audit FINANCIAR

Anul XVIII, nr. 159 - 3/2020

3/2020

Inovaţii în auditul financiar bazate pe tehnologiile emergente

Innovations in Financial Audit Based on Emerging Technologies

Camera Auditorilor Financiari din România

Sumar / Content

audit FINANCIAR
3/2020

Revistă editată de
Camera Auditorilor Financiari din România
Str. Sirenelor nr. 67-69, sector 5,
Bucureşti, OP 5, CP 83

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Indexare în B.D.I.:
Cabell's;
Deutsche Zentralbibliothek für Wirtschaftswissenschaften;
DOAJ;
Ebsco;
ERIH PLUS;
Global Impact Factor;
Google Scholar;
Index Copernicus;
ProQuest;
Research Papers in Economics (RePEc);
Ulrich's

Marcă înregistrată la OSIM,
sub nr. M2010 07387

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E-mail: audit.financiar@cafr.ro;
revista@cafr.ro; http: revista.cafr.ro;
facebook.com/revistaauditfinanciar
ISSN: 1583-5812,
ISSN on-line: 1844-8801

Tipar: SC Print Group Serv SRL
Str. Baicului nr. 82, sector 2, Bucureşti
e-mail: office@printgroup.ro

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audit FINANCIAR
3/2020

Journal published by the
Chamber of Financial Auditors of Romania
67-69 Sirenelor Street, District 5, zip code 050855, Bucharest, OP 5, CP 83
Scientific Director:
Professor **Pavel NĂSTASE**, Ph.D.
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International Databases:
Cabell's;
Deutsche Zentralbibliothek für Wirtschaftswissenschaften;
DOAJ;
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ERIH PLUS;
Global Impact Factor;
Google Scholar;
Index Copernicus;
ProQuest;
Research Papers in Economics (RePEc);
Ulrich's

OSIM Trademark no. M2010 07387
Chamber of Financial Auditors of Romania
Phone: +4031.433.59.22;
Fax: +4031.433.59.40;
E-mail: audit.financiar@cafr.ro; revista@cafr.ro; http: revista.cafr.ro;
facebook.com/revistaauditfinanciar
ISSN: 1583-5812,
ISSN on-line: 1844-8801

Printing:
SC Print Group Serv SRL
Str. Baicului nr. 82, sector 2, Bucureşti
e-mail: office@printgroup.ro

Audit financiar, XVIII, Nr.3(159)/**2020**, *513-531*
ISSN: 1583-5812; ISSN on-line: 1844-8801

Innovations in Financial Audit Based on Emerging Technologies

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Abstract

In the context of assessing the impact of IT concern on financial audit missions, the purpose of this paper is to investigate how new Big Data technologies shape the auditor profession, the methods and tools used. ***Motivation:*** *technology has put its mark on all fields of activity and professionals tend, step by step, to experiment within auditing by testing new technologies; taking into account the hypothesis of large-scale adoption of modern technologies offered by IT, Big Data development and Data Analytics (BDA) represent a highly interesting case, on which the author pleads for debating. The two qualitative and fundamental* ***research methods****, together with the critical observation that consisted in manual selections of the online publications of the professional bodies in audit and accounting, the specialized literature and discussions with IT and audit Big Four specialists support the analysis of Big Data impact, completing previous specialized papers, given the fact that the need for (extended) documentation in this regard is further pointed out.* ***The results*** *of this investigation propose Data Analytics, Hadoop, NoSQL as Big Data top technologies applicable on financial audit missions, in order to simplify audit procedures, improve the organizational performance and reduce the level of risk.*

Keywords: *financial audit; Big Data; Data Analytics; Hadoop; NoSQL; emerging technologies mapped to audit*

JEL Classification*: M42, O33*

To cite this article:
Cristea, L.M., (2020), Innovations in Financial Audit based on Emerging Technologies, *Audit Financiar*, vol. XVIII, no. 3(159)/2020, pp.513-531, DOI: 10.20869/AUDITF/2020/159/016

To link this article:
http://dx.doi.org/10.20869/AUDITF/2020/159/016
Received: 22.02.2020
Revised: 9.03.2020
Accepted: 25.05.2020

1. Introduction

Big Data will change the world (ISACA, 2018 a); Chan et al., 2018), this was the conclusion following the survey conducted in 2014 (61%) and 2018 (53%). ACCA (2019) argues that technology has the potential to revolutionize the audit and the analyzes that require the purpose of this process, analyzes which are high volumes of data (i.e. Big Data). Big Data proposes an avalanche of changes in the business models, the adoption of an automated trend and the acquisition of new prospective approaches from the professionals, in order to embrace the opportunities but also to face the challenges generated by the IT impact. For auditors, the evolutions in technology require documentation and technological preparation (Rîndaşu, 2016) in order to perform a high-quality audit.

Given the fact that the Big Data technological phenomenon and the technologies that derive from this field have not been explained so far to all stakeholders, present and future users of modern technology, this work complements the research direction proposed by Appelbaum (2017) to deepen the impact of Big Data and Data Analytics (BDA), an area of research analyzed over extended periods of time (Moffitt & Vasarhelyi, 2013; Goes, 2014; Krahel & Titera, 2015; Vasarhelyi et al., 2015; Klous & Wielaard, 2016; Alles et al., 2016; ISACA Journal, 2018; Salijeni et al., 2018; Gepp et al., 2018; ACCA, 2019) with whom the author aspirate to contribute by initiating discussions on this topic, namely (1) how these technologies can be mapped on financial audit missions, (2) which are their particularities and (3) why are suitable for the auditing profession. Blockchain, RPA, AI, Machine Learning and the Deep Learning subset will be analyzed in a forthcoming article "Emerging IT Technologies for Accounting and Auditing Practice", following the same methodological approach.

Specifically, this paper aims to contribute to the current research by: (1) developing technical notions of BDAs based on qualitative research and (2) understanding how BDA technologies can be integrated into the financial audit missions. In this regard, we considered a fundamental research process, conducted through debates with IT and audit specialists of Big Four companies. From a technical point of view, the development of the notion of these emerging technologies in the financial audit is based on the extended documentary research, by critically examining specialized literature, topic debates, data sources with technical explanations (i.e. books, websites), technological audit reports issued by the Big Four companies (i.e. KPMG, PwC), reports and journals issued by professional bodies and organizations in the financial and IT field (i.e. ACCA, ISACA, AICPA). The integration of these technologies in the financial audit missions is proposed by the author, being illustrated through representations of (practical) schemes that highlight the technological processes, mathematical algorithms and factors that influence the results of running scripts that define the software (Chan et al., 2018). Although in Big Four companies the applicability of BDA is in the development stage, and still at the level of documentation for larger analyzes and implicitly, more precisely, the author hopes that this research will find answers to 4 important points, on which the business environment seeks for answers:

- What will be the technological impact of BDA development for financial audit missions?
- How emerging BDA technologies can be mapped in these missions?
- What is the working mechanism (of these technological innovations) and what are the algorithms involved in data analysis?
- Currently, what is the role of the auditor? Is there a professional redefinition?

This article can contribute with concrete examples for the interested public and debate initiations regarding the emerging technologies functionality and their mapping (where applicable) on financial audit missions. For Romania, the financial audit is the coordinating form for all types of audit. The general audit rules are issued by the Chamber of Financial Auditors of Romania and are considered reference criteria for any type of audit.

The examination of the reports issued by the Big Four companies and the professional bodies has as main objective the highlighting of IT impact that must be embraced by the auditors. According to current estimates, by 2025, international companies specializing in audit and consulting services (i.e. Big Four) will hold a substantial share of the audit market (Bhaskar and Flower, 2019). I consider that the examination of these reports represents a solid foundation for the chosen topic, together with the qualitative research of the specialized literature and fundamental technical documentation (books, websites) realized through critical observations, selecting only the necessary information. The present study follows trends, actions

and predictions in the financial audit, but also factors involved in the analysis and decision-making process. The present paper can be useful for the young generation who intend to follow this profession, but also for actual auditors, to adapt to new requirements and to assimilate new technical working skills.

2. Analysis of literature and specialized publications

In the context of confidence restoring in the effectiveness of this process (i.e. financial audit) following the Enron Corporation, Carillion economic scandals (Bhaskar and Flower, 2019), the Sarbanes-Oxley Act (SOX) was adopted in 2002 in order to ensure the accuracy of financial information. Thus, the financial audit examines the compliance of financial statements with the international accounting standards (IAS) and the international auditing standards (ISA), to express the audit opinion. From Sarbanes-Oxley and till present, the quality of the financial audit has been considerably improved. In this era of emerging technologies, auditing is an ever-changing profession since technology impacts all areas of this profession (Chan et al., 2018; Schmitz & Leon, 2019).

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Looking at the past, the financial crisis (2006-2010) was the first impulse that "pushed" companies to pay greater attention to the presentation of financial statements and the adoption of advanced professional skepticism by the auditors, ensuring the accurate representation and the absence of errors in the declared amounts. Later, the introduction of IFRS as an international financial reporting standard for all listed companies in the EU, while the option of converging with IFRS for listed and unlisted companies, without equity investments, is the second argument favoring the paradigm shift in audit missions. Starting with the XIX century, the emergence and development of technology is the third aspect that favors recent discoveries in the working methods of this profession. By the emergence and development of technology, we understand that IT ensures the integrity of information systems and financial reporting, in order to prevent economic-financial crises. The opinion of investors, auditors, CEOs, CFOs and stakeholders is that IT improves audit activity and helps in increasing the quality, accuracy of results and the allocation of shorter working time for financial data analysis (PwC, 2019).

From 2000-2010 years, the audit has encountered a period of progress due to the intense development of technology. Distributed Computing enables data storage in the Cloud and the use of IT software that processes data in a virtual environment. Between 2010-2020, Big Data appears and develops in the fields of accounting and auditing (Vasarhelyi and Kogan, 2015; Moffitt and Vasarhelyi; 2013), during which various audit software (e.g. CIEL Audit and Review, Gaudit) appear. These software supports the financial auditor in order to carry out the audit activities, creating a hybrid environment in which the systems are responsible for monitoring a voluminous external data environment (Krahel and Vasarhelyi, 2014).

According to the survey conducted by ISACA (2018, b), 94% of the interviewees are aware of the change in the financial sector and 62% believe that **auditing will become a more IT-oriented profession**, this mention represents the second controversial hypothesis of this paper, contrary to KPMG (2018) where it is argued that the methodology of applying the audit should not necessarily be adapted to Big Data, as IT is not absolutely necessary in methodological procedures. The acquisition of IT skills and working abilities better than in present are foreseen in the future of this activity sector. IT audit or IT audit systems is a process that allows the hardware and software infrastructure evaluation of the audited company. The IT audit is necessary in establishing the resources-needs connection and verifies the compliance with the working procedures, the way of using the software, the existence of the IT equipment and the existing configurations of the client's network.

For an IT auditor, any audit mission is based on the verification of general IT controls, such as: the correct

functionality of the technologies implemented, the hardware and software infrastructure of the audited company, and the granting of access rights. The financial auditor verifies the recording of transactions in the computer system according to the original documents, representing the accounting basis record. The verification action represents the financial audit essence, that is why it is possible that this term (i.e. of verification) to be frequently encountered in this paper. By following the application of specific standards, reporting frameworks or audit guides, the compliance of the financial statements is verified (Rozario & Thomas, 2019), while the IT audit will be responsible with user rights verification, access or modification/ deletion of access right as a result of hiring, changing the company's position or resignation, the access password integrity, the hardware and software organizational components infrastructure, the list of active and inactive users and implicitly the creation of IT tickets to the support department.

This type of audit involves responsibilities and specific technical skills. The IT audit consists of studying the client's network, analyzing existing licenses, organizing the software legalization process, identifying errors, analyzing infrastructure deficiencies, recommendations and suggestions for optimizing the company system, drawing up the organizational plan, developing long-term strategies that are envisaged the virtual prototype identified from the analyzed infrastructure. Are analyzed the activities carried out by companies, due to the use of complex ERP systems, the implementation of the services provided by Cloud (e.g. Hybrid Cloud, Private Cloud), but also the adoption of other business models (e.g. remote type connection through the Remote Desktop Protocol - RDP application or the adoption Bring Your Own Device - BYOD solutions.

The future signals on changes in the auditor profession, namely a new perspective of the auditor: an IT-based audit, with the objective of certifying the company's transactions, assurances on the correct implementation of information technologies. Especially in Big Four companies, the audit has become an **IT audit** or **continuous audit** or **hybrid audit**, where the IT auditor performs **general IT controls**, such as granting user rights, access or deletion of access rights following the status change:

- employment, change in company's position or resignation (i.e. a list of changes), but also the existence of the IT ticket regarding these changes;
- the list of active and inactive users, through a fast verification with HR department;

The IT audit aims to comply with internal regulations, such as the **password user access integrity** at the company level, provided in a folder (e.g. Active Directory).

Example: In the company's security policies, certain rules of internal procedure are specified, such as: the length of a password to be greater than 12 characters, at least two characters to be set in upper case, at least two special characters, and based on the password history, not allowing the same password to be set, in addition, the frequency of change to occur at least once a calendar month. Password history means that you cannot set *popescu12345*, given that the previous password was *popescu1234*, the system only allowing the password to be set as *popescu5678*. Through this audit test, which is called Test of 1 (in Big Four companies), the IT auditor examines compliance with this internal organizational procedure.

Currently, analyzing the impact of information technology on the audit practice and the auditor profession has become more than a necessity. Auditing in the presence of technology and efficient use of data analysis techniques are two essential features for meeting the audit objectives (Pathak, 2005). At the organizational level, there will be restructuring at the process level, the working mode at the procedural and practical level will be different, the constitution of the audit teams will be aimed at a balanced percentage of accounting specialists, auditors, IT and experts in Data Analytics, which will lead to the emergence of new work tasks and the redefinition of this profession (ISACA, 2018 b).

Financial auditors need to understand the new BDA technologies and to translate them into the audit mission stages. To ensure and protect the quality of the audit, it is necessary to improve IT skills (Janvrin and Wood, 2016; Omoteso, 2016). In order to acquire these skills and learn the specific competencies in the information technology sector, auditors will need training, IT professional training and improvement in the processes performed. The analysis and reflection on the changes in the profession in order to acquire the necessary skills

represent actions that must be learned (Stanciu, 2015; Chan et al., 2018; Farcane and Deliu, 2020). Proper professional training contributes to improving the standard of audit activity (Salijeni et al., 2018) and establishing a more controlled working environment. Developing emotional intelligence in order to establish a closer connection with clients, in addition to acquiring the technical skills of working in coding, cryptography and hashing, are future aspects, which should be considered by the auditors, for learning and adaptation vision.

The dynamics of IT brings opportunities and risks in the financial audit missions, which denotes a relationship of divergence, opportunity-risk, "imposed" through the development of IT. Traditional auditing continues to change following the implementation of advanced ERP systems, increasing online transactions, Cloud technology and rapid access to data and information (ACCA, 2019), representing opportunities generated by IT dynamics, followed by sophisticated cyber-attacks, representing the risks that organizations face. For a better understanding of the aforementioned IT effects, the author will explain how these new information technologies work and how they contribute to changing the auditor's traditional way of working. The audit procedures and tests applied in the financial audit will evolve significantly, starting with the method of sampling historical information, 100% auditing the transactions, in real-time or at frequent intervals, favoring the emergence of continuous audit (Chan et al., 2018; Schmitz & Leon, 2019). Thus, we are witnessing a high degree of automation of the technology that has led to a process of obtaining current, real and relevant data. The full verification of transactions is due primarily to the development of ERP systems.

Since the 1990s, the adoption of ERP has undergone a period of rapid expansion. The Enterprise Resource Planning (ERP) platform gathers all the processes of the company and allows the data flow available to the platform users. Due to the various modules (e.g. Administration, Control, Accounting, Nomenclature, Reports, etc.), ERP systems automate and standardize the operational processes, contribute to the efficiency of the working time and ensure integrated management of the activities through the access to a common database. This database uses standardized data as a result of common definitions and experiences of ERP users. These basic concepts establish connections with defined processes of the company, specified by the workflows of the business departments (e.g. Finance, Human Resources, Operations), facilitating the connection between the user and the system.

The basic principle of ERP consists of the centralized collection of data for accessing them, data that are obtained from several activities and from all ERP users. Data registration is performed either by entering the data by the operators, transfer between third parties or importing from other databases. Over time, the implementation costs have increased and the hardware resources have proved insufficient to keep up with the needs of the organizations, due to the development of technology and new security requirements (e.g. the emergence of vulnerabilities at the computer system level, cyber-attacks, hacking).

More recently, starting with the new millennium, the Cloud is emerging as the main delivery mechanism for new technologies: Blockchain, AI, Machine Learning, Cognitive Computing, intelligent process automation and Internet of Things (IoT). Blockchain, AI, Robotic Process Automation, Machine Learning and Deep Learning subset technologies will be researched and designed on financial audit missions in a forthcoming article “Emerging IT Technologies for Accounting and Auditing Practice”, the author also contributing by analyzing other technologies what can be adaptable in this area.

The System as a Service (SaaS) delivery model for ERP enables the execution of services on a network of remote servers. The IT infrastructure is stored outside the company. The Cloud provider has control in the integration of the applications, the updating and development of the best functionalities, necessary to run and maintain the company in the competitive environment. The ERP Cloud service provider is responsible for managing the IT infrastructure, integrating software applications and developing new system properties. The assimilation of a Cloud model has become necessary for companies wishing to continue their business, opting for a software update several times a year, at the expense of a costly upgrade that takes place over a longer period of time, between 5 and 10 years. However, companies are reluctant to migrate to a public cloud and prefer hybrid cloud architectures. This choice is due to the combination of the classic benefits of public media and internal control, being found in a Hybrid Cloud.

An ERP Cloud requires a constant Internet connection to access hardware and software at any time. ERP SaaS works through a network, more precisely through a property lease system, which is not conditioned by Cloud technology. Both solutions are advantageous in terms of the initiation method, although, financially speaking, ERP SaaS could outweigh the cost of an ERP Cloud if the organization opted to purchase the license from the outset. Moreover, in a Cloud system, the data security would be up to the Cloud provider, who is responsible for implementing a secure and efficient technology.

Starting with 2000, Doug Laney presents the term Big Data by joining three elements: volume (i.e. data collection from various sources and storage of massive data), speed (i.e. speed and shorter processing time), variety of data (i.e. structured data, unstructured, digital, email, video, audio, financial transactions). These characteristics were followed by the veracity of the data (i.e. the uncertainty that requires verification) and their value, deduced from the data analysis (Saha, 2014). Data variety is an important feature of Big Data due to the collection of data from various sources (e.g. social media, Web, mobile platforms, corporate systems). The variety in data helps companies in detecting economic trends, but also in establishing links between transactions, facilitating the procedure of conducting the financial audit.

Due to the benefits offered, Big Data investments seek to maximize management in each company. Big Data does not answer the question "why?" it happens, but to the question "what?" it happens. Big Data offers answers and solutions to many requests and challenges from customers or management. Big Data is an invaluable filter for future causal analysis and contributes to the appreciation of the world in which we live in a much more complex way than has ever been perceived (Klous & Wielaard, 2016).

Today, through Big Data, companies have the opportunity to keep and collect a lot of information, which in the past was practically unavailable. This information is collected from internal sources, based on past records or old searches by the company. In addition, devices used daily, at the individual or organizational level, constantly use data to collect information and perform various functions.

Example: When a user first visits a website, a cookie (i.e. message in a text file) is loaded by the webserver on the user's browser, a cookie identified by a unique ID, which allows identification of preferences in the following visits. This action is repeated on the server page and through the browser, whenever the user visits a website. Once this (collected) information has been identified, it will be possible to connect the user to information already stored on his profile, which results in preferential browsing.

Big Data is due to the increase in the number of transactions, both online and offline. Computer programs contribute to the processing of structured, semi-structured and unstructured data, processing them quickly and accessing any kind of service, at any time. This software is based on algorithms that process information at a phenomenal speed (Chan et al., 2018). The decision is calculated by computers that make the connection with the user's request in a very short time.

Example: For any company, the digital transactions performed are constantly increasing. Any transaction, payment or action by the Internet user contains information, which is subsequently processed through a self-service network. Most of the time, a transaction is based on sub-transactions. An interaction with a client is often constituted of sub-transactions, that is, many points that are moving between a starting point (e.g. ATM, other self-service devices) and an endpoint (i.e. the host authorization).

Another factor that has contributed to the growth of online transactions is the emergence and (unlimited) connection to the Internet, a service that is currently available at an affordable price. Easy access to the Internet is due to the development of efficient infrastructures and technologies that allow continuous navigation and fast data transfer. The Internet is the growth proof of online transactions and hence the emergence and development of Big Data. The data resulting from transactions helps to prepare reports, situations or statistics, which can be found in any type of data (e.g. structured, unstructured, semi-structured) and in any format (i.e. image, sound, video, text etc.), providing auditors indications and answers to questions such as:

1. Were there any changes in the process of completing the transaction from the ATM?
2. Did the transactions take place in a normal way or not? If not, what has prevented the normal flow of money withdrawal?

3. Was the working procedure followed before cash withdrawal to the client (the existence of a balance greater than or equal to the amount withdrawn from his account)?
4. If an unauthorized card was introduced in the ATM, what does it seem it was not issued by an authorized bank, what were the measures taken?

3. Research methodology

At the micro-level, the paradigm shift brought about by the IT effect in auditing is known at a superficial level. The specialized literature strives to define in a concrete way the impact of IT on financial audit missions. Thus, in order to define this phenomenon as accurately as possible, it is necessary to go through some preliminary steps, necessary in explaining this technological trend and in clarifying a few essential aspects towards: understanding the new technologies, analyzing the data, being familiar with the stages in the financial audit missions and learning the rationale professional auditor. In order to understand the acceptance of the IT effect in this type of audit, it might be considered the deepening of several specialized areas, such as: accounting, business valuation (i.e. calculation and pricing, estimating the company fair value), economic-financial analysis, financial audit, computer systems for management database. Achieving this knowledge, in addition to international auditing and accounting standards, expressing value judgments and applying professional judgment would integrate a supportive research framework in understanding this topic: "Innovations in financial audit based on emerging technologies".

In order to achieve this objective, the author has adopted two types of research, namely qualitative research and fundamental research, considered the most appropriate to achieve the objectives mentioned in the first section of this paper. The impact of IT debated by the specialized literature and the professional accounting and auditing bodies, together with the discussions controlled with IT and auditing Big Four specialists, allowed to create a fundamental connection type, through fundamental and qualitative strategies. Through the qualitative research, I have fixed the technology - financial intercorrelation, interpreted the information of the existing structures and relationships with the way of conducting an audit mission of Big Four companies and transposed them into schema-like information flows. Quantitative research would not have provided sufficient information, more precisely a comprehensive perspective on the approach that is intended to be demonstrated for the purpose of the present study, limited to a data set, limited in providing sufficient information about the reasons that are the basis for the BDA adoption. The occasion of the qualitative research adopted in this paper is due both to the fundamental research and to the critical observation of the author, along with the way of selecting the scientific papers that highlight controversial hypotheses from the specialized literature, professional bodies, but also the applicability of Big Data technologies in financial audit, following discussions with Big Four specialists in the interest areas of this paper, audit and IT.

The article aims to analyze the impact of IT on financial auditing, which is currently a topic of interest in the global economy. This aspect arises from the analysis of the specialized literature and the related publications, where a predominant interest was found on the Big Data and Big Data Analytics topic, as mentioned in the introduction of this paper. The critical observation applied in this paper consists of rigorous documentation of the debates issued by the professional accounting bodies, which was achieved through an online search of the most recent and concise news/information regarding the effect of Big Data and Big Data Analytics. Scientific articles indexed in international databases were consulted, such as: Emerald Group Publishing, JSTOR, Scopus, Web of Science, Springer Science + Business Media, ScienceDirect, ProQuest, Elsevier, but also the website of the American Accounting Association, the social network Research Gate, Financial Audit Magazine, Semantic Scholar and Google Scholar search engines. An online search of results was done by keywords in both Romanian and English, such as: "audit and technology", "impact of technology in the audit", "financial audit and Big Data", "Data Analytics in the audit", „Challenges in the audit profession".

For this article, only the relevant researches from 2013-2019 were included, which concerned the impact of BDA in the financial audit. The sorting of articles and publications was accomplished manually, by critically reading their content in advance and including them in this paper, representing the way of specialized works selection. Thus, for the research results are mentioned specialized research, scientific articles, international

publications and books that have debated and initiated discussions on the current state of emerging technologies.

The present research contributed first to the author's understanding of the emerging technological concepts and secondly, the transposition in an applied way of the acquired information, by mapping the Big Data technologies in the audit profession. As a result of the free discussions conducted with the Big Four specialists and the analysis of the specialized publications, the researcher interpreted the information and tried to understand the vision behind the received answers and the investigated articles. The definition and influence of emerging technologies in the financial audit are commented on throughout this paper. I seek to understand this impact because in the applicative part of this paper the way of working of these technologies is outlined, the logical schemes are represented on this technological process, are detailed key algorithms that compose and develop the present industrial revolution 4.0, but also debates regarding the question "why?" these technologies facilitate the work of the auditor, which is currently extremely time-consuming.

4. Results and discussions

4.1. Big Data analysis through scientific research and specialized work

Big Data is based on technologies that converge to meet the extensive demands of information users. Financial auditors could not fully process the amalgamation of data resulting from transactions without the existence of Big Data and Data Analytics tools, in real and accessible time. Despite the outlandish claims of many industry commentators, it is known that many companies are still struggling to understand the Big Data phenomenon. While big companies, LinkedIn, Google and Facebook are already working with Big Data, for medium-sized companies, Big Data is a challenge, both in understanding this technology and the decisions to be applied with Big Data (Goes, 2014). The confusion is heightened by the diversity of business solutions and software applications designed to work in the Big Data context. **Table no. 1** presents the Big Data influences in the financial audit of literature and specialized publications in chronological order, in order to capture the debates and views on this subject.

Table no. 1. Big Data research in auditing literature and specialized publications

Research year	Influence on financial audit	Article name	Author
2013	- Big Data involves any kind of data, from any kind of source. - Auditors will initiate new data mining and automation verification processes.	AIS in an Age of Big Data	Moffitt, K. C., Vasarhelyi, M. A.
2014	- Management still does not understand this technology and how the organization could be helped.	Big Data and IS research	Goes, P. B.
2015	- Big Data is a resource for those who know how to use it. - Big Data should be adopted by accounting and audit firms.	Consequences of Big Data and formalization on accounting and auditing standards	Krahel, J.P., Titera, W.R.
2015	- Big Data development is fundamental in accounting and auditing processes. - Big Data development could contribute to changes in reporting standards.	Big Data in Accounting: An Overview	Vasarhelyi et al.
2016	- Big Data is an invaluable filter for past, potential and future causal analyzes in financial audit.	We are Big Data	Klous & Wielaard
2016	- Big Data will become a necessary technology for auditors. - Auditors will find that Big Data is inevitable to use, especially when Big Data is already in the implementation phase of the client.	Drivers of the Use and Facilitators and Obstacles of the Evolution of Big Data by the Audit Profession	Alles et al.

Research year	Influence on financial audit	Article name	Author
2018	- The analysis conducted by ISACA concludes that Big Data will change the world. - However, management does not understand this technology and how the organization could help. - The needed skills for Big Data represent a challenge for users. - The inability of the auditors to work with Big Data could lead to a competitive advantage or future professional opportunities lose. - The existence of Big Data in the audited companies implies for the auditors the adoption of the same business solution applied by the client. - Using Big Data by both auditors and clients, the audit process performed will increase the confidence in the effectiveness of this process and will help to maintain a closer connection between them.	Data and Data Analytics Progress During the Last Four Years	ISACA Journal
2018	- A change in accounting and audit standards would add value and relevance to both economic processes.	Big Data and Changes in Audit Technology: Contemplating a Research Agenda	Salijeni, G., Samsonova, T. A., and Turley, S.
2018	- Although the Big Data system involves multiple benefits through its characteristics (i.e. volume, variety, speed and veracity), the audit profession has hardly adopted this concept.	Big Data in Accounting and Finance: A Review of Influential Publications and a Research Agenda	Gepp et al.
2019	- The structured information Big Data is only a fragment of the infinite universe of data (unstructured, semi-structured).	Audit and technology	ACCA

Source: Author`s processing

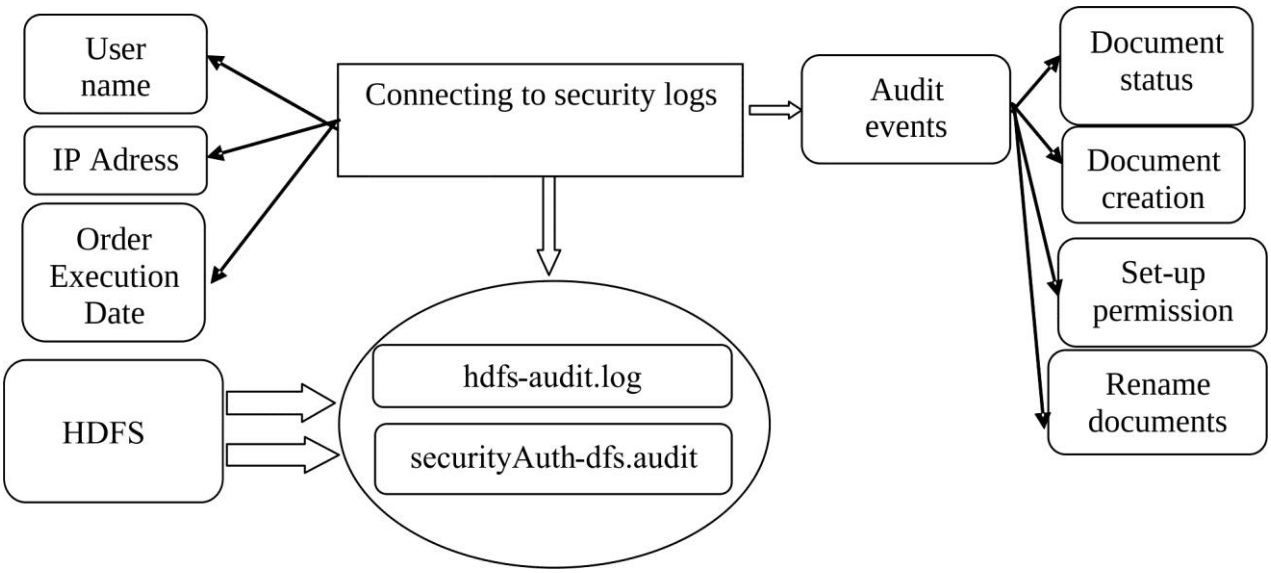
4.2. Big Data architectures and technologies through Apache Hadoop

As a result of Big Data implementation, Big Data Cloud analysis can be performed using Apache Hadoop, a constantly developing technology that offers adaptability to companies in modern times. Hadoop is a set of open-source software utilities for Cloud Computing, which stores data in a distributed manner and in massive quantities, processing them in parallel. This allows the use of a network of multiple computers, which solves problems sent by the client. The input data is divided into 128 Mb blocks and then moved to different nodes (i.e. computers). Since all data blocks are stored on data nodes, the user can start processing the data. Then, the resource manager schedules the transmission of data received from the user on individual nodes. Finally, after all the nodes process the data, the output is written back to HDFS (i.e. data warehouse), via MapReduce, being the data processing engine, specifically the Hadoop clusters implemented for Big Data applications. MapReduce program consists of running two functions, also called: Map and Reduce, pillars that ensure the processing of data stored in HDFS. The advantages of MapReduce are the processing of huge amounts of (raw) data at phenomenal speed, the elimination of duplicates, the ability to process a multitude of data in parallel. Due to its unique scalability property, MapReduce can run on thousands of nodes, without compromising data analysis performance.

