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Detecting Asset Misappropriation: Forensic Accounting

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Abstract

The main task of the investigation of asset misappropriation is the correct classification of a crime: identification of the fact of misappropriation and determination of the amount of misappropriated assets. Specificity of asset diversity, asset accounting requirements, and a wide range of misappropriation opportunities require specialised knowledge in accounting and economics that investigators often lack. The aim of the study is to increase the knowledge of investigators in forensic accounting in order to increase effectiveness of investigations in detecting asset misappropriation. In this article, the authors, Latvian and Lithuanian accounting experts, talk about typologies of asset misappropriation and ways to detect misappropriation. The authors have compiled a list of red flags for misappropriation of assets and proposed an algorithm for determining the shortage or surplus of assets using forensic accounting methods. Research methods include: qualitative and quantitative methods of economic science, analysis of international standards and scientific literature, and graphical analysis.

Keywords: asset misappropriation, forensic accounting, shortage, concealment typologies.

Introduction

Asset misappropriation is a form of fraud that involves theft of assets or misuse of company resources by employees, management, or third parties. According to a global study on occupational fraud and abuse carried out by the Association of Certified Fraud Examiners (2020), asset misappropriation is the most common form of fraud, occurring in 86% of cases of fraud, with an average loss of USD 100,000 per case. The most frequent victims of this crime are government and public administration (195 cases of fraud identified), manufacturing (185), and health care (149). Fraud examiners note that the average duration of detecting internal fraud by the police is 24 months, while the forensic accounting approach (document examination, account reconciliation) reduces the investigation time to 7–18 months.

Misappropriation is a criminal offence under the Criminal law in Latvia and Lithuania. Liability for such criminal offenses is provided for in Section 179 “Misappropriation” and Section 180 “Theft, Fraud, Misappropriation on a Small Scale” of the Criminal Law of the Republic of Latvia (1998); in Article 183 “Misappropriation of Property” and in Article 178 “Theft” of the Criminal Code of the Republic of Lithuania (2000). Correct identification of the shortage or surplus of the asset and its amount is also necessary in the investigation of other economic crimes: bankruptcy fraud, corruption, money laundering, tax evasion, etc. Asset misappropriation research studies are mainly related to the internal control of the company to prevent misappropriation of assets and internal and external audit capabilities to detect asset misappropriation. The study by C. Albrecht, M. Kranacher and S. Albrecht (2008) is one of the first works which presents the nature of asset misappropriation, types and schemes of misappropriation, weakness of internal control of the company, red flags of the crime, as well as procedures for prevention, detection and investigation of this type of fraud.

Importance of red flags for detecting misappropriation of assets is demonstrated in studies by R. Kassem (2014), W. Hijazi and R. Mahboub (2019). The authors analyse alerts of fraud in context with the International Standard of Auditing (ISA) 240 “The Auditor’s responsibilities relating to fraud in an audit of financial statements” (International Federation of Accountants, 2009).

Finnish scholars B. Gullkvist and A. Jokipii (2013) examine perception of the importance of red flags by internal and external auditors and economic crime investigators. The study found that internal auditors pay more attention to red flags related to misappropriation of assets than to those related to fraud in financial statements. Investigators, on the other hand, take the opposite point of view, but external auditors do not see significant differences. Results of Indonesian researchers Y. Yusnaini et al. (2017) are different. Based on experiments of 92 internal auditors using Anova’s one-way analysis and independent sample t-test, the researchers concluded that internal auditors can effectively detect all types of internal fraud, including asset misappropriation, without distinction. T. T. H. Le and M. D. Tran (2018) examine the effect of internal control

system on asset misappropriation in Vietnamese firms. Based on 279 questionnaires of internal auditors, accountants and department managers, using regression analysis, three components of internal control are identified that have the strongest impact on misappropriation of assets: control environment, control activities, information and communication.

