Information Technology for Fraud Detection

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Abstract

The modern society simultaneously acknowledges a growth and diversification of the activity, and, also, the increased potential of the fraud. This case study focuses on the theoretical ideas regarding the concept of "fraud", and, also, the instruments and computer assisted techniques used to reveal it within the public institution. Throughout a theoretically applicable initiative, the present article tries to outline the characteristics of the IDEA instrument which is used by the Supreme Audit Institutions.

Keywords: fraud, CAAT'S, IDEA, analytical procedures

JEL Classification: M41, M42, M15

Introduction

In the business environment, the risk of fraud is extremely high. Fraud is commonly encountered both in the private and public sphere, its main purpose being the procurement of material and intangible assets. The consequences of fraud are immense and can jeopardize the reputation and the very existence of the organization.The cost of fraud is difficult to be assessed, due to the fact that most of the fraud cases are never revealed to the public, and the non-financial effects are equally important aspects and should not be omitted.

The non-financial consequences can have a disastrous effect for the organization reflected both in the loss of confidence of its clients', shareholders' and other partners', and, also, in the irreclaimable discredit of its reputation.

In order to avoid the risk of fraud which could block the accomplishment of the organizational goals, a self control mechanism should be implemented followed by corrective actions on all levels. This can only be done throughout internal control and auditing.

Fraud is a general term which encompasses a multitude of fraudulent actions from various fields of activity: corruption and money laundering, theft, embezzlement, scams, forgery and use of forgery, deliberate misstatement, fraudulent trading.

Generally, fraud is defined by the Professional Standard 1210-A2A1 of internal audit as „the totality of irregularities and illegal acts commited in order to secure unlawful

gain. Frauds can be commited for the company's interest or against it, both by the employers and, also, by persons outside the organization."

According to the revised International Auditing Standard 240, fraud is defined as a „deliberate act commited by one or more individuals from the board of directors, corporate governance, employers or other third parties, which implies the use of deception in order to gain an unlawful or illegal advantage."

Referring to the same standard, fraud appears as a consequence of mishandling or tampering with data or documents, forgery leading to the misinterpretation of truth. Removing or deliberately omitting the effects of some transactions from the records or documents, or registering into meaningless transactions, in order to conceal financial situations are part of the fraudulent events, as well as the wrongful application of the accounting policies in order to outline some financial situations that might mislead the users.

Fraudulent financial report implies the misinterpretation of truth or deliberate concealment of the values and data from the financial statements, in order to mislead the users.

The fraudulent financial reporting implies the following:

• Fraudulent acts, such as mishandling, forgery or altering the accounting records or the audit documentation used for compiling the financial statement. The misinterpretation or the deliberate concealment of events, transactions or other significant information from the financial statements.

• The wrongful application of the accounting policies associated with the assessment process, classification, or data presentation.

• Embezzlement refers to the theft of a company's assets. Embezzlement can be commited throughout various methods (fake receipts, tangible and intangible assets or tricking an entity into making a payment for goods and services unrendered.) Embazzlement is often accompanied by false documents or records which mislead , in order to conceal the absence of the assets.

The fraudulent financial reporting might be submitted because the administration is forced, both from the inside and outside the organization, to achieve a foreseen target profit (perhaps unrealistic) – mainly because, for the leadership, the consequences of not accomplishing the financial objectives can be significant.

1. Considerations regarding CAAT'S

In the modern society, all the activities require the intensive use of the information technology. In the domanin of fraud detection, the objective of the computer assisted auditing techniques is to support the auditor's work. These applications don't have a particular purpose, they are only used to increase the efficiency and effectiveness of the auditing process. Using CAAT'S can increase the efficiency of the auditing process because the information technology can execute a variety of auditing tasks which require a big budget and, also, an additional time if they are manually performed. CAAT'S allow the increase of the effectiveness of the auditing process by executing some tasks which are virtually impossible to be manually performed. The advantages and disadvantages of this software are presented in Chart no.1.

Chart no. 1

The advantages and disadvantages of using the CAAT'S technology

Advantages	Disadvantages
• Cheaper than any programs developed on-demand for every type of accounting application; • Offers the users a friendly interface; • Facilitates the execution of complex analysis, by accessing data from a variety of accounting applications; • Incorporates random number generators and routines for statistic sampling; • Portable on different computer configurations; • Incorporates the approach used by big auditing companies; • The auditor doesn't have to rely on the staff of the audited organization.	• Initial high development cost; • Relative large amount of time for the verification; • Constraints regarding the necessary equipment should be taken into consideration; • Adequate training needed to fully use the software.

