MODEL FOR INSURANCE FRAUD RISK ASSESSMENT AND PREVENTION

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Summary

This article critically examines insurance frauds in terms of the risk they create and the significant losses they bring to the insurance industry. A comparative analysis of the classification of insurance frauds in the legal systems of many developed countries has been conducted. A model for risk assessment and the prevention of insurance frauds is presented. In the suggested model the overall risk assessment is achieved by the evaluation of risk elements – probability, exposure (frequency) and results. The possibilities for the practical application of the model of insurance frauds assessment and prevention in the insurance organizations practices have been outlined.

Key words: Insurance frauds, Legal classification of insurance frauds ,Insurance fraud risk assessment, Insurance fraud risk prevention.

JEL: G22, G18, G17.

1. Insurance fraud as a source of losses for the insurance industry

Insurance frauds are among the most significant risks related to the operation of insurance companies worldwide. Generally it is considered that insurance frauds have an unfavorable impact specifically on the activity of the insurance companies. Their negative effect, however, is also connected with the diligent participants on the insurance market and, in particular, on the insured. They have to suffer the losses caused by frauds that translate directly into increased costs of insurance policies.
Insurance frauds are a source of significant losses for the global insurance industry. Their value is estimated at an average of 15 – 20% of overall revenues. [5.C.1].

"According to American experts the losses from insurance frauds in the USA reach 100 billion dollars per year. It is considered that 10% of all claims are fraudulent." [1.C.5]. A recent survey carried out by the Coalition Against

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Insurance Fraud yielded similar results, while the damages were estimated at 80 billion dollars per year. [2.C.1].

An expert evaluation shows that the losses from insurance frauds in Russia amount to 4,000 million dollars per year. Some large insurance companies declare that the amount of insurance frauds reaches 10% of all revenues in motor insurance. Losses on the whole market are estimated at 20%, even though it is impossible to confirm the exact amount of the damages [3. C 5].

In Bulgaria insurance frauds are estimated at 42 million euros per year. [4. C.10].

The serious negative consequences stemming from insurance fraud require a constant definition and implementation of more effective tools for evaluation and prevention.

The problems associated with insurance fraud are the subject of much scientific research. Here are the studies of the of Kuller, Reinhard (Kuller JM, Reinhardt G. R, 2011), Zalma (2015) Morz, Askling (Morse D., Ackling L., 2004) Smith, Button, Lichter (Smith G., Button M., Johnston L., Lichtor J 2010) Knohe (Knoche, J, 1992). Putilina I (Putilina I.2010)Petrov M. (Petrov,2006) Larichev (V. Larichev, 1998) Lopashenko N. (Lopashenko, 2002), Todorov Y. (Todorov, 2007), Draganov. H. (Draganov, 2012).

2. Legal classification of insurance frauds

Insurance frauds are subject to classification in the criminal codes of many countries.

According to the text of Section 263 of the German Criminal Code (Strafgesetzbuch), offenders falling in the basic case of insurance fraud crime shall be liable to imprisonment not exceeding three years or a fine. In especially serious cases of fraud, where the offender falsifies or stages an insured event, the penalty may reach up to ten years in prison. [6].

Article 298 of the Polish Penal Code (Kodeks Karny) defines insurance fraud as "actions of a person who, in order to obtain compensation under an insurance contract, causes an event which provides grounds for a compensation payment." The crime is punishable by deprivation of liberty for 3 months to 5 years. [7].

In the Criminal Code of the Netherlands (Wetboek van Strafrecht), insurance frauds are subject to two texts: Sections 327 and 328. Section 327 criminalizes the act of misleading the insurer. In this case the offender is defined as a person who, "by cunning maneuvers, misleads the insurer as to the circumstances relevant to the insurance, causing him to enter into an agreement that he would not have entered into under different conditions, had he known of the true state of affairs. " The offender is liable to a term of imprisonment not exceeding one year or a

fine. Section 328 lays down provisions for a penalty of up to four years for a person who, "with the intention of benefitting himself or another unlawfully, to the detriment of an insurer, sets fire to or causes an explosion inside any property insured against fire or sinks a vessel" with similar intentions. [8].

