PalArch's Journal of Archaeology of Egypt / Egyptology

DETECTING FRAUD IN INSURANCE COMPANIES AND SOLUTIONS TO FIGHT IT USING COVERAGE DATA IN THE COVID 19 PANDEMIC

Mehmet Hanifi AYBOĞA[1], Farshad Ganji[2]*

[1]*Co-author Prof. Dr.* Marmara University, hanifiayboga @ gmail.com.
[2]Business-Accounting and Finance Ph.D. The student in the Institute of Social Sciences of Istanbul Arel University, farshadganji69 @ yahoo.com.

Mehmet Hanifi AYBOĞA, Farshad Ganji: Detecting Fraud in Insurance Companies and Solutions to Fight It Using Coverage Data in the COVID 19 Pandemic -- Palarch's Journal Of Archaeology Of Egypt/Egyptology 18(6), 225-240. ISSN 1567-214x

Keywords: Fraud, insurance fraud, data mining, application of data mining in fraud detection, supplementary insurance; Classification

ABSTRACT

Under normal circumstances, insurance customers may not often think about their insurance services, but the Covid-19 pandemic caused widespread uncertainty among insurance customers. Insured people are now looking to find things like insurance coverage, freeing up money and taking risks. Meanwhile, insurance companies try to adapt their performance to the existing conditions and address the needs of their customers. Fraud is one of the challenges that insurance companies have been facing for a long time and it constitutes a significant part of the losses incurred by them. In recent years, forensic techniques have been instrumental in identifying and preventing fraud in the insurance industry. Due to the high direct or indirect costs of fraud, banks and financial and monetary institutions are increasingly seeking to expedite and expedite action in identifying the activities of fraudsters and fraudsters. The use of these methods can be useful in identifying fraudulent losses in the insurance industry. The growth of fraud patterns as well as fraud costs can constantly threaten any company, so a strong fraud detection management system should have different methods of detecting fraud and what It is important to have experienced experts and specialists in this field who should be directly supported by the supervisory bodies and the board of directors because they are the source of many violations from within the organizations.

INTRODUCTION

Insurance is as old as social life. The so-called accrual mortgage contracts were known to the Babylonian merchants from 3,000 to 4,000 BC. The contract stipulates that if the ship is lost on a voyage, for example looted by pirates, the lender loses his money, and the borrower is not forced to repay. In this contract, the interest on the loan covered the insurance risk. This type of mortgage or insurance was also used by the Hindus in 600 BC and was common in ancient Greece 400 BC and was well used. Marine insurance developed greatly in the 15th century. In Rome, too, there were funeral associations that paid for the funeral of their members from a

monthly membership fee. Gradually, insurance contracts developed rapidly, and fire, liability, property and health insurance, which are among the types of insurance today, were added. Under normal circumstances, insurance customers may not often think about their insurance services, but the Covid-19 pandemic caused widespread uncertainty among insurance customers. Insured people are now looking to find things like insurance coverage, freeing up money and taking risks. Meanwhile, insurance companies try to adapt their performance to the existing conditions and address the needs of their customers. In the United States, an insurance company follows the Google search process, so it can find out what customers want in terms of insurance. "We track Google search as a major indicator of consumer interest, and we've seen the highest level of consumer search traffic so far specifically for life insurance," says Jennifer Fitzgerald[1], CEO of the company. Compared to the past few years, the volume of this search volume in the first few months of 2020 has increased from 25 to 50 percent, as well as the conversion rate search is high.

Meanwhile, some companies have tightened their life insurance requirements in response to the Covid-19 risk. Some shipping companies have temporarily stopped accepting applications from people over the age of 70 and have postponed applications from people who have recently traveled internationally or are planning to travel. Others ask the customer to complete their full health certificate before delivering insurance services, confirming that their health status has not changed since the initial request. In this statement, in the event of death from coronavirus in the first two years, there is a possibility for the insurer to object. The price of life insurance has also changed during this period. Even as the United States tries to restart businesses, even at the risk of infection, insurers promise to cover the damage caused by the epidemic. But most American policyholders will not feel coronavirus coverage for jobs, while in China it is very easy to obtain. Since the outbreak of the virus, 68 Chinese insurers have introduced coronavirus-related services in accordance with the country's banking and insurance regulations. Some of these services, in addition to compensating companies, have also provided compensation for company workers for work stoppages.

China

With the outbreak of Quaid-19, the insurance industry in China quickly began its support activities. A number of insurers quickly provided ways to provide insurance products and services to make it easier to deal with infectious diseases during an outbreak, including Covid-19 in insurance coverage. 74 Insurers introduced various types of insurance protections for medical staff fighting on the front lines, amounting to approximately 9,000 billion renminbi (RMB, the official currency of China[2]). In the short term, the growth and development of the industry has faced many problems, including traditional access to the market due to quarantine policies and social distancing, or restrictions on travel and tourism.

[1] Jennifer Fitzgerald
[2] RMB, the official currency of China

Life insurance

On February 3, 2020, the Office of Life Insurance Supervision issued a directive providing life insurance services related to the prevention and control of Covid-19 outbreaks. This directive supports all life insurers in such a way that the risk factors are reduced to less than previously accepted, such as lifting restrictions on waiting periods, income taxes, and designated hospitals. The directive also covers Covid-19 in accident insurance and serious illness insurance products.

