

VILNIUS UNIVERSITY

ŽIVIL GRUNDIEN

DETERMINATION OF FRAUD IN THE FINANCIAL STATEMENTS

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SUMMARY OF DOCTORAL DISSERTATION

INTRODUCTION

Relevance of the subject. Every financial statement shall give a true and fair view of the company's financial condition, results of operations and cash flows, however, during these times of technological advancement and economic globalization company relations are becoming increasingly complex - they compete unfairly and seek to improve their company image and for this purpose they are not even afraid to use fraudulent financial statements. Certified Fraud Investigator Association (hereinafter CFIA) has conducted research in the United States and found that the cases of fraud in the financial statements are the least ascertained compared to the other types of fraud cases, i.e., corruption and misappropriation of property, but on average one fraud in the financial statements causes the largest losses (2008 - 2 mln.\$, 2010 - 4,1 mln.\$, 2012 - 1 mln.\$) compared to the other types of fraud: corruption (2008 - 0,375 mln.\$, 2010 - 0,25 mln.\$, 2012 - 0,25 mln.\$) and misappropriation of property (2008 - 0,15 mln.\$, 2010 - 0,135 mln.\$, 2012 - 0,12 mln.\$)(CFIA, 2008, 2010, 2012). Scandals have occurred in major global companies as a consequence of unfairly competing and incorrect accounting: 1999 – “Wastemanagement”, 2000 – “Xerox”, 2001 – “Enron”, 2002 – “AOL”, “Bristol-Myers Squibb”, “Freddie Mac”, “Global Crossing”, “Halliburton”, “Homestore”, “Kmart”, “Merck&Co”, “Merrill Lynch”, “Mirant”, “Nicor”, “Peregrine Systems”, “Qwest Communications”, “Tyco International”, “WorldCom”, 2003 – “Parmalat”, 2004 – “Chiquita Brands International”, 2004 – “AIG”, 2008 – “Bernard L. Madoff Investment Securities LLC”, 2009 – “Satyam Computer Services”, 2010 – “Lehman Brothers”. Companies that cause accounting scandals most often not only go bankrupt (e.g.: “Enron”, “WorldCom”, “Parmalat”, “Lehman Brothers”), but also have a negative impact on the economy and cause a serious social concern on the reliability of the financial statements. Accounting scandals also negatively affect fair businesses casting shadow of doubt on them.

Scandals caused by incorrect accounting and CFIA studies show that a greater control over company financial statements is required, as they contain information that affect decisions of financial statement users. Frauds reduce the reliability of the financial statements, distort corporation financial results, fail to demonstrate *true* and *fair* view therefore, in order to ensure the *reliability* of the information they provide its *certainty*

and *fairness*, it is important to analyse fraud in the financial statements. However a lack of comprehensive and effective fraud determination model is felt. In order to ensure that the financial statements information users receive reliable information, fraud in the financial statements model must include concepts of fraud and fraud in the financial statements, classification of fraud in the financial statements, legislations assigned to the fraud groups, fraud risk factor analysis and methods of determining them.

Exploration level of the scientific problem. Aspects of determining fraud in the financial statements are examined in foreign management research works, whose authors are the following: Pincus (1989), Tatum and others (2001), Gu and others (2005), Sitorus, Scott (2009), Kennett and others (2011). Unfortunately in their research aspects of fraud in the financial statements are not fully examined, only few of them have drawn attention to the different aspects of this problem: only in respect of fraud risk factors in the assessment and analytical procedures.

A systematic analysis of the scientific literature on fraud determination in the financial statements suggest that research in scientific accounting and auditing research throughout the world, financial fraud statements in most cases are analysed from the perspective of audit - fraud risk factors are determined and the risk of fraud is evaluated. This topic is discussed by the following foreign authors: Feroz (1997), Deshmukh, Talluru (1998), Koornhof, Plessis (2000), Tatum and others (2001), Graham, Bedard (2002), Turner and others (2003), Howard S., Howard D. (2005), Moyes and others (2006), Morris and others (2006), Brennan, McGrath (2007), Brazel and others (2007), Jamieson (2007), Chen, Elder (2007), Skousen, Wright (2008), Chad (2008), Smieliauskas (2008), Asare and others (2008), Rajendra and others (2009), Lou, Wang (2009), Sitorus, Scott (2009), Jans and others (2009), Seow (2009), Hegazy, Kassem (2010), Tugas (2012), Kerr (2013), Ugrin and others (2014). To fully determine fraud in the financial statements is not enough to indicate their risk factors and to evaluate the risk of fraud, as it is just the beginning stages of fraud determination and it requires a broader study.

Fraud investigators in their scientific research on accounting and auditing fraud also analyse the determination of fraud in the financial statements. Such authors are Rezaee (2002), Albrecht and others (2008), Wells (2008), CFIA (2008, 2010, 2012).

However aspects of determination in their research are not fully analysed, lack of concentrated and consistent fraud determination methodology.

In interdisciplinary informatics, accounting and audit, scientific research by foreign scientists (Fanning and K. Cogger (1998), Spathis and others (2002), Phua and others (2005), Kotsiantis and others (2006), Kirkos and others (2007), Yue and others (2007), Hoogs and others (2007), Gaganis (2009), Comunale and others (2010), Ngai and others (2010), Zhou, Kapoo (2011)) considerable attention is given to the creation of models that define fraud in the financial statements. Authors of these models classify corporations by their chosen financial indicators and assessment methods and divide them into constituting fraudulent and non-fraudulent financial statements. However this distribution does not identify the specific fraud in financial statements.

Fraud in the financial statements is analysed in interdisciplinary foreign law, accounting and auditing scientific research, whose authors are: Golden and others (2006), Singleton and others (2006), Skousen, Wright (2008), Boritz and others (2008), Crumbley and others (2009), Aliabadi and others (2011), Lynch and others (2011), Cieslewicz (2012), Henry and others (2012). In research by these authors aspects of economic court expertise are analysed in order to determine fraud in the financial statements, however there is still no clear answer on how to identify fraud.

Fraud determination methods in financial statements are also analysed in Lithuanian law research. Such authors are: Poši nas (1990), Poši nas (1994), Poši nas, Lakis (1996), Fedosiuk (2003), Spie i t , Barkauskas (2005), Paulauskas (2006), Kuncevi ius (2007), Kuncevi ius, Kosma ait (2007), Pranka (2012). These researches analyse only individual aspects of fraud determination, however comprehensive analysis of fraud determination methods in the financial statements is yet to be made.

Problems of determining fraud in the financial statements are also investigated in Lithuanian accounting and auditing scientific research. Such authors are: Kabašinskas, Toliatien (1997), Jagminas and others (1998), Mackevi ius, Bartaška (2003), Kanapickien and others (2004), Kal inskas (2007), Lakis (2007, 2008a, 2008b, 2009, 2011), Mackevi ius (2007, 2012a, 2012b), Kanapickien (2006, 2008, 2009), Mackevi ius, Kazlauskien (2009), Kutkait , Javaitien (2011), Mackevi ius, Giri nas (2013), Giri nas (2012a, 2012b, 2013). These researches analyse motives, conditions,

factors, and ways of fraud, fraud risk determination and evaluation during the audit. However it are not the final steps in determining the fraud in the financial statements.

A systematic analysis of scientific literature suggests that determining fraud in the financial statements is a complex sequence of actions requiring accounting, audit, economics, law and computer science knowledge.

When determining the fraud in the financial statements necessary information is often lacking, so in order to fully investigate facts indirect fraud determination actions are used. In such situation it is necessary to develop fraud determination in financial statements model in Lithuanian corporations which would bring together fraud determination actions used in the different sciences - management, accounting, audit, finance, law and informatics.

After the evaluation of problematic aspects of the subjects analysed **the problem of the research** has been formulated – how to determine fraud in the financial statements?

The object of the research – fraud in corporate financial statements

The aim of the research – to develop and test fraud in corporate financial statements determination model.

The main objectives of the research are to:

1. Perform a theoretical analysis on variety of approaches to concepts of fraud and summarize the key components of the fraud for a better understanding of it.

2. In accordance with the theoretical analysis, formulate the concept of fraud in the financial statements. Develop a summarized fraud risk factors questionnaire that enables effective determination of fraud possibilities. After performing group analysis of fraud in the financial statements, develop fraud in the financial statements group classification system.

3. Investigate and improve the process of fraud determination in the financial statements bringing together accounting, audit, economics, law and informatics science used in fraud determination actions.

4. Perform critical comparative analysis on the determination models of fraud in the financial statements offered by the scientific literature, highlighting their strengths and weaknesses.

