# audit FINANCIAR

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# Effects of the Covid-19 Pandemic Estimated in the Financial Statements and the Auditor's Report

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## Abstract

*The COVID-19 pandemic had a significant impact on all aspects of life, but also on the financial reporting of companies and on the activity of auditors. The paper aims to highlight the importance of reporting in the financial statements the subsequent events caused by the COVID-19 pandemic, but also of the aspects that can significantly influence the going concern of companies' activities, respectively how these effects can cause changes in the quality of audit services. The study was conducted on a sample of 60 companies listed on the Bucharest Stock Exchange, analyzing the components of the annual reports for the financial year 2019, namely the financial statements, the administrator's report and the independent auditor's report. The results showed that the effects generated by the COVID-19 pandemic had a significant impact in most of the industries studied, affecting both companies to carry out activities by closing borders, reducing or even closing certain activities, stopping travel and hindering communication with suppliers, customers or investors, reduced sales, deferred payments or the need to optimally manage costs and available resources, as well as at the level of employees by performing work at home, technical unemployment or salary reductions, but also at the level of the client-auditor relationship, by limiting travel in business interest. Most of the estimated effects of the pandemic were presented in the administrator's report, some of the effects being mentioned in the explanatory notes to the financial statements. From a statistical point of view, the companies' declaration of the effects of the pandemic was correlated with the size of the auditor, the opinion issued by him and the average number of employees. The study showed that certain auditors assessed the risks posed by subsequent events reported by companies, presenting insignificant uncertainties in some cases, but also significant uncertainties regarding the going concern of the activity of some companies.*

***Key words:*** *COVID-19; audit; subsequent events; going concern; adjustment*

***JEL Classification:*** *M40, M41*

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# Introduction

The COVID-19 pandemic has produced numerous changes, both at the level of individuals and at the level of companies through the restrictions imposed to limit the spread of the virus, which have had serious repercussions. Companies were forced to assess the risks associated with the pandemic on their financial statements, which will be reported as they occur or can be estimated. Although the globalization of the economic environment has experienced a favorable evolution lately, the COVID-19 pandemic has brought a strong reversal of the situation, causing numerous blockages.

The main concern of the organizations was human capital by taking measures to protect them and limiting the risk of contamination with this virus. The COVID-19 crisis has forced governments to impose strict measures, such as restricting travel even in the interests of work, or temporarily shutting down certain industries and automation, redirecting employees to work from home, teleworking or even technical unemployment.

The pandemic caused a significant impact on all aspects of life, but also on the financial reporting and the conduct of the audit activity. Auditors need to be careful about adapting audit procedures to gather sufficient appropriate audit evidence to support the audit opinion, especially as audit risk has increased and travel restrictions at the client's premises are limited or even prohibited in some countries. Even so, it is imperative to comply with auditing standards and applicable law in order to maintain the required level of audit quality.

As it is difficult to estimate the period of the pandemic, the entities had to make a thorough assessment of the risks and potential impact of this epidemic, but also to implement rapid measures to reduce any risk. A generally valid set of procedures does not suit all companies. In this case, it is recommended that they contact consultants for specific advice depending on the field in which the company operates, the nature of the activity carried out, the country of origin or any other element that could be affected by this event.

The auditor has the responsibility to plan and perform a quality audit, applying professional skepticism and taking into account the fact that there may be certain circumstances that distort the financial statements. A relevant example would be the related consequences of the COVID-19 pandemic which have led to risks of material misstatement, either as a result of fraud or error, or of a change in the internal control environment in which entities that may incur financial reporting errors operate. Auditors should be aware of these factors risk and ensure that professional skepticism is applied throughout the audit. If fraud or error is identified or suspected, the auditor should discuss these issues with management, or, where appropriate, with those responsible for governance. If can not be obtained evidence of discovered nonconformities, the auditor should evaluate the effect of the lack of sufficient and adequate evidence on the audit opinion, according to the audit standards.

The objective of the paper is to analyze the presentation of the effects generated by the COVID-19 pandemic in the annual financial statements concluded on December 31, 2019 and in the directors' report, and whether these effects led to the adjustment of financial statements or even changes to the audit opinion initially issued. The sample includes 60 companies listed on the Bucharest Stock Exchange with non-financial activity.

The results of the study indicate that the COVID-19 pandemic has produced numerous changes in financial reporting and financial audit activity. In most cases, companies were forced to close down or reduce certain areas of activity, this directly affecting the employees and revenues of the companies concerned. Also, the smooth running of the economic market was disrupted by sudden changes in prices and demand for certain raw materials, thus producing a supply disruption that forced companies to better manage existing stocks and resources. A large part of the companies' budgets has been allocated to the purchase of protective materials and disinfectants, but also to donations to institutions that treat COVID patients. The only industry that gained value from this pandemic was the pharmaceutical industry, which in this situation has increased the production of medicines used to treat and prevent contamination.

The research provides an analysis of available data on the reporting of subsequent events following the COVID-19 pandemic by listed companies in Romania, from a perspective focused on the need to declare and assess the risks arising from subsequent events caused by the COVID-19 pandemic.

The paper is structured as follows: a section containing a synthesis of the relevant literature on reporting the effects produced by the COVID-19 pandemic, followed by the second section describing the research methodology. The third section presents the results of the study together with the analysis and synthesis of the data, and the paper is completed with a part reserved for the conclusions, the limits of the study and the future research directions.

## 1. Literature review

As the pandemic began spontaneously, auditors and regulators of the profession were forced to find quick and viable solutions to align the standards imposed by the profession at the best level. In this regard, the specialists from the *Association of Chartered Certified Accountants* (ACCA) considered that the current restrictions generated by the COVID-19 pandemic affect both the auditor and the audited entities, the auditors having to perform audit procedures to assess the events recorded after the preparation of the financial statements. These events differ depending on the industry in which the audited company operates. If the entity has ceased operations, the declared events should not cause problems for the auditors. Otherwise, if trade has been possible, distortions can be significant and can even make audit procedures more difficult.

Studies were also carried out by specialists from audit firms in category BIG 4. Thus *KPMG* (2020) analyzed the effect of the COVID-19 pandemic on international taxation or applicable social security legislation. The responses to the questionnaire reflected the application of the following measures to limit the effects of the pandemic on the business environment: monitoring the legal, tax and immigration implications in each jurisdiction, reviewing employee mobility policies, improving employee experience, information security technologies, additional costs generated by various forms of work and benefits brought to the company, review of remuneration packages.

*PwC Romania* (2020) conducted a study on the continuation of companies' activity after the COVID-19 pandemic, using a questionnaire answered by a number of 91 companies from various sectors. Thus, 37% of the surveyed companies partially or totally interrupted their activity after declaring the state of emergency, 20% restricted their activity, 19% opted for work at home and 27% stated that they would resort to technical unemployment.

*Deloitte* (2020) appreciated that from a financial reporting perspective, entities may face significant challenges for future reporting periods. To address these implications, experts suggested the following adjustments to the balance sheet items: impairment of fixed assets, adjustment of inventories, provisions for onerous contracts, provisions for employee benefits at retirement and subsequent events.

*BDO International* (2020) believe that certain factors such as: declining revenues, low financial liquidity or the risk of business continuity in the pandemic, can affect the sustainability of companies.

*Accountancy Europe* (2020) proposed four steps for a sustainable recovery during the pandemic: improving management risk, especially in the case of SMEs, moving to a circular economy, adapting the public sector, a change in lobbying.

*South African Institute of Chartered Accountants* - SAICA (2020) considers that changing the audit approach and using alternative procedures may impact the planned audit activity, requiring additional time for completion, resulting in delays in financial reporting of companies, in some cases auditors are required postpone the publication of the audit report, or even make changes to the audit report originally issued.

The auditor is not required to perform audit procedures on the financial statements after the date of the audit report. The only exception is when the auditor finds information that could lead to a change in the audit report (IAASB, 2020). While it is important to adjust the effects of the pandemic, it is equally important for auditors to apply professional skepticism and ensure that the adjustments presented in the financial statements are indeed a result of the pandemic and are assessed correctly (*Australian Accounting Standard Board* - AASB and *Auditing and Assurance Standard Board* - AUASB, 2020).

*Committee of European Auditing Oversight Bodies* - CEAOB (2020) highlighted some of the challenges facing auditors following the pandemic, which could have a negative effect on audit quality. These are: obtaining sufficient and relevant audit evidence, a thorough assessment of the entity in terms of its ability to continue to operate, an analysis of the information provided by the companies, in terms of subsequent events and the extent to which these events may influence the financial statements and the audit report, assess the financial position of the entity, the main risks and uncertainties faced by the audit activity and, where appropriate, mention in a paragraph dedicated to this section in the audit report.

*Public Company Accounting Oversight Board* - PCAOB (2020) considered that during this period it is very important to communicate with the audit committee and the main effects produced by the COVID-19 pandemic on the financial statements to be reported are: significant changes to the planned audit strategy or significant risks initially identified that require changes, issues related to accounting policies, practices or estimates and the auditor's assessment of the audited company's financial statements quality or any difficulties encountered during the audit engagement.

*The Center for Audit Quality* (2020) specified another example that may influence the quality of audit services is the limitation resulting from the auditor's inability to observe the balances of the material inventory, which is caused by the restriction of travel to the client's premises. Examples of risks from the COVID-19 pandemic: compliance risk; poor correlation of the measures imposed to reduce the risk of contamination with the needs of users of financial statements; operational risk; prioritizing the company's objectives and priorities during the pandemic; the risk of not taking staff safety measures during work; financial risk: failure to plan for cash during the pandemic.

*The Romanian Chamber of Financial Auditors* - CAFR (2020) made recommendations on the implications of the pandemic, which is considered "an event after the close of the financial year 2019 which may or may not lead to sharp adjustments to the annual financial statements, insofar as they may be estimated in a credible way".

All the implications on the annual financial statements as well as the risk of business continuity require a careful analysis by the persons responsible for governance and by the financial auditors.

Audit standards contain recommendations that contribute to increasing the quality of audit services provided. Thus, according to ISA 701, "Communicating Key Audit Matters in the Independent Auditor's Report", the auditor should carefully consider these key issues and introduce them in a special paragraph regarding the impact of the business continuity risk. In the case of companies that do not currently adopt this standard, the auditor should carefully evaluate the content of the explanatory notes detailing these issues, as well as the risk assessment included in the administrator's report, as required by the financial reporting framework.

The second standard that contributes to increasing the quality of audit services is ISA 570 "Going Concern", which specifies that the preparation of annual financial statements is based on the assessment of management's statements regarding the company's ability to continue its business even if the general financial reporting framework does not include a requirement in this regard.

In this regard, ISA 315 "Identifying and Assessing the Risks of Material Misstatement" also requires auditors to identify and assess the risk of material misstatement, either as a result of accounting fraud or error, or by understanding the entity, its environment, and internal control, thus providing a basis for designing and implementing responses to identified distortion risks.

In the case of entities significantly affected by the impact of the COVID-19 pandemic, it is necessary to consider the possibility of preparing financial statements based on going concern, even if the significant impact on activity occurred after December 31, 2019. If the company's management is aware of certain, uncertainties that may significantly affect the entity's ability to continue to operate should be disclosed and quantified in the annual financial statements.

Also, the ISA 560 "Subsequent Events" standard requires the inclusion in the financial statements as of December 31, 2019 of detailed explanatory notes, so that users of the financial statements can assess the effects of these implications on the company concerned or even the economy in general.

The impact of the COVID-19 pandemic on the financial audit activity was also studied at international level by elaborating scientific studies, especially qualitative ones, being a difficult event to estimate quantitatively. In this approach, the authors Castka et al. (2020) conducted a qualitative study to analyze the way in which the certification services were performed following the COVID – 19 pandemic. The results showed a significant adoption of remote auditing, even if it uses advanced technologies.

## 2. Research methodology

In order to carry out the proposed study, 60 companies listed on the Bucharest Stock Exchange (BVB) on the main market, with non-financial activity, were analyzed. Starting from the total number of 83 of the listed companies, 12 companies in the financial field, 3 international companies and 8 companies in insolvency or on the special list were eliminated, resulting in a sample of 60 companies. The data were collected manually from the annual reports published for the financial year 2019 by the companies included in the sample.

The companies were grouped by activity sectors, respectively the following industries: extractive, manufacturing, production and provision of services, construction, trade, transport and storage, hotels and restaurants and professional activities. The financial statements, administrators 'reports and auditors' reports were analyzed for the specified period, looking at whether companies identified the events that occurred as a result of the COVID-19 pandemic and how they were reported in the annual report structure, and the extent to which the auditor took these into account when expressing his opinion or having to change the initial opinion.

The data from the first stage of the study were statistically processed to analyze the correlations between reporting events identified as pandemic effects (E) mentioned above and possible factors, represented by company characteristics (CC), which led to the reporting of pandemic effects. Thus, the proposed econometric model is represented by a linear regression, according to the equation:

$$E = \alpha_{it} + \beta_1 CC + \varepsilon_{it} \qquad (1)$$

Where:

$\alpha_{it}$ - constant

$\beta_1$ - beta value or risk measure,

$\varepsilon_{it}$ - represents the error component, $\varepsilon \sim N(0, 1)$.

In order to highlight the characteristics of the companies (CC), the indicators referring to the characteristics of the auditors were used as independent variables, such as: the size of the audit firm (A) and the type of opinion expressed in the report (O). The inclusion in the econometric model of the mentioned indicators was based on previous studies on the quality of the financial statements of Romanian listed companies (Bătae, 2019; Istrate and others, 2020), as well as on research in which they were statistically validated in econometric models (Robu et al., 2019; Grosu et al., 2019). To control the reliability of the model and reduce the risk of bias, the following control variables were introduced in regression: trading category (C), profitability (P) and average number of employees (S). These indicators have been considered relevant in previous research, as they may influence communication with stakeholders (Hațegan, 2020; Hațegan and others, 2020).

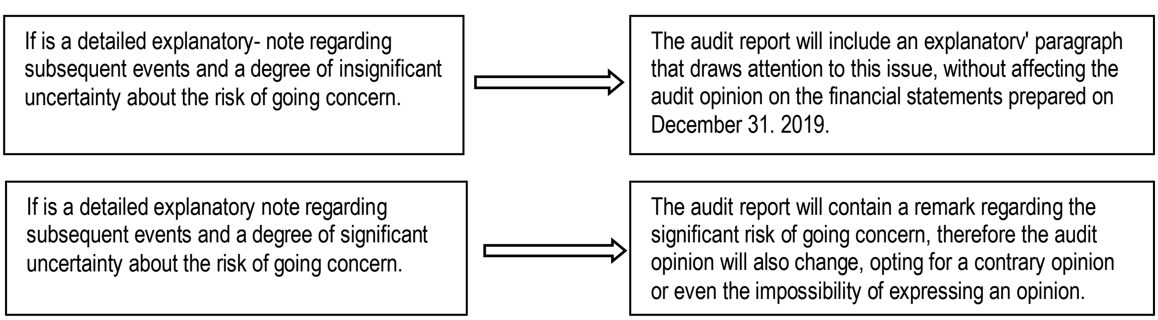
# 3. Results and disscusion

The results were grouped in two directions: identifying the events generated by the pandemic and the characteristics of the companies that declared the possible effects of the pandemic on their activity.

## 3.1. Identification of events generated by the COVID-19 pandemic

The study showed that information on the effects of the pandemic was presented both in the directors' reports and in the explanatory notes to the financial statements. Depending on the content of the explanatory note on subsequent events, the auditor may include in the report an explanatory paragraph drawing attention to events with insignificant uncertainty about the continuity of the activity or may change the opinion if there are significant uncertainties on it (***Figure no. 1***). From the reports issued by the auditors, it was found that only situations with insignificant uncertainty were identified, so that at a small number of companies the auditors drew attention in the reports prepared on the significant uncertainties regarding the continuity of the activity.

***Figure no. 1. Subsequent events generated by COVID-19***




*Source:* Own projection, based on data analyzed

The identified events were grouped according to their subject and according to the frequency of their occurrence. Depending on the subject of the events declared by the companies were classified into 11 categories, as one can see in **Table no. 1**.

**Table no. 1. Classification of identified events**

| No. | Subject | Event identified | No. of companies |
|---|---|---|---|
| 1 | Ongoing activities | Activity reductions | 14 |
| | | Closing branches | 2 |
| | | Increasing production | 3 |
| | | Delivery of new products | 3 |
| | | Opening new projects | 3 |
| 2 | Honoring contracts | National delivery | 5 |
| | | Import-export | 3 |
| 3 | Losses | Income | 3 |
| | | Turnover | 5 |
| | | Interest rate | 1 |
| 4 | Cost allocation | Raw material stock | 5 |
| | | Fixed cost adjustment | 3 |
| | | Disinfection materials | 4 |
| 5 | Market | Price change | 5 |
| | | Changes in demand | 3 |
| 6 | Postponement of payments/ receipts | Suppliers / customers | 1 |
| | | Rent | 1 |
| | | Sources of external financing | 1 |
| | | Debts to the state | 1 |
| 7 | Implementation | Going concern | 7 |
| | | Prevention | 10 |
| 8 | Employees | Work from home | 7 |
| | | Technical unemployment | 6 |
| | | Salary reductions | 1 |
| 9 | Communication with users of financial statements | On-line system | 1 |
| | | Technical support | 1 |
| | | Travel limitation | 3 |
| 10 | Donations | Donations to public institutions | 1 |
| 11 | Not declared | | 20 |
| | **TOTAL** | | **123** |

*Source:* Own projection, based on data analyzed

The first category contains the subsequent events that affected the actual activity of the analyzed companies, encountering in this group temporary reductions in activity (14 companies), the closure of branches in countries severely affected by the COVID-19 pandemic (2 companies, in the case of extractive industry). and production). From another perspective, the pandemic has also benefited the pharmaceutical and drug industries. Three companies producing drugs used to treat the virus have predicted a significant increase of the paracetamol production and the adoption of a product delivery strategy both nationally and internationally.

The second category of subsequent events declared by the companies refers to the impossibility of honoring the service contracts established prior to the COVID-19 pandemic. In this regard, five companies postponed deliveries nationwide and three companies said they were unable to meet their obligations due to the cessation of imports and exports.

The analysis of the information showed that for most industries the COVID-19 pandemic had negative effects producing significant losses, especially on sales and automatically on turnover (declared by 5 companies), but also a decrease in revenue (3 companies) or the decrease of the monetary policy interest rate (1 company declared this aspect as a subsequent event).

All these negative effects have determined companies to better manage the costs and resources available. In this category, the companies stated as subsequent events that an optimal management of the existing raw material stocks is necessary in order not to reach the impossibility of supply, in some cases the supply was from severely affected countries such as China (5 companies), but also an adjustment of fixed costs (3 companies) and the allocation of costs necessary for the purchase of protective materials and disinfectants (4 companies).

The following category of subsequent events refers to the changes in the economic market, namely the change in the price and demand for raw materials, especially oil and crude oil, which affected the extractive industry (8 companies).

The companies also stated the need to postpone the payments already expected, due to the decrease in sales. In this category we find the postponement of payments for receivables and debts incumbent on customers and suppliers (1 company), the postponement of rent payment (1 company), the postponement of debts to the state budget (1 company), but also the impossibility to access external financing sources (1 company).