Research results by Korean authors D.-B. Song et al. (2013) suggest that there is a relationship between earning management and asset misappropriation, so, negative accrual basis of accounting provides a clue to management misappropriation of assets. The study by the USA researchers D. Kip Holderness Jr. et al. (2018) found a negative correlation between recession and increased misappropriation of assets, as an opportunity (incentive) plays a larger role than financial pressure. The research was conducted in the form of an interactive simulation involving 324 business professionals in the role of a manager or CFO, based on the theory of the triangle of fraud. Research results demonstrate that asset misappropriation is less likely to be initiated during economic recessions (when pressure is high but opportunity is low) than during economic expansions (when opportunity is high but pressure is low). However, economic downturn leads to an increase in the number of asset misappropriation reports as more emphasis is placed on budgetary planning and internal control, increasing the likelihood of misappropriation. E. H. Nia and J. Said (2015) conducted a survey among employees of three top banks in Iran, involving 191 respondents, to assess nine asset misappropriation scenarios. Thus, bankers noted the most common types of misappropriation of assets: using office internet services for personal purposes, applying for new checkbooks for oneself or their close relatives without permission, and borrowing small money from a bank for personal use.

The authors did not find any scientific studies to identify misappropriation of assets in Latvia and Lithuania. Experts use specialised methods, such as, the Methodology for determining the shortage of material assets and funds of the Forensic Science Centre of the Ministry of Justice of the Republic of Lithuania (Lakis et al., 2001). In turn, standards of the International Organization for Standardization (ISO) (2012, 2017) require mandatory validation of forensic methods, which is possible through international recognition of methods in scientific environment.

This research topic is determined by incompleteness of theoretical achievements in this field and relevance of the scientific basis of forensic approach for detecting asset misappropriation.

The aim of the present study is to increase the knowledge of investigators in forensic accounting in order to increase effectiveness of investigations in detecting asset misappropriation. An additional goal of the study is international recognition of the forensic accounting method for identifying asset shortage. To achieve the goal, the following tasks have been set to examine typologies of asset misappropriation and detection approaches, and offer an algorithm for determining asset shortage using forensic accounting methods.

The research methods include the generally accepted qualitative and quantitative methods of economic science, analysis of international standards and scientific literature, and graphical analysis.

Asset Misappropriation Typologies and Accounting Features

According to the Association of Certified Fraud Examiners (ACFE), the occupational fraud is classified into three major categories: corruption, asset misappropriation, and fraudulent statements. Each of these categories is divided into further sub-categories. This complete classification of internal fraud is often referred to as the Fraud Tree. Asset misappropriation is divided into three subcategories: skimming, larceny, and fraudulent disbursements (ACFE, 2020; Kassem, 2014). Classification of asset misappropriation typologies (fraud schemes) is demonstrated in Figure 1.

Detection of misappropriation of assets must be dependent on the fraudulent schemes used to commit the crime. As observed in Figure 1, most fraudulent schemes involve accounting records in which misappropriation of assets has not occurred as a result of unconcealed larceny. Thus, in order to identify a fraudulent scheme, it is necessary to know the specifics of asset accounting.

Based on the basic principles of accounting theory, assets are divided into long-term investments and current assets. Long-term investments are assets that the company intends to hold for more than a year, such as investment properties and technological equipment. Current assets are for business use for up to one year, such as cash, inventory, etc. The full list of asset types is specified in the Law on the Annual Financial Statements and Consolidated Financial Statements (AFSCFS_{LV}) in Latvia (2015), and in the Law on Financial Reporting by Undertakings (FRU_{LT}) Lithuania (2001). The main difference between long-term investments and current assets is that the cost of a long-term investment, which is usually high, is gradually written off over the life of the asset rather than in full immediately as is the case with current assets. Long-term investments are stated in the balance sheet at residual value (excluding accumulated depreciation). There are other features of asset accounting. The most important features of asset accounting and requirements accordance with International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) are presented in Table 1.

Thus, the main laws governing accounting requirements are the law On Accounting (1992) and AFSCFS_{LV} (2015) in Latvia, and the Accounting Law (2001) and FRU_{LT} (2001) in Lithuania. Public sector accounting is regulated by a separate law on public sector reporting.

Summarised requirements are provided in the mentioned laws, and more detailed provisions are provided in International Accounting Standards. The most important standards are 2 “Inventories”, 18 “Revenue”, 16 “Property, plant and equipment”, 17 “Leases”, 32 “Financial instruments: presentation”, 38 “Intangible assets”, etc.