Property insurance

Early in the epidemic, China's Treasury Department issued a directive providing insurance claims service and product insurance industry product development related to the Covid-19 outbreak to all property insurers. The directive calls on insurers to prioritize customers who claim damages for contamination or damage caused by Covid-19. Also expand insurance coverage appropriately and pay all claims very quickly. Insurers are also required to simplify the payment process to customers who claim to have suffered from Covid-19. For those who claim that their business has suffered from the epidemic, advance payment insurance and other measures can be taken to increase the efficiency of claims and reduce the pressure on jobs.

Recommendations for insurers

Despite the many short-term problems, this epidemic offers significant growth opportunities for the insurance industry. We recommend that insurers react seriously to epidemics and the problems of this epidemic and accelerate their digital transformation.

Improving the insurance industry's ability to respond to sudden outbreaks is an important event that significantly affects families and companies. To fulfill the role of risk protection in the insurance industry and to prepare for future sudden epidemics, insurers must cover the risks of new infectious diseases within the scope of insurance risks. This requires them to improve data storage, conduct scientific pricing, and conduct targeted development and promotion of trade disruption insurance and other functional products.

Singapore

In Singapore, as part of the insurance industry's relief efforts in the Covid-19 crisis, some 25,000 life and health insurance companies temporarily exempted insurers from paying their premiums for six months from April 1 to June 5. Flexible installment plans for public insurance policies such as assets and vehicles are also on the agenda. The Bank of Singapore has partnered with the Life Insurance Association and the Public Insurance Association to provide relief work to those affected by the economic weakness of the coronavirus epidemic.

United Kingdom

The UK government has officially listed coronavirus as a significant disease and said it would help businesses claim their insurance. In the UK, work stoppage insurance is usually purchased as part of a combined

commercial property insurance package. The type of insurance is to support the business in the event of a loss.

Travel insurance and cancellation of travel

When selling corporate insurance policies, there is travel insurance due to the wide range of coverages available in the market, and insurers are required to provide only coverages that meet the customer's wishes and needs.

Vehicle and home insurance

This insurance is introduced because many consumers may use their home as their main place of work in the current situation and keep some work-related assets at their home address. Due to government travel restrictions and the current situation, some may not be able to access their original or additional residential property, or some businesses may not be able to access commercial premises. Where access is required as part of a policy requirement, insurers are expected to consider temporary customer changes in how they access the site and treat their customers fairly. Private health insurance for private hospitals and product suspension insurance are other epidemic insurances in the UK.

Spain

During the Covid-19 outbreak, Spain witnessed the publication of several laws that sought to address important health, economic, and social challenges following the epidemic crisis.

Health insurance

While most policies cancel insurance coverage in the event of an epidemic, however, given that coverage is granted in cases such as the common flu, commonly known as the pandemic, Spanish insurers have agreed to cover 19 medical costs. Also cover.

Travel and tourism

Following the order of closure of all hotels by the Spanish government, travel service providers such as hotels, tour operators, restaurants, etc., which are currently unable to operate, have faced problems. This situation will eventually lead to the activation of business stop insurance policies. On the other hand, some people have been forced to cancel their trips or have contracted the disease abroad and have had to pay for treatment, which has resulted in economic losses. Thus, similar to health insurance companies, travel insurance companies now cover overseas medical expenses in the event of a Covid-19 contract. Previously, this insurance covered business interruptions when physical damage and financial loss occurred, but after the outbreak, Covid-19 disease was also covered by interruption insurance, although this plan is very expensive and many Insurance companies do not offer this type of coverage due to the difficulty of determining possible losses in advance. It is important to note that the economic consequences of a global pandemic are unpredictable and difficult to calculate, so they must be assessed on a case-by-case basis, in terms of trade, supply chain, and so on. Cyber risk insurance, when most of the work is done remotely from home, as well as business credit insurance

are covert insurances from Covid-19. It is difficult to predict the final impact of Covid-19 in the insurance sector. Certainly, insurance and reinsurance companies, industries and consumers will suffer severely in terms of economic losses and must adapt to the new challenges ahead. It seems that considering that insurance is one of the main economic engines and acts as a safety net for companies and indirectly for the economy, the insurance sector should manage this health crisis. As a result, insurance companies may be forced to reconsider their products in the future to meet market needs, as industry and consumers expect governments to be able to cover the consequences of epidemics and possible future epidemics. Which is specified in Figure 1 A successful fraud management strategy consists of four elements:

Figure 1: A successful fraud management strategy consists of four elements:

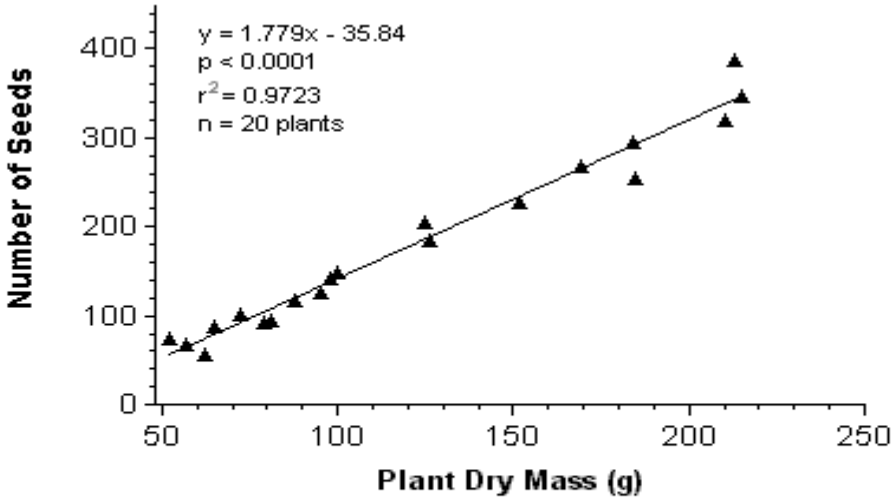


Figure 3. Seed production as a function of plant biomass in waterlilies (*Nuphar luteum*) harvested from Great Works Pond in Northern Maine in August, 2001.

The purpose of the fraud prevention strategy is to reduce the likelihood of fraud. Technical solutions may result in a scoring system that scrutinizes insurance plans for potential fraudsters. In addition to technical solutions, law enforcement can impose tougher penalties on fraudsters when they violate insurance industry laws. When the prevention mechanism is not used, the fraud detection mechanism is used to identify unfair claims. If fraud is detected, various types of investigations such as audits, surveillance and interviews will be used and the necessary measures will be taken to resolve the fraud. Existing insurance fraud detection systems :A framework for counter-fraud strategies that can detect, prevent and manage fraud in insurer claims must be defined. This framework depends on a variety of data mining techniques such as segmentation, communication rules, and classification techniques to detect fraudulent fraud. This method uses a variety of techniques such as predictive modeling, text extraction, reporting exceptions and parsing to detect the possibility of fraud. This framework can process claims in real time and obtain results according to

their intensity. Combining information from multiple databases can detect fraud in seconds, and the ability to detect it based on a set of proven fraud indicators can be customized to comply with business rules.

Insurance Challenges

One of the main challenges in creating fraud detection models in insurance is classified errors, which can be mentioned in two ways: The first type: how to identify false claims :Type 2: Mistakes in the legitimate claims of the insurer, who are sometimes accused of fraud. In the first type, according to the claims, more costs are transferred to the insurer, leaving the way open for further fraud claims. The second type can provide a list of claims that need further investigation, but these legal reviews can have a negative impact and weaken the industry. Therefore, the model that should be considered to minimize both types of errors in fraud detection is a critical classification. Another issue with detecting insurance fraud is to distinguish honest people based on personal characteristics, and based on existing experiences, professional fraudsters tend to use false identities and develop their own methodologies that make them applicants. Authentic and detachable anti-diagnostic systems. Fraud is constantly evolving, and once a fraud technique is discovered, fraudsters will understand a new tactic and find new ways to trick detection systems as long as the systems detect them. Therefore, fraud detection systems must be environmentally friendly and evolve, and these models must be constantly updated with new information to ensure accuracy, and several types of fraud can occur at the same time, and each style of fraud can have unique characteristics and Fraud detection model should be able to detect anomalies for any style. These challenges naturally exist in the development of fraud detection models, and unless there is a model to detect fraud and senior managers are determined to detect it in real time, it is impossible to deal seriously with fraudsters. will be:

Six solutions to fight insurance fraud

The following are some operational strategies for insurance companies that, as trustees, should take steps to prevent and detect fraud:

1. Establishment of a special investigation office in insurance companies: Insurance companies should take action to set up this office in the company to fight against insurance frauds. Insurance companies should employ the best research experts to form and set up this office. The department investigates the accuracy of the incident and other cases suspected of fraud through investigations and field investigations into cases that have been identified by fraud assessors and damage experts, and provides the necessary evidence for litigation by companies' legal units in Prepare the court to prevent fraudulent damages to be paid to fraudsters.

2. Use of damage assessment experts with insurance information and expertise: One of the most important steps in the claims settlement process is the assessment of the case by claims experts. Unfortunately, insurance companies, due to the lack of qualified and experienced damage assessment experts, cannot correctly identify all cases of suspected fraud and misconduct. As a result, many counterfeit claims are deemed payable and, in addition to damaging insurance companies, encourage fraudsters to file fraudulent cases and receive fraudulent damages. Therefore, the use of

damage assessment experts who have insurance expertise can well lead to the detection of fake cases.

3. The need to monitor compensation centers / branches for accurate registration of files: Insurance companies should develop the necessary instructions and regulations to exercise adequate supervision over compensation centers / branches so that these centers receive the necessary documents and the necessary documents. To prevent multiple referrals to complete the case, it is possible to better investigate suspicious cases.

4. The need for necessary training for experts and damage assessors: Given that some experts and damage assessors are inexperienced and also due to the dynamic nature of fraud and new methods that are created over time, companies need the necessary training and continuous training workshops. And hold a coherent for all damage experts.