The COVID-19 pandemic forced entities to develop and implement complex business continuity plans (7 companies) and plans to protect and prevent COVID virus contamination (9 companies).

Another group of subsequent events severely affected by the COVID-19 pandemic is related to the employees of companies that have suffered as a result of the reduction of production activity or even the permanent closure of certain sections or branches. In this regard, seven companies opted for the provision of work at home by employees, six companies were forced to establish technical unemployment and only one company expected wage reductions.

To continue operating under the law, three companies have limited business travel, one company has implemented online communication systems with users of financial statements, and another has developed an IT technical support department that provides assistance to employees and users. .

A penultimate category of subsequent events refers to donations made by companies that were not significantly affected by the COVID pandemic. Thus, a company (ALRO S.A.) offered donations to state institutions that treat COVID patients, even if the financial result obtained by it was a loss.

As the COVID-19 pandemic started suddenly and inevitably, the companies failed to estimate an exact value of the effects produced on the annual financial statements and on the balance sheet elements. For this reason, the companies did not consider it necessary to adjust the financial statements, being values difficult to estimate in the event of subsequent events caused by the pandemic.

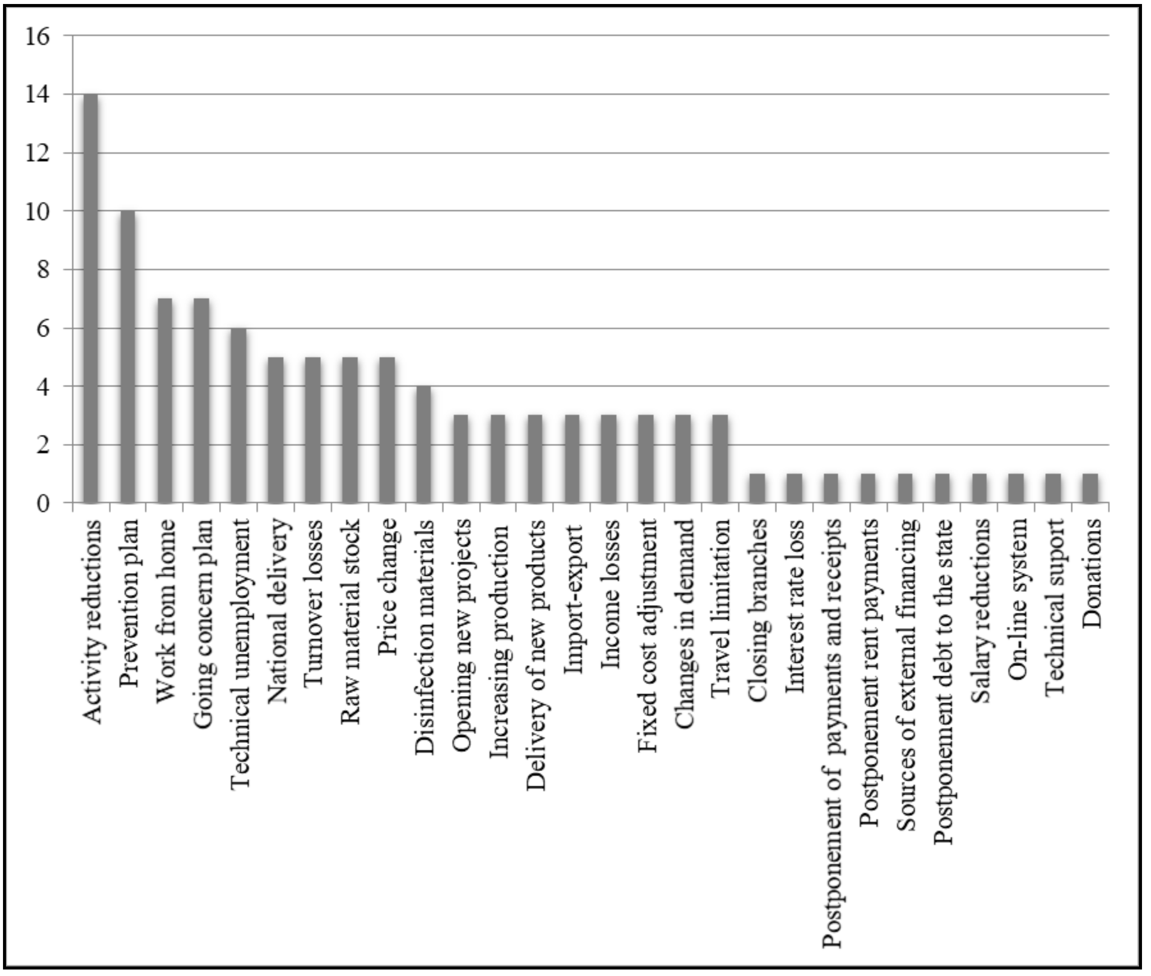
Following the analysis, we found that the subsequent events declared by the companies in the annual reports affected the industries both at the microeconomic level, but especially at the macroeconomic level by imposing strict restrictions on movement and production.

From the 60 companies analyzed, 20 did not report subsequent events caused by the COVID-19 pandemic.

The second classification of subsequent events caused by the COVID-19 pandemic was made according to their frequency (***Figure no. 2***). The most common are the reductions of activity in various industries, the implementation of plans for the protection of employees and the prevention of contamination and continuity of activity, but also the allocation of employees in technical unemployment or work at home.

They are followed by effects resulting from the need to delay deliveries, change the price, optimize the distribution of raw material costs and reduce turnover. The ranking is followed by the allocation of costs for the purchase of protective and disinfection materials.

**Figure no. 2. Frequency of events generated by the COVID-19 pandemic**




*Source:* Own projection, based on data analyzed

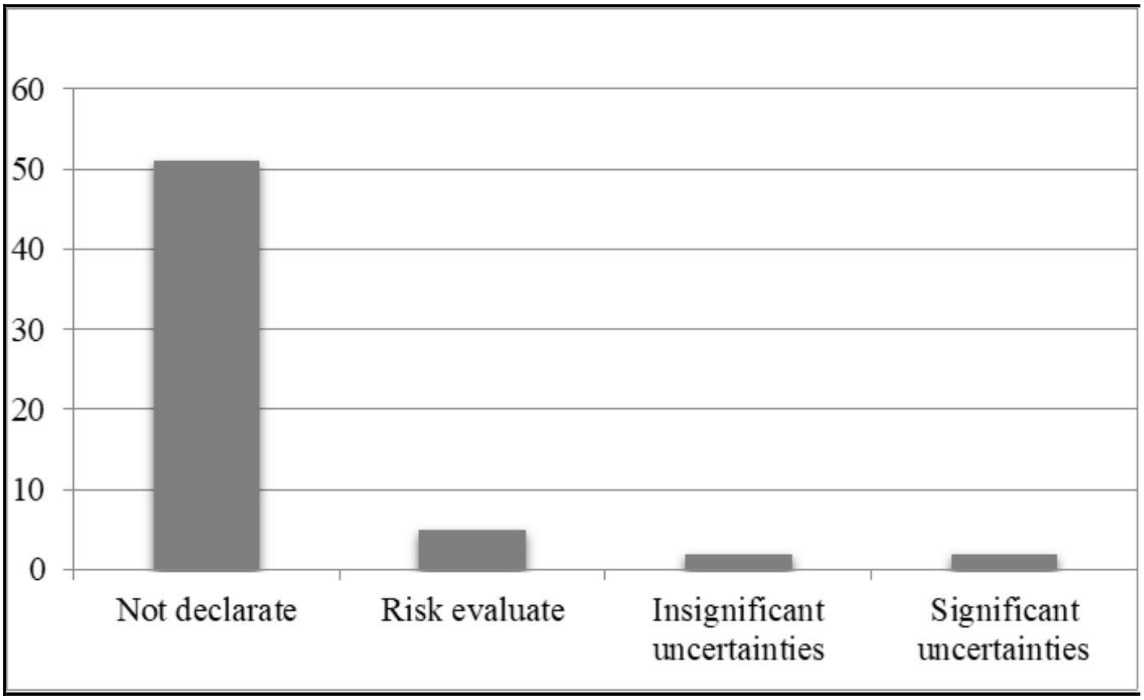
Less frequently, there are effects caused by closing borders, increasing the production of medicines and delivering them to new markets, reducing revenues, adjusting fixed costs, changing product demand and limiting business travel.

On the penultimate place we find the closure of activity in severely affected industries, and the ranking is finalized with subsequent events such as: lowering the monetary policy interest rate, postponing payments, stopping access to external financing sources, postponing the payment of debts to the state, reducing wages, donations to hospitals and clinics, but also the implementation of technical support and online assistance.

In the case of the audit reports, it was not necessary to issue another audit opinion or modify the initial report. Some auditors reported significant uncertainties about business continuity for companies in significantly affected industries, while some auditors felt that the current uncertainties were not significant and only temporarily affected business continuity in the audited industries. Also, a significant proportion of auditors did not assess the risks or uncertainties caused by the COVID-19 pandemic.

From the total of the 60 audit reports analyzed, 51 reports do not present information on subsequent events caused by the COVID-19 pandemic, most of which were in the case of companies that did not report further events in this regard (***Figure no. 3***). The risks declared by certain companies were assessed by 5 auditors in the audit reports, 2 auditors considered that there were insignificant uncertainties regarding the continuity of the companies' activity and 2 auditors assessed these uncertainties as significant on the going concern.

***Figure no. 3. Risk assessment by the auditor***




*Source:* Own projection, based on data analyzed

## 3.2. The characteristics of the companies that declared in the annual report the effects of the COVID-19 pandemic

The study showed which companies declared the effects of the pandemic on their activity and how to declare them. For the characterization of the companies were used the indicators presented in **Table no. 2**.

From **Table no. 2** results that two thirds of the number of studied companies presented the effects of the pandemic in the report of the administrators. The average number of identified effects is 2.05, and the maximum number is 7, in a single company. Regarding the presentation of the events identified in the explanatory notes to the financial statements, the number of companies that have chosen to declare the effects decreases by half. Most companies presented the effects in the Explanatory Notes to Subsequent Events, and a small number of companies also mentioned in the explanatory notes on accounting policies or risk management. As a result, the average number of events decreases to 1.07, and the maximum number remains 7 for a single company, but different from the one that presents 7 events in the directors' report. In the case of 15% (9 companies) of the number of reports issued by auditors, paragraphs were identified to draw attention to the possible effects of the pandemic, which were mentioned by auditors in the Non-BIG4 category.

| Table no. 2. Descriptive statistics | | | | | |
|---|---|---|---|---|---|
| **Variables** | **Code** | **Description** | **Average** | **Standard error** | **Standard deviation** |
| ***Events identification*** | ***E*** | | | | |
| Identifying events in the administrators' report | RA | 1 – Yes<br>0 – No | 0.6667 | 0.06137 | 0.0475 |
| Number of events identified in RA | NRA | From 0 to 7 | 2.0500 | 0.2554 | 1.9781 |
| Identify the events in the explanatory notes | NE | 1 – Yes<br>0 – No | 0.5000 | 0.0651 | 0.5042 |
| Number of events identified in the NE | NNE | From 0 to 7 | 1.0667 | 0.1972 | 1.5279 |
| Identification of events in the auditors' report | RAud | 1 – Yes<br>0 – No | 0.1500 | 0.0464 | 0.3601 |
| ***Characteristics of companies*** | ***CC*** | | | | |
| Auditor size | A | 1 – BIG4<br>0 – Non BIG4 | 0.3167 | 0.0606 | 0.4691 |
| Auditor opinion | O | 1 – Unmodified<br>0 – Modified | 0.8167 | 0.0504 | 0.3902 |
| Average number of employees | S | 1 – over 500<br>0 – under 500 | 0.3833 | 0.0633 | 0.4903 |
| Transaction category | C | 1 – Premium<br>0 – Standard | 0.2333 | 0.0551 | 0.4265 |
| Profitability | P | 1 – profit<br>0 – loss | 0.8333 | 0.0485 | 0.3758 |

*Source:* Own projection, based on data analyzed

Regarding the characteristics of the studied companies, it is observed that only 31.67% were audited by auditors from BIG4 category, the predominant audit opinion was without reservations (81.67%), 38.33% of companies had an average number of employees over 500, in the category Premium trading were included 23.33%, and most companies made a profit (83.33%).

The correlations between the presentation of the effects of the pandemic in the annual report and the characteristics of the companies are presented in **Table no. 3**.

**Table no. 3. Correlation matrix**

| | RA | NRA | NE | NNE | RAud | A | O | S | C | P |
|---|---|---|---|---|---|---|---|---|---|---|
| RA | 1 | | | | | | | | | |
| NRA | 0.739 | 1 | | | | | | | | |
| NE | 0.424 | 0.297 | 1 | | | | | | | |
| NNE | 0.428 | 0.375 | 0.704 | 1 | | | | | | |
| RAud | 0.099 | 0.084 | 0.420 | 0.136 | 1 | | | | | |
| A | 0.253 | 0.311 | 0.322 | 0.490 | -0.186 | 1 | | | | |
| O | 0.122 | 0.122 | -0.215 | -0.121 | -0.283 | 0.045 | 1 | | | |
| S | 0.339 | 0.085 | 0.171 | 0.259 | -0.235 | 0.127 | 0.108 | 1 | | |
| C | 0.223 | 0.227 | 0.236 | 0.392 | -0.011 | 0.387 | 0.058 | 0.294 | 1 | |
| P | 0.158 | 0.171 | 0.000 | -0.098 | -0.063 | 0.016 | 0.135 | -0.015 | 0.141 | 1 |

*Source:* Own projection, based on data analyzed

From the analysis of correlations, it is observed that there are no close correlations between the analyzed variables. However, the moderate correlations between the variables that reflect the presentation of the effects of the pandemic (RA, NRA, NE and NNE) with the Auditor variable can be taken into account, from which it can be concluded that the size of the auditors moderately influenced the reporting of events. Other moderate correlations were also recorded between the group of variables RA and NNE with the variables S and C.

Given the lack of strong correlations between variables, to test the degree of dependence of variables in group E with those in group CC, we proceeded to eliminate invalidated variables from groups, so that the econometric model was tested only with representative variables.

Thus, in the econometric **Model 1** the dependent variable was represented by the number of effects declared in the administrators' report (NRA) and the size of the auditor (A) and the audit opinion (O) were tested with independent variables. **Table no. 4** shows the regression results.

**Table no. 4. Results of regression for Model 1**

| Regression Statistics | |
|---|---|
| Multiple R | 0.7372 |
| R Square | 0.5435 |
| Adjusted R Square | 0.5184 |
| Standard Error | 1.9497 |
| Observation | 60 |

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | df | SS | MS | F | Significance F |
| Regression | 2 | 262.5126 | 131.2563 | 34.5274 | 0,0000 |
| Residual | 58 | 220.4874 | 3.8015 | | |
| Total | 60 | 483 | | | |

| | Coefficients | Statistics error | t Stat | P-value |
|---|---|---|---|---|
| Intercept | 0 | #N/A | #N/A | #N/A |
| A | 1.5526 | 0.5253 | 2.9555 | 0.0045 |
| O | 1.6563 | 0.3271 | 5.0633 | 0.0000 |

*Source:* Own projection, based on data analyzed

The statistical processing showed that the change of the two variables influences in a proportion of 54% the change of the dependent variable, and Multiple R shows a strong link between the variables. Given that the P-value is significant at 1%, **Model 1** is validated.

In econometric **Model 2** the dependent variable was represented by the number of events identified in the explanatory notes (NNE) and was tested with the same independent variables as in **Model 1**, the regression results are presented in **Table no. 5**.

From the information processing it resulted that the modification of the two variables influences in a proportion of 45% the modification of the dependent variable, and Multiple R shows a quite strong connection between them (**Table no. 5**), but lower than the results from **Model 1**. Given that the P-value is significant at 1% only for variable A model 1 can be considered partially validated.

**Model 2** was also tested with another independent variable that replaced the invalidated variable (O), respectively the average number of employees (S). The regression results are presented in **Table no. 6**.

**Table no. 5. Results of regression for Model 2 (var A)**

| Regression Statistics | |
|---|---|
| Multiple R | 0.6740 |
| R Square | 0.4543 |
| Adjusted R Square | 0.4276 |
| Standard Error | 1.3922 |
| Observation | 60 |

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | **df** | **SS** | **MS** | **F** | **Significance F** |
| Regression | 2 | 93.5837 | 46.7919 | 24.1418 | 0.0000 |
| Residual | 58 | 112.4163 | 1.9382 | | |
| Total | 60 | 206 | | | |

| | Coefficients | Statistics error | t Stat | P-value |
|---|---|---|---|---|
| Intercept | 0 | #N/A | #N/A | #N/A |
| A | 1.8385 | 0.3751 | 4.9014 | 0.0000 |
| O | 0.3793 | 0.2336 | 1.6237 | 0.1099 |

*Source:* Own projection, based on data analyzed

**Table no. 6. Results of regression for Model 2 (var B)**

| Regression Statistics | |
|---|---|
| Multiple R | 0.7076 |
| R Square | 0.5007 |
| Adjusted R Square | 0.4748 |
| Standard Error | 1.3317 |
| Observation | 60 |

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | **df** | **SS** | **MS** | **F** | **Significance F** |
| Regression | 2 | 103.1433 | 51.5716 | 29.0808 | 0,0000 |
| Residual | 58 | 102.8567 | 1.7734 | | |
| Total | 60 | 206 | | | |

| | Coefficients | Statistics error | t Stat | P-value |
|---|---|---|---|---|
| Intercept | 0 | #N/A | #N/A | #N/A |
| A | 1.7388 | 0.3385 | 5.1369 | 0.0000 |
| S | 0.8848 | 0.3076 | 2.8761 | 0.0056 |

*Source:* Own projection, based on data analyzed

Following the statistical processing, it resulted that the modification of the two variables influences in a proportion of 50% the modification of the dependent variable, and Multiple R shows a strong connection between them. Given that the P-value is significant at 1%, **Model 1** can be considered validated.

The results of the statistical processing showed that the number of effects presented by the companies in the annual report is closely correlated with the size of the auditor. In the case of the pandemic effects presented in the directors' report, a direct correlation was identified with the type of opinion expressed by the auditor, and in the case of presenting the effects in the explanatory notes there was a correlation with the company size expressed by the average number of employees.

## Conclusions

Through this paper were presented the theoretical and practical aspects regarding the effects and subsequent events following the COVID-19 pandemic, both at the level of financial reporting and at the level of audit activity.

The COVID-19 pandemic has produced numerous changes in all aspects of life, but also in the annual financial reporting or even the conduct of the planned audit activity.

The main industries affected were the extractive industry, HORECA, transport and the manufacturing industry to some extent, while the pharmaceutical industry benefited to an increase of over 50% in the production of paracetamol and other drugs used to treat the COVID pandemic. 19.

From the analysis, were identified two categories of subsequent events occurred as a result of the COVID pandemic: events that did not adjust the financial statements, in which case the analysis of uncertainties and risks to which the entity is exposed was included in the explanatory notes and the directors' report and subsequent events that lead to the adjustment of the annual financial statements.