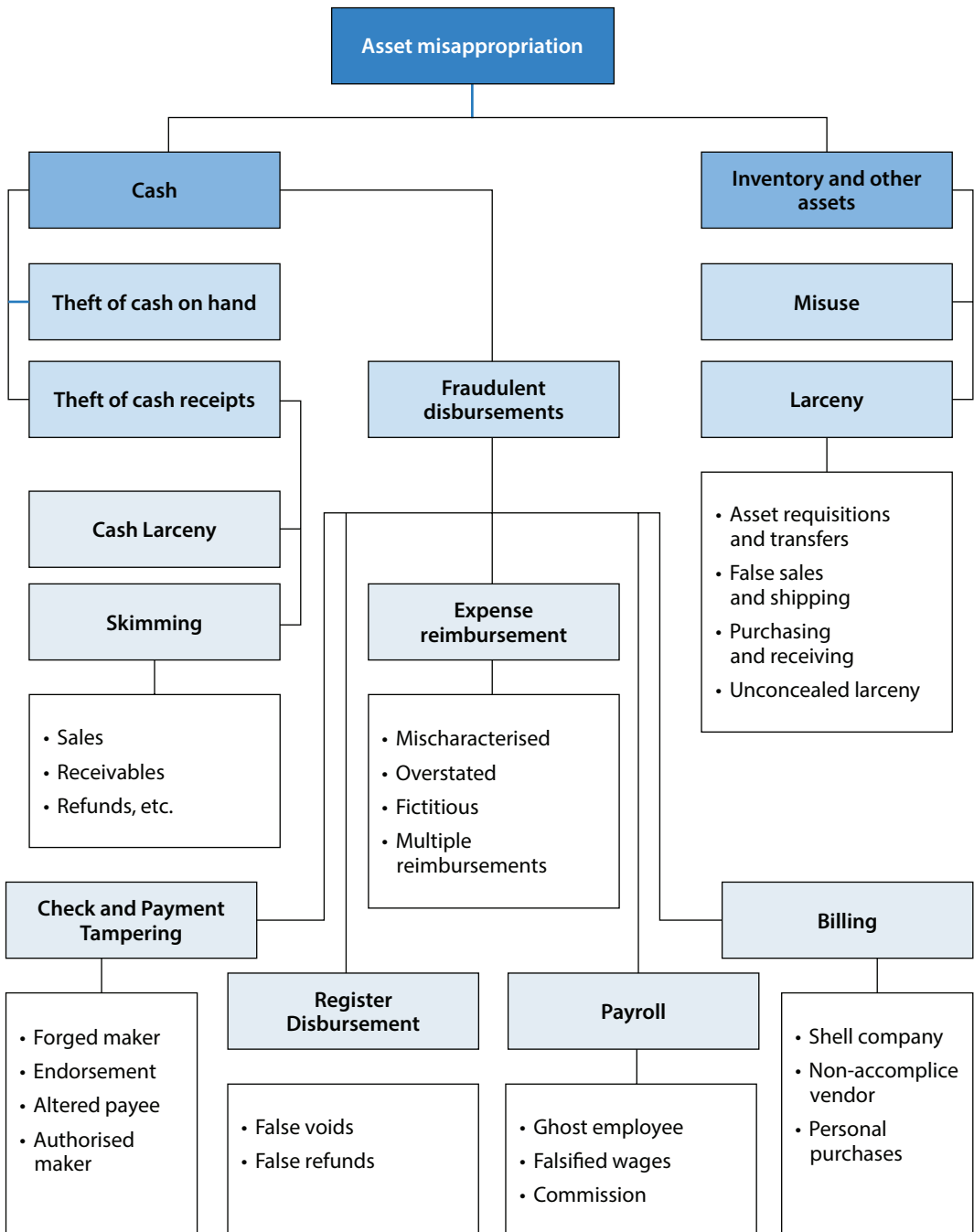


Figure 1. Classification of asset misappropriation typologies (created by the authors based on ACFE, 2020)

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*Table 1. Features of asset accounting**