Returning to HDFS, it offers 2 different audit logs: hdfs-audit.log – used for the auditor's general activity and SecurityAuth-hdfs.audit – for the audit activity of the authorization. Configuring these logistics files involves connecting to security logs. An experiment was

undertaken by Ahmad et al. (2019), where existing audit logs were used to verify the BlockTrail prototype on the Blockchain network. The level of correctness and consistency was verified at the level of this network through audible events, which shows different actions performed, such as status, creation, permission setting, document renaming. Logs from logs show username, recipient of order execution, date of execution of an order, IP address and other information. ***Figure no. 1*** presents the HDFS functionality that could be mapped in the financial audit missions.

Figure no. 1. HDFS functionality mapped in financial audit missions

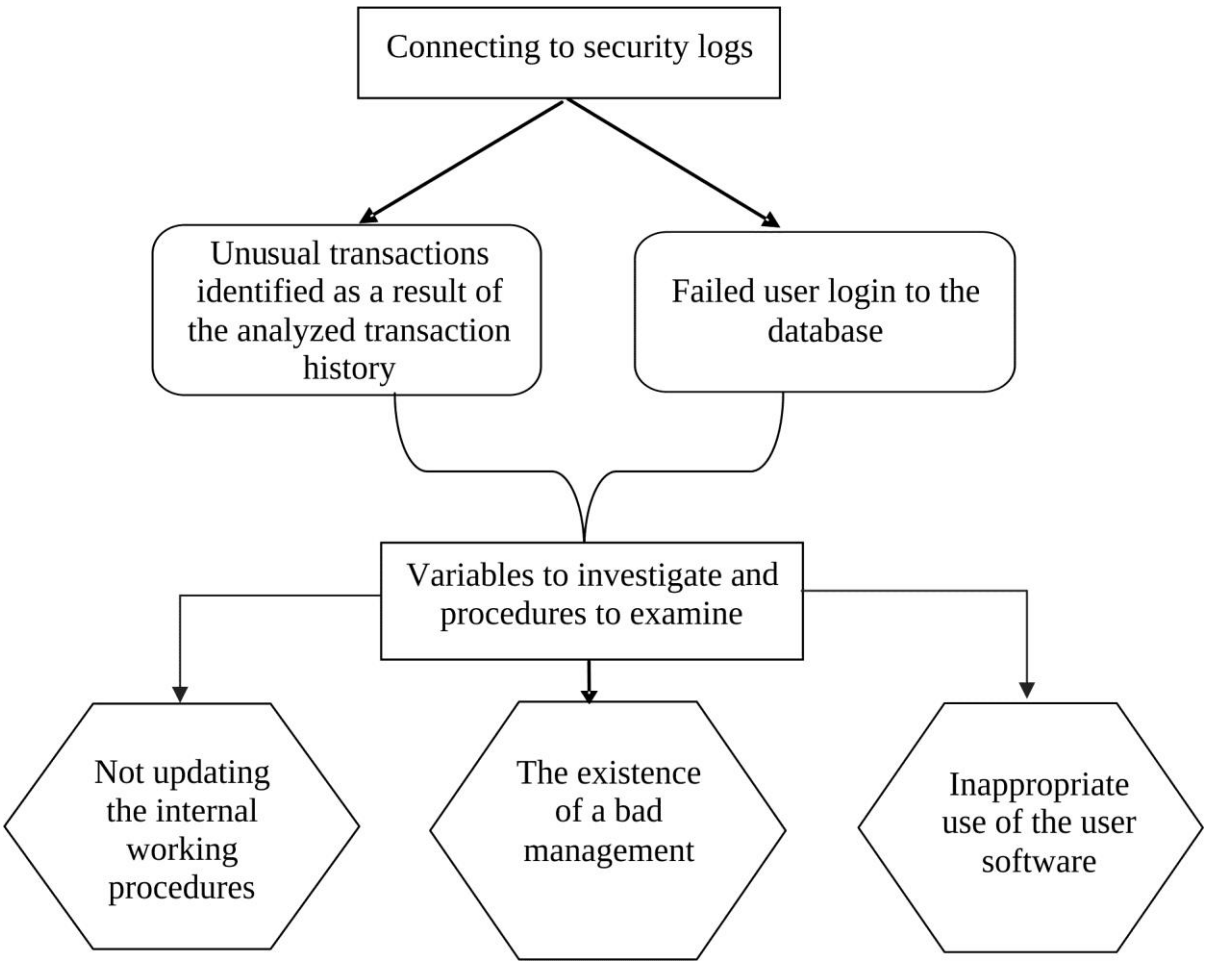


Source: Author`s processing

Also, all failed access attempts are logged. By verifying audit logs, unusual transactions or unsuccessful attempts to connect to the audited company database could be detected. These results are variables that require examination and could have as main causes: failure to update the internal working procedures (the user who logged in has access rights but were not granted by the IT department), the existence of faulty management (insufficient knowledge of HDFS) or the inadequate computer software use (incorrect implementation of the two audit logs).

Another advantage for financial auditors is that Hadoop own tolerance error, resumes the command and allows security analysis and storage of Advanced Persistence Threats (APT) to deepen available security tools. The Hadoop provides a response to "blocks" on the cluster, identifies the similar data groups and distributes the processed data by dividing that command into a series of independent tasks. These tasks run in parallel on the computer cluster, thus increasing the amount of data analyzed by obtaining a shorter time and varied processing. In ***Figure no. 2*** is graphically presented the utility of Hadoop in the financial audit, by connecting to the security logs and possible causes that led to anomalies in the operational processes.

Figure no. 2. Implications of connecting to security logs



Source: Author`s processing

4.3. Architectures and Big Data technologies — SQL and NoSQL

Running SQL on Hadoop allows the application of similar SQL techniques, namely running queries, which makes it extremely versatile and easy to use in data analysis. Users expect Hadoop SQL technologies to support common Business Intelligence tools, such as Tableau and MicroStrategy platforms for data visualization, custom technical analysis, conversion of CSV and PDF reports, or Excel and Access files. From my point of view, the auditors should incorporate this technology in the audit missions, taking into account the offered tools, efficiency and speed for processed data.

The execution time of SQL queries on Hadoop range from milliseconds to minutes, depending on the complexity of the query, analyzing a smaller amount of data in more detail.

NoSQL summarizes very large data sets, from non-relational or distributed databases, opposite to SQL where data are found under structured databases. NoSQL helps to analyze unstructured data and store data in several ways: document-oriented databases (e.g. MongoDB, CouchDB), column-based, graphical representation (e.g. Neo4j, GiraffeDB) or organized as a KeyValue store (e.g. Redis, Cassandra, MemcacheDB). NoSQL offers flexibility by creating documents that do not have a previously defined structure. The use of

NoSQL provides a unique structure for each document. NoSQL has appeared as a necessity for a simpler design and due to its horizontal scalability (i.e. the ability of a system to support a large volume of data by adding more computing devices to the system). NoSQL is preferred when working with huge amounts of data or in real-time web applications (i.e. transactions, notifications, SMS alerts), greatly improving response time.

The inclusion of NoSQL in the financial audit analysis performed would allow the structuring of the non-rational data in a unique way, conceived by the auditor. Many commands in the operating system become automatic by accessing the "sort" or "find" commands and innumerable other UNIX shell utilities, which are useful in the command line interface between the user and the operating system. Big Data could be structured in various ways, due to the flexibility offered by this storage mechanism. Studying the data and modelling it would allow a personalized professional judgment achievement. The possibility of collecting data from multiple sources and analyzing them, without needing structured data, provides the auditor extended perspectives for detailed analysis (where appropriate), as well as an imaginative projection in proposing solutions to improve processes. **Table no. 2** presents the SQL and NoSQL properties, which could be compared and examined so that the appropriate mechanism for the audit mission type is adopted.

Table no. 2. The SQL and NoSQL properties

SQL (Structured Query Language)	NoSQL (Not only Structured Query Language)
The programming language that allows writing queries, writing and executing certain syntax (SELECT, FROM, WHERE, GROUP BY) and including existing parameters in fields/columns	Summarizes very large data sets, in real-time. For example, ID, quantity, price, location are data that are contained in databases, (in some cases) as duplicates
Structured or relational database	Non-rational or distributed databases
It already implies a certain schema, called fields/columns containing data	It does not already involve a schema. Due to its flexibility, data could be added anytime and anyway
Users could work with several tables, because of the relationship between them	There is no relationship between data, but these relationships could be created manually
Horizontal scalability is impossible to achieve. Vertical scalability is possible	Both horizontal and vertical scalability are possible
Restrictive in large data analysis, but allows to run quickly queries, on smaller data sets	Suitable for financial audit missions because large volumes of data could be read and explored, with flexibility in selecting the database

Source: Author`s processing

Big Data allows access to information in different extended format and 100% verification of the company's transactions (IAASB, 2017), surpassing the sample testing. With the Computer Assisted Auditing Techniques (CATT) help, the auditor analyzes the transactions in its entirety, and the company's image is substantially more relevant, qualitative and reliable. CATTs (e.g. Caseware IDEA, ACL, Pentana) allow the verification of a large volume of data managed in order to identify risks, inconsistencies and errors, implicitly offering a broader view on the audited financial processes. Tens of thousands or millions of transactions could be sorted, filtered and analyzed (Stanciu, 2015), facilitating the discovery of high-risk items (KPMG, 2018; ACCA, 2019). In the audit process, CAAT became synonymous with the concept of Data Analytics, a term that will be discussed during this paper. Through efficient use of intelligent Data Analytics solutions, a major innovation for the auditors is expected, methodologically and professionally (KPMG, 2018). Above were identified studies, process schemes, advantages and comparisons of the support provided by Big Data, such as: describing a spectacular growth of data that complements many of the traditional analyzes, possible changes in the international accounting (IAS) and audit (ISA) standards due to a new way of working, necessary skills for interpretation (HDFS audit logs) and choice of data retrieval mechanism (SQL vs. NoSQL). As a result, Big Data contributes to a complete analysis. Achieving this goal also requires (in a time) useful

processing. This fast, varied processing is due to the emergence of Big Data Analytics.

4.4. Big Data technologies – Data Analytics

A first perspective suggests changes in the audit methodology and maybe even in a radical way. The BDA changes the traditional way of auditor's working and brings various changes at the professional level, consisting of new approaches to the working procedure regarding the carrying out of the audit missions, the change of the methodology in audit, connection to (Project) Server in order to manage the audit project and remote (IT) support that allows the connection and communication with the client from distance. The ability to verify and work with large volumes of data brings innovation to the auditor's profession. In this way, an adaptation to *smart data* is highlighted (KPMG, 2018). The term *smart data* is based on intelligent data processing algorithms that help interpret past, present and future transactions and provide a solid basis in making effective strategies for making the best decisions. The presence of two important filters in the audit is particularly important: the AI and the professional reasoning of the financial auditor, rather than by applying AI in a singular way (Klous & Wielaard, 2016). AI software tools help extract information based on keywords. Thus, it is not only easy to process data and create state-of-the-art software, but also to understand human behavior, a fascinating vision with far-reaching consequences for auditors.

The second perspective is that the audit methodologies should not necessarily be adapted to Big Data. In fact, here we find a divergence with the specialized literature discussed so far in this paper. This view is supported by the fact that a traditional audit methodology could be just as important to follow, so there is no need for innovation in this direction (KPMG, 2018). The explanation of this vision is that based on a quality audit there will be a detailed analysis of data and performance indicators. For the financial auditor, question marks can be raised when discrepancies are found between the amounts presented in the financial statements, being unexpectedly lower or higher than they were commonly reported. The analysis of these data should be delegated to the experienced auditor, who understands the significance behind the figures and has the ability to interpret/predict possible strategic risks. The process of data analysis and interpretation requires increased attention. There may also be a tendency to overuse current auditor technologies, with important details being overlooked regarding already acquired knowledge, past experience or business understanding. These issues concern the skeptical reasoning of the financial auditor (already in charge), not involving emerging technological tools.

For financial audit missions, the observations made above find their correspondent in the huge potential offered by Big Data (Stanciu, 2015), but neither can the impact of BDA integration be ignored (Appelbaum, 2017; Krahel & Titera 2015; Ramamoorti et al., 2016, Vasarhelyi et al., 2015). According to ACCA (2019), Big Data Analytics is the most widely used technology, being present in most companies, which cannot be said about Machine Learning, a technology that is just in the implementation stage. Data Analytics and operational process automation are working techniques used significantly in audit missions (Vasarhelyi et al., 2015; Alles et al., 2006). Investor expectations are that these new, sophisticated technologies will become widely implemented, while also following a redefinition of the auditing profession (Rozario & Thomas, 2019). There are companies (Big Four) that already use Data Analytics in the audit tests and the processes of testing the validity of transactions, analysis and reconciliation between accounting accounts, replacing the classic methods of testing. The Guru99 website (2019) ranks the best Big Data Analytics tools for 2020, including: Xplenty, Microsoft HDInsight, Skytree, Talend, Splice Machine, Spark, Plotly, Apache SAMOA. FinancesOnline believes that the main Data Analytics 2020 software, in descending order, are: Sisense, Looker, Yellowfin, Zoho Analytics, Periscope Data.

Periscope Data highlights trends-based results, interactive presentations, and dashboard-like graphics. Sisense is number 1 in Data Analytics, with a 99% consumer satisfaction ratio due to the variety of options offered (e.g. custom dashboards, interactive results visualization, easy detection of analytical trends and models) and Machine Learning applicability. The second place is the Looker, which allows the extraction of data from multiple sources and then transfer to a SQL database, which is subjected to processing before reaching the auditors' attention. The advantage of this Data Analytics tool is that it can schedule data delivery to any other access source, such as: chat, email, webhook, File Transfer Protocol (FTP), a type of

protocol that allows access to data or files stored on servers.

According to PwC (2019), the potential of Data Analytics, RPA (Robotic Process Automation) and AI (Artificial Intelligence) technologies will be observed in 2-3 years. Data Analytics is the most widely used technology in auditing and allows the identification of new analytical methods, contributes to cost-effectiveness and better decision-making and testing tens of thousands of transactions (ACCA, 2019). Despite the benefits offered, the pace at which things are evolving is slower than expected five years ago (ISACA, 2018 a). **Table no. 3** allows an overview of the most representative debates, surveys and specialized research on (Big) Data Analytics.

Table no. 3. Research Big Data Analytics in the auditing literature and specialized publications

Research year	Influence on financial audit	Article title	Author
2013	- Predictive analytics are grounded in Data Analytics, proving to be an investment worth adopting. - Data Analytics allows access to interesting models of analysis, trends and exceptions in the audit.	Predictive audit analytics: evolving to a new era	Kuenkaikaew, S.
2017	- The quality of the financial audit could be completely ensured and even improved by implementing and developing Data Analytics (e.g. analyzing the models behind the transactions, extracting information and stating conclusions, thorough research of inconsistencies, anomalies at the accounting process level).	Exploring the Use of Technology in the Audit, with a Focus on Data Analytics	IAASB
2017	- At the level of modern audit commitments, there is a need to make advanced predictions. - Big Data Analytics allows companies to stay competitive. - The logical reasoning of the auditor will know a professional extension.	Big Data and Data Analytics in the Modern Audit Engagement: Research Needs	Appelbaum, D., Kogan, A., Vasarhelyi, M.
2018	- Most organizations have started working with Data Analytics. - Data Analytics is a trend that is developing faster in the current period, compared to the last period.	Data and Data Analytics Progress During the Last Four Years	ISACA Journal
2018	- Big Data Analytics has a competitive advantage in accounting and in general, in the financial sector, favoring the decision-making process, fraud prevention and detection, verification and analysis of customer information.	Big Data Opportunities for Accounting and Finance Practice and Research	Cockcroft et al.
2018	- Data Analytics facilitates continuous auditing and real-time auditing, followed by establishing analytical models, identifying errors, extracting useful information and formulating the audit opinion.	Audit Risk Alert: General Accounting and Auditing Developments 2018/19	AICPA & CIMA
2018	- Big Data Analytics facilitates the discovery of potential errors by 100% testing the huge volume of data, sorting, filtering and analyzing all transactions.	The future of audit	KPMG

Source: Author`s processing

5. Conclusions

Technology has penetrated all sectors of the economy, and auditing is no exception. Auditors are already constrained by technological developments, as are all other areas of this world (e.g. medicine, marketing, construction, the renewable energy sector). This research has shown how the impact of IT can cause

changes in the information circuit, in the procedures and tests applied by financial auditors, through the adoption of Big Data and Big Data Analytics.

Big Data brings to analysis information of any kind: structured, unstructured or semi-structured, but which can be analyzed in a complete manner, which proposes avoiding risks, detecting fraud and identifying material errors. Since the technology allows for a full test of financial information, Data Analytics applies to a wealth of huge information (i.e. Big Data). Technological changes require better financial management for financial auditors. The research includes projects from Big Data and Big Data Analytics, "collected" through fundamental and qualitative research. In the context of understanding these technologies, ERP platforms, Cloud Computing platforms, the concept of Audit IT, Apache Hadoop, HDFS and Map Reduce, SQL and NoSQL, CATT, emerging technological tools that, without just and maybe, could lead to automation were analyzed and studied. on a large scale, contributing to a comprehensive analysis of the Big Data phenomenon, in fact, existing in all large companies.

At the Big Four companies` level, with the appropriate Big Data tools help, projections were detailed on how to allow complete audits in a shorter time, even though increasing volumes of information are reported, as the day goes by. Progressively, financial auditors cover more of the audit activity with a lower level of effort, adding value to this process. In the Big Data context, companies can develop an internal approach aimed at adopting measures that will face the new challenges related to data integrity, security and analysis, starting from the following actions:

- Use of existing applications for rapid implementation in the organizational system;
- Training of internal staff at the expense of hiring expensive contractors;
- Closer collaborations with stakeholders to substantiate the business strategy;
- Implementation of a hybrid data ecosystem (i.e. management, forecasting and use of IT systems).

Apache Hadoop, Big Data technology, has proven itself to fold on financial audit missions. Because it allows the analysis of this phenomenon (i.e. Big Data) in the Cloud, Hadoop offers adaptability to the companies that choose to implement this technology. This research has demonstrated through logical projection schemes such as Big Data via HDFS and Map Reduce that it is possible to track audit logs so that the auditor easily and securely verifies information about the company's transactions. The advantages of MapReduce consist of the huge processing of (raw) data at a phenomenal speed and in parallel, eliminates duplicates. Through Apache Hadoop, unsuccessful access attempts can be checked and unusual transactions detected. Moreover, security analyzes can be undertaken and the desired commands can be resumed if an error has occurred.

In addition to the aforementioned points, which are based on the fundamental research method, the research denotes and critical observation, in the sense that only specialized research/reports debating Big Data and Data Analytics were included for this paper. With the ever-deeper integration of technology, the manual and repetitive tasks (eng. Ticking and bashing) will disappear, being replaced by the BDA effect that revolutionizes the business world. At the same time, these advantages offered by technology have many interpretations. If IT development makes it possible to increase the efficiency of audit missions in a substantial way, shouldn't there be a dramatic increase in costs for extending this goal? It seems not. The price of technology is decreasing as the benefits increase. There is an indirect relationship between technology and the advantages offered. The technology brings the auditor face-to-face with a professional redefinition, which promises easier data management, total testing of company transactions, implementation of test models through Apache Hadoop and understanding of Data Analytics software. These technological effects lead to the redefinition of audit processes based on lower costs and a smarter way of working. These observations are his correspondent in the work of Rozario & Thomas (2019).

The present research also considered qualitative research by highlighting the literature, but also projections, models, demonstrations, applications of the new technological instruments that could be included in the financial audit missions, but which did not reach a general peak (integration and working entirely with and through the new technological tools). The article also describes the practical part, which is based on discussions with audit and IT specialists from Big Four companies, more precisely how the auditor's routine work is taken over by computer software based on the BDA concept.

IT will not be able to substitute the actions of the human being, which is responsible for deep thinking and analysis, which defines the selection criteria. So, without the human expert, computing would not be able to progress. No matter how many (paradigm shifts) technology promises, professional judgment will always be needed in the audit. IT will not be able to (ever) provide everything an auditor needs to know, for example, it cannot extract false information from the data provided by companies. The value of human capacity contributes to the experience and judgment in the audit, regardless of the IT benefits. At this time, the models predefined by the auditors facilitate the analysis of the data, the making of predictions and the preparation of the audit reports. In addition to Big Data, there is other information that auditors should consider, for example: information history of the audited entity, views on the industry in which it operates, competition, audit reports from past audits. The sampling method, on various selection criteria (e.g. at the level of sum, filtering depending on the complexity of the transactions) will cease to be used or at most discussed.

In this paper were presented aspects regarding the possibility of 100% data analysis through advanced IT tools Data Analytics, which highlights the technological developments that tend to adopt a continuous audit, due to the automation and the complete verification of transactions. When applying Data Analytics, several top tools (e.g. Sisense, Looker, Yellowfin, Zoho Analytics, Periscope Data) can be mentioned. With such a diverse range of Data Analytics software, the auditor profession will revolutionize completely. Mapping them on audit missions is the first step towards a new, more technologized and efficient approach, such as: analyzing suspicious transactions resulting from inconsistencies in the income and expense accounting accounts, how to use the expenditures between years N-1 and N, values of expenses and revenues that significantly exceed the previous financial situation reported, total invoices that do not match the balance in the balance sheet. It is certain that everything that is delegated from current or so-called ordinary transactions will be concerned with the professional reasoning of the auditor, these representing work tasks that fall to the human factor. This is the point where the most careful analysis of the data comes in, the financial auditor being the one who analyzes those suspicious transactions extracted from the software. In this way, causes are determined, but also possible diagnoses: error (material), (attempt of) fraud or unusual transaction.

NoSQL has proven to be another type of technology that can facilitate the work tasks of auditors. NoSQL has the ability to summarize very large sets of data, in real-time, on non-national databases and requiring a certain data schema. Even if the data source is a varied one, it is up to the auditor to apply the professional reasoning for modelling the audit model. Auditors must embrace numerous working techniques based on NoSQL, Hadoop Apache or at least first instance connection to these technologies and then mapping the data obtained on Machine Learning, a technology that will be discussed and mapped in a subsequent article.

This paper showed the functioning of the emerging technologies, the algorithms behind the BDA, but also the transposition into the financial audit missions. Auditors need to be aware of working with Big Data and Data Analytics and how they can maximize the huge potential they offer. Combined with professional reasoning, experience and critical thinking, emerging technologies promise changes in the financial auditor profession. The impact of IT is also felt at the level of junior auditors, who are just beginning their audit career. They will need to be intensely documented about the new technologies and the functionality of the business, in order to understand the newly emerging technological instruments and to acquire the skills needed for a quality audit, at the senior level. With an increasingly intense tendency towards automation, success does not seem impossible to achieve.

The present paper also aspires to present other aspects that could be considered for the audit profession, namely the advantage that all parties involved would benefit if closer collaboration between organizational staff was adopted. The applicability would consist of a direct contact of the financial audit department with the accounting and internal audit department, which would provide a broader view on the critical risk areas and a stronger connection between these professions. Linking the occurrence of risk with company transactions, followed by risk assessment (fraud) would know early management and anticipation of economic trends (i.e. the emergence of other technologies, the development of new economic trends, the adoption of business strategies).

The ability to look in perspective, the development of a healthy professional judgment represents future perspectives for this profession. Auditors are advised to turn their attention to understanding the current

technological trend, but also what is expected to follow. In order to develop the technical skills that auditors are required to acquire, this paper recommends proactive attitude, critical thinking, professional skepticism (i.e. an auditor's muse quality), an open mind to challenges and a developed financial curiosity. An important aspect must be considered: complex financial audit missions should be conducted by auditors with the necessary experience and skills. Adapting the entire corporate reporting system to a documented level towards IT, together with a qualification of directors, administrators and auditors are imperative in these technological developments. Along with emerging technologies, the audit would provide important stakeholders with key controls and access to service quality. In addition to investing in training and working with the right people, investments in new technologies (which will surely revolutionize the near future) will complete a quality financial audit.

5.1. Exclusively conclusions for Romania

By positioning this work in the (development space) industrial revolution 4.0, working with the technologies presented throughout this paper is important to become known to the financial audit in Romania. Auditors need to be aware of the benefits and risks generated, mainly towards data theft. On the professional level, the poor preparation in the analysis of transactions, which is increasingly prone to automation, represents another impasse that must be overcome by the auditors in our country. The process of data analysis would require a higher degree of expertise in order to balance human resources with the impact of information technology. It is essential to strengthening the professional judgment by contributing to emerging technologies and focusing on identified risk elements. Generally, the regulatory authorities in Romania should take into account extensive information, extended guidance and rigorous control campaigns to ensure that the financial auditors in Romania are truly informed and know in detail, at an experienced level, the work with these emerging technologies.

5.2. Future research directions

For future work, it is possible to take into account the research of the situation existing in some countries such as Switzerland, Italy, which have already adopted the technologies presented throughout this article, but also the extension of research at the level of public institutions, where the degree of implementation of the technologies emergent is experiencing a late-onset, produced by people's resistance to change.

The undertaken fundamental-qualitative research could be continued later by applied research, in order to demonstrate the practical impact of IT by mapping the new technologies on the financial audit missions in the daily work, starting from the models outlined in this paper. Auditors can track the actual flow of audit missions and implement BDA in a comprehensive manner for testing and technological learning, both in the private and public sectors. The author will initiate quantitative research in this regard, by conducting a survey with the authorized auditors in Romania, registered in the electronic public register ASPAAS.

5.3. Research limitations

The present qualitative research considered the impact of IT not only in the audit but also in some sections of this article, on accounting, following the connection between these professions. The technologies analyzed could also be applied to other financial fields (e.g. business expertise, business evaluation, internal audit, financial reporting, business consulting), this aspect contributing to the limitations of this paper. Discussions with audit and IT specialists, and not with managers with a broader view of business processes, could be the second limitation of this article.

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Audit financiar, XVIII, Nr. 3(159)/**2020**, *532-541*
ISSN: 1583-5812; ISSN on-line: 1844-8801

Does Identification with the Firm and Profession Mitigate Outcome Effect on Auditors' Decisions?

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Abstract

The paper examines whether auditors' identification with the organization or with the profession will influence the use of outcome knowledge when reviewing audits. In addition, the study examines whether the conflict between organizational identity and professional identity influences evaluators' use of outcome knowledge. The study participants consisted of 63 auditing experts in managerial ranks. Auditors completed an instrument containing randomized audit review scenarios developed to evaluate the effects of identification and outcome knowledge on decisions. Results showed that organizational identification can minimize the effect of outcome knowledge on decisions while professional identification results in an increase in biases.