A significant effect of the pandemic was the limitation of business travel, which made it more difficult to plan the audit activity, in some cases being necessary to communicate with the client only through the online system.

Under these conditions, the auditors need to pay more attention to adapting audit procedures in order to gather sufficient appropriate audit evidence to support the audit opinion, especially as the audit risk has increased. Even so, it is imperative to comply with auditing standards and applicable law in order to maintain the required level of audit quality. If fraud or error is identified or suspected, the auditor should discuss these issues with management, or as appropriate, with those responsible for governance. If cannot be obtained evidence of discovered nonconformities, the auditor should assess the effect of the evaluate if have sufficient and adequate evidence that based the audit opinion, in accordance with ISA 705.

The analysis showed that most of the events identified by the companies were the reduction of activity, the announcement of prevention plans and the work at home of employees. Two thirds of the analyzed companies presented the information regarding the effects of the pandemic in the directors' report, and half of the total number also stated in the explanatory notes to the financial statements. In the case of 15% of the companies, the auditors included in their report a paragraph in which drawing attention to the possible effects of the pandemic. The econometric model tested showed a direct correlation between the declaration of the effects of the pandemic in the annual report with the size of the auditor, as well as with his opinion or with the average number of employees. The other characteristics of the companies included in the model did not influence the way of declaring the effects of the pandemic.

The paper can be a bibliographic source for researchers in the field of accounting and financial auditing, for business representatives to understand the need and importance of reporting subsequent events, especially in uncertain crisis conditions.

The limitations of the research consisted in the fact that there is no certified database, the data were collected manually being taken from the information published by companies, their degree of trust being ensured by the reports issued by independent financial auditors.

Future research directions can be seen in expanding the number of companies both nationally and internationally, as well as future analyzes of the extent to which the estimated effects of the pandemic have occurred and how they may influence the content of annual reports.

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# Risks Associated with Threats Related to Disruptive Technologies in the Current Financial Systems Context

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## Abstract

*The subject of the study is the analysis of the risks associated with threats generated by disruptive technologies in the context of current financial information systems of the entities. The phenomenon of cybercrime, facilitated by the development of Artificial Intelligence, Deep Learning and the disruptive frequency of security incidents represents the foundation of this paper. The aim of the article is to integrate, compare and investigate the impact of disruptive technologies, current security risks and incidents, and to design measures in order to manage risk. The results of this paper highlight Advanced Persistent Threats (APTs), malware, ransomware, sabotage of external actors, third-party threats in the top 5 most common security incidents. The paper acknowledges the complexity of digitization and transposes a practical model of risk management. The paper contributes to informing stakeholders about the forced penetration of hackers into victims' devices, under the pretext of COVID-19.*

***Key words:*** *risks associated with the financial system; cyber threats; disruptive technologies; current information systems; Artificial Intelligence impact; Deep Learning impact; COVID-19*

***JEL Classification:*** *D83, G32, K24, M41, M42, O33*

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# 1. Introduction

The adoption of complex digitization processes has grown rapidly in the last period of time (Forbes, 2020), being determined by the high requirements regarding the reporting procedure and presentation of financial statements for users and stakeholders, but also from the companies' aspiration to stay in trend and in market competition, becoming dependent on IT. The digitization processes, which underlie the current financial-accounting information systems of the entities, consist in digitizing the data or the transition from analog data to data in digital format, representing a process of collecting the available information into digital access. Following the digitization of analog data, the resulting data were integrated into software applications designed to use automated work processes or extensively automation in many industries, to optimize productivity and organizational flexibility.

Entities providing accounting and auditing services (and other services) are in a continuous search for automation, as is easier to achieve the commercial value added of existing investments as a result of Robotic Process Automation (RPA). At the same time, the industry is aligning towards joining RPA with Artificial Intelligence (AI) and Machine Learning, following these two borders, to a Robotic Intelligent Automation. The application of the above-mentioned emerging technologies contributes to a (full) ingenious operational flow and an additional value added to the business.

AI designates a generic term for systems or machines that mimic human intelligence, in order to perform activities that, based on the information collected, might significantly improve work processes. The principle of AI is to reproduce the way people act, and even refine work tasks, providing meaning to the data in a way that would not have been conceived until present. Machine Learning recognizes models resulting from previously data processed by auditors so that might formulate predictions, in order to automate extremely complex business processes that follow a certain routine. By Robotic Intelligent Automation we understand the consolidation of robotics, automation and AI. In the financial sector, by adopting these disruptive technologies, professional accountants and auditors would acquire a more advanced freedom of thought and innovation.

Companies will increasingly invest more in intelligent automation of internal processes, methodologies and current practices, to increase the company's reputation, maintaining customer confidence in financial reporting and capital placement by investors. In this regard, a prevention plan is imperative to combat cyber threats at both the individual and organizational levels (Goodman, 2016), given that by 2020, cyber incidents are at the forefront, compared to 2013, where they ranked 15th. Since locally (i.e., Romania) is not acquired a strong information on the topic "The risks associated with threats related to disruptive technologies in the current financial systems context", transparency being limited in this respect, the author discusses the cyber financial current through documentation and critical analysis of the latest digital publications, which might be transposed to the accountant or auditor profession.

The objective of this paper is (1) to identify the current cyberspace that seems unsafe in terms of training professional accountants and auditors, in order to prevent threats arising from emerging technologies, (2) to analyze the risks from security incidents caused by the evolution of disruptive technologies and (3) to design a risk management analysis model in order to be assumed an acceptable level of risk by entities. Through this article, the author contributes to the literature by better information about the current entities system's and designing an analysis model regarding risk management, the aim of this paper being to develop an awareness at the individual and at the company level, to mitigate and why not, to reject the generated threats by disruptive technologies.

The paper places current security incidents in a context of interest for technology users and companies that persevere in the ongoing fight against cyber risks associated with the threats generated by disruptive technologies, arising from the harsh development of the online environment, digitization processes and current financial information systems. The first section focuses on the literature review, which considers the analysis of the framework constituted by "Risks associated with threats related to disruptive technologies in the current financial systems context", at a global level. The second section discusses the research methodology of this paper. Section three presents the obtained results, outlines evolutions and comparisons of the most common security incidents reported by Kaspersky and Fraud Watch International, simultaneously with a risk management strategy designed in an analysis model, which might be considered by companies in order to assess, prevent, transfer and assume the risk generated by disruptive technologies. The article concludes by stating the conclusions and future research directions.

## 2. Scientific literature review

The risks associated with threats related to disruptive technologies in the current financial systems context continue to affect companies and technology users around the world (Hawker, 2000; Goodman, 2016; Mohammed, 2018; Rainer, 2020). In this regard, the risks associated with the threats generated by disruptive technologies are closely linked to the cybercrime and cybersecurity phenomenon (ISACA, 2015; PwC, 2016; ITU, 2017; E&Y, 2017; von Solms and von Solms, 2017; Demertzis, 2018; E&Y, 2018; Kaspersky, 2018; Kaspersky, 2019; Alloghani, 2020), a phenomenon that seems to become more frequent, more sophisticated in the way hackers attack, and on the impact generated. In order to avoid these risks as much as possible, it is recommended to design and integrate appropriately-developed IT systems, as well as to establish in time measures regarding the confidentiality, integrity, availability, processing and data storage resulting from operational processes. Joining Cloud platforms might ensure data security (Wang et al., 2011; Faccia et al., 2019; Zhang et al., 2019; Shkarlet et al., 2020) and might be an effective business solution by estimating future resources data requests, needed for the proper activity of the enterprise, using a predictive approach (Gadhavi, 2020). Before concluding contracts with third parties or with Cloud providers, it is recommended to pre-verify the risks associated with those contracts or with Cloud platforms aimed at simplifying business processes.

Despite the offered advantages (e.g. allocation of a shorter time for the preparation and presentation of financial statements, operational processes level automation, computerized systems usage, bookkeeping level efficiency) by disruptive technologies (i.e. Cloud Computing, Big Data, IoT, AI, Machine Learning, Robotic Process Automation) (PwC, 2016; Richins et al., 2016; Mangiuc, 2017; Azvine and Jones, 2019), the generated risks finds support in various computer threats (e.g. Advanced Persistence Threats, phishing, malware, ransomware, DDoS, Man-In-The-Middle, SQL injection, mobile devices cyber-attacks, electronic fraud) (Rîndaşu, 2016; Guo et al., 2016; Hou et al., 2017; Stanciu and Tinca, 2017; Azvine and Jones, 2019), generated by disruptive technologies, emerged in cyber-attacks, which compromise the organization's information systems, as a result of the increasingly complex digitization processes emergence (Goodman, 2016).

For 2020, Kaspersky Lab investors (2019) report that companies and users confront extensive risks, represented by Advanced Persistent Threats (APTs) of the WildPressure type, Backdoor.Win32.Agent malware, spam, phishing, computer incidents, cyber attackers seeking access to biometric data. Lately, hackers have substantially invested in methods that "cheat" anti-fraud systems. As authentication theft is not enough, through access to Personally Identifiable Information (PII), attackers need a fingerprint to withdraw money from the bank. Thus, during 2019, was identified Genesis, an undercover e-store that sells fingerprints of worldwide users, representing one of the associated risks (i.e., theft of fingerprint) with the generated threats (i.e., theft of authentication) by disruptive technologies (i.e., Tenebris Linken Sphere browser) faced by online banking users. More than 60,000 stolen profiles have already been identified, the profiles include browser fingerprints, user and password authentications on various sites, cookies, credit card information, etc. By uploading the fingerprint into the Tenebris Linken Sphere browser, criminals are able to log in as banking legitimate users. This type of attack shows that criminals have in-depth knowledge about the internal functionality of banking systems, which represent a real challenge to protect against such attacks. The best prevention method would be the Multi-Factor Authentication (MFA).

In fact, many of the threats generated by disruptive technologies are against Android. For example, for the third quarter (September, 2019), Zerodium, a brokerage firm, indicated that a day without access to Android would cost more than a day without access to iOS (Apple Inc. operating system), that is $2.5 million. This amount represents a significant increase, which previously would have been paid against an attack on iOS two million dollars, $2 million. On the same day, a threat was identified in the v412 driver (Video4Linux), an Android media driver. If this vulnerability had not been identified in time, it could have allowed user privileges to escalate. The Android generated threat is due to the lack of updates from September, which should have included this type of vulnerability in the Google's security update. A few days later, another Android vulnerability was identified that would have allowed attackers to give full access to the Samsung, Huawei, LG and Sony smartphone users e-mails by sending a text message (Kaspersky 2019 a).

The hackers are the actors who seek to threaten, create costly globally damage and find weaknesses in terms of information security especially in companies where data vulnerability might be easily endangered. Cyber attackers are constantly concerned about initiating attacks against Android or iOS, or to the area of politics, military, hospitals around the world, where WannaCry is already history in this regard (CERT.RO, 2018; Azvine and Jones, 2019; Kaspersky, 2019). Most of the time, the risk of being attacked is taking place, leading to litigation or lawsuits (Forbes, 2020). Cyber incidents are listed no. 1 in ranking risks that companies around the world are afraid of, the emergence of a cyber-attack representing a real risk that threatens the economic activity (Allianz Risk Barometer, 2020).

## 3. Research methodology

This article aims to address the latest episode in "The risks associated with the threats generated by disruptive technologies and digitization processes" topic. Digital currents issued by the software company Kaspersky Lab are debated, a company that has proven over time professionalism in the design and implementation of effective security programs. We consider that for the understanding of current cyber security phenomenon that underlies these risks, is necessary to examine the current cyber state and cyber attackers' movements that seem to be increasingly complex, sophisticated, fast and documented. This examination was performed by investigating the reports issued by Kaspersky Lab for the last three years - 2017, 2018, 2019. The research method of this paper is based on fundamental qualitative research and critical observation, applied to investigate trendy digital reports and practices, which have as a purpose user's information about the threats generated by disruptive technologies, towards a better protection against vulnerabilities, which seem to monopolize the computer systems of the entities.

The article is divided into (1) analysis and comparison of Kaspersky Lab security reports for the period 2017-2019, (2) examination of security incidents presented by Kaspersky Lab and Fraud Watch International and (3) threats generated by the Artificial Intelligence and Deep Learning globally impact. Data source finds its origins in online digital publications specialized bodies and other current publications concerned with stopping these attacks. In 2020, due to the COVID-19 pandemic, the threats generated by this virus induced a deep fear around the world, hackers finding the perfect opportunity for repeated infiltrations and technology users attacks, (users) particularly interested in this topic and protection against the virus. The article provides details on the complexity of the risks associated with the adoption of disruptive technologies in the context of current financial information systems. For the analysis of the current phenomenon and in order to identify the present reported threats, security reports issued by the specialized security company Kaspersky Lab were taken into account, as mentioned above, but also records of the Internet security organization, Fraud Watch International, specialized in online protection against fraud.

This paper investigates the threats generated by disruptive technologies, especially Artificial Intelligence and Deep Learning, through a documentary research of the latest technological currents that signal the threats generated by digitization processes. International databases such as ProQuest, Springer Link, ResearchGate and Google Scholar were consulted to identify the literature suitable for this study. Sorting items was manually performed by the author, and only articles that discuss the risks associated with threats related to disruptive technologies in the context of current financial accounting information entities system by first ensuring that key information is included.

The paper initiates discussions and explores the risks associated with the threats posed by disruptive technologies on the financial accounting system and the development of digitization processes, emphasizing (1) the evolution of the most common five security incidents, (2) recommendations issued by banks (e.g., ING Bank), companies and specialized organizations (e.g., Europol, CERT.RO) in terms of information security. The terms "vulnerability", "alerts", "hackers", "cyber attackers" are used alternately in this paper. Considering that it has been noticed reluctance on the current state of cyber-attacks and a large reporting number of security incidents faced by companies and worldwide users, it was impossible covering all security events.

## 4. Results and discussions

The focus of this paper is the risks that arise once with the development of digitization associated to disruptive technological threats and reported by informatics systems, by both the organizational and individual level. In the new COVID-19 pandemic context, ING Bank took action. Specifically, the bank informs about the new ways of attacking, hackers using this epidemiological pretext to send phishing e-mails to ING customers, under the subject regarding protection against this virus (i.e., COVID-19). Cyber Attackers are using current and the current trending topic on which there is an instant action (by clicking on the infected link). The e-mails appear to be sent from trusted sources, but by a closer look, it could be detected e-mails from illegitimate sources. Phishing e-mails require users to take various actions, such as accessing links, downloading files or images (which may be infected with a virus), providing confidential data (e.g., bank details, card names or passwords). ING Bank warns about these suspicious actions taking place on a large scale, once with the emergence of COVID-19 virus.

Also, under the COVID-19 pandemic pretext, cyber attackers send false advertisements (e.g., "Measures against COVID-19", "Donate 2 euros"), under the WHO (World Health Organization) logo, notifies CERT.RO (2018) and Europol (2020). These false advertisements baffle online users, hackers turning to so-called fund-raising campaigns, promotion of investment products, gloves purchase, treatments, vaccines, masks.

Phishing e-mails are sent under the hospitals or medical clinics name, users being informed about a relative or acquaintance who has been infected with this virus, asking from the recipient money for treatment. Professional organizations advice is to ignore these malicious campaigns, to not open unknown links from e-mails and to check the sending source. For users who intend to purchase online or to donate during this period and beyond, prior documentation before making the transaction is recommended. Installing an antivirus or security solution would provide anti-phishing, anti-malware and anti-spam protection.

**Table no. 1** examines the alarming evolution of phishing e-mails sent by attackers claiming to be bank personnel (Santander Bank, Wells Fargo Bank), financial services companies (American Express), courier (FedEx) or video streaming (Netflix), software for sending and receiving e-mails (Outlook, Global E-mail Server) or from an operator of an online payment system (PayPal). These phishing alerts are only some of the millions received and reported worldwide victims (i.e., organizations, individuals). Risks associated with such threats generated by the advent of online payment methods, available courier service, information download or view, vary in the manner and diversity of attack, the ultimate goal being device infestation and theft of personal data. Privacy is not respected by cyber attackers, they seek to permeate all sectors, undermining users' technology rights. The leader in anti-phishing protection, Fraud Watch International, notifies about the latest phishing activity (**Table no. 1**).

**Table no. 1. Evolution of phishing alerts for March 2020**

| Phishing Incidents | The subject of the e-mail | Date |
|---|---|---|
| Microsoft - File "Lewis Invoice 076689.pdf" Has Been Shared With You | Install Update for Microsoft Outlook | 26 March 2020 |
| Netflix - Please Verify Your Account? | Netflix account verification | 24 March 2020 |
| Global E-mail Server (Webmail Login) - Urgent Account Verification Needed!!! | Urgent account verification | 20 March 2020 |
| PayPal - Your Account cannot be used until you verify it | Urgent account verification to be used | 18 March 2020 |
| Outlook - Notification: Release Your 12 held E-mails | E-mail notification | 17 March 2020 |
| 1 New Security Message from Wells Fargo Bank | Security message from Wells Fargo Bank | 17 March 2020 |
| Banco Santander S.A - Aviso Santander Way (41855) | Information from Santander S.A. | 03 March 2020 |
| American Express - ***Your Account Has Been Flagged*** | The American Express account needs your attention | 02 March 2020 |
| FedEx - FedEx Support on Coronavirus | Coronavirus support | 02 March 2020 |

*Source*: Author's projection based on https://fraudwatchinternational.com

Phishing alert has been identified by the FanCourier company, under whose name hackers send payment messages or opening of attachments to users who have placed orders or who have had at least one order operated by the company (FanCourier, 2019). To avoid the risk of infestation or damage to personal data, it is recommended to pay more attention to these e-mails, to identify unknown e-mail addresses that transmit information about the so-called expeditions operated by FanCourier. The e-mails do not come from the FanCourier company, but from some cyber attackers specialized in malicious phishing campaigns. Hackers use the FanCourier name to distribute Trojan-infested files. The risk of infection is huge, it is recommended to avoid opening files from unknown senders or access to online deals that seem untrue, whatever form that was the basis of their receipt (e.g., message received telephone link submitted online). Following the warning issued by ING Bank, FanCourier, Europol, CERT.RO, it is recommended for devices non-stop connected to the Internet and used for browsing purposes to be updated and to include effective security solutions.

About the impact of Artificial Intelligence today, it could be said that this technology could not fully replace human workload. By looking more carefully at this phenomenon, details are known about a GPT-2 robot creation, which might generate coherent text paragraphs, might translate from various languages and is able to answer various questions and even develop abstracts (Prangate, 2019). OpenAI, the company that designed it, points out that the robot is able to write online false news and create confusion, claiming it could be anyone. There is no doubt the ability of this robot, showing how advanced it is, but nor the result obtained is a perfect one. It is brought into discussion a risk associated with the disruptive technology, Artificial Intelligence, which humanity may face, by creating a confusion state. There is a risk that should not be underestimated, even if in the first instance the effect is unexpected.

Another situation transposed by Artificial Intelligence is the generation of images through Deep Learning algorithm, GAN (Generative Adversarial Network). The results of this algorithm could be used for both positive and negative purposes. Positive, by exempting costs for fashion designers, advertising agencies or clothing manufacturers, they use GAN to create the necessary models and promote clothing items. Negatively, malicious actors might use the algorithm for a broad propaganda, images obtained after running this software undermining public confidence respecting these digital tools.