Type of asset	Specific of accounting	Standards, law
Long-term investments		
Intangible investments	Intangible investments are identifiable non-monetary asset without physical substance and meet the following classification criteria: they can be separated from the company and sold, transferred, licensed, leased or exchanged under a contract or other right, and the company intends to use them for more than a year and expects economic benefits from these cases. Typical elements are goodwill, development costs, concessions, patents, licenses, trademarks and similar.	IAS No 38
Fixed assets	Movable or immovable tangible property used by the company for business purposes for a longer period of one year. The initial amount of fixed assets is determined by reference to its acquisition cost or production cost or, in special cases, its fair value. Fixed assets are presented in the balance sheet at net value, except for land plots, for which depreciation is not calculated. The value of the asset in the balance sheet depends on the chosen period of use. A revaluation method may be used to measure fixed assets. Leased assets are recognised in the balance sheet only if they are finance leases.	IAS No 16 IAS No 17 IAS No 40
Financial investments	Any asset that is cash, a contractual right to receive cash or another financial asset from another party, or an equity instrument issued by another entity: participation in the capital and loans of related or associated undertakings, own stocks and shares, etc. They are measured using the cost or equity method and are not permitted to be measured at fair value. The value of the asset depends on the valuation method.	IAS No 28
Current assets		
Inventory	Assets that are used by entity for generating revenues over one year or over one operating cycle: raw materials and components, work in progress, finished products and goods for sales. When calculating the cost of inventories used production or the cost sold inventories, which may be determined as a weighted average price or by the first-in, first-out (FIFO) method. The notes to the financial statements provide information on accounting policies adopted for inventory accounting, including the methods of application of accounting and valuation.	IAS No 2
Debtors	Debtors or accounts receivable is the balance of money due to a firm for goods or services delivered or used but not yet paid for by customers. Accounts receivable are carried in the balance sheet at their net worth, calculated by deducting provisions for doubtful debts from the carrying amount of these receivables. The notes to the financial statements provide information on the adopted accounting policy for provisions for doubtful debts.	IAS No 18 IAS No 11

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Continuation of Table 1

Type of asset	Specific of accounting	Standards, law
Financial instruments	Short-term financial investments are participation in capital and securities, derivative financial instruments, etc. The value of transferable securities included in short-term financial investments can be determined as a weighted average price or using the FIFO method.	IAS No 32 IAS No 39 IFRS No 7
Cash	Money in a bank account and cash at the balance sheet date. The foreign currency in the balance sheet is translated into euros at the exchange rate set on the balance sheet date (end-of-day).	IAS No 21

* Created by the authors based on AFSCFS_{LV}; FRU_{LT}

Detection Approaches

Fraud Triangle

Fraud is usually hidden, but can be detected using the concept of the fraud triangle, which is recommended for auditors (ISA, 2009). The fraud triangle is a model for explaining factors that cause someone to commit occupational fraud. The term “fraud triangle” was developed decades after D. Cressy’s pioneering work with criminals by J. Wells, an agent of the Federal Bureau of Investigation, who founded the Association of Certified Fraud Examiners (Morales et al., 2014).



Figure 2. The Fraud Triangle (ACFE, 2021)

The fraud triangle consists of three components which, together, lead to fraudulent behavior (ACFE, 2021; ISA, 2009):

1. Perceived unshareable financial need (an incentive or pressure to commit fraud).
2. Perceived opportunity (a perceived opportunity to commit fraud).
3. Rationalisation (an ability to rationalise the fraudulent action).

According to the study conducted by Liodorova and Ievitis (2019), the main components of the fraud triangle can be described as follows:

- motive or pressure is primarily the financial need or greed of a potential criminal. The non-financial motivation is the desire to “put up with” the employer’s violations;
- opportunity or favourable conditions that allow a person to commit an illegal activity. The authors believe that the main reason for misappropriation of assets is lack of internal control of the company and complex organisational structure of it;
- rationalisation of crime is a rational explanation for action according to their own personal code of ethics. For example, “I deserve this money”, “I’ll just borrow, and then I’ll return everything”, because “the victim deserved it” or because “I was mistreated”, etc.

Thus, a crime is committed in the presence of all three components.

