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Audite Process Automation – between Vision and Realism

Reflections on the Concept of Authority: The Case of Accounting Standards
The Impact of Digitalization on the Quality of Accounting Information
Influence of Gender Differences on the Quality of Financial Audit Engagements
The Impact of Covid-19 on the State Audit – Lessons from the Crisis
An Inquiry about what Influences the Key Audit Matters' Number

Studiu comparativ asupra raportării de sustenabilitate în industria bancară
Comparative Study of Sustainability Reporting on the Banking Industry
Sumar / Content

Alain BURLAUD, Maria NICULESCU
- Reflections on the Concept of Authority: The Case of Accounting Standards and Standards Setting .................................................... 275

Dragoș Ovidiu TOFAN, Dinu AIRINEI
- Audit Process Automation – between Vision and Realism.................. 282

Mehdi BOUCHETARA
- The Impact of Digitalization on the Quality of Accounting Information. The Case of Algeria.............................................................. 295

Maria GROSU, Ioan-Bogdan ROBU, Costel ISTRATE, Marinela ISTRATE
- Influence of Gender Differences on the Quality of Financial Audit Engagements for Listed Companies ........................................... 304

Ivan DIONISJEV, Zorica BOZHINOVSKA LAZAREVSKA
- The Impact of Covid-19 on the State Audit in the Republic of North Macedonia - Lessons from the Crisis .............................................. 320

Teodora PORUMBĂCEAN, Adriana TIRON-TUDOR
- An Inquiry of Empirical Quantitative Studies about what Influences the Key Audit Matters’ Number.............................................. 333

Jessabel A. Amadis GELLIDON, Yanuar Nanok SOENARNO
- Comparative Study of Sustainability Reporting on the Banking Industry in Several Countries ......................................................... 348
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- an Abstract is compulsory, which must be written at the 3rd person plural, presenting the subject of the research, the main problems and authors’ contributions;
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Reflections on the Concept of Authority: The Case of Accounting Standards and Standards Setting

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Abstract

The question of authority can take various forms and have different purposes. The exercise of authority influences behaviors, changes practices, transforms realities, and, by avoiding chaos, brings intellectual comfort to those who submit to it by leaving it to others, i.e., those who possess authority, the task of asking questions and sometimes finding satisfactory answers. The paper highlights the multiple perspectives of a definition of the concept of authority, to then reflect on the authority and legitimacy of accounting rules and regulations. This is because if confidence is essential in trade, it is just as essential in accounting matters. In this regard the authors consider that it would be more useful to deal with the substance of the problem and to address the underlying or implicit assumptions that made it possible to produce the accounting information. Thus, the accounting can be perceived as a legitimate and effective authority which contributes to a climate of trust.

Key words: accounting; authority; legitimacy; accounting standards;

JEL Classification: M42

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Introduction

All societies, including in the animal kingdom, are faced with the question of authority. It can take various forms and have different purposes. The exercise of authority influences behaviors, changes practices, transforms realities, and, by avoiding chaos, brings intellectual comfort to those who submit to it by leaving it to others, i.e., those who possess authority, the task of asking questions and sometimes finding satisfactory answers. When we talk about authority, we immediately think of a person, let's call him Hero, capable of exerting authority, having the power to impose obedience. That power is therefore that of a natural person. Hence, we talk about a person who is an authority figure, or authorities to designate persons holding an official office.

Are our great organizations led by Heroes like Louis Renault, André Citroën, Marcel Boussac, Marcel Dassault and many others in the industry or by General de Gaulle, Winston Churchill, Helmut Kohl and many other statesmen, or do these organizations drift at the mercy of authorities to designate persons holding an official office.

Tolstoy describes an authority, personified in the person of Bagration, lieutenant-general of the Imperial Russian Army, but immersed in an organizational reality. In other words, is authority the prerogative of one man or that of multiple and anonymous forces? Tolstoy has the intelligence not to answer this question in a simplistic and affirmative way. The reality is more subtle as illustrated in the following quote: “Prince Andrei listened attentively to Prince Bagration’s conversation with his subordinates, and to the orders that he issued, and to his amazement discovered that in reality he did not give any orders at all, but that the prince only tried to give the impression that all that was done by his various officers either through necessity, chance, or volition, was done if not exactly by his orders, at all events in accordance with his design. Prince Andrei noticed that owing to the tact displayed by Prince Bagration, in spite of the fortuitousness of events and their absolute independence of the general's will, his presence was of great importance. The subordinates, with distracted faces, who kept galloping up to the prince, instantly became calm; soldiers and officers received him with enthusiasm, and were animated by his presence and evidently took pride in displaying their courage.”

The manifestation, the exercise of authority in this complex reality is done through interactions, which can be consensual or conflictual. Its expression in the latter can be considered from a particular angle: its ability to resolve conflicts. Accounting is also, among other things, a tool for conflict resolution, a peaceful as possible tool for government by numbers. This twofold observation raises the following question: what is the authority of accounting?

1. Definition of authority. The authority of rules and standards

These reflections raise the question of the definition of authority. Etymologically, the word ‘authority’ comes from the Latin auctoritas, derived itself from the verb augere, which means to give birth, to augment. According to Benveniste, augere consists above all in performing a creative, founding, even mythical act, which makes something appear for the first time. He describes the primitive meaning of the word as: “Every word spoken with authority determines a change in the world, creates something; this mysterious quality is what augeo expresses, the power that make the plants spring up, that gives existence to a law.”

From this original meaning, the possibilities for a definition of the concept of authority are multiple. Thus, authority can be seen as a particular form of exercising power: “authority is the power to obtain, without recourse to physical coercion, a certain behavior on the part of those who are subject to it. (...) Where authority is not exercised by a natural person, society substitutes for it an anonymous collective pressure, well known to sociologists as social control, which forces the members of the group to certain attitudes imposed by the widespread conformism. (...) Authority is so indispensable to the accomplishment of every collective work, in any enterprise involving convergence of the efforts of a plurality of individuals, that the relations of command and obedience are (...) artificially created through an organic hierarchy.

1 Tolstoy, p. 216.
through which the cohesion of the whole is ensured\(^1\). Authority can also be defined as the expression of trust that one has in someone, whether in a hierarchical position or not, and whose order or advice one follows. ‘Someone has authority or is an authority figure’ means that their qualities or competence generate an action in accordance with their design without constraint and with confidence.

In everyday language, we speak of the authority of a person, an institution, or a message to signify that they are trusted, that their advice, suggestion or injunction is received with confidence or at least without hostility or resistance.

According to these definitions, ‘authority holders’ and, respectively, those who exercise it, are natural or legal persons. An ‘invisible technology’, to use the expression of Michel Berry (1983), such as the different forms of accounting, is not envisioned within the definitions of authority that we have just discussed. In this particular case, we are supposed to ask ourselves whether a tool, that can be physical or immaterial, like the accounting standards, can have, or be an, authority when, in appearance, such a tool is devoid of intention?

The words regulation/rule\(^2\) come from the Latin regula, which designates, in its primary sense, the instrument that serves to guide the hand when drawing a line. Figuratively speaking, it sends to the principles, the norms of behavior in a group or in society, in a given context. Rules and regulations, including accounting regulations/standards, are social constructs that gain authority through a complex process of interaction and negotiation between the ‘makers’ of the rules or standards, those who ensure their application, and the final recipients. The authority of accounting standards is conferred both by those that make them (the standard setters) and by those who apply them.

This means that even if ‘invisible technologies’ are not mentioned as such in the definitions of authority, they meet the criteria that these definitions subsume: absence of physical constraint, control of behavior, submission of those whose action or consequences of action are made visible by accounting. It is therefore an invisible or anonymous authority that induces behaviors internalized by natural persons whose action in its essentially financial dimensions is revealed, put in the spotlight. It is the performativity\(^3\) of accounting that drives actors into action (mise sous tension\(^4\), Fr.). For this coupling between knowledge and action to work in the absence of physical constraint, this invisible authority must be perceived as legitimate by those who are subjected to it and who must have confidence in the veracity of the numbers produced. This voluntary, or at least consented, submission to an artifact derives from the recognition of the quality of accounting standards, the competence of the regulator or standard setter, the neutrality of the producer of the information and the independence of the auditor.

2. Authority and legitimacy of accounting rules and regulations

These reflections show how strong the link between power, authority and legitimacy is. The performative power of accounting lies in its legitimate authority. “It is legitimate, in general, that which conforms, not only to the laws, but also to morality, to reason.” (Auroux, p. 1459) “Etymologically, legitimacy is the character of what is founded in law and/or justice. It therefore concerns only those things that can be debated from the point of view of law or justice, that is, essentially, human actions, as they take place in a social context that defines the norms of the acceptable and the unacceptable, the conforming and the non-conforming, the convenient and the inconvenient.” (Lauffer & Burlaud, 1997, p. 1754).

What are the foundations of the authority of numbers when it comes to accounting?

According to Hans Kelsen, the authority of norms, rules or standards can be ‘intrinsic’, given by the message they carry, which corresponds to universally recognized and accepted principles of life in society (for example: prohibition of killing) or an authority rooted in ‘legality’, based on the enunciation of the norm by a recognized institution and respecting a social contract\(^5\). Since few regulations have intrinsic authority, the search for authority often lies in external elements, and first of all in the circumstances of their making and their guarantee.

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2. The accounting profession uses only the word “standard” as a synonym for “rule”.
4. On the concept of ‘mise sous tension’ see Burlaud & Simon (2003), pp. 7 & following, as well as Burlaud et al. (2004), pp. 57 & following.
In accounting, there is talk of a substantive legitimacy of certain standards (for example, in the case of IFRS or IPSAS) because they are based on globally recognized principles and algorithms. Similarly, the U.S. accounting system, called Generally accepted accounting principles (US-GAAP), is based, as its name suggests, on ‘generally accepted’ principles. We therefore refer to the majority rule to establish their legitimacy.

The legitimacy of the standards also rests on that of the standards setter. For example, the International Accounting Standards Board (IASB) and the International Federation of Accountants (IFAC) proclaim their attachment to the public interest, which is introduced into their governance in order to materialize the concept as they cannot define it, the Public interest oversight boards guaranteeing the reality of their attachment. Of course, such organizations can be challenged to the extent that not all stakeholders are represented. Political legitimacy is therefore lacking (Burlaud & Colasse, 2010, p. 155).

Beyond standards and standards setters, there is the legitimacy of those who produce the accounts. It results from their technical competence, attested by professional diplomas in accordance with international standards, the International Accounting Education Standards of IFAC, or intergovernmental standards such as the European Directive 2014/56 on statutory audit. Their professionalism allows accountants to hide behind standards to preserve the reality or the appearance of their neutrality. Finally, there is the legitimacy of the statutory auditors, which is also based on their competence but also on their independence, guaranteed by a code of ethics, in France, the code of the National Institute of Auditors (Compagnie des Commissaires aux Comptes), which is in compliance with the International Code of Ethics of IFAC and the Directive 2014/56 in Europe. In addition, auditors must comply with professional rules, i.e., the International Standards on Auditing issued by IFAC and transposed in France in the Standards of Professional Practice (Normes d’exercice professionnel: NEP). In Romania, the standards issued by IFAC were adopted in 2013 by the Romanian National Institute of Auditors (Camera Auditorilor Financiari din România), in the Code of ethics of financial auditors (Codul etic al auditorilor financiari).

This relatively complex set of institutions stems from the rational-legal legitimacy (i.e., rationality of the rule of law) as described by the German sociologist Max Weber (p. 223 & following). In accounting, we can also speak of a tradition-based legitimacy of the standards, in the sense put forward by Weber. These are rules based on ancestral principles and guaranteed by trust in an institution whose legitimacy is obvious because it has long been undisputed.

However, the rational-legal legitimacy or procedural legitimacy of accounting and, more specifically, of financial accounting and auditing, is the main form of authority, indisputable and extremely robust. It has withstood many scandals over the past centuries, from Panama to Wirecard via Enron, Parmalat, Crédit Lyonnais and many others. In Romania, the series of financial scandals of recent decades (Bancorex, FNI, Loteria, etc.) shows, however, the limits of such rationality in a context disrupted by the pace and complexity of changes, and in the presence of insufficient administrative capacity. Each time, a few heads fall, symbolically, and the regulations are adapted, ensuring the continuity of the accounting function and a particular form of government by numbers until the next scandal occurs.

Of course, any authority must face protest movements. They may consist of breaking the rules: which constitutes fraud. But one can also take advantage of the loopholes in the regulations, which lawyers call an ‘abuse of rights’: which is creative accounting1. In both cases, it is a question of governing by falsified or manipulated numbers in order to obtain the desired result by weighing on a decision.

The previous developments seem to apply mainly to financial accounting. In reality, the mechanisms are similar in respect to management accounting. The position of international and national regulations, less restrictive in this field, is taken by the doctrine which provides ‘generally accepted’ definitions of the different concepts used: costs, margins, variances, etc. The reporting and management accounting rules of the parent company have the force of ‘law’ within the group. The ties between financial and managerial accounting (calculation of transfer prices, valuation of inventories, etc.) do not allow the two systems to be completely independent and are both subject to the control of the auditors and the tax authorities or the Court of Accounts (Cour des comptes in France, Curtea de Conturi in Romania), depending on the legal status of the entity.

We have seen that authority, whether that of a person or that of language, more generally of an artifact, can only deploy its power if it has legitimacy, that is to say, it is recognized, accepted by those who are subject to such authority which

excludes the use of physical coercion. In reality, things are more complex. Power is not entirely vertical; it is shared. To a certain extent, we, individually or collectively, are ‘free to obey’ (libres d’ôbéir, Fr.), to use the oxymoron that Johann Chapoutot gave as the title to his book published in 2020. In some situations, it is difficult to say who commands whom. Whoever is supposed to be the subject of authority can develop strategies of passive resistance, zeal to paralyze, simulate or conceal, etc. The flow of information, necessary for the exercise of power, is never complete and can be taken advantage of. Transparency is necessarily limited even if it constitutes a proclaimed objective. It is limited, if only because of the volume of information provided. Thus, the financial reports of large groups often comprise several hundred pages. According to the expression that ‘too much information kills information’ (complexity of abundance), the goal of transparency cannot be achieved. Full control is impossible, so a minimum of trust is required.

3. Authority and trust in the accounting ecosystem

"Trust is a certain level of subjective probability by which no agent believes that another agent or group of agents will perform a particular action before they can control that action (or without ever being able to control it) and in a context where it affects their own action." (Canto-Sperber, p. 287) In addition, trust reduces complexity by freeing the person who exercises trust from certain particular and practical decisions. Those who place their trust, however, have a duty of vigilance and the depositary of the trust must be worthy of the trust that has been placed in them. It is therefore a reciprocal commitment that reduces the cost of control or, in the words of Ronald Coase, the ‘transaction costs’ for the benefit of all.

The trust that a natural or legal person inspires, or more precisely that they gain little by little, is an important component of their relational capital from which they can derive benefits. Within an organization, it can replace, at least in part, hierarchical control to leave discretionary space to the subordinate in exchange for a commitment of loyalty. In relations between organizations, it can replace, at least in part, contractual formalism with implicit agreements to manage unforeseen situations in a spirit of fairness and lasting relationship. "The hope of good prevails over the fear of possible evil." (Canto-Sperber, p. 284)

If confidence is essential in trade, even if only confidence in money, it is just as essential in accounting matters. The fall of Arthur Andersen (AA) in 2002 is a great illustration in this respect. AA was the world’s number one in auditing and was about to celebrate its centenary. But AA saw its trust capital collapse when involved in the bankruptcy of one of its customers, Enron, a multinational in the energy and telecommunications sectors rating sixth in terms of market capitalization in the United States, which was accused of having falsified its accounts with the complicity of its auditor. Very quickly, the firm lost many of its auditor mandates and was forced to give up its CPA licence. This case shows the extent to which financial accounting, an instrument for holding executives accountable and for measuring financial performance, is dependent on the trust it inspires. In order to strengthen it, it is subjected to external control by an auditor, which is an independent professional who has taken an oath, and who is a member of a regulated liberal profession under the supervision of a public authority, and who has civil and criminal liability.

For most public organizations, this role is played by the Court of Accounts or the Regional Courts of Accounts, whether in France or Romania. Within public or private organizations of a certain size, internal auditors have the possibility to rely on professional standards and to be a member of an association (although this is not a requirement): the Institute of Internal Auditors (IIA) at the global level and its French counterpart, the French Institute of Audit and Internal Control (Institut Français de l’Audite et du Contrôle Intérieur: IFACI) or in Romanian, the National Institute of Internal Control of Romania (Institutul Național de Control Intern din România: INCIR).

The existence of a whole normative system, the membership of a professional organization guaranteeing competence and ethics, the supervision of a governmental authority, the brand policy of large audit firms and professional organizations contribute to fueling public confidence in the truthfulness of financial statements. This trust, essential to the functioning of the ‘accounting ecosystem’ and which is even one of its reasons for being, is at the heart of many cases of information asymmetry.

Doctors, veterinarians, architects, lawyers, etc. have provided

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1 La Boétie spoke of ‘voluntary servitude’ in Discours de la servitude volontaire. Flammarion, 1983 (originally published in 1574).

2 CPA: Certified Public Accountant

3 In France, la Compagnie nationale des commissaires aux comptes and in Romania, Camera Auditorilor Financiari din România.
comparable responses for similar situations. This accounting ecosystem consists of standard setters, producers of financial statements, auditors and users of financial information that is not limited to financial accounting. To manage the relationships between these persons, none of whom can do without the others, requires an authority capable of coordinating activities and settling disputes. In the absence of a supreme leader, the authority is that of an invisible technology (technologie invisible, Fr.), a techno-science or a capitalization of practical knowledge (savoir d'action, Fr.) to use the terms found in the academic literature in management sciences¹. Accounting techniques and practices, however, are not neutral; they introduce a cognitive bias. However, this is accepted, even if it is imperfectly known, thanks to the authority that actors recognize to these techniques and the confidence they inspire.

4. Authority and accounting evidence

The authority of accounts, the legitimacy of such authority, the confidence they inspire provide certain conformation/evidence to the conclusions they induce. They must lead to immediate agreement and to the feeling that no other solution is reasonably possible. There is no alternative (TINA). Let us consider several cases in which accounting data are used to make an important decision.

Whether it is necessary to develop, invest and finance or to start restructuring or insolvency procedures or to put a company into liquidation, it is the annual accounts, giving a true and fair view of the assets, performance and financial position, as well as projected figures, which will play a decisive role in the decision. They will show the possible and the impossible.

Whether to open or close a production site or a retail store, to launch or stop the production of a good or a service, to conquer or abandon a market, to accept or refuse an order, to relocate the business or an activity, to outsource or not, in all these cases, management accounting will inform debate revealing positive or negative performance and the financial viability and opportunity of the operation.

In all of these cases, the solution finally adopted, insofar as it creates victims, will never be unanimously accepted by the stakeholders. For example, the closure of a factory with the human tragedies that this entails will never be obvious to dismissed employees or subcontractors in difficulty, in the sense that it will not necessarily lead to their assent. But this decision is the result of an accounting evidence for the directors, the bankers, the employees of the other factories of the group if they benefit from a transfer of the activity or for the employees of the factory in question who will benefit from an advantageous redeployment.

 Anyone who does not want to acknowledge the evidence will be considered to have a partisan point of view or to be in bad faith. Such a person has only one recourse available: rhetoric. The classic argument put forward in these cases is: "You have an accounting vision of things." Many politicians use it. It would be more skillful and useful to deal with the substance of the problem and to address the underlying or implicit assumptions that made it possible to produce the accounting information. But for that, one needs to know the mechanisms. Contrary to what many think, there can be several very different faithful representations of economic reality.

Conclusion

Accounting is, in conclusion, a legitimate and effective authority insofar as it contributes to a climate of trust. The numbers produced by different forms of accounting are accepted as 'true'. The quantophrenia and the apparent scientificity of accounting productions contribute to this acceptance. Yet there is a cognitive bias, a blind spot. Accounting is essentially based on the observation and recording of transactions. The consumption of human and natural capital is invisible, prompting a movement for non-financial disclosure.² If some form of authority is needed, let us not forget to exercise our critical thinking. It is also a general rule of conduct in the face of different forms of authority, as Étienne Klein reminds us (p. 5): "The authority we grant to X or Y inclines us to accept all their propositions as true, relieving us from exercising our critical thinking. Dan Sperber describes this sensitivity to authoritative arguments as a guru effect³. In its degraded form, this fault leads us to believe that something is true for the sole reason that we have read or heard about it."

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¹ The term ‘technologie invisible’ was used by M. Berry (according to Op. Cit.) and that of ‘savoir d’action’ by B. Colasse (In J.-M. Barbier), p. 73 & following.

² See on this subject: Burlaud & Niculescu (2015)

Reflections on the Concept of Authority:  
The Case of Accounting Standards and Standards Setting

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Abstract

The crisis of the qualified labor force both on the Romanian and foreign market, as well as the need for profitability determined the companies to find alternative solutions for optimizing the internal processes. Robotic Process Automation – RPA technologies bring solutions applicable in context by computer replication of human behavior and by automating the repetitive and usual tasks of employees. Predictably, the audit can be integrated as a perfect client for such offers, especially in terms of mission-specific risks through complete data analysis, due to analytical capabilities clearly superior to traditional ones. Given the extremely important role that an audit opinion has in front of all stakeholders, the involvement of RPA in carrying out work missions must, however, comply with certain rules of professional skepticism and interpretation of the results of financial-accounting analysis. The article supports the idea of automating audit processes through RPA and elaborates a realistic assessment of all the components and efforts that such an approach entails.

Key words: Robotic Process Automation; digital audit; data analysis;

JEL Classification: M1, M2, M4, O3

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Introduction

On April 21, 2021, at the most powerful stock exchange in the world, New York, the opening bell was rung by a Romanian, Daniel Dines, the founder of the software robot manufacturer UiPath. The company had become a global giant in the market by raising $ 1.3 billion from investors, developing a product based on artificial intelligence and digital tools for large companies and government organizations interested in operational efficiency and automation of routine processes. The software solution produced by UiPath, transformed from a company of 10 employees in Bucharest, into a world leader in the field, is generically known as "Robotic Process Automation (RPA)". It is a name that essentially sums up a complex of tools designed to automate repetitive processes and tasks and in significant volume (Lawton, 2021), replacing or minimizing the intervention of the human factor.

In the current context of adopting RPA technologies in various branches of the world economy, with immediate effect in increasing efficiency in terms of costs, resources and investments by automating information manipulation processes (Chakraborti et al., 2020), the audit must find the most appropriate solutions to manage such tools and, in particular, the results it generates. This research is interested in the implications of RPA for audit from two perspectives:

- Management of information generated by RPA implemented in the audited company, in terms of classification as audit evidence, internal control analysis, etc.;
- Implementation of RPA within the audit firm as information collection tools.

Regardless of the positioning of the automation tools (whether they are within the audited company or are part of the information systems of the audit firm) the article aims to address the legal, ethical and practical aspects of RPA adoption in the field of instrumentation needed for processing of financial-accounting information. Thus, the proposed approach is made starting from the analysis of the current stage of automation of data collection processes within complex organizational processes and continuing with the identification of the main trends of propagation of RPA technologies both in terms of investment volume and areas of application.

Unquestionably, as it results from the studied literature (Rosin, 2018; Vasarhelyi and Rozario, 2018; Wewerka and Reichert, 2020; Vieira, 2015; Lacity, Willcocks and Craig, 2015) as well as from market studies (McKinsey Global Survey, 2018; Deloitte Global RPA Survey, 2018; Forrester, 2017), process robotization will capture more and more areas of activity, but clear limits must be set within which the auditor can fit in order to comply with the condition of professional skepticism and standards.

1. Specialized literature overview

The origins of RPA can be found in the "Screen Scraping" programs dedicated to extracting text from any page or user interface of application, web, image, HTML or PDF file, the results obtained being dedicated to end users, without further processing in the initial version (Liu, 2020). At the same time, the automation of work processes, a process started in the industrial era and found today in applications that replace manual data entry, has contributed to the development and implementation of large-scale RPA in the area of information processing at various organizational levels. Robotic Process Automation applications, as defined by Professor Leslie Willcocks of the London School of Economics, "mimic the work that a person performs in order to perform a task in a process, performing repetitive operations faster, more accurately and on a longer duration than a human can achieve" (Luher, 2016). Thus, data is transferred from email or spreadsheet sources to other processing or recording systems – for example, from the Enterprise Resource Planning (ERP) and Customer Relationship Manager (CRM) category, the ease of such operations leading to widespread absorption of RPA at the level of large companies interested in reducing costs while increasing the quality of services provided and in the shortest possible time (Lacity, Willcocks and Craig, 2015). The relief of human resources from repetitive tasks, consuming energy and at constant risk of inherent errors, thus leads to an increased availability for creative, challenging and value-generating activities.

For a proper understanding of the notion, there are three basic characteristics of RPA that are eloquent for the way these systems interact with data and complement the information systems within organizations:

- **Imitation of human actions** – similarity with the way the human factor interacts with applications (usual interfaces), collects information, and then uses it by inserting it into other applications or worksheets (Vasarhelyi and Rozario, 2018). Replication of human
operations is done after a prior registration of the targeted processes, thus helping to avoid inherent errors caused by routine (Quinn and Strauss, 2018).