Keywords: *auditor judgement; organizational identification; professional identification; organizational-professional conflict; outcome knowledge; audit*

JEL Classification: *M42*

To cite this article:
Johnson-Snyder, A.J., Killingsworth, B. L. (2020), Does Identification with the Firm and Profession Mitigate Outcome Effect on Auditors' Decisions?, *Audit Financiar*, vol. XVIII, no. 3(159)/2020, pp. 532-541,
DOI: 10.20869/AUDITF/2020/159/017

To link this article:
http://dx.doi.org/10.20869/AUDITF/2020/159/017
Received: 20.02.2020
Revised: 1.03.2020
Accepted: 2.06.2020

Introduction

Information, in general, comes in various forms and at various times, including *ex-post* of the completion of an audit. In the auditing environment, whether conducting an internal or external review, an auditor will try to make the best decision based on the information that is available at the time. Auditing is a very litigious environment. When an unanticipated event occurs that results in a legal issue, some evaluators forget or overlook the fact that only certain information was available prior to the event and, instead, use the event information to work backward in assessing the information (Anderson, Lowe, and Reckers, 1993). Peecher and Piercey (2008) argue that some evaluators who "were not at the audit," may not be familiar with an auditor's decision process and have "uncertain and incomplete information" (p. 246). Hence, it seems logical that an evaluator should use the same information that was available to the auditor to assess the auditor's judgement. This is also in line with maintaining professional skepticism and objectivity when making a decision (Bunget, Tudor, and Sumanaru, 2019).

Evaluators, however, continue to use outcome information as part of the evaluation process (e.g., Emby, Gelardi, and Lowe, 2002; Brazel, 2018), resulting in a biased assessment influenced by information not available for the original audit. For example, although judges are trained to follow the logical path of the information or evidence, prior research has found that some judges still use the outcome information to make their judgement (Jennings, Lowe, and Reckers, 1998). The use of *ex-post* information doesn't align with international standards for auditing. Case in point, the International Accounting Standards Board sets IFRS Standards which state that, "Hindsight should not be used when applying a new accounting policy to, or correcting amounts for, a prior period…" (IAS 8, paragraphs 53, 2018a, p. 53) and also offers direction on how to make materiality judgements about prior-period information (IFRS Practice Statement 2, 2017).

Another source of bias in auditing is an auditor's degree of identification with the organization (Bamber and Iyer, 2002). International and national standards organizations alike stipulate or encourage that auditing decisions be based on evidence and not biased by an auditor's relationships. For instance, IFRS Standards require an organization to disclose any related party relationships that might influence the independence of the financial statement audit (IAS 24, 2018b). Similarly, the Sarbanes-Oxley Act of 2002, a law passed by the U.S. Congress, forbids accounting firms from offering some consulting services to firms that they also audit (U.S. House of Representatives, 2002). This law was designed to protect individuals investing in companies from fraud and to help improve the reliability of corporate financial reports in the wake of a wave of high-profile corporate crime incidents in the United States. Yet, even with these guidelines and laws in place, studies have shown that organizational influences do exist and can bias auditor judgements (e.g., Bazerman, Loewenstein, and Moore, 2002).

Both sources of bias, organizational identification and outcome knowledge, should be avoided to maintain professional standards and independence. However, the use of outcome knowledge to assess another expert's audit is of special concern in this paper. When auditors use outcome knowledge to assess *ex-post* another audit, then the original audit is taken out of the context in which it was conducted. Using outcome knowledge will result in an inaccurate assessment of the original audit performed and unduly place additional response burdens on the firm. For instance, ISO 9001:2015 mandates management to make certain corrective action is taken to address any nonconformities uncovered in the course of an audit (International Standards Organization, 2015). Further, experts tend to be more strongly influenced by negative outcome knowledge. Finally, biases resulting from the use of outcome knowledge has been shown to magnify the relative salience of outcome-consistent information (Emby, Gelardi, and Lowe, 2002). This magnification of negative outcome knowledge, especially when used during an external audit, can have serious financial and legal ramifications.

The purpose of this paper is to examine whether an auditor's identification with the firm or with the profession will influence an evaluator's use of outcome knowledge when reviewing another auditor's decision. Further, the paper examines whether a conflict between these two identities (professional and organizational) will influence the use of outcome knowledge in an evaluator's evaluation of another's decision.

The research contributes to the outcome knowledge and hindsight bias literature in assessing identification and outcome knowledge factors that impact an auditor's

judgements. In the ensuing section, we draw on extant research in outcome knowledge and identification to expand on the field's understanding of how these factors influence auditors' review of other auditing experts' judgements and to develop our hypotheses. Then, we present an empirical study that tests the research hypotheses using an instrument containing randomized scenarios developed to evaluate the effect of identification and outcome knowledge on auditors' judgements. We conclude with an identification of the study's limitations and a discussion of theoretical and practical implications of the study's findings on ways to mitigate the use of outcome knowledge when an auditor reviews an audit.

1. Literature review

1.1. Outcome Knowledge

Outcome effects occur when an evaluator's judgement is unfavorably (favorably) swayed by negative (positive) event outcome information (Peecher and Piercey, 2008; Emby, Gelardi, and Lowe, 2002). Prior research shows that negative outcome knowledge has a higher impact on evaluators' objectivity than positive outcome knowledge (Emby, Gelardi, and Lowe, 2002; Lowe and Reckers, 2002; Peecher and Piercey, 2008). However, other factors may mitigate the skewed perception resulting from outcome knowledge.

Research shows that judgements of highly trained professionals are impacted by negative outcome knowledge. For instance, although trial judges are trained to exercise due professional care, research reveals that they "consistently overestimate the probability of a known outcome" (Jennings, Lowe, & Reckers, 1998, p. 148). In other words, judges' ability to objectively evaluate an auditor's performance retrospectively fades depending on the adverse information. Anderson, Lowe, and Reckers' (1993) study suggest that evaluators focus on the given event outcome and use this knowledge to work backward to the antecedent factors consistent with the outcome.

Prior to Peecher and Piercey's (2008) study, other studies used variables to control for the outcome effect but failed to measure the impact of the outcome effect and reverse outcome bias. Peecher and Piercey used two experiments to replicate the outcome effect, i.e., both hindsight and foresight, from prior audit failure studies to examine undergraduate students' assessment of auditor negligence. Participants' judgements exhibited outcome bias when the probability of negligence fell below 40 percent yet exhibited reverse outcome bias when the evidence supported a probability higher than 40 percent. In essence, if the outcome information in the experimental scenario crossed an invisible line of 40 percent probability, the students' judgements would shift to the direction that was presented in the outcome information.

Prior to performing the current year audit, auditors review the working papers for the prior year audit and any available information. This is a continuous learning environment where an evaluator will review the information at a much later date than when the prior year audit was performed. More information, including event outcome information, is available in the later period that wasn't available while the prior year audit was in progress. As of this writing, no prior study has examined whether the outcome effect, the impact of the outcome information on a decision, is minimized by auditors' identification.

1.2. Identification

Prior literature finds that identification influences accounting professionals in a number of ways. Former accounting employees are likely to recommend business to their former employer (Iyer, 1998) and use their services (Herda and Lavelle, 2011). An auditor is likely to underreport his actual work hours on a project when he identifies with a client (Bamber and Iyer, 2007). Of interest in this paper is King's (2002) study that examines the level of social identity among auditors.

King (2002) investigated the judgements of 44 manager and auditor pairs, played by business-school students, to measure self-serving biases using an audit trust game. Within the game, managers communicated different messages in which either did or did not lead auditors to form biased opinions toward managements' intentions. The author finds that auditors do have self-serving biases, but the bias is mitigated by their identification with the audit group. These findings are of interest to us because other debiasing techniques have not always been successful in minimizing the impact of outcome information.

Prior literature on outcome effect suggests that outcome information still influences individuals' judgements

although debiasing techniques have been implemented. Previous research on identification supports identification may be another way to minimize the impact of the outcome effect. Hence, in this paper, we posit and examine whether the outcome effect is mitigated by auditors' various types of identification.

H1: Outcome bias will be higher for subjects with higher organizational identification.

H2: Outcome bias will be lower for subjects with higher professional identification.

H3: Outcome bias will be lower for subjects with higher identification conflict of organization.

Consistent with prior literature that adverse outcome knowledge negatively impacts an individual's judgement (Peecher and Piercey, 2008), we expect outcome knowledge to impact auditors' judgements. However, we predict that the outcome effect will be higher for auditors with higher levels of organizational identity while we expect the outcome effect will be lower for those with higher professional identity. Further, we predict that the outcome effect will be lower for auditors experiencing a higher level of identity conflict between the organization and profession.

2. Research methodology

2.1. Method

An Analysis of Variance (ANOVA) is used to examine whether the outcome effect is mitigated by identification when making a decision. SPSS® Statistics version 26, was used for analyzing the data. Decision (DECISION) was operationalized by asking participants their level of agreement with the lead engagement partner's decision to accept management's claim. All variables, except for OUTCOME, were assessed using a 7-point Likert-type scale where "1" represented "Strongly Disagree" and "7" represented "Strongly Agree." In this study, the variables of interest are OUTCOME, ID_ORG, ID_PRO, and ID_CONFLICT.

Outcome knowledge (OUTCOME) was operationalized by manipulating positive and negative outcome information within an instrument. In the scenario, management assumed a higher growth rate in calculating a business valuation and goodwill impairment that were semi-dependent on a new product line. The negative outcome informed participants that the reporting unit's sales did not meet management's projections, and the positive outcome stated that the reporting unit's sales projections were met. Half of the participants received an instrument with negative outcome information and the other half received an instrument with positive outcome information. Identification was operationalized by using three questions to assess subjects' identification with the organization (ID_ORG), identification with the profession (ID_PRO), and whether there was a conflict between the two identifications (ID_CONFLICT). Participants were asked to select their level of agreement on the statements presented in **Table no. 1**.

Table no. 1. Statements Used to Measure Identification Variables

Variable	Statements
ID_ORG	I would recommend my current employer to my friends and family who are searching for a job. (Question 20)
ID_PRO	As a whole, I would recommend entering the accounting industry to my friends and family who are searching for a profession. (Question 21)
ID_CONFLICT	I would consider changing jobs before a mandatory retirement age. (Question 19)

Source: Authors' survey, ID_ORG adapted from Tropp & Wright, 2001

Each survey was presented in a specific sequence. First, participants were presented a welcome and informed consent page. Second, the Qualtrics software randomly assigned participants to different scenarios. Third, all subjects were given identical situational information on a goodwill impairment scenario, an audit memorandum, and five supporting working papers. Next, participants were provided one of two random outcomes. Finally, each participant was given an identical questionnaire. Approximately half of the participants were given negative information while the other half were given positive information.

2.2. Data

Considering we needed auditor participants to complete the survey, a number of methods were used to contact potential participants within the United States. First, surveys were sent to personal contacts of the authors, mentors, and friends. We also asked the contacts to not only complete the survey but to share the survey with their coworkers and friends. Second, additional participants were contacted who had connections to the university. Finally, both a request for participants and a link to the survey were posted on a professional society's LinkedIn page for one week. Data were collected between November 2013 and March 2014. The survey was attempted by 121 participants but only completed by 82. Manipulation checks were used to assess whether participants could identify the randomly assigned outcome information and were familiar with the scenario topic. Only 63 surveys remained after those by participants who failed the manipulation checked were removed. Of the 63 participants, 29 (46.03%) received the scenario where outcome information was positive while 34 (53.97%) participants received the scenario in which outcome information was negative.

All participants were in managerial rank in an accounting firm. Specifically, participants were 5 (7.94%) accounting firm owners, 40 (63.50%) partners, 4 (6.35%) directors, 6 (9.52%) senior managers, and 8 (12.70%) managers (See **Table no. 2**).

Table no. 2. Participant Title

Title of Survey Participants	Number of Participants	Percentage of Participants
Manager	8	12.70%
Senior Manager	6	9.52%
Director	4	6.35%
Partner	40	63.50%
Owners	5	7.94%

Source: Authors' processing based on surveyed auditors' responses

3. Results

3.1. Analysis of Variance (ANOVA)

We performed an Analysis of Variance (ANOVA) to evaluate the hypotheses. The ANOVA results are presented in **Table no. 3**. Overall, we find that OUTCOME and ID_ORG were statistically significant ($p = 0.05$ and $p = 0.01$, respectively), and ID_PRO was marginally significant ($p = 0.10$). ID_CONFLICT was not significant. Based on these results, we performed a more in-depth review of the group differences (OUTCOME) across ID_ORG and ID_PROF.

Table no. 3. Analysis of Variance (ANOVA)

Dependent Variable: DECISION					
Source	Type III Sum of Squares	Df	Mean Squares	F	Sig.(one-tailed)
Corrected Model	24.64[a]	4	6.16	2.65	0.02
Intercept	3.10	1	3.10	1.33	0.13
OUTCOME	6.83	1	6.83	2.94	0.05**
ID_ORG	13.94	1	13.94	6.00	0.01**
ID_PRO	4.07	1	4.07	1.75	0.10*
ID_CONFLICT	3.41	1	3.41	1.47	0.12
Error	134.79	58	2.32		
Total	1216.00	63			
Corrected Total	159.43	62			
a. R Squared = 0.16 (Adjusted R Squared = 0.10					
b. Computed using alpha = 0.05					
c. ** p < 0.05 and * p < 0.10					

Source: Authors' processing based on surveyed auditors' responses; SPSS® Statistics

Results for the Independent Samples T-test (one-tailed) are provided in **Table no. 4** and **5**. Referring back to hypothesis one (H1), we test whether the outcome effect is higher for auditors with higher organizational identity. The means and standard deviation (SD) for organizational identification with negative and positive outcome are 6.21 (0.85 SD) and 5.86 (1.22 SD), respectively. We predict and find that the outcome effect is higher in the decision of auditors with higher organizational identity. We also find that the difference between negative and positive outcome effect and organizational identification is marginally significant (p = 0.10).

In hypothesis two (H2), we examine if the outcome effect is lower with auditors who have higher levels of professional identification. The means and standard deviation for professional identification with the negative and positive outcome are 6.24 (0.92 SD) and 5.69 (1.63 SD), respectively. We predict and find that the outcome effect is lower for auditors with higher levels of professional identity. We also find that the difference between negative and positive outcome effect and professional identification is statistically significant (p = 0.05). In hypothesis three (H3), we assess if identification conflict of organization and profession decreases (increases) the influence of positive (negative) outcome bias on experts' judgements. According to Leech, Barrett, and Morgan (2011), since the results for the ANOVA for the ID_CONFLICT were not marginally significant, we must reject hypothesis three. These results for H1 and H2 are better clarified and discussed below using figures.

Table no. 4. Group Statistics

	OUTCOME	N	Mean	Standard Deviation
ID_ORG	Negative	34	6.21	0.845
	Positive	29	5.86	1.217
ID_PRO	Negative	34	6.24	0.923
	Positive	29	5.69	1.628
ID_CONFLICT	Negative	34	3.76	1.908
	Positive	29	4.93	1.831

Source: Authors' processing based on surveyed auditors' responses; SPSS® Statistics

Table no. 5. Independent Samples T-test

Variables	Variance Assumption	T	Df	Sig. (1-tailed)	Mean Difference	Std. Error Difference
ID_ORG	Equal variances assumed	1.32	61	0.10*	0.34	0.26
	Equal variances not assumed	1.28	48.77	0.10*	0.34	0.27
ID_PRO	Equal variances assumed	1.67	61	0.05**	0.55	0.33
	Equal variances not assumed	1.60	42.74	0.06*	0.55	0.34
ID_CONFLICT	Equal variances assumed	-2.46	61	0.01**	-1.17	0.47
	Equal variances not assumed	-2.47	60.12	0.01**	-1.17	0.47

Source: Authors' processing based on surveyed auditors' responses; SPSS® Statistics

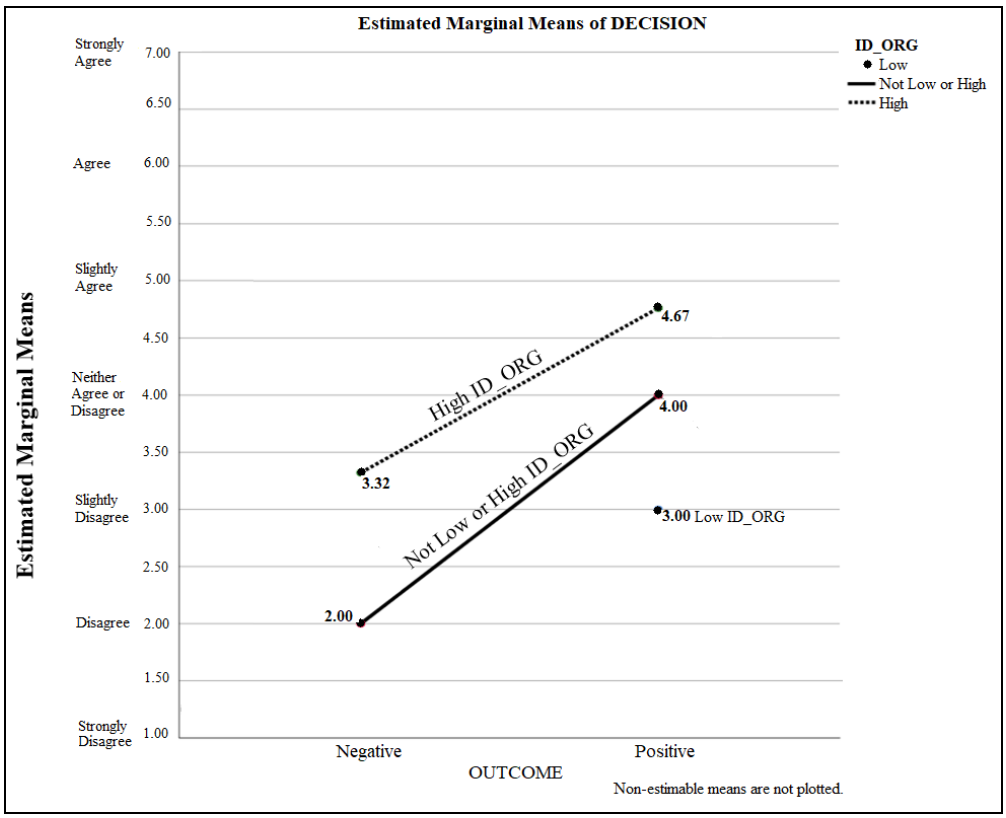
4. Discussion

We accept H1 and H2, but not H3. To better understand the impact of the outcome effect and its relationship with organizational identification and professional identification we created ***Figures 1 and 2***. To create the figures, we adapted the data points on the 7-point Likert-type scale to where participants' organizational identity (ID_ORG) and professional identity (ID_PRO) responses were made into categories: (1) response values from one through three are coded as "1" and "Low"; (2) response values of four are coded as "2" and "Not Low or High"; and (3) response values from five through seven are coded as "3" and "High."

Simply looking at the numerical results does not adequately provide the context of the results. In the

survey scenario, a lead engagement partner (LEP) assessed a client for goodwill impairment and agreed with the client's management that their new product line's estimated six percent annual growth was plausible. In today's economy, it would be difficult for any company to sustain a six percent annual growth for a sporting goods product line. The LEP's decision resulted in the client not recording a goodwill impairment. Auditor participants were asked to evaluate the same documentation as the LEP, were given outcome information, and asked to respond to a statement on the previously mentioned Likert-type scale. The negative information stated that the projected annual growth rate had not been met while the positive information stated the annual sales had been met.

Figure no. 1. Organizational Identity (ID_ORG) Across Outcome (OUTCOME)

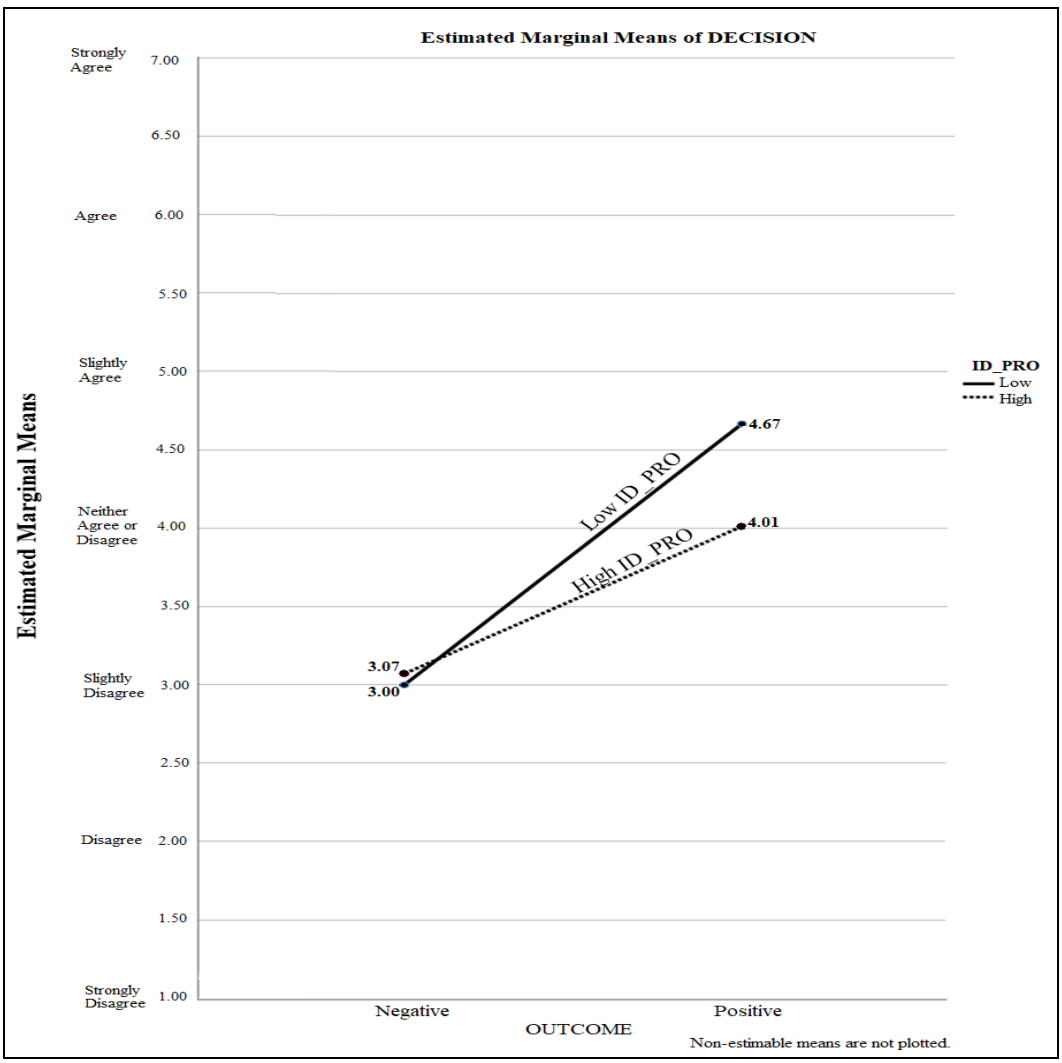


Source: Authors' processing based on surveyed auditors' responses; SPSS® Statistics

Figure no. 1 is a visual representation of H1. Once the values are disentangled, we clearly see that decisions of auditors with *high* organizational identity are more likely to slightly disagree with their peer when given negative outcome information (average of 3.32) where those who are given positive information (average of 4.67) are more likely to slightly agree. If the outcome effect and organizational identity had no impact on the decision, the response averages would be four or "Neither Agree or Disagree" (this point is also neutral). This conclusion is further supported by the presentation of the lines for "Not Low or High" and the point for "Low." Decisions of auditors with average (*not low or high*) organizational identity are still likely to disagree when negative information (average of 2.00) is presented, yet are neutral when positive information (average of 4.00) is provided. We did not have any participants with low identification that were given negative information. Interestingly, the participants with *low* organizational identification and given positive outcome information are more likely to disagree with their peer's decision. These results are consistent with prior literature which suggests

that individuals with high organizational identity are more likely to make decisions that are favorable to or protective of their employing firm (Bamber and Iyer, 2002).

Figure no. 2. Professional Identity (ID_PRO) Across Outcome (OUTCOME)



Source: Authors' processing based on surveyed auditors' responses; SPSS® Statistics

Figure no. 2 represents auditors' professional identification across negative versus positive outcome effect. Similar to the values provided in the prior figure, the 4 value represents a neutral position or "Neither Agree or Disagree" with the lead engagement partner's decision. Note that subjects with a *high* and *low* professional identification who received negative information have a 3.07 and 3.00, respectively, and are more likely to disagree slightly. Interestingly, positive outcome information impacts the decisions of auditors with *low* professional identity (average of 4.67) more so that those with *high* professional identity (average of 4.01). Overall, the outcome effect has less impact on the decision of auditors when professional identity is present at a low level. Notice that all the response averages are close to 4 or neutral. Thus, it appears that professional identification may minimize the impact of the outcome effect.

Overall, the results suggest that upper management of accounting firms should consider implementing techniques to increase auditors' professional identification, for the individuals with these qualities appear to be less impacted by outcome effect, regardless of the type (negative versus positive) information. They may also want to consider implementing techniques that will minimize organizational identification.

Conclusion

The results of this study provide the support that professional identification can minimize the influence of the outcome effect where organizational identification appears to have a detrimental impact. Professional identification is a slightly better tool for mitigating the effects of negative and positive outcome knowledge on auditors' decisions. Given that there can be adverse impacts associated with an auditor's identification with the firm audited, including increased organizational-professional conflict, these results should be considered within the context of the auditing profession's ethos. The auditing profession should continually strive to elevate auditors' level of professional identification to ensure that auditor judgements remain unbiased and not influenced by either organizational ties or outcome knowledge. Similarly, these results suggest that it would behoove an organization to cultivate a professional-oriented culture since it is more likely to assist auditors and minimize biases.

While the sample size for this study was relatively large for experimental studies using professional auditors, the size limited the ability of the authors to examine the outcome effect by auditor rank or experience. All participants in this study are audit professionals; therefore, these results may not be generalizable to participants that fill multiple roles within a firm while serving clients. Prior research finds that professionals in tax preparation roles are more likely to be an advocate for their client (Pinsker, Pennington, and Schafer 2009). A topic for future research may be to examine whether identity differs for professionals filling more than one professional role. Based on Shanteau (2000), professional experts' decisions will be within consensus of those of other experts. Hence, we believe these results are only generalizable to audit professionals with ten years or more experience, such as those who are represented in our population. A future area of research may be the impact of the identification and outcome effect on less experienced auditors. Also, this study focused on the broader question or organizational identification and professional identification's impact on the use of outcome knowledge when rendering an audit judgement. Examining whether auditor experience and rank influence the relationship between identification and outcome effect would offer insight for management when establishing auditing teams.

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Audit financiar, XVIII, Nr. 3(159)/**2020**, *542-554*
ISSN: 1583-5812; ISSN on-line: 1844-8801

Risk Analysis in Financial Audit using the Trust Function Method

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Abstract

With a strong expansion of the competitive environment in almost all sectors, the key resource for competitiveness is information, which becomes a value for the economic entity and society at large when it contributes positively to the objectives. This article has as its primary objective the presentation of an approach to the documentation and risk assessment by financial auditors using the method of trust functions. In the area of financial audit, risk assessment and quantification shall form the basis for planning, carrying out of the mission, obtaining audit evidence and expressing opinion. Based on the literature synthesis, the research undertaken aimed to ensure that audit evidence is represented as a network of interconnected variables, statements about the synthesis documents for which the mission team collects evidence to determine whether or not they are correctly presented. The method of the services of assignment gives an important role to professional judgment when planning and during the course of the mission.

Keywords: *audit risk; trust functions; audit mission; audit objectives; professional judgment*

JEL Classification: *M41, M48*

To cite this article:
Tanasă, F.-E., Nuță, F. M. (2020), Risk Analysis in Financial Audit using the Trust Function Method, *Audit Financiar*, vol. XVIII, no. 3(159)/2020, pp. 542-554, DOI: 10.20869/AUDITF/2020/159/018

To link this article:
http://dx.doi.org/10.20869/AUDITF/2020/159/018
Received: 9.01.2020
Revised: 23.01.2020
Accepted: 10.06.2020

1. Introduction

The risk in various forms and dimensions has been and is present in the economy of any society. It is precisely this why it has consistently been an area of study to find solutions to reduce the threats faced by the economic environment. At company level, risk minimization contributes to the development of companies, to higher performance with an impact on the industry and the economy.

In the area of financial audit, their evaluation and quantification shall constitute the basis for planning, carrying out the mission, obtaining audit evidence and expressing opinion.

The occurrence of the risk may result in the entity's objectives being not met[1,2]. Thus, the rationale for implementing an identification and evaluation system is to minimize exposure to uncertainty, of course, within reasonable tolerances. Normally, the implementation of such a process cannot take place without defining the objectives to be achieved at different levels of organization, according to the real and possible risks. "The development of contemporary society has been made possible by risk-taking. Thus, economic growth could not be achieved if the certainty trumps before risk and uncertainty[3]". In conjunction, the 'reason' for any economic entity to exist is to generate profits for the owner as a result of risk-taking.

Will anyone invest in shares whose return is lower than that of government bonds? Surely not!

The purpose of this article is to present an alternative methodology for the assessment of audit risk, respectively by using the method of trust functions. The method of trust functions can also be used for the assessment of risks at the level of a commercial entity.

During the course of the research I sought to present and analyze relevant literature on audit risks, as well as to present approaches in audit missions for their completion and audit standards with incidence in risk analysis. The causal relationship between risk, the significant level and audit evidence is the basis for documenting and presenting the audit risk assessment methodology using the Trusted functions method.

Evidence is a key component of the audit process. They form a variable network. Grouped into account balances, classes of transactions, management statements or audit objectives, is of higher relevance because a sample provides a basis for analysis and evaluation for more than one variable in the network[4].