Red Flags

Distortions in financial statements and accounting records resulting from misappropriation of assets are important to accounting experts. Fraudulent financial statements involve intentional misstatement or omissions of financial statements to mislead users of the financial statements. Fraudulent financial reporting involve (ISA, 2009):

- manipulation, falsification or change in accounting records or supporting documents;
- misrepresentation or intentionally omitting events, transactions or important information;
- intentional misapplication of accounting principles;
- recording fictitious journal entries without supporting documents;
- payment for services or goods not received on the basis of fictitious invoices;
- use of company funds for personal use, etc.

Some undesirable signs of employee behavior or company accounting records are a dangerous signal to accounting experts, drawing their attention and pointing to an issue that needs to be addressed. These signs are often called red flags – factors that can indicate fraud.

A list of possible red flags indicating asset misappropriation have been provided in Table 2.

The authors note that these red flags should be viewed in connection with each other.

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*Table 2. Examples of red flags for asset misappropriation**

Personal behaviour	Activities	Anomalies in accounting
Living beyond means	Anonymous emails, calls	Warehouse accounting at cost is not performed
Unusually close relationship with partners	Emails are sent at unusual times	More items issued than received
Reluctance to share responsibilities	Obviously inappropriate signatures	Abnormally large balances of goods / debtors
Unusual, irrational behaviour	Transactions started without confirmation	Receivables are not confirmed by debtors themselves
Financial difficulties	Re-grading of goods	Purchased fixed assets are soon written off or sold
Complaints about remuneration	Illiquid balances of goods	Deviations from business indicators
Excessive involvement in accounting policies or concern about these issues	Significant related party transactions that are not a normal business activity	Assets are valued on the basis of estimates related to subjective judgments
Low morale, inappropriate values or ethical standards	Use of business intermediaries without clear justification	Last minute adjustments that have a significant effect on financial results
There is no difference between personal and business transactions	Inventory is not carried out or is carried out formally	Inadequate operating expenses for prepayments with employees (business trips, etc.)
Repeated attempts to justify improper accounting and errors	Canceled checks missing	Frequent changes in accounting estimates unrelated to changed circumstances

* Created by the authors based on the authors' experience and (ISA, 2009; CIMBA, 2008).

Algorithm for Determining Asset Shortage

In the previous study (Liodorova and Shneidere, 2020), the authors developed an International Conceptual Model of Forensic Accounting, which includes the main stages of examination: acceptance, planning, findings, conclusion and reporting. In Table 3, the authors present algorithm for determining the shortage or surplus of assets used in the accounting examination, based on checkpoints and mandatory verification procedures.

This algorithm for determining the shortage of assets can be used not only by forensic accountants, but also by auditors and investigators, as well as for internal needs of the company in detecting misappropriation of assets.

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Table 3. Algorithm (created by the authors) for determining asset shortage (surplus)*

Components of examination	Procedures					
	Accounting system	Inventory and its results	Supporting documents	Accounting registers	Recalculation of examination	Comparison of results of the examination with the result of the inventory
examination	1	2	3	4	5	6
Acceptance / planning						
Purpose	Determination whether asset accounting allows to track the movement of assets and detect balances at the date of inventory	Determination whether inventory results are reliable	determination whether acquisition / disposal of assets, etc., the set and quality of supporting documents complies with the accounting requirements	Determination whether accounting of the assets is accurate and based on supporting documents	Recalculation of the balance of examination assets on the inventory date based on supporting documents	Confirmation or refutation of shortage (surplus) of assets
Identification task	Identification of the asset financial accounting system	Identification of the inventory process	Identification of the circulation of supporting documents	Identification of entries in registers which are not substantiated by supporting documents or which do not correspond to supporting documents	–	Identification of (in) compliance
Evaluation task	Identification of the physical asset accounting system	Registration of an inventory act (identification of inconsistencies)	Determination of (in) compliance with the design of supporting documents			
	Clarification of the specifics of accounting					
Conformity assessment of the accounting system	Conformity assessment of the accounting system	Conformity assessment of the inventory process	Assessment of the completeness of supporting documents	Determination of the amount of unreasonable transactions recorded in registers	Balance of assets	Determination of the size of the difference
		Conformity assessment of the planned inventory act	Conformity assessment of document design			