- **Automation of repetitive processes** – the absence of the decisional or creative component by following a well-defined set of rules, this aspect being partially compensated by Machine Learning algorithms or Artificial Intelligence technologies (Vieira, 2015). Relieving employees of routine and repetitive tasks allows them to engage in more complex and motivating activities, with a direct effect in increasing the level of creativity of the work performed.

- **Use of existing applications** – use of the usual interfaces, not requiring a complex integration or a special connection for current applications. Interconnectivity with tools such as PDF, MS Excel, ERP, CRM, PowerPoint, etc., as well as HTML pages or email programs contributes to increasing operational efficiency within an organization, in particular by reducing costs (Siderska, 2020).

Thus, RPA systems connected to applications in an organization’s information system can move and transmit files, folders, or other types of data, read and interpret emails, complete forms, and manipulate more or less structured data from documents, browsers, or other sources. This non-intrusive interaction with other digital systems allows a complete or at least partial automation of specific human processes or activities with beneficial effect in terms of efficiency or operational productivity (Vasarhelyi and Rozario, 2018).

The literature also notes a number of disadvantages that RPA entails and which are derived, in particular, from the fact that these technologies automate rules-based processes due to lack of cognitive capabilities, exceptional situations being treated by the human factor (Santos, Pereira and Vasconcelos, 2019). This is why the organizations that are interested in automation need to identify, standardize and optimize information flows; these restrictive conditions led to a reformulation of the RPA definition, for example the IEEE Advisory Group studies which concluded that these technologies are "preconfigured software applications that use business rules and predefined choreography to complete autonomous execution of a combination of processes, transactions and tasks in one or more software systems to provide a result or service, taking into account the exceptions addressed by the human factor" (IEEE SA, 2017). The UiPath provider recommends, in the automation approach, organizations to identify the targeted processes, to involve all staff – not only in IT, to apply a progressive automation – from basic to complex processes (www.uipath.com). Selecting the components of a company’s activity that will be transformed by automation is a critical factor for the success of RPA and can be achieved in terms of the following criteria (Fung, 2014):

- The processes should be of low complexity and cognitive level;
- Existing applications are maintained;
- Relatively high frequency of processes and tasks considered;
- Increased probability of occurrence of the risk of human error but low of possible exceptional situations.

In the current context of the digital age, however, technologies such as "cloud computing", "artificial intelligence", "machine learning" or "advanced analytics" bring RPA tools to the next level by acting intelligently and proving increased versatility. The combined use of the stated technologies creates opportunities for automation of increasingly complex processes announcing an amplification of the applicability of RPA. The artificial intelligence component accelerates the rate of the learning process by analyzing and processing available data in real time. Moreover, the remaining time for completing a task is calculated while streamlining resources and increasing operational efficiency (Siderska, 2020).

### 2. Research methodology

The article promotes the idea of automating audit processes by using RPA through a contextual approach to current developments in the field by analyzing articles dedicated to this topic and published in journals or impact databases. At the same time, emphasis is placed on the analysis of the practical area, of the companies directly involved from several points of view:

- **Suppliers of RPA products** – white paper publications, applications offered, fields of application, development trends, etc.
Market research companies (for example, Gartner, Forrester) – pointing out the main trends, predictions of the development of automation tools in terms of investments or areas of use;

Audit firms – organizations with experience and pioneering in the implementation of RPA in the analysis of financial-accounting information and operating globally, adapted to national legislative standards or standards (mainly companies in the Big Four).

The dynamics of the analyzed field requires a certain rigor of the selection of materials in terms of sources (must be recognized and verifiable), the year of appearance (emphasis on novelty), the relevance of the content (extraction of innovative ideas). Thus, the identification of data sources containing publications relevant to the topic resulted in electronic libraries such as IEEE, Science Direct – Elsevier, SpringerLink and Google Scholar. In addition, the bibliographic resources cited in the content of the articles thus identified were taken into account and the alerts in Google Scholar were necessary to identify, during the writing of this paper, the news published on the subject of RPA. In particular, English-language publications were considered by introducing in the search process expressions such as: "robotic process automation in audit", "cognitive process automation", "intelligent process automation", "artificial intelligence in business process", "tools process automation for audit" or "machine learning in business process". The use of the abbreviation "RPA" has been avoided as the acronym serves a broader terminology, unrelated to the intended processes (for example, Rubin Postaer Associates – advertising agency, Replication Protein A – the main protein that binds to single-stranded DNA in cells eukaryotes, Republican Party of Arkansas / Armenia – political parties etc.).

The main research questions of the study can be summarized as follows:

Q1. What are the current applications for RPA?
Q2. What is the current level of RPA involvement in the audit?
Q3. What are the main dilemmas or challenges for the professional auditor facing the evidence generated by RPA?

Based on the research questions, the criteria for accepting and excluding the relevant articles were established:

Acceptance criteria:

- The publications correspond to the theme of RPA and contribute with answers to the proposed research questions;
- The titles and abstracts contribute to the research idea and contain the terminology stated above ("robotic process automation", “tools process automation for audit” etc.)

Exclusion criteria:

- Publications are not written in English;
- Titles and abstracts do not contribute to the solution of research questions, although they include the terminology according to which the search was performed;
- Repeat ideas or other relevant aspects of the research;
- The extracted publication only compares existing research, without bringing new contributions or ideas.

Both acceptance criteria were taken into account to take over the source of information and if only one exclusion criterion was verified, the article was not included in the research database.

3. Results and discussions

3.1. Applicability of RPA

The areas of application currently identified are varied – human resources, IT, finance, insurance, telecommunications, banking, legal services, real estate or the public sector – and providers bring arguments through case studies (www.uipath.com) and integrate their offer into other available technologies, such as cloud computing – for example IBM Cloud Park (www.ibm.com). Thus, from the analysis of the available offer as well as of the specialized articles, the areas of applicability can be synthesized, as presented in the Table no. 1.
Table no. 1. Areas of RPA applicability

<table>
<thead>
<tr>
<th>Activity field/department</th>
<th>Potential processes for automation</th>
<th>Source of documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Resources</td>
<td>Employment procedures – CV analysis, payroll – payroll, salary changes, etc., human resources management, professional training, professional performance evaluation.</td>
<td>Hallikainen, Bekkhus and Pan, 2018; Hyun and Lee, 2018; <a href="http://www.uipath.com">www.uipath.com</a></td>
</tr>
<tr>
<td>IT</td>
<td>System / application installations, email, file synchronization, infrastructure configuration and maintenance, server management, back-up security, FTP access.</td>
<td>Hyun and Lee, 2018; Khramov, 2018; <a href="http://www.uipath.com">www.uipath.com</a></td>
</tr>
<tr>
<td>Finance, banks</td>
<td>Financial-accounting records, fixed assets accounting, loan repayment charts, information on customer creditworthiness, online sales, client services.</td>
<td>Chakraborti, 2020; Hyun and Lee, 2018; Lacity, Willcocks and Craig 2017; <a href="http://www.uipath.com">www.uipath.com</a></td>
</tr>
<tr>
<td>Telecommunications</td>
<td>Data management – security and integrity, development of new innovative services, operational agility, back-office operational flow, customer support services.</td>
<td>Lacity, Willcocks and Craig, 2017; <a href="http://www.uipath.com">www.uipath.com</a></td>
</tr>
<tr>
<td>Legal services</td>
<td>Case management, deadline management, updating legislative changes and jurisprudence.</td>
<td>Holder et al., 2016; <a href="http://www.mitratech.com">www.mitratech.com</a> <a href="http://www.uipath.com">www.uipath.com</a></td>
</tr>
<tr>
<td>Insurance</td>
<td>Back-office processes, support services, online sales, registration and processing of statements / appeals, risk assessment, compliance with regulations.</td>
<td>Lacity, Willcocks and Craig, 2017; Makadia, 2020</td>
</tr>
<tr>
<td>Public services</td>
<td>Connecting to applications, moving files and folders, accessing databases, collecting data from the web, connecting existing systems, processing forms across departments.</td>
<td><a href="http://www.uipath.com">www.uipath.com</a> <a href="http://www.deloitte.com">www.deloitte.com</a></td>
</tr>
</tbody>
</table>

Source: Authors’ projections, 2021

Regardless of the sector, public or private, the motivation for implementing the RPA is given by the increase of productivity and operational efficiency. By their nature, these process automation tools are justified within organizations with complex activities, consistent information volumes, extended geographical area as well as with numerous staff in services and support and logistics departments. Investments in RPA generate quantifiable benefits such as:

- Reducing the processing time of repetitive tasks;
- Decreased error rate;
- Satisfactory Return on investment (ROI);
- Reduction of operational costs.

In addition to the work scenarios offered by RPA providers, eloquent for the profitability of RPA are case studies conducted in private companies or public services / government authorities. Thus, one of the largest financial groups in Latin America, Bancolombia has implemented RPA technologies in order to transform the operating methodology in the 12 countries where the holding is present, resulting: increasing by 50% the efficiency of customer support services, cutting 127 thousand of working hours annually in branches, investment return of 1300% (www.automationeverywhere.com). In the area of public services, the largest government department in the UK, the Department of Labor and Pensions, responsible for a budget of approximately £ 177 billion, has opted to automate specific processes since 2017 by implementing 50 robots; The key benefits, according to a UiPath report, were: 30,000 pension applications processed in 2 weeks, 15:1 return on investment (www.uipath.com).

In Romania, the Ministry of Finance announced in July 2021 the agreement with UiPath for the implementation of the RPA Center of Excellence with the stated purpose of reducing the waiting time for tax information requests from taxpayers and increase security of the processed data (www.mfinante.gov.ro).
The results obtained as well as the transition of RPA technologies from the classic version of data collection, from “screen scraping” to the cognitive version with AI component outlines an upward trend in the volume of investments in process automation but also a diversification of application areas. According to a Gartner report conducted in 2020, the RPA market is the segment with one of the fastest growth in the area of software products: 63.1% in 2018 and 62.9% in 2019, compared to 13.5% and 11, respectively, 5% representing total market developments (www.gartner.com). At the same time, due to the COVID-19 panic and, implicitly, of the global recession, the same study estimates an acceleration of the insertion of RPA solutions to support remote work, of the digitization of physical / paper operations. The losses registered by the companies, during this period, determined a pressing need to reduce the expenses by automating the processes and by reducing the number of employees involved in performing redundant tasks. Thus, the April 2021 Grand View Research report notes an increase in RPA adoption trends among small and medium-sized companies and a profile market size of $13.74 billion in 2028 (www.grandviewresearch.com).

3.2. Involvement of RPA in audit procedures

In the current context of process automation within private organizations but also in the field of public services, the audit is required to have a proactive attitude and to meet the new procedures of information processing, reporting and, last but not least, evidence audit. As audited clients implement intelligent information technologies to increase business efficiency, focus on customers, find new markets, increase productivity, the auditor must understand the impact of digitalization on the business and apply such technologies in their work missions (Meuldijk, 2017). A 2017 KPMG report published in Audit Committee News insists on the need to define a “digital strategy” by implementing a culture of innovation, by adopting training programs for the acquisition of technological skills and even by rethinking the whole profession in the light of new realities.

In a study conducted in 2017 by Ernst & Young on a number of 745 respondents from 19 countries having a leading role in organizations that hold Forensic Data Analytics tools, the results indicate an overwhelming percentage in favor tools in the Spreadsheet category (90%). The sophisticated instruments from the RPA or Voice Search and Analysis category are expected to be adopted in much smaller shares by those interviewed, as can be seen in Table no. 2. At the same time, a high percentage is registered by the instruments designed within the beneficiary entities, to the detriment of the solutions marketed by companies specialized in the area of data processing.

<table>
<thead>
<tr>
<th>Technologies</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spreadsheets and relational databases</td>
<td>90%</td>
</tr>
<tr>
<td>Data Warehouses</td>
<td>63%</td>
</tr>
<tr>
<td>Internally designed tools</td>
<td>55%</td>
</tr>
<tr>
<td>Data Visualization and Reports</td>
<td>54%</td>
</tr>
<tr>
<td>Continuous monitoring</td>
<td>46%</td>
</tr>
<tr>
<td>Incidents/security events Management</td>
<td>43%</td>
</tr>
<tr>
<td>Statistical analysis and Data Mining</td>
<td>42%</td>
</tr>
<tr>
<td>Social media and web monitoring</td>
<td>40%</td>
</tr>
<tr>
<td>Fraud detection</td>
<td>33%</td>
</tr>
<tr>
<td>Robotic Process Automation (RPA)</td>
<td>14%</td>
</tr>
<tr>
<td>Voice Detection and Analysis</td>
<td>8%</td>
</tr>
</tbody>
</table>

Source: https://www.eycom.ch/en/Publications/20181203-Global-Forensic-Data-Analytics-Survey-2018

Under these circumstances, an analysis is required on some practical examples in which the automation of financial-accounting information processing impacts the audit procedures, on the degree of acceptance of the results from the digitization of data collection flows. Thus, the Dutch company Mechan Groep, which is one of the world leaders in the supply of components for agricultural machinery, faced the need to streamline the management of invoices received from partners, from the entry of documents in the company to payment acceptance.
According to the case study available on the RPA NTT Data provider's website, the possible solutions to handle the approximately 15,000 invoices received annually were either to hire additional staff or to implement a system to automate specific procedures. The complexity of the operations that presented a high risk of error or fraud as well as the urgent need to reduce costs determined the organization to opt, in 2017, for automation solutions for the entire process. In the new configuration, the company's provider sends the invoice as a simple email attachment, from which time the intelligent software handles the entire administrative process required until the time of payment. The time required to process the invoices received was thus reduced by up to 60%, errors specific to manual and repetitive activities were eliminated and no additional costs were incurred with license fees or software updates. In this example, from the point of view of the company's management or shareholders, things are great: costs have been reduced, existing staff have been relieved of redundant tasks and focused on strengthening the database, the relationship with partners, productivity has increased and the risks of error or fraud have disappeared by removing the human factor from the process. From the point of view of an external audit, however, the changes made have a different perspective:

- Invoices reach payment level directly, without confirmations in physical form (signatures, reports, payment orders, etc.) from the responsible factors;
- There are no documents referring to contracts, negotiation minutes, rescheduling agreements for payment, VAT exemptions, etc.;
- The reports that the operational management receives are not always saved or printed;
- Difficulties may arise in monitoring cash flow, in correlating with the financial resources available at a given time or in forecasting a cash evolution.

On the operational flow of acquisitions and payments, the auditor can verify that there are controls and that they are fully complied with. As a result, the risks that can be identified and assessed are: fraud risk, overestimation of income / underestimation of expenses, separation of financial years, erroneous recording of reversals, inability to pay, understatement of debts. In the present example, by reference to ISA Standard 315 – Risk Identification and Assessment, Due to Emerging Technologies Implemented in the Client Entity's IT System, “the auditor's responsibilities in relation to IT applications and general controls of IT systems (...) remain unchanged” (www.iaasb.org). In conclusion, although the standard recognizes the importance of smart automation in terms of increasing operational efficiency and improving financial reporting, the auditor should consider, in such situations, the associated risks of using IT.

On the other hand, large audit firms, especially those in the Big Four, have adopted RPA technologies in their own procedures as they carry out operations specific to the human factor with a much higher efficiency (Rozario et al., 2019). Worksheet digitization techniques or profile IT applications (for example, IDEA, ACL) are already widely known and applied, and these tools are involved in separate stages of a mission.

The RPA creates the premises for an intelligent approach to the whole process if a series of preparatory operations are carried out (Moffit, Rozario and Vasarhelyi, 2018):

- creation of a joint work team composed of representatives of the audit firm, of the RPA provider to which consultants or representatives of the academic environment can be added;
- identifying the audit stages / processes that are repetitive, well-defined, time-consuming and significant human resources tasks;
- breaking the audit procedures identified in modules / sub-activities;
- identifying the modules / sub-activities that are suitable for automation (must be structured, available or digitally transformable);
- standardizing data obtained from different sources and with different attributes;
- selecting modules for which RPA automation is considered feasible;
- designing a prototype (an RPA tool / combination) and experimenting with it in concrete work scenarios;
- final evaluation and centralization of feedback from the system – analysis of 3 main indicators: speed (comparison of automated process vs. manual), quality (percentage of errors), degree of automation (number of human interventions).

From a similar perspective, Griffiths and Pretorius (2021) emphasize the prior preparation of data and processes but bring to the fore the importance of sizing the desired results through RPA. A clear picture of the purpose, objectives and role of automation in the future configuration of work procedures is considered essential
for the success of such a project. In addition to the necessary external expertise, the own staff training is considered to be a critical factor in the correct management of RPA instruments through professional training in the field of audit and IT. At the same time, the realistic assessment of possible weaknesses or risks of automation must be considered from the design stage in order to come up with alternative solutions to ensure the continuity of the audit mission.

According to a report by the Public Company Accounting Oversight Board (PCAOB) – the statutory audit body in the United States – since September 2020, large firms have experience in the field of intelligent audit applications and give the start signal for the inclusion of emerging technologies – e.g.: KPMG uses IBM Watson in the analysis of credit bank files in commercial loan portfolios, and Ernst & Young involves machine-learning technologies to detect billing anomalies and to identify fraud with 97% accuracy (www.pcaobus.org). Deloitte indicates RPA as a basic tool in testing samples by connecting documents and including data obtained in its own analyzes. Automation is extended to performing calculations, extracting structured data from documents, filling in specific forms or preparing basic materials for reports (www2.deloitte.com). Analyzing the approach of RPA by the audit companies from the Big Four structure, three directions of action are observed:

- **auditing the RPA within the client entities** – there is the necessary expertise to analyze data or reports obtained through automation as well as the appropriate own tools for controlling the audited procedures;

- **auditing through RPA** – cabinets have their own technologies for automating mission-specific work tasks and invest in perfecting these tools;

- **RPA expertize and consultancy** – addresses companies interested in automation related to the evaluation of processes that are suitable for such a transformation and recommends solutions. This is the reason why partnerships are concluded with RPA providers (for example, KPMG Romania agreement with UiPath, 2020).

### 3.3. RPA dilemmas for auditors

Although RPA technologies have a proven potential in the processes of analysis and collection of financial-accounting data, in general, and in auditing in particular, the literature concerned with this topic as well as the practice in the field retain a number of conditions, challenges or risks related to:

- investment budget;
- specific audit regulations;
- human resources.

Regarding the budget required for such an investment, the most accessible option for small companies is in the "cloud", in which case the offers are presented differently, depending on a series of technical or purely commercial conditions (Table no. 3).

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>UiPath</td>
<td>3,990 USD/year</td>
<td>1 user, starting price</td>
</tr>
<tr>
<td>AutomationAnywhere</td>
<td>750 USD/month</td>
<td>1 user, 12 months contract</td>
</tr>
<tr>
<td>IBM</td>
<td>840 USD/month</td>
<td>Starting price</td>
</tr>
<tr>
<td>Microsoft Power Automate</td>
<td>500 USD/month</td>
<td>Price for five flows/month</td>
</tr>
</tbody>
</table>


The rates are indicative, each offer being customized according to several factors such as: company size – implicitly the number of users, the degree of involvement of the artificial intelligence component, maintenance and periodic reassessments or the number of robots required. As this is an investment of thousands of USD per year, the decision to opt for such a solution must be very well-founded, especially if it is a small and medium-sized company. The return on investment can take years and audit firms with a modest turnover may fail to benefit from such tools. In predicting the total budgetary effort of such products, in addition to the actual purchase, the subsequent costs of maintenance / "upgrade", training of own staff, management and scaling of automated processes, etc. must be taken into account (Jedrzejka, 2019). On the other hand, the competitive pressure, the
accentuated spread of the innovative methods of financial-accounting data processing, as well as the need for efficiency oblige to a minimum of digitization of the procedures (George, 2018).

Large audit firms have directed substantial investments in the acquisition or development of digital instruments. Ernst & Young has committed $ 400 million to the development of audit technologies, and KPMG has announced plans to invest $ 100 million in partnerships with companies specializing in the development of such systems.

From the audit regulation point of view, current standards do not limit the use of automation tools, but the lack of text reference to these technologies may inhibit the adoption of such solutions; although, according to the Institute of Certified Financial Analysts (CFA), some standardized procedures may seem redundant in terms of intelligent data analysis, “the aim is to find ways to reference such technologies in the ISA without leading to block changes that would have undesirable consequences“. An edifying example of this is the revision of ISA Standard 315 “Knowledge of the entity and its environment and knowledge of the risks of material misstatement” – which provides a more accurate and broader risk identification as well as an improvement and clarification of requirements and application material. In Annex 5, the standard recognizes emerging technologies (blockchain, software robots, artificial intelligence, etc.) applied in the information systems of the analyzed entities as possible working tools in the preparation of financial statements. At the same time, the sources of risk associated with IT systems are identified for audit depending on their complexity (Table no. 4).

<table>
<thead>
<tr>
<th>Characteristics of a risk-free IT application</th>
<th>Characteristics of a high-risk IT application</th>
</tr>
</thead>
<tbody>
<tr>
<td>- standalone applications;</td>
<td>- applications are interfaced;</td>
</tr>
<tr>
<td>- insignificant volume of data or transactions;</td>
<td>- the volume of data or transactions is significant;</td>
</tr>
<tr>
<td>- functionality of a reduced complexity of the application;</td>
<td>- complex functionality of the application in the sense that it automatically initiates transactions and there are a variety of complex calculations that underlie the automated entries.</td>
</tr>
<tr>
<td>- each transaction is based on physical documentation.</td>
<td></td>
</tr>
<tr>
<td>The IT application does not pose a risk for the following reasons:</td>
<td>The IT application carries a certain degree of risk for the following reasons:</td>
</tr>
<tr>
<td>- insignificant volume of data, which is why management does not rely on IT in data processing or management;</td>
<td>- management relies on the application in the system to process and manage significant volumes of data;</td>
</tr>
<tr>
<td>- management is not based on automated controls or other automated functionalities. The auditor did not identify automated controls as required by the standard;</td>
<td>- the management is based on the application in the system in order to perform certain automated identified and audit controls.</td>
</tr>
<tr>
<td>- although the management uses in the control activity reports generated by the system, it does not rely on these reports. These are reconciled with physical documentation and the calculations in the reports are verified;</td>
<td></td>
</tr>
<tr>
<td>- the auditor will directly test the information generated by the organization used as audit evidence.</td>
<td></td>
</tr>
</tbody>
</table>

Table no. 4. Risks derived from IT systems implemented within client entities

If the emerging technologies implemented in the audited entity's information system are above the usual or already known ones, the auditor has the same responsibilities regarding the identification of the risks generated by IT. The task of the professional involved in the analysis of such electronic systems for processing and generating financial-accounting information thus becomes complex if not complicated, given the expertise required in this case. The Public Company Accounting Oversight Board (PCAOB) of the United States, in a report issued in February 2020, notes the adoption of intelligent working tools in the field of practical audit procedures, aspect encouraged, in their view, by the permissiveness of PCAOB standards in this regard. However, the lack of mention of these technologies in the text raises the issue of an assessment or revision of regulatory acts based on:

- Assessing changes in the use of technology in auditing and financial reporting;
- Understanding how new technologies are involved in identifying the risks of significant distortions;
- Analysis of how the specific requirements of the PCAOB standards are applied;
– Collaboration with other bodies with a regulatory role or to implement standards in the field.

The PCAOB report on the reactions of audit committees in approximately 400 entities inspected in the United States during 2019 notes skepticism about the adoption of emerging technologies in auditing. It is still unclear, in the opinion of these committees, whether these instruments have a positive impact on the quality of the audit, or on the contrary, bring a number of shortcomings (Dwyer, 2020).

From the perspective of human resources, the implementation of RPA creates, first of all, barriers determined by the organizational culture. Robots that replace human labor can become a demoralizing reality for a company's staff. At the same time, the lack of qualification and experience in the field complicates the automation process, if there are no mixed teams of specialists involved from the early stages of design and implementation (Jedrzejka, 2019). Reported to auditors, RPA involvement takes on specific nuances as tasks strictly related to professional judgment are difficult to automate. However, given that professional skepticism, for example, is the ability by which an audit determines whether an accounting treatment or a client's behavior is reasonable, the help provided by automation technology must play a complementary role in carrying out a mission (Cohen, 2019).

A 2018 World Economic Forum report shows that routine-based activities, which require average training, accountants, payroll officials and auditors will be less sought after in the future (The Future Jobs, 2018). The ACCA (Association of Chartered Certified Accountants) study, conducted in 2020 on the future configuration of the labor market, shows a trend of reinventing jobs in which the human factor combines traditional methods with new technologies that will have a significant involvement in the next three years, giving a digital and multi-disciplinary character to the positions in the sphere of financial-accounting processing (ACCA, 2020). Changes brought about by Artificial Intelligence, cognitive tools or RPA are seen as opportunities to re-settle the contribution of the human factor, by relieving repetitive, time-consuming operations, leaving room for creativity, professional reasoning or even the involvement of a sensitive or specific human side. Of course, all the changes that are foreshadowed can negatively impact the perception on the new digitization tools for several reasons: fear of unemployment, insufficient training, incomplete information on smart technologies, etc. The fear that software robots will replace human positions is also fueled by the fact that one of the key performance indicators of RPA is the number of hours saved per month or the number of work rules replaced by automation (Moffit, Rozario and Vasarhelyi, 2018). That is why the current offers, reports or guides of the providers of such technologies avoid phrases that suggest the replacement of the human factor by RPA and insist on the advantages that these tools confer by streamlining the usual operations.

