

STANDARDIZATION OF THE INVESTIGATION PROCESS AND PREVENTION FROM CASES OF INSURANCE FRAUD IN TRAFFIC ACCIDENTS ATTACHMENT: PROCEDURE FOR PROCESS REALIZATION

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Abstract:

Insurance fraud have been existing since insurance exists. A special and most important segment of insurance fraud is fraud in the field of motor vehicle insurance. Many insurance companies and many individuals have learned how to recognize and detect fraud. However, the modern tendencies of process management in the organization impose the need to take systemic actions and implement a process approach in the management of the fraud investigation process and their prevention, which will ensure the reduction of uncertainty in decision-making and transparent process management.

This paper presents the need for standardization of the process by establishing a specific procedure for research and prevention of insurance frauds and determination of certain elements for the quality management of the process.

Key words: frauds, insurance, process, procedure

1 Introduction

The time we live in, the economic crisis, the class differences, and the redistribution of social wealth, have a consequence in increasing the number, i.e., the frequency of insurance frauds, especially in motor vehicle damage. The increased level of insurance fraud, in all areas in general, is a global trend. The primary and most important goal of the operation of any system should be the prevention of fraud, its reduction, and if a case of insurance fraud has already occurred, its detection and sanctioning within the justice system.

Insurance fraud [1] is a process, conducted by some individuals and groups, using procedures in insurance companies, which aims to gain material benefit illegally. Fraud is interpreted as intent to obtain illegal property gain for oneself or another by misleading misrepresenting or concealment of facts. Frauds extend to all areas of insurance, occur in all types of insurance, and have extremely negative implications for other areas of society.

The most significant and the largest in scope and recurrence, at the same time with the largest financial implications, subject to insurance fraud is in the segment of motor vehicle insurance. Fraud schemes can be various, from unjustified increases in damages, reports of vehicle theft that did not occur, intentional destruction of vehicles or property and false reporting of accidents, falsification of medical records related to injuries to participants in traffic accidents, to the actions of organized groups in setting of complex traffic accidents with huge damage of vehicles and bodily injuries of participants. The entities that deal with the monitoring and detection of fraud, operate with a margin of 10% losses on this basis, to the insurance companies from the total paid damages on an annual basis.

Insurance companies [2] have five key areas of exposure to insurance fraud (Figure 1). The analysis of the results leads to the conclusion that the significant areas of risk exposure are internal or related to the system set-up and the organization of the insurance company. According to [3] the relationship between internal and external frauds is illustratively shown (Figure 2) as an iceberg. External frauds are the part of the piece, visible, that is above the water, but convincingly the bigger part and the basis of the whole piece, internal frauds, are the part of the piece that is under the water.

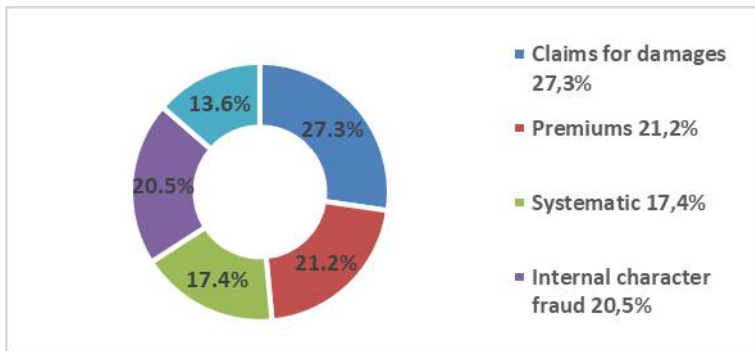


Figure 1. Risk exposure to insurance frauds [2]



Figure 2. Relationship between internal and external frauds [3]

Researches conducted in European Union countries show [2] that a very high percentage of citizens (around 60%) believe that insurance frauds are not a matter of ethics, so fraud should not be the subject of penalty policy. According to the results obtained from the research on the conditions for risk reduction at motor vehicle insurance, every sixth participant in the survey (17.3%) answered that he would have participated in insurance fraud if he had known that he would not have been detected. These striking data lead to the conclusion about the huge risk of fraud faced by insurance companies and the challenge of establishing, maintaining, and developing system measures and actions to prevent, detect and sanction participants in insurance frauds.