5. The need to monitor the capital increase supplements for the insured: Some people issue capital increase supplements for the insured and by creating intentional and fictitious damages for the insured, file a claim and ask the insurer for compensation. Due to the fact that the amount covered by the insured is more than the real value of the insured, so even with the deduction of the deductible, the scammer achieves more damage than the real value of the insured. Therefore, insurance companies should prevent the purchase of additional coverage, which is more valuable than the insured value, by modifying the relevant processes and strictly monitoring the capital increase supplements.

6. Establishment of a legal department with legal experts and knowledge of insurance laws in insurance companies: Insurance companies should establish a legal department using legal experts who are proficient in insurance laws. Many insurance claims cases require legal experts who are proficient in insurance law to be able to defend the rights of insurance companies based on evidence, documents and insurance laws.

Research background

Today, with the rapid growth of data, the traditional algorithm cannot meet the challenges of bulk data. Challenged in order to cope: Big data mining based on big data technology has become an important and hot research among other research topics: Data mining in the insurance industry can help companies gain a competitive advantage. For example by using :Data mining techniques, companies can use the data to discover knowledge about customer buying patterns and customer behavior :Data mining is also about understanding the business to help reduce fraud, improve insurance, and increase risk management. And provides effective. One of the important applications of data mining is the detection of fraud in a wide range of data. Hidden Relationships Between Data and Continuous Learning of Fraud in the System: Fraudulent potentials that prevent fraud and detection steps in fraudulent risk management control structures: The detection of fraud in various markets is of particular importance. Of the total volume of one thousand billion dollars :About 21% of the world's insurance industry (up to 04% in some areas such as health insurance) has been fraudulent This high volume of overhead costs has led organizations to

use technology (Mohit & amp; Kumar[3]. Is. 2011) Newcomers to the field of fraud detection show great interest. On the other hand, organizations that are distributed from databases Use, due to the nature of information distribution, has a high redundancy to speed up transactions Which in turn increases the likelihood of fraud. This research is an attempt to identify the parameters Underlying the occurrence of fraud in the Social Security Organization, which is sometimes due to the weakness of existing laws or violations of organizational staff and The abuse of the insured is done in order to achieve sinister goals In Ireland, a man bought car insurance from an insurance company; He states in the completed application form for insurance that he has not committed any offense or offense with the car; But the insurance company finds out by phone call from an unknown person in the insurance federation that this man has committed several violations. The Internal Insurance Research Group is conducting further investigations and this matter will be reported to the police. After that, the person is convicted of obtaining insurance by giving false information and driving without insurance and receives a four-month suspension. Both incur costs. Losses incurred through fraudulent activities benefit insurers. And potentially affect their financial stability. To compensate for these losses, insurers raise premiums.

Brand and this leads to higher costs for insurers. Fraud can stakeholder confidence and consumption It can also reduce the reputation of individual insurers, the insurance sector and, potentially, economic stability. Affect. The numbers are shocking in the area of insurance fraud. Studies by the British Insurance Association show: Fake spending in the UK insurance industry is over 1bn a year. Telecommunications in the world amount to 214 billion dollars. Of the total volume of one thousand billion dollars in the insurance industry in the world, about 21% of it Health insurance costs around the world have been alarming in recent years (Mohit & Kumar[4].2011).Most of these costs have been claims of error detection and fraud in the insurance payment process.

Application of data mining in the fraud detection process

(Negai et al[5].2014) examined the application of data mining methods to detect financial fraud. They reviewed the article published in reputable journals and found that in the study set, six categories of Data mining tasks / applications have been used to detect financial fraud. These include classification, regression, Clustering, forecasting, outdated data detection and imaging. Each of these six classes, with a set of approaches. An algorithm is supported that seeks to extract relevant connections from the data. These approaches in the type of issues that are able They are different; they are different from each other. Classifies a model and uses it to predict the title of classes of unknown objects rather than between objects.

Belonging to different classes, make a difference. These class titles are pre-defined, but not distinct and orderly. Classification and prediction is the process of identifying a set of common features and models that classes

[3] Mohit& Kumar
[4] Mohit & Kumar
[5] Negai et al

or concepts. Describe and differentiate data. Common classification methods include neural networks, simple Bayesian networks, and trees. Decisions and support machines support such classification tasks in detecting credit card, health insurance and insurance fraud: Automotive and corporate fraud and other types of fraud are used. Classification is one of the most common learning models in application: Data mining is to detect financial fraud. Classification is a two-step process. In the first step, using a sample. Educational, a model is taught. One of the attributes, the attribute of the title of the class, contains values that represent. A class is a predefined one to which each row belongs. This step is also known as supervised learning. the door. Step 2, the model tries to classify objects that do not belong to the training sample and a test sample (confirmation) Form. The most common methods used to detect financial fraud are logistic regression models (most common). Neural networks, nearest neighbors, Bayesian inference networks, and decision trees are all important solutions to "Classification" presents inherent problems in detecting and classifying fraudulent data. These 0 methods, all in the group Take. The methods that are the main basis of the research are in this article.