Viewed from the perspective of the auditor profession, automation creates a risk of de-professionalization by imposing new reasoning, auditors being forced to think like computer scientists, reaching situations of including data analysts in audit engagements or even replacing auditors with applications intelligent information processing (Munoko and Brown-Liburd, 2019). Under such conditions, the maintenance of critical thinking and professional skepticism must come from an intrinsic motivation cultivated by adequate professional training to encourage automation as a tool of control and support in work procedures. In order to be prepared for the new foreshadowing of the profession, auditors must be proactive, open to process innovation, and acquire new skills from which, in a recent study, Ernst & Young names: data analysis (visualization, programming logic, analytical modeling), personal skills (resilience, communication, agility), critical thinking, understanding and application of disruptive technologies (RPA, IA, Blockchain, etc.) (Rozario, Zhang and Vasarhelyi, 2019).

Conclusions

The paper reviewed a number of theoretical and practical issues regarding the definition, role and particularities of RPA instruments and insisted on the implications they have on audit missions. The basic idea, generally accepted, is that automation relieves staff of redundant, time-consuming and error-prone activities, in order to streamline operational efficiency and encourage creativity, professional reasoning. From the analysis of practical examples and reports issued by suppliers or audit firms, a number of particularities of the moment emerge, such as:

✓ at the current stage, it is recommended to automate the operations identified as standardized and based on rules; although the involvement of artificial intelligence in RPA is configured, with the “IPA (Intelligent Process Automation)” format expected, emphasis is placed on
human expertise in dealing with exceptions and situations that require professional judgment;

✓ software robots are seen as a link between the other information systems of the organization (ERP, CRM, etc.), non-intrusiveness being appreciated;

✓ the available case studies denote an appreciable success rate in the case of organizations with complex activity and significant information volumes in which automation leads to a rapid amortization of the investment;

✓ the public sector is emerging as an important beneficiary, being interested in reducing costs and streamlining the fiscal apparatus;

✓ the introduction of RPA in the financial-accounting flows changes the traditional circuit of documents, complicating the possible external audit missions.

Although the digitization of the processes of analysis or monitoring of financial-accounting data has a remarkable progress in the light of the new available technologies, the potentiation of the audit through innovation depends on a series of factors that require a detailed analysis and a permanent reporting to the context. Excessive technologizing in recent years with a direct impact on the ways of processing, collecting or storing data has created a "mined" ground for the auditor because, in addition to the need for information, training and investment in emerging technologies, legal frames are needed – additional or adapted to current information flows. The revisions already proposed or implemented bring a beneficial support in the audit work and open the way to a necessary but cautious flexibility of the methodologies applied in the work missions, in the spirit of the fundamental principles of the profession. Emerging technologies applied in the customer organization's information system are risk-generating and should be treated as such, as suggested by ISA 315.

Replacing the human factor in certain categories of operations leads to a number of different approaches, depending on the end-user's position:

✓ replaced human operators in carrying out routine and repetitive processes that require average training – show an attitude of resilience, skepticism, fears related to the prospect of unemployment or the need for professional retraining;

✓ company management / shareholders – concerned with the return on investment in RPA, can allocate a budget to expand automation to other sectors;

✓ highly qualified staff (e.g. auditors) – is relieved of redundant, time-consuming tasks and is more involved in professional reasoning, opinion forms, etc., but needs new skills in data analysis or use of new tools computer science.

In addition to the obvious benefits of RPA, a good part of the studied literature warns about the risk of de-professionalization of auditors and insists on the role of support and complementarity of these tools in carrying out missions. Similar to other fields of activity, automation remains the prerogative of large audit firms that have the financial, logistical and "know-how" resources needed to invest not only in the actual acquisition of software but also in the qualification of available staff or in the recruitment of specialists with multi-disciplinary skills.

Assessing the findings presented and taking into account the current information complexity, it can be stated that the audit now has working tools at its disposal to ensure effective monitoring of transactions in which an entity may be involved. The financial auditors can carry out their specific operations throughout the year or financial year, thus being able to identify in advance the important aspects that may lead to the timely modification of the audit plan. At the same time, audit services reach a higher level of quality through continuous reporting due to the capabilities offered by the web; the financial information becomes permanently available thus replacing the periodic situations and the audit assurance can acquire the continuity much desired by the interested users. It remains to be seen to what extent the procedural or legislative dilemmas and obstacles analyzed in this paper will be addressed through the direct involvement of regulatory bodies, as well as practitioners with a growing interest in reinventing financial-accounting analysis tools.

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Abstract

This study aims to identify the impact of the digitalization of accounting information systems on the quality of accounting information, as applied to accountant experts. The importance of this study lies in the fact of knowing if the use of an AIS (Accounting Information System) within an organization makes that the quality of this accounting information in question is positively affected or not, in the case of Algeria.

The author targeted a sample of 345 public accountants for whom a questionnaire was designed and distributed online. There were 181 responses accepted for the analysis process. To obtain relevant and representative results of the study, a simple linear regression with the SPSS software was performed. The results indicate that the computerization of the accounting information system has a significant impact on the quality of the accounting information.

Key words: information system; digitalization; accounting; quality; information;

JEL Classification: M15, M41
Introduction

Due to technological, economic, and globalization developments, information systems are important in all areas. They have evolved at a fast rate. Many softwares at all administrative levels have been used in operational, technical, and strategic activities. Accounting information systems have many advantages; they provide important information to all users of accounting information. Accounting information system is very important for all companies, it facilitates and manages their activities and help them to achieve their objectives with a high degree of control (Kanakriyah, 2016).

Information is data that has been organized and processed, to make sense and improve the decision-making process (Huy & Phuc, 2020). High-quality information is a product with characteristics, attributes, or qualities that make it more valuable to users (Sun, Marakas, & Aguirre-Urreta, 2015). These characteristics are accurate, relevant, and timely and, complete (Susanto, 2015). Users need quality information to increase the value of the decision (Sun, Marakas & Aguirre-Urreta, 2015). An effective accounting information system makes the information useful and of high quality (Adeh Ratna, 2012). The accounting information system is a data collection, recording, storage, and processing system that is used to generate relevant information for decision-makers (Huy & Phuc, 2020). According to Fitrios (2016) accounting information system is a set of resources, which is designed to transform data into financial information.

The authors Fitriati & Mulyani (2015) argue that AIS (accounting information systems) are used to provide financial information for decision making and that the success of AIS is significantly related to the quality of accounting information. Accounting information has important effects on the performance of organizations. The widespread use of accounting information systems in companies could lead to better financial and managerial decisions for a company. In emerging economies, these decisions are extremely costly, which will lead to significant consequences if these decisions are wrong (Soto-Acosta, Popa & Martinez-Conesa, 2018). In a competitive business environment, the accounting information system (AIS) forms the basis of an integrated system that enables an organization to gain a competitive advantage (Amidu, Effah & Abor, 2011).

The objective of our research is to clarify the importance of the use of accounting information systems in organizations and to know the reality of the use of these systems in Algeria according to the accounting experts. It is also a question of evaluating the impact of the use of accounting information systems on the quality of accounting information in terms of reliability, consistency, relevance, and comprehensibility of the information in question.

The aim of the current research is to examine the impact of digitalization of the accounting information system on the quality of accounting information. We applied the quantitative method, using a questionnaire, distributed to 345 accountants from Algeria, to collect, the opinions of users of accounting information on how the accounting information system affects the quality of accounting information.

An accounting information system should provide relevant information in real-time and should frequently report on the most important events and provide quick feedback on previous technology (Al-Ibbini, 2017). The accounting information system is a set of data and processing procedures that produce the information required by the company (Li, Ning, Li & Xu, 2017). A management information system has also been defined as a user-machine integrated system to provide information to support operations, management, and decision making in an organization. This system uses computers, manual procedures, models for analysis, planning, control, and decision-making, and a database (Fitriati & Susanto, 2017).

The lack of quality of financial data leads to financial results that decrease in terms of reliability and lead to poor decision-making, which results in losses to decision makers (Al-Dalabih, 2018). Therefore, the question we ask here, in this study, is: According to the users of accounting information in Algeria, would there be a significant impact of the informatisation of
accounting information systems on the quality of accounting information or not?

After analysis of the literature review, two hypotheses, to be tested in the empirical study that follows, present themselves to us. First hypothesis: The use of an informatization accounting information system has a significant impact on the quality of accounting information. Second hypothesis: The use of an accounting information system does not have a significant impact on the quality of accounting information.

In order to confirm or reject the hypotheses, our study will be based on sub-variables: reliability, consistency, relevance, understandability, flexibility, comparability, and usability; related to the main variables which are: the accounting information system, which is an independent explanatory variable, and the quality of accounting information which is the dependent variable to be explained.

1. Literature review

“The most difficult part of managing an organization is making the right decision” (Simkin, Norman & Pa, 2014). Management usually plays a central role in making these decisions through its involvement in the long-term planning of the company (Galbraith & Schendel, 1983). “Successful decision-making, which is at the heart of the administrative process, is highly dependent on the information available” (Azar, Zakaria & Adwa, 2019).

“Information is a set of data that is classified, interpreted for decision-making. It has also been defined as some tangible or intangible entity, which serves to reduce uncertainty about future state or events” (Mokodompit & Wuriasih, 2017). The power of technology has transformed the role of information in a business enterprise. Today, Information is recognized as the lifeblood of an organization and without it, modern business is dead (Novianty, Mulyani, Winarningsih & Farida, 2018).

The article of Abdelraheem, Hussaien, Mohammed & Elbokhari (2021) analyzes the effect of using information technology on the quality of accounting information by studying the dimensions of information technology (collecting, processing, storing, and sending data and information) with a field study on Nile Bank in Sudan. The researchers distributed 120 questionnaires and 104 of them were collected. The study concluded that the dimensions of information technology (collection, processing, storage, and transmission of data and information) affect the dimensions of accounting information quality (relevance, reliability, understandability, consistency, comparability).

The study of Puspitawati & Anggadini (2019) examines the influence of an accounting information system on the quality of accounting information in Indonesia. The authors used both descriptive and verification methods. The respondents were 60 functional managers of state-owned enterprises in Bandung, Indonesia. The statistical tests used the structural equation model-PLS. The results indicate that accounting information systems have a significant effect on the accounting information of state-owned enterprises in Bandung City -Indonesia.

The author Al-Dalabih (2018) explains the effect of using accounting information systems on the quality of financial data, applied to service companies listed on the Amman Stock Exchange. The study sample consisted of 70 people working in different service sectors, where a questionnaire was designed and distributed. The results indicate that there is a statistically significant positive effect of the nature and security of accounting information systems on the quality of financial data. However, the inputs to the accounting information systems did not affect the quality of the financial data. The quality of financial data on which Jordanian service companies depend was found to be high.

Kanakriyah (2016) examines the impact of computerization of accounting information systems on the quality of accounting information. The researcher identified some criteria to understand the concept of an accounting information system and used a qualitative characteristic (relevance, reliability, more comparability, understandability, consistency, and neutrality) as a proxy to measure accounting information quality. The author states that all users of accounting information believe in the important role of the accounting information system on the quality of accounting information and that there is a significant effect between the two variables, which in turn influence the decisions of users, such as creditors, financial analysts, and investors. The results indicate that the accounting information system has a significant influence on the
profitability of companies, there is a close relationship between the use of accounting information resulting from the accounting system and management efficiency.

The article of Sjaiful, Roespinoedji & Roespinoedji (2020) determines the effect of knowledge management on the quality of accounting information systems and their implications on the quality of financial reporting. This study was applied to all public companies. The analysis used was a regression. The results show that knowledge management has in part a significant effect on the quality of accounting information systems, the simultaneous implementation of good corporate governance and knowledge management significantly influences the accounting information systems, and the quality of accounting information systems has a significant effect on the quality of financial reporting.

The authors Mbilla, Nyeadi, Akolgo & Abiire (2020) examined the impact of digitalized accounting systems on quality financial reporting by banks in Ghana. The study population included all banks listed on the Ghana Stock Exchange. The study implies for banks to have quality financial reports, efforts should be made to invest in computerized accounting systems to improve the timeliness, timeliness, convenience, accuracy and relevance of financial reports of their operations. The study of Kuraesin, Yadiat, Sueb & Fitrijanti (2019) determines the relationship between management support, the quality of accounting information system. Based on the results of the hypothesis test using structural equation modeling with Partial Least Square – Path Modeling, there is a relationship between the directional variables and the quality of the accounting information systems. Furthermore, the quality of the information systems has an impact on the quality of the information. The results of this test prove that management support influences the quality of the information systems and has an impact on the quality of the information.

2. Research methodology

2.1. Data collection

The study population includes users of accounting information in Algeria. According to the study provided by Kanakriyah (2016), we applied a comprehensive survey by dividing the population into six groups of users of accounting information (accountants, investors, creditors, auditors, CPAs, financial analysts, and academics).

The questionnaire was distributed to a selected sample from these groups. Accountants were the target sample of the study. Online questionnaires were distributed to a sample of 345 charted accountants, which is one of the population groups. Based on the contact details of the accountants, we made an online questionnaire on Google Forms and sent it to the 345 accountants by email. There were 181 responses accepted for the analysis process.

The sample is composed of all chartered accountants in Algeria. The selection of the sample is based on two main criteria. The first criterion is experience in the field of accounting. The second is the professionalism and commitment to auditing firms and this means that they are knowledgeable and experienced.

2.2. Method used

Our survey is divided into two sections. The first section represents the profile of the respondents. We collected data like age, gender, level of education, etc. (Table no.1). The second section is the measurement parameters of the variables (Tables no. 2, 3, 4, and 5). It is a question of measuring independent and dependent variables according to the opinion of the respondents. The final analysis will be done by crossing the different variables, to measure whether the impact of the accounting information system on the quality of accounting information is significant or not (Tables no. 6 and 7).

The questionnaire consists of 13 questions, distributed online, on 345 accountants. The Likert scale is the standard for responses. We analyzed with SPSS software (version 23.0) the percentage of respondents in favor or against each statement, which represents a specific variable in the survey. We measure the correlation with the Spearman coefficient, between the different independent variables (flexibility, ease of use, reliability) with the dependent variables (consistency, relevance, comprehensibility, comparability). Further, we performed a linear regression between the variables, followed by a statistical analysis based on Durbin-Watson, and ANOVA.
Table no. 1. Profile of respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>175</td>
<td>97%</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-30 years old</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>30-35 years old</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>35-40 years old</td>
<td>15</td>
<td>8%</td>
</tr>
<tr>
<td>40-45 years old</td>
<td>79</td>
<td>44%</td>
</tr>
<tr>
<td>Over 45 years old</td>
<td>87</td>
<td>48%</td>
</tr>
<tr>
<td>Level of study criterion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Master</td>
<td>146</td>
<td>81%</td>
</tr>
<tr>
<td>Doctorate</td>
<td>35</td>
<td>19%</td>
</tr>
<tr>
<td>Sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>113</td>
<td>62%</td>
</tr>
<tr>
<td>Private</td>
<td>68</td>
<td>38%</td>
</tr>
<tr>
<td>Work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal account</td>
<td>98</td>
<td>54%</td>
</tr>
<tr>
<td>Business/Company</td>
<td>83</td>
<td>46%</td>
</tr>
<tr>
<td>Firm size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-25 employees</td>
<td>62</td>
<td>84%</td>
</tr>
<tr>
<td>25-40 employees</td>
<td>16</td>
<td>16%</td>
</tr>
<tr>
<td>40-55 employees</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>More than 55 employees</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: Own processing with SPSS

3. Results obtained

In this section, we present the main results of our study.

3.1. Univariate Analysis

On a scale of 1 (Strongly Disagree) to 5 (Strongly Agree), the majority of respondents strongly agree that Accounting Information Systems improve the quality of accounting information which in turn improves decision making.

On a scale of 1 (Strongly Disagree) to 5 (Strongly Agree), almost 50% of the respondents in our sample agree and more than 40% strongly agree that accounting information systems increase the quantity and accuracy of published accounting information.

3.2. Correlations

We note that the correlation is significant, so we can reject the null hypothesis that there is no relation between the accounting information system and consistency (Table no. 2). This means that the probability of obtaining a coefficient of this size in a population where these two variables are not related is less than 5%. We accept the alternative hypothesis: There is a positive linear relationship between the two variables (since the coefficient is positive).

Table no. 2. Correlation between dependent and independent variables

<table>
<thead>
<tr>
<th></th>
<th>Relevance (Dependent variable)</th>
<th>Consistency (Dependent variable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman's Rho</td>
<td>1.000</td>
<td>0.250**</td>
</tr>
<tr>
<td>Relevance (Dependent variable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation coefficient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (Bilateral)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>181</td>
<td>181</td>
</tr>
<tr>
<td>Coherence (Dependent variable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation coefficient</td>
<td>0.250**</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (Bilateral)</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>N</td>
<td>181</td>
<td>181</td>
</tr>
</tbody>
</table>

** The correlation is significant at the 0.01 level
Source: Own processing with SPSS
We note that the correlation is significant, so we can reject the null hypothesis of no relationship between information reliability and comprehensibility (Table no. 3). This means that the probability of obtaining a coefficient of this size in a population where these two variables are not related is less than 5%. We accept the alternative hypothesis: There is a positive linear relationship between the two variables (since the coefficient is positive 0.263).

### Table no. 3. Correlation between dependent and independent variables

<table>
<thead>
<tr>
<th></th>
<th>Relevance (Dependent variable)</th>
<th>Consistency (Dependent variable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman's Rho Reliability (Independent variable)</td>
<td>1.000</td>
<td>0.263**</td>
</tr>
<tr>
<td>Correlation coefficient</td>
<td>N 181</td>
<td>0.000</td>
</tr>
<tr>
<td>Sig. (Bilateral)</td>
<td>181</td>
<td>181</td>
</tr>
<tr>
<td>Comprehensibility (dependent variable)</td>
<td>0.263**</td>
<td>1.000</td>
</tr>
<tr>
<td>Correlation coefficient</td>
<td>0.000</td>
<td>181</td>
</tr>
<tr>
<td>Sig. (Bilateral)</td>
<td>181</td>
<td>181</td>
</tr>
</tbody>
</table>

**The correlation is significant at the 0.01 level.**

*Source: Own processing with SPSS*

### 3.3. Regression Test

Concerning the Durbin Watson test, the result is 2.117, which is between 1.5 and 2.5, which shows it is significant, and we do not find a relation between the residuals.

- First box: There is a single equation for the slope of the simple regression line.
- Second box: There is a correlation between the variables (X, Y) that reached 0.277.

### Table no. 4. Summary of models

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R-two</th>
<th>Adjusted R-two</th>
<th>Standard error of the estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.277</td>
<td>.077</td>
<td>.071</td>
<td>.706</td>
</tr>
</tbody>
</table>

*Source: Own processing with SPSS*

### Table no. 5. Summary b of models

<table>
<thead>
<tr>
<th>Variation of R-two</th>
<th>Variation in F</th>
<th>Ddl1</th>
<th>Ddl2</th>
<th>Sig. Variation in F</th>
<th>Durbin-Watson4</th>
</tr>
</thead>
<tbody>
<tr>
<td>.077</td>
<td>14.840</td>
<td>1</td>
<td>179</td>
<td>000</td>
<td>2.117</td>
</tr>
</tbody>
</table>

*Source: Own processing with SPSS*

### 3.4. ANOVA Test2

### Table no. 6. ANOVA Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of squares</th>
<th>Ddl</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>7.395</td>
<td>1</td>
<td>7.395</td>
<td>14.840</td>
<td>0.000</td>
</tr>
<tr>
<td>Residual</td>
<td>89.201</td>
<td>179</td>
<td>.498</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>96.597</td>
<td>180</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Own processing with SPSS*
3.5. Coefficients

The sig is 0.00 which is less than 0.05, so there is a relationship between the dependent and independent variables. The most important result is the sig which is 0.000 and is less than the significance level which is 0.05, subsequently, we reject the null hypothesis H0 and take the hypothesis H1, so there is a relationship between the variables (X, Y) (Table no. 7).

There is a statistically significant relationship between the independent variables and the dependent variables.

<table>
<thead>
<tr>
<th>Table no. 7. Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>The use of accounting information systems provides information which facilitates their understanding (Understandability variable)</td>
</tr>
</tbody>
</table>

Source: Own processing with SPSS

In Table no. 7 we find that the variable Xi is significant. In conclusion, there is a relationship between the dependent variable Yi and the independent variable Xi:

\[ Y_i = 0 + 0.277X_i \]

where

- \( Y_i \): Represents the dependent variable;
- \( X_i \): Represents the independent variable.

4. Discussion

Through the literature review, the results of the survey on how the accounting information system affects the quality of accounting information, confirm that the accounting information system contributes to the quality of accounting information by ensuring its consistency, relevance, understandability, and comparability, hence the term "quality" of accounting information.

As shown in univariate analysis and the percentage of the rest of the variables, the majority of accountants consider the digitalization of accounting information systems, has a positive impact on the quality of accounting information. The percentage of agreement in favor of hypothesis H1, in all the answers to the survey, is between 45% and 56%. In addition, this rises to 82% for the respondents who say that they agree with the statement concerning the variable of relevance that Accounting Information Systems improve the quality of accounting information, which, in turn, improves decision-making.

In our case, all independent and dependent variables are correlated with each other, as the MIS highlighted in the correlation tables is less than 0.05 or close to zero. We, therefore, reject the null hypothesis, which states that there is no correlation between the variables. The correlation coefficients are all positive, which is evidence that there is a positive linear relationship (greater than zero, see correlation table) between each pair of correlated variables. In our case, all the crossings between independent and dependent variables gave a positive linear relationship, which means, for example, that the more flexible and easy is to use the accounting information system (independent variables), the more understandable the quality of the accounting information system is (dependent variable).

In the Jordanian context (Al-Dalabih, 2018), there is a statistically significant positive effect like accounting information systems on the quality of financial data (\( \alpha \leq 5\% \)). There is a significant impact of the use of accounting information systems on the characteristic of accounting information, which means that AIS has a significant
influence on the quality of accounting information (Kanakriyah, 2016).

In the Indonesian context (Puspitawati & Anggadini, 2019), the improvement of the accounting information system affects the quality of accounting information, the significance level \( p = 0.000 < 0.05 \). The result of the hypothesis test shows that the quality of accounting information is influenced by the changes in the accounting information system. In the Sudanese context, the study of Abdelraheem, Hussaien, Mohammed & Elbokhari (2021) shows that the impact of information technology is directly on the quality of accounting information. The study made by Mbilla, Nyeadi, Akolgo & Abiire (2020) concludes that computerized accounting systems take into account their speed, accuracy, reliability, and ability to produce quality data positively affecting the quality of financial reports of banks in Ghana.

In comparison with the result of the correlations carried out in the previous studies, the cross-tabulation between the different variables such as flexibility or quality, coherence or relevance of the information, the significance level is also close to zero and lower than (5%), which proves the similarity of the results to the Algerian context.

Conclusion

Accounting information systems are essential for producing quality accounting information on time and for communicating this information to decision-makers to improve the quality of accounting and financial reporting. However, it is important to stress that further study is needed to examine other factors that may influence this relationship. The value of the information generated by digitalized AIS to accounting and financial staff in making investment decisions is inestimable. Financial managers need the financial and accounting data provided by the digitalized AIS to assess the company’s past performance and to develop plans.

This study showed that there is a strong relationship between the digitalized accounting information system and the efficiency of the quality of accounting information, which means that access to accounting information will lead to efficiency in financial performance. The use of an accounting information system in an organization helps to provide meaningful, valuable, and accurate information for effective decision-making. In other words, digitalized accounting information systems improve the characteristics of accounting information.

The contribution of this study lies in the possibility of comparing the Algerian context with that of other countries such as Indonesia, Ghana, or Jordan. The importance and usefulness of information systems are obvious for a more reliable accounting and faster processing of the financial data of the company in Algeria. We, therefore, conclude that the use of accounting information systems in all organizations is essential for obtaining quality accounting information.

REFERENCES


The Impact of Digitalization on the Quality of Accounting Information. The Case of Algeria


Influence of Gender Differences on the Quality of Financial Audit Engagements for Listed Companies

Abstract

Gender differences can be explained by the level of development of a state, by the perception of employers, but also by the attitude of men and women towards the labor market. In recent years, more and more women are working in the accounting and auditing profession, but not necessarily in top-management. The quality of engagements in the field of accounting and auditing can be influenced by the characteristics that women can have compared to men, to be more conservativ, attentive, rigorous, with a great capacity for work, practicality and sociability. This study aims to what extent the existence of gender differences influences the quality of audit engagements in Romania, performed at the level of companies listed on the Bucharest Stock Exchange – Regulated Market. As a variable, the quality of the audit is determined by using a model for estimating discretionary accruals, taking into account the type of audit opinion. The results show that the probability of expression a modified opinion is significantly influenced by the detection of accounting distortions in the conditions of gender differences.