In his research [2] on the conditions for risk reduction at motor vehicle insurance, because of statistical analysis of the collected data, the author draws two hypotheses of the research:

H1: Appraisers working in Insurance companies, where fraud detection and prevention procedures have been developed, give greater importance to the technical aspects of fraud protection.

H2: Appraisers working in Insurance companies that have developed work procedures, show more motivation to work and are more satisfied with the work.

From all the above-mentioned it follows that the Insurance companies and the whole insurance system should have a systematic approach to detecting and preventing frauds, based on an automated process of insurance receiving, as well as in claim of damage, assessment, and liquidation of damages.

The general goal of this paper is to expand and deepen knowledge about the need for the standardization of the process by establishing clear procedures for detecting and preventing insurance fraud around motor vehicles insurance, as a basis for monitoring and measuring the process, defining objectives to be achieved and finally determining and realization the action for continual improvement of the process of research and fraud prevention.

2 Flow diagram. Assignment of the responsibilities and authorities in the process of insurance frauds detection and prevention

The requirements for continual improvement of the efficiency in the operation of the organization, imperatively impose the necessity for insurance companies for applying the process approach in the management of the organization. The time of resolving the damages, the customer satisfaction, the number of solved damages, and the other target functions that are set before the main process of the service realization, seem to be in some contradiction with the objectives that are set for the process of insurance frauds detection and prevention. But is that so? The benefits that can be achieved through the process of detecting and preventing fraud, make without a doubt, the process important and necessary in the integrated network of processes in the organization. So, when designing and developing processes in

the organization should abandon the traditional model of core analysis of each damage and make some compromise between processes, taking into account the cost minimization, rational use of available resources, and benefits maximization.

The aim of the process of detecting and preventing insurance fraud is to detect fraud through analysis of the reliability of data in all processes in the insurance company (receiving in insurance, insurance, application, assessment ...) fraud detection and their separation from the regular operating flows. In this paper, the subject of research is the process of fraud detection and preventing within the framework of resolving motor vehicle damages - auto liability and auto casco damages.

Organizational settlement regarding fraud detection is different for different insurance companies. The last time, the insurance companies usually have special departments or individual investigators employed with the sole task of combating insurance fraud, and using external expertise as needed. The degree of dismantling - the analysis of the process, as well as the organizational settlement in the process of detecting and preventing fraud depends on the size of the insurance company and the commitment of top management to this issue. In addition to this paper (*Appendix 1*), a procedure that describes the process of detecting and preventing fraud in the field of motor vehicle damages) is presented, at the same time as a basis for further improvement and adjustment of the procedure to the specifics of the organization. During the development of a procedure by which, through the distribution of activities and assignment of responsibilities and authorities in the process, the elements of quality in the process of detection and prevention of fraud should be determined and managed.

The process of detecting and preventing of fraud in motor vehicle damage is realized in three phases:

- 1) receipt of the claim and data collection related to the damage,
- 2) identification of possible fraud - indication,
- 3) procedure for fraud proving - detection.