Head of research at Microsoft, Eric Horvitz, believes that the development of Artificial Intelligence brings into discussion certain risks or legal, psychological and ethical nature (Bellini, 2018). Personal data identification must remain personal. It might be considered that Artificial Intelligence, in one form or another, might have access to confidential data (e.g., home address, bank account, daily routine and housework, illnesses, emotional state). The question will be to what extent Artificial Intelligence will penetrate people's lives, but also what will be the rights and freedoms in a world of Artificial Intelligence.

With the development of this disruptive technology, aspects of redefining jobs and creating new ones must also be considered. It is well known that the fourth industrial revolution will lead to the replacement of millions of jobs (Kaeser, 2018; Borak, 2018), humanity needing better education, vocational and academic training, innovation and adaptation to everything is new. Since 2022, Singapore will introduce driverless buses (BBC, 2017), while in Sweden, since 2018 there is risk involving the gradual disappearance of jobs that require drivers. Another question that derives from all these inventions and implicitly, risks, generated by Artificial Intelligence, is whether entrepreneurs will prefer robots or human beings in their daily work. It seems that there are already companies that have moved towards this trend (The Guardian, 2017), preferring to work with Artificial Intelligence, from the perspective of lower costs, an efficiency that increases considerably, requiring no breaks, annual leave or monthly salary.

A robot becomes a legal issue, where for the first time Sophia was presented, a robot receiving the citizenship of Saudi Arabia (Weisberger, 2017), being considered a citizen with full rights and with its own personality. In Romania, for the first time, it seems that there will be a form of Artificial Intelligence as an ambassador, who will recommend places to visit, will answer various questions about Romania in order to satisfy the foreigners' interest, it will talk about the habits and lifestyle of Romanians (EMEA, 2017).

Regarding the dynamics of security incidents, the Kaspersky Lab study reveals the most feared security incident, Advanced Persistence Threats (APTs), which ranks first in top 5, for 2018 and 2019, while in 2017, the malware were first reported. APTs represent a recent class of threats that seems to have gained a higher impact, a maximum of 68% for 2019 compared to malware and ransomware, with a percentage of 66%, respectively 70%. This ranking of APTs has been maintained for the last two years, 2018 and 2019, and is due to new hackers' attack methods, the complexity of the attacks and the accurate target (**Table no. 2**).

**Table no. 2. Dynamics of the 5 most frequent security incidents between 2017-2019**

| Security incidents | 2017 | 2018 | 2019 |
|---|---|---|---|
| APTs | 32% | 66% | 68% |
| Malware | 56% | 65% | 66% |
| Ransomware attacks | 33% | 64% | 70% |
| Sabotage by external actors | 41% | 56% | 35% |
| Threats from third parties/ partners | 44% | 44% | 44% |

*Source*: Author's projection based on Kaspersky Lab security reports

In the malware case, the evolution registers higher values every year. The purpose of these malware attacks is information theft, a situation that particularly faces the financial-accounting sector. The hacker seeks for weaknesses in the entities' computer system in order to enforce an attack plan, by installing the malware and completing the perfect attack (e.g., password theft, (theft of) banking data, financial information, investment programs data, audit plans or other confidential information). An example of malware is the Trojan (e.g., Poweliks, FakeAV), a malicious program that disguises as a seemingly legitimate software. This type of infestation is a real challenge in detecting the type of attack, misleading users about the true intent. Once this infectious software enters the system, it is activated, which allows the hacker to extract data from the victim's device.

Ransomware attacks ranks 3rd in Kaspersky Lab hierarchy and continue to increase. Ransomware is a new form of malware that seeks to install malicious software on the victim's device (e.g., computer, phone, tablet) by tracking data encryption. In exchange for restoring access, the hacker requires a certain amount of money. If the victim does not pay on time or does not prove the payment, there is a risk that the data might not be recovered, access to data being allowed only after the hacker receives the requested amount. In the ransomware category, CryptoWall 3.0 is a very dangerous ransomware that has generated $325 million from ransom schemes.

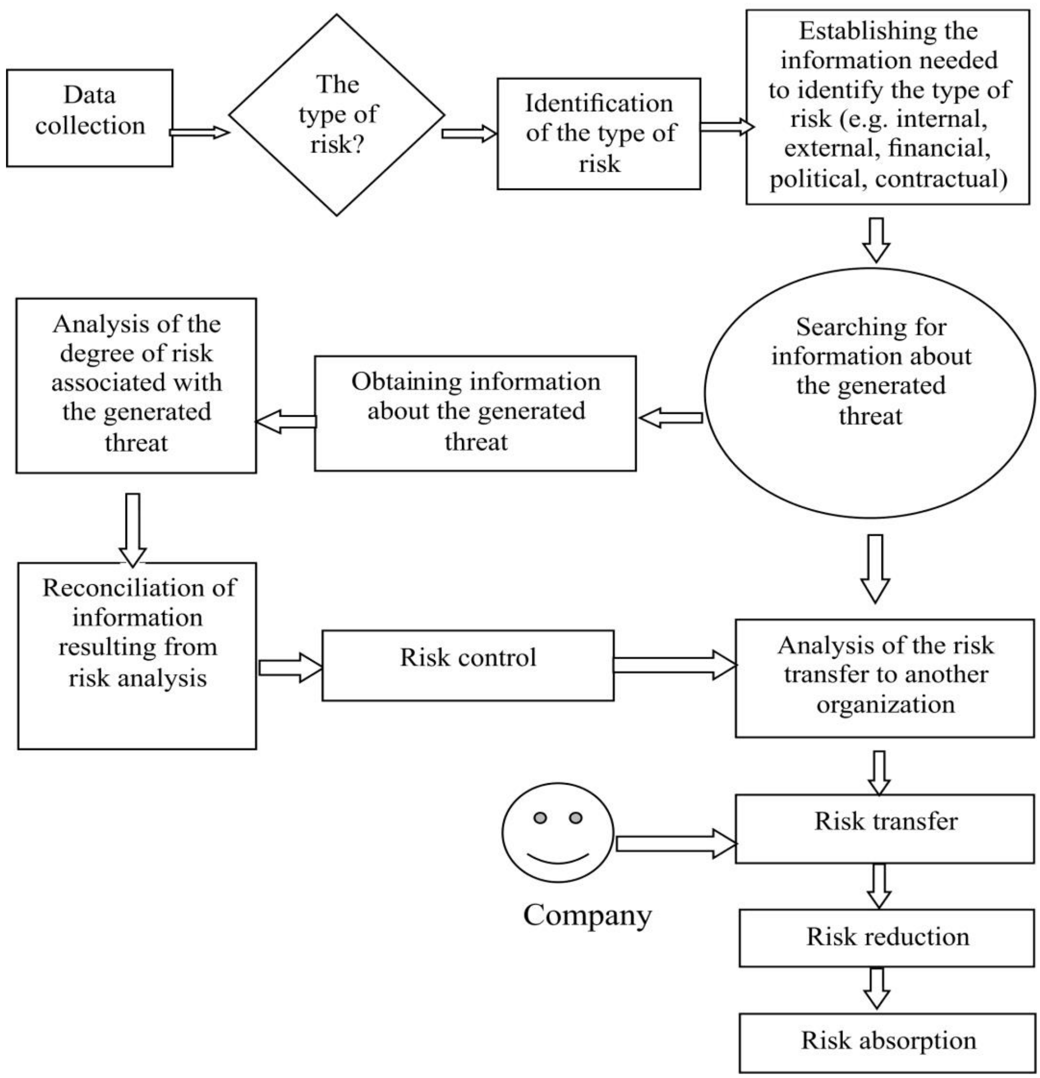
Sabotage by external actors ranks 4th in the evolution of security incidents. The evolution of this type of attack presents an evolution for 2018, where for 2019 the sabotage by the external actors registers a decline of 21 percent. However, this incident, frequently in worldwide companies, continues to register risks caused by insufficient computer protection. Companies should analyze the risks they face and adopt implementation strategies for safer protection.

Threats from third parties or partners are not less popular in top 5 security incidents, recorded for 2017-2019 (**Table no. 1**). A constant support of 44% defines each reported year (**Table no. 2**). The target of the attacks might be any type of company, regardless of size or industry in which it performs. Increased attention is recommended to contracts with unknown partners or recently active in the market, as well as with Cloud providers, considered the most important future information security technology (i.e., the Cloud). Companies should test the partners and third parties before signing the contract regarding the competence on promised preservation, given the later major dependence.

The risks associated with information security threats not only derive from the used software, but also depend on how users manage it. Because employees are the ones who use computer systems, the security of the organization risks to be threatened by their actions. A first dangerous action that might expose computer systems to security incidents is to visit websites including malicious content or websites that process credit card information. There are entities that perform financial-accounting activities on the same network, without a segmentation of professional activities. In the event of a cyber attack, all operational activity would be compromised. Therefore, the network should be divided into activity areas and high value assets, "isolated". To the unknown devices should not be allowed Wi-Fi access, by setting up a private or public network (i.e., private, public network). Moreover, Wi-Fi connections are not secure, especially when making online payments. It is recommended to avoid connecting to public Wi-Fi because it has been detected hackers' techniques to connect to the Wi-Fi server, acquiring the data. Then, when users connect to the hacker's Wi-Fi network, the hacker will have access to the victim's browsing history, implicitly in case of a payment, to user confidential data (i.e., name and surname, bank card number, card expiration date, CVV code).

Risk management, a controversial topic, is based on extensive management experience in identifying the risk generated by disruptive technologies or as a result of the risks associated with the digitization processes. The first step is to collect the data in order to determine the type of risk the company confront. The identification of the risk type facilitates the establishment of the necessary information to establish the type of risk (e.g., internal, external, financial, political, contractual) in order to analyze the degree of risk. Following the reconciliation of information, risk control arises, which aims to transfer the risk or to move it to another organization or person. The transfer is usually made to the insurer (e.g., the bank), against an insurance premium. In this way, the risk is reduced, the company managing the remaining assumed risk (***Figure no. 1***).

***Figure no. 1. Risk management analysis model***




*Source*: Author's projection

## 5. Conclusions

Discussions regarding threats generated by disruptive technologies (i.e. Cloud Computing, Artificial Intelligence, Machine Learning through the Deep Learning subset) that generate frequent security incidents (e.g. APTs, phishing, malware, ransomware, sabotage by external actors, threats by third parties / partners, loss of access to mobile devices by accessing malicious links) were included in this paper, along with the analysis of the impact generated by disruptive technologies based on the security reports issued by Kaspersky Lab over a period of 3 years (2017, 2018, 2019) and based on frequent phishing records, according to Fraud Watch International. The Cloud Computing, Artificial Intelligence and Deep Learning progress is a fact that cannot be challenged. The adoption of Robotic Process Automation would contribute to a Robotic Intelligent Automation, materialized by the emergence of new tasks and the automation of routine activities (which follow the same flow each time), creating an added value to existing investments. Given the result of this investigation, where security incidents are showing successive increases, companies will increasingly invest in intelligent automation of internal processes, will require greater assurance from Cloud providers, will design new methodologies and current practices, which will need protection in order to maintain the company's reputation, maintaining the clients' confidence in the financial reporting and the investors in continuing the capital investment.

Professional bodies, experts in the field and banking experts are facing a cybernetic phenomenon (i.e., cybercrime) that seems to meet no boundaries. The use of a research methods mix has contributed to a further detailed investigation and a broader framework analysis for the current context, marked by risks resulting from non-stop connections to the online environment and threats posed by hackers, given the economic context, currently influenced by the COVID-19 pandemic. Users are overwhelmed by these unprecedented threats for two reasons:

- The subject of the e-mail seems to be very credible (e.g., "Measures against COVID-19", "Donate 2 euros" campaigns);
- The source (i.e., the sender) is well known (i.e., WHO), users considering for the credibility of the recipient.

The increasing level of transmission, in frequency and impact, marks an extremely vulnerable environment for users and companies of disruptive technologies. May be taken into account the human risks factor, subject of Artificial Intelligence, concluding on ethical issues, legal or psychological (e.g., Sophia case) or GPT-2 robot, which might generate paragraphs of coherent text, might translate into various languages and would be able to answer various questions and even conceive online false news, by creating confusion, pretending to be someone else. In fact, connections to a public Wi-fi should be absolutely avoided, especially if online payments are made at that time, there are various ways hackers might steal confidential data.

This article also outlined some unconventional measures that would help the financial sector, professional accountants and auditors to mitigate the risks associated with threats generated by disruptive technologies. Increased attention is recommended to the software working and management process, since computer systems (even the newest ones) are exposed to cyber attacks. Both locally and internationally, numerous information campaigns might be considered aimed at raising awareness of the risks associated with the discussed threats, in order to ensure the quality of the audit, financial reporting system. If are received messages that appear to be suspicious or subject to a popular topic (COVID-19), from unknown recipients and even officials (WHO), a preliminary documentation is recommended before accessing the data. For accountants and auditors, deepening new technologies (Artificial Intelligence, Deep Learning, RPA) is recommended, given that in Romania these technologies are insufficiently assimilated. In the current information systems context, an analysis model has been outlined, that aims risk management by organizations concerned with this issue, detailing the phases of this process, contributing to a better information and awareness, needed in a continuous changing and uncertain world in terms of information security.

As future research directions, the author undertakes to investigate in a future material the extent to which the risks associated with threats from disruptive technologies impact the financial field, in particular accounting and auditing.

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# Convergent and Divergent Elements in the Reporting of Key Audit Matters at the Level of the Banking Sector

## from Central and Eastern Europe

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## Abstract

*The current economic turmoil manifested at international and national level is influencing the banking sector, situation which calls for an innovative approach to the informational value of the independent auditor's report. In order to reduce the information asymmetry of the audit reports from a stakeholder's perspective, competent authorities have issued a series of regulations aiming to change the structure and the content of these reports. The most important change relates to the reporting of the key audit matters, which are considered to bring many benefits to stakeholders.*

*In this context, this research aims to identify, analyze and compare the key audit matters reported by the statutory auditors of credit institutions operating in Central and Eastern Europe. The results revealed that the reported key audit matters reflect the particularity of the industry and of the activities carried out by these institutions. Also, the research highlighted a portfolio of convergent and divergent elements in the key audit matters reporting both at the level of the analyzed territories and at audit firm level. The results of the research are useful to stakeholders of the banking industry, professional bodies and regulators from two perspectives: firstly, by generating value added to the informational value of the audit report and secondly, by building an informational symmetry of the audit report in relation to its stakeholders.*

***Key words:*** *statutory audit; independent auditor's report; key audit matters (KAM); credit institutions; Central and Eastern Europe*

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# Introduction

In the current context dominated by COVID-19 pandemic and, implicitly, by the negative economic effects on entities, regardless of the industry in which they operate, but especially in the banking sector, the relevance and credibility of the audit reports issued by the statutory auditors recorded an upward trend. The structural and informational related issued of the audit reports issued by statutory auditors represent an area of interest for professional bodies, European and international regulators but also for the academic environment.

Thus, the requests for the extension of the statutory auditors' report have increased over the last decades. The traditional format of the audit report has been criticized by users for presenting limited information on the specifics of the audited entity (International Committee on Auditing and Assurance Standards – IAASB, 2015). The confidence of investors and other stakeholders in the independent audit and statutory auditors decreased following the scandals which led to the financial crisis and bankruptcy of some large corporations, considering that many of the reports issued in relation to those entities presented an unmodified opinion (Asare and Wright, 2012). Thus, a simple opinion that the financial statements give a true and fair view of the business, was no longer enough.

In response to the requests to reduce the information gap between the user's informational needs and those actually presented within the auditor's report, regulators such as IAASB, the Public Entities Accounting Supervisory Committee, the UK Financial Reporting Board or the European Commissions launched a series of initiatives to improve the content of the audit report and proposed changes aiming to significantly increase the information presented in these reports.

At European Union (EU) level, the European Parliament and the Council drafted proposals regarding the statutory audit, considered to enhance the transparency of the audit report and to increase the confidence in the statutory auditor profession. Following their endorsement, at EU level, two regulations addressing the audit activity reform were adopted, namely the Directive 2014/56/EU on the statutory audit and EU Regulation no. 537/2014 on specific requirements for statutory audits of public interest entities. These regulations were adopted on 16 April 2016 and entered in force on 17 June 2016. All EU Member States transposed the new requirements in their national laws. In Romania, it was adopted Law no. 162/2017 on the statutory audit of the annual individual and consolidated financial statements.

IAASB launched a process to review the International Auditing Standards (IAS) related to the reporting activity of the statutory auditors and also a new related standard, ISA 701 *"Communicating key audit matters in the independent auditor's report"* (IAS 701). As a result, the structure and the content of the audit reports incurred many changes, the most significant being the presentation of the key audit matters (KAM), which is considered to bring many benefits to the numerous stakeholders, regulators, corporate governance professionals and audit firms. According to IAS 701, KAM represent those aspects that, in the professional opinion of the auditor, had a significant impact in performing the audit engagement. Consequently, the competent authorities in different states revised their national auditing standards to ensure compliance with the rules adopted at international level.

The research literature provides for several studies which envisaged the effects of KAM presentation on stakeholders, increase of the financial reporting quality and of the statutory audit, analyses of main KAM across industries. The majority of these studies are concentrated on KAM analyses from a selected territory (mainly Western European) and industries. Most frequently, the banking sector was excluded from the studies.

In this context, this paper aims to identify, analyze and compare the KAM included in the independent auditors' reports of credit institutions operating in three countries from Central and Eastern Europe, namely: Romania, Poland and Czech Republic. These countries represent a group of emerging economies, with close geographical position and similar institutional configuration (European Investment Bank, 2013).

The results of this research are useful to stakeholders of the banking industry, professional bodies and regulators in order to improve the informational value of the audit reports. Thus, against the background of economic instability and the vulnerability of the banking sector, the statutory audit report will better respond to the informational needs of stakeholders in terms of intelligibility, relevance and credibility.

The article is structured as follows: the first section addresses the KAM concept in a multidimensional way, while the second section is dedicated to the research on KAM reporting in the banking industry. The first part of the second section presents the theoretical framework and research methodology, followed by the section dedicated to the presentation and interpretation of results. The final section of the paper includes the conclusions, limitations of the study and future research directions.

# 1. Literature review

The importance of the changes brought to the statutory auditor's report, and implicitly, of KAM reporting, is also reflected at the level of the literature in this field through the diversity of the conceptual approaches taken by authors in their researches.

In this regard, Sneller et al. (2016) analyzed the importance of KAM presentation in correlation with IT for the stakeholders from Netherlands. The authors analyzed the audit reports issued during 2013 – 2015 for 25 entities listed on the Amsterdam Stock Exchange. The research results revealed that all 75 audit reports analyzed include 255 KAM, out of which 39 are IT related. Among the most important and frequently reported IT related KAM are: the reliability and continuity of IT systems, transformation programs and new business models and the outsourcing of IT services.