Key words: quality of audit engagements; gender differences; female auditor; discretionary accruals; audit opinion; Bucharest Stock Exchange;

JEL Classification: B23, C01, J16, K38, M42, M48

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1. Introduction

In most cases, stereotyping underlies discriminatory treatment, and a country's level of development, as well as employers' perceptions of female and male labor, are factors that may explain gender discrimination (Linville et al., 1986). Gender discrimination is highly dependent on the attitude of men and women towards the labor market, and the elimination of discrimination, direct or indirect, has become one of the major challenges on the international political agenda, being included in the 2030 Agenda Sustainable Development Goals launched by ONU (Núñez et al., 2020).

Regarding the accounting profession in Romania, more and more women work in this field, but not at the top levels (Del Baldo et al., 2019). Through their experiences of inequality in responsibilities and remuneration at work, in the accounting and auditing profession, women want to bring to light the fact that they must be treated in the same way as men accountants. However, the practice of audit firms indicates some dominance of the gender factor, at least in terms of salary justification in the activity of the profession (Brennan & Nolan, 1998; Anderson-Gough, et al., 2005).

Although women are the most numerous in this sector of activity, they are extremely poorly represented in terms of top management positions (Michailidis et al., 2012). It is known that in some situations, women are more qualified than men and have much more knowledge, but in order to be promoted to higher hierarchical positions, they have to work much harder to prove superior performance compared to men working in the accounting profession (Michailidis et al., 2012). The dominance of the accounting and auditing profession by women (at least numerically) can be explained by the fact that they are more patient, meticulous, attentive, rigorous and have a good analytical ability, characteristics accompanied by those specific to the accounting profession and audit, respectively: high work capacity, practicality, sociability and compliance with conventions (Dimnik & Felton, 2006). All this can have a direct effect on the quality of the performed engagements, including those related to assurance and audit services.

In the field of financial auditing, the quality of an engagement performed in accordance with the standards can be assessed on the basis of the auditor's success in detecting possible accounting misstatements, as a result of applying the best audit procedures (De Angelo, 1981). This success is ensured as a result of maintaining professional competence throughout the engagement, and the application of the best procedures to lead the auditor to sufficient and appropriate audit evidence is determined by the auditor's objectivity and independence (Knechel, 2016). A quality audit engagement, in accordance with professional standards, leads to the expression of a fair audit opinion that ensures the accuracy of the financial information reported (Hayes et al., 2005).

The purpose of this study is to evaluate the extent to which the quality of audit engagements in Romania, performed at the level of companies listed on the Bucharest Stock Exchange – Regulated Market, is influenced by the existence of gender differences. Given a number of characteristics – the type of opinion expressed, the type of auditor (engagement partner), the level of discretionary accruals that may affect the accuracy of the information in the audited financial statements – in this study we aim to identify a profile of a quality financial audit engagement, as well as the probability of having such an engagement depending on the determinants.

The study is structured in five distinct sections, respectively: introduction, review of the literature and substantiation of research hypotheses, research methodology, results and discussions and, finally, the conclusions.

2. Literature review and research hypotheses

For the activity carried out, the financial auditors, regardless of gender, are evaluated and receive periodic ratings, depending on how they meet the requirements set out in the rules. In recent years, at the national level, it has been found that not all auditors comply with the requirements of financial audit engagements, either at the procedural level or at the reporting level (CFAR, 2019). One aspect considered negative refers to the fact that, although the competent bodies have issued preventive measures in order to increase the quality of the financial audit activity (IAASB, 2018), however, regressions over time have been highlighted.

In all cases, the purpose of verifying the quality assurance of the financial audit activity is to consider, on the one hand, the assessment of compliance with International Standards on Auditing (ISA) and the requirements of independence, and on the other hand, the assessment of the organized quality control system at the level of the
auditor, as well as the assessment of compliance with the requirements related to the resources spent and the audit fees (IAASB, 2018). All work related to quality inspections is performed by verifying audit files. The members of the inspection team have the obligation to comply with the requirements regarding the confidentiality of the information obtained (not subject to publication of audit fees) during the inspections, as well as the professional obligations, according to the Code of Ethics (IESBA, 2016).

When analyzing the presence of women in the financial audit, it is also necessary to take into account the membership of some women on the audit committees of companies. The presence of women on the audit committee is a variable with a significant impact on the quality of the audit, in that the requirements for the financial auditor are more numerous, generating higher audit fees (Aldamen et al., 2016).

2.1. The quality of financial audit engagements and their determinants

The quality of financial audit engagements is difficult to assess, at least from the perspective of the issue with which the relative success of the implementation of different types of regulations specific to the profession can be appreciated. In general, the quality of the audit is defined by the existence of two important attributes, namely the professional competence (expertise) and the independence (objectivity) of the auditor (Knechel, 2016).

Determinants that can lead to an increase in audit quality are the rotation of partners and audit inspections (Moroney, 2016). At the same time, the quality inspections performed by the competent professional bodies or structures aim at preventing, detecting and correcting non-conformities in the activity of financial auditors and audit firms. Such inspections shall seek reasonable assurance that the financial auditor complies with a number of requirements in accordance with the applicable rules (IAASB, 2018). First, it is verified that it has an adequate internal quality control system for financial audit missions and reviews of financial statements, in accordance with the provisions of ISQC1 (International Standard on Quality Control 1) and ISA 220 (Quality Management for an Audit Financial Statements). Secondly, it is verified that it carries out its activity in accordance with the requirements of the professional standards applicable to the financial audit activity (IAASB, 2018). Third, it assesses whether the auditor complies with the ethical requirements contained in the Code of Ethics (IAASB, 2018), because quality assurance in auditing certainly refers to the principles included in the Code of Ethics of the International Federation of Accountants-IFAC (IESBA, 2016).

Some opinions argue that most irregularities occur as a result of non-compliance with ethical principles, which is a challenge for every financial audit professional (Hătegan, 2020). For this reason, European Directives have been introduced into the legislation of the Member States of the European Union, although their implementation is questionable (Botez, 2019). One of the requirements included in the directives is the establishment and operation of the audit committee in public interest entities, as it has been found that this solution can lead to a significant and positive relationship between the existence of the audit committee and the quality of financial and audit reports (Namakavarni et al., 2021).

Deficiencies or non-conformities in the activity performed by the financial auditor, natural person, or audit firm are considered serious violations if they fall into one of the following situations: the obligations regarding the existence of the internal quality control system are not met or it is poorly implemented; the requirements of professional ethics are violated; there is no audit evidence to support the conclusions on which the audit opinion was expressed; lack of cooperation from the financial auditor or the representatives of the audit firm with the inspection team (Reg. No. 537/2014, Law No. 162/2017, IESBA, 2016).

The auditor's membership of the Big 4 group of companies does not guarantee the quality of the audit, but the opinion changed in one period may contribute to increasing the quality of the audit in the next period (Carp & Istrate, 2021). With the introduction of Key Audit Matters (KAM) in the auditor's report, it was found that the presentation of such issues in one period leads to an increase in the quality of the audit activity in the next period (Grosu et al., 2020). In addition, KAM, identified as risk factors for money laundering in one period, influence the audit opinion in the next period (Grosu & Mihalciuc, 2020).

However, it was noted that there are different approaches of auditors regarding the average number of key audit matters described at the report level and by industry, the nature of the key matters and the disclosure of the significance threshold used in the audit process (Levanti, 2019; Fülöp, 2018). Recent studies have examined various aspects that can significantly influence the
continuity of companies’ activity and, as a result, can lead to changes in the quality of audit services (Crucean & Hațegan, 2021).

Professional accounting and auditing services can improve their performance by automating robotic processes (RPA), which can help increase the credibility of the accounting profession, as well as streamline business, meet the requirements of professional standards, at much lower costs (Lacurezeanu, et al., 2020). It was found that in 300 Audit Reports out of 1,000 analyzed, the auditors introduced paragraphs highlighting some matters, and the main element found here is, by far, the continuity of activity (Istrate et. al, 2020).

The quality of the audit has a significant positive effect on the performance of companies, the results being relevant for regulators, shareholders and other stakeholders, especially in countries with emerging capital markets (Sailendra et al., 2019). In order not to destabilize the balance that the auditor brings to the environment of corporate governance, it is necessary to have a reasoned correlation between the role of the auditor, his actions and the responsibility that affects him (Măgdaș, 2018).

The researchers found that companies for which audit reports were issued without mentioning issues related to business discontinuity reported losses in the following periods more than companies for which audit reports were issued in which such issues are mentioned (Kim, 2021).

Good audit quality contributes to the proper functioning of markets by improving the integrity and efficiency of financial statements (European Directive No. 43/2006) and increasing transparency in financial reporting, with a significant impact on ensuring the stability of financial markets (McPhail and Walters, 2009).

2.2. The existence of gender differences in the accounting and auditing profession

The establishment of communism in Eastern European countries also took into account the homogenization and equalization of the population, a process whose main objective was to eliminate all social differences, including gender, in order to create the "new, socialist man". (Gal & Kligman, 2003). Thus, the necessary labor force was ensured to support industrialization and urbanization by including women among salaried workers, and it was desired to emancipate it at least from the perspective of involvement in the labor field (Massino, 2004).

At the same time, the woman kept her responsibility for housework and raising children, so the communist regime created for women a surplus of tasks, but also a new image: mother, worker, life partner and housewife (Gal and Kligman, 2003). The promotion of women in leadership positions was encouraged, at least at the declarative level, although their presence was often purely formal or only symbolic (Betea, 2004). In this sense, it was considered that the emancipation of women must be achieved through work and the active participation of women in the formation of communist society (Morar-Vulcu, 2002), maintaining its productive and reproductive function (Țârău, 2002).

After 1989, with the fall of communism, women (especially those in urban areas) adapted to the demands of the labor market, accepting more and more the dependence on men, as well as their domination (Pescaru-Ureș & Popescu, 2009). They learn to look for a job, to easily accept new jobs and even to open their own businesses (Pescaru-Ureș & Popescu, 2009).

Although in recent years, the number of women working in the accounting and auditing profession has become the majority, at the level of top management in large audit firms, the gender ratio is inversely proportional. At the level of professional bodies, comparing Romania with Italy, it is found that in the higher councils, only in a percentage of 12% are women in Romania, compared to 31% in Italy (Del Baldo et al., 2019). On the other hand, among the people working in the accounting field, women have a percentage of 78% in Romania, while in Italy the percentage of women exceeds by a little 31%. A possible explanation for the low percentage of women in top positions in professional bodies in Romania can be given by cultural factors.

There are studies that have analyzed the factors that determine women in the auditing profession to open their own offices (Faragalla et al., 2020), concluding that profitability, invisible barriers, the existence of children, higher hierarchical levels, lack of flexibility in place as well as low chances of promotion are factors that determine women to become entrepreneurs. In other words, both the internal events of the company and the personal ones can be determinants of the gender entrepreneurship in the accounting profession in Romania (Faragalla et al., 2020). In Romania, women are associated, rather, with the family, respectively with the private space, while men are associated with professional life and the role of manager (Zamfir, 2007).
In 2020, the Chamber of Financial Auditors of Romanian (CFAR) included 4547 members, individuals and 1019 members, legal entities. In the category of individual auditors, there are 3174 women and 1373 men (CFAR, 2020). According to the CFAR Annual Reports, over time, the ratio of women/men in the audit profession in Romania is around 70% (2015-72%; 2016-69%; 2017-69%; 2018-69.25%; 2019-69.5%; 2020-69.8%). The ratio was certainly reversed in previous periods, in Spain, between 1942-1988, only 6% was the percentage of women members of the body of audit professionals (Carrera et al., 2001).

An analysis of research conducted (after 1990 and published in indexed journals in various databases) on women's careers in accounting organizations showed that most articles addressed this issue taking into account the involvement of women in business teams. audit of the Big 4 group and less female entrepreneurship by opening accounting offices, and a more assiduous approach to this topic appeared about once every 10 years (Tiron-Tudor & Faragalla, 2018).

A study conducted in 2012 focused on the female accounting profession in Romania (Istrate, 2012) denies that a feature of the stereotype of the traditional accountant is that he has a masculine gender. Subsequently, in 2015, another study focused on entrepreneurship in the audit profession in Romania analyzes the evolution and improvement of the financial audit activity in Romania considering the fact that the financial auditor is an entrepreneur or freelancer, CFAR member (Popescu et al., 2014).

Recent studies have examined the extent to which the inclusion of women in top management of companies influences their financial behavior (Tahir et al, 2021) and concluded that the inclusion of women in the audit committee has a positive influence on asset return and a negative influence on the risk-taking behavior. In another order, Becker (2010) analyzed the discrimination caused by employers and hypothesized that female employees incur psychological costs that employers would not have if they hired men.

### 2.3. Hypotheses development

Gender is not just an essentially biological conceptualization of men vs. women, they construct gender positions in professional life through a process of mutual positioning (Gherardi & Poggio, 2001). At the beginning of the Swedish profession of licensed auditor, there were notable differences in the assessment of men's and women's performance, career plans and intentions to leave the profession (Jonnegard et al., 2010). However, despite the fact that many studies find differences generated by the gender variable, stereotypes about men and women in auditing cannot be generalized throughout the profession (Reheul et al., 2017). At the same time, accounting and auditing technologies are not gender neutral, they produce divisions in the exercise of accounting and auditing work, and can create and perpetuate gender differences through the vocabulary used, through assessments and images (Carmona & Ezzamel, 2016).

A number of studies show that women have more ethical behaviors in the workplace, are less likely to engage in unethical behaviors in order to obtain financial benefits, demonstrate greater risk aversion, and are more cautious and less aggressive in decision making (Arun et al., 2015). In addition, the presence of more women on the board (especially since they are independent) leads to more prudent accounting policies, with firms retaining policies to reduce rather than increase, reported results (Arun et al., 2015).

The presence of women on the board and in the audit committee can generate the demand for better quality financial audits and, therefore, can lead to higher audit fees (Lai et al., 2017). The more diverse boards in terms of gender are associated with a better quality of sustainability reporting and independent women on the board have a stronger influence on this quality than in the case of non-independent women (Al-Shaer & Zaman, 2016).

Yang et al. (2019) finds significant differences in the audit quality, depending on the type of person signing the financial audit report, in the sense that the audit performed by men has a better quality than that performed by women, in the case of a sample of Chinese companies listed for 2011-2015. The advanced reason for this situation is related to the superior empathy of women and their orientation towards social relations. However, after separating the positive and negative discretionary accruals, the differences in audit quality between men and women fade (Yang et al., 2019). The quality differences between the two genres decrease significantly with the age of the auditors. The quality of the audit is determined using Jones’ basic model for estimating discretionary accruals, but also using the type of audit opinion.

Alderman (2017) analyzes the way in which auditors (women vs. men) can be judged, in case of detecting
some problems of negligence in carrying out the audit mission. It is concluded that female auditors pose a higher risk of being held accountable, as their negligence is justified by close personal ties with the client; on the contrary, male auditors become more accountable when they are accused of financial conflicts, such as dependence on a client (Alderman, 2017).

To limit such situations, the example of Taiwan proposes the idea of joint audit for listed companies. Using performance-adjusted discretionary accruals as a proxy for accrual earnings management, it is concluded that audit teams involving two women or a woman (as led signing auditor) tend to limit the level of accruals earnings management, which demonstrates that differences in may have implications for the quality of audit and financial reporting (Kung et al., 2019).

Thus, starting from the empirical evidence and the ideas identified from the literature, in the study we propose the following research hypotheses:

\( H_0: \) At the level of Romanian companies listed on the Bucharest Stock Exchange – Regulated Market, the quality of audit missions is significantly influenced by the existence of gender differences in the audit profession.

\( H_1: \) At the level of Romanian companies listed on the Bucharest Stock Exchange – Regulated Market, the probability of giving a modified opinion is significantly influenced by the detection of accounting distortions in the conditions of gender differences.

By validating the research hypotheses, the study aims to identify a profile related to the quality of an audit engagement according to auditor’s gender, as well as estimating the parameters of a logistic regression model to calculate the probability of expression a certain type of audit opinion under the influence the detection of accounting misstatements in the conditions of existence of gender differences at the level of the auditor profession.

### 3. Research methodology

For the testing and validating of the proposed research hypotheses, the study follows a positivist- logical approach. In this sense, the studied population is identified, for which a representative sample is selected for data collection and analysis using advanced statistical methods of data analysis, respectively, factorial analysis of multiple correspondences and logistic regression analysis (Jaba, 2002; Robu, 2012; Robu, 2021).

#### 3.1. Target population and sample

In this paper, the target population is represented by the totality of the companies listed on the Bucharest Stock Exchange (BSE www.bvb.ro) – Regulated Market and which falls under the incidence of Law no. 162/2017. In the current year, corresponding to the year 2021, on BSE there were 84 listed companies, out of which 27 in the Premium category, 54 in the Standard category and 3 in the Int’l category.

From the total of them, the companies representing the financial intermediaries, the banks, the insurance-reinsurance institutions, as well as the companies for which not all the information necessary for the analysis was found at the level of the period 2007-2020 were eliminated. In the study, a balanced sample was preferred, in order to increase the accuracy of the estimated results (Robu, 2021), so that the final sample includes 37 listed companies and 13 periods (respectively 14 financial years), which ensured a number of 481 observations.

#### 3.2. Analyzed variables, proposed models and data source

To study the influence of gender differences on the quality of financial audit engagements in Romania, the paper started from the idea of Yang et al. (2019), based on the estimation of discretionary accruals (DAC) – as an indicator of the existence of accounting misstatements and using the type of audit opinion. However, in our study we chose to calculate discretionary accruals based on the model proposed by Dechow & Dichev (2002).

Thus, we chose to calculate the DAC, using the following relationships (Robu, 2021):

\[
\Delta WC = ([\Delta CA - \Delta TreasA] - [\Delta CD - \Delta TreasL]) - Imp - Dep \tag{1}
\]

where,

- \( \Delta WC \) represents the variation of the working capital, influenced by the application of the accounting of accruals, calculated on the basis of the equation (1),
- \( \Delta CA \) represents the variation of current assets;
- \( \Delta TreasA \) represents the variation in treasury assets;
- \( \Delta CD \) represents the variation of current debts;
- \( \Delta TreasL \) represents the variation of treasury liabilities;
- Imp represents the value of impairments recorded during the period at the level of assets;
- Dep represents the amount of depreciation calculated for fixed assets.
and,
\[ DAC = \varepsilon = \Delta WC - Estim\Delta WC \]  \hspace{1cm} (2)

where,
\( Estim\Delta WC \) represents the value of the accruals explained on the basis of the cash flows from the operating activity (CFO),

and,
\[ Estim\Delta WC = \beta_0 + \beta_1 \cdot CFO_{t-1} + \beta_2 \cdot CFO_t + \beta_3 \cdot CFO_{t+1} \] \hspace{1cm} (3)

where,
\( \beta_{i=0,...,3} \) represents the parameters of the regression model, and
\( \varepsilon \sim N(0,1) \), aleatory variable, error.

Once the DACs is estimated, its values in absolute quantities will be used (Abs_DAC) and these new values will be discretized, using the interquartile ranges (Q1 and Q3): Low DAC \( \varepsilon \) [\( \text{min} \text{ Abs\_DAC}; \text{Q1Abs\_DAC} \)], Medium DAC \( \varepsilon \) (Q1Abs\_DAC; Q3Abs\_DAC], High DAC \( \varepsilon \) (Q3Abs\_DAC; max Abs\_DAC].

To identify a quality profile of an audit engagement by gender of the auditor, as well as to estimate the parameters of the logistic regression model for calculating the probability of issuing a certain type of audit opinion under the influence of detecting accounting misstatements in terms of gender differences at the level of the auditing profession, Table no. 1 presents the main categorical variables used.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit Opinion</td>
<td>MO = 0</td>
<td>Modified Opinion</td>
</tr>
<tr>
<td></td>
<td>UO = 1</td>
<td>Unmodified Opinion</td>
</tr>
<tr>
<td></td>
<td>QO = 2</td>
<td>Qualified Opinion</td>
</tr>
<tr>
<td></td>
<td>AO = 3</td>
<td>Adverse Opinion</td>
</tr>
<tr>
<td></td>
<td>DO = 4</td>
<td>Disclaimer of Opinion</td>
</tr>
<tr>
<td>Gen CEO</td>
<td>M = 1</td>
<td>Male Gender</td>
</tr>
<tr>
<td></td>
<td>F = 2</td>
<td>Female Gender</td>
</tr>
<tr>
<td>Gen CFO</td>
<td>M = 1</td>
<td>Male Gender</td>
</tr>
<tr>
<td></td>
<td>F = 2</td>
<td>Female Gender</td>
</tr>
<tr>
<td>Gen_Auditor (Gender of the Auditor)</td>
<td>F = 1</td>
<td>Female Gender</td>
</tr>
<tr>
<td></td>
<td>M = 0</td>
<td>Male Gender</td>
</tr>
<tr>
<td>Abs_DAC (Absolute value of the discretionary accruals)</td>
<td>Abs_DAC(Low) = 1</td>
<td>Low DAC ( \varepsilon ) [( \text{min} \text{ Abs_DAC}; \text{Q1Abs_DAC} )], Medium DAC ( \varepsilon ) (Q1Abs_DAC; Q3Abs_DAC], High DAC ( \varepsilon ) (Q3Abs_DAC; max Abs_DAC]</td>
</tr>
</tbody>
</table>

Source: Own projection

For estimate the probability of issuing a certain type of audit opinion under the influence of detecting accounting misstatements in terms of gender differences in the audit profession, in the study we propose the following model of logistic regression:
\[ \ln(p/(1-p)) = \theta_0 + \theta_1 \cdot \text{Gen\_Auditor} + \theta_2 \cdot \text{Abs\_DAC} + \theta_3 \cdot \text{Abs\_DAC} \cdot \text{Gen\_Auditor} + \varepsilon \] \hspace{1cm} (4)

where,
\( \theta_{i=0,...,3} \) represents the parameters of the regression model,
\( p \) represents the probability of having an unmodified opinion and (p-1), a modified opinion, and,
\( \varepsilon \sim N(0,1) \), aleatory variable, error.

Data analysis was performed using SPSS 25.0.

4. Results and discussions
Following the analysis of the data collected at the level of the analyzed sample, the main results obtained aim at.
identifying profiles regarding the association between the type of audit opinion, the type of auditor and the type of Chief Executive Officer (CEO) or Chief Financial Officer (CFO), as well as identifying profiles representing a mission. Quality audit, based on the associations between the type of audit opinion, the type of auditor and the different types of levels of discretionary accruals (expressed in absolute terms) using factor analysis of multiple correspondences; estimating the parameters of the logistic regression model related to equation (4).

**Figure no. 1. Association between the type of audit opinion, the gender of auditor and the gender of Chief Executive Officer (CEO) or Chief Financial Officer (CFO)**

Based on the diagrams in Figure no. 1, we can state the following: from diagram a), representing the association between the type of audit opinion, the gender of auditor and the gender of CEO, it can be seen that most often, women auditors tend to express an unmodified opinion for the audited firm led by a male CEO and less other types of opinion; At the same time, male auditors, when auditing firms led by a male CEO, express, to the same extent both, unmodified and qualified opinions; from diagram b), representing the association between the type of audit opinion, the gender of auditor and the gender of CFO, it can be seen that, in most cases, women auditors tend to express an unqualified opinion for the audited firm to which the CFO it is masculine and less so other types of opinion; At the same time, male auditors, when auditing firms in which the CFO is female, usually, express qualified opinions, and when auditing firms in which the CFO is male, they, usually, express unmodified opinions. From this point of view, we can appreciate the fact that women auditors are tempted to be less demanding with audited clients when they are represented by male directors, a fact confirmed by Alderman’s study (2017). At the same time, male auditors tend to be more demanding when auditing firms where CFOs are female.
Based on the diagrams in Figure no. 2, we can state the following: from diagram a), representing the association between the type of audit opinion, the gender of auditor and the level of discretionary accruals, it can be seen that most women auditors tend to express an unmodified opinion for the audited firm, regardless of the level of discretionary accruals reported, while male auditors express qualified opinions when average and above average levels of discretionary accruals are reported; from diagram b), representing the association between the type of audit opinion (unmodified and modified), the gender of auditor and the level of discretionary accruals, it can be seen that in most cases, male auditors express a modified opinion when the audited firm reports average levels of discretionary accruals, while the female auditor expresses an unmodified opinion, regardless of the level of reported discretionary accruals. This indicates a higher professional skepticism of the male auditor compared to the female auditor.

Following the application of the logistic regression analysis, using the model from equation (4), a series of descriptive statistics presented in Tables 2, 3 and 4 were obtained.