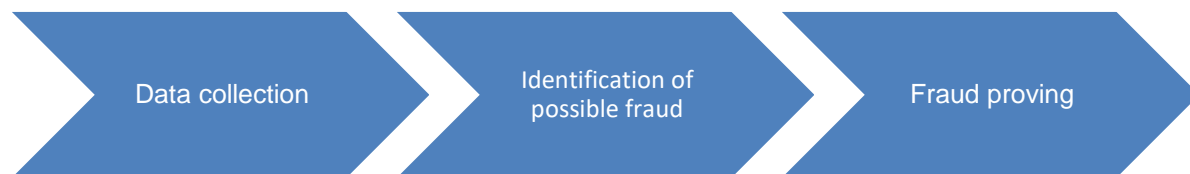


Figure 3. Insurance fraud detecting and preventing process and its sub-processes

2.1 Acceptance of damage claim and data collection damage related

Preparation of temporal and spatial analysis of the traffic accident, determination of the causal-consequential connection of the damages and the injuries of the participants in the traffic accident, with the mechanism of occurrence and development of the harmful event, or determination of the amount of material damage to the vehicles, must [4] be based on relevant evidence and facts arising from the claim for damages and the available documentation attached to the case. Claim reception and data collection related to the damage is only the first step in recognizing and qualitatively identifying the claim for damage and the harmful event. The purpose of this process is to collect all the essential data and information which are related to the harmful event and are the basis for making a correct and timely decision. The basic principle in decision-making is to make decisions based on facts. Therefore, the process of receiving the claim request and data collecting related to the damage is extremely important and an assumption for the successful realization of the process of detecting and preventing fraud in motor vehicle damages.

Claim for damage and subject formation, collecting the necessary data, expert inspection, and identification of damaged vehicles are just some of the steps in the series of activities that are part of the

process of receiving the claim for damages and collecting data. The purpose of these activities is to collect accurate data and real evidence from the harmful event and reduce the uncertainty or eliminate inaccurate data that distort the knowledge of the harmful event or exclude the possibility of objective knowledge of the harmful event. So, only sufficiently specific and clear, accurate data can be processed in the further stages of the process of detecting and preventing fraud in motor vehicle damage. There is a direct link between the quality of the conducted evidence procedure and the conclusions made and the outputs of the fraud detection and prevention process.

The activities automation of this process, modernization, and application of new methods of data collection, better connection and coordination with other entities working in the field of damage to motor vehicles, will contribute to creating conditions for the more efficient and effective realization of the process of receipt of the claim and data collection.

2.2 Identification of possible fraud - indication process

Insurance companies that perform activities for proceeding many damage claims are faced with the question of how to efficiently control fraud attempts, considering the number of claims for damage, staffing capacity, and economic justification. The process of indication of possible fraud is a key process that will provide conditions for the separation of suspicious claims and their detailed processing to the indisputable claims and their resolution and refund. The purpose of this process [5] is to determine the status of the claim in respect of possible insurance fraud by measuring the so-called indicators. This approach to establishing and constantly developing an efficient process of indication of possible fraud will reduce the gap between the need to increase customer satisfaction by timely resolution of their claims on the one hand and detect insurance fraud and reduce such financial ballast for the organization, on the other hand.

In the area of detection of insurance fraud, the establishment of the systems for control of the claims through appropriate indicators is actual, which in some way will contain information about possible fraud, i.e., will guide that the relevant claim for damage should be analyzed and processed in detail. In the field of traffic safety [5], the indicators are a measure that describes the performance of the traffic safety system and as a rule, have a strong connection with the final outputs of the safety system, i.e., with the number and consequences of the traffic accidents.

Organizational units that carry out actions to detect and resolve insurance fraud, must develop appropriate indicators that will simply indicate suspicious claims and special attention during their processing should be paid. For certain data related to a traffic accident to be an indicator, it must be accessible for use and easy to understand by all stakeholders. The indicator must be established in a way to be confidential and is to be based on the material evidence or indisputable facts that are part of the case file. At the same time, for a certain indicator for insurance fraud to be selected, it must be determined to what extent it appears in traffic accidents that have signs of insurance fraud.

With the development of computer networks and software tools [2], models for indication of insurance fraud are developed in parallel, operating on the principle of mathematical algorithms, with the ability to analyze the widest range of data from external and internal databases and with the ability for dynamic adjustment. on trends and variations in auto liability insurance fraud.

Older fraud detection models operate with a combination of multiple static indicators, called red flags, while in the newer models a synthetic indicator (1) is calculated which integrates the impact of all indicators from the list of indicators:

$$I = \sum_{k=1}^n \alpha C \quad (1)$$

where:

- I – a synthetic indicator of insurance fraud;
- α - weight coefficient as a function of the importance of every single indicator;
- C – the probability of occurrence of a single indicator of insurance fraud;
- n - number of indicators;

Thereby, criteria are developed, which determine the levels of indication of fraud (low, medium, or high level), which are displayed differently: as a number, percentages, colored flags, text, etc. With the constant changes that occur in traffic safety, with the development of technology, at certain periods it is necessary to update each indicator of insurance fraud, to re-evaluate its confidentiality and its eventual redefinition, as well as to supplement the list of indicators and to analyze the weight coefficients of each indicator. If there is no periodic review and updating of the existing model and knowledge, the risks of insurance fraud over time will increase, ie the model itself will become a generator of problems, otherwise, if the existing model follows current trends, then over time the organization will move from the phase of detection and sanctioning of frauds to the phase of their prevention.