Machine learning and data mining

The present age is the age of information. A lot of information is stored in databases that are converted to :The knowledge needed to make decisions requires new tools. Statistical methods for data analysis are more based. Extraction of quantitative indicators is robust. Although these methods indirectly direct us to the required knowledge Make decisions; But in the end, interpreting their results requires human analysis. New methods of analysis Data facilitate data interpretation and can provide a better understanding of processes. To facilitate the decision process. Equip data analysis systems with the necessary and decision-making knowledge based on the data. To achieve. To this end, researchers have come up with new ideas for machine learning. According to these ideas, the task of learning: The machine will be the data (input (to decision knowledge) output). Also based on these ideas, the necessity (Data. Michalski et al, the emergence of a new field of research called data mining[6] .1998) Mining is the process of discovering patterns in data. This process must be automated or semi-automated. Identified patterns must be valid and have benefits for us, including economic benefits. Also, the data must always be in the form of valid quantities (Witten & amp; Frank, to be presented[7]. 2000) Using mathematical models to detect fraud allows insurance professionals to Recognize less time and cost whether the claim of the requested services is statistically suspected of fraud. In this research, three methods of neural networks, decision tree and nearest neighbor are common tools in data mining. Introduce and use these methods to identify and classify fraudulent data damage. The real will be fitted.

Neural Networks

The neural network has been widely used in classification and clustering and after full regression

[6] Data . Michalski et al, The emergence of a new field of research called data mining
[7] Witten & amp; Frank, to be presented

The first network using a set of data (Yue et al, is the most practical method of data mining in fraud detection.[8] 2007) Paired cells are trained to draw inputs and outputs. Then the weight of communication between neurons is stabilized and: The network is used to determine the classification of a new set of data.(Foa et al.[9], 2014)

Learn the decision tree

The structure of the decision tree in machine learning is a predictive model that the facts observed about

Involves a phenomenon in making inferences about its target value. Machine learning technique for inferring one

Decision Tree From Data Learning is called decision tree, which is one of the most common methods of data mining.

(KNN) K Nearest Neighbor Nearest Neighbor K .4-3

Kurd from the set of educational records that the closest records K The nearest neighbor of a group includes K Method

Select to be an experimental record and based on the superiority of the category or the label related to them in the experimental record category It makes the decision. In simpler terms, this method selects the row in the selected neighborhood that is the most The nearest neighbor observed K is the number of records attributed to them. Hence the rank of most of all categories That is, if a creature like KNN becomes a duck, it will be considered a new record category. The main idea of the method

Slow, so it must be a duck. Quack Quack Go and be like a duck

Dataac

In general, the proposed method can be divided into the following steps and specified in Analysis and formulas 1 Data collection:

1. Data collection, preparation and preprocessing:

$$1.4 = t\,178 \implies 5 = t\,168 < conf: (0.94) > lift: (1.76)\ lev: (0.01)\ [72]\ conv: (7.49)$$

$$2.1 = t\,6 = t\,128 \implies 5 = t\,117 < conf: (0.91) > lift: (1.7)\ lev: (0.01)\ [48]\ conv: (4.94)$$

$$3.1 = t\,9 = t\,137 \implies 5 = t\,120 < conf: (0.88) > lift: (1.63)\ lev: (0.01)\ [46]\ conv: (3.53)$$

$$4.1 = t\,11 = t\,117 \implies 5 = t\,100 < conf: (0.85) > lift: (1.59)\ lev: (0)\ [37]\ conv: (3.01)$$

$$5.6 = t\,9 = t\,11 = t\,166 \implies 5 = t\,140 < conf: (0.84) > lift: (1.57)\ lev: (0.01)\ [50]\ conv: (2.85)$$

$$6.7 = t\,9 = t\,195 \implies 5 = t\,158 < conf: (0.81) > lift: (1.51)\ lev: (0.01)\ [53]\ conv: (2.38)$$

$$7.6 = t\,7 = t\,162 \implies 5 = t\,130 < conf: (0.8) > lift: (1.49)\ lev: (0.01)\ [43]\ conv: (2.27)$$

$$8.6 = t\,11 = t\,490 \implies 5 = t\,389 < conf: (0.79) > lift: (1.48)\ lev: (0.02)\ [125]\ conv: (2.22)$$