2. Audit risks – literature review

Starting from the assumption that the risk is associated with uncertainty, or rather with effects from exposure to uncertainty, its measurement becomes a difficult process. The identification and assessment of audit risk falls within this general meaning given the implications for the mission. In order to achieve its objective, i.e. the extent to which the financial statements of companies present a true and fair view of the financial position and performance, the auditor should obtain the evidence necessary to substantiate the opinion[5]. Effective management of the mission requires the auditor to correctly assess the audit risk as a fundamental step in determining methods, techniques, nature and scope of procedures[6]. "The process is carried out at the very beginning of the planning process, immediately after the customer has been informed

[1] Dobrotă, N., Economy dictionary, *Economic publishing house*, Bucarest, 2000, page 37;

[2] Cosma, D., Cosma, O., Modern Risk Management Strategies for the Romanian State Treasury, available at: http://mpra.ub.uni-muenchen.de/20425/1/MPRA_paper_20425.pdf

[3] Morariu, A., Petroianu, G.-O., Modificări conceptuale şi structurale ale riscului în societatea cunoaşterii, *Audit Financiar* Journal, no.6/2013, p. 22.

[4] See: Arens, A., Elder, R., Beasley, M., Auditing and assurance services: an integrated approach, 14th edition, *Pearson Education*, New Jersey, p. 20-175, 2012

[5] Horomnea, E. et al., Utilizarea pragului de semnificație şi a riscului de audit în planificarea şi conducerea auditului financiar, The volume of the national conference *„Informarea financiar-contabilă în condiții de criză: 16 ani de la implementarea noului sistem contabil în România",* Iaşi, 2010.

[6] Causholli, M., Knechel R.W., Lin, H., & Sappington, D., Competitive Procurement of Auditing Services with Limited Information, *European Accounting Review*, no.3, p.573-605, 2013.

and the internal control system has been assessed[1]". The approach taken is also a key factor in the completion of the mission's performance.

Essentially, there are four different approaches to audit. The underlying approach, the balance sheet approach, the systems approach, the risk-based approach. The main difference between these approaches is the volume and allocation of resources.

Depending on the nature of the audit process, each mission poses a new challenge for the accounting professional. There are no two entities identical in terms of industry, location, size, number of employees or corporate governance structure. However, it is generally accepted that a risk-based approach will minimize the possibility that audit objectives may not be met.

The first models for determining audit risk were drawn up in the years 1980. A very well-known and widely used approach is the model proposed by the AICPA[2] (American Institute of Certified Public Accountants), with audit risk estimated on the basis of inherent risk, control risk and detection risk. Currently, the most common methods for audit risk assessment include risk factor analysis, qualitative risk approach, fuzzy theory[3], Bayesian model[4] or the trusted function model[5]. In our country, the following are used for the estimation of audit risk: Statistical survey technique, matrix of audit assessment criteria on significant areas or risk summary matrix. *Auditors often use, in the absence of standardized information or technical indications, the qualitative representation of risk based on professional judgment*[6].

In Romania, the method of reliable functions for estimating audit risk was presented in articles and specialized books, but no concrete ways of determining it were presented[7]. In practice the method is extremely little used because it is not promoted by professional bodies, nor are there any charts developed in this respect. The method is an alternative to the model proposed by the International Audit standards and uses the same network of variables, with the indication that for each statement and objective in the financial statements, the auditor based on professional judgment shall give a degree of confidence and plausibility for each variable, and the accounting professional can use the same software, whether it's a specially created software or Excel tables.

Unlike other methods of determining audit risk, the trust function method allows for greater flexibility in the professional judgment applied, allows for the correlation and image of a statement in the financial statements during the performance of the mission, thus allowing the volume of evidence collected to be altered.

The audit risk issue is presented in ISA 315 – Identification and assessment of significant distortion risks through an understanding of the entity and its environment. Through this standard, auditors are guided to a mission-based approach. According to that Regulation, *"the objective of the auditor is to identify and assess the risks of significant misstatement of information, in so far as it is due to fraud or error, in financial statements and allegations, through an understanding of the entity and its environment, including the entity's internal control thus* ***providing a basis for the development and implementation of the risk of material misstatement assessed***"[8]. As the auditor is required to focus on the entity and the environment or in risk assessment, this approach first requires the identification of the key operational risks a business must faces. The second step is to quantify the impact of those risks on the entity's financial position and performance. Planning audit procedures is the last step in this process. For these reasons, we can continue to use the designation "Business risk approach" as an integral part of the audit risk.

[1] Horomnea, E., Audit Financiar. Concepte. Standarde. Norme, Ed. *TipoMoldova*, Iaşi, 2014, p.129.
[2] AICPA, SAS 47, Risk and Materiality Audit in Conducting an Audit, 1983.
[3] Chang, S.-I., The development of audit detection risk assessment system: Using the fuzzy theory and audit riskmodel, *Expert Systems with Applications,* Vol.35, 2008, pp.1053-1067.
[4] The Canadian Institute of Chartered Accountants, 1980.
[5] Srivastava W., Shafer G., Belief-function formulas for audit risk, *The Accounting Review*, nr. 67, 1992, pp. 249-283.
[6] Danescu, T., Proceduri şi tehnici de audit financiar, Ed. *Irecson*, Bucharest, 2007, p. 23-146.
[7] Zăiceanu A.M., et.all., Methods for Risk Identification and Assessment in Financial Auditing, Emerging Markets Queries in Finance and Business, *Procedia Economics and Finance* no. 32 (2015), pp 595-602
[8] IAASB, ISA 315, p.278.

Audit risk expresses the likelihood that the auditor will give an inadequate opinion, as a function of risks of significant distortions in financial statements (inherent risk and control risk) and of detection. In the literature, there are numerous studies addressing the issues of factors influencing its evaluation and estimation[1,2]. Beattie[3] classifies these factors into two categories:

a. "auditor's risk" means the risk caused by the failure of the accounting professional to detect significant distortions as a result of its assessments of: integrity and management attitude, understanding of the audited company's environment, scale and complexity of operations, expertise and experience of specific transactions undertaken by the entity (for example: auditing of derivatives), failure to identify significant systems properly, limitation of procedures due to increased cost importance or inadequate determination of significance level;

b. „Mission risk" refers to the degree of influence that the misreporting of an audit report has on the client entity. Among these factors are: the perception of external users of financial statements or the likelihood of financial difficulties for the audited company after the presentation of the audit report.

According to ISA 315[4], audit risk shall not include the possibility for the auditor to express a qualified or adverse opinion where the financial statements are not distorted. It also does not relate to the risk to the auditor of any disputes arising from the audit report or negative publicity. "for the auditor or audit firm it represents an economic or business risk"[5].

The relationships between audit risks from the perspective of International Audit Standards are set out below:

$$RDP = \frac{\text{RAA}}{\text{RI x RC}} \text{ or } RDP = \frac{\text{RAA}}{\text{RDS}}$$

RI = inherent risk;

RC = control risk;

RDP = planned detection risk;

RDS = risk of significant distortion;

RAA = acceptable audit risk.

In literature[6], the risk of significant distortion is sometimes referred to as 'audited risk' or 'emerging risk' because it represents the risk that material distortions may occur in the financial statements before the audit process begins. The value of inherent risk and control risk are the primary variables for estimating the risk of planned detection. The latter indicator determines the amount of substantial evidence the auditor plans to collect, which is inversely proportional to the size of the RDS.

The planned detection risk is influenced by the following factors:

- The nature, timing and extent of the audit procedures carried out;
- Sampling risk – choosing an unrepresentative sample;
- The observation risk.

Summarizing the information presented above, the relationship between audit risks, significant information and audit evidence is shown in ***Figure no. 1***.

[1] AICPA, SAS 47, Audit Risk and Materiality in Conducting an Audit, 1983.

[2] Arens, A., Loebbecke, K., Audit: O abordare integrată, Ed. *Arc*, Chişinău, 2003.

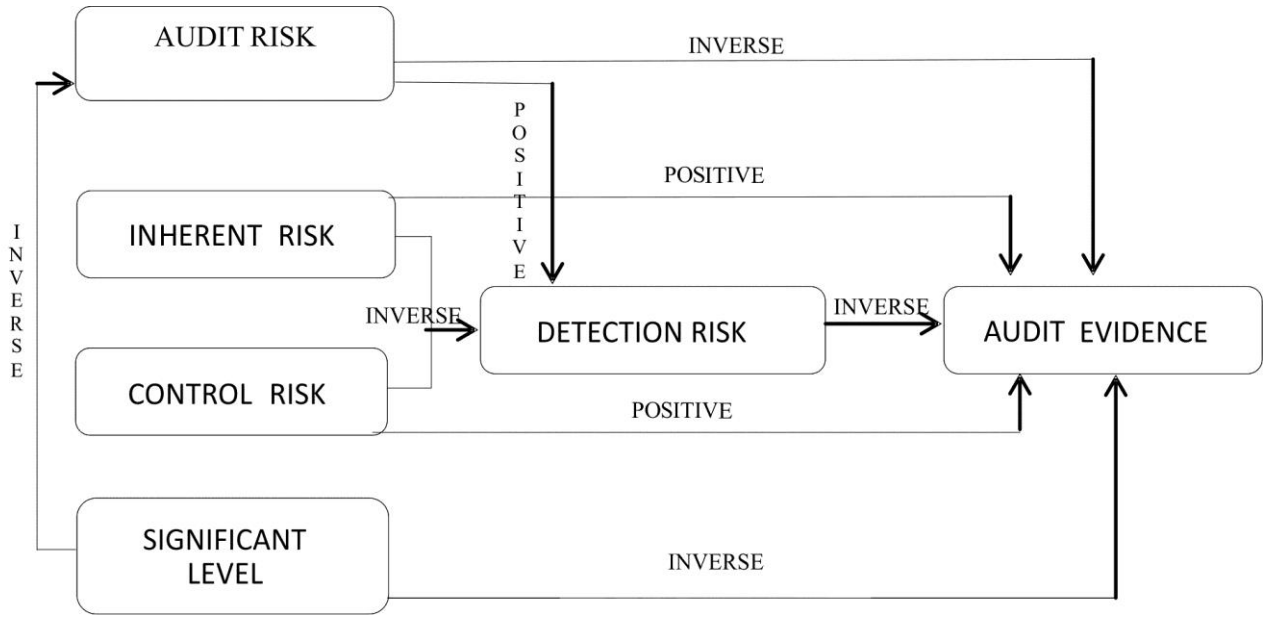
[3] Beattie, V., et.al., Auditor independence and audit risk in the UK: A Reconceptualisation, Presented at *The American accounting association professionalism and ethics symposium*, 2002, apud Chang, S.-I., op.cit.

[4] IAASB, ISA 315;

[5] Briciu, S. et all., Contribuții la evaluarea şi implementarea unui model de evaluare a riscului de audit, *Audit Financiar*, no.6/2010, p.32.

[6] Khurana, I., Raman, K., Litigation risk and the financial reporting credibility of big 4 versus non-big 4 audits: Evidence from Anglo-American countries. *The Accounting Review*, 79(2), pp. 473-495, 2004.

Figure no. 1. Relationship between risks, significant level and audit evidence



Source: Own approach

3. Research methodology. The approaches and methods used

In our research, we have used both qualitative (predominantly constructive) and quantitative (predominantly positive) approaches.

The problem addressed, *the risk analysis in audit using the reliable function method* is analyzed in the context of the increasing concerns of international accounting bodies to increase the quality of audit work and restore investor confidence in the financial statements submitted by companies. The research methodology outlines the steps taken to achieve the aim and objectives. The work assumes an application character.

In our approach, we started from analyzing the causal relationship between risk, significant level and audit evidence, and a scheme of this. I used the reliable function method to represent audit risk because it has some advantages, including the fact that the risk is viewed from the perspective of the plausibility of an event to take place. Unlike the theory of probabilities, a value equal to zero assigned to a variable is the lack of any evidence and not the impossibility of an event occurring.

For the purpose of obtaining the final risk value, audit samples shall be considered as a network of variables. For their aggregation, the Dempster-Shafer theory (DS) was used, considered in literature the most appropriate approach to combine a variety of independent evidence. There are three important functions for the application of the theory: The function of basic probabilistic assignment, the function of trust and the function of plausibility. To be applied in the framework of research it is proposed that audit evidence be collected in mission stages (planning, internal control, control of accounts, examination and verification of financial statements) and that the network of variables comprising audit objectives is structured in inherent risk, risk of control and financial statements.

4. Audit risk modeling using the trust function method

Previous research and international normalizers explored more rigorous frameworks for audit risk analysis and assessment such as specific mathematical definitions and a particular focus on the sampling process. Recently, "auditing practice puts work thinking

more in place and risk is seen as a general guidance for mission planning"[1].

The disappearance of "Arthur Andersen" company together with many other alleged failures of audit shows us that the current ways of conceptual design and operational risk must be reconsidered. The Trusted functions method offers some potential advantages in its assessment and a summary is presented below[2, 3, 4]:

- Risk is considered from the perspective of the plausibility of an event to take place;
- It can be used in a variety of situations, in fraud risk assessment, audit risk assessment, auditor independence assessment, limited review missions of financial statements or in situations of significant uncertainties and ambiguities;
- unlike the theory of probabilities, a value equal to zero assigned to a variable is the absence of any evidence and not the impossibility of an event;
- the basic probabilistic allocation is represented by positive, negative and confirmation values to better reflect reality.

The Dempster-Shafer theory of reliable functions was developed by Glenn Shafer in 1960 and by Arthur Dempster in 1970 through the "A mathematical they of evidence". This is relevant for audit and assurance missions because it focuses on the process of collecting audit evidence and the rigorous rationale of the auditor's judgment.

There are three important functions for the application of Dempster-Shafer theory (DS): the function of the basic probabilistic assignment, the function of trust and the function of plausibility.

[1] Srivastava, R., An Introduction to Evidential Reasoning for Decision Making under Uncertainty: Bayesian and Belief Functions Perspectives, *International Journal of Accounting Information Systems*, Vol. 12: 126-135, 2010.

[2] Srivastava, R., Mock, T., Gao, L., The Dempster-Shafer Theory of Belief Functions for Managing Uncertainties: An Introduction and Fraud Risk Assessment Illustration, *Australian Accounting Review*, Volume 21, Issue 3, pp. 282-291, 2011;

[3] Harrison, K., Srivastava, R., Plumlee., D., Auditors' Evaluations of Uncertain Audit Evidence: Belief Functions versus Probabilities, *Studies in Fuzziness and Soft Computing*, Volume 88, 2002, pp 161-183;

[4] Srivastava, R., et.al., Causal inference in auditing: A framework, *Journal of Practice and Theory*, Vol. 31, Issue 3, p. 177-220, 2012

The research was based on the models developed by Rajendra Srivastava.
Similar to the probabilities' theory of Bules, the Dempster rule is used in the theory of trusted functions to aggregate several independent samples relating to a variable.

4.1. The function of the basic probabilistic assignment

This function is similar to the probabilities' distribution function, but with a significant difference. In Bayes' theory, it assigns a value to each element of the set, for example, A=(a_1, a_2,...,a_n). Assume that the probability assigned to an item of to be true is P (AI) that takes values from 0 to 1 and the sum of them is 1.

Thus: $\sum_1^i \mathrm{P}\,(\mathrm{ai}) = 1.$

In DS theory, the basic probabilistic attribution (m-values) is performed both on the single elements of the set and at all levels of aggregation (its own subgroups).

Thus: A = (a_1a_2, $a_1a_2a_3$,....., a_1a_2.....a_n).

The basic probabilistic assignment is represented by m(X), X⊆A, X=a_1a_2, which takes values from 0 to 1 and the sum of them is 1, as follows: $\sum_{X\subseteq \mathrm{A}}^{n} \mathrm{m}\,(\mathrm{X})$=1.

For variable x we can have: m(x)≥0, the extent to which the variable is considered correct; m(~x)≥0 the extent to which the variable is considered incorrect and m(x, ~x)≥0, trust for the whole set; so that m(x)+m(~x)+m(x,~x)=1.

M-values can be obtained by the decision maker (auditor in our case) on a subjective judgment or may be derived from a compatibility relationship between a framework with known probabilities and a lot of interest[5]. For each statement in a section on the financial statements, the auditor will conduct an analysis, giving an average level of confidence on a scale of 0 to 1. Using the basic probabilistic assignment, the auditor may represent the degree of trust attributed to the whole crowd as follows:

M-values above represent the level of support obtained from the samples described, and m(x, ~x) is the level of support attributed to the entire crowd. These m-values are mixed evidence, some confidence in favor of the claim and some support against it. A positive evidence means that we

[5] Srivastava, R., Shafer, G., *Belief function formulas for audit risk*, The accounting review, vol.67, nr.2, p.249-283, 1992.

have information to substantiate the opinion only for m(x) and no support for its denial; thus: 1>m(x)>0 and m(~x)=0. A negative sample means we have support only for denying it, like this: 1>m(~x)>0 and m(x)=0.

4.2. Function of trust

The value attributed to confidence for a set of items, noted as A, is equal to the sum of all the m-values for the subset of items marked with B that are contained in A. Mathematically, we express the confidence in the network of variables A as: $Bel(A) = \sum_{B \subseteq A} m\ (B)$.

Unlike the theory of probabilities, where P(A)=0 represents the impossibility to occur, the trusted function Bel(A)=0 represents the lack of evidence about A. However, both Bel(A)=1 and P(A)=1 express the certainty that A is true and the event will certainly occur. Also, Bel(A) + Bel(~A) ≤1, so the certainty that the "A" event will occur and the confidence that the "~A" event will occur is not required to be 1. In probabilities theory always P(A)+P(~A)=1. The auditor's activity is to decide which state is true.

4.3. Plausibility function

This function is the third component of the equation. In a variable network, for example "A", this is the maximum possibility that "A" is true based on all the evidence gathered. "A" is the sum of the m-values of a decomposition level.

$$Pl(A) = \sum_{A \cap B \neq \varnothing} m\ (B).$$

Plausibility for "A" can be described as a complementary function to the value attributed to "~A", thus: Pl(A)=1-Bel(~A).

Pl(A) = 1 implies that the statement "A" is possible and true, while we don't have evidence to show that "~A" is true, Pl(~A)=0.

$$Pl(x)=m(x)+m(x,\sim x).$$

$$Pl(\sim x) = m(\sim x) + m(DT,\sim DT).$$

The value of PL(~x) can be interpreted as the maximum risk that variable A is not true on the basis of the accumulated evidence. From this perspective, the plausibility function is used to estimate different types of risks. Srivastava[1] defines audit risk by the plausibility that undetected significant distortions are present in the financial statements.

The estimation of risk by the function-of-trust method is conservative in the sense that due attention is paid to both evidence and situations of ambiguity or uncertainty. In general, uncertainty refers to situations where the outcome of an event is not certain. For example, we assume that the auditor has no evidence of management fraud. In the absence of any favorable records from the point of view of the trust functions, zero value is assigned for both States: Bel(fraud is present)=0; Bel(fraud does not exist)=0. Plausibility that fraud is present or not 1. The ambiguity in a result is defined as the difference between plausibility and confidence in the result. Thus, "ambiguity" in this case is 1.

Evidence is a key component of the audit process, and international standards state that the final opinion must be supported by sufficient and appropriate evidence [2]. The evidence collected by the auditor also remains uncertain. They form a network of variables and can be grouped into account balances, classes of transactions, management statements or audit objectives. *Structured in this way, they are of higher relevance because a sample provides a basis for analysis and evaluation for more than one variable in the network*[3] and the interrelationship between them is expected to provide more effective audit.

In order to obtain the final value of risk, it is necessary to obtain evidence, to attribute basic probabilistic, to determine the functions of trust and plausibility, and not least to aggregate them. In literature, the most appropriate approach is Dempster's theory, used to combine a variety of independent evidence.

The audit is a process of collecting evidence and reducing uncertainty about the accuracy of the presentation of financial statements for qualified opinion. Thus, in order to understand the possible risks in the auditing process, the accounting professional should have access to the risks arising from accounting information[4]. The way in which the audit risk assessment

[1] Srivastava, R., Audit Decisions Using Belief Functions: A Review, *Control and Cybernetics*, Vol. 26, No.2, 1997, pp. 135-160.

[2] ISA 500 – Audit Evidence.

[3] See: Arens, A., Elder, R., Beasley, M. Auditing and assurance services: an integrated approach, 14th edition, *Pearson Education*, New Jersey, p. 20-175, 2012

[4] Wustemann, J. (2004). Evaluation and response to risk in international accounting and audit systems: Framework and German experiences. *Journal of Corporation Law*, 29(2), 449-466.

is carried out, in the view of international normalizers, provides a way to assess the existence and intensity of significant distortions in an assertion or assertion of financial statements, but does not provide an adequate way to aggregate accumulated documentation by measuring accounts and transaction flows.

We appreciate that one of the most effective ways of auditing involves obtaining a combination of (obvious) certainty for each mission objective. Audit samples collected by the auditor may be represented as a network of interconnected variables, statements of the summary documents for which the mission team collects evidence to determine whether or not they are correctly submitted. A summary of the objectives for each statement in the financial statements is presented in **Table no. 1**.

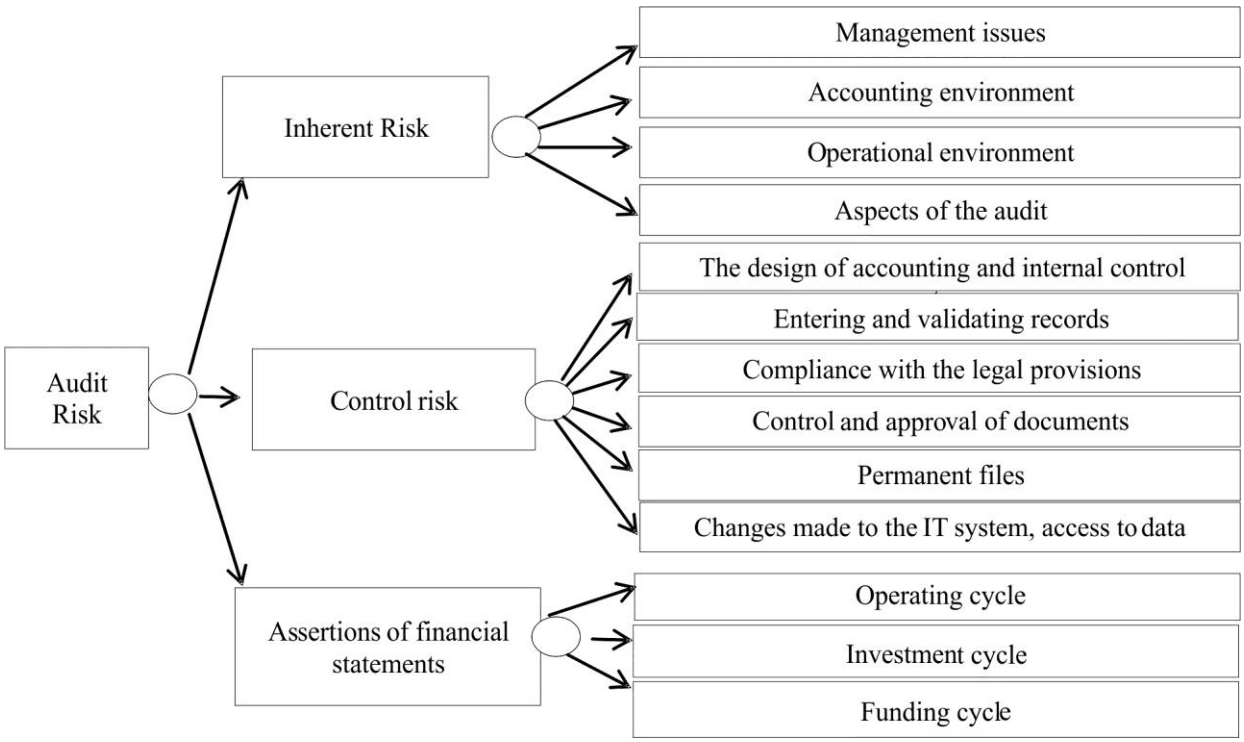
Table no. 1. Audit objectives

Statements	Targets	Explanation
Classes of transactions	Occurrence	The transactions and events recorded have actually occurred and relate to the entity
	Exhaustiveness	Journals include all operations to be recorded
	Accuracy	Transactions will show accurately the amounts involved
	Separation of the financial years	The records relate to the period during which they occurred.
	Classification	The classes of transactions and events have been recorded in the corresponding accounts
Balances on accounts	Existence	Balance sheet accounts (assets, liabilities and equity) exist and are not fictitious.
	Rights and obligations	The entity holds or controls the rights to the assets and a liability is an obligation
	Exhaustiveness	All relevant balance sheet items have been recorded
	Evaluation and allocation	The balance sheet accounts shall be presented at fair value and any value adjustment shall be recorded accordingly.
Presentation and description	Occurrence, Rights and obligations	The transactions and events described have occurred and are related to the entity.
	Classification and comprehensibility	All relevant information has been presented in the financial statements
	Accuracy and evaluation	The financial information shall be adequately described and presented and shall be clearly expressed.

Source: Own processing according to "Quality audit guide", CFAR, 2019

In general, the auditor obtains more evidence on each variable and has evidence at different levels of financial statements. To estimate audit risk by using the reliable function method, we have been working on identifying information sources and collecting evidence at mission stages (planning, internal control, auditing, financial statements review and verification). The network of variables we propose to estimate audit risk using the Trusted functions method is shown in ***Figure no. 2.***

Figure no. 2. The network of variables influencing the audit risk



Source: Own projection based on "Quality audit guide", CFAR, and Horomnea, E., "Financial audit. Concepts. Standards. Rules", 2014

In the model, the values of the underlying probabilistic assignment are obtained by direct subjective judgment estimation. It should also be noted that the auditor's information sources are diverse and sometimes interdependent, and the level of trust in the different categories of evidence obtained is not equal in value. Some elements may not be conclusive in their own right, but overall contribute to the formation of opinion by linking them with other information. The situation presented is not exhaustive and can be further specified in the audit engagement.

The audit risk assessment shall include the estimation of the basic probabilistic attribution values, the calculation of the confidence-setback function and the plausibility-function-based rating for each of the above-mentioned variables network claims. A model is given in **Table no. 2**.