(Source: Adrian Muntean 2002: 149)

Computer assisted auditing techniques can be defined as computer based instruments which can be used in order to increase the effectiveness and efficiency of the auditing process; and alternate definition would be the following: „techniques used by auditors which use the computer as an instrument for data collecting and analysis."

The use of CAAT'S does not change the objectives of the auditing process, it only modifies the audit methodology. In most processing environments, if not in all of them, the audit evidence is either not available on printed paper version, or the paper version is only a derived copy of data in electronic format.Hence, the auditor should rely on CAAT'S in order to collect sufficient information, relevant and reliable.

The information environment, in which every audited company carries on its activities, continuously influences the auditors' work, thus creating new opportunities, new risks, additional rules regarding the safety and acceptable margins of error.

The growth in systems' complexity (e.g. accounting information systems) as well as the large number of recorded transactions led to the almost immediate replacement classical auditing methods with the modern computer assisted techniques.

These modern instruments and techniques can assist the auditor at any stage of his mission, specially in the following fields of activity:
- Checking the precision of the accounting process;
- Testing the security measures within an information system;
- The analysis and control of the existent applications in the system;
- Identifying and assessing the organizational risks ;
- Assessing internal control;
- Checking file integrity;

- Analysing the information of the audited client throughout complex inquiry of the databases, sampling, layering, integration.

Data analysis techniques used in the auditing process rely on the following common techniques:

- Sampling – extracting a set of representative transactions from a file in order to accomplish the audit procedures;
- Integration – used in order to prove the completeness and compliance in accounting;
- Layering – creating a full image whenever the totality of data to be analysed is not homogenous;
- Checking the duplicate records – allows the identification of the errors from the past transactions or the possible fraudulent activities;
- Analysing the payment delays – discovering a payment pattern for a certain period of time, by monitoring the amount of time that passes between the reception of a bill and the actual remittance of the payment;
- Exception reporting – refers to the selection of the records and extracting the data which comply or, conversely, break the specified criteria for a future analysis.

A list of other important applications similar to CAAT'S is the following: ACL, Active Data for Excel, IDEA, TOP CAAT'S. A hierarchy of the aforementioned applications cannot be done , because some of them have trial versions which allow users to evaluate their characteristics, but there are some applications which cannot be assessed because the manufacturer didn't allow this feature.

2. Application regarding the external auditing process in public entities using the CAAT'S technology

The working hypothesis for the following case study starts from the practical assessment of CAAT'S performance in discovering anomalies in various data sets.

According to the provisions of art. 42 alingment (2) and art. 44 letter m) from Law 76/16.01.2002 regarding the unemployment insurance program and the encouragement of workforce occupancy, modified and completed, the unemployment compensation is suspended when the beneficiary joins a full-time form of education.

Starting from these provisions, in order to validate or invalidate this hypothetis, the IDEA application identified the situations in which a person took advantage both of the unemployment compensation and studentship.

In order to test these conditions, the two databases were combined, namely the database containing all the payments made by the County Agency for Workforce Occupancy in 2013 representing the unemployment compensation and the database containing the students matriculated in the academic years 2012 and 2013 within Valahia University from Targoviste.

The processing of the two databases outlined a file located in the archive of the IDEA software (InteractiveDataExtraction&Analysis); the file was exported in .xls format to be processed by the audited company in order to delete certain positions (e.g. students who lodged an application for suspending the unemployment compensation) and checking the remaining positions. Using the CAAT'S technology, the most important sequences

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from the auditing procedure are illustrated by the printscreens executed through the process.
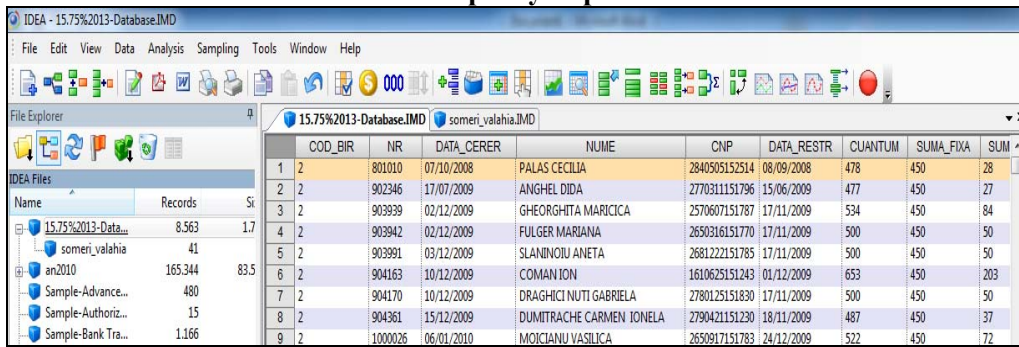
Diagram 1.