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Continuation of Table 3

Components of examination	Procedures					
	Accounting system	Inventory and its results	Supporting documents	Accounting registers	Recalculation of examination	Comparison of results of the examination with the result of the inventory
examination	1	2	3	4	5	6
Research objects	Inventory acts, acquisitions / disposals, revaluation documents, analytical and synthetic registers, reports, contracts, computer programs, methodological documents, etc.	Inventory acts, reports, methodological documents, etc.	Acquisitions / disposals, revaluation documents, contracts, etc.	Acquisitions / disposals, revaluation documents, analytical and synthetic registers, reports, contracts, computer programmes, etc.	Inventory acts, acquisitions / disposals, revaluation documents, analytical and synthetic registers, reports, contracts, computer programmes, methodological documents, etc.	Results of recalculation of examination, inventory act
Risk assessment	Sufficiency and relevance (research objects, method of examination, expert professional competence)					
Examination	(forensic) process					
Methods	Analysis, synthesis, systems analysis	Analysis, comparison, regulatory review	Analysis, synthesis, systems analysis, regulatory review	Analysis, synthesis, induction, systems analysis, document revision	Basic principles of accounting	Counter check
Checkpoints	–	Recalculation of examination	Accounting records	Supporting documents, synthetic registers, reports	Supporting documents, synthetic registers, reports, inventory act	Inventory act, recalculation of examination

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Continuation of Table 3

Components of examination	Procedures						Comparison of results of the examination with the result of the inventory
	Accounting system	Inventory and its results	Supporting documents	Accounting registers	Recalculation of examination		
	1	2	3	4	5	6	
Possible violations	-	Inventories have not been made or have not been made formally Inventory report has been falsified	Falsification of some supporting documents Incorrect evaluation	Falsification of some supporting documents Incorrect evaluation	Falsification of some supporting documents Incorrect evaluation	Inventories have not been made or have not been made formally Inventory report has been falsified Falsification of some supporting documents Incorrect evaluation	
Effects	No significant	Significant	Medium significant	Medium significant	Medium significant	Significant	Significant
Risk score assessment	Sufficiency and relevance (research objects, method of examination, expert professional competence)						
Conclusion and reporting							
Conclusion and reporting	Yes / no	Yes / no	Yes / no	Yes / no	Amount of assets	Yes / no	Amount of difference (yes)
Estimated	There are shortcomings, but overall asset accounting is acceptable for drawing conclusions	There are shortcomings, but in general the results of the inventory are acceptable for drawing conclusions	There are shortcomings, but the set and quality of the documents are acceptable for drawing conclusions	There are shortcomings, but overall asset accounting is acceptable for drawing conclusions	Asset balance range, minimum or maximum	-	-
Unable	-	-	-	-	-	-	-

Conclusion

The study clearly shows that in international practice, there is a discussion among scientists about the most effective methods for detecting misappropriation of assets. According to the Association of Certified Fraud Examiners (ACFE), asset misappropriation is divided into three sub categories: skimming, larceny, and fraudulent disbursements. In order to identify a fraudulent scheme, it is necessary to know specifics of asset accounting. Auditors and investigators use different approaches to detecting fraud. Several studies show that it is useful to use forensic accounting methods to detect misappropriation of assets, such as red flags and the Fraud Triangle. The Fraud Triangle explains factors that lead someone to commit occupational fraud: motivation, opportunity, and rationalisation. It is based on years of experience of American investigators in detecting fraud. Red flags are the dangerous signal of employee behaviour or company accounting records that could indicate fraud. Auditing uses red flags to detect fraud, some of which are described in the International Standard on Auditing (ISA) No 240.

Based on analysis of international practice and scientific literature, the authors of the study compiled a list of red flags on misappropriation of assets and developed an algorithm for determining asset shortage or surplus using forensic accounting methods. The research results can be applied in practice not only by forensic accountants and auditors, but also by investigators, as well as for a company's internal needs in detecting misappropriation of assets. Correct determination of the shortage or surplus of the assets and its amount is also necessary in investigation of other economic crimes: bankruptcy fraud, corruption, money laundering, tax evasion, etc. Standards of the International Organization for Standardization (ISO) require mandatory validation of forensic methods, which is possible through international recognition of methods in scientific environment.

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