2.3 *Fraud discovery and proof - detection process*

The result of the indication process, ie the high value of the synthetic indicator does not necessarily mean that the claim is an insurance fraud but only indicates an increased probability of insurance fraud, high doubts about the reliability of the occurrence, and/or consequences of the accident and provide guidance that special attention should be paid to the specific claim in the process of its further processing. The high level of indication of fraud directs to the need to conduct a detailed review of all aspects and data from the claim for damage, if necessary, additional data collection, realization of technical analysis of the accident to determine the cause, course, and development of the harmful event and to determine the consequences of the traffic accident. The proof of the fraud is based solely on relevant evidence and facts arising from the available documentation attached to the case.

The process of insurance fraud detection is interdisciplinary and inclusive, i.e., the conduction of various activities of this process should include profiles from different fields (appraisers, lawyers, investigators, etc.) and, if necessary, external experts.

The analysis of the compatibility of the collision process [6] should answer the question of whether the deformations of the vehicles reported as participants in the accident are a logical consequence of the harmful event, but also provide indisputable evidence for further procedures for sanctioning insurance fraud. The compatibility of the collision process is perceived through:

- The geometric interdependence of the damages of the vehicles involved in the accident,
- The interdependence of the deformation work,
- Spatial interdependence of traces in the collision process,
- Time analysis of the traces in the collision process,
- Biomechanics of driver injuries caused in the collision.

2.3.1 *Geometric compatibility*

Geometric compatibility shows the geometric interdependence, the mutual appearance, and position of the vehicle tracks, and the interdependence of the injuries of the participants in the area of the accident.

2.3.2 *Energy compatibility*

Energy compatibility shows the interdependence of the occurrence of deformations about the path of movement of vehicles in the collision process, the place of contact, and the path of calming of vehicles after contact.

2.3.3 *Spatial compatibility*

Spatial compatibility shows the position of the tracks in the moment of entry of the vehicles in the collision process, during the collision, and the position of the traces after the collision.

2.3.4 *Time compatibility*

Time compatibility shows the mutual time dependence of the occurrence of traces and deformations of vehicles in the moment of entry of vehicles into the collision process, during the collision, and after the exit of vehicles from the collision process.

2.3.5 *Biomechanical compatibility*

Biomechanical compatibility shows the type and extent of injuries of the drivers and passengers to the vehicle interior, place, and time of the collision process occurrence.

Recently, a certain methodology has been developed [6], which by evaluating each compatibility factor (2), more precisely by estimating the probability of a traffic accident by assessing the compatibility factor, calculates the so-called compatibility index, which should tell us about the probability that the traffic accident occurred and thus reduce the uncertainty in decision-making whether it is a fraud.

$$KI = \sum_{k=1}^5 kx\alpha \quad (2)$$

where:

- KI – index of compatibility of the collision process;
- α - factor of the importance of the appropriate compatibility;
- k - single factor of compatibility;
- x - the probability of occurrence of the event of the corresponding compatibility;

Based on a well-realized process of collecting data for the traffic accident and through compatible analysis of the collision process, it is possible to determine exactly the cause of the accident and the consequences for the participants, vehicles, and the environment.

3 **Process of detection and prevention of insurance fraud through practical example**

Evaluation of the effectiveness of the process of detecting and preventing insurance fraud will be realized by comparative analysis of two similar traffic accidents, two cases applied in two different insurance companies. By analyzing the mechanism of occurrence and development of the collision and its consequences, the reliability of the occurrence of the traffic accident is determined. In both accidents, the causes were trucks, and the vehicles reported as damaged were high-class passenger motor vehicles: in the accident A) Mercedes Benz C 220D, and in accident B) BMW X5 3.0D.