Abdullatif and Rahahleh (2019) explored the application of IAS 701 in Jordan by conducting an analysis of the audit reports issued by the financial auditors in 2017 (for 193 entities) and 2018 (for 192 entities) and by conducting interviews with 18 audit partners and directors involved in KAM reporting. The results indicated that the number of KAM reported in Jordan is relatively small, relating mostly to receivables, inventory, real estate investments and income. Also, the authors identified that, generally, audit firms have different approaches with regards to KAM nature and content, with a tendency to report KAM specific to the industry in which an entity operates and not specific to the audited entity.

Ciger et al. (2019) identified and analyzed the most significant KAM reported by the auditors of entities operating in the manufacturing sector, in order to determine the divergences between the KAM reported in Turkey, compared to Central and Eastern European countries. The sample included 177 entities listed on Istanbul Stock Exchange. For the comparative study, the authors analyzed the audit reports of the following: 94 entities listed on Warsaw Stock Exchange, 38 entities listed on Bucharest Stock Exchange and 28 entities listed on Prague Stock Exchange. The results revealed that the nature and the average number of KAM reported are similar mainly in Turkey and Poland. More specifically, the nature of reported KAM is similar in Turkey, Poland and Romania for entities operating in the metal production sector. The most notable difference between Turkey and two of the Eastern European countries (Romania and Poland) envisage the presentation of business going concern.

Kend and Nguyen (2020) examined the KAM reported in 3,000 audit reports issued in 2017 and 2018 for a sample of Australian entities. Among the most commonly reported KAM are: goodwill and intangible assets impairment, valuation of assets, recognition of revenues and acquisitions, part of them being also identified by Abdullatif and Rahahleh (2019). Almost 70% of the audit reports analyzed include the same KAM reported both in 2017 and 2018. Also, the results revealed differences between the number of KAM reported depending on the size of the audit firm.

Li (2017) studied the benefits of KAM reporting by analyzing the 2016 audit reports for 84 entities listed on Beijing Stock Exchange. The research results revealed that the most commonly reported KAM are: revenue recognition, impairment of assets and deferred taxes. Moreover, the results indicated that KAM reporting had more of a symbolic significant rather than an informational one.

From a different perspective, Tudor et al. (2018) analyzed the responses of stakeholders to IAASB's invitation to comment on the proposed changes to the financial auditor's reports. The analysis was conducted using quantitative and qualitative methods, based on content analysis and statistical models. The authors concluded that KAM presentation is perceived as beneficial given that most of the stakeholders agreed with the proposed amendments.

Kitiwong and Sarapaivanich (2020) analyzed the extent to which the implementation of the extended auditor's report in Thailand, starting with 2016, and mainly of KAM reporting, contributed to an improvement in the audit quality. To respond to this question, the authors analyzed the quality of audit engagement carried out during a four-year period, by analyzing 1,519 reports related to 312 entities. The results indicated that the quality of the audit process did not improve as a result of KAM reporting. Furthermore, the KAM number and the commonly reported aspects upon their nature, are not associated with the increase of audit quality.

Moroney et al. (2020) examined the impact of KAM reporting on Australian investors perception with regards to the audit quality and auditor's credibility. The results indicated that KAM reporting contributed to the increase of the credibility and value of the audit in case of entities that are not audited by a Big4 firm. In case the audit is conducted by a Big4 firm, the credibility and quality of the audit engagement is perceived at a high level regardless of KAM reporting. Also, the authors identified that KAM presentation may lead investors' attention being distracted from the basic information included in the audit report. Thus, the results of the studies carried out on stakeholders' perceptions with regards to the improvement of the financial audit quality as a result of KAM reporting are divergent.

Pratoomsuwan and Yolrabil (2020) investigated the effects of KAM reporting on the financial auditors' liability in case of fraud or error. The respondents, 174 financial auditors, assessed the existence of greater responsibility for the auditor when a misstatement appears due to an error rather than a fraud. Additionally, the results demonstrated that KAM reporting reduces the auditors' liability only in the event of frauds, not in case of errors. On a cumulative basis, the results support the view that KAM reporting reduces the discretionary opinions of stakeholders and consequently, the financial auditors' liability.

Segal (2019) analyzed the perceptions of financial auditors from South Africa regarding the improvement of the transparency of the audit report following KAM reporting and identified the main risks financial auditors are facing as a result of this presentation and the impact on client relationship. By using qualitative research methods and a constructivist and investigative approach, the author interviewed 20 audit partners and directors working for 6 audit firms (Big4 and second tier firms). The research results showed that respondents believe the audit report's transparency did not improve but, in fact, deteriorated, due to rising expectations and the public's perception of the financial auditors' role. Respondents argued that, while the available information in the audit report increased with KAM reporting, the use of this information in a wrong context does not constitute valuable information. With regards to the new risks faced by the auditors, the respondents mentioned: increased threat of litigations, financial risks caused by higher fees disproportionate to the recoverability margins, KAM content misinterpretation by stakeholders without specialization in the field.

From a different perspective, Coram and Wang (2019) investigated the effect of KAM disclosure on the public's perception of the role of financial auditors. The sample included 240 respondents, inexperienced auditors. The results indicated that stakeholders' perceptions on the financial auditors' role did not change. In fact, the role of the financial auditor is positively perceived, especially when reported KAM are related to the new accounting standards implemented during the reporting period. These results are convergent with those obtained by Segal (2019) in the context of South Africa, where the expectations and the role of the financial auditors in the public perception highlighted an upward trend.

Kohler et al. (2020) studied the effects of KAM reporting on the informational value of the financial auditor's report. In particular, the author examined the informational value of the KAM related to goodwill impairment, from the perspective of professional and non-professional investors. Main results revealed that, when in the KAM section it is mentioned that a change in the key assumptions could determine a goodwill adjustment, professional investors assess the economic situation of entities as being significantly better than in the situation where it had been mentioned that only significant changes in the key assumptions could determine such an adjustment. Another conclusion is that, for non-professional investors, KAM reporting has no communicative value, which indicate that this category of investors has difficulties in interpreting the information from the audit report.

Pinto et al. (2020) examined whether the probability of reporting a KAM is influenced by the level of accuracy and detail of an accounting standard. The author used the Rules-Based Characteristics score to determine the accuracy of a standard (for example: more rules than principle based). The sample included 135 entities listed in the UK, France and the Netherlands, whose auditors issued extended audit reports in 2016. The results indicated that the probability of presenting a KAM increases with the standard accuracy. Also, the reporting of KAM deriving from accounting standards with a high degree of standardization from the perspective of applied rules, leads to the decrease of the capacity to understand the content of the audit report.

Gold et al. (2020) analyzed the behavior of UK managers in terms of financial reporting in the context of KAM reporting as part of the audit report. The authors identified that the managers of the entities for which an extended audit report was issued show a more conservative reporting behavior compared to the managers of the entities for which KAM are not reported. The results also reveal a reduced tendency to make aggressive decisions from a financial reporting perspective when it is anticipated that a KAM will be reported for a particular topic. These results are consistent with those obtained by Reid et al. (2019), according to which, KAM disclosure lead to the significant improvement of the quality of financial reporting in the UK.

Velte (2019) studied the link between diversity (percentage of female members of the Audit Committee of UK entities) and KAM reported by the financial auditors. The sample included entities listed on the London Stock Exchange, having a premium status, during the period 2014 – 2015. Thus, 660 entities were analyzed (333 from 2014 and 327 from 2015), financial institutions being excluded. The results, measured using the Flesch index, indicated that entities with female-dominated Audit Committee members have a better KAM understanding.

Similarly, Abdelfattah et al. (2020) investigated whether the gender of the audit partner influences the degree and communication style of KAM reporting. The authors' hypotheses focused on the following: female audit partners report more KAM than male audit partners, female audit partners present KAM in more detail compared to male audit partners and the fact that female audit partners have a less optimistic approach than their male counterparts. The sample included all entities listed on the London Stock Exchange, excluding financial institutions, which formed the FTSE ALL Shares index between 2013 and 2017. The results indicated that female audit partners are more likely to report more KAM compared to male audit partners. Also, the audit reports prepared by female audit partners include a higher level of detail, using a less optimistic approach.

With regards to the banking industry, the literature on KAM reporting is limited. Boolaky and Quick (2016) studied the impact of KAM reporting on the perceptions of the directors of credit institutions in Germany on the financial statements quality, on the audit process and auditor report, as well as lending decision. The study was conducted by interviewing 105 directors of such institutions and by using ANCOVA method to determine their perceptions and decisions. The authors couldn't demonstrate the fact that KAM reporting influences in a positive manner the perception of the directors. On the same note and using the same research method, Pantsar and Hillstrom (2019) investigated the perceptions of the directors of Swedish credit institutions on the extended auditor's report. To conduct the study, quantitative and experimental research methods were used. The experiment included a control group, seven experimental groups and 122 participants, directors of credit institutions. The results revealed that KAM reporting led to an improvement in the perceptions of directors regarding the informational value of the audit report, in contrast with the result obtained by Boolaky and Quick.

The European Banking Institute (2019) conducted an empirical analysis of KAM identified in the financial industry. The sample included 90 credit institutions operating in the European Union, mainly in Germany, Netherlands, Italy, Spain and France, for which the 2017 audit reports were analyzed. The average number of reported KAM was of 3.4. The most common aspects identified relate to the impairment of loans and advances to customers, fair value of financial instruments, fiscal, legal and IT related matters. The results of Logit analysis indicated that there are certain factors that influence the nature of reported KAM. Thus, it was observed that the size of the credit institution influences the probability of reporting a key matter related to taxation and IT. Furthermore, the number of reported KAM is influenced by the increase in the value of the institutions' assets. Regarding the reporting upon the audit firm, it was identified that Deloitte has the highest average number of reported KAM. Compared to the other Big4 firm, Deloitte has a tendency to disclose tax related KAM.

A similar study was conducted by Accountancy Europe (2019), which analysed the main KAM reported at the level of the European banking sector in 2018. The sample included 62 European credit institutions which hold most of the assets of the European banking sector. The study showed that the analysed audit reports include 260 KAM, being calculated an average of 4.2 KAM per audit report, higher than the average reported for other industries (4 KAM per audit report). The highest average number of KAM were reported in Ireland and Switzerland (7 KAM), while the lowest in Luxembourg and Slovenia (2 KAM). Regarding the nature of reported KAM, the most common relate to: impairment of loans and advances to customers, classification and measurement of financial instruments, IT, legal and regulatory aspects, deferred taxes and other allowance. Same matters were identified by the study carried out by the European Banking Institute for 2017.

Regarding the Romanian banking industry, Bătae (2019) performed an analysis of the components of the audit reports and of the KAM reported by the financial auditors of the Romanian credit institutions for 2017 and 2018. The results indicated that all financial auditors complied with IAS requirements for the new audit report, both in terms of structure and content. With regards to KAM, the author observed that the auditors reported between 2 and 4 KAM per report. The most common reported KAM relate to the impairment of loans and advances to clients, which were included in all the audit reports analyzed.

The results of the literature review indicate that the conceptual approaches to KAM are multidimensional, both in terms of research objectives but also industries, converging towards the impact on stakeholders and the improvement in the quality of financial reporting and the statutory audit process.

# 2. Research on the key audit matters reporting in the banking industry. The case of Central and Eastern Europe

## 2.1. Research methodology

The objective of this research is to identify and analyze the convergent and divergent elements in KAM reporting at the level of the banking sector in Central and Eastern Europe, more specifically, for credit institutions operating in three territories of Central and Eastern Europe, namely: Romania, Poland and Czech Republic. These states are members of the EU and are therefore required to transpose the provisions of EU Directives and Regulations in their national laws. According to EU Regulation 537/2014, credit institutions are classified as public interest entities. Thus, for these institutions, statutory auditors prepare an extended audit report, which include KAM presentation, in accordance with IAS 701 requirements.

In order to achieve the research objectives, we made use of the institutional theory and qualitative research methods. The institutional theory provides a perspective that helps to understand how organizations respond to institutional pressures and expectations. It assumes that organizational practices, including financial reporting, are closely related to the values of the society where the entity operates, with a tendency to achieve homogeneity for maintaining organizational legitimacy (Deegan and Unerman, 2011). The process of homogenizing organizational practices is called isomorphism and is defined as a constraint process that forces a unit in a population to resemble other units that face the same environmental conditions (DiMaggio and Powell, 1983). There are three mechanisms that can be used for isomorphic change of organizations, namely: coercive isomorphism, through formal and informal pressures on organizations from third parties on which they depend on, mimetic isomorphism, through pressures to imitate organizations in conditions of ambiguity and uncertainty and normative isomorphism, through pressures to act professionally and to follow generally acceptable practices (DiMaggio and Powell, 1983).

The application of the institutional theory in the study of international audit practices is limited. Instead, this theory has been used by researchers to study the adoption of the International Financial Reporting Standards (Albu et al., 2014; Hassan et al., 2014; Aburous, 2019). The transposition at national level of the provisions of Directive 2014/56/EU and of EU Regulation 537/2014 was conducted based on coercive isomorphism, the EU Member States having the responsibility to adopt all normative acts issued by the European institutions. The revision of the national auditing standards was conducted based on the normative isomorphism; IAS being considered best practice standards at international level. The institutional theory is complemented by the use of qualitative research methods. The research was carried out in two stages: the first stage of the analysis includes the revision of IAS 701 requirements regarding the content of the audit report and KAM concept. The second stage assumes the identification of the reported KAM for the selected sample.

The sample includes credit institutions from Romania, Poland and Czech Republic, as follows:

- Top 15 credit institutions from Romania, ranked upon the value of their net assets as at 31 December 2019. According to the annual report of the National Bank of Romania, as at 31 December 2019, in the Romanian banking market operated 34 credit institutions, out of which 7 are branches of foreign credit institutions, whose financial statements are prepared and audited at group level.

  The credit institutions included in the sample have a total market share of 83.86% (**Table no. 1**). The fourth ranked institution in Romania (ING Bank N.V. Amsterdam) is a branch of a foreign credit institutions, whose financial statements are prepared and audited at group level. Thus, this institution was excluded from the sample. This aspect represents a limitation of this study because, if included, the total market share of the analyzed sample would have accounted for 92.87% of the Romanian banking sector.

**Table no. 1. Sample of credit institutions from Romania, ranked upon their net assets value**

| No. | Name of the credit institution | Net assets value (RON million) as at 31 December 2019 | Market share as at 31 December 2019 |
|---|---|---|---|
| 1 | Banca Transilvania | 87,741 | 17,72% |
| 2 | Banca Comercială Română | 71,450 | 14.43% |
| 3 | BRD Groupe Societe Generale | 55,853 | 11.28% |
| 4 | Unicredit Bank | 44,541 | 8.99% |
| 5 | Raiffeisen Bank | 42,876 | 8.66% |
| 6 | CEC Bank | 32,898 | 6.64% |
| 7 | Alpha Bank | 17,821 | 3.60% |
| 8 | OTP Bank | 13,253 | 2.68% |
| 9 | Garanti Bank | 10,870 | 2.19% |
| 10 | Banca de Export-Import a României | 7,751 | 1.57% |
| 11 | Banca Românească | 6,647 | 1.34% |
| 12 | Banca Comercială Intesa SanPaolo | 6,583 | 1.33% |
| 13 | Libra Internet Bank | 6,527 | 1.32% |
| 14 | First Bank | 6,417 | 1.30% |
| 15 | Credit Europe Bank | 4,031 | 0.81% |
| **Total** | | **415,259** | **83.86%** |

*Source:* Annual report of the National Bank of Romania for 2019, page 165, available online at: https://www.bnr.ro/PublicationDocuments.aspx?icid=3043

- Credit institution listed on the primary market of Warsaw Stock Exchange as at 31 December 2019 (**Table no. 2**)

**Table no. 2. Sample of credit institutions listed on the primary market of Warsaw Stock Exchange**

| No. | Name of the credit institution |
|---|---|
| 1 | Alior Bank Spolka |
| 2 | Banco Santander |
| 3 | Bank Handlowy W |
| 4 | Bank Millennium |
| 5 | Bank Ochrony Srodowiska |
| 6 | Bank Polska Kasa Opieki |
| 7 | BNP Paribas Bank Polska |
| 8 | Getin Noble Bank Spolka |
| 9 | Idea Bank Spolka |

*Source:* https://www.gpw.pl/list-of-companies

Regarding this sample, we mention that the audit report of Alior Bank Spolka and Idea Bank Spolka could not be retrieved neither from the official website of the institutions, nor from that of the Warsaw Stock Exchange. Thus, these two institutions were excluded from the sample.

- Credit institutions listed on the primary market of Prague Stock Exchange as at 31 December 2019 (**Table no. 3**).

**Table no. 3. Sample of credit institutions listed on the primary market of Prague Stock Exchange**

| No. | Name of the credit institution |
|---|---|
| 1 | Česká spořitelna (Erste Group) |
| 2 | Komercni Banka |
| 3 | Moneta Money Bank |

*Source:* https://www.pse.cz/en/market-data/shares/prime-market

Thus, the final sample includes 25 credit institutions. All the necessary information to carry out this study was retrieved from the statutory auditors' reports in relation to the financial statements prepared for the financial year ended 31 December 2019. The audit reports were obtained from public sources, being available on the official websites of the credit institutions or of the stock exchanges. The content of the audit reports was analyzed in detail, in particular, the section dedicated to KAM reporting and auditors' responses. All information was manually collected from the audit reports.

## 2.2. Results and discussions

Prior to the content analysis conducted in order to identify the KAM reported by the statutory auditors of the credit institutions included in the sample, we investigated the typology of audit opinions issued. Thus, we identified that for all 25 credit institutions analyzed, the statutory auditors issued an unmodified opinion, according to which the financial statements give a true and fair view, in all material aspects, of the financial position as at 31 December 2019, respectively of the financial performance and cash flows for the financial year ended 31 December 2019.

The research on the distribution of audit firms that perform the statutory audit of the analyzed credit institutions and on the identification of the number of KAM reported per each institution revealed the following: at Romania level, there are 28 KAM reported for the 15 institutions analysed, which translates into an average number of 1.86 KAM reported at institution level. The frequency distribution of KAM revealed the following: there are 6 cases in which only one KAM was reported, 5 cases in which 2 KAM were presented, respectively 4 cases in which 3 KAM were presented. We mention that for all credit institutions included in the sample, the statutory auditors reported at least one KAM (**Table no. 4**).

With regards to KAM reporting at firm level (**Table no. 4**), the analysis evidenced that all 15 institutions are audited by Big4 audit firms, as follows: 33% audited by KPMG, 27% audited by Deloitte and the remaining 40% are distributed equally between PwC and EY. Furthermore, there is a general tendency of the audit firms to report the same number of KAM for each credit institution, with only two situations in which additional KAM were reported. Thus, Deloitte reported 2 KAM per audited credit institution, EY reported 3 KAM, KPMG reported 1 KAM for four out of the five audited institutions while PwC reported 1 KAM for two out of the three credit institutions.