Table no. 2. Distribution of types of audit opinion (MO and UO) according to the gender of auditor

<table>
<thead>
<tr>
<th>Gen_Auditor</th>
<th>MO Count</th>
<th>UO Count</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>103</td>
<td>225</td>
<td>328</td>
</tr>
<tr>
<td>F</td>
<td>37</td>
<td>116</td>
<td>153</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>341</td>
<td>481</td>
</tr>
</tbody>
</table>

% within Gen_Auditor

<table>
<thead>
<tr>
<th>Gen_Auditor</th>
<th>MO %</th>
<th>UO %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>31.4%</td>
<td>68.6%</td>
<td>68.2%</td>
</tr>
<tr>
<td>F</td>
<td>24.2%</td>
<td>75.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>29.1%</td>
<td>70.9%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: Own processing in SPSS 25.0
From the data presented in Table no. 2, it can be seen that the male auditors had more audit engagements than the female auditors (68.2% of the total engagements were signed by male auditors and 31.8% of the total engagements were signed by women auditor). For the 328 engagements, in 68.6% of cases, male auditors expressed unmodified opinions, while women expressed unmodified opinions for 75% of the 116 engagements.

Also, out of the total engagements for which modified opinions were formulated (respectively 140 cases), in 37 cases the engagements were signed by women auditors, and in 103 cases, the engagements were signed by men auditors. Based on the data, it can be seen that female auditors have fewer engagements than male auditors and tend to express approximately 3 times more unmodified opinions than modified ones.

Table no. 3 presents the audit engagements for which different levels of discretionary accruals were reported. Although it can be seen that male auditors had more audit engagements than female auditors (approximately twice as many), the percentage of cases with low, medium and high levels of discretionary accruals did not differ by gender. From this point of view, we can consider that for both categories (male and female auditor) we have approximately the same risks of undetection, which means that there is no discrimination in the audit market (both categories are subject to the same risks).
Following the application of the logistic regression analysis for the model proposed in equation (4), Table no. 4 presents a series of descriptive statistics detailing the distribution of the number of audit engagements included in the study, according to the levels (categories) of discretionary accruals, as well as depending on the gender of auditor. From the data presented, it can be seen that most audit engagements were performed at the level of companies that reported average levels of discretionary accruals, about twice as many, both compared to companies that reported a low level of discretionary accruals and by those who reported a high level of these accruals.

Regarding the number of audit engagements performed by women auditors, it can be seen that their level is half the number of missions performed by male auditors, which indicates that the audit market in Romania is mainly aimed at companies with male audit partners.

Following the application of the logistic regression analysis, Table no. 5 presents the estimates of the model based on which the probability of having an unmodified opinion can be calculated, depending on the gender of auditor and the level of discretionary accruals.

### Table no. 5. Estimates of the regression model parameters related to the equation (4)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen_Auditor(Male)</td>
<td>.442</td>
<td>.438</td>
<td>1.018</td>
<td>1</td>
<td>.313</td>
<td>1.556</td>
</tr>
<tr>
<td>Abs_DAC(Low)</td>
<td></td>
<td></td>
<td>2.764</td>
<td>2</td>
<td>.251</td>
<td></td>
</tr>
<tr>
<td>Abs_DAC(Medium)</td>
<td>.252</td>
<td>.437</td>
<td>.332</td>
<td>1</td>
<td>.564</td>
<td>1.287</td>
</tr>
<tr>
<td>Abs_DAC(High)</td>
<td>.924</td>
<td>.563</td>
<td>2.696</td>
<td>1</td>
<td>.101</td>
<td>2.519</td>
</tr>
<tr>
<td>Abs_DAC(Low)* Gen_Auditor(Female)</td>
<td></td>
<td></td>
<td>5.950</td>
<td>2</td>
<td>.051</td>
<td></td>
</tr>
<tr>
<td>Abs_DAC(Medium)* Gen_Auditor(Male)</td>
<td>-.821</td>
<td>.538</td>
<td>2.326</td>
<td>1</td>
<td>.127</td>
<td>.440</td>
</tr>
<tr>
<td>Abs_DAC(High)* Gen_Auditor(Male)</td>
<td>1.612</td>
<td>.665</td>
<td>5.879</td>
<td>1</td>
<td>.015</td>
<td>.200</td>
</tr>
<tr>
<td>Constant</td>
<td>.811</td>
<td>.347</td>
<td>5.463</td>
<td>1</td>
<td>.019</td>
<td>2.250</td>
</tr>
</tbody>
</table>

c. Variable(s) entered on step 1: Gen_Auditor, Abs_DAC, Abs_DAC * Gen_Auditor.
d. -2 Log likelihood: 569,910; Cox & Snell R Square: 0.021; Nagelkerke R Square: 0.030

Source: Own processing in SPSS 25.0

From the data presented in Table no. 5 it can be seen the influence of factors (gender differences) and the level of discretionary accruals (on the three levels) on the probability of expression an unmodified opinion. According to the proposed methodology, we consider that an audit engagement is of quality when for an increased level of discretionary accruals, the auditor will express a modified opinion, or when for a low level of discretionary accruals, the auditor will express an unmodified opinion. According to the results obtained in the study, for a low level of discretionary accruals, women auditors will express an unmodified opinion with a probability of 125% (2,250 - 1), a probability that will increase with increasing level of discretionary accruals. We conclude that with the increase in discretionary accruals reported by the firm, women auditors tend to express an unmodified opinion, which may illustrate a decrease in the quality of audit engagements performed. For male auditors, a low level of discretionary accruals will lead to an increase in the probability of expression an unmodified opinion by 55.6% (1,556 - 1), compared to the case of female auditors. However, as discretionary accruals increase, the likelihood of expression an unmodified opinion will decrease and the likelihood of expression a modified opinion will increase. From this point of view, we can consider that audit engagements performed by male auditors are much more sensitive to variations in discretionary accruals, with an impact on increasing the engagements quality.

### 5. Conclusions

Research in management, accounting, auditing or finance sometimes takes into account the gender variable, to explain some behaviors of the actors involved in the production, validation, publication and use of information in financial statements. Our study starts from the finding that the current share of women in the accounting and auditing profession is higher than the share of men and aims to test the influence of gender on the audit quality of...
Influence of Gender Differences on the Quality of Financial Audit Engagements for Listed Companies

companies listed on the regulated market of the Bucharest Stock Exchange. The sample extracted from the population of listed companies on the regulated market is a balanced one and includes 37 listed companies, over a period of 14 years (2007-2020). We opted for this period, due to the fact that 2007 is the first year of Romania's membership in the European Union. To measure the quality of the audit, we chose to use discretionary accruals, calculated based on the model proposed by Dechow & Dichev (2002), but also the type of opinion expressed: modified vs. unmodified. After estimating the absolute values of the discretionary accruals, we discretized them into three groups, using the interquartile ranges (Q1 and Q3). We have therefore proposed to consider that the audit is of good quality, if the auditor expresses a modified opinion, given that the level of discretionary accruals is high or when, at a low level of discretionary accruals, the opinion is unmodified.

The descriptive analysis shows us, first, that male auditors are more numerous than women (68.25% compared to 31.8%) in appearing on audit reports as partners who sign and assume the audit opinion. Remaining to the descriptive statistics, we also notice that the low, medium and high levels of the discretionary accruals estimated for the Romanian companies listed on the regulated market do not differ according to gender.

The main results that we can report following the analysis of the available data refer to:

1) in most cases, women auditors tend to express an unqualified opinion for the audited firm led by a male CEO and less other types of opinion; at the same time, male auditors, when auditing firms led by a male CEO, express to the same extent both unmodified and qualified opinions;

2) women auditors tend to express an unqualified opinion for the audited firm in which the CEO is male and less other types of opinion; at the same time, male auditors, when auditing firms in which the CFO is female, usually express qualified opinions, and when auditing firms in which the CFO is male, they usually express unmodified opinions;

3) women auditors tend to express an unqualified opinion for the audited firm, regardless of the level of discretionary accruals reported, while male auditors express qualified opinions when average and above average levels of discretionary accruals are reported;

4) male auditors express a modified opinion when the audited firm reports average levels of discretionary accruals, while female auditors express an unmodified opinion, regardless of the level of discretionary accruals reported.

The limitations of our study consist mainly in the small sample size, which makes it difficult to generalize the results. Also, we limited ourselves only to the Romanian financial market, without making comparisons with the situation of other ex-communist countries that had a relatively similar starting point in the transition to a market economy and adaptation to the acquis communautaire. These limits represent as many future directions of research. For the same sample, we could also analyze the effects of the mandatory transition from 2012 to the application of IFRS in individual accounting.

At the same time, we intend to extend the analysis area to the companies listed on the AeRo alternative market of the Bucharest Stock Exchange, with a slightly higher generalization potential, considering the fact that they apply only the Romanian accounting and financial reporting norms. Another category of entities to which we can extend the analysis is represented by the Romanian state companies, insofar as the related data will be available.

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The Impact of Covid-19 on the State Audit in the Republic of North Macedonia – Lessons from the Crisis

Abstract

The COVID-19 pandemic has left no area in the society that has not been affected. For auditing the spending of public money, especially in times of uncertainties imposed by the COVID-19 pandemic, the state audit is a crucial factor, hence the synonym for state audit is “watchdog of public money”. The activities related to the state audit in the Republic of North Macedonia are performed by the State Audit Office (SAO), as the Supreme Audit Institution. This paper attempts to investigate the impact of the COVID-19 pandemic on the state audit in the Republic of North Macedonia, through the state auditors’ perception of the COVID-19 pandemic impact on the dynamics and the scope of SAO activities, with a special focus on ethical dilemmas and expectations for the post-covid period and what have the state auditors specifically learned from the crisis. For that purpose, a structured and detailed survey was submitted to all state auditors in the Republic of North Macedonia, covering all aspects of the audit process, the independence of the State Audit Office, changes in the environment, and the post-covid period. The obtained answers are analyzed through ‘descriptive statistics’ and ‘analysis of variance’. In general, it can be concluded that the state auditors have retained their independence and the quality of conducting audits during the pandemic.

Key words: COVID-19; “black swan” event; state auditor; independence; technology;

JEL Classification: H82, M42
Introduction

The appearance of COVID-19 is proof that the world is not immune to the occurrence of pandemics on a global scale, so the whole situation from the beginning affected all spheres of action in society, affecting certain sectors very badly. State audit as a profession, although not so popular, is of great importance to society, as it is the sole custodian of public money.

The Supreme Audit Institutions (SAI) in states generally influenced by fragility, conflict, and violence are dealing with especially intense issues in completing the audits during the COVID-19 PANDEMIC, and indeed, even before the pandemic, many worked with restricted staff data transfer capacity, poor or non-existent IT systems, and lacking a financial plan to conduct field audits (El-Chami and Goldsworthy, 2020). SAIs can contribute, whether by performing a real-time audit to minimize fraud and corruption or post-crisis audits when countries face economic recessions. They need to continue monitoring the public funds and public services are delivered properly, but they face many challenges, including limited access to auditees, technology infrastructure, and connections to perform remote audits, along with high expectations from key stakeholders on audits’ quality and timeliness (World Bank Blogs, 2020).

Metaphorically, Brachio (2020) states that at a big-picture level, the most powerful learning to take away from the COVID-19 crisis is that there is always a potential “black swan” event around the corner – that is, an unpredictable event that has a severe impact. The risks associated with “black swan” events tend to be so big and so rare that many businesses do not contemplate them, much less plan for them. The state auditors need to have a mindset where they are always prepared to think the unthinkable – because the “black swan” will show up (Brachio, 2020).

Our motivation for research stems precisely from the influence of the “black swan”, and we want to highlight some of the practical challenges that state auditors in the Republic of North Macedonia are now faced with, in light of COVID-19, and also to highlight some of the key considerations for auditors by referring to the INTOSAI Framework of Professional Pronouncements (IFPP). In this paper, we discuss the impact of the COVID-19 outbreak on the state auditing profession in the Republic of North Macedonia which not only includes writing an audit report in which the auditor will offer a reasonable assurance to users of the opinion expressed but also obtaining sufficient and appropriate audit evidence in the absence of communication with the client, assessing the risks of material misstatement, recognizing the symptoms of fraud, exercising the required level of professional scepticism, facing ethical dilemmas, etc.

The main purpose of the research is to provide empirical evidence on state auditors’ perceptions about working in a pandemic environment, i.e. to obtain concrete data on how the state auditors in the Republic of North Macedonia responded to the new unpredictable situation caused by COVID-19, whether they made certain changes in the audit process, does the pandemic have implications for the audit reports, as well as to determine the opinion of the auditors on changes in the regulation and their expectations for the post-covid period.

We believe that this is the first study about the impact of the outbreak of COVID-19 on the state auditing profession from the viewpoint of the state auditors in the Republic of North Macedonia.

1. Literature review

The onset of COVID-19 has brought about a global health and economic crisis affecting every country in almost every sector. To deal with the pandemic, state governments have begun to allocate significant resources and introduce new major safeguards. The COVID-19 crisis required urgent action by governments and the international community and posed a significant challenge to balance the need for rapid response with due regard for accountability, transparency, and integrity.

The report of the International Organization of Supreme Audit Institutions Development Initiative (IDI) indicates that the experience of previous pandemics and crises of this magnitude shows that this situation can lead to increased levels of corruption and mismanagement at a time when governments resources are under critical pressure (INTOSAI Development Initiative, 2020).

In response to the pandemic, governments around the world have adopted enormous measures, including full lockdown, airport closures, travel restrictions, and the complete "sealing" of their borders to curb the spread of the virus as much as possible. This has been but still is, a huge cost to the global economy. Furthermore, the pandemic has led to serious global socio-economic disruption (The New York Times, 2020), delaying various personal gatherings, including meetings of the International Organization of Supreme Audit Institutions...
(INTOSAI) working groups. Under all of these conditions, the SAIs have a vital contribution to make to keep governments and other crisis management bodies accountable to parliament, citizens, and other stakeholders for the use of public funds (Edmond, 2020). Stevenson (2019) finds that the gap in audit expectations is the gap between what the public expects from the auditor and what the auditor considers their role (Stevenson, 2019). Hence, the various repercussions of the crisis raise the question of the role of the SAIs in responding to the pandemic. In terms of meeting citizens' expectations and ensuring transparency and accuracy of financial information regarding pandemic-related expenditures, SAIs are solely set up to guarantee this transparency, as most of them have administrative and financial independence from the executive and follow INTOSAI principles for making a difference in the lives of citizens (INTOSAI, 2019).

While some SAIs already have best practices for responding to such pandemics, other SAIs have no experience in dealing with such crises. Thus, the latter inexperienced still have an important role to play in ensuring government accountability for the new approaches they can take to tackling the pandemic (Besma, 2020). But regardless of their experience with crisis management, the World Bank (2020) in its report on the role of SAIs in governments’ response to COVID-19 states that audit procedures during a pandemic will be less than normal capacity, as a result of the unavailability of staff in the SAI and the audited entities.

OECD (2020) pointed out that parliamentary oversight committees have been suspended, due to public health concerns or concerns over expediency, also many SAIs are facing difficulties conducting audits and have postponed the publication of audit reports (OECD, 2020).

SAI auditors need to independently decide on the nature, scope, and approach to COVID-19, and they should conduct their audit with a minimal time lag after the restoration of normalcy. To be able to conduct it, SAI needs to keep abreast of the modifications done to Public Financial Management systems and identify potential risk areas (Gurazada and others, 2020). Work from home and video-audio conferencing replaced face-to-face meetings prevented easy access to information and records, eliminating first-hand observations, and creating greater exposure to technological errors (World Bank, 2020). Difficulties were greater for SAIs that did not have e-audit systems or connect with governments and/or staff, they could not communicate remotely even in cases where auditors did not keep electronic records, audit plans, and programs prepared before COVID-19 would require significant adjustments (World Bank, 2020).

Besma (2020) concluded that one of the most important lessons for SAIs which lack experience in dealing with such crises is the need to develop contingency plans for how to respond to similar situations, and a key lesson is to realize the importance of remote working, which remains a good alternative for coping with such complex situations and requires the development of IT tools, digitization of audit work, developing the skills of auditors, and also the virtualization of audited entities.

In the coming post-covid discussion, SAIs will want to succeed to have the ability to impart an intelligent arrangement for building a resilient country that is capable of defeating the risks of COVID-19 on a continuous premise, guaranteeing its economic and social development, and accomplishing the SDGs (Oyola, 2020).

In 2020 with research for the certified auditors’ perceptions about working in a pandemic climate, we concluded that "all challenges posed by the pandemic will be more easily overcome by joint and smart action of certified auditors and related associations and regulatory bodies, to find alternative ways of acting in a radically changed environment under the influence of the COVID-19 pandemic" (Bozhinovska and others, 2020).

The first Law on State Audit in the Republic of North Macedonia was adopted in 1997 and has set the framework for state auditing at the national level. According to the Law, the state audit in the Republic of North Macedonia is performed by the State Audit Office as a Supreme Audit Institution and independent public authority managed by the Auditor General (State Audit Office, 2021). To increase the compliance of the legal regulations in the state audit with the requirements of the Lima Declaration and the Mexico Declaration of SAI Independence and to bring it closer to the EU standards and practice, this law undergoes several changes, and in 2010 enters into force new Law on State Audit (2010) which is largely in line with the stated requirements of the declarations.

The State Audit Office of the Republic of North Macedonia is a member of the INTOSAI since 2001 and the EUROSAI since 2002. Since 2005 the SAO is an active
The Impact of Covid-19 on the State Audit in the Republic of North Macedonia – Lessons from the Crisis

member of the SAI network of candidate countries and potential candidates for accession to the European Union and the European Court of Auditors in Luxembourg.

The legal task of the SAO is to audit the use of public funds and to provide information to state institutions and the public on the proper use of funds (Akademik, 2016). Today, the SAO is an independent institution for auditing the use of budget and other public funds in the Republic of North Macedonia.

2. Research objectives

The state audit profession in the first half of 2020 was faced with unknown circumstances due to COVID-19. The activities related to the state audit in the Republic of North Macedonia are performed by the State Audit Office as a SAI, following the Law on State Audit (2010). The state audit is performed by the certified state auditors and state auditors who are employed in the State Audit Office (Official Gazette of RNM, 2010). The subject of this paper is to isolate the impact of the COVID-19 pandemic on a very sensitive segment of the auditing profession such as state auditing. The purpose of this paper is to investigate the perception of state auditors to see which segments of audit engagements were most affected by the pandemic, how the auditors faced the challenges, and what lessons they learned from working in an environment that the profession does not remember. To achieve this goal, the research covers five main research objectives:

- Analyzing how the state auditors responded to the new unforeseen situation created by the pandemic;
- What audit activities were performed and intended to be performed by the state auditors in the Republic of North Macedonia during and after the COVID-19 pandemic?
- How did state auditors deal with the challenges posed by the COVID-19 pandemic?
- The ethical dilemmas posed by the profession, the need for professional scepticism, and the gap in expectations;
- What are their expectations for the future of state audit in the post-covid period?

From the defined objectives of the research, a general hypothesis can be set that “the SAO has maintained its independence during the COVID-19 pandemic and has successfully dealt with the challenges of the crisis.” It is also expected that “the lessons learned from the crisis will guide the state auditors in the future activities in the post-covid period, with great attention to the risks and more sensitive areas posed by the crisis.”

3. Methodology

In addition to a thorough examination of the literature related to the issue, for the research, the survey method is used, i.e., an online structured questionnaire was submitted to all state auditors in the Republic of North Macedonia. The questionnaire covers all aspects of the state audit process, the independence of the State Audit Office (hereinafter: SAO), the change in the work environment, the need for change in the legislation, the implications of the audit reports for 2020 and 2021, the INTOSAI Code of Ethics (ISSAI 130), as well as questions about the expectations of the state auditors for further activities.

The population in the research are the certified state auditors and state auditors that are employed in the SAO of the Republic of North Macedonia, who are coded and categorized to their work experience and their job position in the SAO. The questionnaire was intended to take no more than 10 minutes. Most of the questions (except introductory and preliminary questions) were answered on a Likert scale from 1 to 5, where 1 is "totally disagree" and 5 is "totally agree". Introductory and preliminary questions include the job title and department, work engagement of the auditor, and the number of work experience in the SAO.

The questionnaire was web-based and it was sent to all 90 state auditors that work in the SAO of the Republic of North Macedonia. Participants received an invitation email that provided a link to the questionnaire and 64 responses are received or a 71.11% response rate. We believe that the percentage of answers received is representative because it is over 70% of the entire population, based on which we can further draw concrete conclusions (Fincham, 2008). The survey supporting this research was issued on the 15th of April 2021.

The data analysis performed to interpret the obtained answers and results include the following statistical methods:

1. Descriptive statistics of the responses to describe the basic features of the data in the study;
2. Case summaries to calculate subgroup statistics for variables within categories of the grouping variables. Summary statistics for each variable across all categories are also displayed;
3. We use ANOVA analysis to determine whether there are any statistically significant differences between the means of the independent (unrelated) groups, i.e. to determine whether there is a difference in the answers obtained between the groups defined in the research.

4. Multiple response analysis to analyze the multiple response questions in the survey. We use this analysis for more detailed processing of the received answers to the multiple-choice questions, especially in the part of the expectations of the state auditors in the post-covid period.

4. Results and discussions

Before starting with any research analysis of the results, reliability analysis was carried out. Cronbach’s alfa coefficient was calculated to measure the internal consistency and reliability of the questionnaire. Its result is 0.81 which implies high internal consistency and all items appeared to be worthy of retention. Furthermore, Table no. 1 shows the descriptive statistics of the characteristics of the respondents.

Table no. 1. Descriptive statistics of the characteristics of the respondents

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Title and Department</td>
<td>- Certified State Auditor in Audit Department</td>
<td>39</td>
<td>60.94%</td>
</tr>
<tr>
<td></td>
<td>- State Auditor in Audit Department</td>
<td>24</td>
<td>37.50%</td>
</tr>
<tr>
<td></td>
<td>- Certified State Auditor in Audit Support Department</td>
<td>1</td>
<td>1.56%</td>
</tr>
<tr>
<td></td>
<td>- State Auditor in Audit Support Department</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>64</strong></td>
<td><strong>100.00%</strong></td>
</tr>
<tr>
<td>Work engagement</td>
<td>- Category A (General Secretary)</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>- Category B (Assistant Audit Manager, Audit Manager, Assistant to the Auditor General, Advisor to the Auditor General)</td>
<td>14</td>
<td>21.9%</td>
</tr>
<tr>
<td></td>
<td>- Category V (Junior Auditor, Auditor, Senior Auditor, Principal Auditor)</td>
<td>50</td>
<td>78.1%</td>
</tr>
<tr>
<td></td>
<td>- Category G (Junior Associate, Associate, Senior Associate, Principal Associate)</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>64</strong></td>
<td><strong>100.00%</strong></td>
</tr>
<tr>
<td>Work experience in the SAO</td>
<td>0-5 years</td>
<td>15</td>
<td>23.4%</td>
</tr>
<tr>
<td></td>
<td>6-10 years</td>
<td>10</td>
<td>15.6%</td>
</tr>
<tr>
<td></td>
<td>11-15 years</td>
<td>18</td>
<td>28.1%</td>
</tr>
<tr>
<td></td>
<td>over 15 years</td>
<td>21</td>
<td>32.8%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>64</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

Source: Authors’ calculation, 2021

The analysis of the received answers was made on a structured sample of two groups, namely: certified state auditors and state auditors on the job in Category V – field auditors (50) and certified state auditors and state auditors on the job in Category B – management (14). The statistical analysis of the obtained data based on ANOVA (Appendix A) indicates the fact that there is no significant difference in the answers given by the state auditors, regardless of their title and position in the SAO. Appendix B of the paper shows Case Summaries, which give a detailed overview of the answers received by the group. Table no. 2 shows the descriptive statistics of the answers obtained.
The Impact of Covid-19 on the State Audit in the Republic of North Macedonia – Lessons from the Crisis

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Sum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The State Audit Office has successfully overcome the unique challenges posed by the pandemic to ensure transparency and accountability of public sector institutions.</td>
<td>64</td>
<td>3.0</td>
<td>5.0</td>
<td>290.0</td>
<td>4.531</td>
<td>0.6416</td>
</tr>
<tr>
<td>6</td>
<td>At a time of heightened uncertainty and increased government intervention, the role of the State Audit Office was and still is significant during the COVID pandemic.</td>
<td>64</td>
<td>3.0</td>
<td>5.0</td>
<td>293.0</td>
<td>4.578</td>
<td>0.6620</td>
</tr>
<tr>
<td>7</td>
<td>During the pandemic, the State Audit Office maintained its independence and financial resources.</td>
<td>64</td>
<td>3.0</td>
<td>5.0</td>
<td>300.0</td>
<td>4.688</td>
<td>0.5599</td>
</tr>
<tr>
<td>8</td>
<td>The State Audit Office is closely monitoring important government decisions that create packages of financial measures to respond to the crisis.</td>
<td>64</td>
<td>1.0</td>
<td>5.0</td>
<td>294.0</td>
<td>4.594</td>
<td>0.7709</td>
</tr>
<tr>
<td>9</td>
<td>The COVID 19 pandemic has changed the approach to your professional engagement.</td>
<td>64</td>
<td>1.0</td>
<td>5.0</td>
<td>226.0</td>
<td>3.531</td>
<td>1.0979</td>
</tr>
<tr>
<td>10</td>
<td>In the circumstances initiated by the COVID-19 pandemic from March 2020 until today, the State Audit Office was ready to implement INTOSAI recommendations for the transition from the classic way of working from office to remote work to protect health and employee lives.</td>
<td>64</td>
<td>2.0</td>
<td>5.0</td>
<td>272.0</td>
<td>4.250</td>
<td>0.8165</td>
</tr>
<tr>
<td>12</td>
<td>The uncertainties imposed by the COVID 19 pandemic have affected your professional judgment in the area of reviewing the predetermined level of materiality and audit risk of certain auditees.</td>
<td>64</td>
<td>1.0</td>
<td>5.0</td>
<td>181.0</td>
<td>2.828</td>
<td>1.2157</td>
</tr>
<tr>
<td>13</td>
<td>The work in conditions of quarantine measures, self-isolation, and remote work influenced the application of the audit procedures for collecting and documenting sufficiently appropriate audit evidence in the existing ones, and especially in the new audit entities.</td>
<td>64</td>
<td>1.0</td>
<td>5.0</td>
<td>213.0</td>
<td>3.328</td>
<td>1.0244</td>
</tr>
<tr>
<td>14</td>
<td>The health crisis initiated by COVID 19 and its overflow in the economy with the complete closure of public sector institutions and their phased opening, influenced you to increase the level of professional scepticism during the audit engagements due to the increased risk of material misstatement in the financial statements as a result of fraud or error.</td>
<td>64</td>
<td>1.0</td>
<td>5.0</td>
<td>231.0</td>
<td>3.609</td>
<td>1.1072</td>
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<td>The closure of public sector institutions, the rotation of employees, the application of quarantine measures supplemented by remote operations enabled possible modifications in the placement and functioning of the elements of internal control at the auditing entities.</td>
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<td>Working remotely, even in the case of increased levels of professional scepticism, has imposed certain barriers in identifying symptoms of fraud (so-called &quot;red flags&quot;) due to the inability to conduct closer interviews with staff and monitor non-verbal communication (body language).</td>
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<td>The new environment imposed by COVID 19 will lead the management of audited entities to be tempted more often to disobey laws and regulations.</td>
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<td>The COVID 19 pandemic will affect the form and content of the audit report in terms of many modifications to the audit opinion expressed (qualified audit opinion, adverse audit opinion, disclaimer audit opinion) on the audited financial statements of the audited entities for the year ends on 31.12.2020.</td>
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<td>The work of the auditing entities in conditions of the pandemic with COVID 19, will affect the more frequent use of the Emphasis of Matter paragraph in the audit reports for presented financial statements for the year ended 31.12.2020.</td>
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<td>In conditions of remote work, limited communication with the management and employees of the entities, closure of the offices of the audit entities, introduced quarantine measures, the state auditors must not sacrifice the quality of the audit.</td>
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<td>The COVID 19 pandemic will widen the expectation gap between state auditors, on the one hand, and the users of audited financial statements – the general public, on the other.</td>
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<td>The risks posed by the COVID 19 pandemic in terms of a truthful and objective presentation of data in the financial statements underscored the importance of having a quality state audit profession.</td>
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<td>The uncertain environment in which state auditors operate in the face of the COVID 19 pandemic will tempt state auditors to compromise basic principles of the INTOSAI Code of Ethics.</td>
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It is noteworthy that all state auditors agree that the SAO has overcome the challenges posed by the pandemic in terms of transparency and that the SAO has maintained its independence and closely monitors government decisions that create packages of financial measures to respond to the crisis, with given answers with mean values greater than 4.53 (Q5, Q6, Q7, Q8).