The Austrian Penal Act (Strafgesetzbuch) includes insurance frauds in the section for offences against property. According to Paragraph 151 insurance frauds consist of "destruction, damage or concealment of property, insured against destruction, damage, loss or theft; causing physical injury to oneself or another person or attempting to commit such actions with the intention to obtain compensation under an insurance contract. The offender is liable to imprisonment for up to six months or a fine. "[9].

In the United States the problems connected to insurance frauds are subject to regulation at state and federal level. In 47 states insurance fraud is classified as a crime, while in 37 states it falls in the category of violent intentional crime. Forty-two states have special anti-fraud services, while 26 states have specific laws regarding the different types of insurance frauds (Kansas -Insurance Fraud Act §208, Maryland – Auto Insurance Fraud H 1409, New Hampshire – Workers Compensation H 337, etc.). Along with the specific laws in the separate states, on March 2, 1995, the US adopted a law dedicated to insurance fraud at federal level, the Model Insurance Fraud Act. Many of the laws passed later at state level are based on this Act. [1.C.23]

The cited criminal law texts clearly confirm that insurance fraud is generally classified as a serious crime which violates important public relationships and requires significant penalties.

3. Insurance fraud as a risk

Insurance practice shows that frauds are of focused, intentional and subjective nature.

In the broad sense, frauds are committed because of the specific nature of insurance as an economic activity and business.

In particular, insurance fraud is likely to occur because of the specific insurance activity and the type of insurance contract.

The consequences of each insurance fraud are of individual nature and the amount of incurred loss proportional to the amount in the particular insurance contract.

In conclusion, "insurance fraud" is a risk emerging during the performance of specific insurance activity, in the process of implementation of proprietary interests with respect to the scope of the insurance contract and the relationships between the parties.

The risk of insurance fraud can be evaluated, predicted and mitigated.

The purpose of this study is to identify the risk of insurance frauds and to present a model for the assessment and prevention of insurance fraud.

The model primarily suggests how to identify credit frauds especially in the process of claiming insurance damages rather than other aspects of insurance business.

The main assumption behind the proposed model is that it is possible to use a qualitative methods for analysis in order to lay down a general risk assessment of insurance fraud by assessing its probability, exposure (frequency) and consequences.

 The model can be used in risk management in the activity of the insurance organizations.

The study uses methods of comparative and normative analysis, as well as modeling. Empirical material from the practice of insurance organizations has also been used.

4. Model for insurance fraud risk assessment and prevention

The management of insurance fraud risk involves an assessment of the "likely hazard" that it brings to a particular insurance organization. The implementation of efficient countermeasures requires the application of new methods, models and technologies. A survey carried out in the USA at the end of 2014 shows that insurers are increasingly using new technologies to counter fraud.

An increasing share of companies sees a positive return on investments in new technologies against fraud. Most frequently insurers rely on the advantages of new technologies to counteract emerging threats such as falsification of documents, money laundering and computer crimes.

- Almost all insurers, 95% of the respondents, claim that they use new technologies against fraud, compared to 88% in 2012;
- Most insurers, 71% of the respondents, state that they detect signs of frauds using new technologies;
- Approximately half of the respondents, 53%, point at the lack of sufficient IT resources as a major obstacle in the implementation of new counter-fraud technologies;
- Most insurers, 81% of the respondents, state that they use instruments such as automatic indicators to detect frauds. Fewer use other models such as relationship analysis (50%), predictive modeling (43%), etc.;
- About half of the insurers (51%) claim that the signs of the occurrence of frauds have increased moderately, while 7% consider that the signs have increased significantly. [2.C.1].

The abovementioned data clearly show that there is a need for constant improvement in fraud prevention using new models and technologies to mitigate the risk of fraud.

The proposed model for insurance fraud risk assessment employs qualitative methods for analysis. The use of qualitative methods is seen as more appropriate, considering that insurance fraud creates an economic and social risk of a subjective nature that is difficult to evaluate. The overall risk assessment is performed by evaluating the separate elements of risk: probability (likelihood), exposure (frequency) and consequences (outcome). Risk is a function of these elements and is measured with levels after a respective coding procedure.

The coding of expert assessments is used to extrapolate all evaluations to a common scale defined in advance. Thus coded coefficients (numeric values) are used for calculations in the mathematical model. Specific expertise is applied for each characteristic field.