Table no. 2. The functions of the probabilistic basic, reliable and plausible assignment for the audit risk evidence

Statements analyzed	Basic probabilistic assignment	Trust function	Plausibility function
Inherent Risk			
Management issues	$m_{AC}(ri)$ $m_{AC}(-ri)$ $m_{AC}(ri;-ri)$	$Bel_{AC}(ri)$ $Bel_{AC}(-ri)$ $Bel_{AC}(ri; -ri)$	$Pl_{AC}(ri)$ $Pl_{AC}(-ri)$
Accounting environment	$m_{MC}(ri)$ $m_{MC}(-ri)$ $m_{MC}(ri;-ri)$	$Bel_{MC}(ri)$ $Bel_{MC}(-ri)$ $Bel_{MC}(ri; -ri)$	$Pl_{MC}(ri)$ $Pl_{MC}(-ri)$

Statements analyzed	Basic probabilistic assignment	Trust function	Plausibility function
Operational environment	$m_{MO}(ri)$ $m_{MO}(-ri)$ $m_{MO}(ri;-ri)$	$Bel_{MO}(ri)$ $Bel_{MO}(-ri)$ $Bel_{MO}(ri; -ri)$	$Pl_{MO}(ri)$ $Pl_{MO}(-ri)$
Audit aspects	$m_{AA}(ri)$ $m_{AA}(-ri)$ $m_{AA}(ri;-ri)$	$Bel_{AA}(ri)$ $Bel_{AA}(-ri)$ $Bel_{AA}(ri; -ri)$	$Pl_{AA}(ri)$ $Pl_{AA}(-ri)$
TOTAL INHERENT RISK	$m_{RI}(ri)$ $m_{RI}(-ri)$ $m_{RI}(ri;-ri)$	$Bel_{RI}(ri)$ $Bel_{RI}(-ri)$ $Bel_{RI}(ri; -ri)$	$Pl_{RI}(ri)$ $Pl_{RI}(-ri)$
Control Risk			
Design of the accounting and internal control systems	$m_{SC}(rc)$ $m_{SC}(-rc)$ $m_{SC}(rc;-rc)$	$Bel_{SC}(rc)$ $Bel_{SC}(-rc)$ $Bel_{SC}(rc; -rc)$	$Pl_{SC}(rc)$ $Pl_{SC}(-rc)$
Entering and validating records	$m_{VI}(rc)$ $m_{VI}(-rc)$ $m_{VI}(rc;-rc)$	$Bel_{SC}(rc)$ $Bel_{SC}(-rc)$ $Bel_{SC}(rc; -rc)$	$Pl_{SC}(rc)$ $Pl_{SC}(-rc)$
Compliance with the legal provisions	$m_{DL}(rc)$ $m_{DL}(-rc)$ $m_{DL}(rc;-rc)$	$Bel_{SC}(rc)$ $Bel_{SC}(-rc)$ $Bel_{SC}(rc; -rc)$	$Pl_{SC}(rc)$ $Pl_{SC}(-rc)$
Control and approval of documents	$m_{AP}(rc)$ $m_{AP}(-rc)$ $m_{AP}(rc;-rc)$	$Bel_{AP}(rc)$ $Bel_{AP}(-rc)$ $Bel_{AP}(rc; -rc)$	$Pl_{AP}(rc)$ $Pl_{AP}(-rc)$
Permanent Files	$m_{FP}(rc)$ $m_{FP}(-rc)$ $m_{FP}(rc;-rc)$	$Bel_{FP}(rc)$ $Bel_{FP}(-rc)$ $Bel_{FP}(rc; -rc)$	$Pl_{FP}(rc)$ $Pl_{FP}(-rc)$
Changes made to the IT system, access to data	$m_{AD}(rc)$ $m_{AD}(-rc)$ $m_{AD}(rc;-rc)$	$Bel_{AD}(rc)$ $Bel_{AD}(-rc)$ $Bel_{AD}(rc; -rc)$	$Pl_{AD}(rc)$ $Pl_{AD}(-rc)$
TOTAL CONTROL RISK	$m_{RC}(rc)$ $m_{RC}(-rc)$ $m_{RC}(rc;-rc)$	$Bel_{RC}(rc)$ $Bel_{RC}(-rc)$ $Bel_{RC}(rc; -rc)$	$Pl_{RC}(rc)$ $Pl_{RC}(-rc)$
AUDIT RISK AT PLANNING STAGE	$m_{RP}(ra)$ $m_{RP}(-ra)$ $m_{RP}(ra;-ra)$	$Bel_{RP}(ra)$ $Bel_{RP}(-ra)$ $Bel_{RP}(ra; -ra)$	$Pl_{RP}(ra)$ $Pl_{RP}(-ra)$
Assertions of financial statements			
Intangible assets	$m_{I}(as)$ $m_{I}(-as)$ $m_{I}(as;-as)$	$Bel_{I}(as)$ $Bel_{I}(-as)$ $Bel_{I}(as; -as)$	$Pl_{I}(as)$ $Pl_{I}(-as)$
Tangible assets	$m_{IN}(as)$ $m_{IN}(-as)$ $m_{IN}(as;-as)$	$Bel_{IN}(as)$ $Bel_{IN}(-as)$ $Bel_{IN}(as; -as)$	$Pl_{IN}(as)$ $Pl_{IN}(-as)$
Investments	$m_{I}(as)$ $m_{I}(-as)$ $m_{I}(as;-as)$	$Bel_{I}(as)$ $Bel_{I}(-as)$ $Bel_{I}(as; -as)$	$Pl_{I}(as)$ $Pl_{I}(-as)$
Stocks and current production	$m_{SP}(as)$ $m_{SP}(-as)$ $m_{SP}(as;-as)$	$Bel_{SP}(as)$ $Bel_{SP}(-as)$ $Bel_{SP}(as; -as)$	$Pl_{SP}(as)$ $Pl_{SP}(-as)$
Bank balances and cash available	$m_{SB}(as)$ $m_{SB}(-as)$ $m_{SB}(as;-as)$	$Bel_{SB}(as)$ $Bel_{SB}(-as)$ $Bel_{SB}(as; -as)$	$Pl_{SB}(as)$ $Pl_{SB}(-as)$

Statements analyzed	Basic probabilistic assignment	Trust function	Plausibility function
Debtors	m_D(as) m_D(-as) m_D(as;-as)	Bel_D(as) Bel_D(-as) Bel_D(as; -as)	Pl_D(as) Pl_D(-as)
Taxes	m_{IM}(as) m_{IM}(-as) m_{IM}(as;-as)	Bel_{IM}(as) Bel_{IM}(-as) Bel_{IM}(as; -as)	Pl_{IM}(as) Pl_{IM}(-as)
Liabilities, commitments and contingencies	m_{DA}(as) m_{DA}(-as) m_{DA}(as;-as)	Bel_{DA}(as) Bel_{DA}(-as) Bel_{DA}(as; -as)	Pl_{DA}(as) Pl_{DA}(-as)
Legal and statutory issues	m_{AL}(as) m_{AL}(-as) m_{AL}(as;-as)	Bel_{AL}(as) Bel_{AL}(-as) Bel_{AL}(as; -as)	Pl_{AL}(as) Pl_{AL}(-as)
Sales and revenues	m_V(as) m_V(-as) m_V(as;-as)	Bel_V(as) Bel_V(-as) Bel_V(as; -as)	Pl_V(as) Pl_V(-as)
Purchases and expenditure	m_{AC}(as) m_{AC}(-as) m_{AC}(as;-as)	Bel_{AC}(as) Bel_{AC}(-as) Bel_{AC}(as; -as)	Pl_{AC}(as) Pl_{AC}(-as)
Salaries and similar debts	m_{SD}(as) m_{SD}(-as) m_{SD}(as;-as)	Bel_{SD}(as) Bel_{SD}(-as) Bel_{SD}(as; -as)	Pl_{SD}(as) Pl_{SD}(-as)
Profit and loss statement	m_{CP}(as) m_{CP}(-as) m_{CP}(as;-as)	Bel_{CP}(as) Bel_{CP}(-as) Bel_{CP}(as; -as)	Pl_{CP}(as) Pl_{CP}(-as)
Trial balance	m_{BV}(as) m_{BV}(-as) m_{BV}(as;-as)	Bel_{BV}(as) Bel_{BV}(-as) Bel_{BV}(as; -as)	Pl_{BV}(as) Pl_{BV}(-as)
TOTAL STATEMENTS	m_{AS}(as) m_{AS}(-as) m_{AS}(as;-as)	Bel_{AS}(as) Bel_{AS}(-as) Bel_{AS}(as; -as)	Pl_{AS}(as) Pl_{AS}(-as)
FINAL AUDIT RISK	m_{RA}(ra) m_{RA}(-ra) m_{RA}(ra;-ra)	Bel_{RA}(ra) Bel_{RA}(-ra) Bel_{RA}(ra; -ra)	Pl_{RA}(ra) Pl_{RA}(-ra)

Source: Own processing according to "Quality audit guide", CFAR, 2019

Legend:

MAC(ri) – value of the underlying probabilistic attribution for management claims at the inherent risk analysis stage

BelAC(ri) – value attributed to the trust function for the management claim at the inherent risk analysis stage

Ads(ri) – value attributed to the plausibility function for the statement of looks relating to management in the inherent risk analysis stage

5. Results and discussions

The method of reliable functions shall be distinguished from other modes of audit risk analysis in the light of the fact that the risk is regarded from the perspective of the plausibility of an event. A value equal to zero attributable to a variable is the absence of any evidence and not the impossibility of an event. For example, we believe that the auditor is carrying out a review of the debtor section of the financial statements to ensure that debtors reflect amounts due by third parties at the end of the year. On the basis of the evidence gathered, the auditor shall assign an average level of confidence of 0,8 on a scale of 0 to 1 for the claim that invoices, and receipts exist.

At the same time, the auditor notes that several invoices were issued manually, the company's computerized accounting system was not used which could indicate a risk of mismanagement of assets or fictitious

income. The auditor thus attributes a level of confidence of 0,1 to the claim that the transactions actually took place. The assignment of probabilities is the level of support obtained from the described samples. A positive evidence means that we have information to substantiate the opinion and no support for denying it. A negative sample means we have only support for denying it. The values of the underlying probabilistic assignment are obtained by direct subjective judgment estimation. It should also be noted that the auditor's information sources are diverse and sometimes interdependent, and the level of trust in the different categories of evidence obtained is not equal in value. Some elements may not be conclusive in their own right, but overall contribute to the formation of opinion by linking them with other information.

For the purpose of obtaining the final risk value, audit samples shall be considered as a network of variables. There are three important functions for the application of the theory: The function of basic probabilistic assignment, the function of trust and the function of plausibility. To be applied in the framework of research it is proposed that audit evidence be collected in mission stages (planning, internal control, control of accounts, examination and verification of financial statements) and that the network of variables comprising audit objectives is structured in inherent risk, risk of control and financial statements.

Conclusions

The audit risk assessment is a complex and continuous process that runs from the first information on the entity's knowledge to the issuance of the opinion. An incorrect estimate of this may lead to misallocation of resources and thus to inefficient and ineffective results. An important role is given to the reasoning of the accounting professional that can be influenced by factors such as: The working environment, personality, nature and timing of evidence collected, the decision-making process within the audited entity, the quality characteristics set. Evidence is a key component of the audit process. From the perspective of the reliable functions described by the Dempster-Shafer theory, they form a network of variables. Grouped into account balances, classes of transactions, management statements or audit objectives are of higher relevance because a sample provides a basis for analysis and evaluation for more than one network variable.

During the Article, we have proposed, based on the study of relevant literature on the analysis and risk assessment in the audit, that we present a less used method in practice, i.e. the method of reliable functions. This involves estimating the values of the basic probabilistic attribution base, calculating the confidence-setback function and the plausibility-based function-based rating for each statement in the variable network that influences the audit risk as presented in the "quality audit guide". This gives the auditor greater freedom to use professional judgment in mission documentation and risk assessment.

In practice the method is extremely little used because it is not promoted by professional bodies, nor are there any charts developed in this respect. The method is an alternative to the model proposed by the International Audit standards and uses the same network of variables, with the indication that for each statement and objective in the financial statements, the auditor based on professional judgment shall give a degree of confidence and plausibility for each variable, and the accounting professional can use the same software, whether it's a specially created software or excel tables.

As future Directorates of Research, we aim to make a comparison of a sample of companies listed on the Bucharest stock Exchange to assess whether the determination of audit risk by the trust function method offers a higher level of information than by applying the method recommended by the International Audit standards.

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Audit financiar, XVIII, Nr. 3(159)/**2020**, *555-567*
ISSN: 1583-5812; ISSN on-line: 1844-8801

The External Public Audit in the Member States of the European Union:

between Standard Typology and Diversity

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Abstract

The premise of the research is represented by the importance of the external public audit, as a specific activity that the supreme audit institutions carry out at the level of the public sector entities, in order to provide to interested parties, assurances regarding the management of the public resources of these entities. The research objectives are two-dimensional and the research methodology is qualitative and interpretive. The first dimension aims to identify the conceptual connotations of the external public audit in the specialized literature. The second dimension represents a multicriteria comparative analysis regarding the typology of the external public audit carried out by the supreme institutions of the European Union member states. The study is carried out regarding all the 27 member states, information regarding the United Kingdom, which has recently left the European Union, being also presented and analyzed. The research results showed that, although the applied audit methods vary, convergent elements have been identified, so that the typology of the external public audit also validates the European Union "unity in diversity" motto, at the level of the specific activities of the supreme audit institutions in the community area.

On the background of an area of undoubted importance, but limited in terms of research, this scientific demarche represents a major challenge for both the academic and the socio-economic environment. Thus, the conceptual valences of the external public audit will be complemented and an increase of credibility and relevance will be generated in the manner of supervising the public financial resources' management of the public sector entities at the level of the European Union member states, in the context of the economic turbulences and the rising demand for public services manifested at European and international level.

Key words: *external public audit; public sector; supreme audit institutions; member states; European Union; typology*

JEL Classification: *H83, M42*

To cite this article:
Trincu-Drăguşin, C.-P., Ştefănescu, A. (2020), The External Public Audit in the Member States of the European Union: between Standard Typology and Diversity, *Audit Financiar*, vol. XVIII, no. 3(159)/2020, pp. 555-567, DOI: 10.20869/AUDITF/2020/159/019

To link this article:
http://dx.doi.org/10.20869/AUDITF/2020/159/019
Received: 16.03.2020
Revised: 18.03.2020
Accepted: 15.06.2020

Introduction

The premise of the research is represented by the importance of the external public audit, as a specific activity that the supreme audit institutions carry out at the level of the public sector entities, in order to provide to interested parties, assurances regarding the management of the public resources of these entities.

In this context, the present research brings to the foreground a number of considerations regarding the concept of external public audit and addresses its typology between the "financial audit – performance audit – compliance audit triptych" and diversity. The research horizon targets the types of audits of the supreme institutions in the European Union member states, from a multidimensional perspective.

The research also considers how the external public audit typology is addressed within the International Standards of Supreme Audit Institutions (abbreviated ISSAI), elaborated by the International Organization of Supreme Audit Institutions (abbreviated INTOSAI).

We consider that the research of the external public audit, as a specific activity of the supreme audit institutions, by reference to the community and international framework, highlights current issues, especially from the scientific point of view, but also as a practical matter, which has determined the selection of the research area and theme.

We believe that this approach will strengthen the role of the external public audit and of the supreme audit institutions in overseeing the public financial resources management and will provide stakeholders with an innovative comparative analysis regarding the external public audit typology in the community area, from a perspective oriented towards the "standard typology – diversity" approach, under the aegis of the European Union's "unity in diversity" motto. Complementary, the innovative approach will contribute to the credibility increase regarding the supervision of the public financial resource management at the level of the countries in the community space, in the context of the economic turbulences with negative impact on the public financial resources.

Structurally, the paper begins with an introduction. The first section of the paper is dedicated to the conceptual approaches regarding the external public audit, and the second section presents the research methodology. The third section describes the study results on the external public audit typology in the member states of the European Union, and at the end of the paper, the conclusions, the limits of the study, as well as the future research directions are presented.

1. Conceptual approaches regarding the external public audit

The research approach aims to identify the interest of the academic environment regarding the study of the external public audit, by querying the databases.

Thus, as a testimonial, by querying the Web of Knowledge database, using the keywords "public sector audit" and "supreme audit institution", only 34 articles which contain these keywords in the title were identified. Therefore, we notice from the beginning that the specialized literature is limited regarding the research of the external audit in the public sector, although its importance is undoubted.

Moreover, the World Wide Web query using the keyword in Romanian ("audit public extern") highlights about 654,000 results related to this concept, while a search by the concept in English ("external public audit") reveals about 239,000,000 results, which denotes the limitation of the external public audit approach in Romania.

Our findings are supported also by Johnsen's research (2019, p. 121), which shows that the specialized literature on public sector auditing outside the Anglo-American and North-European contexts is limited.

In Romania, Ispir (2008, p. 107) considers that the external audit in the public sector is usually invoked as the audit carried out by the national supreme audit institution (abbreviated SAI), respectively from outside the government structure, and its sphere of activities includes, in general, the certification of accounts (the financial audit) or the public bodies' internal control systems' evaluation, as well as of the internal control system of the government as a global system.

According to Bobeş (Tăvală) (2016, p. 71), the activity of external audit in the public sector is essential in ensuring the accountability regarding the public funds management in the sense that, although the responsibility of using the public funds, in terms of

legality and performance, lies with the authorizing officers, the external public audit has the role to evaluate the financial management of the public entities and to issue recommendations and measures for its improvement.

Moreover, Matiş, Gherai and Vladu (2014) point out that the audit carried out by the supreme audit institutions is an activity with impact on the societal trust in public sector entities, since the management of public resources impacts the citizens lives.

At international level, in the view of the Organization for Economic Cooperation and Development (abbreviated OECD), the external audit carried out by the supreme audit institutions is traditionally known as aiming at the public expenditures' supervision.

Also, Bonollo (2019, p. 468) highlights the importance of the audit carried out by the supreme audit institutions for the reform of the public sector, emphasizing that through it, the supervision of the use of public resources and the responsibility are ensured. Extending the reasoning, Morin (2010, p. 25) shows that the supreme audit institutions oversee the correct use of the public funds.

For Sacer, Zager and Sever (2011, p. 81), the external public audit (the governmental audit) is noted as an essential condition for the economic, effective and efficient spending of the public money. Moreover, this point of view is convergent with that expressed by Ramirez (2010, p. 95), who points out that the external audit in the public sector plays an essential role in determining the compliance with the three principles (economy, efficiency and effectiveness), both at the level of the administrations themselves, as well as the level of public entities.

In a recent paper, Cordery and Hay (2019, p. 128) highlight the important role of the supreme audit institutions in ensuring the public sector accountability. At the same time, the authors approach the typology of the external public audit, showing that the main activities of the supreme audit institutions focus on the audit of the public sector entities' financial statements, the compliance assessment, providing consulting to parliamentary committees and performing performance audits.

Also, Slobodyanik and Chyzhevska (2019, p. 472) approach the external public audit by referring to its ability to increase the responsibility of the public entities towards the society, regarding the resources use and the performance related results. As a result, as Pierre and Licht (2017, p. 226) highlight, the supreme audit institutions are gradually becoming important agents of the public management reform.

From another perspective, Campos (2019, p. 77) regards the external audit in the public sector as a guarantee of the democratic state and the rule of law.

Moreover, at the level of the national specialty literature, Oțetea, Tița and Ungureanu (2015, p. 622) have highlighted the key position of the supreme audit institutions within the institutional framework of the democratic nations.

In terms of typology, by reference to the International Standards of Supreme Audit Institutions (abbreviated ISSAI), elaborated by the International Organization of Supreme Audit Institutions (abbreviated INTOSAI), ISSAI 100 (The Fundamental Principles of Public Sector Audit) highlights the three main types of audit for the public sector, respectively: the financial audit, the performance audit and the compliance audit, defining them as follows:

- the financial audit – focuses on determining whether the financial information of the audited entity is presented according to the applicable financial reporting and regulatory framework; this objective is achieved by obtaining sufficient and adequate audit evidence, in order to allow the auditor or the audit team to express the opinion on the financial information of the entity, determining whether they contain or are free of misstatements, caused by fraud or errors;
- the performance audit – focuses on determining whether the operations, the programs and the institutions function according to the principles of economicy, efficiency and effectiveness and whether there is room for improvement; performance is evaluated in relation with certain criteria, the causes of deviations from these or other problems being analyzed; in essence, the purpose of this form of audit is to answer the audit questions and to issue recommendations to improve the aspects concerned;
- the compliance audit – focuses on determining whether the activities, transactions and financial information are, in all significant aspects, in accordance with the authorities governing the audited entity (regulations, budgetary resolutions, policies, codes and rules, agreed terms or general

principles that govern the financial management of the public sector and the civil servants conduct).

Within the same standard, it is shown that the supreme audit institutions may carry out missions on any relevant subject for the management responsibilities and for those charged with the governance and the proper use of public resources. These actions may include, among others, reporting on the results of public service provision activities, the compliance with the internal control standards and also the projects' real-time audits. Equally, the supreme audit institutions may conduct combined audits, which include financial, performance and/or compliance issues.

The research shows that the presented conceptual approaches converge towards the importance of the external public audit and the role of the supreme audit institutions in monitoring the management of public financial resources and implicitly the sustainability of the public sector.

2. The research methodology

In order to achieve the objectives of the research, we will use the specific means of the scientific investigation. The research methodology is qualitative and interpretive.

The scientific demarche envisages the analysis of the main approaches in the specialized literature. At the same time, the descriptive-conceptual perspective will follow the coordinates on the basis of which the theme is addressed within the International Standards of Supreme Audit Institutions. The scientific demarche is complemented by an analysis on the typology of the external public audit in the European Union member states, based on the logical and comparative analysis by countries, through the successive processing of the information disseminated by the European Court of Auditors ("Public Audit in the European Union", 2019, https://op.europa.eu/webpub/eca/book-state-audit/en/). The study is carried out regarding all the 27 member states, information regarding the United Kingdom, which has recently left the European Union, being also presented.

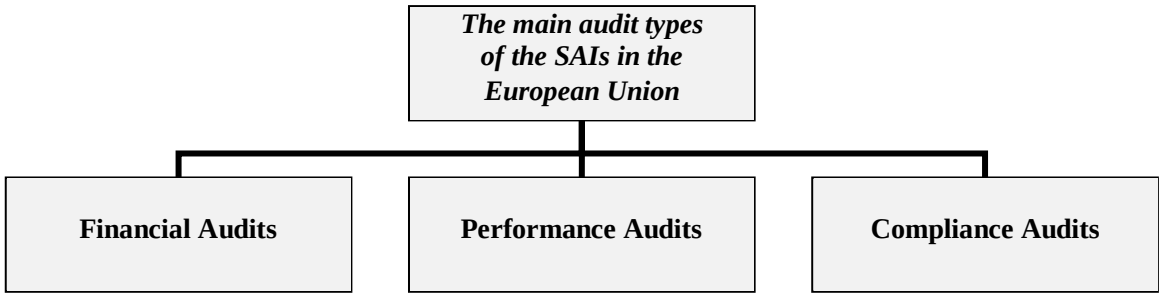
The first stage of processing focuses on grouping the supreme audit institutions in the European Union area, in relation to the types of audit missions they carry out, in three categories: SAIs applying the standard typology (we consider the standard typology as being represented by the "financial audit – performance audit – compliance audit triptych") and/or performs combined audits (audit activities involving several types of missions); SAIs that perform more types of audits compared to the standard typology; SAIs that perform fewer types of audits compared to standard typology. The second stage of processing, aims to correlate the analysis with the integration year of the states in the European Union, and the third stage takes into account also the age of the supreme audit institutions in the member states, determined by reference to the year in which they became active.

The bibliographic sources envisaged for carrying out the research include: books, studies and articles published in prestigious journals, different reports issued by the authorities in the field, international standards specific to the addressed subject, as well as specialized sites consulted in order to strengthen the investigative approach. Also, we will resort to tools such as: participatory and non-participatory observation, data and information collection and processing, analysis, synthesis, deductive reasoning, comparison, exemplification, but also mapping.

3. The multi-dimensional analysis of the external public audit typology in the member states of the European Union

The main types of audit of the supreme institutions from the European Union (***Figure no. 1***) were described in the first edition of the paper "Public Audit in the European Union" (European Court of Auditors, 2019, p. 14). Thus, it is shown that *the financial audits* involve the documents, reports, procedures, records, internal control systems and internal audit examination, in order to verify that the financial statements present a correct and an accurate image of the financial position and if the results of the financial activities comply with the accepted accounting standards and principles. If we refer to *performance audits*, they involve examining the programs, operations, management systems and procedures used by the bodies and institutions that manage public resources, in order to evaluate their economic, efficient and effective use. *The compliance audits* verify if the economic and financial management of the audited entity, activity or program complies with the applicable legal and regulatory provisions.

Figure no. 1. The main audit types of the supreme audit institutions from the European Union



Source: Projection after the European Court of Auditors (2019), "Public Audit in the European Union", p. 14.

Also, within this report of the European Court of Auditors, in the section dedicated to Romania, it is stated that "*the audit missions carried out by the Romanian Court of Accounts take the form of: financial audits of the execution accounts, performance audits, compliance audits and external public audits of the community funds*". We mention that the last form of audit referred to, relates to the specific missions of the Audit Authority, as independent operational authority, organized within the supreme audit institution of Romania.

Regarding the categories of external audit, Ispir (2008, p. 205) shows that the supreme audit institutions in the EU countries carry out a wide range of audit/control activities, each of them being individualized by specific activities and own approaches, which gives them distinct identities.

In order to achieve the research objectives, based on the public information available in the official documents of the European Court of Auditors, we grouped the supreme audit institutions (abbreviated SAIs) from the European Union member states, in relation to the typology of the audit missions carried out, as follows (**Table no. 1**):

1. SAIs applying the standard typology. We consider the standard typology to be represented by the "financial audit (abbreviated FA) – performance audit (abbreviated PA) – compliance audit (abbreviated CA) triptych" and/or combined audits (audit activities involving several types of missions);
2. SAIs that perform more types of audits compared to the standard typology;
3. SAIs that perform fewer types of audits compared to the standard typology.

Table no. 1. SAIs classification according to the typology of the audit missions performed

No.	SAI categories	The categories corresponding countries	External public audit types
1.	**SAIs applying the standard typology and/or performing combined audits**	*Belgium*	FA, PA and audits on legality and regularity.
		Croatia, Denmark, Estonia, Latvia, Lithuania, Slovakia, France, Portugal	FA, PA and CA.
		Czech Republic	FA, PA and audits of legality.
		Slovenia	FA, PA, CA and the most often a combination of two types of audit.
		Italy	Financial-economic audits, PA, *ex ante* CA.
		Poland	FA, PA (planned and ad hoc), regularity audits and integrated audits, which include both financial and regularity and performance issues; **subsequent follow-up audits.**
		Hungary	FA, PA, CA and **subsequent follow-up audits**.

No.	SAI categories	The categories corresponding countries	External public audit types
2.	**SAIs that perform more types of audits compared to the standard typology**	*Bulgaria*	FA, PA, CA and **specific audits.**
		Cyprus	FA, PA, CA, **technical audits, environmental audits, special investigations.**
		Finland	FA, PA, CA, **audits of the fiscal-budgetary policy, subsequent follow-up audits.**
		Germany	FA, PA, CA, **selective audits, horizontal audits, exploration studies, subsequent follow-up audits, general or management audits, *ex post* audits, real-time audits.**
		Greece	FA, PA, CA, ***ex ante* audits**, **pre-contractual audits, *ex post* audits, subsequent follow-up audits.**
		Malta	FA, PA, CA, **investigation audits, IT audits, subsequent follow-up audits.**
		Romania	FA, PA, CA, **community funds' external public audits.**
		Spain	FA, PA, CA (if different types of audits are combined, it results: *regularity audits* – focus on the objectives of the financial audit and the compliance audit; *comprehensive audits* – cover all these types of audits); **subsequent follow-up audits; horizontal audits**.
3.	**SAIs that perform fewer types of audits compared to the standard typology**	*Austria*	Combined audit (FA and PA).
		Ireland, Luxembourg, (United Kingdom), Netherlands	FA and PA.
		Sweden	An annual FA, evaluating the correctness of the financial statements and PA; **subsequent follow-up audits.**

Source: Processing by the European Court of Auditors (2019), "Public audit in the European Union"

The research of the information presented in **Table no. 1**, highlights that in addition to *the standard typology*, the supreme audit institutions in some countries of the community area also carry out *other types of external public audit* missions, such as: specific audits or special investigations, technical audits, environmental audits, fiscal-budgetary policy audits, selective audits, horizontal audits, exploration studies, subsequent follow-up audits, general or management audits, real-time audits, ex ante and ex post audits, pre-contractual audits, IT audits, as well as community funds' audits.

The standard typology is represented by the "financial audit – performance audit – compliance audit triptych" and/or combined audits (audit activities involving several types of missions), being performed in the case of the supreme audit institutions in Belgium, Croatia, Denmark, Estonia, France, Italy, Latvia, Lithuania, Poland, Portugal, Czech Republic, Slovakia, Slovenia and Hungary.

The specific audits or *the special investigations* are carried out in countries such as Bulgaria and Cyprus, being missions conducted at the request of the legislature (through its members and/or commissions), of the ministers within the executive, of the individuals or the organizations, but also of the police for assistance in the investigation of some potentially criminal cases.

It is also noted that within the SAI of Cyprus, technical audits and environmental audits are also carried out. If *the technical audits'* mainly concerns are related not only to the public procurement practices, the construction projects in progress, the leases of the real estate properties intended to house the offices of the public administration, but also to the IT systems of data processing, *the environmental audits* involve a combination of financial, performance and compliance audits regarding a particular topic related to the environmental governance.

The fiscal-budgetary policy audits are carried out in Finland and are intended to evaluate these policies. *The selective audits* involve in-depth examinations aimed at collecting evidence on a certain aspect of the audited subject audited, these being specific to Germany.

The horizontal audits are carried out not only in Germany, but also in Spain, and involve auditing a representative sample of entities within the same public subsector or from different subsectors, which have common characteristics and objectives and aim the same time horizon, in order to draw conclusions regarding specific topics in the fields of public administration.

If we consider *the general (or management) audits*, they are also practiced in Germany, and they aim to provide an overview of the financial management of the audited authority.

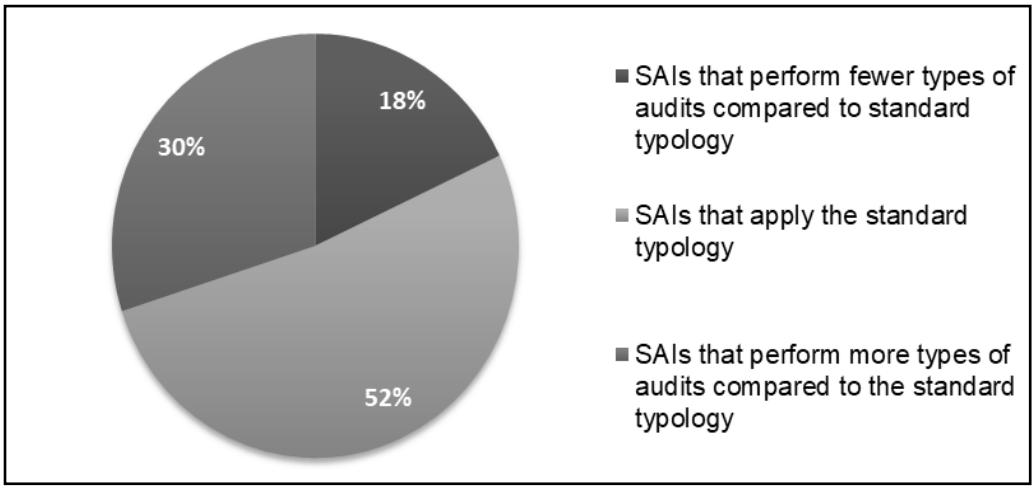
Using the sequential approach, we have also identified the following typology of the missions performed by the SAIs in the European Union member countries:

- *The exploration studies* are specific actions that are practiced by the SAI of Germany. These can be considered as documentation actions, as they aim to obtain in-depth information on certain problematic or interesting aspects, with the primary purpose of preparing new audit missions;
- *The ex-ante audits of the public entities and expenditures* are used by SAIs from countries such as Greece or Italy, being carried out in order to avoid certain illegitimate actions or to approve or reject, as appropriate, the relevant payment orders;
- *The pre-contractual audits* are specific SAI missions in Greece, which are carried out prior to the conclusion of high value contracts, assigned by the state or by any public entity;
- *The real-time audits* are a category of missions in Germany, which permit SAI to examine the multitude of decisions involved in major programs, separately and at each stage of the project, facilitating the detection, at an early stage, of the deficiencies, and the timely information of the decision-makers;
- *The ex-post audits* are verification measures practiced by SAIs from countries such as Germany or Greece, which are carried out with the main purpose of evaluating the legality and regularity of revenues and expenditures legality and regularity, but also the economy, efficiency and effectiveness of policies, programs, measures or the public administration functioning;
- *The subsequent follow-up audits* are aimed exclusively at the subsequent and systematic follow-up of the audits results, by verifying the way and degree of implementation of the measures or the recommendations made following the conclusions and findings related to the previous missions. These types of checks are carried out by the SAIs in countries such as Finland, Germany, Greece, Hungary, Malta, Poland, Spain, but also Sweden. The results of this verification form are recorded in subsequent follow-up reports, and in some cases, some SAIs publish annual reports on this subject. In Romania, these actions are called follow-up missions or for monitoring the recommendations implementation.