**Table no. 4. Number of KAM reported by the statutory auditors of credit institutions from Romania**

| No. | Name of the credit institution | Number of reported KAM | Statutory auditor |
|---|---|---|---|
| 1 | Banca Transilvania | 1 | PwC |
| 2 | Banca Comercială Română | 3 | PwC |
| 3 | BRD Groupe Societe Generale | 3 | EY |
| 4 | Unicredit Bank | 2 | Deloitte |
| 5 | Raiffeisen Bank | 3 | EY |
| 6 | CEC Bank | 1 | KPMG |
| 7 | Alpha Bank | 2 | Deloitte |
| 8 | OTP Bank | 2 | Deloitte |
| 9 | Garanti Bank | 2 | KPMG |
| 10 | Banca de Export-Import a României | 1 | KPMG |
| 11 | Banca Românească | 1 | PwC |
| 12 | Banca Comercială Intesa SanPaolo | 1 | KPMG |
| 13 | Libra Internet Bank | 1 | KPMG |
| 14 | First Bank | 2 | Deloitte |
| 15 | Credit Europe Bank | 3 | EY |
| **Total** | | **28** | |

*Source:* Authors' own analysis

The research at the level of the credit institutions listed on Warsaw Stock Exchange revealed a number of 21 KAM reported for the 7 credit institutions analyzed, which translated into an average of 3 KAM reported at institution level, higher than the level recorded in Romania (**Table no. 5**).

A maximum of 5 KAM was reported at the level of a credit institution and a minimum of 2 KAM, in both situations, the level being higher than the one registered in Romania (**Table no. 5**). The frequency distribution of the number of reported KAM is as follows: 1 case in which 5 and respectively 4 KAM were presented, 2 cases with 3 KAM and 3 cases with 2 KAM reported. Regarding the KAM reporting at audit firm level, awe mention that all 7 credit institutions from Poland included in the sample are audited by Big4 audit firms, except for Bank Ochrony Srodowiska, whose 2019 financial statements were audited by Mazars. Given the small sample, we could not identify a specific trend in the KAM reporting by audit firm. Only Deloitte and KPMG audited 2 credit institutions each. In both cases, KPMG reported 2 KAM.

**Table no 5. Number of KAM reported by the statutory auditors of credit institutions from Poland**

| No. | Name of the credit institution | Number of reported KAM | Statutory auditor |
|---|---|---|---|
| 1 | Banco Santander | 3 | PwC |
| 2 | Bank Handlowy W | 2 | KPMG |
| 3 | Bank Millennium | 2 | Deloitte |
| 4 | Bank Ochrony Srodowiska | 3 | Mazars |
| 5 | Bank Polska Kasa Opieki | 2 | KPMG |
| 6 | BNP Paribas Bank Polska | 4 | Deloitte |
| 7 | Getin Noble Bank Spolka | 5 | EY |
| **Total** | | **21** | |

*Source:* Authors' own analysis

The research at the level of the credit institutions listed on Prague Stock Exchange revealed a number of 6 KAM reported for the 3 credit institutions analyzed, which translated into an average of 2 KAM reported at institution level, higher than the level recorded in Romania (**Table no. 6**). Also, it was identified a similarity in the reporting trend of KAM, compared to Romania. Thus, PwC Czech Republic reported only 1 KAM, similar to PwC Romania, which reported the same KAM number for two out of the three audited credit institutions. Furthermore, Deloitte Czech Republic reported at least 2 KAM for both audited institutions, similar to Deloitte Romania, which reported the same KAM number for all the credit institutions audited in Romania.

**Table no 6. Number of KAM reported by the statutory auditors of credit institutions from Czech Republic**

| No. | Name of the credit institution | Number of reported KAM | Statutory auditor |
|---|---|---|---|
| 1 | Česká spořitelna (Erste Group) | 1 | PwC |
| 2 | Komercni Banka | 2 | Deloitte |
| 3 | Moneta Money Bank | 3 | Deloitte |
| **Total** | | **6** | |

*Source:* Authors' own analysis

The analysis of the nature of the KAM presented in the audit reports of credit institutions from Romania highlighted that the most frequently reported KAM relates to the impairment of loans and advances to clients, which was reported for all analyzed credit institutions (**Table no. 7**). The impairment of loans and advances to clients is calculated in accordance with IFRS 9 "Financial instruments" principles and it is a complex process requiring the management of the credit institutions to apply a high degree of professional judgment, using subjective assumptions to determine the recognition period and to compute the amount to be recognized. This area was considered by the statutory auditors as a KAM because the loans and advances to clients represent a significant part of the total assets of a credit institution and also due to the significant professional judgment applied by the management to determine the impairment level.

The provisions for litigations were reported as KAM for four out of the 15 analyzed credit institutions (**Table no. 7**). According to the auditors' reports, the provisions relate to the debts that will result following the outcome of ongoing litigations, which concern fiscal matters and customer disputes. Provisions for litigations were considered as KAM due to the significant judgment applied by the management of the credit institutions in estimating the final outcome of ongoing disputes, respectively for determining the value of provisions.

A similar reporting frequency was observed also for the recognition of interest and commission income, for which, the accounting recognition method is specific to the credit institutions (**Table no. 7**). Thus, interest income is recognized over the estimated life of a financial instruments, using the effective interest rate method, while the recognition of the income from commissions depends on the nature of those commission and can be recognized either using the effective interest rate or at the moment when the credit institution provides a service to a client. The interest income and commissions recognition were considered a KAM given the particularity of the accounting recognition methods and the large volume of low value individual transactions. Deloitte reported this KAM for all 4 credit institutions audited, from our sample.

Another KAM identified related to IT and relevant systems used by credit institutions for financial reporting (**Table no. 7**). EY reported this KAM for all 3 credit institutions audited, from our sample. The complexity of the IT environment within a credit institution and the automation degree of the relevant processes for financial reporting are the main reasons for which IT and information systems used for financial reporting have been considered a KAM. The investigation of the audit reports also highlighted KAM that relate to fiscal aspects and goodwill impairment (**Table no. 7**). These KAM represent specific aspects encountered in the activity of certain credit institutions.

**Table no. 7. KAM reporting frequency for credit institutions from Romania, based on their nature**

| No. | KAM description | Reporting frequency (number) | Share in total reported KAM |
|---|---|---|---|
| 1 | Impairment of loans and advances to clients | 15 | 54% |
| 2 | Provisions for litigations | 4 | 14% |
| 3 | Recognition of interest and commission income | 4 | 14% |
| 4 | IT and information systems relevant for financial reporting | 3 | 11% |
| 5 | Fiscal aspects | 1 | 4% |
| 6 | Goodwill impairment | 1 | 4% |
| **Total** | | **28** | **100%** |

*Source:* Authors' own analysis

In terms of KAM reporting frequency, the research revealed that the impairment for loans and advances to clients are the most frequently reported KAM also in the case of credit institutions from Poland, being included in all 7 audit reports analyzed (**Table no. 8**). In addition to the reports from Romania, Polish auditors reported as KAM the provisions for off-balance sheet client commitments (in case of 3 credit institutions). Mainly, these commitments represent approved credit facilities, not yet utilized by clients and letters of guarantee.

The second most frequently reported KAM also covers the provision area, namely the provisions for ongoing litigations with clients for the reimbursement of commissions and fees related to consumer loans prepaid by clients, respectively litigations for abusive clauses included in the CHF loan contracts (**Table no. 8**). Credit institutions operate in a regulated market and are exposed to the risk of ongoing regulatory changes but also to events which can generate changes in the contractual cash flows deriving from the contracts concluded with clients, respectively in an obligation arising from past events, whose settlement will involve the use of the resources of those respective institutions. Practically, as at 31 December 201, the statutory auditors identified two rulings of the EU Court of Justice, namely from 11 September 2019 (case C383/18, related to the change in the interpretation of consumer loans legislation) and from 3 October 2019 (case C260/18, related to the abusive clauses included in the loan contracts concluded in foreign currency in Poland), which, although did not refer directly to the analyzed credit institutions, had generated several consequences for them. The estimation of the risks deriving from these two rulings required the application of management professional judgment regarding, inter alia, the number of reimbursement requests, future prepayment rate, number of possible litigations involving loan contracts in CHF and the outcome of current and future litigations. All these elements contributed to the reporting of these provisions as KAM. Contrary to Poland, at the level of the credit institutions from Romania, the provisions for litigations disputing over loan contracts concluded with clients were reported as KAM in 3 situations, namely for the credit institutions audited by EY. However, the context of recording these provisions is not detailed, but it is specified that the provisions have been recorded for ongoing litigations concerning loan contracts with clients.

Another reported KAM envisage the recognition of interest and commission income (**Table no. 8**). As in the case of credit institutions from Romania, Deloitte reported this KAM for the two audited institutions included in the sample. The remaining reported KAM envisage aspects specific to the activity of particular credit institutions, such as: the acquisition of BNP Paribas Bank of Raiffeisen Bank Polska, fiscal aspects regarding the recoverability of the deferred tax asset recognized by Getin Noble Spolka Bank, valuation of related parties' transactions performed by Getin Noble Bank Spolka.

**Table no. 8. KAM reporting frequency for credit institutions from Poland, based on their nature**

| No. | KAM description | Reporting frequency (number) | Share in total reported KAM |
|---|---|---|---|
| 1 | Impairment for loans and advances to clients | 7 | 33% |
| 2 | Provisions for litigations related to mortgage loans in CHF | 5 | 24% |
| 3 | Provisions for off-balance sheet commitments | 3 | 14% |
| 4 | Recognition of interest and commission income | 2 | 10% |
| 5 | Accounting for an acquisition of a credit institution | 1 | 5% |
| 6 | Valuation of related parties' balances and transactions | 1 | 5% |
| 7 | Recoverability of deferred tax assets | 1 | 5% |
| 8 | Valuation of shares owned in non-listed entities | 1 | 5% |
| **Total** | | **21** | **100%** |

*Source:* Authors' own analysis

Similar to the situation in Romania and Poland, also in the case of Czech Republic (**Table no. 9**), the impairment for loans and advances to clients were reported as KAM for all three analyzed credit institutions. Another KAM envisaged the recognition of interest and commission income. Deloitte reported this aspect for both audited credit institutions, included in our sample.

**Table no. 9. KAM reporting frequency for credit institutions from Czech Republic, based on their nature**

| No. | KAM description | Reporting frequency (number) | Share in total reported KAM |
|---|---|---|---|
| 1 | Impairment for loans and advances to clients | 3 | 50% |
| 2 | Recognition of interest and commission income | 2 | 33% |
| 3 | Impairment for investments in subsidiaries | 1 | 17% |
| **Total** | | **6** | **100%** |

*Source:* Authors' own analysis

The research results revealed a series of convergent and divergent elements in reporting KAM at the level of the three territories from Central and Eastern Europe. In terms of convergence, we identified that the impairment for the loans and advances to clients were reported for all 25 credit institutions included in the sample, being considered the most significant aspect of the audit process. This result is in line with those obtained by previous studies conducted at the level of the European banking sector (European Banking Institute, 2019; Accountancy Europe, 2019). Another frequently reported KAM at the level of the three states relate to the provisions for litigations and recognition of interest and commission income.

As divergent elements, unlike Poland and Czech Republic, a KAM reported at the level of the credit institutions in Romania relate to IT and information systems relevant for financial reporting. This KAM was reported by EY Romania for all audited credit institutions. IT and information systems were not reported as KAM for none of the institutions from Poland and Czech Republic, nor in the case of Getin Noble Bank Spolka, audited by EY Poland. Another significant aspect identified is the particular importance given by the statutory auditors from Poland to provisions for litigations in the context of the two rulings of EU Court of Justice, one of them specifically addressing Polish debtors. At the level of Romania, the provisions for litigations were reported as KAM by EY, but without presenting in details, as in the case of Poland, the context for recording these provisions. At the level of the Czech Republic, no KAM of this nature have been reported.

From KAM nature point of view, the results indicated the tendency of statutory auditors to report KAM similar to the audited credit institutions from a particular country, but also at the level of the region. For example, Deloitte reported the impairment for loans and advances to clients and the recognition of interest and commission income for all audited credit institutions from the three territories. At Romanian level, KPMG reported for all audited institutions only one KAM, namely the impairment for loans and advances to clients, except for one case. This tendency was observed also at the level of Poland. A similar situation was identified for PwC, which reported only one KAM for two out of three audited credit institutions, included in our sample. EY Romania reported same KAM for the three audited credit institutions. Out of these KAM, only the one related to IT and financial reporting systems is not included for the credit institutions from Poland.

## Conclusions

The legislative changes regarding the statutory audit and of the International Auditing Standards had as objective the issuance, by the statutory auditors, of an audit report that would improve the public's credibility in the statutory audit process and in the related financial statements, which have benefited from intense media coverage in recent years. The significance of the changes brought to the statutory auditor's report, and implicitly, of KAM reporting, was reflected at the level of the specialized literature, the conceptual assertions on KAM being multidimensional both in terms of research objectives and industries, and converge towards their impact on stakeholders and the improvement in the quality of financial reporting and auditing process.

The research results highlight that KAM reported at the level of the credit institutions included in the sample reflect the particularities of the banking industry and the activities of these institutions. These results are validated by comparison with previous studies envisaging KAM reporting area for entities operating in other industries (Sneller et al., 2016; Abdullatif and Rahahleh, 2019; Ciger et al., 2019; Kend and Nguyen, 2020).

The research on the KAM reported in the audit reports of the credit institutions from Romania, Poland and Czech Republic revealed a series of convergent and divergent elements. In terms of convergence, the impairment for the loans and is the most significant KAM of the audit process, being reported for all the analyzed credit institutions. Other frequently reported KAM at the level of the three states relate to the provisions for litigations and recognition of interest and commission income. Among the divergent elements, we mention the reporting of KAM related to IT and information systems for the credit institutions in Romania, as well as the increased attention paid by the auditors in Poland to the provisions for litigations, as opposed to those in Romania and Czech Republic. Regarding the nature of reported KAM at the level of the statutory auditor, it was observed their tendency to report similar KAM at the level of the audited credit institutions from a particular territory but also at the level of the region.

With reference to the research limitation, we consider that one of the limitations of this study is the lack of the audit report for the fourth ranked credit institution in Romania, a branch of a foreign credit institutions, whose financial statements are prepared and audited at the level of the parent institution. However, considering the total market share of the credit institutions included in the sample, the research results are not significantly influenced. Another limitation is the lack of the audit reports for two of the credit institutions listed on the primary market of the Warsaw Stock Exchange.

As future research directions, we envisage to continue the research on the identification and analysis of the main key audit matters presented by the statutory auditors in their audit reports issued for credit institutions operating in other EU territories.

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# Considerations Regarding Correlated Analysis between Comply or Explain Declaration and Non-Financial Reports

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## Abstract

*Corporate governance still remains a topic of great interest to both researchers and practitioners, as a result of the on-going challenges that companies face. The current economic and pandemic context and the need for a sustainable development bring new requirements to the governance, imposing a rethinking of strategy and business processes. The new challenges require consolidated implementations of corporate governance. The purpose of this study is to analyze how the companies' alignment to the governance requirements is reflected in "comply or explain" declarations as well as in the non-financial reports and emphasize some identified vulnerabilities, most of them being determined by the obvious limitation of transparency and the attempt of minimizing the importance of some nonconformities. The objective of the study is to identify the barriers occurred in a solid corporate governance implementation and sustainable development of companies, as these aspects are emphasized in the reports of companies from various industries listed on Bucharest Stock Exchange. The companies' governance consolidation process, on all its pillars, encompasses the social responsibility coordinate, and remains for the Romanian companies a process that must be accelerated and assumed entirely. The conclusions of this study offer important reflection points and might represent a solid basis for improvement of corporate governance and implicitly of stakeholders' benefits.*

***Key words:*** *comply or explain declaration; Bucharest Stock Exchange; non-financial reporting; Romania; corporate governance*

***JEL Classification:*** *G34, M14, M41, Q56*

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## Introduction

The necessity for mature corporate governance within all entities, regardless of their nature (public institutions, companies, financial institutions, governmental agencies, etc.) is widely recognized, but the existing implementations highlight inconsistencies and even worrying delays in implementing sound, fully assumed corporate governance.

Corporate governance is based on some well-known principles, but a successful implementation involves their application in resonance with cultural, regulatory, economic (including specific business practices) and even religious particularities (e.g., Islamic area). Therefore, a certain dynamic in terms of governance is required in the effort to adapt to existing economic, socio-cultural and politic particularities. With this outlook the sustainable approach to business becomes a stringent necessity raising new challenges in terms of governance as well as managerial processes. A sustainable development of companies would increase the interest and confidence of investors but would also bring multiple positive societal effects. Sustainability is essential to ensure the long-term success of business, contributing to a global sustainable development through a healthy environment and a stable society.

Our research has shown that in large Romanian companies with foreign private capital there is a better crystallized organizational culture and consolidated corporate governance. This can be explained through the leadership provided by experienced managers who have succeeded to integrate their managerial experience and governance requirements in Romanian companies. However, there are also situations in which large companies listed on Bucharest Stock Exchange (BSE), with private capital, show a lower inclination towards transparency and strict compliance with corporate governance requirements. Our opinion is that special attention deemed necessary for small and medium companies where the governance issue reveals a diverse landscape caused by fragile knowledge of the governance framework and implementations in this segment, aspect that was also emphasized by Gheorghiu et. al (2017). The governance quality problem and awareness to the need for sustainable development in this segment of companies is critical for an emerging economy. We cannot omit to point out that the segment of small and medium-sized companies is the engine of emerging economies. And for these reasons, the need to strengthen governance in these companies becomes urgent, and the awareness of a sustainable development is equally necessary.

This paper summarizes the results of our research on the quality of corporate governance and transparency in non-financial reporting in companies listed on BSE, in various fields such as: extractive industry, manufacturing, chemical, textile, agriculture, hospitality etc. We investigated issues related to the attitude towards transparency requirements (as reflected in *comply or explain statements*) and awareness of the need for sound corporate governance and non-financial reporting. We tried to understand what are the barriers impeding the implementation of strong corporate governance and sustainable business development. As this issue was less explored in-depth in Romania, we appreciate that the results of our research can provide important benchmarks, both in theory and practical implications.

## Theoretical background

*The Institute of Internal Auditors* has defined corporate governance through all the processes and structures implemented by the board of directors / supervisory board to notify, manage and monitor the activities of the organization in order to meet the objectives. Corporate governance processes aim the procedures used by the representatives of the board of directors and the executive management to ensure a clear strategic direction, to achieve the set objectives, to supervise the risk management and control processes. Hardi and Buti (2012) argue that there is no recommended model of corporate governance that works in all companies and states, an opinion that aligns with OECD recommendations. Rushton (2008) defined governance as the way to manage “how shareholders ensure they can get a return on their investment”. Analyzing his point of view, we retained the correlation between shareholders, control and performance. Mallin (2010) and Solomon (2007) had a broader view of corporate governance, including different stakeholder groups in the company's objectives. They believe that an organization must answer to several different, stakeholder groups, having a long-term relationship with the entity and are able to influence its performance.

Khanna & Zyla (2017) underlined that the implementation of specific reforms in the field of corporate governance could attract foreign investment. Various studies (Balasubramanian et al., 2010; Dharmapala & Khanna, 2018) have shown that the governance reforms enacted in India have led to improved corporate governance in Indian firms and further led to better assessments of the markets of firms subject to reform. Moreover, studies conducted in other emerging markets, especially Russia and Korea (Black et al., 2005), found a substantial and statistically significant positive impact of the quality of corporate governance on the market valuation of some firms.