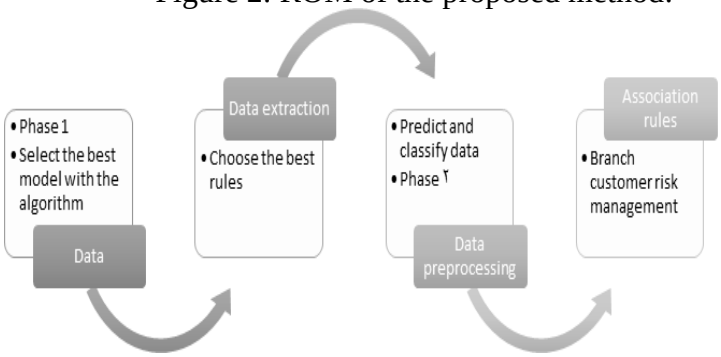
[8] Yue et al
[9] Foa et al

9. 7 = t 11 = t 232 ==> 5 = t 183 < conf: (0.79)
> lift: (1.47) lev: (0.01) [58] conv: (2.15)
10. 6 = t 9 = t 384 ==> 5 = t 298 < conf: (0.78)
> lift: (1.45) lev: (0.01) [91] conv: (2.04)
11. 1 = t 470 ==> 5 = t 363 < conf: (0.77)
> lift: (1.44) lev: (0.01) [110] conv: (2.02)
12. 6 = t 11 = t 12 = t 262 ==> 5 = t 199 < conf: (0.76)
> lift: (1.41) lev: (0.01) [58] conv: (1.9)
13. 7 = t 12 = t 148 ==> 5 = t 109 < conf: (0.74)
> lift: (1.37) lev: (0) [29] conv: (1.71)
14. 9 = t 11 = t 12 = t 255 ==> 5 = t 187 < conf: (0.73)
> lift: (1.37) lev: (0.01) [50] conv: (1.71)
15. 6 = t 9 = t 12 = t 169 ==> 5 = t 123 < conf: (0.73)
> lift: (1.36) lev: (0) [32] conv: (1.67)
16. 6 = t 1291 ==> 5 = t 938 < conf: (0.73)
> lift: (1.35) lev: (0.03) [244] conv: (1.69)
17. 9 = t 11 = t 788 ==> 5 = t 561 < conf: (0.71)
> lift: (1.33) lev: (0.02) [137] conv: (1.6)
18. 7 = t 652 ==> 5 = t 463 < conf: (0.71)
> lift: (1.32) lev: (0.01) [112] conv: (1.59)
19. 6 = t 12 = t 496 ==> 5 = t 333 < conf: (0.67)
> lift: (1.25) lev: (0.01) [66] conv: (1.4)
20. 9 = t 12 = t 453 ==> 5 = t 300 < conf: (0.66)
> lift: (1.23) lev: (0.01) [56] conv: (1.36)
21. 11 = t 12 = t 808 ==> 5 = t 531 < conf: (0.66)
> lift: (1.22) lev: (0.01) [97] conv: (1.35)
22. 5 = t 9 = t 12 = t 300 ==> 11 = t 187 < conf: (0.62)
> lift: (1.77) lev: (0.01) [81] conv: (1.7)
23. 9 = t 2088 ==> 5 = t 1253 < conf: (0.6)
> lift: (1.12) lev: (0.02) [132] conv: (1.16)
24. 5 = t 6 = t 12 = t 333 ==> 11 = t 199 < conf: (0.6)
> lift: (1.69) lev: (0.01) [81] conv: (1.6)
25. 11 = t 2918 ==> 5 = t 1740 < conf: (0.6)
> lift: (1.11) lev: (0.02) [173] conv: (1.15)
26. 7 = t 12 = t 148 ==> 11 = t 86 < conf: (0.58)
> lift: (1.65) lev: (0) [33] conv: (1.52)
27. 6 = t 9 = t 11 = t 166 ==> 12 = t 96 < conf: (0.58)
> lift: (2.88) lev: (0.01) [62] conv: (1.87)
28. 5 = t 12 = t 929 ==> 11 = t 531 < conf: (0.57)
> lift: (1.62) lev: (0.02) [202] conv: (1.51)
29. 6 = t 9 = t 12 = t 169 ==> 11 = t 96 < conf: (0.57)
> lift: (1.61) lev: (0) [36] conv: (1.48)
30. 9 = t 12 = t 453 ==> 11 = t 255 < conf: (0.56)
> lift: (1.59) lev: (0.01) [95] conv: (1.47)

$$31.\ 12 = t\ 1658\ ==>\ 5 = t\ 929\ <\ conf: (0.56)$$
$$>\ lift: (1.04)\ lev: (0)\ [38]\ conv: (1.05)$$
$$32.\ 6 = t\ 11 = t\ 490\ ==>\ 12 = t\ 262\ <\ conf: (0.53)$$
$$>\ lift: (2.66)\ lev: (0.02)\ [163]\ conv: (1.71)$$
$$33.\ 6 = t\ 12 = t\ 496\ ==>\ 11 = t\ 262\ <\ conf: (0.53)$$
$$>\ lift: (1.5)\ lev: (0.01)\ [86]\ conv: (1.37)$$
$$34.\ 5 = t\ 6 = t\ 11 = t\ 389\ ==>\ 12 = t\ 199\ <\ conf: (0.51)$$
$$>\ lift: (2.55)\ lev: (0.01)\ [120]\ conv: (1.63)$$

PCA-2 Reduce the property space dimension (number of traits) using the basic components algorithm or Reset the decision tree classification Which is specified in Figure 2 ROM of the proposed method :

Figure 2: ROM of the proposed method:



The data learning process can be considered as the most important step of the data mining process that can be used: Describe, formulate and execute various techniques. A learning method is an algorithm that has an unknown dependence between Estimates system input and output from available data sets, from which it can be used to predict output The future of the system will be used from known input values.