Import of the database into IDEA Excel charts
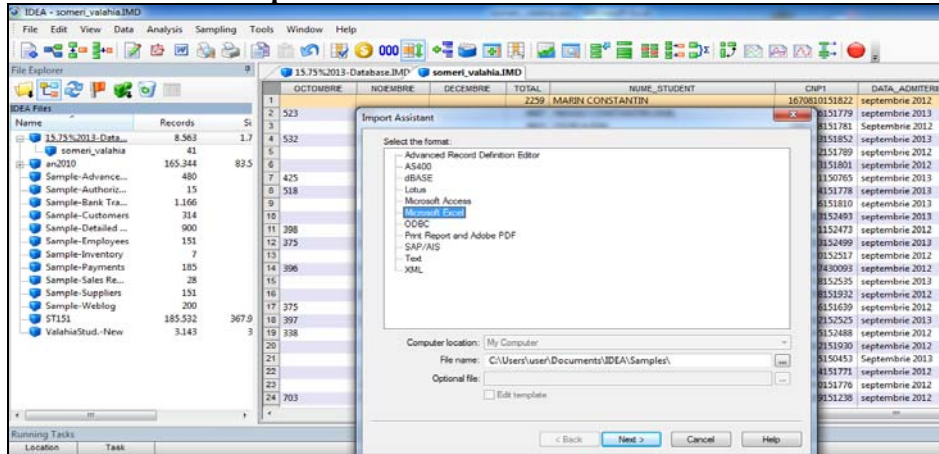
(Source: printscreens from the developed application)
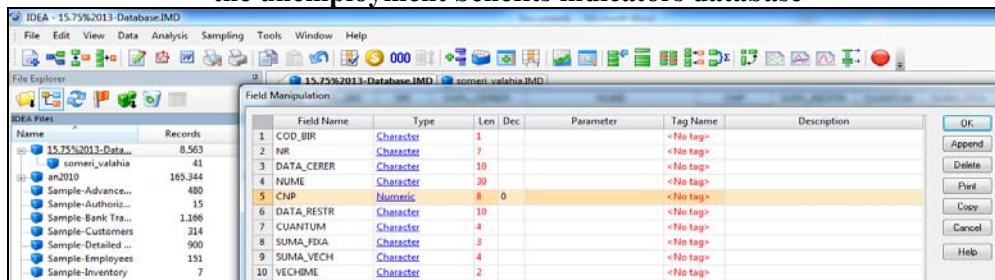
Diagram 2.

Excel database proposed by the County Agency for Workforce Occupancy imported in IDEA

(source: printscreens from the developed application)
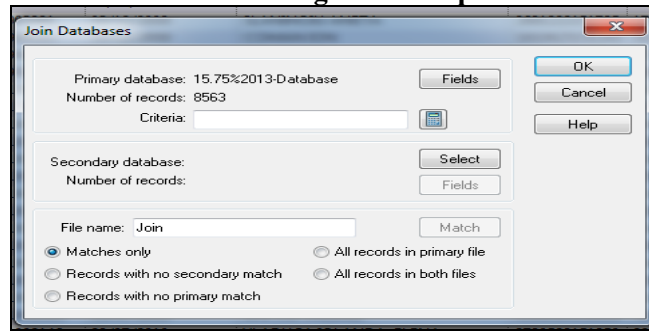
Diagram 3.

Visualizing the format of the fields which compile the unemployment benefits indicators database

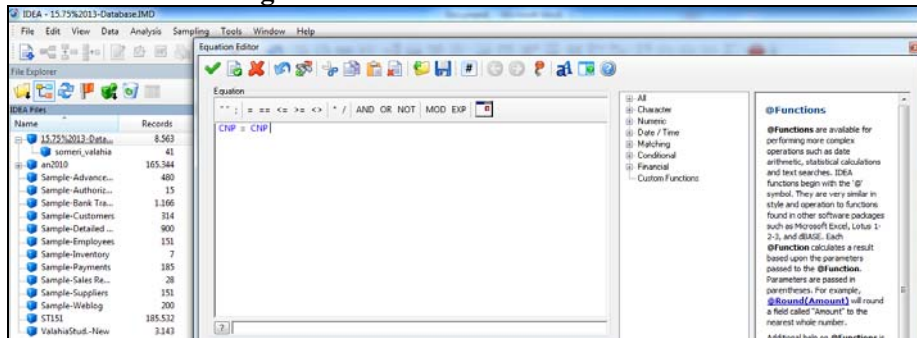*(Source: printscreens from the developed application)*

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Diagram 4.