5. Develop fraud determination in financial statements model after examining its necessity in Lithuania.

6. Develop and adapt theoretically based model on empirical research methodology and verify the model developed.

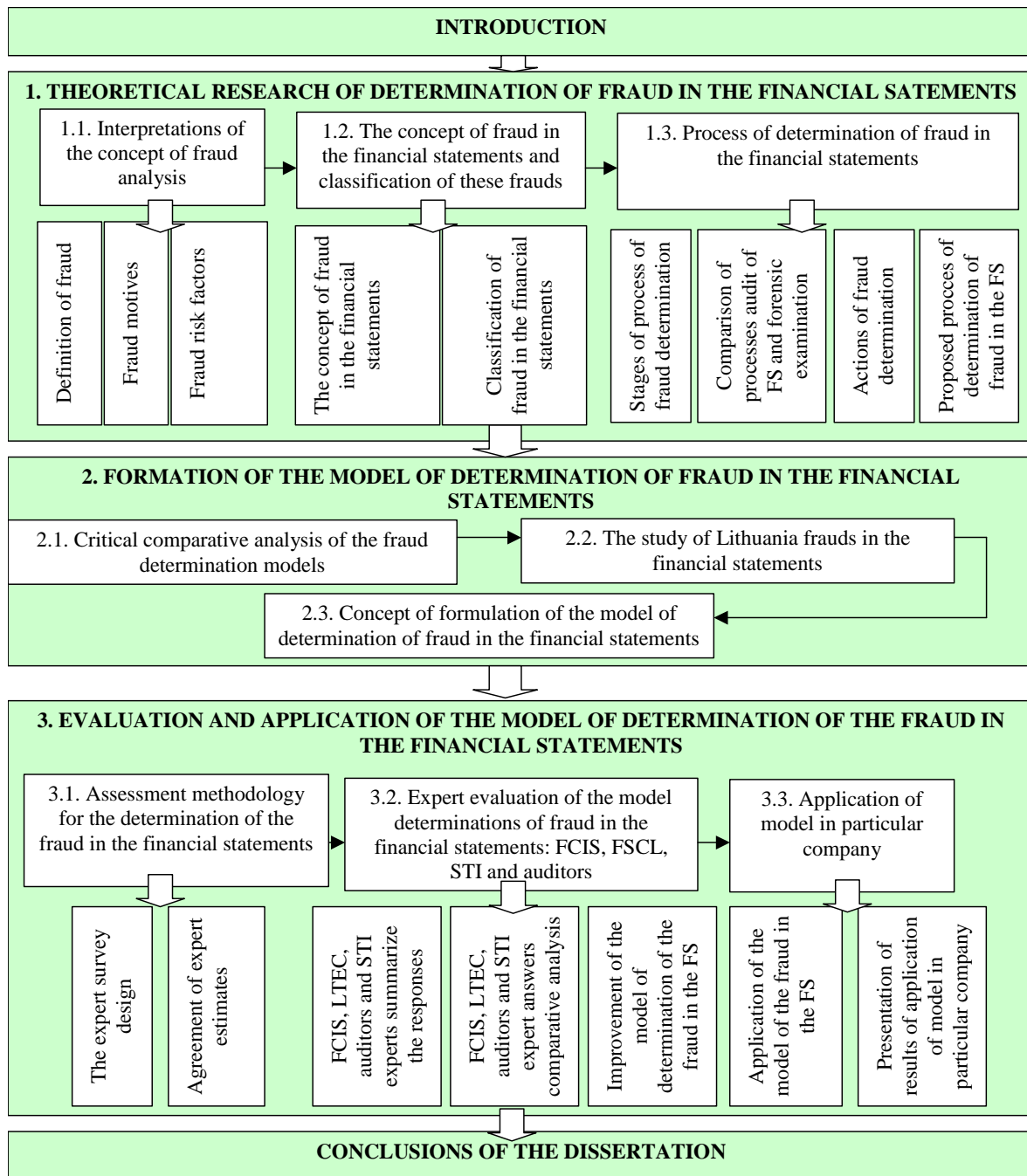
Defended thesis statement – the model developed determines fraud in the financial statements.

Methods of the research. By analyzing theoretical aspects of fraud determination in the financial statements *analysis, generalization and interpretation methods, abstraction, reviews, systematic analysis of literature, synthesis were used.*

In order to find out what model of fraud determination in the financial statements is needed in Lithuania, empirical study of secondary data analysis and graphical representation on fraud tendencies in financial statements in Lithuania were carried out. This analysis was also the result of information inaccessibility.

Developing model of fraud determination in financial statements, *modeling* has been used. In order to develop a data base and to adapt the method of SOM neural networks for fraud determination, an *experimental study* was used and the use of *document analysis, content analysis* and the *quantitative statistical data processing methods* (software used for clustering financial statements Viscovery® Somin). In order to assess the fraud determination in financial statements model *an expert assessment method* was chosen and a questionnaire survey was carried out. To test the developed model in practice a specific corporation *case analysis* was carried out. Hypotheses were tested by performing their *logical analysis*.

The logical structure of the research. The logical structure of the research led to formulation of the subject matter, purpose and solution course of raised objectives that are analysed in three main parts of the research (see fig. 1).



Source: created by the author.

Figure 1. The logical scheme of the dissertation research

In the first part of the dissertation interpretations of the concept of fraud are analysed, the concept of fraud components are distinguished, conditions of fraud determination are given, classification of fraud financial statements are presented, fraud determination processes procedures and methods are examined. *The second part* concentrates on the formulation of the concept of fraud determination in the financial statements. At first models of fraud determination in financial statements are analysed, their strengths and weaknesses are highlighted. Secondly, a critical comparative analysis

is carried out on fraud determination models. Thirdly, in order to ascertain the need for fraud determination model in Lithuania, fraud in the financial statements trends survey is carried out. Fourthly, concept of fraud determination in the financial statements is formulated. *The third part* concentrates on the conclusion of methodology for the empirical research of the fraud determination model. According to the obtained findings of the assessment, the fraud determination model is improved. Practical application of the model is carried out on a particular company.

The following results reveal **the scientific novelty of the research and its theoretical value:**

- Theoretical analysis on various approaches to concepts of fraud allowed to highlight the main fraud components: an object, essential, minor, general and typical features for a better understanding of the nature of fraud.

- Concept of fraud in the financial statements has been formulated, allowing to distinguish the essential distinctive feature from the other frauds - the influence on the financial statements in order to mislead.

- Systematized groups of fraud determination in financial statements according to the classification criteria: 1) company's accounting policy elements, 2) accounting process elements, 3) company's management process elements. These classification criteria clearly show essential characteristics of individual financial statements groups and it is a good tool to identify fraud in the financial statements.

- Concept model of fraud determination in the financial statements has been developed, which is presented in the structural table: 1) model extends the cognitive dimension as the previous models analysed were based on the analytical and technical dimensions; 2) process stages of fraud determination in the financial statements revealed; 3) model users distinguished.

- The proposed and theoretically based methodology for model empirical research allows the assessment of its components, and its practical application.

The practical meaning of the research:

- After analysing the scientific literature, the generalized concentrated fraud risk factors questionnaire has been prepared, allowing more effective determination of fraud presence.

- Taking into account fraud groups in the financial statements analysed and deficiencies found a system of classification groups of fraud determination in financial statements has been created, allowing the determination of fraud.

- A tool for determination of fraud in the financial statements and evaluation of legislative consequences was created. In addition, fraud groups in the financial statements were distinguished and linked to the main Articles of Lithuanian legislation.

- The corporate database developed and artificial neural networks (ANN) method used together are able to attribute an investigated company to other company that have or have not a tendency to cheat.

This model created for determination of fraud in the financial statements is important because:

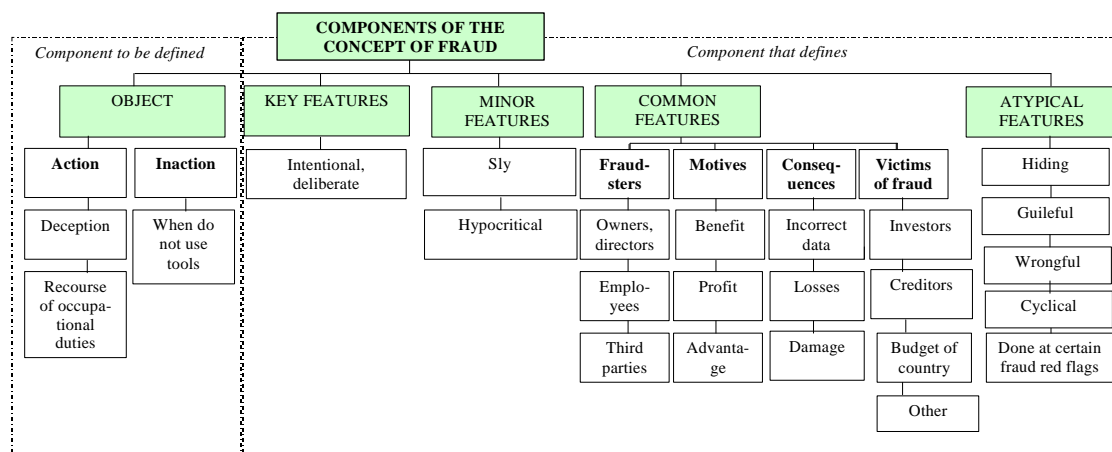
- 1) Financial statements information users: shareholders, managers, creditors, investors, suppliers, auditors, bankers, bankruptcy administrators, statistical offices, national control authorities have ability to use the created model (Vilnius county police headquarters, State Tax Inspectorate, Forensic science centre of Lithuania Economical Examination Department, Financial Crime Investigate Service, Special investigation service, State Enterprise Centre of Registers),

- 2) Reveals the basic fraud determination in financial statements model theoretical aspects, which can be used by academic representatives.

1. THEORETICAL RESEARCH OF FRAUD IN THE FINANCIAL STATEMENTS

In the first part concepts of fraud interpretations have been dealt with, concepts of fraud components were distinguished, motives provided, events or conditions leading to the occurrence of fraud were indicated. The second part presents the concept of fraud in the financial statements, analyses fraud in financial statements, its grouping, provides the improved classification. The third part analyses the fraud determination process in the financial statements, procedures and methods and provides a summary of the fraud determination process

After the analysis of the interpretations of the concept of fraud and the conditions leading to their occurrence, the key components of the concept of fraud has been identified in respect of which it can be said that fraud is an intentional unfair act or inaction that is usually hidden and executed under certain conditions and that it requires certain level of skills. (See Fig. 2.). It is proposed to distribute the concept of fraud components into definitional and definable components, which reflect the concept of fraud component parts, which can be expanded in further research. In addition, while determining the fraud, selection of its components indicates fraud.

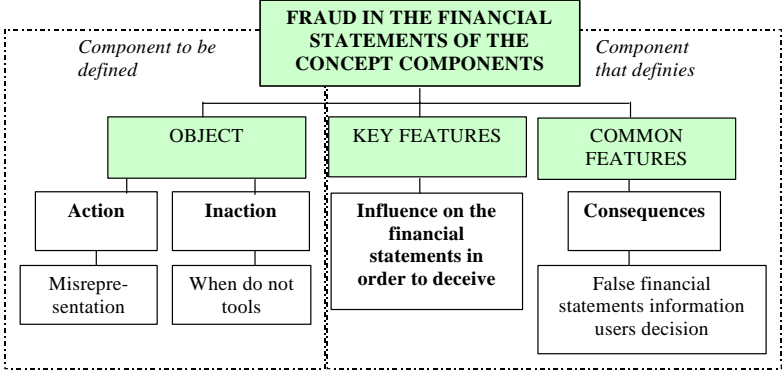


Source: created by the author.