At this stage, using data mining techniques, the data is explored, and the knowledge hidden in them is extracted. And modeling has been done. Then the results and patterns presented by the data mining tool are examined and the results Has been identified as useful. In fact, data mining tools primarily use communication sequences to discover a pattern Finally, it categorizes the information obtained to reach a specific pattern. Because predictive algorithms The need for training samples to learn the patterns and rules in the samples to produce the model governing them and then the need To test this model, they are predicting the class of new samples, so the data set is divided into two parts: We distribute training and experimental samples. For this purpose, 64% of the samples for the educational data set and 14 We consider the remaining percentage for the experimental data set (test).

classification 2 (: How to run the classification algorithm – Figure2In Table No. 1 where the analysis of each data is clearly and accurately stated.:

Summary of results:

Table 1: How to run the classification algorithm Figure2:

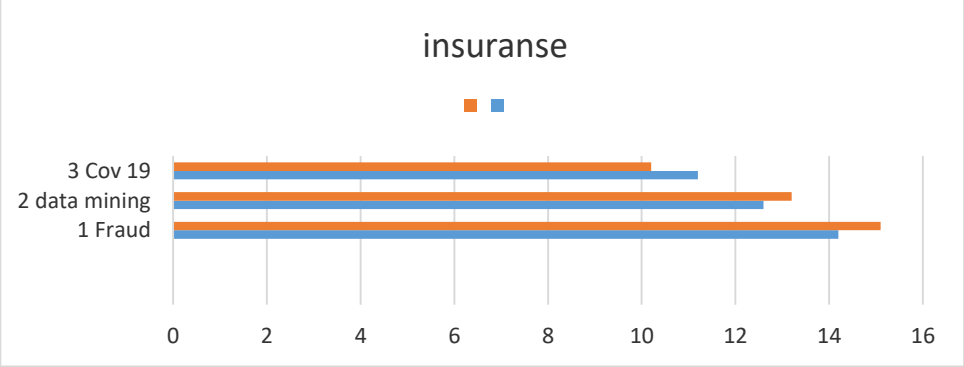
Method	*Mode*	$\|\|K_o\|\|$	$\|\|K_s\|\|$	$\|\|K_a\|\|$	γ
Theorem 5.1	1	1.6028	1.6877	1.4305	3.247
	2	1.8668	1.7971	1.9513	
Theorem 4.1	1	2.4377	3.1445	2.3529	8.688
	2	2.6658	3.2312	2.5145	
Mahmoud (2000b)	1	4.6028	4.6445		23.766
Mahmoud (2004b)	1		5.037		15.455

Table No. 2 and Diagram 1 where the analysis of each data is clearly and accurately stated Fraud, insurance fraud, data mining (1):

Table2: Fraud, insurance fraud, data mining:

	Flight 1	**Flight 2**	**Flight 3**	**Average**
1 Fraud	14.2	15.1	14.9	14.8
2 data mining	12.6	13.2	13.0	13.0
3 Cov 19	11.2	10.2	9.8	10.4

Diagram 1: Fraud, insurance fraud, data mining:



In this paper, three data mining methods of decision tree, nearest neighbor and neural networks to build models for: Identification of cases of fraud were introduced in insurance organizations. Then these methods are based on real test and performance data Each method was weighed. The decision tree method with 66.90% accuracy in the correct identification of fraud cases has the best performance It was compared with the other two methods. It should be noted that the variables used in all three methods were the same As mentioned in the previous section, the most important areas of fraud occur in insurance companies and l the insurance industry In the long run, it imposes huge costs on this organization, both in the field of insurance and in the field of health. Was classified and with the technique of classification and using machine learning algorithms, cases of fraud in 6

parameters and 7 sections Services: medical booklets, maternity leave and unemployment insurance benefits, and non-pension payments The results of the identification work and the results of the learning test were tested on real data and the fraud rate of insurance companies during the Pandemic and Covid 19 was examined: The results of the experiments confirmed that the identification of areas prone to fraud through the knowledge of employers and Insured persons with insurance rules and regulations with the minimum possible history and avoidance of workshop inspection frameworks in order to use :Most of the services provided in insurance companies are done in almost three areas under discussion and other cases due to Systematic and human control processes in recent years can be largely preventable, although it should be noted: Considering that the lack of a consistent administrative procedure has caused most branches to behave in a manner that Some of them will be mentioned below Detecting and reducing insurance fraud is a key priority for insurers. Insurance fraud is not without victims. This severity of victimization is reflected in serious consequences for those who commit fraud, including imprisonment. Honest customers do not have to pay for fraudulent fraud by paying higher premiums. The insurance industry will continue to strengthen its systems and controls to ensure that all types of fraud are detected and minimized to minimize the cost of fraud to insurers and thus the impact on honest insurers. Insurers' methods are constantly evolving to combat the changing behavior of fraudsters. In general, with the help of these results, insurance companies can provide a suitable model for the direction by recognizing the types of celebrities and their characteristics. Provide appropriate services to customers and ultimately achieve maximum added value.

Conclusion:

The most important points to be observed are the following points:

Insured persons with a minimum history of insurance premiums (2 to 7 months per year) pay most of their medical expenses .They receive from insurance companies due to the lack of a preventive algorithm that provides services in the system .Make the Concentrate subject to having at least 7 consecutive months of experience or having a workshop inspection. Insured persons who due to a legal defect in the Maternity Leave Law (Article 93), with at least 2 months of experience in one year Last to the date of delivery, they use 9 to 6 months of maternity leave (usually in government-assisted workshops and :Contractors who are not legally inspected (Relatives of the deceased who, with the knowledge and awareness of the legal shortcomings in Article 30 of the law) establish a minimum record of one year in 14% Year provided there is a record of 7 months in the last year of insurance (in contracting workshops or government assistance Defects Eliminate a history of the deceased and receive a survivor's pension until the end of their life. Insured persons over 11 years of age due to old age and illness not working in contract workshops - which is the nature of No _____ inspections (except in

special cases[10]) - without any monitoring and inspection system to provide false lists

They show.