4.1. Insurance fraud risk assessment

The expert assessment of the probability of insurance fraud depends primarily on the specific type of insurance activity. The most attractive fields for fraudulent activities are motor insurance, property insurance, health insurance, occupational accident insurance, freight insurance, etc.

Secondly, the assessment of the probability of insurance fraud depends on the presence of signs connected with the particular contract or the behavior of the insured. Examples of indicators for the presence of fraud are:

- Significantly increased insurance value.
- Contradictions in the establishment of the facts of the event: place, time, circumstances.
- Concealment of information or lack of response to important risk-related questions concerning the taking-out of the insurance policy.
- Appearance of a legal advisor immediately after the event or participation in discussions exclusively in the advisor's presence.
- The claimant agrees to expedient settlement at a value below the amount of real damage.
- Lack of any witnesses or presence of a witness with a very detailed testimony.

The coding of probability (P) values is presented on Table 1

Coefficient	Description of probability
0,2	Virtually impossible
0,5	Unlikely
1,0	Possible in particular cases
3,0	Below medium probability
5,0	Medium probability
7,0	Above medium probability
10,0	High probability

Table 1

4.2. Insurance fraud exposure assessment

The exposure reveals the level of occurrence of fraud attempts in the operations of insurance companies. For example, according to an analysis of the Association of British Insurers in the United Kingdom companies manage to thwart fraud attempts amounting to over 1 million pounds per day. Over a year the foiled attempts are estimated at 480 million pounds [10.C.1].

The values of exposure (E) are coded as shown in Table 2

Coefficient	Description of exposure
0,5	Too low – less than once a month
1,0	Very low – up to once a week
2,0	Low – up to once every 3 days
3,0	Medium – up to three times a week
6,0	Sufficiently high – up to once a day
8,0	Very high – up to 3 times a day
10,0	Continuous – throughout the work day

Table 2

4.3. Assessment of the consequences of insurance frauds

The assessment of the consequences of insurance frauds involves the direct and indirect losses incurred to insurance companies.

The assessment of the consequences should take into account the size of the insurance company and the intensity of its activities. The estimated effect of

frauds should be consistent with the scope, importance and nature of the activity, leading to a unified value of the coefficient.

The values of the consequences (C) are coded as shown in Table 3.

Coefficient	Description of consequences
1,0	Limited
3,0	Significant
7,0	Serious
15,0	Hazardous
40,0	Catastrophic

Table 3

After determining the elements, the rank value of the risk is calculated, using the formula:

$$R=P*E*C \qquad (1)$$

The risk is classified depending on the interval where the calculated rank value falls. The aim is to identify the feasibility and necessity of implementation of countermeasures. It should be noted that in cases where exposure is not included in Formula 1, the final assessments for the rank values of the risk in Table 4 should be multiplied with a corrective coefficient of 1/10.

The risk is classified in levels as shown in Table 4.

Level	Rank value	Risk description
I	up to 20	Negligible, very limited risk
II	21-70	Acceptable, non-significant risk – attention needed
III	71-200	Moderate risk – measures for mitigation needed
IV	201-400	Serious risk – immediate measures required
V	above 400	High risk – thorough investigation required

Table 4

Each risk event is classified individually with respect to the factors. It is inadmissible to sum the values of identified risk events and then to compare them using the present classification, regardless of whether their values have been averaged. Each value in the above tables can be represented as percentage extrapolated to the interval from 0 to 100%. The normalization of the values from these tables is achieved using the following formula:

$$NORMx = \frac{x_i - \min}{\max - \min}\ \%$$ (2)

where *min* and *max* are the lower and upper limits of the interval, respectively, and x_i is the current value to be normalized. Therefore the percentages for the "probability" element (from Table 1) are:

Coefficient	Corresponding percentage
0,2	0,00%
0,5	3,06%
1	8,16%
3	28,57%
5	48,98%
7	69,39%
10	100,00%

Table 5

This correlation shows that a medium probability of occurrence of a particular risk event is coded with "5" in the interval from 0.5 to 10, which corresponds to 48.98% and coincides with the expert assumption for medium probability (see Table 5). By analogy, the percentages for the other elements of risk (Tables 2, 3 and 4) are also calculated using Formula 2.