Figure 2. Components of the concept of fraud

Fraud in the financial statements is one of the types of fraud, which narrows the interpretation of concept of fraud and provides corporate financial statement level. The concepts of fraud in the scientific literature of the financial statements do not fully reflect

its components, therefore it is proposed to name the fraud in the financial statements as *conscious actions or inactions by the employees and third parties that affect financial statements when seeking to mislead financial statements information users* (See Fig. 3).



Source: created by the author.

Figure 3. Fraud in the financial statements of the concept components

Specific components are typical for fraud in the financial statements, however by describing fraud in the financial statements the author focuses only on those components of fraud in the financial statements that set it apart from other frauds. To summarise the concepts of fraud in the financial statements, it is concluded that the key distinguishing feature *making an impact on the financial statements in order to fraud the information users* is appropriate to elaborate when distinguishing fraud in the financial statements groups.

Following a systematic analysis of the scientific literature on fraud in the financial statements groups, it turned out that the authors distinguish different number of groups of frauds, the level of detail varies. The essential distinction between fraud in the financial statements should be in accordance with: 1) corporate accounting policy elements, 2) accounting process elements, 3) corporate managements process elements. These classification criteria clearly show essential characteristics of individual financial statements groups and it is a good tool to identify fraud in the financial statements (See Table 1).

Table 1. Fraud in the financial statements classification

Classification criteria	Groups	Subgroups
Fraud in accounting policy elements	1. Fraud by applying accounting principles.	
	2. Fraud by applying accounting methods.	
	3. Fraud by applying accounting rules.	
Fraud in accounting process elements	1. Fraud in accounting documents.	1. Misstatement: modification, fictional recording. 2. Intentional omission: the lack of disclosure, data omission.
	2. Fraud in accounting records.	
	3. Fraud in bookkeeping accounts.	
	4. Fraud in elements of the financial statements:	
	4.1. Fraud in the property.	1. Inadequate assessment: overestimation, reduction, fictional recording.
	4.2. Fraud in liabilities.	2. Inadequate attribution.
	4.3. Fraud on equity	1. Fictitious equity recording. 2. Inadequate reevaluation of assets in equity accounts. 3. Inappropriate accounting methods of merging and acquisition transactions.
	4.4. Fraud in the income and expenses.	1. Overestimation. 2. Reduction. 3. Fictitious recording. 4. Change of period: recognized in advance or too late. 5. Incorrectly classified.
4.5. Fraud on the profit (loss).	1 Asset size effect on profit (loss): selling, buying property, determining the value of the stock. 2. Reducing or increasing expenses. 3. Claims from the borrowers not in accordance with terms of the contract. 4. Transactions with fictitious businesses. 5. Consolidation of financial statements.	
Fraud on the corporate management process elements	1. Fraud assessing the management costs.	
	2. Fraud in respect of transactions.	1. Frauds in making related party transactions. 2. Frauds in making transactions with fictitious businesses.

Source: created by the author.

A systematic analysis of literature in the process of determining frauds in the financial statements showed that the analysing authors have not specified in detail the process of determining fraud in the financial statements. Comparative analysis on

financial statement audit and forensic economic have highlighted the limitations of the audit of the financial statements in determining fraud in the financial statements as the audit of financial statements evaluates the risk of significant distortions of fraud in the financial statements and the forensic economic determines the specific facts and circumstances of the fraud in the financial statements. Analysis of actions of fraud determination in the financial statements showed the diversity in fraud determination procedures and methods: they are intertwined with each other, there is no unanimity in determining fraud procedures and number of methods, the sequence of their execution.

Given the observations above and in order to better identify fraud in the financial statements generalized fraud determination in the financial statements process is proposed to: 1) perform an analysis of fraud risk factors; 2) apply the chosen procedures and methods; 3) summarise information and present findings.

The identification process of frauds in the financial statements consists of various steps: methods and procedures. Systematic analysis of the scientific literature that was carried out suggests that a different number of steps (1 to 10) of fraud determination in the financial statements are distinguished and they are also named differently. In addition authors in the scientific literature present only methods alone or only procedures allowing the determination of fraud or provide only part of the methods, procedures but there are no systematised methods and procedures combined, therefore they were systematised.

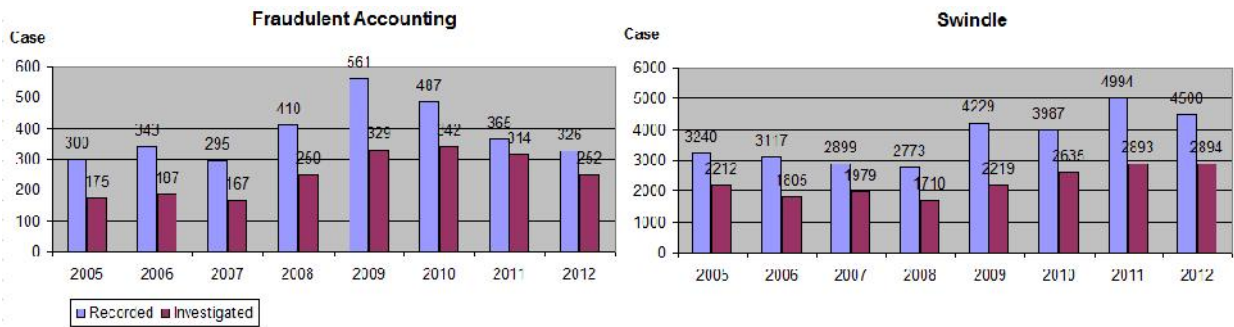
The scientific literature allowed to distinguish the theoretical assumptions that form the basis for the development of fraud determination in the financial statement model.

2. THE DEVELOPMENT OF FRAUD DETERMINATION IN THE FINANCIAL STATEMENTS MODEL

This part of dissertation is devoted to carry out a critical comparative analysis of fraud determination model in the financial statements, analyse fraud in the financial statements trends in Lithuania and formulate the concept of fraud determination in the financial statements model.

Scientific literature not only examines the procedures and methods for fraud determination, but also a variety of fraud determination models (See Table 3). With their

analysis their concept, components, functions and practical applications were found out. After a systematic analysis of scientific literature of the model of fraud determination in the financial statements it was found out that there is a concentrated and comprehensive fraud determination process. Deficiencies of the models analysed led to the idea of creating a new model of fraud in the financial statements and to find out whether such model is needed, therefore an analysis of the model of fraud determination in the financial statements was carried out (See Fig. 4.), by performing an empirical study on fraud trends in Lithuania.



Source: created by the author created by the author by Statistical reports of criminal acts and analyzed the pre-trial facilities of Information Technology and Communications department (2005-2012) .

Figure 4. Recorded and investigated criminal acts under separate CC Articles

A number of differences between of fraudulent accounting, investigated fraud cases and the amount of registration shows that in order to determine fraud in the financial statements, it is necessary to look for more effective ways of research.

Table 2. Fraud determination in the financial statements model comparison

Požymis\modelariai	Causal fraud management model (1989)	Indistinct rules reasoning system model (1998)	Income fraud determination model (1999)	Data extraction model (2002) neural network model (2006)	Fraud audit risk model (2004)	Successful fraud determination theory model (2006)	Fraud summation and classification model (2006)	Genetic algorithms model (2007)	Fraud risk regression analysis model (2008)	Logistic regression model (2009)	Bayesian model (2009)
Fraud determination estimates:											
interval linguistic,	X	X	X	X	X	-	-	X	X	X	X
digital dichotomous,	-	-	-	X	-	-	X	-	-	-	X
interval linguistic with integrated digital.	-	-	-	-	X	-	-	-	-	-	-
Components:											
provides a certain understanding about the fundamental causes of fraud,	X	-	-	X	-	X	X	-	-	X	X
assesses separate fraud risk factors,	X	X	-	X	X	X	-	-	X	X	X
provides a method to calculate the risks of fraud,	X	X	-	X	-	-	-	-	X	X	X
covers more fraud risk factors,	-	X	-	-	-	-	-	-	X	-	-
recognizes fraud risk factors totality,	-	X	-	X	-	-	-	-	X	-	-
shows the relation with the financial statements,	-	-	X	X	-	-	-	X	X	X	
covers dimension of time,	-	-	X	X	-	-	-	X	X	X	-
includes expert rules,	-	X	-	X	-	-	-	-	-	-	X
links fraud groups with fraud relevant legislation.	-	-	-	-	-	-	-	-	-	-	-
Application of fraud determination:											
helps to assess the main causes of fraud,	X	X	-	-	-	X	-	-	-	X	-
can be used to assess fraud risk factors,		X	-			X	X	-	-	X	X
helps to determine more types of fraud in the financial statements,	-	-	-	-	-	-	-	-	-	-	-
can be used to calculate the selection,	X	X	X	X	X	-	X	X	-	-	X
can be used without full data,	-	-	-	-	-	-	-	X	-	-	-
solves the problem of aggregation,	-	-	-	X	-	-	-	-	-	-	-
increases the reliability of fraud determination.	-	-	-	X	-	-	-	-	-	-	-

Source: created by the author.

Summarization of the investigation of fraud trends in the financial statements leads to the conclusion that it is necessary to establish the model of fraud determination in the financial statements, because shadow economy percentage of GDP in Lithuania 1.5 times exceeds average shadow economy in Europe and one of reasons is a level of uninvestigated crimes in Lithuanian financial system.

After a theoretical research on fraud determination in the financial statements it was revealed that there are no fully structured and effective models of fraud determination in the financial statements therefore fraud determination in the financial statements model which was developed combines the fraud determination methods used in accounting, auditing, economics, law and computer science.

Model dimensions. The model is intended for both novice and experienced fraud investigators, but novice fraud investigators may lack knowledge about the concept of fraud components, fraud in the financial statements components, therefore model has two dimensions: cognitive and analytical-technical. *The cognitive dimension* is intended to help novice fraud investigator get acquainted with the components showing fraud in general, and the presence of fraud in the financial statements, determine fraud groups in the financial statements and what legislation have not been followed in order to indicate legal consequences. *Analytical and technical dimension* is designed for fraud investigators qualification development.