Figure 4. Traffic accident A) TMB SCANIA and PMV MERCEDES BENZ C 220 CDI – pictures on site



Figure 5. Traffic accident B) TMB MERCEDES BENZ 817K and PMV BMW X5 3.0. – pictures on site

Common indicators for both traffic accidents, which indicate suspicions for the development of the accident in the way described by the participants in the claim and for the existence of insurance fraud are:

- Traffic accidents happened by caused vehicle returning, in reverse;
- The vehicles reported as damaged, at the moment of the accident, were parked, and their drivers/owners were not present when the harmful event occurred and was additionally called;
- Damage extent of the participant vehicles in both accidents is disproportionate: relatively small in damage extent of the vehicles which caused the accidents and large in the damage extent and the amount of damage of the vehicles reported as damaged;
- The vehicles which caused the accidents are old and of low market value compared to the vehicles reported as damaged;
- Owners of the vehicles which caused the accident are legal entities, and the vehicles reported as damaged are physical persons;
- The drivers of the vehicles are from the same city and are approximately the same age;
- Traffic accidents are not reported to the Ministry of Interior;
- The traffic accident happened at 15.30, and the accident B) happened at 16.30 - at the end of the working time;
- Traffic accidents occurred outside the cities, somewhere on the outskirts;

- By analyzing the attached documentation, it can not be determined whether there were witnesses to the event.

All this leads to serious doubts about whether the analyzed traffic accidents happened at all or whether they happened in the way described in the statements of the participants. It is indisputable that both traffic accidents have a high indication of insurance fraud and that a further elaboration is required to prove whether it is insurance fraud.

By analyzing the spatial layout of the vehicle tracks which are reported as damaged in traffic accident A), at the pictures on site, submitted by the traffic accident participants, certain illogicalities can be noticed. As can be seen from Figure 1, the serious degradation of the decorative sign is impossible to occur from such a collision. In contrast, the decorative mask above the front bumper, in the event of a collision with the rear bumper of the truck at a certain angle, should have more serious damage to its left side. Traces and raindrops can be seen on the front cover, front bumper, and the decorative mask above the bumper. As can be seen from all attached photos at the site, the weather is sunny, consequently, the vehicle-reported damage can not have such traces on the front cover.

As a result of these observations, it can be concluded that the spatial and geometric compatibility and interdependence of the vehicle's contact tracks reported as accident participants are disputable, ie that the damage claim is insurance fraud. The claim is rejected by the insurance company.

According to the insurance company team that investigated the accident B), the accident happened, but the participants changed their roles, ie the event happened when PMV BMW hit the truck. As evidence, the researchers have mentioned the traces that on the road - in Figure 2 are marked in red. According to them, these traces are from the position of the vehicles during the real collision, and the vehicles have additionally moved, and changed their positions, to make a change of roles and show a different development of the harmful event. The experts by the insurance company did not agree with the conclusions made in this way, based on assumptions and indications, and considered that such evidence is unclear, incomplete, and insufficient to conclude that the presented traffic accident is a fraud. Unfortunately, we will never know if this accident is a fraud or not.

Conclusion

The risks of vehicle insurance fraud faced by insurance companies and society as a whole are large and significant and are the basis for the unjustified redistribution of funds. This fact is a motive for various stakeholders in society to work dedicated to improving the performance of the system for the prevention, detection, and sanctioning of insurance fraud.

Experience shows that standardizing the activities carried out in the process of detecting and preventing insurance fraud by establishing a certain procedure is expedient and results in an increased number of detected and proven cases of fraud and deterring potential perpetrators of such an act.

It is very important in creating the process of detecting and preventing insurance fraud, through clearly defined activities, which are described in a procedure that is transparent to all employees in the organization, using unambiguous methodologies for measuring certain indicators of indication and fraud, to take care of monitoring, measuring and managing the process of detection and prevention of fraud, quality assessment and taking actions for its continuous improvement.

The process approach in detecting and preventing insurance fraud is the basis for achieving better results in the detection and prevention of fraud, focusing on the prevention of these occurrences and increasing customer confidence and satisfaction.

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APPENDIX 1: Flow diagram of the process of detection and prevention of fraud in motor vehicle insurance