In particular, for the described levels of risk (Table 4) the percentages are: up to 0.26% for Level I, up to 13.42% for Level II, up to 47.63% for Level III, and above 48% for the serious risk Level IV. The last Level V signifies high risk and requires a thorough investigation with the aim of risk mitigation. The results for the defined risk elements with their corresponding clarifications and the calculation of the rank value – level and description – are obtained for each risk event and entered in a risk assessment form.

In order to facilitate the work of experts, it is advisable to work with the coefficients presented in the tables, and, if necessary, to normalize only the result (value) of the risk.

Table 6 presents a model form for assessment of identified risks for the particular case, while Table 7 includes examples of advisable measures for management and mitigation of the indentified risk events according to the assessment.

Model risk assessment form

Signs of the presence of fraud	Probability	Exposure	Consequences	Risk – (R) R = (P*E*C)	Level
1	2	3	4	5	6
1. Contradictions in the establishment of the facts of the event.	Below medium (3)	Very low (1)	Limited (1)	(3) Negligible, limited risk	I
1. The claimant agrees to expedient settlement at a value below the amount of real damage. 2. Lack of any witnesses.	Medium (5)	Low (2)	Significant (3)	(30) Acceptable risk	II
1. Significantly increased insurance value. 2.Concealment of information on important questions concerning the taking-out of the insurance policy 3. Appearance of a legal advisor immediately after the event or participation in discussions exclusively in the advisor's presence.	Above medium (7)	Very high (8)	Hazardous (15)	(840) High risk	V

Table 6

Model form for recommended measures for management and mitigation of identified risk events in accordance with the assessment

Type of insurance activity	Level of risk	Recommended measures
Property insurance	II	Inspection in order to establish: - the reasons for occurrence of the event; - evidence left after the event; - the situation before and after the event; - the amount of damaged property; - method of entry and exit from the property.
Medical insurance	III	An additional inspection is required in three major areas: - whether the event has really occurred; - whether the event is presented objectively; - whether the claimed consequences are fairly represented.
Cargo insurance	IV	Additional inspection in order to establish: - the type and quantity of lost or disappeared goods; - the arrangement of goods in the container or transport vehicle; - the presence and means of tampering of seals, marks on the packaging or the transport vehicle; - the type of packaging, the way of arrangement, external marks on the goods.
Motor insurance	V	Performance of a thorough insurance investigation: - examination of the documents connected to the damage; - inspection and investigation of the reasons and circumstances pertaining to the damage; - collection of additional information regarding the damage; - organization of meetings, interviews, review of facts and documents, communication with the fraudster; - analysis of the collected facts, data, expert opinions, documents; - decision-making and event reporting.

Table 7

5. Possibilities for application of the model for insurance fraud risk assessment and prevention

The management and mitigation of insurance fraud-related risks is the responsibility of the managers of the insurance organization. The proposed model ensures a tool for insurance fraud risk assessment and prevention that should be continuously supplemented and updated. To this effect it is necessary that insurance frauds be systematically identified and analyzed through expert assessments by resorting to various sources such as:

- Analysis of achieved insurance frauds;
- Analysis of the fraud indicators (including addition/modification of indicators);
- Analysis of accidentally thwarted frauds;
- Analysis of the insurance frauds reported by employees;
- Insurance fraud risk assessment;
- External sources, etc.
1. Risk assessments obtained through application of the model can also be incorporated in other systems supporting the process of detection and prevention of insurance frauds, such as:
- Register of insurance frauds (Fraud Management System, FMS);
- Alert lists (Database – Risk Clients Registration System, RCRS);
- Functions for prevention of insurance frauds in the systems for document processing and/or implementation of specialized software for fraud prevention;
2. The information contained in the model for fraud risk assessment and prevention can be used in the processes of the creation of new insurance products and the modification of existing ones in order to provide the necessary controls for the prevention of insurance frauds.
3. The application of the model should be consistent with the conditions and the size of the particular insurance company. An important advantage is that the model allows for adequate prioritization during the investigation of a wide range of insurance fraud cases (if the available resources are not sufficient to investigate 100% of the cases).
4. The risk assessments can also be subject to communication with bodies external to the insurer (police and other authorities) if they are investigating a particular insurance fraud.

Notes

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