Model users. The *users* of the model of fraud determination in the financial statements can be shareholders, managers, creditors, investors, suppliers, auditors, bankers, administrators of bankruptcy, state institutions (Vilnius county police headquarters, State Tax Inspectorate, Financial Crime Investigate Service, Special investigation service, Forensic science centre of Lithuania Economical Examination Department, State Enterprise Centre of Registers, statistical offices). In the illustration *users* of the proposed model are divided into *starters, supervising institutional personnel and other experts*. *Starters* are those who for the first time determine fraud in the financial statements and they are recommended to use not only the analytical-technical dimension of the model, but also the cognitive dimension of the information. *Supervising institutional personnel* fraud investigators are the ones who have the exclusive right to the use of external systems, covert operations and third-party

information. The rest of fraud investigators in the financial statements are *experts and others*.

Model levels. The proposed model is not limited to the company's financial statements only, but also includes information about the *company's management, business, and industry sectors* on the fraud that lead to the results of the company's financial statements. *Financial statement level* includes information found in the accounting records, registers, financial statements, and by analyzing methods, principles, rules, etc. applied in the accounting policy. *The company's management level* includes information pertaining to the directors of the investigated company, organizational structure, and relationship with the regulatory authorities. *Business and industry sector level* includes information about the business environment, merging, divisions, state of the industry, technology, products, services and so on.

There are ten stages of the model of fraud determination in the financial statements as proposed by the author of the paper. The descriptions of the stages of the model are provided below.

During **stage 1** the beginner fraud investigator must identify the key components of the fraud pertaining to the fraud concept as this information helps in determining frauds. Therefore, it is advisable to use the key *components of the fraud concept* (see Figure 2) that were proposed by the author of this work. *The fraud components* are important for the proposed model, because in order to determine fraud, not only it is necessary to know what fraud is, but also to know the definitional one (object) and the definable ones (major, minor, common and atypical features) components, which indicate the fraud presence.

In order to identify fraud in the financial statements during **stage 2**, it is necessary to highlight the inherent characteristics of these frauds, thus, it is necessary to get acquainted with the components of fraud in financial statements (definitional and definable) (see. Fig. 3.), whereas while determining fraud in the financial statements, it is necessary to select components, which prove the fraud presence. The consistency of the methodology for fraud determination in the financial statements is analogous to fraud determination, but those are precisely frauds in financial statements that are investigated, their key distinguishing feature being their effect on the financial statements in order to mislead.

Stage 3 of the model provides the classification of fraud groups in the financial statements (Table 1) based on theoretical research, under which it is necessary to get acquainted with groups and sub-groups of frauds in the financial statements as the use of this classification facilitates fraud determination.

During **stage 4** the beginner fraud investigator must know basic legislation governing business operations. In some cases, it is the law gap that gives way to the fraud in the financial statements. Legislation that is important for fraud determination in the financial statements was selected during an experimental study. The paper analyses the connections between fraud in the financial statements and legislation Articles and creates the tool which provides the major groups of fraud in the financial statements related basic legislation Articles. It provides the following 10 different groups of fraud in the financial statements: 1) unreasonable raising of financial records, their exaggeration, reduction 2) fictitious (fake) records, 3) deliberate failing to record, hiding, inappropriate transcription, 4) illegal clearance of accounting records and registries, 5) agreement on fictitious prices, 6) illegal VAT refund, 7) Charity (support) not for its intended purpose, 8) illegal maternity (paternity) allowances, 9) illegal activity, 10) misappropriation of assets, embezzlement (informal salary payments, deliberate bankruptcy). The above mentioned fraud groups are structured according to the following classification criteria: according to the elements of accounting policy, accounting process and the process of the company management. After the analysis of the records 10 basic legal acts and their Articles were applied for the investigated fraud groups. This tool enables the identification of the legal acts of the Republic of Lithuania and their articles that were not followed while investigating the fraud evidence and evaluating the legislative consequences according to a fraud group.

From **stage 5** of the model there begins the analytical and technical part of the fraud determination, which sets out a concise sequence of actions. The analysis of the scientific literature revealed that existing models do not distinguish *external systems and secret operations* employed by the staff of controlling institutions, thus, they were systemized in stage 5 of the model. This model stage cannot be used by the staff of non-controlling institutions; they skip this stage of the model.

During **stage 6** the fraud investigator must carry out *an analysis on fraud risk factors* so that he could find out warning signals of the fraud. The paper carries out a

theoretical research under which a generalized questionnaire on fraud risk factors is compiled and fraud risk factors are grouped into the following three sections: 1) fraud risk factors occurring in business and industrial environment, 2) fraud risk factors occurring due to organizational structure, 3) fraud risk factors occurring due to financial conditions. The questionnaire helps to determine whether there is a fraud signal or not. The direction of the fraud signal can also be determined. In exceptional cases the fraud itself can also be determined during this stage.

During **stage 7** an analysis of fraud risk factors in accordance with the analysis of scientific literature was carried out, which revealed that scientific works usually suggest performing monitoring and survey procedures that help find out important factual circumstances about frauds in the financial statements.

Monitoring procedures are useful because they help understand the activities of the investigated company, what actually the activities are in comparison with the official reports and documents. Monitoring can also reveal the relationships among the managers and employees. During the monitoring procedures the company's employees or other persons and their activities are monitored, however, it takes a lot of time.

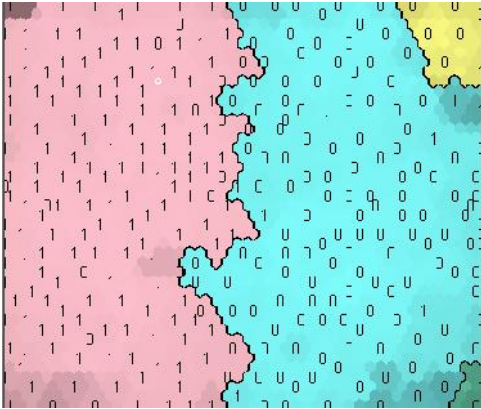
Survey procedures are useful because they help find out important factual circumstances of the fraud. They can be performed orally or in writing by asking individual questions or using pre-prepared questionnaires. The conversation usually reveals opinions, views, or general observations. More numbers are provided when a written questionnaire form is submitted. *Monitoring and survey procedures* may be used after new investigation facts were found out before or after each model stage, starting from the end of stage 5.

During **stage 8** *analytical procedures* are performed. They show what other procedures should be performed, for how long and to what extent, besides, they reduce the fraud risk. Detailed, accurate and valid data is required when applying analytical procedures because it is believed that there is an interdependence of indicators. During these procedures the company's financial information is compared with the information from a previous period, with forecasts and with the information of the same or similar industry sector. Upon the performance of analytical procedures for fraud, the availability, reliability and appropriateness of the investigated company's information should be evaluated. In order to gather as much evidence of fraud as possible, the

analytical procedures in the model proposed are used by applying the method of SOM neural networks.

In order to gather more evidence of fraud in the financial statements during **stage 9**, it is necessary to use *the corporate database created by the author and the applied method of SOM neural networks*. At this stage, the information of the investigated companies is collected, managed and used by means of corporate database and the applied method of SOM neural networks that together can characterize a company as having or not having a tendency to cheat.

Development process of the corporate database and the application of the method of SOM neural networks. After the completion of an experimental study one of artificial neural networks was applied, i.e., self-organizing maps (SOM), also known as Kohonen maps. The financial statements of 160 companies investigated for fraud were used while developing the corporate database; they were treated as an experimental group. Following the methodology of the research, there were selected 160 financial statements that were not investigated for fraud and a control group was created. Then all possible relative financial indicators were calculated and the applied method of SOM neural networks automatically divided the multidimensional input data into different classes



Source: created by the author.

Figure 5. Kohonen map

The result of *the developed corporate databases and the applied method of neural network* was the following- SOM led to the identification of 88 % of fraudulent financial statements and 94 % of accurate financial statements (see Fig. 5) in terms of the values of relative indicators of the companies.

In **stage 10** it is suggested to summarize the findings on frauds in the financial statements by applying the information obtained during the previous stages of the model. The summarized conclusions consist of the following 4 parts: 1) introduction, 2) research, 3) conclusions, 4) additional material.

Arrows linking all stages of the model, show the relationship of the stages of the model, which may be reversible. As the author of the paper proposes in her model, if new facts or circumstances related to fraud in the financial statements become apparent, after each stage it is possible to return to the primary or previous stage and to gather evidence or perform analysis on the fraud.

The structural representation of the developed model of determination of frauds in the financial statements revealed dimensions of the model, consumers, stages and levels of action sequence.

It should be noted that the model can be used not only in Lithuania, but also abroad by applying the relevant legislation and standards and updating the company database in accordance with the country's financial indicators.

It might be argued that the model developed for determination of fraud in the financial statements reveal the essential aspects of determination of fraud in the financial statements to be checked in the other part of the dissertation by the following hypotheses drawn:

H₁ – the use of the methodology of fraud determination in the financial statements and frauds in general might be regarded as a separate cognitive dimension of the developed model of determination of frauds in the financial statements.

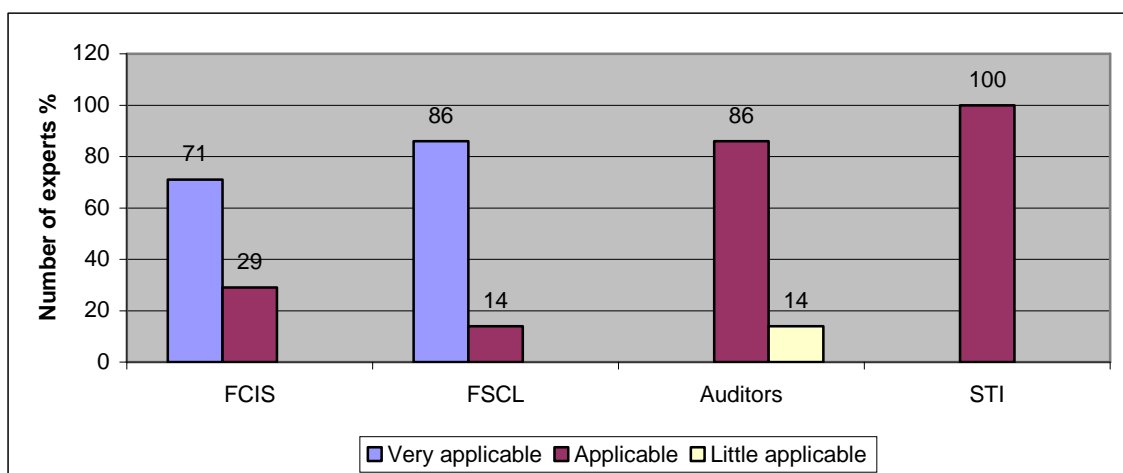
H₂ – the complex information about the company's financial statements, its management, and business and industry levels all provided in one piece help to identify fraud in the financial statements more effectively than information about the financial statements alone.