The principles of corporate governance have been updated by the *Organization for Economic Development and Cooperation* (OECD, 2015). An important principle is that of "providing the basis for an effective corporate governance, legal, regulatory and institutional framework" that promotes transparent markets and an efficient allocation of resources, which market participants can rely on. OECD principles implicitly imply that countries have an effective legal and regulatory framework, and that securities courts and regulators have the means and capacity to implement it. Young and Peng (2008) point out that “corporate governance structures in emerging economies often resemble those of developed economies in form, but not in substance, being the result of inadequate adaptation on local realities”. Legislative “transplantation” has created only suboptimal governance structures compared to those specific to good practice, considers Hardi and Buti (2012). According to the World Bank’s study (2003), evaluating corporate governance in various states, most of the developing and transition economies fail to apply their laws, rules and regulations consistently and uniformly, a conclusion that remains valid today.

The OECD warns on the need to ensure “rights and fair treatment for all shareholders”, regardless of whether they are a majority or a minority. But shareholders' rights are different in different emerging countries, and there is a problem of protecting the rights of minority shareholders. Many shareholders do not know their rights. Another problem highlighted by the literature is the lack of transparency and publicly available information. There isn’t a culture of compliance or regulation enforcement.

According to Rafiee and Sarabdeen (2012), the independence of the board is an important issue especially in emerging markets where, for the most part, the vast majority of corporate shareholders are represented by families or government representatives. Other studies (Riyadh et al., 2019; Welford, 2017) have shown that a large number of board members leads to better monitoring of managers' capabilities and performance and thus conducts to an increased governance quality.

The role of stakeholders in corporate governance is a sensitive issue. The governance framework should endorse the rights of stakeholders established by law or mutual agreement and support the collaboration between corporations and stakeholders for the wealth and job creation process, and sustainability of financially stable enterprises. Companies need to have broader responsibilities, pursuing more than profit maximization. The expectations of these companies, especially those listed on the stock exchange, are to emphasize corporate social responsibility, to adhere to environmental, social and governance (ESG) policies. The European Commission has adopted Directive 2014/95/EU which requires a non-financial statement covering aspects as environmental, social, non-discrimination, respect for human rights, the fight against corruption and bribery, the use of renewable and non-renewable energy, greenhouse gas emissions, water use and air pollution. Ernst & Young's analysis shows that the attention of institutional investors is progressively moving towards non-financial reporting. The study, in which more than 300 investors participated (and continuing surveys from previous years) shows that the percentage of respondents declaring that they do not review non-financial reports or give them minor importance decreased from 36% in 2013 to 22% in 2016 and 2% in 2020. Likewise, 98% of institutional investors are interested in non-financial reports of companies and investment decisions have been made in the last year based on non-financial performance in more than 90% of cases (Ernst & Young, 2020).

The Dyck et. al (2019) study reveals that institutional ownership influences companies in policy-making by including to a greater extent some aspects aimed at improving environmental performance after certain shocks (e.g., the 2010 Deepwater Horizon oil spill). Independent and foreign institutional investors in particular are more involved in the development of corporate governance and environmental, social and governance (ESG) policies. It is noted that companies mainly owned by mutual and pension funds, insurance companies, investment firms, private foundations, and other large institutions managing funds on behalf of others, are associated with higher ESG scores. Withal, companies with the same type of shareholding tend to be actively involved in corporate social responsibility (Walker at al., 2013; Oh et al., 2017).

Studies on Hong Kong's families' business show that greater board independence and CEO non-duality, the existence of multiple independent directors, and the appointment of an independent president are factors that can ensure the quality of reporting (Chau and Gray, 2010; Chen and Jaggi, 2000). Also, family-owned companies tend to personally associate themselves with the company's reputation and consequently choose to report more information to the public (Liu, Valenti & Chen, 2016).

According to Adnan et al. (2018) corporate social responsibility reporting is more prevalent in companies in countries with a culture defined by individualism and also in societies where there is a short distance from power. These two characteristics are part of the pattern developed by social psychologist Geert Hofstede, a pattern that contains six dimensions of cultural differences: distance from power, an indicator that measures the degree of inequality in society; avoiding uncertainty – facet that shows the level of reception by a culture of equivocal and dangerous events; measuring the degree of individualism versus collectivism of a society; masculinity vs. femininity as a cultural dimension of a society; long-term or short-term orientation – at the level of business and way of thinking at the level of society and; indulgence versus restraint as a societal dimension. His entire analysis demonstrates that nationality constrains reasoning and defines organizational rationality (Hofstede et al., 2010).

There are various studies that investigate the relationship between national culture and corporate governance. For companies in emerging countries, the quality of corporate governance is very important, as they need to attract foreign direct investment, which helps the development of national economies. The quality of corporate governance depends to a large extent on effective interaction and negotiation between stakeholders. Culture plays an important role in establishing a productive negotiation between people. Culture influences organizational policies through the values held and promoted.

To understand the reporting of corporate social responsibility (CSR) practices, it is necessary to examine not only how culture can influence both CSR practices and reporting, but also corporate governance practices in a particular country, and how these factors interact in determining CSR disclosure practices.

The speed with which companies respond to the pandemic, addressing risks and thinking strategically – is exactly the necessary manner to respond to climate, governance and social risks. Crisis management is vital for companies in how they prove their responsibilities through their behavior. The COVID-19 pandemic forced the insertion and fundamental focus on health care in all organizations and households around the world and maintaining focus on it can bring significant benefits globally. In their 2020 study, McKinsey & Company show that better health promotes economic growth by expanding the workforce and increasing productivity, while providing huge social benefits. However, in recent years, the political debate has been dominated by the emphasis on rising healthcare costs, especially in mature economies, while health as an investment for economic profitability has been largely absent from the discussion.

# Research methodology

## Comparative-descriptive analysis

Our study is based on a documentary research that aimed to identify the main lines of research highlighted by the literature as well as issues regarding compliance with the principles of corporate governance. In this way we were able to draw our own research directions. The analysis performed is descriptive, the information regarding the application of the principles of corporate governance and the declared causes of non-conformities were identified and analyzed. The research is at the same time explanatory, we aimed to search and find causal relationships between issues related to governance, shareholding and company sizes.

The objectives of the research were:

- analyzing the assumption of importance of corporate governance in companies (as evidenced by *comply or explain statements*)
- assessing the transparency in non-financial reporting and identifying the obstacles that arise in aligning with the recommendations in force.

The established objectives imposed a grounded theory strategy in the methodological plan. We consider this approach appropriate, being a study focused on exploring behaviors and attitudes.

In order to achieve the established research objectives, we identified the following ***research topics***:

1. Assuming the commitment of companies' management towards the real implementation of consolidated corporate governance. The most sensitive areas in providing information on governance requirements and sustainable development will be identified.
2. The extent to which the management of the Romanian companies listed on BSE understands the need and ensures the alignment to the reporting requirements on the topic of sustainability.

The achievement of the above-mentioned research objectives required the establishment of some research coordinates summarized in the form of the following questions that we tried to answer by analyzing the sample of selected companies:

1. Do the statements *comply or explain* highlight a real alignment with good governance practices?
2. Is there real transparency in reporting on corporate governance requirements and sustainable development, respectively?
3. What are the sensitive points in terms of transparency of reporting and how can they be interpreted?
4. Can we talk about a real commitment in relation to sustainable development?
5. Are there qualitative changes over time in terms of reporting on corporate governance issues?

Our analysis focused on companies listed on the Bucharest Stock Exchange, from which we selected a sample of 42 companies. The selection was based on several criteria: covering a diverse set of industries (including industries with environmental impact), the presence of different types of shareholders, the inclusion of companies of different sizes (selection criteria for turnover and number of employees). We have included in the sample companies with:

- Romanian capital
- foreign capital and the participation of the Romanian state
- majority foreign capital.

This selection was based on the idea that the nature of shareholders can have an impact on the quality of corporate governance.

The structure by fields of activity of the analyzed companies is: oil and gas extractive and processing industry (9%), pharmaceutical (7%), manufacturing industry (35%), chemical industry (5%), textile industry (7%), agriculture (4%), hospitality (26%), others (9%).

The sample selected is small in relation to the number of listed companies, and this can be considered a minus for research, but through its structure, we consider that we have largely covered the analyzed population and we can state some conclusions that may have generalization power.

Our research used as a source of information the annual reports of the administrators, the statements *comply or explain* (when they were provided as separate documents), non-financial reports, policies (such as those on remuneration, forecasts, sustainability etc.), procedures on general meetings, constitutive documents of the companies as well as other public information – especially regarding the social responsibility, of some listed companies from Romania, from various industries, such as tourism, extractive and processing industry, agriculture, chemical or textile. One limitation of the research might be conducting it based on public documents only, and we admit that important information from within companies would have been useful on reflecting the gap between the image provided by the board through public documents and the real situation, the true image of governance mechanisms as carried in the current activity. Even so, from the perspective of public documents, the information is useful and correct (but perhaps not complete), indicating inclusively the way in which companies want to be perceived by the readers of those documents.

Our analysis focused mainly on the period 2018-2019, noting that for a group of 17 companies, belonging to industries with an impact on the environment mainly, the time segment was wider, namely 2017-2019. In total, we analyzed over 100 annual reports and, where appropriate, non-financial reports, statements published on the BSE website or directly on the websites of the analyzed companies. We tried to follow the improvements in reporting on governance issues, by covering a longer range, at least on one segment of the sample.

## Awareness of the need and commitment to corporate governance

After analyzing all the documents, we identified the aspects of non-compliance related to corporate governance and we found that the answers to the first two questions (I1 and I2) are negative for many of the companies analyzed. Below we formulate the explanations regarding the sensitive points encountered in the reported information, as well as their interpretation.

The implementations in terms of corporate governance, as they are reflected in the public documents of the analyzed companies, lead us to a very diverse picture indicating different levels in terms of assuming good practices. This conclusion is based on a set of relevant elements from our point of view: rigor in presentation, involvement vs. formal approach to reporting, transparency, social involvement, sustainable development, strategies and policies proving long-term thinking.

Analyzing the documents published by companies in successive years we could see an improvement in reporting. It is significant to point out that, in 2017 compared to the period 2018-2019, we encountered more frequently in the *comply or explain* statements a rhetorical language when the explanations had to be offered in case of non-implementation of some requirements. Such rhetorical language is also signaled by the foreign research literature (Laufer, 2006), thus highlighting the shortcomings of reporting. In the case of the analyzed Romanian companies, this rhetorical language is manifested by the formal, evasive explanations regarding the causes of non-implementation of some requirements and the fact that precise terms and responsibilities are not offered for solving the respective non-conformities. Phrases such as “the board will review this requirement” or “the non-compliance is going to be resolved” are not meant to convince the reader that the board members are convinced of the need to resolve the non-compliance as soon as possible.

What is worrying, from our point of view, is the fact that after so many years in which companies have made these declarations of compliance, and therefore these reports have become accustomed to internal assessments, we still encounter cases, albeit fewer in number, in which this rhetorical approach continues to be present. From our point of view, such an approach can lead to an unfavorable image of the company from the perspective of the quality of management and the maturity of the organizational culture.

If for smaller companies a possible justification could be the insufficient training on corporate governance, in the case of large companies it is more difficult to accept such justification. This rhetorical language and lightness in providing explanations in case of non-compliance proves the lack of understanding of the need for transparency especially since we are talking about listed companies but we could even say disrespect to investors, to the general public, and regulators. Let’s not overlook the fact that, in successive years, for some companies, this approach becomes a constant in the declarations of conformity. As such rhetoric is promoted, the readers of these statements cannot understand the causes of the non-compliance and perceive only this non-compliant attitude of the administrators.

If we were to analyze the issues in the *comply or explain* statements, where these non-conformities are present, certain conclusions are crystallizing easily. Non-compliances are registered in “more sensitive” areas, involving the evaluation processes of the boards of directors, the lack of policies regarding remuneration, dividends and forecasts or regarding the transactions with the affiliated parties etc. In one of the *comply or explain* statements, the explanation for the non-establishment of the remuneration committee was as it follows: “the company has and applies some principles regarding the remuneration of board members and the board of directors”, without further details and with a clear and conscious lack of transparency. Even if the number of companies in this situation is small, the mere fact that they consciously apply this lack of transparency and that there is no reaction from supervising entities is sufficiently revealing. With few exceptions, the above-mentioned policies are not published on the website of the listed companies, or if they are published, they are summarized in a few lines (35.7% of the companies analyzed do not publish dividend and forecast policies).

In the 2017 reports, half of the listed companies that we analyzed were showing non-compliances regarding the evaluation of the board members' performance and the non-drafting of the policy regarding this aspect. Even if for the period 2018-2019 many companies from the analyzed sample solved these non-conformities, there continued to be companies where those problems persisted. It is obvious that the evaluation of the board members' performance is a very sensitive point but, at the same time, critical for the company's activity. This assessment of the performance of the board cannot be compensated by the assessment of the performance indicators in the management contracts, given the extensive responsibilities of the boards of directors and their composition – executive and non-executive members, including the independent ones. As the performance indicators in the management contracts are mainly economic and financial, the coordinate of the sustainable development of the company is not present; however, this aspect has become vital in the current context. Perhaps it is not unimportant that there are few companies that opt for the dualist approach, the supervisory board and the board of directors. A supervisory board could better assess the work of executive management.

The existence of non-conformities in the 2019 reports should raise awareness knowing that the list of these non-conformities is longer. The lack of nomination committees (which is necessary for Premium companies), non-compliances related to internal audit function (even lack of audit committee) and ensuring its independent management, the lack of statements on other professional commitments of the executive and non-executive board of directors' members etc. We consider it necessary to emphasize the importance of the committees subordinated to the board of directors. These committees, bringing together professionals in different fields, many of them independent, can provide monitoring and in-depth analysis of company activities/processes and provide fundamental information for decision-making process at the board level. In Western companies with solid governance structures, are not missing the committees, such as: nomination, remuneration, audit, CSR (corporate social responsibility), transactions committee, corporate committee.

It is not without significance that the presentation of board members is often limited to a few lines, not being embossed the professional experience related to the industry the company operates in. The recommendation, as a source of additional information, of the CVs published on the company website cannot be accepted as an explanation of the non-compliance. In the case of some companies, this situation should be corroborated with the fact that there are no statements of the board members regarding other professional commitments or the lack of a policy on reporting situations where board members have relationships with persons holding more than 5% of shares.

In many cases, non-compliance on the conflict-of-interest segment, also a sensitive topic, is formally made explicit. In this case, but also in others "sensitive" ones, through the explanations offered, one is trying to minimize the importance of that irregularity, and the lack of deadlines for correcting the non-compliance and responsibilities on this line shows the real lack of commitment to the solution.

Many of the non-conformities regarding the internal audit function highlighted in 2017 have been resolved. However, still remain problems to be solved on ensuring the independent management and duties of the audit committee. These improvements in the internal audit function may be the consequence of understanding the need and its importance for the company, but it is not insignificant the fact that during the analyzed period regulations have been issued that enforced, in this way, the resolution of nonconformities in this area.

## Understanding the need and aligning with reporting requirements on sustainability

If the *comply or explain* statements have entered the maturity stage, taking into account the long period of time in which the listed companies proceeded to prepare them, in the case of non-financial reporting there is a shorter period of time since regulation, so some reporting problems can be justified by the "novelty" element.

A first important finding to be highlighted is that, in the case of the listed companies analyzed, which submitted *comply or explain* statements reflecting full alignment with corporate governance requirements we identified the concern in implementing the sustainable approach.

Furthermore, companies operating in areas such as the pharmaceutical industry, oil processing etc. were the ones that rigorously provided non-financial reports. These are industries with an impact on the environment and where there are specific regulatory requirements;

so, in case of non-compliance those companies are facing significant impact on their activity. This indicates that alignment with non-financial reporting requirements has been largely driven by real needs to adapt to the conditions and requirements in the field of business, competition, risk and resource management, social involvement etc. Operating in industries with an impact on the environment, those responsible with governance understood the need for a sustainable approach in terms of the company's strategy and current management, aligning with specific compliance requirements being part of these processes.

In most cases, the listed companies opted to include non-financial reporting elements in the management report. Those who opted for separate reporting are those with business processes with an impact on the environment and proceeded to structure the reports in accordance with GRI indicators. It is important to note that in the case of these companies the strategic sustainable approach and ensuring organizational structures for implementing specific processes and monitoring indicators in this segment confirms the involvement of those responsible for governance and managerial approach adapted to this goal of sustainable development.

The non-financial reports reflect the awareness on the need to reduce waste of resources, including water, electricity, gas, and recycling. These are requirements specific to an activity built on the principles of sustainability but also ensure cost reductions and improvements in efficiency indicators. Policies take effect, with the indicators presented in the reports highlighting this. It should be noted that in few cases independent audits on renewable energy, gas emissions, water use or air pollution are reported.

Occupational safety and health policies are also reported by the analyzed companies. Indicators in this segment are reported, given that these issues are also covered by other regulations and, consequently, transparency is ensured.

If in 2017 providing detailed information on the structure of gender, age etc. of staff was not always complete, in the period 2018-2019, the transparency in this segment is evident, diversity policies producing the desired effects. However, there are few companies in the sample analyzed that do not report on the drafting of the diversity policy. One aspect that stands out from the analysis of the documents is the limitation of the information on the members of the boards of directors. Few details are provided on the professional profile as well as analyses related to the principles of diversity policies. We do not consider being a recommended practice. We do not endorse practice of referring to CVs uploaded to the company's site, which in many cases are synthetic.

An important area in non-financial reporting is anti-corruption. This chapter is briefly presented and no identified cases of corruption are reported. As we did not find these policies on the websites of the analyzed companies, which would have proved full transparency and the involvement of all the management factors from this perspective, the analysis could not be deepened. It would have been interesting to analyze whether and how much time the internal audit allocates to the analysis on the effectiveness of fraud prevention and control procedures and the quality of management monitoring in this area. As the statements *comply or explain* indicate, in many cases analyzed, non-conformities related to the audit committee (establishment and activity) we can have a more accurate picture of reality, even if in the declarative perspective things are presented in a different way. It should be noted that the corruption phenomenon is highlighted in many public documents issued by entities with responsibilities in their investigation. The sensitive nature of this area is recognized and greater transparency in non-financial reporting would be required, even if regulations are vague about the information that should be provided.

We appreciate that more attention should be paid to reporting on the risks related to the operations specific to the business processes and the industry in which the company operates. Risk exposure assessment and reporting is not clearly presented, although the European Directive requires this information to be reported according to the estimated impact of the risks. The risk management process is extremely complex, implementations exist due to regulatory requirements, especially in certain industries, but the maturity of implementing this process in Romanian companies remains an open topic. The consequences of limited information on this segment explain many aspects of companies' decisions and results.

If we refer to the questions that formed the basis of our analysis (I2 and I4) on the coordinate of non-financial reporting we can conclude that a main tendency in these reports is the limited transparency. The textual approach focused on presenting the vision, the strategic elements and the ideas extracted from different policies on the coordination of sustainability, and less focusing on specific relevant indicators (so called *hard disclosure*) proves a limited commitment in aligning with the requirements of sustainable development.