Suggestions for the future:

What is certain is that preventive measures are taken to prevent and identify numerous cases of fraud in the above cases :And cases that will be referred to outside the scope of this study, without making major changes to the rules Existing web circulars and modification of software used in insurance branches will not be possible. Although in recent years .Major progress has been made in this regard. Most important titles:

Transfer of services provided at the branch level in the form of integrated global systems and creation of a centralized database that :Interacting with the country's civil registration systems, the Ministry of Labor, the Chamber of Trade Unions, the Ministry of Foreign Affairs :Elimination of medical records and use of national electronic cards issued by the Civil Registration Organization as (ATM) The main reference for electronic medical and insurance records and the use of the system

Eliminate the defined deadline for submitting the list of two-month insurance premiums of government aid workshops (two-month payment, one-month list) Failure to receive suspended lists of contractors and classes Using image and fingerprint scans to identify real insured persons working in trade unions Implementation of a centralized system for payment of short-term benefits (maternity leave, unemployment insurance, orthosis allowances and Prosthetics, sick leave, etc. (Carrying out control and monitoring steps in the time interval between sending internet lists until the final approval by the employees working in Branches. Equalization of contract calculation coefficients of contractual agreements. Assigning a unique identification code to identify trade unions and contractors and implement a monitoring system Concentrated between the Ministries of Labor and Social Welfare, Economy and Finance and the Social Security Organization, to extract Employee statistics, control and calculation of workshop expenses and payments.

REFERENCES

britannica.com

lexology.com

Lee, S. J. and Siau, K., "A Review of Data Mining Techniques," Industrial Management & Data Systems, pp. 41-46, 2001.

Kudya, S. and Hoptroff, R., "Data Mining and Business Intelligence: a Guide to Productivity," IGP, 2001.

Yeo, A.C. Smith, K.A. Willis, R.J. and Brooks, M, "Modeling the effect of premium changes on motor insurance customer retention rates using neural networks," Computational Science – ICCS. International Conference, pp. 28-30, 2001.

R. S. Del, V. López, J. M. Benítez, F. Herrera, "On the use of MapReduce for imbalanced big data using random forest," Inf. Sci., vol. 285, pp. 112-137, 2014.

[10] except in special cases

R. C. Bhagat, S. S. Patil, "Enhanced SMOTE algorithm for classification of imbalanced big-data using random forest," Proc. IEEE Int. Adv. Comput. Conf. (IACC), pp. 403-408, 2015.

k. Smith, "An analysis of customer retention and insurance claim patterns using data mining: a case studyk," Journal of the Operational Research Society, pp. 532-541, 2000.

C. Lin, "Using neural networks as a support tool in the decision making for insurance industry," Expert Systems With Applications 36 (3), pp. 6914-6917, 2009.

L. Guo, "Applying data mining techniques in property," Casualty Insurance, pp. 230-472, 2002.

B. Morley, "How the detection of insurance fraud. Psychology," Crime & Law 12, pp. 163-180, 2006.

R. Mizerski, "An attribution explanation of the disproportionate influence of unfavourable information," Journal of Consumer Research, V. 9, p. 301–310, 1982.

C. Bhattacharya, "When customers are members: Customer retention in paid membership contexts," Journal of the Academy of Marketing Science, 26, pp. 31-44, 1998.

Ding Junmei, Liu Guicheng, Li Hui, "Application of Improved Stochastic Forest Algorithm in Prediction of Customer Missing in Telecommunication Industry," Research and Application, 2015.

Liang Wuchao, Wang Ying, Wang Shuxia, "Research on Win win Strategy of Customer Missing Based on Fuzzy Analytic Hierarchy Process," Management Manager, 2017.

Goudar, Ashok, "Predictive Analytics in insurance Services," MPHASIS, Hp Company, 2009. [17]

Kahane, Y., Leviny, N., Meiriz, R, Zahavi and J., "Applying Data Mining Technology for Insurance Rate Making: An Example of Automobile Insurance," Asia Pacific Journal of Risk and Insurance, pp. pp. 33-51., 2007.

Rekha, "Detecting Auto Insurance Fraud by Data Mining Techniques," Journal of Emerging Trends in Computing and Information Sciences, pp. 156-162, 2011.

Lin, Kuo-Chung. and Yeh Ching-Long, "Use of Data Mining Techniques to Detect Medical Fraud in Health Insurance," International Journal of Engineering and Technology Innovation, vol. 2, no. 2, pp. 126-137, 2012.

nsurance fraud," Journal of Risk and Insurance, vol. 69.3, pp. 271-287, 2002.

Ngai, E.W.T., Hu, Y., Wong, Y.H., Chen, Y., and Sun, X., "The application of data mining techniques dataacademy.ir.