H₃ – the information components of analytical and technical dimensions supplement one another while determining frauds in the financial statements

3. ASSESSMENTS AND APPLICATION OF THE MODEL OF DETERMINATION OF FRAUDS IN THE FINANCIAL STATEMENTS

This part of the dissertation carries out the assessment and application of the model of determination of frauds in the financial statements. Subchapter 3.1 of this dissertation provides the methodology for assessing the empirical research of the model of determination of frauds in financial statements. In order to comprehensively reflect the characteristics of the model proposed, the methodology in subchapter 3.2 of the dissertation is applied by experts in four fields of expertise (Financial Crime Investigation Service (FCIS), Forensic Science Centre of Lithuania (FSCL), auditors and State Tax Inspectorate (STI) who carried out the assessment of the model of determination of fraud in the financial statements to determine the main advantages and disadvantages of the model application, which are important both for the author of the dissertation and the model users. Subchapter of the dissertation provides comparative analysis of the experts' answers, subchapter carries out improvements of the developed model with regard to weaknesses of the model determined during the empirical assessment, and subchapter 3.3 applies the model to a particular company.

This section of the dissertation provides the assessment of the author's proposed model of determination of frauds in the financial statements carried out by FCIS, FSCL, STI experts and auditors (see. fig.6).



Source: created by the author.

Figure 6. The extent of model applicability

The model application results confirmed the model conception and its applicability in practice while identifying fraud in the financial statements.

In order to improve the model of determination of frauds in the financial statements according to the expert assessments provided in the questionnaire survey, the author of the paper carried out the evaluation of expert assessments (see Table 3) to verify that the expert opinions are coordinated and consistent.

Table 3. The evaluation of expert assessments according to concordance correlation coefficient, W

1. Question-answer groups	1-4,4	4,5-5,3	5,4-8,1	8,2-12	13-19,1	19,2-22
2. FCIS	0,9	0,8	0,95	0,7	0,8	0,7
3. FSCL	0,9	0,4	0,7	0,6	0,7	0,4
4. Auditors	0,8	0,4	0,2	0,2	0,8	0,4
5. STI	0,98	0,7	0,4	0,4	0,8	0,7

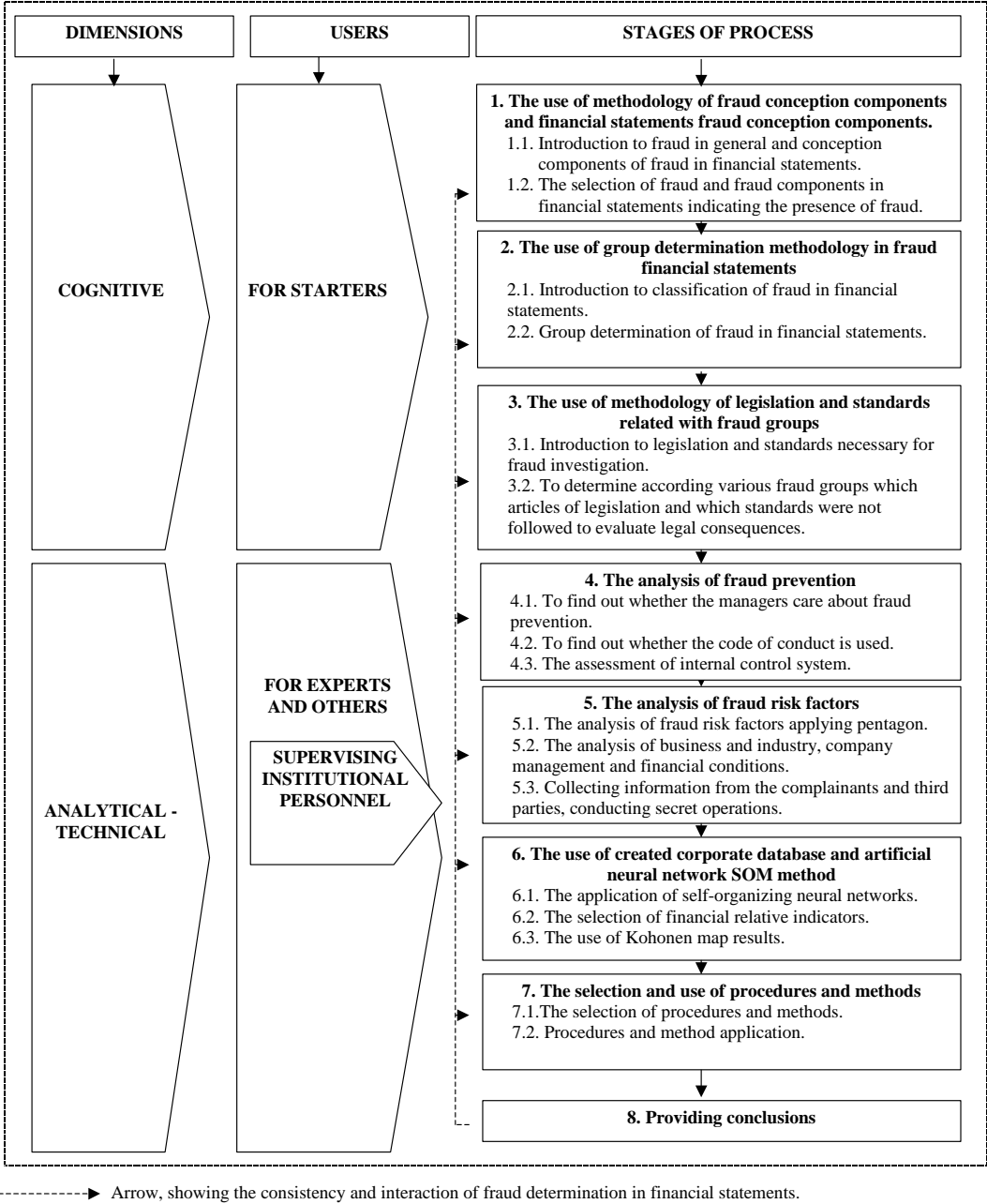
Source: created by the author.

Since the majority of questionnaire questions and answers groups' concordance correlation coefficients (W) are close to one (See Fig. 3), the conclusion is drawn that the opinions of experts are coordinated and it shall be decided in accordance with their opinions to improve the proposed model of determination of fraud in the financial statements.

When applying the author's model of determination of fraud in the financial statements according to the groups of all experts under the hypothesis, unanimous conclusions are made. All three hypotheses (H, H2, H3) were confirmed as correct.

After the experts' assesment on the author's proposed model, it was improved (See Figure 7). The stage of "The use of fraud conception components methodology" was joined with the stage "The use of fraud in financial statements conception methodology". In the methodology of fraud conception victims were supplemented with state. The third model's stage "Legislation related with fraud methodology" was also supplemented with standards. A new stage was implemented in the process of fraud determination – "The analysis of fraud prevention". The generalized questionnaire of fraud factors was adjusted so that each line would ask one question and some of the questions were corrected as well. The stage "The use of external systems and secret operations" was joined with the stage "The analysis of fraud risk factors". The stages "Observation and the performance of survey procedures" and "The performance of analytical procedures" were joined into one common stage "The selection and performance of determination procedures and methods. The order of stages of model's

analytical and technical parts was changed and the role of level in the model was grounded.



Source: created by the author.

Figure 7. The structure diagram of fraud determination in financial statements

Model application. The created model of fraud determination in the financial statements helped to better understand that JSC “Statybos brolija” according to unrealistic VAT invoices in accounting recorded failed economic operations of acquisition of goods for resale and the performance of works. What is more, the cost price was unreasonably increased. Also, according to unrealistic VAT invoices, the

records of JSC “Statybos brolija” were filled in with incorrect information about the company’s financial operations which were not actually related to the changes in size of liabilities, asset and structure thus partially it is not possible to determine the company’s asset of investigation period, equity, the size of liabilities and structure. It has also been established which articles of legislation were not followed in order to assess the legal consequences. The conclusion is made that model verification in JSC “Statybos brolija” confirmed the model components (dimensions) and their synergetic relations.

In conclusion it can be stated that the aim of the research – to create and adapt the model of fraud determination in the financial statements– is implemented. The complete model of fraud determination in the financial statements consists of a structure diagram of determination model of financial fraud, the component of fraud concepts, the components of fraud in the financial statements, the improved classification of fraud in the financial statements, the mean of main groups of fraud in the financial statements together to legislation and their main Articles, the generalized questionnaire of fraud risk factors, the created corporate database and the adapted method of artificial neural networks (SOM).

CONCLUSIONS

Having carried out the theoretical and practical research of fraud in financial statements, the following conclusions have been formulated:

1. Different approaches to the fraud have shown that while determining it there is one predominant opinion that *fraud is intentional actions to deceive users or to avoid liability*. However, such a definition is not detailed enough as it does not fully reflect the object or features of fraud. Therefore, when indicating the fraud, it is necessary to identify the key fraud components: 1) *definitional*, which identifies the object of the fraud and 2) *definable*, describing the features of the object of the fraud; also, essential, non-essential, common and atypical features were distinguished and an improved definition of fraud was provided stating that it is *an intentional unfair act or inaction that is usually hidden and executed under certain conditions and that it requires certain level of skills*.