**Creating a liaison between the two imported databases
in IDEA using the Join option**

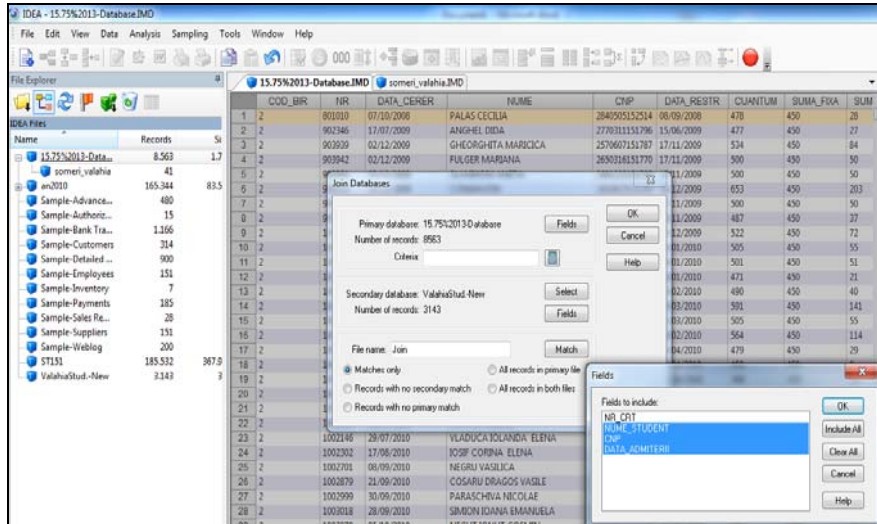*(Source: printscreens from the developed application)*

Diagram 5.

Creating an association rule in the first database

(Source:printscreens from the developed application)

Diagram 6

**Specifying the content of the second database and the fields
to be included in the result of the fusion of the two databases**

(Source: printscreens from the developed application)

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Diagram 7

The result of the fusion between the two databases: a new database which contains a number of 42 positions identified as common in the two databases.

	DATA_SF_RE	IANUARIE	FEBRUARIE	MARTIE	APRILIE	MAI	IUNIE	IULIE	AUGUST	SEPTEMBRIE	OCTOMBRIE	NOIEMBRIE	DECEMBRIE	TOTAL	NUM
1	05/08/2013					425	580	580	580	94				2259	MARIN CONSTANTIN
2	09/10/2013	523	523	523	523	523	0	331	523	523	523	152		4667	NEAGU CONSTANTIN
3	08/08/2013	462	462	462	462	462	462	462	462	119				3815	STOICA ION
4	08/04/2014					390	532	532	532	532	532	532	532	4114	PÎRVAN SORIN-IULIAN
5	02/06/2013							568						568	BINIUC VASILE
6	28/06/2013	703	703	703	703	703	703	656						4874	DUMITRA GABRIEL-VA
7	28/10/2013	425	425	425	425	425	425	425	425	425	425	384		4634	BALEA EDUARD-SEBA
8	01/11/2013	1019	518	518	518	518	518	518	518	518	518	518	17	6216	DRAGNESCU BOGDAN
9	06/03/2013	440	440	440	85									1405	STAICU M. DANIEL
10	13/05/2013	846	479	479	479	479	0							2762	STOICA NICOLAE
11	29/10/2013							809	270	526	398	372		2375	SAVU CONSTANTIN
12	30/01/2014									387	375	375	375	1512	CAMBREA PAUL-OVI
13	15/05/2013		938	375	375	375	181							2244	RADU M. ION CODRU
14	03/12/2013									613	396	396	396	1801	COSTIA ȘTEFAN ANTO
15	31/03/2013	738	375	375	375									1863	SIMION CRISTI-CONS
16	26/02/2014										865	400		1265	MANEA CRISTIAN
17	30/09/2013							496	375	375	375			1621	BARBU IONUȚ-VALEN
18	29/12/2013									602	397	397	397	1793	DUTA NICOLAE-COSM

(Source: printscreens from the developed application)

Conclusions

The present case study outlined some of the features of the IDEA instrument in order to track down the irregularities from the database of a public institution.The algorithms presented are the most commonly used amongst the certified auditors, yet not claiming that I fully understand them or being able to fully implement them.

IDEA is world-renowned for data analysis instruments, combining the power analysis with an extremely friendly working environment. The product does not require technical and professional knowledge from its users and allows combination of functions and unique features.

In the future articles, my aim is to focus on outlining the features of this type of application in the private sphere.

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