Furthermore, the state auditors agree that the quality of the audit should not be sacrificed in the newly created conditions (Q21), with a mean value of responses of 4.516 and that the risks posed by the COVID 19 pandemic in terms of a truthful and objective presentation of data in the financial statements underscored the importance of having a quality state audit profession (Q23).

The state auditors also answered with high certainty the question with which they agree that the SAO in the new program for 2021 has included a significant number of audits that will examine the spending of public funds during the pandemic (Q26).

The situation for the answers to several questions is not very reliable (mean value below 3), and they refer to the fact that the situation with COVID-19 does not greatly affect the state auditors in terms of their professional judgment in the area of reviewing the predetermined level of materiality and audit risk of certain auditees (Q12). Furthermore, the state auditors did not respond with great certainty that COVID-19 will increase the number of modified audit opinions in their final reports (Q19), and in terms of the expectation gap, they do not expect it to increase significantly (Q22). Also, the state auditors do not believe that the new environment would lead the management of audited entities to be tempted more often to disobey laws and regulations (Q17).

Regarding the basic principles of the INTOSAI Code of Ethics – ISSAI 130 (Figure no. 1), the state auditors do not believe that the changing environment will affect their compromise (Q24), but when conducting audit engagements in the face of the COVID 19 pandemic, auditors consider that the ‘Professional Behavior’ can be mostly compromised (43.80% of respondents), followed by the principles of ‘Confidentiality and transparency’ and ‘Independence and objectivity with 28.10% respectively. From this question, it can be concluded that state auditors do not believe that the pandemic will affect their integrity.

Finally, it can be concluded that in the circumstances initiated by the COVID-19 pandemic, the SAO has implemented the INTOSAI recommendations for the transition from the classic way of working from office to remote work to protect health and employee lives (Q10). For the post-covid period, as it is expected in all other professions, the state auditors expect changing of the skills and knowledge required for the audit that should be included in the programs for certification of auditors (Q30).
The survey also has included multiple response questions for which in the following their analysis.

The state auditors were asked what were the key challenges they have faced in conducting their audit engagement at the beginning of the COVID-19 Pandemic. Most of the state auditors (60.9%) see Limitations in the scope of obtaining and documenting sufficiently appropriate audit evidence as a big challenge but also Pressure to complete the fieldwork within the stipulated deadline in conditions of quarantine measures, self-isolation, and mobility of the employees at the audited entities (57.9%) and Inability to meet the legally prescribed deadlines for completing audit procedures and submitting the audit report (59.4%).

A question was also asked about the key risks initiated by COVID-19, and the answers received indicate that the biggest risk is the Internal controls – how they are designed and how they work (56.3%) and the risk of inability to obtain appropriate and sufficient audit evidence (56.3%).

The survey also included a special group of questions on the perception of state auditors concerning the post-covid period and contained four multiple response questions.

Auditors’ perception of what their work environment will look like next year, 56.3% believe it would be a hybrid (remote work, but also work from home), while the rest believe that they will return completely to the workplace.

Given the fact that the work of auditors during 2021 will again be strongly influenced by the health crisis and the consequences for the economy, when conducting the regularity audit, the attention of auditors will be focused mostly on: identifying risk factors for fraud and errors (28.1%), followed by an increase in the level of professional scepticism (21.9%) and the collection of sufficient and appropriate audit evidence (21.9%).

Finally, the lesson that the state audit profession has learned since the beginning of the COVID 19 pandemic is that there is always a danger of an unpredictable event happening around the corner that could have serious consequences for the lives and work of individuals. The opinion of the auditors they learned from the pandemic is that there is a need to transform the operation with greater use of the power of technologies to connect people and continue the operation of institutions (58.7%) and that public sector institutions must prepare for change without whether they like it or not, by adopting new ways of working, promoting technological tools such as virtual reality (50.8%).

5. Research limitations

Based on the answers we received we could see the initial impression of the functioning of the state auditing profession during the COVID-19 Pandemic and post-covid expectations.
In our opinion, if the research was conducted in the future the results would be different due to more certain consequences for the economy, also more conducted and issued final reports related to the impact of COVID-19 in several sectors of the public sector, the temptation to follow the moral compass and adhere to basic principles in a time full of temptations, etc. The lack of publicly available similar research in the Republic of North Macedonia has disabled us from comparing our results to isolate similarities and differences from the effects of the pandemic on the performance of the state auditors.

Conclusion

COVID-19 has imposed a great challenge to the audit profession as a whole. In this paper, we point out the consequences of the pandemic on the state auditors, who have been operating a long time in the shadow of COVID-19. The pandemic was a test to the independence of the SAO but also a test for the state auditor to remain professionals.

The results show that the SAO still managed to maintain its independence in the most difficult times of the pandemic and to closely monitor the government measures to help the economy. Most importantly, the state auditors did not allow the downturn to compromise the principles of the INTOSAI Code of Ethics (ISSAI 130), and that in no case should the quality of the audit be sacrificed. Overall, the SAO has followed the recommendations for remote work and other recommendations issued by INTOSAI.

State auditors faced limitations in the scope of obtaining and documenting sufficient and appropriate audit evidence, but also pressure to complete the fieldwork within the stipulated deadline in conditions of quarantine measures, self-isolation, and mobility of the employees at the audited entities and inability to meet the legally prescribed deadlines for completing audit procedures and submitting the audit report.

By 2021, state auditors expect to face difficulties in identifying risk factors for fraud and errors, but also with an increase in the level of professional scepticism, and the collection of sufficient and appropriate audit evidence.

The general conclusion is that the state auditors have successfully overcome the challenges of the crisis and they have already learned the lesson that there is always the possibility of an unexpected event ("black swan"), such as the COVID-19 pandemic, which would have serious consequences for their work engagements, but also for the normal course of life. Thus, from the whole research, it remains to recommend the SAO, that in the coming period it should try to adopt newer ways of working, with greater use of technology.

REFERENCES


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### Appendix A: ANOVA analysis

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Source: Authors’ calculation, 2021
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Source: Authors’ calculation, 2021
Abstract

In recent years, the auditor reporting model suffered several relevant modifications, one being related to the communication of Key Audit Matters (KAMs). By better understanding what factors can affect the number of disclosed items, the users of the audit report can gain more trust in the work performed by the auditors. The measurement of the number of KAMs contributes to the overall understanding of the company’s risk level as they provide financial statement users with relevant information about significant estimates and risks reported in the financial statements. The paper aims to determine the variables from quantitative empirical studies influencing the number of disclosed Key Audit Matters in the auditor’s independent report by conducting a structured literature review of the relevant academic research papers. Our findings reveal that factors such as audit committee characteristics and financial expertise, auditor and client general characteristics and accounting aspects, gender of the audit partner, the measurement uncertainty together with the country of the audited company and audit market structure, all have an impact on the number of disclosed KAMs.

Key words: Key Audit Matters; Critical Audit Matters; Audit Report; ISA 701;

JEL Classification: M41, M42
Introduction

As a result of the financial crisis, there was a pressing need to provide more client and audit-specific data, hence new policies and practices were established that generated a shift towards considerably more extensive audit reports. The traditional audit report, which is the primary mean of communication between auditors and financial statement users (PCAOB, 2017), was seen to contribute to the audit expectation gap, with its standardized format and language limiting its utility (Humphrey et al., 2009).

Thus, the users' perspective on the audit report became quite distorted, correlating it with a pass/fail document with minimal relevance (Mock et al., 2012). Vanstraelen et al. (2012) suggested that additional audit results disclosures, such as key risk areas, are of relevance to users. Gray et al. (2011) stated that 'it is not clear to users, preparers, and auditors what the auditor's report is intended to communicate' arguing eventually that significant changes must be made in the auditor's report in order to reduce these misperceptions.

These disputes and research findings have sparked a slew of initiatives around the world to improve the auditor's report's communication value. In response to stakeholder concerns, the International Auditing and Assurance Standards Board (IAASB) adopted International Standard on Auditing (ISA) 701, 'Communicating Key Audit Matters in the Independent Auditor's Report'. This standard applies to audits of complete sets of general-purpose financial statements of listed entities and when the auditor otherwise decides to communicate KAMs in the auditor's report (Kend & Nguyen, 2020).

ISA 701 defines KAMs as “those matters that, in the auditor’s professional judgement, were of most significance in the audit of the financial statements”. Consequently, the auditor should refer to areas with a high risk of material misstatement (RMM) or significant risks identified as required by ISA 315 (revised); areas that imply significant management judgement, such as accounting estimates that have a high level of uncertainty; and the impact on the audit of significant events or transactions that took place during the audited period (Jermakovicz et al., 2018).

The paper aims to determine the variables from quantitative empirical studies influencing the number of disclosed Key Audit Matters in the auditor’s independent report by conducting a structured literature review of the relevant academic research papers. According to Brouwer et al. (2016), by measuring the number of KAMs one can have a better understanding of the company’s risk level as “the key audit matters reported by the auditor provide new insights to financial statement users with respect to significant estimates and risks reported in the financial statements”.

Our study contributes to the literature by conducting a thorough review of articles published in prestigious accounting journals that addresses a current literature gap as the communication of KAMs in the independent auditor’s report is quite a new requirement. By doing so, the paper contributes to the current understanding of the stakeholders in respect to the Key Audit Matters.

1. Background information on KAM regulations

The IAASB released a consultation paper in May 2011 called "Enhancing the value of auditor reporting: Exploring options for reform", which discussed methods to improve the auditor's report, particularly in light of the heightened scrutiny and the users' need for knowledge, as well as the expectation and information gap that persists (IAASB, 2011).

Later, in 2013, issued another paper entitled “Proposed New and Revised International Standards on Auditing”, featuring a new standard – the ISA 701: Communicating Key Audit Matters in the Independent Auditor's Report (IAASB, 2013) which are defined as “those matters that, in the auditor’s professional judgement, were of most significance in the audit of the financial statements”. The IAASB completed its project in January 2015, releasing the final version of the new and revised ISAs, which included the obligation for public entities to disclose KAMs in their auditor's report (IAASB, 2015a, ISA 701).

ISA 701 applies to audits of listed companies' financial statements for periods ending on or after 15 December 2016. However, the Financial Reporting Council (FRC) in the United Kingdom amended its reporting criteria in June 2013 in order to improve the transparency of the auditor's report and these requirements were effective earlier than for the other European countries, on October 1, 2012, for audits of financial statements for periods beginning on or after that date.

Similarly, PCAOB implemented the requirement for disclosing Critical Audit Matters (CAM) in the auditor's
report, request that is applicable for audits for fiscal years ending on or after 30 June 2019 for large accelerated filers, while the rest of the public listed entities shall report these matters for periods ending on or after 15 December 2020 (PCAOB, 2017). CAMs are described in the literature as “matters arising from the audit of financial statements that require to be communicated to the audit committee and refer to auditing accounts or disclosures that are material to the financial statements and involve especially challenging, subjective or complex auditor judgement” (Jermakovicz, et al., 2018). The communication of CAMs under AS 3101 shall relate to accounts or disclosures that are material to the financial statements; and address challenging, subjective, or complex auditor judgement.

It's also worth noting that, under both standards, at least one KAM/CAM is expected to be disclosed; however, there's no imposed limit, and there may be cases where no KAM/CAM was identified; in such cases, the auditor must issue a statement in the audit report to address this aspect (Jermakovicz et al., 2018).

2. Research methodology

The purpose of this literature review is to critically analyse the relevant literature in the field, to identify the key drivers discussed in empirical studies that directly impact the disclosure of the audit matters in the audit report. Accordingly, a structured literature review (SLR) that includes both proceedings and academic articles is proposed.

‘SLR is a method for studying a corpus of scholarly literature, to develop insights, critical reflections, future research paths and research questions’ (Massaro et al., 2016). The approaches to the computation of a theoretical framework and literature analysis have increased in the past period, and the specialised papers adopt more diverse techniques (Cuozzo et al., 2017; Zaheer et al., 2019).

Most of the options that the authors consider are represented by the rapid review, with few implied rules, followed by the narrative review, research synthesis and meta-analysis, and ending with systematic and structured literature reviews, which use a clear and strict set of rules, based on a predefined structure (Massaro et al., 2016), as Figure no. 1 shows.

![Figure no. 1. The literature review continuum](image)

Source: Tommasetti et al., 2020, p.3

Clearly, ‘traditional literature reviews can provide interesting insights based on the researcher’s skills; however, for this study, which requires concrete facts and influencing factors, an SLR is a more suitable option than other listed methods, because it ‘differs from traditional narrative reviews by adopting a replicable, scientific and transparent process, in other words, a detailed technology, that aims to minimize bias through exhaustive literature searches of published and unpublished studies and by providing an audit trail of the reviewers’ decisions, procedures and conclusions’ (Denyer, 2006).

In addition, the structured literature review provides a basis for the author to identify literature gaps and new research territory, by processing a considerable number of scientific papers. At the same time, this is quite a new approach for experienced researchers as well as newer ones, offering a clear guideline and a structured protocol (Massaro et al., 2016).
Cuozzo et al. (2017) performed an SLR on ‘intellectual capital disclosures’. Dumay et. al. (2015) approached the topic of ‘IC and public sector’, Pisano et al. (2017) focus on ‘Corporate disclosure of human capital via LinkedIn and ownership structure’, while Zaheer et al. (2019) provide an SLR about ‘digital entrepreneurship to generate insights into recent developments in the field’. Various research topics are approached using the SLR method because it can be customised for different research areas and has the advantage of guiding the researchers through the analysis with a structured method (Massaro et al., 2016).

The particularity of the SLR is that it ‘is a form of content analysis whereby the unit of analysis is the article, as opposed to words, sentences or paragraphs, as is commonly found in content analysis research’ (Krippendorff, 2013, p. 9).

The framework for developing an SLR is based on ten required steps that guide the author through developing insights and critiques, but also identifying future research paths and questions. These steps not only facilitate and ease readers’ understanding of the overall process but also allow the author to have a logical stream of ideas listed, to avoid the risk of overlapping ideas.

Moreover, ‘the SLR method relies on a review protocol that precisely explains the ideas and choices made by the researchers when conducting the review’ (Tommasetti et al., 2020). Additionally, it facilitates entirely assessing the data, leading towards defined results and offering justifications for the identified literature gaps, meantime creating new exploration paths.

The ten steps of development (Massaro et al., 2016) are:

- writing a literature review protocol;
- defining the questions that the literature review is setting out to answer;
- determining the type of studies and carry out a comprehensive literature search;
- measuring article impact;
- defining an analytical framework;
- establishing literature review reliability;
- testing literature review validity;
- coding data using the developed framework;
- developing insights and critique through analysing the dataset;
- developing future research paths and questions;

All these steps are performed and individually explained in the upcoming sections.

2.1. The literature review protocol

This preliminary stage of the model aims to present the methods used to establish the research territory. The scientific-papers list was generated using the relevant keywords from the Web of Science database that exclusively contains prestigious and well-regarded journals. First, to the authors’ best knowledge, no structured literature review of the factors influencing the key-audit-matters disclosure has been conducted before now.

Moreover, attempting to reduce the information gap and the information asymmetry between the users of the financial statements and the auditors and to improve transparency, increase the quality of the audit and make the audit reports more relevant for users, the International Auditing and Assurance Standards Board (IAASB) adopted International Standard on Auditing (ISA) 701 – ‘Communicating key audit matters in the independent auditor’s report’, which became effective for audits of financial statements for periods ending on or after December 15, 2016. Considering the short time between implementation and the current period, not much has been published. Yet, interest in the topic is increasing contributions to the already existing literature on KAMs.

The authors used a manual coding procedure to structure the data, and software solutions designed for bibliographic data performed the analysis. The particularity of the SLR is that ‘a structured literature review is a form of content analysis whereby the unit of analysis is the article, as opposed to words, sentences or paragraphs, as is commonly found in content analysis research’ (Krippendorff, 2013, p. 9).

Thus, the starting point of this analysis is the broader topic of Key Audit Matters, analysed through a wide search of published research articles and conference-proceedings papers on the topic. The data was segregated based on the paper's title, as the research focused on the factors that influence the number of disclosed KAMs. Hence, studies not addressing these topics were eliminated after the confirming assessment of the abstract.

Then, analytical criteria based on previous SLR studies were applied, namely: location, research method, stock-exchange of the analysed listed companies, the model
used in empirical quantitative studies, applicable disclosure regulation (audit standard) and factors influencing the number of disclosed KAMs. Applying the manual coding procedure structured the data, and both qualitative and quantitative analysis ensued. The quantitative analysis was performed using software solutions VOSviewer and Bibexcel.

Once the articles were properly segregated, the author performed the synthesis of the relevant data, by categorising the findings of each paper and grouping similar results into relevant categories.

2.2. Research questions
As the primary goal of this paper is to identify the factors from the selected literature that influence the number of disclosed key audit matters, thus, the research question targets only quantitative data. The paper sets itself to compute a list of factors validated through statistical sampling or equation modelling. According to Brouwer et al. (2016), by measuring the number of KAMs one can have a better understanding of the company’s risk level as ‘the key audit matters reported by the auditor provide new insights to financial statement users with respect to significant estimates and risks reported in the financial statements.

ISA 701 defines KAMs as ‘those matters that, in the auditor’s professional judgement, were of most significance in the audit of the financial statements. Thus, the auditor should refer to areas at high risk of material misstatement (RMM) or significant risks that ISA 315 (revised) requires the auditor to identify—areas that imply significant management judgement, such as accounting estimates, with a high level of uncertainty, as well as the impact on the audit of significant events/transactions that took place during the audited period (Jermakovicz et al., 2018). The auditor should explain the rationale for selecting the matter and how the audit addresses it. At least one KAM must be disclosed (Jermakovicz et al., 2018).

Based on the paper’s objective, the research question proposed is as follows:

Q1. Which are the factors that influence the number of disclosed of KAMs?

2.3. The literature search
The articles from internationally recognised journals were selected by using keyword queries from the Web of Science database. The keywords used to identify the relevant materials in the field were: KAM/CAM, Key Audit Matters/Critical Audit Matters, number and audit in the following structure: ("kam" OR "cam" OR "key audit matters" OR "critical audit matters") AND ("number of KAM" OR "number" OR "KAM number") AND "audit*").

The search was conducted on 'all files' in order to avoid excluding any paper that might be correlated to the study's purpose, the relevant language was set in English and the categories selected were: business finance, business, management and economics and both articles and proceedings papers were considered. Moreover, no period filters were applied because the requirement for KAMs disclosure began in 2016 in Europe, the only early adopter being the UK. The preliminary result of this research was 34 articles, of which 18 were considered representative for the study, based on an analysis of the abstract. Further on, to add more valuable data in the study, other three articles from prior research were added. Thus, the number of papers considered for additional review is 21. After the analysis of each article, 4 papers were excluded because the results were not completely aligned with this paper’s purpose, thus, the final population is computed of 17 papers.

2.4. Measuring article impact
Multiple methods can be used to assess article impact, such as Google Scholar citations or the computation approaches Citation Index (CI) and Citations Per Year Index (CPY). The extracted database from the Web of Science already contains all citations, two types of indicators: ‘cited reference count’ and ‘times cited, Web of Science all databases’ (Jacso, 2005). This analysis considers the ‘times cited, all databases’ because it contains all citations. The limitations of this step correlate with the newness of the research topic, namely, the segregation criteria for the relevant data should also consider eliminating from the research recently published articles for which ‘there was not sufficient time for the articles to be cited’ (Dumay, 2015). In this circumstance, even though the overall number of citations is not significant, the journals in which the articles were published are relevant and highly ranked. Table no. 1 shows the rating of the top three articles based on the number of citations. Only the top three articles were selected for presentation, due to the fact that the average citation times of the remaining ones is two times.
2.5. Define the analytical framework

To perform a relevant analysis on the database extracted from Web of Science, multiple units of analysis were selected and considered individually or in the aggregate, to provide significant insights and lead towards answers to the research question.

To answer the research question, an in-depth analysis of the content of each article selected was performed. A summary of the findings from each article was computed and the results were crossed-checked, to present the overall findings and compute a list of the factors identified through the sample papers that influence the number of disclosed key audit matters.

Table no. 2 presents the data set for which the author used six criteria to outline the analytical framework. These results of the coding process ‘have constituted the starting point for debating insights and critiques and for outlining possible future research paths’ (Tommasetti et al., 2020).

### Table no. 1. Top articles based on times cited

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<th>Times Cited, All Databases</th>
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<td>Sierra-Garcia et al., 2019</td>
<td>Understanding the determinants of the magnitude of entity-level risk and account-level risk key audit matters: The case of the United Kingdom</td>
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<td>Ferreira and Morais, 2019</td>
<td>Analysis of the relationship between company characteristics and key audit matters disclosed</td>
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<td>Pinto and Morais, 2019</td>
<td>What matters in disclosures of key audit matters: Evidence from Europe</td>
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*Source: Authors’ computation based on Web of Science database*

### Table no. 2. Analytical framework

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An Inquiry of Empirical Quantitative Studies about what Influences the Key Audit Matters’ Number

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E. Applicable disclosure regulation (Audit Standard)

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F. Factors influencing the number of disclosed KAMs

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<td>F4. Measurement uncertainty</td>
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</tr>
<tr>
<td>F5. Existence of directors and officers (D&amp;O) liability insurance at the company</td>
<td>1</td>
</tr>
<tr>
<td>F6. Year of the disclosure</td>
<td>2</td>
</tr>
<tr>
<td>F7. Country of the audited company</td>
<td>1</td>
</tr>
<tr>
<td>F8. Audit Market Structure</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Authors’ computation

2.6. Developing reliability

SLRs are based on the analysis of the content, which is undoubtedly subjective and might raise bias concerns. Multiple procedures and techniques can mitigate this risk and ensure data reliably. This step is significantly relevant for SLR as it is ‘characterized by the objective of carrying out a critical analysis of the existing literature on a specific theme’ (Tommasetti et al., 2020). Multiple alternative measurement techniques are available, such as Cronbach’s α, Bennett et al.’s S’, Scott’s Pi, Fleiss’s K, Cohen’s κ and Krippendorff’s α (K-alpha).