2. The fraud in the financial statements is one of the types of fraud which narrows the concept of fraud and provides it in the level of the company's financial statements therefore it is appropriate to name it as *conscious actions or inactions by the employees and third parties that affect financial statements when seeking to mislead financial statements information users*. Specific components are typical for fraud in the financial statements, however when describing fraud in the financial statements only those components of fraud in the financial statements are distinguished that set it apart from other frauds. The key distinguishing feature *making an impact on the financial statements in order to fraud the information users* distinguishes fraud in the financial statements groups from other concepts in the scientific literature.

The occurrence of fraud is determined by fraud risk factors. The latest trend is to identify fraud risk factors related to leadership and management, employees and external factors. The main reasons for fraud are benefit, profit and superiority.

Having carried out a systematic analysis of the scientific literature on fraud in the financial statement groups it was found out that authors distinguish a different number of groups the detail of which also varies. The essential distinction among frauds in financial statements shall be made in accordance with: 1) the elements of the company's accounting policy, 2) elements of the accounting process, 3) elements of company's governance process as these classification criteria clearly demonstrate the qualities of substantial groups' frauds in the financial statements and best reflect where it is cheated in the company.

3. A systematic analysis of literature in the process of determining frauds in the financial statements showed that the analysing authors have not specified in detail the process of determining fraud in the financial statements. Comparative analysis on financial statement audit and forensic economy have highlighted the limitations of the audit of the financial statements in determining fraud in the financial statements as the audit of financial statements evaluates the risk of significant distortions of fraud in the financial statements and the forensic economic determines the specific facts and circumstances of the fraud in the financial statements. Analysis of actions of fraud determination in the financial statements showed the diversity in fraud determination procedures and methods: they are intertwined with each other, there is no unanimity in determining fraud procedures and number of methods, the sequence of their execution.

Thus, in order to better identify fraud in the financial statements generalized fraud determination in the financial statements process is proposed: 1) to perform an analysis of fraud risk factors; 2) to apply the chosen procedures and methods; 3) to summarise information and present findings.

4. Having carried out a critical comparative analysis of determining fraud models in the financial statements it was established that they do not fully reflect the process of fraud determining: 1) not all the models include the factors of fraud risk and those which involve signal of fraud not effectively enough, 2) do not reflect the fraud determination steps in financial statements, 3) there is no consensus whether the selected relative number of factors is optimal, 4) there is a lack of quantitative (financial relative indicators) and qualitative information usage together, 5) different fraud groups are not analysed in models, 6) models do not include legislation and their main articles, regulating the financial accounting of companies, 7) in most of the models there are no possibilities to investigate fraud in the case of information shortage, 8) not all models solve the problem of aggregation, 9) not all models use computer data processing tools which increase the reliability of fraud detection in financial statements.

A critical comparative analysis of determining fraud models in the financial statements revealed the gaps in analysed models therefore the directions for improvement were proposed:

1) to use in the models those factors of fraud risk that effectively signal the areas of fraud presence, 2) to supplement *the stage of analysis of fraud risk factors* with external systems, secret operations and information from the third parties, 3) to supplement *the procedural stage* with the financial statement frauds procedures, 4) to supplement *the stage of information summarising* with a structural finding, 5) to provide an optimal number of data of financial statements, relative indicators and use them together with qualitative information; 6) to include a group analysis in the fraud financial statements; 7) to link fraud groups with relevant legislation and their main articles, 8) to allow the possibility to use the missing data, 9) to solve the problem of aggregation.

5. Having found out the need of fraud determination model in Lithuania, the research of tendencies of fraud in financial statements was carried out. It was established that it is necessary to create a model of fraud determination in the financial statements because the investigation of fraudulent accounting is behind the registration and what is

more Lithuania shadow economy percentage of GDP 1.5 time exceeds average shadow economy in Europe and it is a signal that frauds are inevitable in the companies.

The author created the model of fraud determination in financial statements and it consists of: 1) the fraud determination in financial statements structure diagram, highlighting the consistency of fraud in the financial statement determination process which is lacking in other models and also is highlights the users of the suggested model, 2) the components of fraud conception which reveal the essential, non-essential, common and atypical fraud features, 3) the components of fraud in the financial statements which reflect the essential peculiarities distinguishing fraud in the financial statements from other frauds, 4) the classifications of frauds in the financial statements where the peculiarities of individual financial statement fraud groups are revealed, 5) the means where the legislation and their articles are adjusted to the fraud groups, 6) the fraud risk factors' questionnaire where the main fraud risk factors to identify fraud signals are summarised and concentrated, 7) created corporate databases and the method of artificial neural network (SOM) which, when used together, can attribute the investigated company to those companies which are characterised by fraud or not.

6. The results of experts' assessment survey have shown that the proposed model of fraud determination in financial statement is adaptable and appropriate. When evaluating the proposed model experts approved its structural parts – dimensions, users, stages of process and they also agreed that the model can be useful when determining the aspect of time, dynamics, aggregation and that it can influence the model's connection with financial statements. Taking into consideration the comments and recommendation of experts at the time of assessment survey, the proposed model was improved: some stages of process were supplemented and combined, their separate parts were extended and a new stage of process – “The analysis of fraud prevention” - was implemented, the sequence of stages of model's analytical and technical parts was changed, the role of levels in models was grounded and the place of levels in the model's structure diagram was changed moving them into the fifth stage “The analysis of fraud risk factors”.

7. The performed examination of the financial statement fraud determination model in a specific company confirmed the model's components and their sunergetic relations. Therefore, it is concluded that the model is applicable in practice to various

users of financial statements and is an appropriate methodological mean to determine frauds in the financial statements.

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REZIUM

Temos aktualumas. Finansin s ataskaitos turi rodyti *tikr* ir *teising* mon s finansin b kl , veiklos rezultatus ir pinig srautus, ta iau šiais technikos pasiekim ir ekonomin s globalizacijos laikais moni santykiai darosi vis sud tingesni - jos nes žiningai konkuruoja ir siekia kuo geresnio bei naudingesnio mon s vaizdžio nevendamos šiam tikslui pasitelkti net apgaulingas finansines ataskaitas. Sertifikuot apgauli tyr j asociacija (toliau ACFE) atliko tyrimus JAV ir nustat , kad apgauli finansin se ataskaitose atvej yra nustatoma mažiausiai nei kit apgauli r ši atvej : korupcijos ir turto pasisavinimo, ta iau vidutiniai vienos apgaul s nuostoliai apgauli finansin se ataskaitose yra didžiausi (2008 m. - 2 mln.\$, 2010 m. - 4,1 mln.\$, 2012 m. - 1 mln.\$) lyginant su kitomis apgauli r šimis: korupcija (2008 m. - 0,375 mln.\$, 2010 m. - 0,25 mln.\$, 2012 m. - 0,25 mln.\$) ir turto pasisavinimu (2008 m. - 0,15 mln.\$, 2010 m. - 0,135 mln.\$, 2012 m. - 0,12 mln.\$)(ACFE, 2008, 2010, 2012). Nes žiningai konkuruojan i moni apgauli pasekm – skandalai d l neteisingos apskaitos, vyk stambiosiose pasaulio mon se: 1999m. - „Wastemanagement“, 2000 m. - „Xerox“, 2001 m. - „Enron“, 2002 m. - „AOL“, „Bristol-Myers Squibb“, „Freddie Mac“, „Global Crossing“, „Halliburton“, „Homestore“, „Kmart“, „Merck&Co“, „Merrill Lynch“, „Mirant“, „Nicor“, „Peregrine Systems“, „Qwest Communications“, „Tyco International“, „WorldCom“, 2003 m. - „Parmalat“, 2004 m. - „Chiquita Brands International“, 2004 m. - „AIG“, 2008 m. - „Bernard L. Madoff Investment Securities LLC“, 2009 m. - „Satyam Computer Services“, 2010 m. - „Lehman Brothers“. mon s, sukelian ios skandalus d l apskaitos, dažniausiai ne tik bankrutuoja (pvz.: „Enron“, „WorldCom“, „Parmalat“, „Lehman Brothers“), bet ir neigiamai paveikia ekonomik bei sukelia rimt socialin nerim d l finansini ataskait patikimumo sumaž jimo. Apskaitos skandalai taip pat neigiamai veikia ir s žiningai dirban ias mones, nes meta ant j nepasitik jimo šeš l .

Skandalai d l neteisingos apskaitos ir ACFE atlikti tyrimai rodo, kad b tina didesn moni finansini ataskait informacijos patikimumo kontrol , nes jose pateikiama informacija veikia finansini ataskait informacijos vartotoj sprendimus. Apgaul s mažina finansini ataskait patikimum , iškraipo moni finansinius rezultatus, neparodo *tikro* ir *teisingo* j vaizdo, tod l, siekiant užtikrinti j teikiamos

informacijos *patikimum*, *tikrum* ir *teisingum*, labai svarbu analizuoti apgaulės finansinėse ataskaitose. Tačiau pasigendama apgaulių finansinėse ataskaitose vairiapusio ir efektyvaus apgaulių nustatymo modelio. Siekiant užtikrinti, kad finansinių ataskaitų informacijos vartotojai gautų patikimą informaciją, apgaulių finansinėse ataskaitose modelis turi apimti apgaulės ir apgaulės finansinėse ataskaitose sampratas, apgaulių finansinėse ataskaitose klasifikaciją, teisės aktus, susietus su apgaulių grupėmis, apgaulių rizikos veiksnių analizę ir jų nustatymo veiksmus.

Mokslinė problema, jos ištyrimo lygis. Apgaulių finansinėse ataskaitose nustatymo aspektai nagrinjami užsienio vadybos mokslo darbuose, kurių autoriai: Pincus (1989), Tatum ir kt. (2001), Gu ir kt. (2005), Sitorus, Scott (2009), Kennett ir kt. (2011). Deja, jų darbuose apgaulių finansinėse ataskaitose nustatymo aspektai išnagrinėti fragmentiškai, atsižvelgiant tik apgaulės riziką, jos veiksnius, vertinimą ir analitinės procedūras.