The analysis made based on the information disseminated by the European Court of Auditors shows that half of the SAIs in the community area apply the standard typology and/or carry out combined audits. Basically, it is the case of the SAIs in 14 countries (Belgium, Croatia, Denmark, Estonia, France, Italy, Latvia, Lithuania, Poland, Portugal, Czech Republic, Slovakia, Slovenia and Hungary) from the total of 27 EU member states, which means 52%. In contrast, 30% of the SAIs in the European Union carry out more audit types than the standard typology. These include the Romanian Court of Accounts, together with the SAIs in Bulgaria, Cyprus, Finland, Germany, Greece, Malta and Spain.

Regarding the SAIs which perform a limited typology of missions compared to the standard typology, the research carried out highlighted 18% of the SAIs in the European Union, namely those in member states such as Austria, Ireland, Luxembourg, Sweden and Netherlands (***Figure no. 2***). The same situation is found also in the case of the United Kingdom, which has recently left the EU.

Figure no. 2. The structural analysis of the SAIs in the community area



Source: Authors' processing, 2020

The geographical distribution of the member states on the map of Europe, grouped by the three categories of SAIs identified through the present research, is presented in ***Figures 3, 4 and 5***.

Figure no. 3. Member states in which SAIs apply the standard typology and/or perform combined audits

Source: Authors' processing, 2020

Figure no. 4. Member states in which SAIs perform more types of audits compared to the standard typology

Source: Authors' processing, 2020

Figure no. 5. Member states in which SAIs perform fewer types of audits compared to the standard typology

Source: Authors' processing, 2020

The analysis of the information released by the European Court of Auditors also revealed that the SAIs in Austria, Ireland, Luxembourg, (United Kingdom), Netherlands and Sweden do not mention the compliance audit missions. Diametrically opposed, in addition to the financial audit, that is carried out in all the supreme audit institutions in the European Union states, we have also identified the performance audit, which indicates that, at the community, level significant importance is given to aspects related to economicy, efficiency and effectiveness.

In order to identify the degree of consolidation of the external public audit missions in the member states of the European Union, we have continued the research by correlating the typology of the missions carried out by the supreme audit institutions with the states integration year in the European Union. The member states from 1993 and the four enlargement stages from 1995, 2004, 2007 and 2013 were taken into account (**Table no. 2**).

Table no. 2. The classification of SAIs according to the typology of the audit missions carried out and the states integration year in the European Union

Member states at the founding of the EU/ Stages of EU enlargement	SAIs that perform fewer types of audits compared to the standard typology	SAIs applying the standard typology and/or performing combined audits	SAIs that perform more types of audits compared to the standard typology
Member states in 1993	*Ireland, Luxembourg, (United Kingdom), Netherlands*	*Belgium, Denmark, France, Italy, Portugal*	*Germany, Greece, Spain*
The extension stage in 1995	*Austria, Sweden*	-	*Finland*
The extension stage in 2004	-	*Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Czech Republic, Hungary*	*Cyprus, Malta*
The extension stage in 2007	-	-	*Bulgaria,* ***Romania***
The extension stage in 2013	-	*Croatia*	-

Source: Authors' processing, 2020

The results of the two-dimensional analysis *the states integration year in the European Union – the typology of the audit missions* showed that the member states from 1993 cover the whole range of categories of SAIs, while the states that joined in 1995 (Austria, Finland, Sweden) and those that joined in the 2004 enlargement (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia) cover only two categories of SAIs. The states that have joined the European Union through the last two enlargement stages (2007 – Bulgaria and Romania and 2013 – Croatia) cover only one category.

From another perspective, in the case of the 12 founding countries of the European Union by the Maastricht Treaty in 1993 (Belgium, France, Germany, Italy, Luxembourg, Netherlands, Denmark, Ireland, (United Kingdom), Greece, Portugal, Spain), we notice a quasi-equal distribution between the three categories of SAIs. In contrast, in the countries that joined the community space in the enlargement phase of 2004, we note that most supreme audit institutions (from Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Czech Republic, Hungary) apply the standard typology (financial audit, performance audit and compliance audit and/or combined audits).

The research results showed that the states that joined during the enlargement stages of 2004, 2007, 2013 borrowed from the experience of the senior states in the European Union, being oriented either on the actions specific to the standard typology, or towards a wider palette of missions. Between the latter, the Romanian Court of Accounts is also found, which, as the White Book attests (Romanian Court of Accounts, 2017, p. 99), in the process of rallying to the requirements formulated by the European Union, has benefited from the support of Spain and Germany SAIs.

In the followings, we considered interesting to carry out the analysis taking into account also the age of SAIs in the member states of the European Union, which was determined by reference to the year in which they

became active. Thus, through recourse to the public information of the European Court of Auditors, to which we have already referred in the paper, by processing the data, we have ordered the member countries according to the seniority in activity of their SAIs (**Table no. 3**).

Table no. 3. The classification of SAIs according to the typology of the audit missions performed and their age, by reference to the years since they are active

No.	EU member states	Member states at the founding of the EU/ Stages of EU enlargement	The year from which SAI is active	SAIs that perform fewer types of audits compared to the standard typology	SAIs applying the standard typology and/or performing combined audits	SAIs that perform more types of audits compared to the standard typology	The age of SAI
1	Sweden	1995	2003	x			17
2	Luxembourg	1993	2000	x			20
3	Malta	2004	1997			x	23
4	Bulgaria	2007	1995			x	25
5	Slovenia	2004	1994		x		26
6	Czech Republic	2004	1993		x		27
7	Slovakia	2004	1993		x		27
8	Croatia	2013	1993		x		27
9	**Romania**	**2007**	**1992**			**x**	**28**
10	Latvia	2004	1991		x		29
11	Estonia	2004	1990		x		30
12	Lithuania	2004	1990		x		30
13	Hungary	2004	1989		x		31
14	Spain	1993	1978			x	42
15	Denmark	1993	1976		x		44
16	Cyprus	2004	1960			x	60
17	Germany	1993	1950			x	70
18	Italy	1993	1948		x		72
19	Austria	1995	1948	x			72
20	Ireland	1993	1923	x			97
21	Poland	2004	1919		x		101
22	Portugal	1993	1849		x		171
23	Greece	1993	1833			x	187
24	Belgium	1993	1831		x		189
25	Finland	1995	1825			x	195
26	Netherlands	1993	1814	x			206
27	France	1993	1807		x		213

Source: Authors' processing, 2020

The research has shown that the SAIs in the community area, which have a maximum age of 20 years, are institutions that perform fewer types of audits compared to the standard typology. This is the case of the SAIs of

Sweden and Luxembourg, which are also the only supreme audit institutions in the European Union that started their activity after the accession.

From the diametrically opposite perspective, the supreme audit institutions in Malta and Bulgaria, which have a working age of 20 to 25 years, carry out more types of audit compared to the standard typology.

For the age bracket between 26 and 30 years, we observe that the supreme audit institutions apply mostly the standard typology and/or carry out combined audits, with the exception of the Romanian Court of Accounts, which also performs external public audits of the community funds.

In contrast, in the case of the supreme audit institutions older than 30 years, but below 100 years, we notice a balanced distribution between the three categories. Regarding the SAIs with a working age of over 100 years, we notice that most of them apply the standard typology and/or carry out combined audits.

The results of the three-dimensional analysis *The states integration year in the European Union – the age in activity of the SAIs – the typology of the audit missions* showed that the senior states in the European Union, but whose supreme audit institutions started their activity after the accession are oriented towards a narrower typology of missions, while the countries whose supreme audit institutions are older in activity, perform mainly either the actions specific to the standard typology or a wider range of missions.

Conclusions

The research of the assertions and the conceptual valences of the external public audit shows that it is complex, but insufficiently debated in the academic sphere. The external audit in the public sector approaches interfere regarding its importance in monitoring the management of public financial resources.

In this context, the external public audit can be defined as the whole of the specific activities of the supreme audit institutions, through which the supervision of the correct use of the public sector resources is realized, in the sense of spending them in compliance with the five fundamental principles "L.R.E.E.E." (legality, regularity, economy, efficiency and effectiveness), aiming to protect the financial interests of the state and the public sector, as well as increasing the responsibility of public entities towards the stakeholders, both in terms of the resources use and in relation to the performance related outcomes.

The results of the research revealed that the supreme audit institutions in some countries of the community area carry out, complementary to the standard typology (represented by the "financial audit – performance audit – compliance audit triptych"), also other types of external public audit missions, among which we mention: specific audits or special investigations, technical audits, environmental audits, fiscal-budgetary policy audits, selective audits, horizontal audits, exploration studies, subsequent follow-up audits, general or management audits, real-time audits, *ex ante* and *ex post* audits, pre-contractual audits, IT audits, as well as audits of the community funds.

At the same time, based on the information disseminated by the European Court of Auditors, we have identified that, at the level of the European Union, there are supreme audit institutions (from Austria, Ireland, Luxembourg, (United Kingdom), Netherlands and Sweden) without mentions referring to compliance audit missions, with regard to their activity.

From the comparative analysis by countries, carried out on the typology of the external public audit of the European Union member states, it was found that, although the audit methods vary, certain common elements were identified, of which we mention the accomplishment of the financial and the performance audit missions by all the SAIs at community level, as well as other elements of convergence, in relation to the classification criteria considered.

The research results revealed that the states that joined the European Union during the enlargement stages of 2004, 2007, 2013, borrowed from the experience of the senior member states in EU, being oriented either on the actions specific to the standard typology, or towards the realization of a wider palette of missions. Additionally, in relation to the age in activity of SAIs, the results of the analysis showed that the senior member states in the European Union, whose SAIs started their activity after the accession, are oriented towards a narrower typology of missions, while the countries whose supreme audit institutions are older in activity, perform mainly either the actions specific to the standard typology or a wider range of activities.

Therefore, the research performed on the typology of the external public audit validates the European Union "unity

in diversity" motto, also at the level of the SAIs' specific activities in the community area.

Regarding to the limits of the research undertaken, we consider that they are related not only to certain barriers regarding the approach of the external public audit in the specialized literature, the heterogeneity of the reports of SAIs in the European Union member states, but also to the limitation of the study at the level of the community area countries.

As future research directions, we intend to continue the investigative approach by extending the comparative analysis on the typology of external public audit at the level of the candidate and potential candidate countries for accession to the European Union and, subsequently, at the level of all the states in the geographical region of Europe.

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Audit financiar, XVIII, Nr. 3(159)/**2020**, *568-577*
ISSN: 1583-5812; ISSN on-line: 1844-8801

Information Transparency on Financial Markets, an International View

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Abstract

In this study, the author analyzes the issue of transparency of financial information at the level of entities listed on the financial markets, as a solution to the process of optimizing management strategies in increasing the information users' confidence and in attracting investors.

The research consisted in analyzing the financial statements of 120 companies listed on 8 capital markets. In constructing the sample, it was assumed that the degree of transparency of the information presented by the companies is directly proportional to the weight they occupy in the structure of the stock indices. Finally, 10 stock indices were analyzed.

It was concluded that in order to meet transparency and regular reporting requirements, listed entities need to adapt their organization and communication according to good governance practices and accounting rules so that they are always engaged in an open market dialogue. The level of transparency also comes from the way in which the management of each entity knows how to take responsibility and build that optimal information system, based on the cost-benefit ratio and also to ensure that all shareholders and investors are treated equally.

Keywords: *IFRS; US GAAP; accounting; transparency; stock exchange; stock indices*

JEL Classification: *M41*

To cite this article:
Iordache, I.-D., (2020), Information Transparency on Financial Markets, an International View, *Audit Financiar*, vol. XVIII, no. 3(159)/2020, pp. 568-577,
DOI: 10.20869/AUDITF/2020/159/020

To link this article:
http://dx.doi.org/10.20869/AUDITF/2020/159/020
Received: 26.03.2020
Revised: 29.03.2020
Accepted: 22.06.2020

Introduction

Through the notion of "corporate transparency" the regulators want to suggest to the entities the idea of visibility, credibility and openness in the process of reporting information to the persons they come in contact with, from employees, shareholders, business partners and even public authorities.

In general, when talking about corporate transparency, we all understand that in fact we refer to ensuring the publication of accurate, complete, credible, intelligible, but also accessible information in terms of presentation.

It is important to emphasize that good corporate transparency is achieved when there is also a regulatory framework for this aspect so that the information provided will convince its recipients, without manipulating their understanding. In this respect, entities must differentiate between marketing, advertising and transparency related to financial information.

However, from the analyzes carried out by various consulting organizations[1] it is observed that at the level of the entities in general, the management does not fully assume the optimum transparency, often trying to report either insufficient or useless information on the unfolded activity. This aspect affects the credibility and sustainability of the information, impacting both the internal activity of the company and the one with the external partners.

In ensuring transparency, regulatory accounting requirements play an important role, according to which an entity must disclose timely information about the financial position, financial and operational performance, and the entity's accounting policies[2]. A high level of transparency is achieved when financial reporting ensures a good understanding of both the economic reality of an entity and the economic environment in which the entity operates in a competitive market. In antithesis, providing a minimum of information, according to any regulations, also means the publication of a minimum level of indicators that express the financial position and performance of the entity.

In order to facilitate transparency and for a good interpretation of the financial statements, internationally high-quality accounting standards have been created to ensure a common language in the processing and reporting of financial results. The most widely used and credible standards in business globalization are International Financial Reporting Standards (IFRS) and US Generally Accepted Accounting Principles (US GAAP).

Through this study we intend to analyze the issue of transparency of financial information at the level of entities listed on financial markets, as a solution to the process of optimizing management strategies in increasing the confidence of information users and attracting investors.

Theoretical framework

Over time, countries have developed their own accounting standards, based on rules, principles, business or tax orientations, etc.

As we mentioned, at international level, the most acceptable regulatory accounting frameworks for investors are IFRS and US GAAP. The two systems, while each offering a set of principles, evaluation rules, techniques for recording and reporting financial information, however, are based on different reasoning of regulatory frameworks.

Thus, IFRSs are established on a general framework, based on a set of principles, definitions, rules for evaluation, recognition and presentation of the structural elements that represent the financial position and performance (assets, liabilities, equity, income and expenses). Within this regulatory system, transparency is a qualitative requirement that an entity's management must meet when reporting financial statements[3]. In the case of the US GAAP, in order to comply with this regulatory framework, the entities construct their accounting policies in such a way as to respond to an

[1] *Transparency International – România*, Campioni ai integrității: Linii directoare de conduită pentru o companie lider, 2015, online at https://www.transparency.org.ro/ro/content/campioni-ai-integritatii-linii-directoare-de-conduita-pentru-o-companie-lider, accessed on 17.01.2020.

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[3] *Ernst and Young*, US GAAP versus IFRS: The basics – February 2018, online at https://www.ey.com/Publication/vwLUAssets/IFRSBasics_00901181US_23February2018/$FILE/IFRSBasics_00901-181US_23February2018.pdf, accessed on 12.12.2019.

exhaustive list of rules and requirements. Such an approach has in time generated a fluffy legislation, of about 140,000 pages, but which manages to answer most of the cases encountered in practice and very difficult to give rise to interpretations[1].

Starting from this different approach in drafting the two regulatory frameworks, the question arises whether US accounting standards and IFRSs are alike and whether information reported for transparency requirements is comparable. In this respect, there is a permanent concern to ensure the convergence of the two sets of standards, an objective expressed by common agreement since 2002 through the Norwalk agreement[2].

However, it is noted that there are still a number of differences between the two sets of regulations, especially that between the accounting specialists there are different opinions and loyal supporters of a single category of regulation. For example, David Tweedie in a 2012 statement argues that IFRSs are a stronger set of regulations, as they are based on principles[3], while supporters of US GAAPs such as Braton and Cunningham believe they are better because it offers clearer rules based on principles, but which better manage revenue recognition and evaluation[4].

In such debates, it is difficult to find a consensus because the measurement of differences and the impact of the transparency of information are based on the technical approaches found in the two categories of accounting standards for the same kind of operations and activities.

Regardless of the accounting standard applied, the question is: "What is the optimum level of transparency that a public entity must present to users?"

Starting from this objective and from the inherent risks arising in the information and decision-making process through the study we propose to identify a stratification of the degree of international transparency in which public entities can fall.

Research methodology

In order to reach the objective proposed in the first stage, we considered absolutely necessary to identify the area of application of the two regulatory systems by consulting at a general level the accounting regulatory frameworks (in 165 countries). Subsequently, we focused our study on public reporting of entities in countries where financial markets present a significant number of transactions or particularities. Thus, in the second stage we studied the regulatory frameworks and financial statements of the companies listed on 8 major stock exchanges: the New York Stock Exchange, the Shanghai Stock Exchange, the London Stock Exchange, the Swiss Stock Exchange, the Hong Kong Stock Exchange, the Stock Exchange from Tokyo, the Moscow Stock Exchange and the Bucharest Stock Exchange.

The study continued with the analysis of the financial statements of 120 companies listed on the 8 mentioned stock exchanges. In order to define the sample of the 120 companies, the stock market indices of the 8 stock exchanges were used. At the New York Stock Exchange, we used 3 more representative indices on both the US and global markets: the S&P500, Nasdaq and Dow Jones. In this regard, finally, 10 stock indexes were analyzed. Of the companies that are part of these stock indices, 12 companies were selected for each index as follows:

- the first 2 companies with the highest weight in the index structure were selected;
- the last 2 companies with the lowest weight in the index structure were selected;
- of the remaining companies in the structure of each index, 8 companies were selected randomly.

We decided to choose the stock index as a selection criterion due to the fact that the most capitalized entities in the international financial markets are analyzed from the point of view of this indicator. Next, based on this reasoning, but also the need to obtain a comparable data base, we have granted for each entity, separately, scores from 1 to 12, depending on the weight it holds in the index structure of which it is a part. Thus, in order to optimize the information that the entities report through the prism of transparency, we have built a scorecard

[1] *KPMG*, IFRS compared to US GAAP, Decembrie 2017, online at https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/12/ifrs-us-gaap-2017.pdf, accessed on 26.12.2019.
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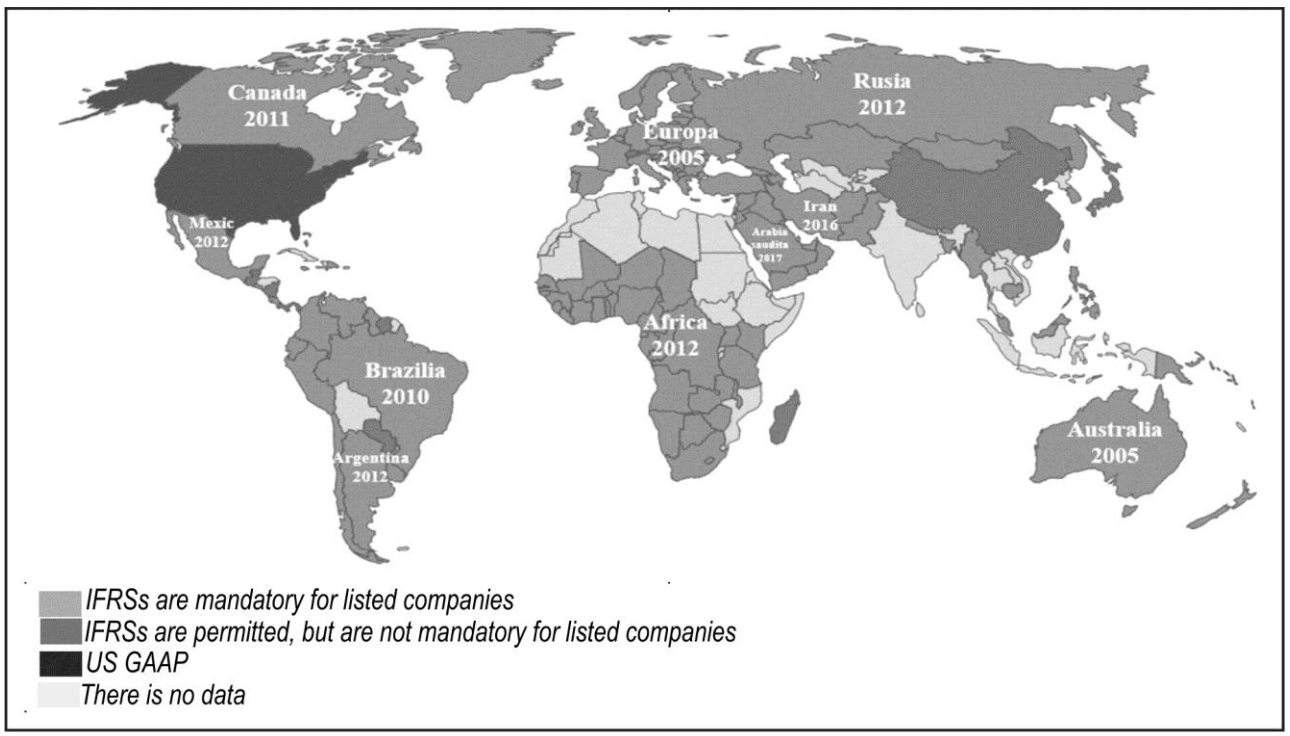
consisting of 21 elements, which represent categories of information necessary to determine the level of transparency.

In constructing the sample, we started from the hypothesis that the degree of transparency of the information presented by a listed entity is directly proportional to the weight occupied by the stock indexes. In the study we've included the test of this hypothesis.

Results

A first result was the geographical identification of the application of the most representative accounting standards, namely IFRS and US GAAP. Thus, out of the 65 countries studied, we found that at the level of 144 jurisdictions there is an obligation to apply IFRS for listed domestic companies, and in 12 countries IFRSs are recommended, but not necessarily. The rest of the 9 countries included in the study apply their own standards based on national rules, including the United States with its own accounting rules, which nevertheless significantly influence the capital markets, becoming the main competitor of IFRSs. ***Figure no. 1*** illustrates the territorial application of the two accounting systems.

Figure no. 1. Accounting systems around the world

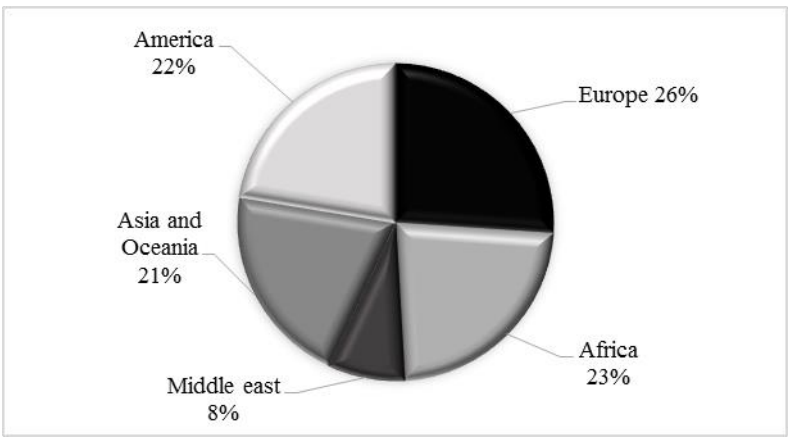


Source: Own processing based on ifrs.org data

We note that the application of International Financial Reporting Standards is not mandatory, but it is allowed among the companies listed in the following states: Switzerland, Japan, Paraguay, Suriname, Panama, Nicaragua, Guatemala, Madagascar, Timor-Leste.

Regarding the distribution on the continents level, according to ***Figure no. 2***, it can be seen how most jurisdictions that oblige or allow the use of IFRS among listed companies are found in Europe (44 states), followed by Africa with 36 countries.

Figure no. 2. Distribution of IFRS by continent in 2018



Continent	No of countries
Europe	44
Africa	36
Middle east	13
Asia and Oceania	32
America	33
Total	158

Source: Own processing based on ifrs.org data

Also, from the analysis we conclude that among the listed companies that do not use IFRS, the vast majority (over 80%) are listed companies in the United States, China, Japan and India.

This first result was the starting point in the second phase of the study, namely in constructing the sample of 120 entities that validate the level of transparency of listed entities, being known that, in practice, various factors affect the degree of transparency.

Following the analysis of the 120 entities listed on the 8 capital markets, we identified a number of 21 elements that characterize the level of transparency of the information reported by each company.

We grouped and summarized the presented information according to the theoretical objectives of transparency, finding that a number of 11 elements can be found in the reports of all the studied companies. Thus, we concluded that the presentation of these 11 elements ensures a basic level of transparency regardless of the capital market where the entities operate. In addition to these elements, we also identified in the studied reports another set of information, such as risk factors, management remuneration policy etc. Their presentation, in addition to the 11 basic elements, we considered to extend the degree of transparency. In addition to the two categories of information, we also encountered a third set of informational elements, such as information on the production process or the presentation of anti-corruption policies, information that is less often found in reports, but which we've considered to conduct to a more intensified transparency.

In order to test our hypothesis, according to which the companies with a higher weight in the stock market indexes (strong market capitalization) have the highest degree of transparency, we measured the correlation of these variables with the help of the Pearson coefficient.

$$r_{xy} = \frac{\frac{1}{n}\sum(x-\bar{x})(y-\bar{y})}{s_x s_y}$$

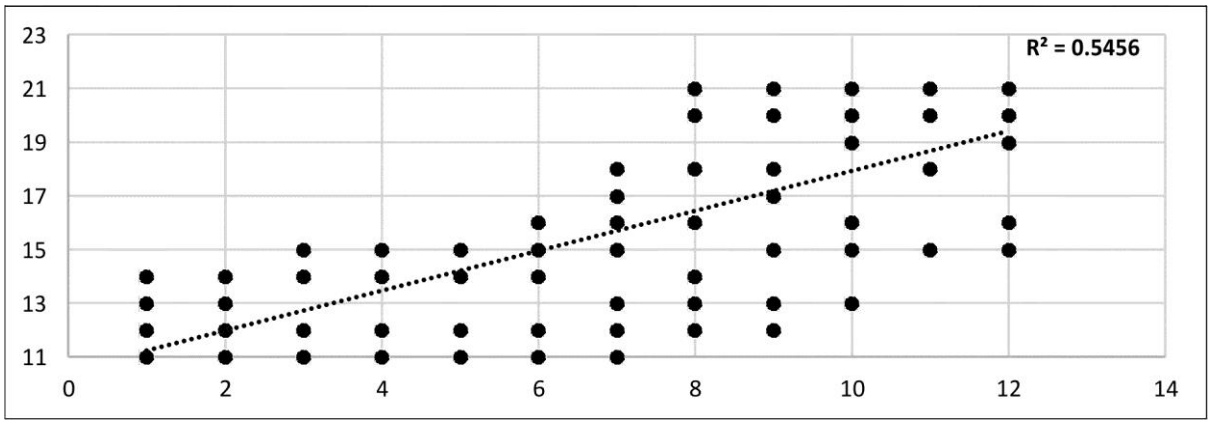
where,
n = sample size of 120 entities
x = weight of companies in stock indices – individual values
y = the score obtained regarding the degree of transparency – the individual values
x = weight of companies in stock indices – arithmetic mean
y = the score obtained regarding the degree of transparency – the arimetic mean
Sx = weight of companies in stock indices – standard deviation
Sy = the score obtained on the degree of transparency – the standard deviation

In this respect, for the comparability of the data, following the analysis of the 21 informational elements, we assigned to each entity in our sample a score regarding the degree of transparency, included in the range 11-21.

We thus identify two significant elements in our research (***Figure no. 3***):

- Share of companies in stock indices (X axis)
- The score obtained on the 21 informational elements (Y axis).

Figure no. 3. The correlation between the information presented by the companies and their weight in the stock market indices



Source: Own projection based on Pearson correlation

From ***Figure no. 3*** it is observed that there is a direct and positive correlation between the two elements. Also, the combination of the two elements is relevant, concluding that there is a strong correlation between these two variables, as the Pearson correlation coefficient has the value of 0.73.

- 1 ----------	0 ----------	+1
perfect negative correlation	null correlation	perfect positive correlation

Also, the correlation of the two variables is also proved by the coefficient of determination r^2. According to the theory, if r^2 is greater than 0.5 it means that the variables introduced in the matrix system are strongly correlated and interdependent.