The qualitative research methodologies are very interpretive and, specifically for this reason, ‘there are no standardized methods to ensure rigor across all types of qualitative studies’ (McAlister et al., 2017). According to Blackman and Koval (2000) ‘agreement between multiple rating is indicative of the reliability of a single rating’. The method selected for reliability testing of this SLR is Cohen’s kappa, ‘originally introduced as a chance-corrected measure of agreement between two raters for normal scales’ (Bloch & Helena, 1989).

To assess the level of reliability, ‘it is necessary to imagine SLR as a sort of content analysis, whereby the scientific contribution represents the unit of analysis’ (Tommasetti et al., 2020). To assess reliability, we measured inter-rater reliability for qualitative items, performing a rating process comprising two individual rates. The results were then assessed using an accept-reject method, classifying unsatisfactory papers as ‘0’ and satisfactory papers as ‘1’. Following the computation method for Cohen’s kappa, the results were compressed in a matrix. The coding process returned a result of 82.9%, above the acceptable threshold. The magnitude guidelines suggest that values below zero indicate no agreement, while results between 0.61–0.80 suggest substantial agreement, and between 0.81–1 almost perfect agreement (Bloch & Helena, 1989).

The calculation of Cohen’s kappa was performed in a Microsoft Excel Spreadsheet, and the result raised no reliability concerns.

2.7. Testing literature review validity

This highly relevant step focuses on checking the accuracy of the findings. To generalise the results of the study, all the sample literature was analysed in-depth, to make sure that the papers address the study RQ. The first criterion for accepting or rejecting an article related to the title and the abstract; if no concrete decision was possible, the full content of the article was assessed.

There are three main types of validity: internal validity, ‘concerning the existence of a causal relationship among the claims and evidence’; external validity, ‘aimed at assessing the chance to generalize the findings’; and construct validity, ‘expressing the overall quality of the measures employed’ (White & McBurney, 2012). In this paper, the authors consider all types.

Tommasetti et al. (2020), propose a verification model in which testing internal validity occurred through...
pattern-matching logic that ‘compares the empirically based pattern with a predicted one made before the data was gathered’ (Modell, 2020). As Tommasetti et al. (2020) suggest, the authors selected five random articles and ran a pilot test to identify elements for further analysis.

To verify external validity, previous studies were analysed, to see if they support the claims. Last, construct validity was checked through the article-impact analysis and by considering that the selected articles came only from well-known journals. Table no. 3 summarises the author’s method for testing all three validity types.

Table no. 3. Methodology validity

<table>
<thead>
<tr>
<th>Test</th>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal validity</td>
<td>Pattern-matching logic</td>
<td>Comparing the empirically based pattern with a predicted one made before data was gathered</td>
</tr>
<tr>
<td>External validity</td>
<td>Theory explanation</td>
<td>Taking into account existent literature to understand whether previous studies support the claims</td>
</tr>
<tr>
<td>Construct validity</td>
<td>Total citations</td>
<td>Considering the importance of the selected articles and the relative journals through the citations’ analysis</td>
</tr>
</tbody>
</table>

Source: Tommasetti et al., 2020, p. 10

2.8. Article coding

The author preferred the manual approach to coding because the findings of each paper require knowledge of the field and a deep understanding of the topic, to split the factors into relevant categories. Hence, the author used a Microsoft Excel Spreadsheet to create summary tables of the coding procedure.

3. Results and discussion

To study the sample population and identify literature gaps, an in-depth analysis of each article was conducted based on the criteria employed in the analytical framework. To answer the study RQ, this section presents a meta-analysis of the articles. Splitting the articles into categories occurred using the number of times that the same influencing factors appeared in multiple studies, and pivot tables were created to correlate factors influencing KAMs disclosure.

3.1. Location studied in the literature

The first criterion is Location (A), which includes the following sub-criteria: Asia (A1), Europe (A2), Australia (A3) and South America (A4). The splitting of the studies into clusters revealed that more than half of the studies concern companies located in Europe (47%), the most-studied region, followed by a significant distribution in Asia (35%), and the remaining regions have a total distribution of 18%. The analysis of the location is significantly important, showing the areas of most interest to the researchers and drawing attention to the regions that might require additional research.

Within Europe, the dominating country is by far the United Kingdom, where the audit report has integrated the KAMs paragraph since 2013 (Gambetta, et al., 2019). By far, the least represented locations are Australia (12%) and South America (2%). In Australia, the auditing regulations around Key Audit Matters (KAMs) were fully adopted, as in the majority of the European countries, in 2016 (Kend & Nguyen, 2020), a short time span that would allow the collection of representative data.

However, the justification of the large percentage of papers concerning European companies lies with the ‘progressive spread of value co-creation that starting from the first years of the new millennium and has involved an increasing number of scholars operating within the European continent’ (Tommasetti et al., 2020).

3.2. Research method

Research Method (B) is the second criterion applied in the analytical framework, structured by the following sub-criteria: Statistical sampling (B1), Equation modelling (B2) and Statistical sampling and Interviews (B3). The purpose of analysing the research methods is to gain valuable insights into the most suitable methods that researchers use to draw conclusions regarding the topic of the proposed study and understand the efficiency level of each adopted method.
By far, the most-employed research method (53%) is represented by the equation modelling by performing various sensitivity and regression tests to validate initial hypotheses concerning variables that influence the number of disclosed KAMs in the auditor’s report. The findings are correlated with the author’s expectation in terms of research methods employed, showing a preferred methodology for use in studies concerning KAMs, arguably the most appropriate as the statistics and hypothesis validation offers the most significant insights, especially when being interested in the quantitative analysis regarding Key Audit Matters. They address large sample sizes of listed companies from multiple sectors, audited by various audit companies.

3.3. Stock-exchange of the analysed listed companies

Focusing on the listed companies, the leading stock exchange is the Financial Times Stock Exchange-UK (C1), found in 24% of the articles. The result was quite expected, as the audit report had integrated the KAM paragraph in audit reports since 2013 (Gambetta et al., 2019), offering the researchers the possibility of extending the research period. The researcher implemented this category to obtain an overview of the most studied countries and a general understanding of relevant sources for the sample-size collection, constituting a possible future research base in the numerous countries that require more focus.

The second stock-exchanges in terms of occurrences are represented by the stock exchange of Thailand and Australian Securities Exchange, having both, individually a share of 12% out of the total sample. The remaining sub-criteria from the analytical framework concerning this section, have an equal individual distribution of 6%. The last category, namely C11, that incorporated papers that perform studies over an extended sample gathering data from multiple countries, such as Turkey, Poland, Romania, Czech Republic, The Netherlands, Germany and United Kingdom.

3.4. Model used in empirical quantitative studies

The model used in empirical studies is the fourth criterion employed for this SLR, with the purpose of understanding which types of regressions researchers use most frequently in studies. Almost half of the sample was categorized under the D6 category as they do fall under the equation modelling research method category. The most employed method, in about 18% of the articles, was the cross-sectional regression, meaning that the authors rather focused on studying more variables, than their evolution in time. The remaining listed models were used in a proportion of between one and two studies.

3.5. Applicable disclosure regulation (Audit Standard)

As far as the applicable disclosure regulation is concerned, two sub-criteria were used, namely Critical Audit Matters – CAM (US) – PCAOB (E1) and Key Audit Matters – KAM (Europe) – IAASB (E2). As expected, and also in line with the location criteria (A) used in the analytical framework, all studies focused on the standard ISA 701, and no study based on A 3101. The results are quite expected, as PCAOB implemented the requirement for disclosing Critical Audit Matters (CAM) in the auditor’s report, request that is applicable for audits for fiscal years ending on or after 30 June 2019 for large accelerated filers, while the rest of the public listed entities shall report these matters for periods ending on or after 15 December 2020 (PCAOB, 2017).

3.6. Factors influencing the number of disclosed KAMs

The sixth criterion used in this SLR is Factors influencing the number of disclosed KAMs (F), to address the study research question. Most of the studies variables, particularly 47% concerning KAMs’ number are related to auditor and client general characteristics and accounting aspects (F2), a subsection that covers multiple factors revealed below in Table no. 4.

Referring to the level of regulation and supervision of the entity, Pinto & Morais (2019) started with the assumption that some industries might be more difficult to audit than others, mentioning that because of the banks’ greater complexity, opacity, and agency conflicts, auditors can issue more KAMs than for other corporations, an idea also emphasised by Kend & Nguyen (2020). Thus, for the study’s purpose, the sample population was split between the financial institutions and others. Despite the initial assumption, the study’s results revealed that auditors disclose fewer KAMs for financial institutions mainly due to the fact that ‘the industry is very well regulated’ and particularly due to this increased supervision auditors find fewer areas of risk (Pinto & Morais, 2019).
Table no. 4. Auditor and client general and accounting characteristics that influence KAMs’ number

<table>
<thead>
<tr>
<th>Description of the characteristic</th>
<th>Auditor’s characteristics</th>
<th>Client’s characteristics</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of regulation and supervision of the entity</td>
<td>x</td>
<td></td>
<td>(Pinto &amp; Morais, 2019)</td>
</tr>
<tr>
<td>Firms’ number of segments complexity</td>
<td>x</td>
<td></td>
<td>(Pinto &amp; Morais, 2019)</td>
</tr>
<tr>
<td>Firms’ risk</td>
<td>x</td>
<td></td>
<td>(Pinto &amp; Morais, 2019)</td>
</tr>
<tr>
<td>Industry of the client</td>
<td>x</td>
<td></td>
<td>(Kend &amp; Nguyen, 2020)</td>
</tr>
<tr>
<td>The precision of an accounting standard (more rule-based)</td>
<td>x</td>
<td></td>
<td>(Pinto &amp; Morais, 2019)</td>
</tr>
<tr>
<td>Type of the Audit Company (Big 4/Non-Big 4)</td>
<td>x</td>
<td></td>
<td>(Kend &amp; Nguyen, 2020)</td>
</tr>
<tr>
<td>Audit fees</td>
<td>x</td>
<td></td>
<td>(Pinto &amp; Morais, 2019)</td>
</tr>
<tr>
<td>Auditor’s opinion</td>
<td>x</td>
<td></td>
<td>(Ferreira &amp; Morais, 2020)</td>
</tr>
<tr>
<td>Going Concern issues</td>
<td>x</td>
<td></td>
<td>(Ferreira &amp; Morais, 2020)</td>
</tr>
<tr>
<td>Profitability of the company</td>
<td>x</td>
<td></td>
<td>(Ferreira &amp; Morais, 2020)</td>
</tr>
<tr>
<td>Level of indebtedness</td>
<td>x</td>
<td></td>
<td>(Ferreira &amp; Morais, 2020)</td>
</tr>
</tbody>
</table>

Source: Authors’ projection

In line with the prior ideas discussed, both Ferreira & Morais (2020) and Pinto & Morais, (2019) concluded that the number of business segments, or in other words the level of a company’s complexity, increases the probability of disclosing a higher number of KAMs. Directly correlated with the complexity of the business is also the firm’s risk, as Pinto & Morais (2019) argue: ‘in more complex firms, there are more areas of risk that lead to an increase in the number of disclosed KAMs’. However, the study’s results demonstrated that the correlation between the audited company’s risk and the number of disclosed KAMs is only ‘marginally positive when using the number of segments as a proxy for complexity and risk’.

As priory discussed, the industry of the audited company plays a significant role when referring to variables that influence the KAMs’ number, because auditing some industries is more challenging than auditing others, a fact also highlighted by Rahaman & Chand (2021) mentioning that ‘number of KAMs and their extent of the disclosure generally varies within industries’. According to Kend & Nguyen (2020), the highest average in terms of the number of KAMs disclosed belongs to the banking sector, telecommunication services, insurance and Consumer Services.

Moving on to the auditor’s characteristics, Kend & Nguyen (2020) findings are consistent with Sierra-Garcia, et al. (2019) research as both studies spotted that PwC disclosed the highest number of KAMs in audit reports in both of the studied countries, namely, Australia and the United Kingdom. Abdullatif & Al-Rahahleh (2020) also concluded that Big Four audit firms also tend to report more KAMs than the non-Big Four companies, an idea that is also emphasised by Ferreira & Morais (2020). Moreover, Wuttichindanon & Issarawornrawanich (2020) also supports these results, stating that ‘firms audited by a Big Four audit firm are likely to have a larger number of
KAMs’. These findings can be justified by the fact that the audit procedures performed by Big Four entities are of a higher quality due to their investment in financial and human resources, access to cutting-edge technology which gives the auditors the ability to invest in their auditing procedures (Ferreira & Morais, 2020).

Moreover, Woudenberg et al. (2021) also gathered statistical evidence that the average number of communicated KAMs is higher in most of the analysed years in case of an audit conducted by a Big Four company, however, the model did not provide clear results, due to the compact audit market structure from the Netherlands. Suttipun (2021) proposed a model correlating both the audit company time and the audit fees with the number of KAMs and obtained a positive correlation, a result that is in a partial opposition with the findings presented by Sierra-Garcia, et al. (2019) who stated that ‘audit fee is not significant, and therefore is not related to the number of KAM identified by the auditors.

Regarding the audit fees, Pinto & Morais (2019) concluded that ‘that the higher the audit fees the greater the number of KAMs received by the firms’; these results could be explained by the fact that the audit fees are ‘positively related with the company’s specific financial, strategic, and operational risks’ (Yang et al., 2018). Moreover, as Pinto & Morais (2019) explained, audit fees are higher when the client’s risk and complexity are higher, an idea also in line with prior studies conducted by Hogan & Wilkins (2008) revealing that audit fees are much higher for organizations with significant internal control deficiencies.

As far as the auditor’s opinion is concerned, a modified opinion ‘shows a negative relationship with the number of KAMs’ (Ferreira & Morais, 2020). However, the same study did emphasise a correlation, suggesting that ‘the audit reports of more complex companies, those audited by a Big Four, and those that present unmodified opinions in these reports include a greater number of KAMs’ (Ferreira & Morais, 2020).

Finally, as far as the variables, going concern issues, the profitability of the company and level of indebtedness are concerned, no statistically significant results were identified by the study conducted by Ferreira & Morais (2020), however, we mentioned them in this paper, as they have an underlying theoretical substance, and could be considered for further research.

Further on, the paper will proceed with the remaining sub-criterion from the analytical framework. In terms of additional factors that influence the number of disclosed KAMs, 12% of the sample also specified the year of the disclosure of these matters (F7). Both studies analysed, on two different samples, one containing companies from France and the other one from Germany concluded that there were no significant variations in terms of KAM’s number communicated from one period to another (Warzocha & Bujak, 2020; Warzocha and Bujak, 2019). However, the study is focused on identifying factors that might also be relevant for further investigation.

Another sub-criterion proposed in the analytical framework that also has a distribution of 12% in the study’s sample is the audit committee characteristics (F1). Abu & Jaffar (2020) analysed three variables namely, effectiveness, independency and financial expertise. The findings revealed that ‘frequent audit committee meetings reduced the number of KAMs’ (Abu & Jaffar, 2020). However, as for the rest of the studied factors, the results show that ‘audit committee independence and financial expertise do not have significance in reducing the number of KAMs’ (Abu & Jaffar, 2020). Similarly, Warzocha & Bujak (2020) concluded ‘that the financial expertise of audit committee members could influence external auditor’s judgment on KAM disclosure’, however, no significant correlation that would indicate a positive relationship between the number of audit committee meetings and audit committee financial expertise was identified, the topic is still open for further investigation.

The rest of the factors detailed in the analytical framework have an equal individual distribution of 6%. As far as the gender of the audit partner (F3) is concerned, Abdelfattah, et al. (2020) mentioned that ‘female audit partners are more likely than male audit partners to disclose more KAMs with more details after controlling for both client and audit firm attributes. These findings could be justified by the women’s increased sensitivity in terms of risks and also their risk-averse profile (Abdelfattah, et al., 2020). Moreover, prior studies revealed that ‘female auditors detect more possible material misstatements’ (Breesch & Branson, 2009) also they are more inclined to issue a going-concern opinion (Hardies et al., 2016).

Further on, the measurement uncertainty (F4) topic will be assessed, which refers to ‘uncertainty that arises when monetary amounts in financial reports cannot be observed directly and must instead be estimated’ (IAASB, 2018). Lau, 2020 argues that ‘measurement uncertainty is the
major determinant of auditors reporting KAMs related to accounting estimates and impairment of assets. The study’s results conveyed that measurement uncertainty influences the number of disclosed KAMs concerning accounting estimates, as ‘fair value estimation represents only a small proportion, while impairment review and loss estimation make up the major portion of the total KAMs related to accounting estimates’ (Lau, 2020).

Regarding the existence of directors and officers (D&O) liability insurance at the company (F5) Lin, et al. (2020) demonstrate that ‘managerial legal liability coverage is a determinant of the number of KAMs in the audit report’. Thus ‘the number of KAMs is higher at a company that purchases D&O liability insurance and for which the insurance coverage is relatively large, which in turn leads to an increase in the number of KAMs reported’ (Lin et al., 2020).

From a geographical standpoint, the audited company’s country (F7) may also be related to the KAMs disclosure. According to Ciger et al. (2019), some CEE countries, such as Poland, Romania, and Turkey, have up to six KAM subheadings reported. The study conveyed, that the Czech Republic is ‘the only country in which all auditor reports include a KAMs section’, whereas ‘Romania has the highest percentage of audit reports that do not include a KAMs section’. Finally, the audit market structure (F8) is in close correlation with the prior discussed topic. The study performed by Gambetta et al. (2019) comparing audit reports of companies from Spain and the United Kingdom, that have a similar audit market structure revealed that the differences noted in the number of KAM are not relevant. However, this factor (F6) could be considered for further research when assessing countries with a different audit market structure as it has the potential to influence the KAMs number.

Conclusions

The latest significant change in the structure of the audit report, imposed by ISA 701 raised various debates regarding not only the utility of disclosing Key Audit Matters but also opinions on the matters disclosed, their relevance and whether they decrease the information gap between the users of the financial statements and the auditors. It is therefore relevant for all the users of the audit report to obtain a better understanding of these matters, as their role cannot be undermined in a decision-making process. Hence, the study focused on providing a set of variables gathered from quantitative empirical studies that influence the number of disclosed KAMs.

It is indeed, however, quite a subjective decision, ‘reporting more or less KAM of a certain type could be viewed as the auditor being more or less specific in this area’ by deciding to break particular risks down and disclose them separately. By understanding the factors that influence the number of disclosed KAMs, one can have a better understanding of the company’s risk level as ‘the key audit matters reported by the auditor provide new insights to financial statement users with respect to significant estimates and risks reported in the financial statements’ (Brouwer et al., 2016).

Our study reveals to a certain extent that the KAM’s number is mostly influenced by particular client and auditor’s general characteristics such as the level of regulation and supervision of the entity, its complexity in terms of business segments and the industry that the entity operates. These aspects are closely linked to the overall risk of a client, not only because some industries are more prone to particular risks such as the financial sector, but also because there are more areas of risk in more complex organizations, which leads to an increase in the number of communicated KAMs (Pinto & Morais, 2019; Kend & Nguyen, 2020).

Another highly debated topic is whether the type of audit company, namely Big Four or Non-Big Four, has relevant importance in terms of KAM’s number. Our literature review shows that entities audited by a Big Four audit company are likely to have a larger number of KAMs, perhaps also due to the fact that audit procedures performed by Big Four entities are of a higher quality due to their investment in financial and human resources (Ferreira & Morais, 2020). Also, positive correlations between audit fees and the number of communicated KAMs were identified within the review papers, as the audit fee is correlated with the business complexity, but also with possible deficiencies in internal controls (Hogan & Wilkins, 2008; Pinto & Morais, 2019).

Nevertheless, the study also analysed research papers addressing various audit committee characteristics, out of which only one, namely the frequency of the audit committee meetings is correlated with a reduction of KAMs’ number. In addition, it was noticed that measurement uncertainty influences the number of disclosed KAMs concerning accounting estimates. Another factor that was correlated with an increase in the number of reported KAMs is the gender of the audit
partner, as according to Abdelfattah et al. (2020), ‘female audit partners are more likely than male audit partners to disclose more KAMs’.

The limitations of this research refer mainly to the limited literature due to time frame considerations as the Key Audit Matters disclosure (ISA 701) became mandatory in most of the countries starting with 2017. Also, the subjectivity level of the authors could influence the reached results, hence, other researchers having the same data available may reach slightly different interpretations.

In short, this paper contributes with this inquiry into the KAM’s number to the existing audit literature and opens up an additional line of research in respect to new factors that could be further studied. Future research paths target a continuation of the research using an econometric model based on this literature review on a large sample of European companies to validate the factors identified on a larger scale.

REFERENCES


Comparative Study of Sustainability Reporting on the Banking Industry in Several Countries

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Abstract

Levels of credit risk or credit quality, which can be measured by the ratio of non-performing loans (NPL), can be seen as a form of representation in companies, particularly in the banking sector. The purpose of this study is to determine the impact of Sustainability Report disclosure, specifically in each dimension of economic, environmental, and social disclosure, on the credit risk level of each banking company in Indonesia, Singapore, and Malaysia, as measured by the NPL ratio. The effect of Sustainability Reporting disclosure on NPL is consistent with the use of stakeholder, legitimacy, and signalling theories, where the three theories are related and explain to each other that a company does not only function for its own benefit, but also for other stakeholders. This study collected 129 samples from banking sector companies in Indonesia, Singapore, and Malaysia over a three-year period, from 2018 to 2020, using the purposive sampling method. Multiple linear regression was also utilized to evaluate and determine the impact of each component of the Sustainability Report disclosure on the NPL ratio, as well as other control variables. According to the study’s findings, the overall disclosure of the Sustainability Report has a significant influence on the NPL ratio in Indonesian and Singaporean banking sector companies, but not in Malaysian companies. Although partially, economic disclosure has a negative and significant impact on NPL in Singapore, whereas environmental disclosure only has an impact on the NPL ratio in Malaysia, and the final factor is the impact of social disclosure, which has a negative and significant impact on NPL in Indonesia.

Key Words: banking; sustainability report; economic disclosure; environmental disclosure; social disclosure; non-performing loan

JEL Classification: G21, G32, Q50

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1. Introduction

Sustainability reporting, or a report that refers to the World Commission on Environmental Development's (WCED) formulation of sustainable development in 1987, supports the Sustainable Development Goals, which aim to maintain a sustainable increase in the community's economic welfare, the sustainability of community social life, environmental quality, and inclusive development and implementation of governance that is capable of achieving these goals.

According to the three bottom line (TBL) principle, companies should prioritize the interests of stakeholders (all parties participating in and having an impact on the company's activities) over the interests of shareholders (shareholders). Profit (profit), community sustainability (people), and environmental sustainability (the planet) are the three categories of stakeholder interests. The development of a country, which is a by product of sustainable development, is not solely the responsibility of the government; every individual human being, including the corporate world, must play an active role in achieving social welfare and improving the quality of life in the community.

Investors began to pay attention to the company's non-financial performance as they understood that the company's profitability was insufficient to predict long-term success. The Sustainability Report can be used by investors as a tool for monitoring and controlling firm performance, as well as a decision-making tool. Other factors, such as environmental and social considerations disclosed in the Sustainability Report, will help increase company transparency, strengthen risk management, and improve communication with stakeholders by reviewing factors beyond economic, strategic, and operational considerations.

Companies that are less transparent, companies that consider Sustainability Reports to add additional operational costs, and the lack of regulations that require or only require companies to issue Sustainability Reports are some of the factors that continue to make companies reluctant to make Sustainability Reports (Kim and Todorovic, 2013; Thornton, 2013). Several other countries, including China, Denmark, South Africa, and Malaysia, have made it mandatory for all enterprises, both state-owned and public, to provide a Sustainability Report, including construction firms (Deegan, 2013; Iqbal, 2019; Istianingsih et al., 2020; Kim and Todorovic, 2013).

The banking industry has a significantly smaller direct environmental effect than other businesses or sectors, hence that reason can be used as an exemption in the publication of Sustainability Reports for the banking sector and financial firms (Archer, 2003). This might be contested, however, because the banking sector can be perceived as facilitating industrial operations that harm the environment. Ordinary people would find it easier to envision the outline of CSR initiatives undertaken by sectors such as mining or manufacturing to decrease the impact of their operational activities on the environment and neighboring communities.

According to Bouma, J. et al. (2017), the banking sector is reluctant to examine the social and environmental implications of its performance. The banking and financial sectors have gradually realized that their operational operations are impacted and influenced by the environment. Following the global economic crisis in 2008, some banks were able to survive and continue to thrive, while others failed (Mehran et al., 2012). Banks that operate in a sustainable way and focus on social, environmental, and governance issues are more likely to survive and develop. As a result, in order to exist, the banking industry must pay attention to financial performance as well as environmental and social considerations (Alston et al., 2005). Branco and Rodrigues (2006) claim that there has been little attention paid to Corporate Sustainability Reporting in the banking and financial services sector, concluding that the publication of Sustainability Reports will have a beneficial influence on the banking industry. Returning to the author’s description of TBL, TBL is a critical benchmark in achieving sustainable objectives, and TBL is now in high demand in a number of corporations, including for-profit and non-profit organizations, as well as government agencies.