Atlikta sisteminė mokslinė literatūros apie apgaulių finansinėse ataskaitose nustatymą analizė leidžia teigti, kad pasaulyje moksliniuose apskaitos ir audito darbuose apgaulių finansinėse ataskaitose nustatymas dažniausiai analizuojamas iš audito perspektyvos - nustatomi apgaulės rizikos veiksniai ir vertinama apgaulės rizika. Ši tema aptariama tokių užsienio autorių: Feroz (1997), Deshmukh, Talluru (1998), Koornhof, Plessis (2000), Tatum ir kt. (2001), Graham, Bedard (2002), Turner ir kt. (2003), Howard S., Howard D. (2005), Moyes ir kt. (2006), Morris ir kt. (2006), Brennan, McGrath (2007), Brazel ir kt. (2007), Jamieson (2007), Chen, Elder (2007), Skousen, Wright (2008), Chad (2008), Smieliausko (2008), Asare ir kt. (2008), Rajendra ir kt. (2009), Lou, Wang (2009), Sitorus, Scott (2009), Jans ir kt. (2009), Seow (2009), Hegazy, Kassem (2010), Tugus (2012), Kerr (2013), Ugrin ir kt. (2014). Siekiant išsamiai nustatyti apgaulės finansinėse ataskaitose neužtenka nurodyti jų rizikos veiksnius ir vertinti apgaulės riziką, nes tai - tik apgaulių nustatymo pradžios etapai, reikalaujantys platesnio tyrimo.

Apskaitos ir audito mokslo darbuose apgaulių tyrimai taip pat analizuoja apgaulių finansinėse ataskaitose nustatymą. Tokių darbų autoriai yra Rezaee (2002), Albrecht ir kt. (2008), Wells (2008), ACFE (2008, 2010, 2012). Tačiau jų darbuose nustatymo aspektai nėra išanalizuoti visapusiškai, pasigendama koncentruotos, nuoseklios apgaulių nustatymo metodikos.

Tarpdisciplininiuose informatikos, apskaitos ir audito mokslo darbuose užsienio mokslininkai (Fanning ir K. Cogger (1998), Spathis ir kt. (2002), Phua ir kt. (2005), Kotsiantis ir kt. (2006), Kirkos ir kt. (2007), Yue ir kt. (2007), Hoogs ir kt. (2007), Gaganis (2009), Comunale ir kt. (2010), Ngai ir kt. (2010), Zhou, Kapoo (2011)) nemažai dmesio skiria modeli , kurie nustato apgaules finansin se ataskaitose, k rimui. Šiuose modeliuose mon s pagal autori pasirinktus finansinius rodiklius ir klasifikavimo b dus suskirstomos sudaran ias apgaulingas ir neapgaulingas finansines ataskaitas. Taciau toks suskirstymas nepadeda nustatyti konkre i apgauli finansin s ataskaitose.

Apgaul s finansin se ataskaitose analizuojamos ir tarpdisciplininiuose užsienio teis s, apskaitos ir audito mokslo darbuose, kuri autoriai Golden ir kt. (2006), Singleton ir kt. (2006), Skousen, Wright (2008), Boritz ir kt. (2008), Crumbley ir kt. (2009), Aliabadi ir kt. (2011), Lynch ir kt. (2011), Cieslewicz (2012), Henry ir kt. (2012). Ši autori darbuose analizuojami teismo ekonomin s ekspertiz s aspektai siekiant nustatyti apgaules finansin se ataskaitose, taciau ir j darbuose aiškaus atsakymo, kaip nustatyti apgaules, iki šiol n ra.

Apgauli finansin se ataskaitose nustatymo elementai analizuojami ir Lietuvos teis s mokslo darbuose. Toki darb autoriai yra: Pošinas (1990), Pošinas (1994), Pošinas, Lakis (1996), Fedosiuk (2003), Spie i t , Barkauskas (2005), Paulauskas (2006), Kuncevi ius (2007), Kuncevi ius, Kosma ait (2007), Pranka (2012). Šiuose darbuose analizuojami tik atskiri apgauli nustatymo aspektai, taciau neišanalizuota visapusiškai apgauli finansin se ataskaitose nustatymo metodika.

Apgauli finansin se ataskaitose nustatymo problematika nagrin jama ir Lietuvos apskaitos ir audito mokslo darbuose. Toki darb autoriai yra: Kabašinskas, Toliatien (1997), Jagminas ir kt. (1998), Mackevius, Bartaška (2003), Kanapickien ir kt. (2004), Kal inskas (2007), Lakis (2007, 2008a, 2008b, 2009, 2011), (2007, 2012a, 2012b), Kanapickien (2006, 2008, 2009), Mackevius, Kazlauskien (2009), Kutkait , Javaitien (2011), Mackevius, Giri nas (2013), Giri nas (2012a, 2012b, 2013). Šiuose darbuose analizuojami apgauli motyvai, s lygos, veiksniai, b dai, bei apgauli rizikos nustatymas ir vertinimas atliekant audit . Bet tai n ra galutiniai veiksmai apgauli finansin se ataskaitose nustatyme.

Atlikta sistemin mokslin s literat ros analiz leidžia teigti, kad apgauli finansin se ataskaitose nustatymas - sud tinga veiksm seka, reikalaujanti apskaitos, audito, ekonomikos, teis s ir informatikos žini .

Kai nustatant apgaules finansin se ataskaitose dažnai pritr ksta informacijos, b tinos norint visapusiškai ištirti faktus, tada tyrimui panaudojami netiesioginiai apgauli nustatymo veiksmai. Esant tokiai situacijai b tina sukurti apgauli finansin se ataskaitose nustatymo model Lietuvos mon se, kuris apjungt skirtinguose moksluose – vadyboje, apskaitoje, audite, finansuose, teis je, informatikoje naudojamus apgauli nustatymo veiksmus.

vertinus aptartus probleminius analizuojamos temos aspektus suformuluota **mokslin problema** – kaip nustatyti apgaules finansin se ataskaitose?

Tyrimo objektas – apgaul s moni finansin se ataskaitose.

Tyrimo tikslas – sukurti ir patikrinti apgauli moni finansin se ataskaitose nustatymo model .

Siekiant nurodyto tikslo, sprendžiami šie **uždaviniai**:

1. Atlikti vairi poži ri apgaul s samprat teorin analiz bei susisteminti pagrindinius apgaul s komponentus, leidžian ius geriau suvokti apgauli esm .

2. Vadovaujantis teorine analize suformuluoti apgauli finansin se ataskaitose samprat . Parengti apibendrint apgauli rizikos veiksmi klausimyn , leidžiant efektyviau nustatyti apgauli buvimo galimyb . Atlikus apgauli finansin se ataskaitose grupi analiz , parengti apgauli finansin se ataskaitose grupi klasifikavimo sistem .

3. Ištirti ir patobulinti apgauli finansin se ataskaitose nustatymo proces , apjungiant apskaitos, audito, ekonomikos, teis s ir informatikos moksluose naudojamus apgauli nustatymo veiksmus.

4. Atlikti mokslin je literat roje si lom apgauli finansin se ataskaitose nustatymo modeli kritin lyginam j analiz , išskiriant j privalumus bei tr kumus.

5. Sukurti apgauli finansin se ataskaitose nustatymo model , ištyrus apgauli finansin se ataskaitose modelio reikalingum Lietuvoje.

6. Parengti ir pritaikyti teoriškai pagr st modelio empirinio tyrimo metodik ir patikrinti sukurt model .

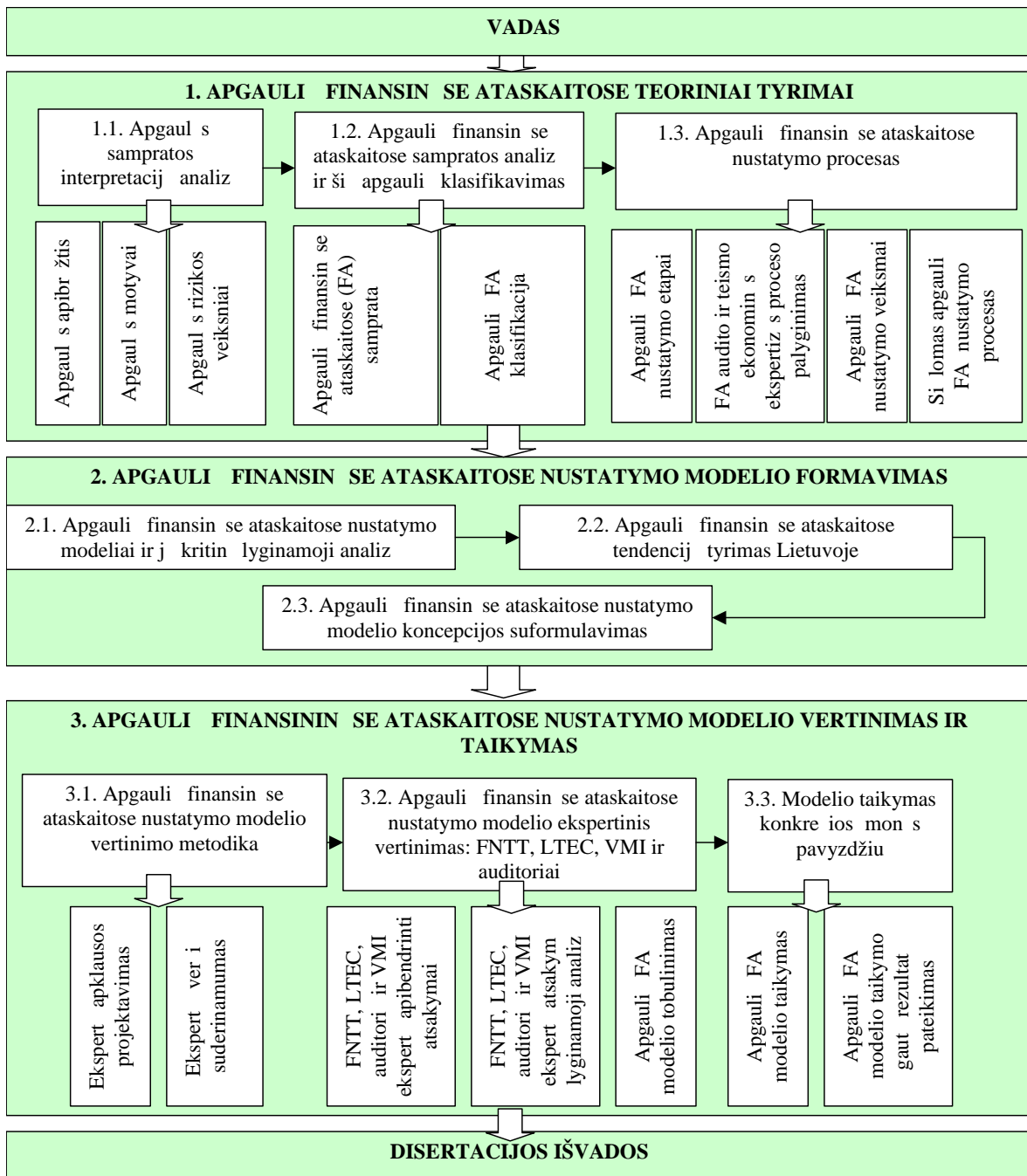
Ginamasis disertacijos teiginys – sukurtas modelis nustato apgaulės finansinėse ataskaitose.