Formula	Interpretation based on Cohen (1988)
$r^2 = (r_{xy})^2$	r^2 = <0.30 there is no linear connection 0.30 <r^2 <0.50 there is an average link between the variables r^2> = 0.50 the variables are perfectly linked to each other

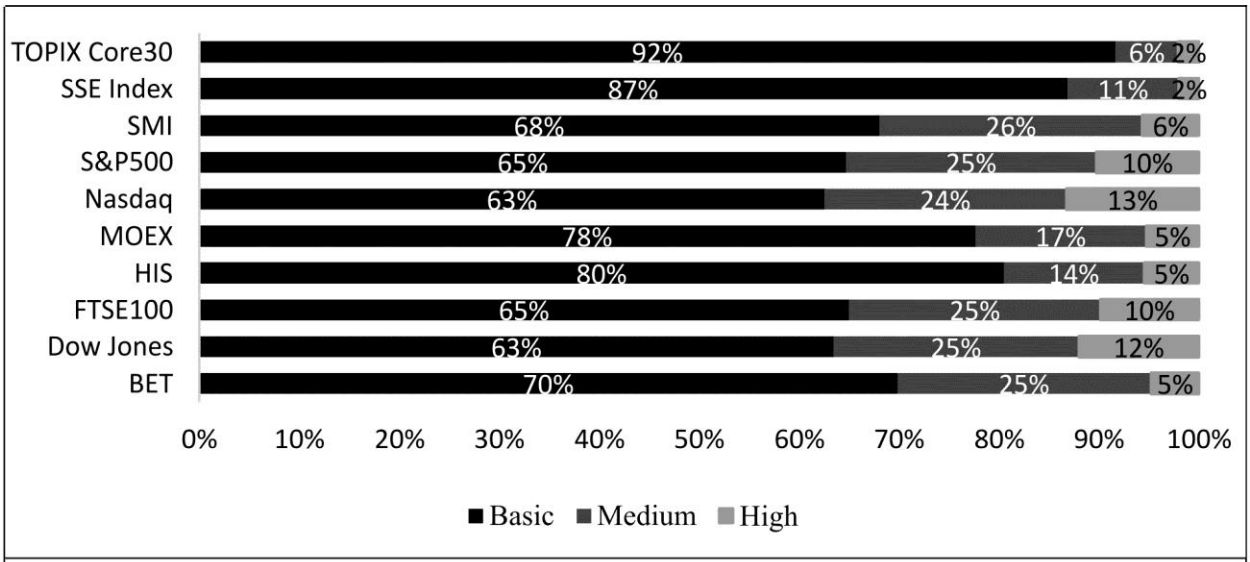
In our case r^2 being equal to 0.5456, we can say that 54% of the variation of the degree of transparency of the information presented by the studied entities is determined by the variation of the weights that these entities occupy within the stock market indices.

In this respect, our hypothesis is accepted and we conclude that an entity obtains a leading position in the capital market on which it operates if it is concerned with increasing transparency.

Thus, using this methodology, we obtained a second result that highlights the overall stratification of the level of transparency on the 8 studied markets. As seen in ***Figure no. 4*** it follows that the biggest concern in presenting a high level of information is to be observed in companies listed on the New York stock exchanges (Nasdaq – 13%, Dow Jones – 12%, S & P500 – 10%) and those in London (FTSE100 – 10%). A low level of transparency can be seen in the Asian stock markets, compared to those in Europe and America. Thus, we found that on the Tokyo and Shanghai stock exchanges, only 2% of the information presented is from the information category with high level of transparency. Most of the companies listed on these exchanges (about 90%) have the minimum (basic) level of information that

ensures transparency. At the BVB level it is observed that 73% of the information presented ensures a basic level of transparency and, at the same time, the listed entities are concerned to increase the degree of transparency by registering a significant percentage, of 27%, of the information with average level of transparency. However, few entities manage to provide information with a higher degree of confidence (5%).

Figure no. 4. The tendency of companies in presenting information towards a high degree of transparency on the 8 studied stock exchanges



Index	Stock exchange	Basic level information	Medium level information	High level information	Total information
BET	BVB	73%	27%	5%	100%
Dow Jones	NYSE	72%	28%	14%	100%
FTSE100	London	72%	28%	11%	100%
HIS	Hong Kong	85%	15%	6%	100%
MOEX	Moskov	82%	18%	6%	100%
Nasdaq	NYSE	72%	28%	15%	100%
S&P500	NYSE	72%	28%	11%	100%
SMI	Switzerland	72%	28%	6%	100%
SSE Index	Shanghai	89%	11%	2%	100%
TOPIX Core30	Tokyo	94%	6%	2%	100%

Source: Own projection

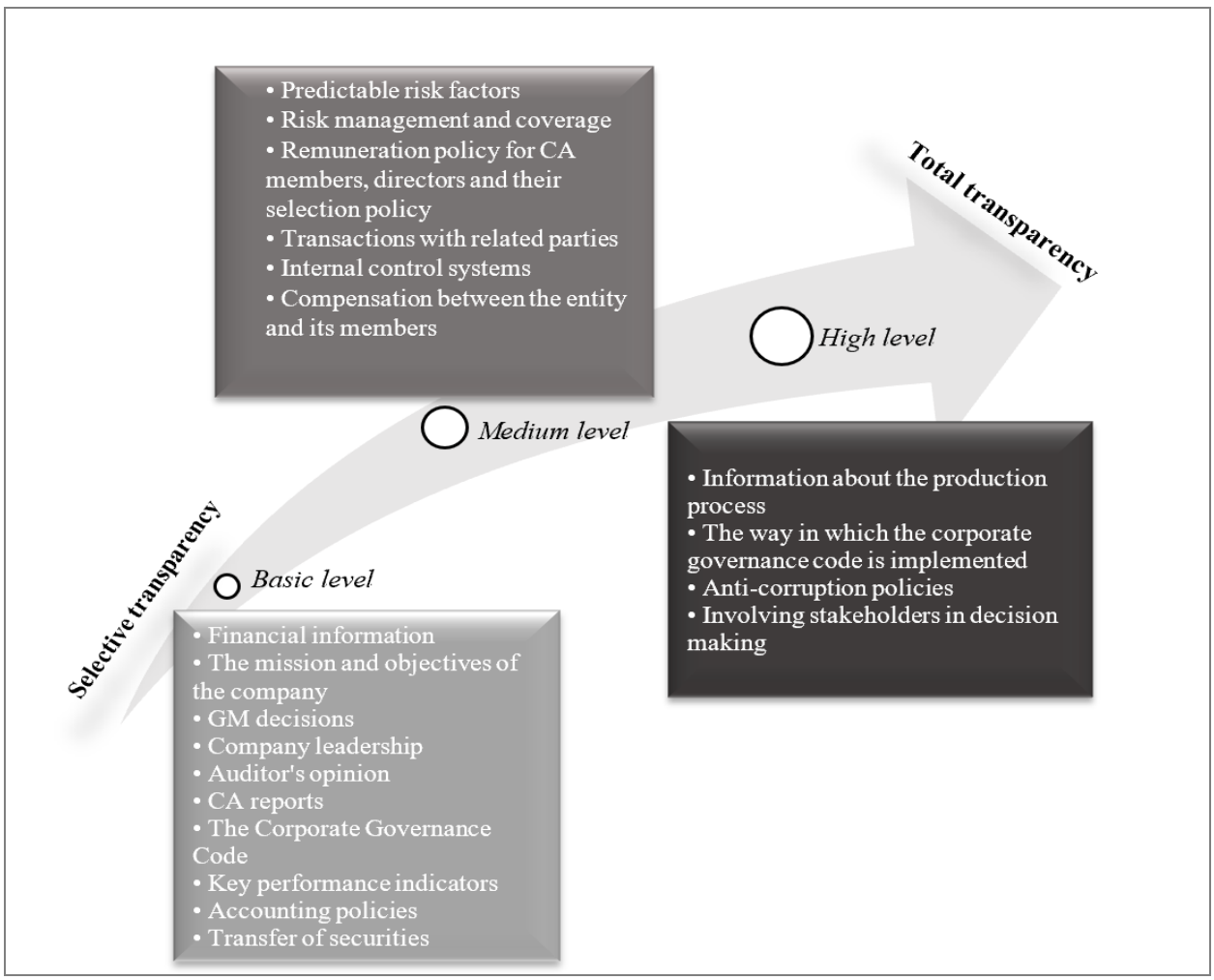
Conclusions and recommendations

Synthesizing the results of the research and taking into account our objective to find optimal solutions in presenting the most transparent information, we identified three categories of entities, depending on the level of information presented. Finally, we've found that in management strategies an important place is occupied by the understanding of the process of obtaining and presenting information through the prism of transparency, which is why an essential condition in improving the performance of the entity is the awareness of the differences between a selective and subjective information presentation and a total.

Since we have tested and observed that the highest level of transparency at present means the presentation of the 21 elements, we consider that the way of selecting the categories of information presented depends on by each entity in determining the optimization of the degree of transparency.

As a result of the hierarchy of the elements identified by our study, the schematic construction of the strategies for optimizing transparency can be achieved by completing the levels of transparency presented in ***Figure no. 5***.

Figure no. 5. Selective transparency versus total transparency



Source: Own projection

Thus, in order to meet the requirements of transparency and periodic reporting, listed entities must adapt their organization and communication according to good governance practices and accounting rules, so that they are always engaged in an open market dialogue. The level of transparency also comes from how the management of each entity knows how to take responsibility and build an optimal information system based on the cost-benefit ratio, which ensures that all shareholders and investors are treated equally.

All these steps to build a transparent and open investor information system inevitably have effects on the share price.

As a result of this study, it is advisable for the listed entities to have a proactive attitude, so that their management is aware of the possibility of building an optimal transparency strategy without having the fear that it will affect their competitive position on the market if they also present so-called "sensitive" information.

As a final conclusion, based on the results of this study, we find that the entities listed on any capital market are concerned about the transparency of the information presented and that this aspect represents for them an evolutionary process related both to the requirements of the regulatory frameworks and also to the policies and management strategies of reporting entities. This conclusion is especially evident after we tested the correlation between the optimization of the level of transparency and the competitive success of each entity, as a management strategy on the capital market.

A possible limitation of this research could be represented by the fact that only 8 financial markets were studied. For future studies, an interesting perspective might be to explore financial markets with different particularities, such as financial markets in China or those in Islamic countries.

Acknowledgement

This work is part of the project „Development of tertiary education in support of economic growth-PROGRESSIO", project code POCU/380/6/13/125040, project co-financed by the European Social Fund through the Human Capital Operational Program 2014 – 2020.

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Audit financiar, XVIII, Nr. 3(159)/**2020**, *578-584*
ISSN: 1583-5812; ISSN on-line: 1844-8801

The Inter-conditioning between Corporate Governance and Financial Performance

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Abstract

The current economic context, as well as previous research, highlights the importance of corporate governance over the financial performance expected by companies. Therefore, the study of the current practices in the field of corporate governance, the impact that it has on the results of the companies, but also vice versa – the identification if the financial performance achieved puts its mark on the degree of compliance with the requirements established for good corporate governance – is a representative approach in opening new priorities for the interests of companies. This is the objective of the present research in which, applying quantitative research methods, the authors tested some hypotheses that demonstrate the corporate governance and the financial performance causality of companies on the Romanian capital market.

Keywords: *emerging markets; corporate governance conformity; Corporate Governance Code; financial performance; Bucharest Stock Exchange*

JEL Classification: *G34, M40*

To cite this article:
Dănescu, T., Popa, M. A., (2020), The Inter-conditioning between Corporate Governance and Financial Performance, *Audit Financiar*, vol. XVIII, no. 3(159)/2020, pp. 578-584, DOI: 10.20869/AUDITF/2020/159/021

To link this article:
http://dx.doi.org/10.20869/AUDITF/2020/159/021
Received: 13.04.2020
Revised: 16.04.2020
Accepted: 26.06.2020

1. Introduction

The financial scandals of the last decades, the increasingly sophisticated expectations regarding the quantitative, as well as the qualitative, global performance, have led to new ways of corporate governance. Evidence in this regard provides us with the evolution of corporate governance regulations, but also the remarkable advances in research from this point of view. The Organization for Economic Cooperation (OECD) has developed principles of corporate governance, and in the United States (US), in 2002, the Sarbanes-Oxley Act (SOX) was introduced.

Multiple researches have investigated the effectiveness of corporate governance regulations. Some researchers have studied the relationship between corporate governance and financial performance. Bhagat & Bolton, in 2009, studied this relationship for the pre- and post-adoption period of SOX law for a sample of US companies, demonstrating the existence of a positive influence between the independence of the Board of Directors and the financial performance after the adoption of the SOX law. They also found that there is a significant positive relationship between the financial performance indicator expressed by the return on assets (ROA) and the corporate governance index (G-index) after implementing the SOX law. The positive relationship between financial performance and corporate governance indicators is also demonstrated by researchers Orazalin & Mahmood (2018), Mishra & Mohanty (2018), Wessels et al. (2017), Chen & Chen (2011), Cremes & Nair (2005) et al.

In other studies, conducted in developed countries, the relationship between a strong board structure and the high degree of compliance with the requirements of the Corporate Governance Codes has been demonstrated by Zhang& Erasmus (2016); Switzer (2007); Boone et al. (2007); Gillen et al. (2007). Moreover, nowadays, powerful companies disclose to the public both financial and non-financial reporting, whose purpose is to increase the transparency and credibility of reporting (Marinescu, 2020).

However, the transition and emerging economies represent a vast area of research in this topic, due to the particularities of these types of economies (Svejnar, 2002). Moreover, Svejnar believes that in emerging economies there are particularities of governance that can influence decision makers. Studies on this topic were conducted on emerging economies of Asia (China, India) and Central and Eastern Europe. Romania, a country with an emerging economy, is facing various problems of governance of companies with effects both in the public and private sectors. The Bucharest Stock Exchange (BVB) has developed, over time, several versions of the Corporate Governance Code. In 2015, BVB drafted the new Corporate Governance Code (the Code), applicable to all companies listed on the Romanian capital market on the Main segment as of January 2016. The Code contains 41 corporate governance requirements. Its purpose is to create an attractive capital market for foreign investors by increasing transparency and trust in companies through good corporate governance.

Previous studies carried out on Romanian companies indicate the existence of a dependency relationship between corporate governance and financial performance (Dănescu & Popa, 2019; Avram et al., 2017; Spătăcean et al., 2017; Dănescu et al., 2015; Lupu & Nichitean, 2011).

2. Data and methodology

Starting from the previous demonstrations regarding the influence of governance on financial performance, in the current economic context, we consider the development of new research to highlight other representative aspects. The purpose of this research is to highlight the role of the Corporate Governance Code (CGC) on financial performance for the companies listed on the Bucharest Stock Exchange (BSE).

We have based the research on the hypothesis that ensuring the companies' compliance with the requirements of the CGC positively influences the financial performance, in the case of the companies listed on the BSE, and vice versa.

To test the hypothesis using econometric models, we used quantitative data published by companies during the listing period on BVB (ln_age), but also annual financial indicators (total assets, total debt, total equity) based on which we calculated the rate of return on assets (ROA) and the ratio between debt and equity (DE_ratio). Also, using the qualitative data published in the Corporate Governance Statements, we calculated the degree of compliance of companies (CGDI) with the requirements of the Corporate Governance Code issued by BVB in 2015, with incidence from 2016. The data

were taken from the base data of BVB, as well as from the websites of the analyzed companies and are expressed in absolute or relative values. We used natural logarithm from numerical data to avoid heteroscedasticity. In **Table no. 1** we present the descriptive statistics of the data used.

For the return on assets (ROA) we use a financial performance indicator by which the net profit is related to the total assets of a company in a financial year. This indicator shows us how efficiently the assets of a company are used for profit.

The Debt / Equity ratio, often used in corporate finance, indicates the degree to which a company finances its economic operations through debt. This indicator indicates the possibility of the companies to cover the outstanding debts of their own assets in case of unfavorable events.

Table no. 1. Descriptive statistics

	Mean	Median	Standard deviation	Max	Min	N
ROA	0,06085	0,0438	0,0703	0,337	1,3E-10	67
CGDI	0,61744	0,6	0,2421	1	0	67
DE _ratio	0,9961	0,3958	1,8763	9,864	0	67
Ln_Age	2,8726	3,091	0,4677	3,219	0,6931	67

Source: Authors' calculation and projection. Data were processed using Eviews software.

The degree of compliance with the requirements of the Corporate Governance Code is mathematically determined according to previous research by Dănescu & Popa (2019). It indicates whether the corporate governance of the analyzed companies meets 40, respectively 41 requirements of the CGCelaborated by the Bucharest Stock Exchange. To calculate the degree of compliance with the CGC, we assigned a degree of importance to each requirement of the Code. Based on the companies' responses to these requirements, found in the corporate governance statements (the "Apply or Explain" Statement), we assigned a score to each requirement (1 when the requirement is fully met, 0.5 when the requirement is partially met and 0 when the requirement is unfulfilled), and we determined the degree of compliance according to formula (1):

$$CGDI_m = \Sigma(s_{i\,m} * w_i) \quad (1)$$

Where:

- $s_{i\,m}$ is the score assigned to each requirement *i* of the Code (it values 0; 0.5 or 1) for company *m* in the year 2018;

- w_i is the importance attributed to requirement *i*.

In the study we included all the companies listed on the Romanian capital market that trade shares on the Main segment, regardless of the category they belong to. From the sample we excluded the companies whose transaction is suspended, or which are in insolvency proceedings. Thus, our sample consists of 67 companies of different sizes. Our study aims to analyze the compliance of corporate governance with the requirements of the Code of each company and its influence on the financial performance (ROA). We have studied this phenomenon for the year 2018, for the data published in the final situations of 2019.

We used the Ordinary Least Squares (OLS) method to determine the influence of the degree of compliance with the Financial Performance Code expressed by ROA. Based on the hypothesis that there is a positive reciprocal causality between financial performance indicators and the degree of compliance of corporate governance (previously assumed by other researchers, i.e. Kanduki et al., 2015), we tested both the influence of compliance on financial performance and the reverse causality – that is, the influence of financial performance on compliance with the requirements of the Code – based on two equations. The first equation investigates the influence of the degree of compliance with the requirements of the Code on the financial performance expressed by ROA, and the second one investigates the influence of the financial performance (ROA) on the degree of compliance (CGDI):

$$ROA_i = \beta_0 + \beta_1 CGDI_i + \beta_2 DE\_ratio_i + \beta_3 ln\_age_i + \varepsilon_i \quad (2)$$

$$CGDI_i = \beta_0 + \beta_1 ROA_i + \beta_2 DE\_ratio_i + \beta_3 ln\_age_i + \varepsilon_i \quad (3)$$

For the accuracy of the results, we included in the study control variables, such as the financial leverage and the age of listing the company on the capital market.

3. Results and discussion

In the study we included control variables (size variable or age on the capital market variable), expecting us to identify a positive influence between the company's age on the BSE and the degree of compliance with the requirements of the Code (due to the experience gained over the period of listing) and a statistically insignificant influence (positive or negative) between the degree of compliance of the corporate governance and the financial leverage (because we do not consider that a company with large debts will not register a high degree of compliance with the Code). These expectations were confirmed by performing the correlation test of the variables and by establishing the Pearson coefficients (according to **Table no. 2**).

Between the financial performance expressed through the profitability of the assets and the degree of compliance with the requirements of the Code, we observe a positive correlation of low intensity. On the one hand, we identify a negative correlation between the return on assets and DE_ratio. On the other hand, contrary to our expectations, a negative correlation was determined between ROA and the age on the capital market of the analyzed companies.

Table no. 2. Variable correlation matrix

	ROA	CGCDI	DE_ratio	Ln_age
ROA	1			
CGCDI	0,2489	1		
DE_ratio	-0,2272	0,1628	1	
Ln_age	-0,2062	-0,1335	0,0324	1

Source: Authors' calculation and projection. Data were processed using Eviews software.

Using the Durbin-Watson test, we tested the autocorrelation of the variables using regression. The value of the test is 1.87, respectively 1.86, which means that the variables are not self-correlated. To avoid the heteroscedasticity phenomenon, we decided to log the data. Also, for the same reason, we performed the Breusch-Pagan-Godfrey test for the two models tested using equations 2 and 3. The significance threshold exceeded the accepted level of 0.05, which means that the null hypothesis of the Breusch-Pagan-Godfrey test it is accepted, rejecting the alternative hypothesis of heteroscedasticity (**Table no. 3**).

Table no. 3. Research results

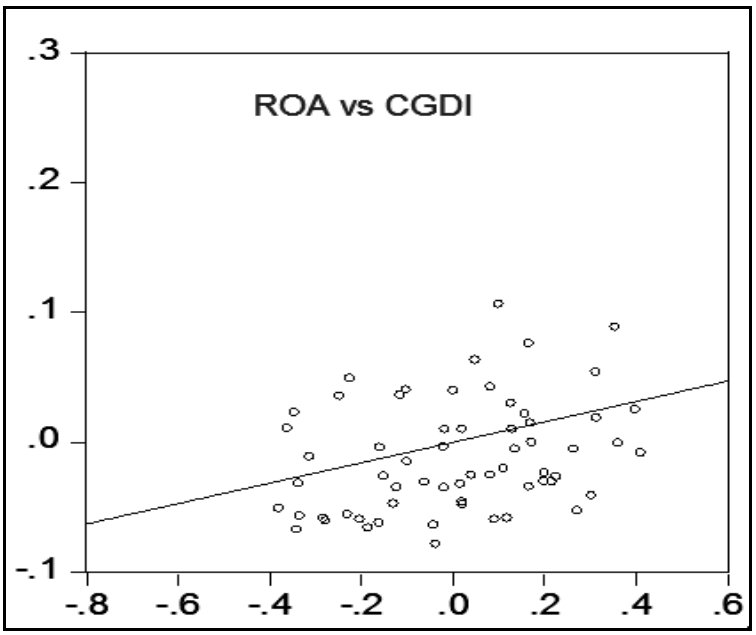
Variable	ROA			Variable	CGCDI		
	Coefficient	Std. deviation	T test		Coefficient	Std. deviation	T test
Constant	0.0919	0.0575	1,5971	Constant	0.6508***	0.1902	3,4204
CGCDI	0.0786**	0.0343	2,2913	ROA	0.9782**	0.4269	2,2913
DE_ratio	-0.0099**	0.0043	-2,2707	DE_ratio	0.0297*	0.0156	1,8945
ln_age	-0.0242	0.0175	-1,3842	ln_age	-0.0426	0.0625	-0,6812
F test	0.0109			F test	0.0448		
R^2	0.1611			R^2	0.1218		
Durbin-Watson test	1.8761			Durbin-Watson test	1.8636		
Breusch-Pagan-Godfrey test	0.7264			Breusch-Pagan-Godfrey test	0.1221		
N	67			N	67		

Source: Authors' calculation and projection. Data were processed using Eviews software.

The coefficient of determination (R^2), specific to the regression analysis, measures the percentage of the variation of the independent variables according to the deviation of the dependent variable. Test F shows that the equations are statistically significant, because its value is below the significance threshold set at 0.05.

By testing Equation 2, we observe the degree of compliance with the requirements of the Code, which has a statistically significant positive impact on the financial performance expressed by the ROA indicator, with a coefficient of 0.0786. The graphical representation of this equation is transposed in *Figure no. 1*. We also observe a statistically significant negative influence of the financial leverage on the financial performance. Although the influence of seniority on the corporate capital market (ln_age) on ROA is negative, the result is not statistically significant.

Figure no. 1. Graphic representation of ROA according to CGDI



Source: Authors' projection using EViews

The results are similar to those obtained by Kandukuri et al (2015), even though they calculated the degree of compliance by scoring method. They tested the influence of the degree of compliance with the requirements of the Code on the Tobin Q indicator, another important indicator considered when evaluating a company, being calculated as a ratio between the market value of the company and its intrinsic value.

Testing Equation 3, we notice that the results obtained are statistically significant. We identify a significant positive influence of the financial performance on the degree of compliance with the requirements of the Code. Therefore, companies that register a higher financial performance, tend to register a higher degree of compliance of the corporate governance with the requirements of the Code elaborated by the BSE. The financial leverage positively influences the degree of compliance. However, even if the result is statistically significant, we cannot affirm that it has a solid economic value.

4. Conclusions

The Bucharest Stock Exchange is guided by the "Apply or explain" principle, requesting companies listed on the capital market to report a corporate governance statement that responds to all the requirements and recommendations of the Code. Through this statement, important information about the corporate governance of a listed company is transmitted. In our research, we used the responses of the companies listed on BVB in 2018 from the corporate governance statement in order to determine a degree of compliance with the requirements of the Code. Moreover, we tracked the

influence of this degree of compliance on the ROA financial performance indicator, but also the influence of ROA on the degree of compliance.

In this study, we identified a positive influence between the ROA indicator and the degree of compliance of the corporate governance for the companies listed on the BSE in 2018. We also identified a moderate negative relationship between ROA and financial leverage. We did not observe any significant connection between the financial performance and the seniority of listing the company on the capital market, as well as between the degree of compliance with the requirements of the Code and the seniority of the listing.

The results of this research applied to the Romanian capital market are similar to those of other previous research applied to other capital markets. The limits of our research are mainly related to the small number of variables included in the study. We aim to develop a stronger research on international capital markets, comparing several European capital markets, as well as extending the existing database for several years and applying specific econometric models for observing phenomena in time and space.

Ackwoledgement

This work is part of "Development of tertiary university education in support of economic growth" - PROGRESSIO, project code POCU/380/6/13/125040, project co-financed by the European Social Fund through the Human Capital Operational Program 2014-2020.

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Audit financiar, XVIII, Nr. 3(159)/**2020**, *585-598*
ISSN: 1583-5812; ISSN on-line: 1844-8801

The Perception of the Representatives of the Accounting Profession from Romania

on the Relationship between Conservatism and True and Fair View

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Abstract

Assuming that there is a potential conflict between true and fair view and conservatism, the authors aimed to identify, by means of a survey, the perception of the representatives of the accounting profession from Romania, namely chartered certified accountants, licensed accountants, financial auditors and accountants other than chartered certified and licensed accountants, on the following aspects: the meaning of true and fair view, the need to assign a universally accepted definition to this concept, the meaning of creative accounting, the use of conservatism as a way to manipulate earnings and, last but not least, on the relationship between conservatism and true and fair view. The result indicated that the most representative interpretation of true and fair view is „the application, in good faith, of all accounting principles". Regarding creative accounting, this was perceived mainly as a way to manipulate earnings within the law, most of the respondents considering that the current accounting regulations facilitate the existence of such practices. Within the limit of the analyzed sample, the relation between true and fair view and conservatism has been perceived as complementary, in the sense that it implies the use of conservatism in order to obtain an image that represents the economic reality.

Keywords: *true and fair view; conservatism; creative accounting; questionnaire; accounting principles; earnings management*

JEL Classification: *M41*

To cite this article:
Ciocan, C. C., Georgescu, I., Carp, M. (2020), The Perception of the Representatives of the Accounting Profession from Romania on the Relationship between Conservatism and True and Fair View, *Audit Financiar*, vol. XVIII, no. 3(159)/2020, pp. 585-598, DOI: 10.20869/AUDITF/2020/159/022

To link this article:
http://dx.doi.org/10.20869/AUDITF/2020/159/022
Received: 10.04.2020
Revised: 13.04.2020
Accepted: 28.06.2020

Introduction

The continuous evolution and the transformations that take place in the business environment at global level make us to refer, more and more frequently, to a unique accounting framework that regulates the accounting activity, regardless of the geographical coordinates or the socio-cultural differences, to an international, global model, meant to increase the transparency, relevance and comparability of financial reporting and to facilitate financing through capital markets from all over the world. Thus, in the context of globalization, standardization and accounting harmonization that brought the International Financial Reporting Standards to the fore, we considered necessary to clarify the relationship between the two concepts: true and fair view and conservatism as well as the problems and influences that this relationship can generate.

In order to carry out the research, we considered the fact that in the accounting literature there are two opinions, in antithesis, suggesting: a *conflictual relationship*, which implies the exclusion of conservatism in order to obtain a true and fair view or a *complementary relationship*, which implies the use of conservatism, along with other accounting principles in order to obtain a true and fair view.

We propose, in the following, to present: the current state of the field regarding the relationship between true and fair view and conservatism (first section), the methodology applied in the undertaken analysis (second section), the analysis of the results and the perception of the representatives of the accounting profession regarding the presented problems (the third section), as well as the conclusions and limits of the study (the last section).

1. Literature review

Although, in general, conservatism is accepted, its relation with the financial reporting objective, true and fair view, is controversial. Our research has focused on this relationship because it is considered that this connection arouses most of the debates among theoreticians and practitioners in the accounting field. Before presenting the results, we consider it necessary to review the main arguments against and for conservatism and the opinions in the accounting literature regarding the type of relationship between the two concepts.

1.1. The conflicting perspective on the relationship between true and fair view and conservatism in the accounting literature

The main arguments against conservatism, according to ACCA (2014), concern the neutrality and comparability of the resulting financial statements. Other professional investors, for example Chartered Financial Analysts (CFA), want management to report the actual results in a transparent manner that is not biased but neutral to both good and bad news. Where there are uncertainties, they would like management's best estimate with the appropriate disclosures of the basis on which this has been made. It is also contested the fact that while conservatism may hold back profits in one year such restraint may simply lead to their release in a subsequent period which as a result will show exaggerated results.

In the accounting literature, a first opinion on the conflicting relationship between the two concepts can be attributed to Hinton (1972), presented by Evans & Nobes (1996, p. 366), according to which conservatism is inconsistent with another basic concept, vigorously proclaimed by accountants, namely that accounting must be fair and free from bias. Conservatism and fairness are, in the author's opinion, inconsistent concepts, since conservatism serves some users of financial statements to the detriment of others.

Then, according to the Montesinos Julve, Garcia Benau & Vela Bargue's opinions (1989), presented by Machado Cabezas (1996, p. 811), the purpose of conservatism is to protect the wealth of a company against the risk of reflecting unrealized („oversized") results, the distribution of which could lead to the decapitalization of the company. This tendency of conservatism is able to distort the true and fair view objective.