TBL is used in Sustainability Reports to assess the impact on financial performance. Profitability ratios can be used to measure and evaluate a company's financial performance. In the banking industry, the risk profile of the bank in question can be used to assess the company's profitability. The risk profile can also be represented by the bank's level of credit risk or non-performing loans. Non-performing loans (NPL) are one of the indicators used to assess credit risk in banking, with the proportion of NPL indicating the credit quality of the connected bank's loan portfolio. Investors and creditors can analyze the soundness of a banking organization in compliance with applicable legislation based on PERATURAN OTORITAS.
JASA KEUANGAN NOMOR 15/POJK.03/2017 by utilizing NPL as a reference for assessing research. According to Wu and Shen's (2013) research, there is a link between CSR and NPL, with banks that publish CSR in their Sustainability Report being more profitable and having fewer NPLs.

The environmental dimension, which is an important factor for companies to show the existence or participation of companies in dealing with environmental problems as a form of responsibility to the environment in which they conduct operational activities, has a relatively attractive influence on the performance of a company. By exposing the environmental dimension in the Sustainability Report, the firm may also demonstrate that its actions have the consent of the community and ensure that the company's operational operations continue to operate, resulting in increased revenues (Nofianto and Agustina, 2014; Tarigan and Semuel, 2014; Rosyid, 2015). According to Rosyid (2015), the disclosure of the social component can offer true information that the company's production operations do not just focus on the profitability aspect but also on environmental and social problems, therefore increasing the confidence of the stakeholders concerned. Furthermore, it influences the company's image, attracting public attention and sympathy to be more loyal and enjoy the items made by connected firms, which is intended to increase the company's financial performance. The theory that underpins this research is directly tied to the Sustainability Report disclosure on its effect on the NPL ratio. It is a theory that states that a firm must prioritize variables and repercussions on other stakeholders, followed by the level of trust and public appraisal of the company's existence, in addition to profit. By releasing a Sustainability Report, the company will indirectly open up transparency regarding company information that not only explains the financial benefits but also disclosures about the economic, environmental, and social dimensions, which will improve the financial performance of banking companies as measured by the NPL ratio.

This research paper is divided into several sections: Introduction, Literature review and hypothesis development, Research methods, Results and discussion and conclusion. The core background of the research problems conducted on the three bottom line concepts and their relationship to non-performing loans is explained in the Introduction section. The literature review section follows, explaining the basic concept theory used in this study as well as several other literature-based explanations for the variables used.

2. Literature review and hypothesis development

2.1 Literature review

2.1.1. Three bottom lines

The TBL concept, proposed by John Elkington (1997), focuses on three critical aspects of a company's performance: profit, people, and planet. According to James (2015), the use of the TBL concept has an impact on the organization's or company's performance and reputation. As a result, competitive advantages are based on innovative and socially responsible green products, according to an organization (Luo and Bhattacharya, 2006). The company's form of social responsibility will have an interaction effect between consumers and companies and can build consumer support for the company's or related organizations' sustainability (Choi and Ng, 2011).

2.1.2. Sustainability reports in the banking industry

Financial institutions, notably the banking industry, play a vital role in driving long-term development. According to Weber (2014), this can be demonstrated by various factors, the first of which is that the financial or banking sector has significant influence over access to funds, which has a large impact on the lending industry. Second, the opinions and judgments of stakeholders might have an impact on a company's reputation in the financial or banking sector. The third factor is the impact of global warming, which will have an indirect impact on financial institutions' ability to respond to sustainability issues. Based on some of these presentations, banking sector organizations can design mechanisms to promote transparency in the future, not only for investors and stakeholders, but also on a larger scale.

2.1.3. Financial performance

Evaluating a company's financial performance can be seen through the percentage of NPL, which shows an indicator of credit risk. With the NPL ratio, investors or customers can see a comparison of the total NPLs to the total loans that have been disbursed. So it can be concluded that the level of NPL is inversely proportional to the level of credit risk of the related bank. As a result, the performance of banking firms that release CSR or Sustainability Reports can improve the reputation of bank
companies since they can identify and attract more creditworthy borrowers, which can have an influence on growing income and asset quality in the company. The ratio of return on assets (ROA), which will be employed as a control variable in this study, can be used to quantify corporate profitability through the rate of return on assets.

According to Peraturan Otoritas Jasa Keuangan Nomor 15/POJK.03/2017 Tentang Penetapan Status dan Tindak Lanjut Pengawasan Bank Umum, a bank's NPL limit that is regarded to have the potential to harm the company's viability is 5% of total credit or financing. The level of credit risk allows stakeholders to transparently examine the financial performance of their preferred bank, allowing important comparisons to be made when making decisions.

The following formula can be used to compute NPL:

\[
NPL = \frac{\text{Non performing loan}}{\text{Credit in Total}} \times 100
\]

2.1.4. Stakeholder theory

Other than the shareholders, several parties are described in stakeholder theory as being responsible for the company or organization (Freeman et al., 2010). Stakeholders, as defined, are groups or individuals that have the ability to influence and are influenced by the process of achieving company or organizational goals (Freeman et al., 2010). Stakeholders can control or influence the use of economic resources used for the company's operational activities. According to stakeholder theory, a corporation must not only function for the advantage of its own company but also for the benefit of other stakeholders such as shareholders, creditors, consumers, suppliers, the government, society, and other parties. As a result, the support of stakeholders for a company has a strong influence on its existence or nonexistence (Ghozali and Charir, 2007). According to Freeman and McVea (2001), organizations must not only function for their own gain but also deliver mutual advantages to their stakeholders. Stakeholder Theory is also consistent with Legitimacy Theory, which emphasizes that businesses must continue to strive to ensure that their operational activities are within the framework and norms that exist in the community or environment in which the company is located, and that their activities are accepted by the parties (Deegan, 2010).

2.1.5. Legitimacy theory

In carrying out its operational business procedures, it is evident that the corporation is an inseparable element of societal consumption and assessment. The interaction between companies and social or environmental actions is referred to as the legitimacy theory (Vitolla and Rubino, 2017). As a result, the public has high expectations of the firm to act responsibly in light of the environmental damage produced by its business operations. Legitimacy theory emphasizes that companies must continue to carry out their operational activities within the framework and norms that exist in society or the environment (Deegan, 2013). When an organization or company contributes socially, its existence and activities will be recognized by the community and the surrounding environment. The legitimacy gap occurs when there is a disparity between corporate values and social ideals, which has an impact on the firm's ability to continue doing business and identify the members of the public who have the capacity to grant legitimacy to the organization.

2.1.6. Signalling theory

Signalling theory explains how businesses compensate for information asymmetry on both sides (Wardhani, 2019). Signalling theory, according to Retno and Priantinah (2012), encourages companies to provide information to external parties, both financial and non-financial. This theory is a good strategy for companies to create a competitive advantage by providing information to stakeholders. In this context, the company will send a signal to stakeholders by publishing a Sustainability Report, which will help them make better decisions. This might lead to improved financial success for the organization (Levy and Lazarovich-Porat, 1995).

2.2. Hypothesis development

2.2.1. The impact of economic disclosure on the sustainability report on financial performance (NPL)

In order to compare the financial performance provided in the company's financial statements, disclosure of the economic dimension in the Sustainability Report is thought to offer considerably more transparent information. Companies disclose information on economic sustainability, which refers to the company's responsibility to generate profits in order to maintain its capabilities as a company. The information in the Economic Dimension of the Sustainability Report can assist stakeholders in putting their trust in more competitive capital resources with a
lower level of risk. The company's financial performance will be improved by the trust of investors and creditors, which will increase the company's sources of funding.

According to research conducted by Razafindrambinina and Grace (2021), CSR had an insignificant effect on NPLs in the ASEAN banking sector. Based on Simpson and Kohers (2002) and Wu and Shen (2013), CSR has a negative impact on NPLs since the lower a company's NPL ratio, the better its financial performance. As a result, CSR and NPL have inversely or negatively proportional values or equations. According to Razafindrambinina and Grace (2021), CSR disclosure by banks can raise the company's creditworthiness, which is preferable to reduce the amount of the NPL ratio. As a result, the author wishes to learn more about the impact of the economic dimension disclosure in the Sustainability Report on the performance of banking organizations as measured by the degree of credit risk (NPL).

Based on some of the descriptions, the following theory can be developed:

\[ H1: \text{Economic Disclosure in the Sustainability Report has a negative impact on financial performance (NPL) in the Indonesian, Singaporean, and Malaysian banking sectors.} \]

\[ \text{2.2.1. The impact of environmental disclosure on the sustainability report on financial performance (NPL)} \]

Ernst & Young company (2013) conducted a study that found that disclosing the environmental factor has a favourable effect or relationship on corporate value. It is consistent with Ernst & Young's (2013) study on economic and environmental sustainability that disclosing information about the company’s actions to the surrounding environment may assist in raising the company’s reputation and stakeholder confidence, hence improving the company’s financial performance. Some SGD points that can be reported in Sustainability Reporting through the economic dimension include a type of action to safeguard natural resources in the environment so that they can be used efficiently for the benefit of the present and future. The act of utilizing natural resources has an impact on the company’s financial performance, which is supported by the findings of Ngwakwe’s (2009) research, which demonstrated that there is a significant relationship between the disclosure of the environmental dimension in Sustainability Reporting and a company's financial performance.

According to the findings of Tarigan and Semuel (2014), the economic dimension of Sustainability Reporting has no influence on financial performance, but the environmental and social elements of Sustainability Reporting do. Citing the explanation and purpose for selecting financial performance measurement ratios through the NPL ratio, the authors intend to learn more about the impact of environmental dimension disclosure in the Sustainability Report on the performance of banking companies as measured by the level of credit risk (NPL).

Based on these explanations, the following hypothesis can be developed:

\[ H2: \text{Environmental Disclosure in the Sustainability Report has a negative impact on financial performance (NPL) in the Indonesian, Singaporean, and Malaysian banking sectors.} \]

\[ \text{2.2.3. The impact of social disclosure on the sustainability report on financial performance (NPL)} \]

Companies that demonstrate social responsibility to stakeholders can not only boost the company's share price but can also improve employee welfare, which will undoubtedly affect employee loyalty, allowing them to support the company’s productivity and performance (Ernst & Young, 2013). The social dimension disclosed in the Sustainability Report is related to the influence of the company's operations on the community and takes the form of an explanation of the risks associated with contact with other social institutions. According to Ghozali and Chari (2007), firms will always be constrained by a social contract with the community, in which a company’s survival and expansion are dependent on the acceptance from the community. According to the research results of Sejati and Prastiwi (2015), the disclosure of social dimensions affects the perception of stakeholders regarding the company's treatment of its human resources around them. Companies need quality resources to manage company assets so that they can generate maximum profits for the company.

Referring to the explanation of how the financial performance of this study was measured using the non-performing loan (NPL) ratio, the author would like to know the impact of the social dimension disclosure in the Sustainability Report on the financial performance of banks as seen through their credit risk.
The following are the outcomes of the hypothesis formation based on some of the descriptions above:

H3: Social Disclosure in the Sustainability Report has a negative impact on financial performance (NPL) in the Indonesian, Singaporean, and Malaysian banking sectors.

3. Research methods

3.1. Data collection

We applied in our study secondary data types acquired from the Indonesia Stock Exchange, Singapore Stock Exchange, and Malaysia Stock Exchange. The data utilized includes annual reports and Sustainability Reports from each of the banking sector corporations in Indonesia, Singapore, and Malaysia that were released between 2018 and 2020. The data gathering technique employed in this study is purposive sampling, with the following company criteria used as a data source:

2. Companies in the banking sector that submit annual reports and Sustainability Reports, as well as financial report data required for study between 2018 and 2020 are eligible.

3.2. Data analysis

In this study, descriptive statistical analysis and multiple linear regression were utilized to evaluate the hypothesis. We employed Stata 16 to conduct data analysis. The results of the classical assumption test, which include the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test, were not obtained when Stata 16 was used as a data tool for multiple linear regression analysis, because all of the interpretation results of the classical assumption test can be concluded directly and thoroughly using the results of multiple linear regression as described above and listed in Table no. 2.

This study’s multiple linear regression equation is:

\[ Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \]

where Y is a non-performing loan (NPL); \(\alpha\) is constant; \(\beta_1, \beta_2, \beta_3, \beta_4\) are regression coefficients; \(X_1\) is economic disclosure; \(X_2\) is environmental disclosure; \(X_3\) is social disclosure; \(X_4\) is ROA.

4. Results and discussion

Table no. 1. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>NPL</td>
<td>78</td>
<td>0.0164013</td>
<td>0.0125625</td>
<td>0.0043</td>
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<td>1</td>
</tr>
<tr>
<td>EN Disclosure</td>
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<td>0.1982229</td>
<td>0.1176471</td>
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<tr>
<td>SOS Disclosure</td>
<td>78</td>
<td>0.6741453</td>
<td>0.1661916</td>
<td>0.3333333</td>
<td>0.9792</td>
</tr>
<tr>
<td>ROA</td>
<td>78</td>
<td>0.0142872</td>
<td>0.0129793</td>
<td>-0.0461</td>
<td>0.0368</td>
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<tr>
<td>Singapore</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPL</td>
<td>24</td>
<td>0.0171333</td>
<td>0.0104908</td>
<td>0.0016</td>
<td>0.04</td>
</tr>
<tr>
<td>EC Disclosure</td>
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<td>0.0375369</td>
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<tr>
<td>ROA</td>
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<td>0.003982</td>
<td>0.001</td>
<td>0.016</td>
</tr>
<tr>
<td>Malaysia</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPL</td>
<td>27</td>
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<td>0.0114511</td>
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<td>0.036</td>
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<tr>
<td>EN Disclosure</td>
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<td>0.1486341</td>
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<td>0.88235</td>
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<td>SOS Disclosure</td>
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<td>0.8101852</td>
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<td>0.5416667</td>
<td>0.95833</td>
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<tr>
<td>ROA</td>
<td>27</td>
<td>0.0307447</td>
<td>0.0320221</td>
<td>0.002</td>
<td>0.10601</td>
</tr>
</tbody>
</table>

Source: The authors’ calculation
Based on Table no. 1, it can be observed that the mean of the dependent variable (NPL) and the independent variables (EC Index, EN Index, and SOS Index) is larger than the standard deviation of each variable in each country, implying that the data is normally distributed. Furthermore, it can be noted that the minimum value of NPL in Malaysia is the lowest at -0.101, while the greatest maximum value of NPL in the 3 countries is 0.0497 in Indonesia. The combined minimum value of the three countries for the independent variable economic disclosure is 0.444 in Malaysia, and the maximum value in all three countries tends to be the same, which is 1. In terms of the independent variable environmental disclosure, the combined minimum value is in Indonesia with a value of 0.1176 and the maximum value is also in Indonesia with a value of 1. For the final independent variable, social disclosure, the combined minimum value between the three countries is 0.3333 in Indonesia, with a combined maximum value of 0.9792 in Indonesia and Singapore.

### Table no. 2. Multiple Regression Analysis

<table>
<thead>
<tr>
<th>NPL</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indonesia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC Disclosure</td>
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<td>0.88</td>
<td>0.381</td>
<td>-0.136731 0.0353636</td>
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<tr>
<td>EN Disclosure</td>
<td>0.0112133</td>
<td>0.006826</td>
<td>1.64</td>
<td>0.105</td>
<td>-0.002391 0.248176</td>
</tr>
<tr>
<td>SOS Disclosure</td>
<td>-0.0237354</td>
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<td>0.012</td>
<td>-0.0420377 -0.004533</td>
</tr>
<tr>
<td>ROA</td>
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<td>0.000</td>
<td>-0.8047878 -0.4713076</td>
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<tr>
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<td>0.0086242</td>
<td>3.12</td>
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<td>0.0097147 0.0440907</td>
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<thead>
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<th>Source</th>
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<th>df</th>
<th>MS</th>
<th>Number of obs = 78</th>
</tr>
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<tbody>
<tr>
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<td>4</td>
<td>0.001564976</td>
<td>F(4, 73) = 19.39</td>
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<tr>
<td>Residual</td>
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<td>73</td>
<td>0.000080712</td>
<td>Prob &gt; F = 0.0000</td>
</tr>
<tr>
<td>Total</td>
<td>0.01215189</td>
<td>77</td>
<td>0.000157817</td>
<td>R-squared = 0.5151</td>
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</table>

<table>
<thead>
<tr>
<th>NPL</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Singapore</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC Disclosure</td>
<td>-0.1388114</td>
<td>0.061956</td>
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<td>0.037</td>
<td>-0.2684868 -0.09136</td>
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<tr>
<td>EN Disclosure</td>
<td>0.0308343</td>
<td>0.0366282</td>
<td>0.84</td>
<td>0.410</td>
<td>-0.0458293 0.1074979</td>
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<tr>
<td>SOS Disclosure</td>
<td>0.0483781</td>
<td>0.0425302</td>
<td>1.14</td>
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<tr>
<td>ROA</td>
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<td>0.0055997</td>
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<tr>
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<td>0.00110057</td>
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<table>
<thead>
<tr>
<th>NPL</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Malaysia</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>EC Disclosure</td>
<td>0.0300535</td>
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<td>0.0025906 0.1158275</td>
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<td>Total</td>
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<td>26</td>
<td>0.000131128</td>
<td>R-squared = 0.5243</td>
</tr>
</tbody>
</table>

Source: The authors’ calculation
The results of the Multiple Linear Regression analysis with the determination of Alpha 0.05 may be derived from Table no. 2. The first result shows that there is a Prob > F of 0 in Indonesia, which means it is less than Alpha 0.05, implying that the distributed data has a significant influence on the disclosure of Sustainability Reports (economic, environmental, and social disclosure) as a whole and Non-Performing Loans (NPL) in the Indonesian banking sector as the dependent variable. Furthermore, an Adj R-Squared of 0.4886 is calculated, indicating that the factors influencing the NPL by 48% are impacted by the publication of the Sustainability Report (economic, environmental and social disclosure).

In Singapore, the results of Prob > F are 0.1064, indicating that it is greater than Alpha 0.05. As a result, it is possible to conclude that there is no substantial relationship between the effect of the Sustainability Report disclosure and NPLs in the Singapore banking sector.

For Malaysia, it can be seen that Prob > F is 0.0019, which is less than Alpha 0.05, implying that there is a substantial effect between the disclosure of Sustainability Reports (economic, environmental, and social disclosure) on Non-Performing Loans in the Malaysian banking industry. With an Adj R-Squared of 0.4378, it can be stated that the disclosure of the Sustainability Report has a 43% influence on NPL. This study also alludes to Razafindrambinina and Grace’s (2021) research, which concludes that CSR disclosure has no substantial effect on NPLs in ASEAN banking companies.

Partially and in accordance with the conceptual hypothesis compiled, for each independent variable shows the disclosure of the Sustainability Report, which will be assessed for its effect on NPLs in banking sector companies in Indonesia, Singapore, and Malaysia in more specific dimensions, including economic disclosure, environmental disclosure, and social disclosure.

The effect of economic disclosure on NPL in Indonesia revealed a result of P > t of 0.381, which was greater than Alpha 0.05, implying that economic disclosure had no effect on NPL. However, in Singapore, the result of P > t is 0.037, implying that economic disclosure has a negative and significant effect on NPL, as evidenced by the negative coefficient of 0.1388114. Meanwhile, Malaysia likewise exhibits P > t findings that are bigger than Alpha 0.05, which is 0.189, indicating that the economic disclosure in the Sustainability Report in Malaysia has no influence on NPLs in the Malaysian banking industry, as it does in Indonesia.

The influence of environmental disclosure on NPL in Indonesia, Singapore, and Malaysia is the second hypothesis following economic disclosure. The results in the Indonesian banking sector reveal that environmental disclosure has no effect on NPL with a P > t of 0.105, which is greater than Alpha 0.05. In Singapore, the P > t result is 0.410, which is greater than Alpha 0.05, implying that the environmental disclosure in the Sustainability Report has no effect on the NPL. Meanwhile, in Malaysia, the result of P > t is 0.041, which suggests it is less than Alpha 0.05. So, it can be inferred that environmental disclosure has an influence on NPL in Malaysian banking companies. The coefficient of 0.30053 indicates that environmental disclosure actually has a positive effect on NPL in Malaysia.

The final hypothesis in this study is the impact of social disclosure on NPL. In Indonesia, social disclosure has a negative and substantial effect on NPL in banking sector companies, with a P > t of 0.012 and a negative coefficient of 0.02373, indicating that it is greater than Alpha 0.05. Meanwhile, in Singapore, social disclosure has no effect on NPL, as indicated by a P value greater than Alpha 0.05 of 0.269. Furthermore, social disclosure in Malaysian Sustainability Reports had no significant effect on NPL in Malaysian banking sector companies, with a P > t result of 0.106, which is too far from Alpha 0.05.

In this study, the authors use return on assets (ROA) as a control variable in the three countries studied, namely Indonesia, Singapore, and Malaysia. The effect of ROA on NPL is significant in Indonesia, but not in Singapore or Malaysia.

According to the findings of Hypothesis 1 (H1), economic disclosure has no effect on NPLs in Indonesian or Malaysian banks but has a negative and significant effect on NPLs in Singapore banks. This is also comparable to previous research conducted by Nobanee and Ellili (2016), which stated that economic disclosure had no effect on financial performance in UAE banks, which is consistent with research findings that economic disclosure has no effect on NPL in Indonesia and Malaysia. According to research, Indonesia and Malaysia include almost all economic indices other than company profitability, but it can be interpreted that not only economic factors influence the risk of non-performing loans.
from the bank in question. In contrast, the results of Hypothesis 2 (H2) show that environmental disclosure has no effect on NPLs in Indonesian and Singaporean banks, but has a positive effect in Malaysia. According to the findings of Razafindra and Grace (2021), there is no influence related to CSR and NPL in banking companies throughout ASEAN, which is also in line with this research but specifically discusses the three aspects of the Sustainability Report. With the results obtained, that environmental disclosure has no effect on NPLs in Indonesia and Singapore, this can provide several possibilities that may apply to other countries which have the same environmental disclosure index, including the publication of the Sustainability Report as a whole is only voluntary and not obligations even though the government has required it. But this does not rule out the possibility that environmental disclosure is only limited to raising stakeholder awareness and has no bearing on the bank’s reputation, so the quality of non-performing loans is unlikely to have a significant impact. According to the findings of Hypothesis 3 (H3), social disclosure has a negative and significant effect on NPL in Indonesia but not in Singapore or Malaysia. Referring to the findings of Wu and Shen (2013) research, it is stated that there is an influence between CSR and NPL, which may be consistent with the influence of social disclosure on NPL in Indonesia. However, based on the study’s findings, it is possible to conclude that social disclosure in Indonesia is far more focused on social aspects, as evidenced by the measured index, whereas, in general, Indonesia is a country that places a high value on aspects of society and human rights, as evidenced by corporate social disclosure in the Sustainability Report.

Conclusion

By conducting a comparative analysis of the effect of Sustainability Report disclosure on NPL in banking sector companies in three countries, namely Indonesia, Singapore, and Malaysia, this study concluded that the overall Sustainability Report disclosure has a significant effect on the NPL ratio in Indonesian and Singaporean banking sector companies, but not in Malaysia. According to the partial explanation provided in the result and discussion section, each aspect of the Sustainability Report, which includes economic, environmental, and social disclosure, has a varied effect on NPL in each country’s banking industry. Despite the fact that this research was conducted on banking sector enterprises, it shows that economic disclosure has only a negative and significant effect on NPL in Singapore, whereas environmental disclosure only influences the NPL ratio in Malaysia and social disclosure has only a negative and significant effect on NPL in Indonesia. Given the negative relationship between the overall Sustainability Report disclosure and banking companies in Indonesia and Singapore, it can be concluded that the economic, environmental, and social disclosure can reduce the NPL ratio, which means it can reduce the number of bad loans for related banking companies. It can be linked to several explanations in the literature review section that by disclosing several dimensions outside of the financial dimension, it can increase customer and public trust, thereby improving the financial performance of the company, which in this study uses the NPL ratio as a benchmark. Although each dimension disclosure does not fully affect the NPL, it can be concluded that by disclosing the Sustainability Report, which includes economic, environmental, and social disclosure, the company can improve its financial performance in the form of a lower ratio of bad or non-performing loans in Indonesia and Singapore banking companies. The effect of Sustainability Reporting disclosure on NPL is demonstrated to be consistent with the use of stakeholder theory, legitimacy, and signalling, where the three theories are interrelated and explain that a company functions not only for its own interests, but also for the interests of other stakeholders. According to the research findings, legitimacy theory and signalling theory contribute significantly to the research findings where it can be seen that corporate transparency, as illustrated by the disclosure of Sustainability Reports in three dimensions, can affect the level of public trust in banking companies, which in turn affects the level of credit risk as measured by the NPL ratio. As a result, it is possible to conclude that the influence of stakeholders, the evaluation of the community, and the level of public trust all have an impact on the level of credit risk from banking firms.
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