Mokslinio tyrimo metodai. Analizuojant teorinius apgaulės finansinėse ataskaitose nustatymo aspektus naudotasi *analizės, apibendrinimo ir interpretavimo metodais, abstrahavimu, apžvalgoms, sisteminės literatūros analize, sinteze*.

Siekiant išsiaiškinti, koks apgaulės finansinėse ataskaitose nustatymo modelio poreikis Lietuvoje, buvo atlikta apgaulės finansinėse ataskaitose tendencijų Lietuvoje empirinio tyrimo *antrinių duomenų analizė ir grafinis atvaizdavimas*. Tokiame analize ir informacijos neprieinamumas.

Sudarant apgaulės finansinėse ataskaitose nustatymo modelį buvo naudojamos *modeliavimo*. Siekiant sudaryti monių duomenų bazę ir pritaikyti neuroninį tinklą metodą SOM d l apgaulės nustatymo, buvo pasitelktas *eksperimentinis tyrimas* ir naudojamos *dokumentų analizės, turinio (angl. content) analizės bei kiekybiniais statistiniais duomenų apdorojimo metodais* (finansinėse ataskaitose klasterizavimui naudojama programinė ranga Viscovery® SOMine). Norint vertinti sudarytą apgaulės finansinėse ataskaitose nustatymo modelį buvo pasirinktas *ekspertų vertinimo metodas* ir atlikta anketinė apklausa. Siekiant sudaryti modelį patikrinti praktiškai, buvo atlikta konkrečių monių *atvejo analizė*. Hipotezės buvo tikrinamos atliekant *loginę analizę*.

Loginio darbo struktūra. Loginio darbo struktūra su lygoju suformuluoti tyrimo objektas, tikslas ir išskelti uždaviniai sprendimo eiga, kurie analizuojami trijose pagrindinėse darbo dalyse (žr. 8 pav.).



Šaltinis: sudar autor .

8 pav. Login disertacijos strukt ra

Pirmoje disertacijos dalyje nagrin jamos apgauls sampratos interpretacijos, išskiriami apgauls s vokos komponentai, pateikiamos apgauls atsiradim lemian ios s lygos, pateikiama apgauli finansin se ataskaitose klasifikacija, nagrin jami apgauli nustatymo procesai, proced ros ir metodai. *Antroji disertacijos dalis* skirta apgauli nustatymo modelio finansin se ataskaitose koncepcijos suformulavimui. Pirmia, analizuojami apgauli finansin se ataskaitose nustatymo modeliai, išskiriant j

privalumus ir trūkumus. Antra, atliekama apgaulių nustatymo modelių kritinis lyginamoji analizė. Trečia, norint išsiaiškinti apgaulių modelio nustatymo poreikį Lietuvoje, atliekamas apgaulių finansinėse ataskaitose tendencijų tyrimas. Ketvirta, formuluojama apgaulių modelio finansinėse ataskaitose nustatymo koncepcija.

Trečioji disertacijos dalis skirta apgaulių nustatymo modelio empirinio tyrimo metodikos sudarymui. Pagal gautas vertinimo išvadas, tobulinamas apgaulių nustatymo modelis. Atliekamas modelio praktinis taikymas konkrečiųmonių su pavyzdžiu.

Mokslinai naujumi ir teoriniais darbo reikšmėmis paaiškina šie teoriniai tyrimų aspektai:

- Atlikta vairių požiūrių apgaulių sampratą teoriniais analizėmis leido išskirti pagrindinius apgaulių komponentus: objektus, esminius, neesminius, bendruosius ir tipinius požymius, leidžiančius geriau suvokti apgaulių esmę.

- Suformuluota apgaulių finansinėse ataskaitose samprata, leidžianti išskirti esminį skiriamąjį bruožą iš kitų apgaulių, – taktinį finansiniam ataskaitoms siekiant suklaidinti.

- Susistemintos finansinių ataskaitų apgaulių nustatymo grupės pagal klasifikavimo kriterijus: 1) moniškų apskaitos politikos elementus, 2) apskaitos proceso elementus, 3) moniškų valdymo proceso elementus. Šie klasifikavimo kriterijai aiškiai parodo esmines atskirų finansinių ataskaitų grupių savybes ir yra gera priemonė siekiant nustatyti apgaulių finansinėse ataskaitose.

- Sukurta apgaulių finansinėse ataskaitose nustatymo modelio koncepcija, kuri pateikiama struktūrogramoje: 1) modelis išplečiamas kognityvine dimensija, nes ankstesni analizuojami modeliai buvo pagrįsti analitine ir technine dimensijomis; 2) atskleidžiami apgaulių finansinėse ataskaitose nustatymo proceso etapai; 3) išskiriami modelio vartotojai.

- Pasiūlyta ir teoriškai pagrįsta modelio empirinio tyrimo metodika, leidžianti vertinti jo komponentus ir praktinį taikymą.

Praktiniai darbo reikšmės :

- Išanalizavus mokslinę literatūrą, parengtas apibendrintas koncentruotas apgaulių rizikos veiksmų klausimynas, leidžiantis efektyviau nustatyti apgaulių buvimo galimybes.

- atsižvelgus apgauli finansin se ataskaitose grupi analiz ir jos metu rastus tr kumus, sudaryta apgauli finansin se ataskaitose grupi klasifikavimo sistema, padedanti nustatyti apgaules,

- sudaryta priemon , padedanti nustatyti apgaules finansin se ataskaitose ir vertinti teises pasekmes. Be to, joje išskirtos apgauli finansin se ataskaitose grup s ir susietos su pagrindiniais LR teis s akt straipsniais,

- sudaryta moni duomen baz ir dirbtini neuronini tinkl (SOM) metodo panaudojimas, kurie kartu gali tiriam mon priskirti prie moni , kurioms b dinga arba neb dinga apgaudin ti.

Sukurtas apgauli finansin se ataskaitose nustatymo modelis svarbus, nes:

- 1) priimdami sprendimus sudarytu modeli u gali naudotis finansini ataskait informacijos vartotojai: akcininkai, vadovai, kreditoriai, investuotojai, tiek jai, auditoriai, bankininkai, bankroto administratoriai, statistikos staigos, valstybin s kontrol s institucijos (VPK, VMI, LTEC, FNNT, STT, Valstyb s mon s Registr centras),

- 2) atskleidžia pagrindinius apgauli finansin se ataskaitose nustatymo modelio teorinius aspektus, kur gali naudoti akademin s aplinkos atstovai.

LIST OF SCIENTIFIC PUBLICATIONS

The research results were published in 6 publications, four of which are found in the publications recognized by Lithuanian Science Council as appropriate for defending the doctoral thesis:

1. Grundien , Živil (2009) *Apgauli finansin se ataskaitose nustatymo UTADIS metodas*. Economics&Management. Kauno technologijos universitetas, 2009. Nr.14, p.52-58. ISSN 1822-6515 (Refereed to: EBSCO Business Source Complete, TOC Premier).

2. Kanapickien , Rasa; Grundien , Živil (2010) *Apgaul s samprat interpretacijos. Apskaitos ir finans mokslas ir studijos: problemos ir perspektyvos. Lietuvos žem s kio universitetas*. 2010 Nr.7, p. 93-97. ISSN 2029-1175.

3. Klimaitien , R ta, Grundien Živil (2010) Financial frauds investigation using company budgets information. Economics&Management. Ryga, 2010. Nr.15, p. 963-967. ISSN 1822-6515 (Refereed to: EBSCO Business Source Complete, TOC Premier).

4. Kanapickien , Rasa; Grundien , Živil (2014) *Apgauli finansin se ataskaitose nustatymo veiksmi. Buhalterin s apskaitos teorija ir praktika*, 2014, Nr.15A, p. 37-48. ISSN 1822-8682.

In other publications:

1. Grundien Živil (2011) Peculiarities of financial statements frauds in Lithuania. Business analysis, accounting, taxes and auditing, Tallin university of technology, p.70-78. ISBN 978-9949-430-51-2.

2. Grundien , Živil (2008) *Finansini apgauli teoriniai aspektai. 5-oji mokslin konferencija ,, kio pl tra: teorija ir praktika"*, p.128-133. ISBN 978-9955-33-356-2.

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Academic Background

2008 – 2014 Doctoral studies at Department of Finance and Accounting, Kaunas Faculty of Humanities, Vilnius University
2005 – 2006 Studies at Kaunas Faculty of Humanities, Vilnius University: Master degree of Economics (Accounting, Finance and Banking)
2002 – 2006 Studies at Kaunas Faculty of Humanities, Vilnius University: Bachelor degree of Management and Business Administration (Business Administration and Management)

Professional Experience

2007 – currently Lecturer at Department of Finance and Accounting, Kaunas Faculty of Humanities, Vilnius University
2006 – 2007 Accountant at UAB „Veraudita“
2007 – currently Senior specialist at Financial Crime Investigation Service Under the Ministry of the interior of the Republic of Lithuania

Fields of Scientific Interest

Fraud in the financial statements determination
Forensic Accounting Investigation
Creative accounting
Accounting ethics
Audit

Editor of the English version of the summary - UAB „Bella Verba“.