Feleagă (1996, p. 224) asks the following question regarding this conflict: „what true and fair view does the financial statements offer if we use a provision?" The same author (1997, p. 52) argues that conservatism is clearly in the most conflicting relation with the true and fair view objective, since it constantly induces a pessimistic point of view that requires the recognition of all the decreases in value to the detriment of all the increases in value for assets. Feleagă & Ionaşcu (1997, p. 382) state that, in fact, the excess of conservatism conflicts with the true and fair view concept. Proper

judgment of conservatism is a condition that must be met in order to obtain a true and fair view. The authors assert that, from the French point of view, conservatism is included in the „true and fair view equation".

Following the analysis of conservatism, as it is presented in the accounting regulations, and of the fidelity requirement to which it must comply, Toma & Robu (2014, p. 7) argue that two conclusions can be reached. The first assumes that the asymmetric treatment of the increases and decreases in value for debts and assets inevitably and certainly leads to a departure of the presented information, from the factual entity's state of affairs (in these conditions we cannot state that the information presented reflects the true and fair view of the financial position). The second one assumes that the recognition of all impairments, potential liabilities and losses, regardless of the nature of the result of the financial year, or the moment when they become evident and the non-recognition of the profit until the moment of its realization, at the balance sheet date, leads to failure to present the true and fair view of the entity's performance. The authors support the hypothesis that conservatism is in a conflictual relationship with the objective of financial reporting, true and fair view. They also argue that a reasonable interpretation of the objective at the present time could be presented in the following manner: an accountant should aim for an ideal objective (the true and fair view) knowing that due to conservatism and legal restrictions it is impossible to reach.

We could argue that the real reason we can assert that there is a conflict between true and fair view and conservatism is the existence of the much-contested creative accounting. Thus, as Villarroya Lequericaonandia (2003, p. 210) states in this regard, it is obvious that the existence of accounting principles that allow the introduction of subjectivism, as is the case with conservatism, favors the emergence of accounting manipulations. The author argues that it must be acknowledged that the application of accounting principles, in particular conservatism, is an obstacle to the managers' optimism and a mechanism of protection against business uncertainty, while encouraging creative accounting in companies. Or, creative accounting should be considered an impediment in obtaining the true and fair view. Using conservatism as a facilitator of creative accounting does nothing but to increase the magnitude of this conflict.

1.2. The complementarity perspective on the relationship between true and fair view and conservatism in the accounting literature

Assuming that „the true and fair view's recipe" includes as the main „ingredient" compliance with generally accepted accounting principles (Feleagă & Ionaşcu, 1997), we also focused on the arguments in favor of conservatism, which support the idea of a complementary relationship between those two concepts, in order to reflect the economic reality of a company.

Kamall (2012) states, in defense of conservatism, that abandoning it in favor of neutrality encouraged a „box-ticking attitude", which means that financial statements are always considered „true and fair" if have checked all the requirements imposed by IFRS. The author states that without conservatism some financial institutions and corporations will be able to hide behind the international accounting financial standards and will claim to be solvent while the reality is completely different.

Simo et al. (2013) presents conservatism as „a reasonable assessment of the facts in order to avoid transferring the risks of the current uncertainties, a transfer that could strike the company's assets and revenues in the future". The term „reasonable" refers to the professional judgment of information producers. Risk perception is subjective. The authors' question is: can we define a threshold for the appreciation of conservatism and say whether or not we are too cautious? In their opinion, it is this question that calls into question the coherence of conservatism with true and fair view objective.

Bunget & Bureană (2015) argue that, in order to discuss conservatism, you must first define true and fair view, the first concept being considered by the authors as a complement to true and fair view. At the same time, the authors assert that true and fair view can be assimilated to the image we can trust and that this conflict can never be eliminated.

The asymmetrical treatment of gains and losses found in inventory implies the use of an excess of caution at the expense of pursuing the true and fair view objective. By its nature and content, the use of conservatism ensures that an entity will remain in business for the foreseeable future (going concern concept demands) and that, at the same time, it presents a pessimistic image on the wealth

of an enterprise (Horomnea *et al.*, 2016, pp. 119, 184). Corroborated with the opinion of Feleagă & Ionaşcu (1997), the conflictual relationship between true and fair view and conservatism seems to appear when there is an abuse of conservatism, an exaggeration regarding the measurement process not when a reasonable degree of precaution is used.

The literature review convinced us that there are no papers that explore the relationship between the two concepts as a whole, especially a quantification model. Starting from this finding, our research aims to analyze this relation, especially looking if, and to what extent, conservatism is perceived as a major influencing factor in reaching the true and fair view objective.

2. The research methodology

Considering a series of coordinates such as: the meaning of true and fair view, the use of conservatism as a way to manipulate earnings and the meaning of creative accounting, the problems we set out to clarify, based on the answers received in a survey based on a questionnaire addressed to representatives of the accounting profession from Romania (chartered certified accountants, licensed accountants, financial auditors and accountants other than chartered certified and licensed accountants), are:

- *Is there a unitary opinion among the representatives of the accounting profession in Romania regarding the relationship between true and fair view and conservatism?*
- *Is true and fair view perceived as the image obtained following all generally accepted accounting principles, including conservatism, as a fundamental principle (Penman, 2016)?*
- *Is true and fair view perceived by auditors as a useful objective to them?*
- *Are there any cases where conservatism has been used to manipulate earnings?*

Under these conditions, the main objective of the research is to identify the perception of Romanian representatives of the accounting profession regarding the relationship between true and fair view and conservatism, having as reference point the two types of relationships found in the accounting literature: conflict or completion. Secondary objectives aim at identifying the respondents' perception of the meaning of true and fair view, the need to assign a universally accepted definition to this concept, the meaning of creative accounting and the use of conservatism as a way to manipulate earnings through provisions and impairment adjustments.

The choice and construction of the questionnaire for the survey was based on studies based on true and fair view concept, carried out over the years. In the literature, this tool is often used in order to capture the perception of different categories of users of financial statements on the true and fair view matter.

In this regard, we present a synthesis of representative papers regarding the perception of the true and fair view concept. Thus, using the questionnaire-based survey, Nobes & Parker (1991) analyzed the way in which the financial directors of the UK companies applied in practice the true and fair view concept to their organizations' financial statements. Low & Koh (1997) investigated the differential perceptions of the true and fair view among accountants, bank officers and managers in Singapore and examined whether it was perceived to mean compliance with generally accepted accounting principles and compliance with legal requirements. Amat et *al.* (2000) investigated the experience of Spanish auditors in working with the true and fair view concept, their views on the value of the term, and their experience in use of the true and fair view override. Kosmala (2005) established the importance of true and fair view requirements for Polish practitioners. Kirk (2006) continued and expanded an international empirical research on the perceptions of financial directors, auditors and shareholders on the true and fair view concept in New Zealand. Gonzalo – Angulo et *al.* (2018) examined the effects that professional status and maturity have on the understanding and perception of the true and fair view and its overriding principle in Spain and Piechocka-Kałusna's study (2018) focused on the notion of truth in financial reporting and the role of true and fair view.

Starting from the observation that the aspects covered by our research have not been addressed until now in other studies, as it turns out from the presented synthesis, we set out to identify the perception of the Romanian representatives of the accounting profession on the relationship between true and fair view and conservatism, considering the interpretation

of the two concepts, as well as their connection with the accounting manipulation within the law, that is what we call creative accounting.

The survey consists of a questionnaire, composed of 19 questions (presented in the **Appendix**), *of factual type* – they refer to certain situations, behaviors known by the respondents and *opinion type* – they concern the attitudes, the opinions of the respondents (Şandor, 2013, p. 119), which was addressed to a sample of chartered certified accountants, licensed accountants, financial auditors and accountants other than chartered certified and licensed accountants, being structured into three sections:

- *In the first section (questions 4-6)* opinion questions, that concern the perception of the respondents regarding the meaning of true and fair view and the need to assign a universally accepted definition to this concept, were used.
- *In the second section (questions 7-14),* factual and opinion questions that concern the perception of the respondents about the relationship between true and fair view and conservatism were used. For this purpose, among others, the respondents were offered the option to choose between the two types of relationships identified following the literature review (conflict or complementary relationship) and to motivate their choice.
- *In the last section (questions 15-19),* opinion questions that concern the perception of the respondents regarding the use of conservatism as a means of manipulating the financial results were used.

The questionnaire begins with a series of questions (1-3) which are designed to identify the type of respondent and his experience in the field.

In order to establish the proposed questions, we considered the papers of Barnea, Ronen and Sadan, 1976; Collet, 1990; Walton, 1993; Naser, 1993; Feleagă and Ionaşcu, 1997; Shah, 1998; Amat, Blake and Oliveras, 2000; Stolowy, 2000; García Cea, 2012; Stolowy, Lebas and Ding, 2013; Horomnea *et al.*, 2016 and also the requirements of *IAS 1 Presentation of financial statements.*

3. Sample selection

The target group of specialists was represented by accountants other than chartered certified and licensed accountants, chartered certified accountants and licensed accountants – CECCAR (Body of Chartered Certified Accountants and Licensed Accountants of Romania) members and representatives of the audit activity from the North-East Region of Romania (Iasi, Suceava, Bacau, Neamț, Vaslui and Botoşani counties). However, in order to increase the number of responses from the auditors, the target group subsequently included representatives of the audit activity from counties such as Maramureş, Bistrița, Braşov, Mureş and also from Bucharest. Prior to its distribution, the questionnaire was pre-tested in order to refine its structure.

In order to complete this study, the Google Forms service, made available by the Google platform, was used, the questionnaire thus constructed being made available to the respondents through electronic means of communication (e-mail).

The questionnaire was distributed in a first phase, in paper format, within training courses organized by the Body of Chartered Certified Accountants and Licensed Accountants of Romania (CECCAR) and 17 answers were obtained. Subsequently it was made available to a number of about 900 of representatives of the accounting profession (about 300 representatives for each of the three groups) through electronic means of communication (e-mail)[1], 105 responses being obtained this time.

From the two phases, carried out between April and October 2019, we obtained a total of 122 answers out of which 121 are usable, 1 answer being eliminated due to the non-belonging of the respondent to the target group. The number of responses is comparable to those received for similar questionnaires regarding the perception of true and fair view proposed by McEnroe & Martens, 1998 and Kosmala, 2005 and at the same time represents an acceptable number of responses for Romania, where numerous papers such as those of the authors Săcărin, Bunea and Gîrbină, 2013; Grosu, Almasan and Circa, 2014; Almasan et al., 2019;

[1] E-mails were sent to the target population in May 2019 and then a reminder message was sent to the same group in September 2019. Because for the financial auditors there was a very low response rate in the two phases, we extended the distribution of the questionnaire to other people from Bucharest and other counties outside the North-East region.

Buculescu and Velicescu, 2014, which deals with different aspects of the financial accounting field, presents similar samples. According to Albu et *al*. (2011), conducting and publishing research presenting samples smaller than those provided in international accounting journals is caused by the reluctance of companies and professionals to respond to questionnaire-based surveys, most likely in an attempt to prevent the disclosure of sensitive information.

4. Results and discussions

In a first phase, the analysis of the results outlined the profile of the respondents. Thus, we noticed that most of the respondents are from the ***accountants other than chartered certified and licensed accountants category*** (55 respondents – 45.45%) followed by ***CECCAR members*** (7 licensed accountants – 5.79% and 40 chartered certified accountants – 33.06%) and ***financial auditing representatives*** (11 independent financial auditors – 9.09% and 8 representatives of audit companies – 6.61%).

The predominant role played by the respondents is to prepare/ participate in the preparation of the financial statements (62%) and most of the respondents (79%) have been active for more than 5 years in this field, 47% of them having over 15 years of experience. The first section deals with questions 4-6, opinion questions, which are used with the purpose of determining to what extent the respondents' opinion regarding the meaning of true and fair view overlaps with a series of interpretations provided by the accounting literature and, at the same time, the extent to which the respondents consider it necessary that a universally accepted definition/ interpretation be established for this concept.

In order to explore the perception of representatives of the accounting profession in our country on the true and fair view concept and, implicitly, on its meaning/ interpretation, we presented through the fourth question in the questionnaire a series of definitions/ meanings/ interpretations identified in the accounting literature asking the respondents to give a score from 1 (1 – total disagreement) to 5 (5 – total agreement) for each of them. Based on the scores assigned by the 121 respondents, we obtained a ranking of opinions, as can be observed in **Table no. 1**.

Table no. 1. Interpretation of true and fair view according to the status of the respondent – Q4

The true and fair view interpretation	No. Resp.	The status of the respondent	Score for					Mean	Mode	Rank
			1	2	3	4	5			
Guarantee of the financial reporting quality	121	Accountant	0	0	4	22	29	4.37	4	2
		CECCAR member	0	1	3	22	21			
		Audit representant	0	1	0	12	6			
Compliance, in good faith, of all accounting principles	120	Accountant	0	1	3	18	32	4.44	5	1
		CECCAR member	0	0	1	25	21			
		Audit representant	0	0	1	11	7			
Safety net invoked when the accounting regulations do not cover circumstances other than those specifically foreseen in other clauses in the document	119	Accountant	1	3	13	23	13	3.8	4	6
		CECCAR member	0	3	14	19	11			
		Audit representant	0	1	8	6	4			
Higher objective of financial reporting	120	Accountant	0	3	9	17	25	4.1	5	4
		CECCAR member	0	1	9	20	17			
		Audit representant	0	3	3	8	5			
A useful principle for auditors	114	Accountant	0	2	10	19	21	3.99	4	5
		CECCAR member	1	2	8	19	13			
		Audit representant	1	1	5	8	4			
The true and fair view concept implies the exact representation of the company's economic activity	120	Accountant	0	2	7	11	34	4.27	5	3
		CECCAR member	1	0	5	20	21			
		Audit representant	1	1	3	10	4			

Source: Authors, 2020

Overall, analyzing the data in **Table no. 1**, it can be concluded that ***„Compliance, in good faith, of all accounting principles"*** is the most representative interpretation attributed to true and fair view, followed

closely by that of ***„Guarantee of the financial reporting quality"*** and ***„... exact representation of the company's economic activity".*** As can be observed, there are not very large gaps between the assigned scores, and none of the interpretations was rejected by a significant number of respondents. This highlights the uncertain nature of the concept and brings us to Cunningham's (2003) assertion that true and fair view may indeed have different meanings for different groups or societies.

Regarding the status of the respondents, it can be observed that there were not very big differences in perception between the three categories: ***accountants other than chartered certified and licensed accountants*** (55 respondents), ***CECCAR members*** (47 respondents) and ***financial auditing representatives*** (19 respondents). At the same time, the expectations regarding the priority attribution of the meaning of „useful principle to the auditors" by the auditors proved unfounded since, within the limit of the analyzed sample, it can be observed that the auditors opt for the description of true and fair view as ***„Compliance, in good faith, of all accounting principles"*** and ***„Guarantee of the financial reporting quality".***

Asked if they consider it necessary to establish a universally accepted definition for true and fair view, 58.68% of the respondents said no. The 50 respondents who stated that they considered it necessary were further asked to specify why. Thus, analyzing 28 free answers, we observed that, within the limit of the analyzed sample, the respondents consider it necessary to define/ interpret true and fair view in a universal way in order to ensure: ***a unitary, clear interpretation*** of the concept, thus ensuring the avoidance of individual, subjective interpretations that can lead to different representations of a similar situation; a high degree of ***transparency*** of financial reporting and a ***high degree of objectivity and certainty*** that what is represented, returns the true economic reality.

The second section aimed, first of all, to establish the degree of use of provisions and impairment adjustments, and secondly, the perception of the respondents on how conservatism interacts with the true and fair view objective, considering three phases.

Within the limit of the analyzed sample, for those who have bookkeeping activities, the most used provisions are those for ***litigation, fines, penalties or other damages, compensations, bad debts,*** followed by those for ***warranties*** given to clients and ***other provisions***. As for the impairment adjustments situation, for those who have bookkeeping activities, the least used ones are those for the loss of value of the treasury accounts. Of the mentioned categories, only a limited number of provisions and impairment adjustments benefit from deductibility. Thus, in the limit of the analyzed sample, we cannot argue that the use of the above presented categories takes place for tax reasons, but rather to take into account the risks and uncertainties faced by the companies.

In the first phase, in order to establish the perception on the relationship between true and fair view and conservatism, question no. 9, which aims to identify whether the respondents perceive the financial statements prepared in accordance with conservatism as reports that present the true and fair view of the financial position and performance of the company, was included in the questionnaire. In this regard, 79% of the respondents appreciate conservatism as a feature of the financial statements that present a true and fair view of a company's wealth.

In the second phase, starting from the two types of relationships identified in the literature review: complementary relationship and conflictual relationship, the respondents had the option to select the idea/ belief/ opinion with which they identify (question no. 10), and, in the third and final phase, they were asked to motivate their choice (question no. 11). 91% of the respondents opted for „a complementary relationship that implies the use of conservatism in order to obtain a true and fair view".

Of the 38 usable answers, obtained in question no. 11, we retain some of the answers as follows:

In order to support the conflictual relationship:

„Most of the time, excessive use of conservatism causes a distorted image of a company" (Acc. under 5 years of experience).

„If you are conservative, you do not have a faithful image... True and fair view means that you have all the information that affects the company... information that has a negative consequence in the future. Theoretically, no one knows the future, thus, true and fair view which implies knowing the future does not exist" (FA, over 15 years of experience).

„The use of conservatism does not exactly reflect the reality, due to the decreases of the value of the assets,

respectively to the increases of the debts" (Acc. under 5 years of experience).

In order to support the complementary relationship:

„Professional judgment is essential for an appropriate audit. I consider the term „conservatism" synonymous with the term „professional skepticism". Maintaining professional skepticism during the audit is required if the auditor, for example, must reduce the risk of: omitting unusual circumstances; the use of improper presumptions in determining the nature, timing and extent of the audit procedures and in evaluating their results. Professional skepticism/ conservatism is necessary for a critical evaluation of audit evidence" (Audit firm representative, over 15 years experience).

„... a complementary relationship because, by using conservatism, we can obtain a most accurate image of the financial year. Conservatism does not allow the reporting of overvalued assets or undervalued expenses, which makes us have a most credible financial year situation" (Acc. between 10 and 15 years of experience).

„Conservatism implies the use of provisions and impairment adjustments. Without them the asset would have a greater value than the real one" (CECCAR member, less than 5 years experience).

„.. a complementary relationship because the true and fair view implies the reflection of the real situation, and conservatism implies a reasonable appreciation of the facts in order to avoid future risk, the result being the obtaining of the true and fair view" (Acc. under 5 years experience).

„The overestimation of the receivables and/ or the appreciation of the debts as being smaller do nothing but distort the image on the company, not offering a true image. It is good to go on the most pragmatic scenario, in order to avoid creating the impression of artificial wealth" (Acc. under 5 years experience).

„If conservatism is not used in the measurement process of some cases, an overestimation of the assets or an undervaluation of the debts would be obtained, and therefore a true and fair view of the respective company would not be achieved" (CECCAR member, over 15 years the experience).

Considering the requirement in OMFP 1802/2014 (section 2.1 paragraph 25) to provide additional information in the notes to the financial statements, in cases where the application of the regulations is not sufficient to give a true and fair view of the assets, liabilities, the financial position and the performance of the entity, questions 12-14 relate to how this option was encountered by respondents, given the three questions considered by Amat et *al*. (2000) in their paper.

Therefore, we noticed that 31.40% of the respondents had one or more clients who decided to include additional information in the financial reports, in order to obtain a true and fair view, 49.6% of the respondents were in the situation of having one or more clients who followed the advice to include more information in the financial reports in order to obtain a true and fair view, and 27.3% of the respondents were in the situation of having one or more clients who did not follow the advice to includes more information in financial statements in order to get a true and fair view.

The last section (questions 15-19) concerns the perception of the respondents regarding the use of conservatism as a facilitator of earnings management. In the first phase we set out to identify, as in the case of the true and fair view concept, how the respondents interpret creative accounting, referring again to a series of interpretations identified in the accounting literature.

Analyzing the data in **Table no. 2**, we could find that „***Manipulation of financial statements using accounting options, estimates or other practices accepted by accounting regulations"*** could be considered the most representative interpretation attributed to creative accounting, followed closely by the „ ***A set of procedures used to modify the level of results (to optimize or minimize them), or to present financial statements without these goals being mutually exclusive***". The least representative is that of „ ***Deliberate diminution of fluctuations in the level of earnings considered normal for an enterprise"***, most of the respondents being undecided about this perspective on creative accounting.

Regarding the status of the respondents, it can be observed that, of the three considered categories, the ***accountants other than chartered certified and licensed accountants*** mainly inclined towards „***Manipulation of financial statements using accounting options, estimates or other practices accepted by accounting regulations"*** and ***CECCAR members*** towards „ ***A process by which the management of an enterprise takes advantage of the shortcomings or uses the blurs in the accounting rules to present a modified image of the results"***.

Table no. 2. Respondents' perception of the significance of creative accounting – Q15

The creative accounting interpretation	No. Resp.	The status of the respondent	Score for					Mean	Mode	Rank
			1	2	3	4	5			
A process by which the management of an enterprise takes advantage of the shortcomings or uses the blurs in the accounting rules to present a modified image of the results	118	Accountant	3	10	13	21	5	3.18	4	3
		CECCAR member	8	6	16	13	4			
		Audit representant	0	4	5	9	1			
Manipulation of financial statements using accounting options, estimates or other practices accepted by accounting regulations	116	Accountant	2	10	8	25	7	3.24	4	1
		CECCAR member	11	4	16	10	5			
		Audit representant	0	3	5	8	2			
Deliberate diminution of fluctuations in the level of earnings considered normal for an enterprise	115	Accountant	3	12	20	10	6	2.91	3	4
		CECCAR member	13	6	17	8	2			
		Audit representant	0	2	8	8	0			
A set of procedures used to modify the level of results (to optimize or minimize them), or to present financial statements without these goals being mutually exclusive	116	Accountant	2	5	20	18	6	3.2	4	2
		CECCAR member	12	4	16	12	3			
		Audit representant	0	2	4	10	2			

Source: Authors, 2020

Also, regarding creative accounting, 57% of the respondents consider it easy to detect the creative techniques used in the financial reports of the Romanian companies, and 54% believe that the Romanian accounting regulations facilitate the use of creative accounting.

Being a sensitive topic to be addressed, both through the questionnaire and other types of survey, we have limited ourselves to the documentation of the use of creative accounting techniques that involve the use of provisions and impairment adjustments, thus appealing on respondents' experience. Asked if they identified in their activity cases where provisions and/ or impairment adjustments were used in order to manipulate earnings, 11.57% (14 respondents) stated that they encountered cases in which the impairment adjustments were used for this purpose, and 16.52% (20 respondents) encountered cases where provisions were used to manipulate the results.

At the end of the questionnaire respondents were able to contribute with examples of situations regarding the interaction between conservatism and true and fair view or the creative practices identified/ encountered in their practice. An extremely small number of respondents responded to this invitation. From their opinions it has emerged that conservatism is the most infringed principle and that tax reasons are often invoked in practice for the non-recognition of provisions and impairment adjustments, although in fact their impact is neutral on the income tax calculation base. An expressed opinion was that the management avoids affecting the results and thus „It reaches a decapitalization of the companies in the end..." (FA, over 15 years experience).

Conclusions

The main purpose of this survey was to identify the perception of the representatives of the accounting profession from Romania, namely chartered certified accountants, licensed accountants, financial auditors and accountants other than chartered certified and licensed accountants regarding the relationship between true and fair view and conservatism, considering the two options revealed by the accounting literature: a conflictual relationship or a complementary relationship. The results highlighted that, within the analyzed sample, this relationship is perceived as a complementary one, meaning that the use of conservatism takes place in order to obtain an image that represents the economic reality. Concerns regarding conservatism can be attributed to the exaggeration of the prudential attitude and its use in order to minimize the results of the period.

Regarding the respondents' perception on the meaning of true and fair view, the results indicated that it is perceived as the image resulting from compliance with all accounting principles and both as a guarantee of the financial reporting quality and objective of financial reporting. Although we expected this concept to be recognized as a useful

principle for auditors, the views of the respondents in this category converge on the idea that in achieving the true and fair view objective, compliance with all accounting principles takes precedence. The lack of a definition is pointed out by a large part of the respondents who claim that this concept should be clearly defined in order to leave no room for interpretations and to establish a relationship with certainty, a recipe that once followed would lead two accountants that face identical or similar situations to make the same decision, having as reference only the true and fair view requirement/ objective.

As far as creative accounting is concerned, it is perceived by most as a way to manipulate financial statements using in this regard estimations and the existing options in the accounting regulations. This acceptance was confirmed by a number of respondents who identified in their activity cases in which the use of provisions and impairment adjustments was intended to manipulate the results.

The limits of the research concern, in this case, the small number of the sample, especially in the case of the representatives of the audit activity. Although the target population was large, the response rate was low. In the case of auditors, as mentioned in the description of the methodological approach, we expanded the research area due to the registration of a very low response rate in the first two stages of the distribution of the questionnaire. The number of respondents increased following the enlargement but subsequently remained unchanged.

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APPENDIX

The questions from the questionnaire regarding the perception of Romanian representatives of the accounting profession on the relationship between true and fair view and conservatism

1. Your status:
   a. Financial auditor; b. Audit firm; c. Chartered certified accountant; d. Licensed accountant; e. Accountants other than chartered certified and licensed accountants; f. Another category: specify which.....
2. What is your role in the financial reporting process?
   a. preparation of financial statements; b. auditing financial statements; c. certification of financial statements; d. user of financial statements; e. other: specify which.....
3. Work experience:
   a. less than 5 years; b. between 5 and 9 years; c. between 10 and 15 years; d. over 15 years
4. In order to establish the importance of the true and fair view concept, specify to what extent you agree with the following statements.

Interpretation	5 = „Strongly Agree"	4 = „Agree"	3 = „Neither Agree nor Disagree"	2 = „Disagree"	1 = „Strongly Disagree"
Guarantee of the financial reporting quality					
Compliance, in good faith, of all accounting principles					
Safety net invoked when the accounting regulations do not cover circumstances other than those specifically foreseen in other clauses in the document					
Higher objective of financial reporting					
A useful principle for auditors					
The true and fair view concept implies the exact representation of the company's economic activity					

5. Do you consider it necessary to establish a clear and universally accepted definition for the true and fair view concept?
   a. Yes; b. No;
6. If you answered Yes to question no. 5 specify why do you think a definition of the concept of true image is needed:
7. If you have bookkeeping activities, have you encountered situations where the recognition of provisions was required? Check the types of provisions you have recognised:
   a. for litigation, fines and penalties or other damages; b. for actions related to the decommissioning of tangible assets; c. for restructuring; d. for guarantees granted to customers; e. for pensions and similar obligations; f. for taxes; g. for the termination of the employment contract; h. for employees' participation in profit; i. for onerous contracts; j. for concession agreements; k. other provisions; l. I do not recognise provisions; m. I do not have bookkeeping activities.
8. If you have bookkeeping activities, have you encountered situations where the recognition of impairment adjustments was required? Check the types of impairment adjustments you have recognised:

a. impairment adjustments for depreciation of fixed assets; b. impairment adjustments for inventories and work in progress; c. impairment adjustments for receivables; d. impairment adjustments for the loss of value of the treasury accounts; e. I do not recognise impairment adjustments; f. I do not have bookkeeping activities.

9. Do you consider that the financial statements prepared in compliance with conservatism present a true and fair view of the company's financial position and performance?
   a. Yes; b. No
10. How do you consider the relationship between conservatism and true and fair view?
    a. a conflicting relationship that involves the exclusion of conservatism in order to obtain a true and fair view;
    b. a complementary relationship that involves the use of conservatism in order to obtain a true and fair view;
11. Motivate in maximum 4 lines the choice made to question no. 10.
12. Have you ever had a client who decided to include additional information in their financial statements, with the aim of obtaining a true and fair view? (Amat et al., 2000)
    a. Yes; b. No
13. Have you ever advised a client to include more information in their financial statements in order to obtain a true and fair view? (Amat et al., 2000)
    a. Yes; b. No
14. Have you ever advised a client to include more information in their financial statements in order to obtain a true fair view and he did not take into account your advice? (Amat et al., 2000)
    a. Yes; b. No
15. In order to interpret the concept of creative accounting, specify the extent to which you agree with the following statements:

Interpretation	5 = „Strongly Agree"	4 = „Agree"	3 = „Neither Agree nor Disagree"	2 = „Disagree"	1 = „Strongly Disagree"
A process by which the management of an enterprise takes advantage of the shortcomings or uses the blurs in the accounting rules to present a modified image of the results					
Manipulation of financial statements using accounting options, estimates or other practices accepted by accounting regulations					
Deliberate diminution of fluctuations in the level of earnings considered normal for an enterprise					
A set of procedures used to modify the level of results (to optimize or minimize them), or to present financial statements without these goals being mutually exclusive					

16. Do you consider it easy to detect manipulative/ creative accounting techniques used in Romanian financial statements?
    a. Yes; b. No

17. Have you ever identified cases in which provisions or impairment adjustments were used to manipulate the results of a company?
    a. Yes, cases in which provisions were used for this purpose; b. Yes, cases in which the impairment adjustments were used for this purpose; c. No.
18. Do you consider that the national accounting regulations in force facilitate the use of creative accounting techniques?
    a. Yes; b. No
19. If you would like to give us more information about your experience with the interaction between conservatism and true and fair view or about creative accounting practices, please do so in the following, using examples of such situations.

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