## Conclusions

Corporate governance remains a challenge for any company and plays an important role in creating a strong relationship between managers, shareholders, the board of directors and other stakeholders.

Romania is currently facing enormous potential, moving to emerging market status in 2020 and the changes produced will have sustained effects over time, being the ideal time for companies to give more importance to non-financial reporting. In this context, strengthening corporate governance could increase investor interest, ensuring the capital needed for development. Consequently, as Ansel et al. (2020) argue, we believe that sound governance is based on adaptation and can change policy instruments, regulatory processes, and administrative institutions, to meet new and emerging conditions.

Corporate governance is a top issue in an economic context where reputation is difficult to build but so fragile at the same time. The new demands on sustainability require changing business strategies and models, changing processes and rethinking products and services in order to meet new consumer requirements and environmental protection. The commitment and application of transparency in the area of non-financial reporting is strongly linked to the maturity of implementation in terms of corporate governance. The responsibilities of companies are expanding, their objective being not only to maximize profit but also to form a responsible corporate thinking. Mature corporate governance adjusts negative cultural components, ensures transparency, expands and deepens the process of risk management, including environmental coordination and social impact.

Romanian companies continue the processes of consolidating corporate governance at different rates. It is important to be able to understand the need for sound corporate governance and its real commitment. The present study aimed to signal the weaknesses in the *comply or explain* statements as well as in the non-financial reporting, many of which were determined by the obvious limitation of transparency, trying to minimize the importance of non-conformities, some of them even targeting conflicts of interest. The study highlighted the inclination of many companies to offer, which in the literature is called „soft disclosure”, textual presentation focused on presenting the vision and strategic elements on the coordination of non-financial reporting, and less focusing on indicators (hard disclosure), few companies that have built reporting on GRI indicators.

Future research directions aim to expand the study, using data from companies in several states, analyzing the relationship between national culture, corporate governance and the phenomenon of corruption.

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# The Implications of the Audit Committee

## in the Financial Reporting of the Entities Listed on the Bucharest Stock Exchange

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## Abstract

*Over time social and economic events have reflected that the role of supervisory committees and especially of audit committees within entities is essential for ensuring sustainable development, increasing transparency and confidence.*

*The purpose of the paper is to study the role of the audit committee in the financial reporting process of the companies listed on the Bucharest Stock Exchange in the period 2015-2019.*

*The proposed econometric model shows that the management of the entity is oriented towards reducing deficiencies and non-compliances with internal policies and procedures, giving internal control a central role in the decision-making process.*

***Key words:*** *audit committee; reporting; risk management; Bucharest Stock Exchange*

***JEL Classification:*** *M42, G34*

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# Introduction

In the current economic environment characterized by uncertainty, the management of entities must be flexible, must have the capacity to manage risks and to present confidence to the business and social partners.

As mentioned by Bătae and Feleaga (2020), the audit committee is a key element that can ensure a high-performance and efficient internal audit function for the entity since the quality of financial reports depends on its characteristics (Macovei, 2006).

The study aims to analyze the relationship between the frequency of keywords used in the annual reports, selected by comparative analysis and the requirements of the legal framework applicable to audit committees.

In the context of the increasing use of "impression management" techniques in annual reports, respectively the discretionary presentation by information management (Merkl-Davies and Brennan, 2011), the results largely outline the reports user's expectations in terms of quality of the information thus disseminated and the efficient and effective use of the company's resources. One measure of this assessment is the preference of issuers of annual reports to focus on presenting key issues regarding the degree of compliance with a legal framework. A central element in ensuring compliance with the legal aspects and objectives of the company is the audit committee whose levers are drawn through the corporate governance mechanisms implemented at the level of each company.

It is essential to make an analysis of annual reports from a predefined list of key elements regarding the implications of the audit committee in the corporate reporting and proper functioning of an entity. The audit committee is seen as a guarantor of the achievement of the company's objectives, precisely for its role, as long as it is perceived positively from the perspective of integrity and independence requirements as well as from a high level of competence, experience, expertise and professional conduct. Under these conditions, managers will tend to assure investors of making optimal decisions regarding the allocation of the company's resources.

The proposed study is structured in three sections, as follows: the first section presents the analysis of the literature in the field, the second part presents the research methodology, and the last part discusses the results obtained, conclusions, limits and future research directions.

The purpose of the research is to study the role of the audit committee in the financial reporting process of the entities listed on the Bucharest Stock Exchange by analyzing the reports of boards of directors or directorates, as appropriate, from the perspective of the content and presentation of financial information but especially non-financial.

# 1. Specialized literature

Corporate governance, or the way in which an economic entity is run and controlled, is still a concept of great interest for both practitioners and academia given the many syncopes and interruptions in the functioning of market economies.

Over time, there have been enormous financial scandals, such as Enron, Parmalat, Worldcom, Gupta and, more recently, Wirecard, with a significant impact on society, mainly caused by incompetence, greed, ineffectiveness of auditing, ignoring the auditor's recommendations or the management failing to comply with audit procedures. Thus, the role of internal audit is essential in the sphere of corporate governance, in order to prevent accounting fraud and minimize risks (Bostan, Grosu, 2010).

According to COSO, the risk reflects the possibility of an event that would adversely affect the achievement of the entity's objectives. Thus, "there is a direct relationship between an entity's objectives and the controls it implements to provide reasonable assurance about their achievement (ISA 315)". Risk management is an ongoing process involving the entire entity, designed to reduce both the likelihood of adverse events and their impact if they cannot be avoided, the audit committee having an important role in controlling the company (Wicaksono, 2019).

By using the Corporate Governance Code, the Bucharest Stock Exchange (BVB) has developed a set of principles and recommendations (which influence the way the entity is managed, administered and controlled); transparency, trust and accountability are key factors in ensuring sustainable development and increasing market competitiveness. BVB's Corporate Governance Code issued in 2015 implements the principle of "Apply or explain", respectively a self-assessment of the entities on how the "provisions to be observed" are met.

From our perspective we can conclude that corporate governance is a set of rules that guides companies in order to maximize the goals of all stakeholders in the context of a long-term balance; these rules are based on ethics and social responsibility and are marked by organizational culture, but also culture, respectively legal requirements specific to the areas where the entities have their administrative headquarters or carry out their activity (Bogdan and Dumitrescu, 2020).

The general principles of corporate governance emphasize the obligation to set up the audit committee by entities admitted to trading on the regulated market, which can ensure the integrity of financial reporting, monitoring being one of the main tasks of the audit committee. Also, the Corporate Governance Code of BVB recommends to the listed entities the organization of internal audits in order to evaluate the efficiency of the risk management system periodically.

In Romania, Law no. 31/1990 provides the possibility to set up advisory committees for the Management Board and the Supervisory Board, such as the Audit Board. Articles $140^2$ (1) and $153^{10}$ stipulate that this committee “can be created" which means that the establishment of the structure is not an imperative condition.

Instead, Law no. 162/2017 regarding the statutory audit of the annual financial statements and of the consolidated annual financial statements and of the modification of some normative acts, in article (1) stipulates that public interest entities must have set up an audit committee. Given that the financial statements prepared by public entities are subject to statutory audit, the existence of the audit committee is a mandatory requirement that must be met with a decisive role in conducting high quality statutory audits [(paragraph 24), Directive 2014 / 56 / EU].

Maintaining the independence of auditors is a mandatory aspect in order for financial audit missions to be effective and to provide reasonable assurance to stakeholders regarding the credibility of financial statements (Tănase, Ştefănescu, 2020).

According to article 29 paragraph (1) of Law no. 162/2017, independence is one of the main criteria in selecting the audit partner. Also, with reference to the audit committee, Law no. 162/2017 mentions in article 65, par. (2) and (5), the obligation of independence of both the audit committee and the majority of its members and chairman from the audited entity.

Independence is also a mandatory condition stipulated in company law, Article $140^2$ (2) specifying that at least one member of the committee must be an independent non-executive director.

In the dualist management system, in which we discuss the existence of a directorate and a supervisory board, article $153^{10}$, paragraph (3) of Law no. 31/1990 requires that at least one member of the advisory committees set up in areas such as audit, remuneration and nomination be an independent member of the supervisory board. The same piece of legislation states that at least one member of the audit committee must have relevant experience in applying accounting principles or financial auditing. Related to independence, in practice, this provision transposed into Romanian law has its origins in Directive 2014/56 / EU which emphasizes in Article 24 the importance of strengthening the independence and technical competencies of the audit committee by requiring a majority of members to be independent and at least one member should have auditing and / or accounting skills.

The audit committee is also responsible for the selection procedure of the financial auditor and has the power to inform the members of the board of directors or the supervisory board of the results of the statutory audit and to present its role in this process. Throughout the engagement, there must be effective communication between the statutory auditor and the audit committee that supports the whole process, removes shortcomings in internal control and minimizes the risk of material misstatement of the financial statements. In fact, EU Regulation no. 537/2014 (in Article 11) provides for the obligation to communicate in writing the additional report addressed to the audit committee (being one of the novelties implemented by this latest audit reform at European level).

## 2. Research Methodology

Our research approach aims at a more recent approach in the field of literature, in terms of analyzing financial statements in terms of content and presentation of financial information. Our analysis consists of an empirical approach to the annual reports published by a sample of companies listed on the Bucharest Stock Exchange.

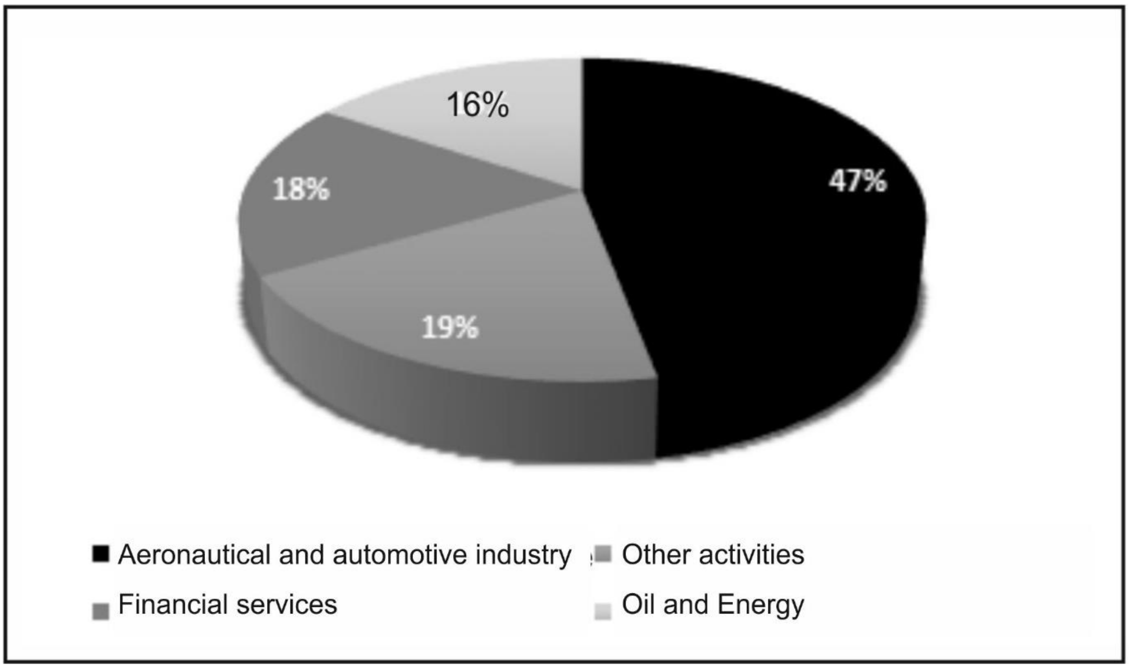
The approach is similar to that proposed by Lang & Lawrence (2015), aiming to analyze the association between textual attributes of annual reports and a number of characteristics specific to the companies considered in the sample, such as profitability, financial leverage or size of conducted operations.

## The analyzed sample

The analyzed sample consists of a group of 51 companies listed on the Bucharest Stock Exchange highlighting the effects of four fields of activity. The selected companies are those that reported a positive financial result and are listed on the regulated market segment of BVB which counts a total of 84 listed companies.

According to ***Figure no. 1***, we notice that most of the analyzed entities, in proportion of 47%, carry out their activity in sectors that belong to a wider field, respectively the financial-banking field which includes banking activities, insurance, mutual investments, etc. However, the other areas of activity are balanced. In order to verify whether the results obtained can be affected by this relatively disproportionate structure of the sample, we will perform post-hoc analyzes to verify the differences in the areas of activity considered in the analysis.

***Figure no. 1. The structure of the analyzed sample***




*Source*: Own projection, based on the analyzed data

The data collected cover the period 2015-2019, respectively 255 observations included in the analysis. They are distributed equally each year given that for each of the 51 entities included in the analysis the data needed for econometric modeling were collected.

The data used in the textual analysis of the annual reports were obtained using the Nvivo 11 application and data on the financial situation of the sampled companies were collected manually from the annual reports available to the general public.

The analysis of the content of the annual reports was performed by using established *text mining* techniques. Therefore, we proceeded to the following research steps in order to collect the data necessary to obtain econometric results:

- ✓ studying the annual reports available to the general public;

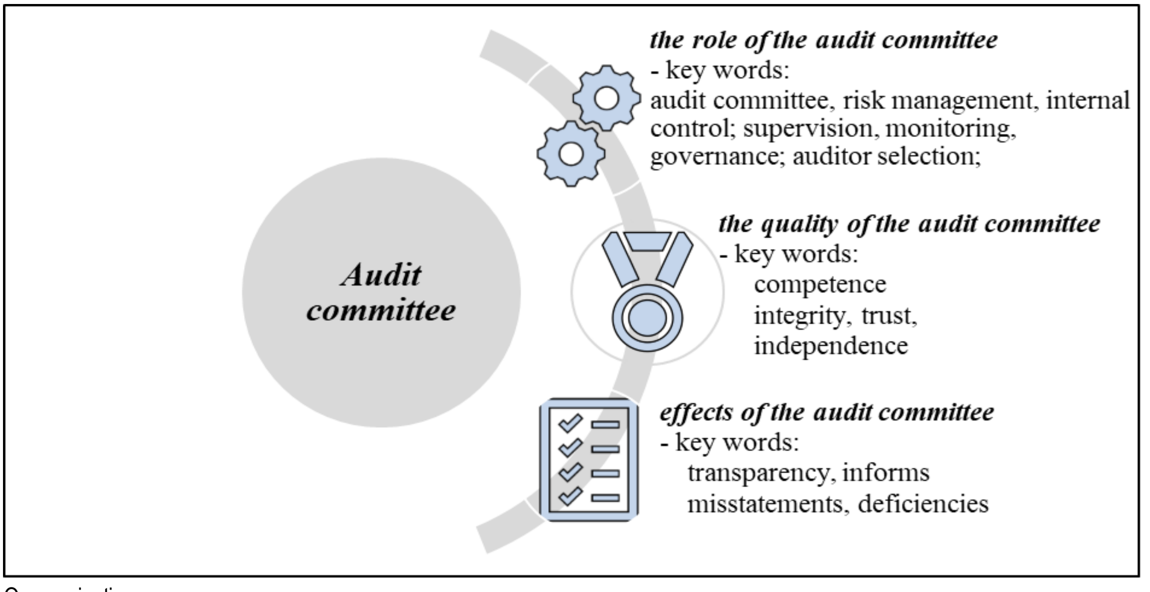
- ✓ counting the words used in all selected annual reports;
- ✓ establishing some key words, used in the econometric analysis, starting from the objective of the paper; In order to illustrate the role of the audit committee in the financial reporting process, we analyzed the text of the following legislative regulations identifying elements that define the framework of the audit committee, as described in **Table no. 1**.

**Table no. 1. Legislative acts analyzed in order to establish the relevant keywords for defining the framework for carrying out the activities of the audit committee**

| Legislative Act | Description |
|---|---|
| Law no. 31/1990 | Establishes a legal framework for the operation of companies including minimum principles and requirements for the establishment and operation of the audit committee as part of corporate governance mechanisms and processes. |
| Law no. 162/2017 | Regulates the statutory audit of the annual financial statements and of the consolidated annual financial statements including the framework for defining the attributions of the audit committee according to art. 65. |
| EU Directive 2014/56/EU | It regulates the statutory audit of the annual financial statements and of the consolidated annual financial statements at the level of the acquis communautaire including the framework for defining the tasks of the audit committee according to Chapter X. |
| EU Regulation no. 537/2014 | Completes the EU Directive 2014/56 / with specific requirements regarding the statutory audit of public-interest entities that is visibly oriented towards the role of the audit committee in the corporate governance mechanisms at the level of listed companies. |
| BVB Corporative Governance Code | It defines a set of principles and recommendations for companies whose shares are traded on the regulated market of BVB, including the importance of setting up an audit committee within the company in order to optimally manage possible conflicts of interest and to defend the independence of auditors. |

*Source*: Own projection

***Figure no. 2. List of keywords analyzed in the annual reports***




*Source*: Own projection

- ✓ our analysis is summarized in the list of keywords transposed in ***Figure no. 2***;
- ✓ determining the frequency of keywords in each annual report considered in the analysis.

## The Variables' Analysis

In order to test the proposed research hypothesis, we will analyze the correlation between the frequency of keywords and the characteristics of the companies included in the sample. As a first step we will start by identifying the most commonly used keywords for which we will estimate the main characteristics of companies that significantly influence the use of these words in annual reports. The selected keywords refer directly or indirectly to the role of the audit committee in the structures and processes through which companies operate. These words provide guidance on the conceptual or theoretical framework of the expectations of investors and other users of financial-accounting information regarding the mission of the audit committee at company level.

**Table no. 2. Brief description of the significance of the variables included in the estimated models**

| Category | Variable | Variable Name | Description |
|---|---|---|---|
| **Dependent Variable** | | *Count*$_1$ | represents the number of occurrences of the keyword *audit committee*, for each annual report analyzed; |
| | | *Count*$_2$ | Represents the number of occurrences of the keyword *risk management* for each annual report analyzed; the audit committee guides its decisions for approving internal audit plans and respectively the selection of external auditors based on the risks assessed at the company level in order to prevent possible adverse effects of events that prevent the company from achieving its objectives; |
| | | *Count*$_3$ | represents the number of occurrences of the internal control keyword for each annual report analyzed; in accordance with the requirements specified in the "Apply or explain" form, respectively B.3 and B.6, it is made clear reference to the audit committee's task of assessing the effectiveness of the internal control system; |
| **Explanatory Variables** | Corporate Governance | Corporate Governance Score | is defined as a measure that reflects the degree to which the company applies the minimum requirements required by the BVB "Apply or explain" form with reference only to Chapter B which describes principles and recommendations regarding the audit committee and the internal audit function; |
| | Control Variables | ROA | represents calculations based on the financial information published in the annual reports considered in the analysis; it is calculated by reporting the net result to the total assets, having as source of information the annual reports of the studied companies; |
| | | Size | is a quantity that expresses the extent of the company's operations; it is calculated by turning into logarithms the value of the total assets, starting from the data disseminated through the annual reports published by the companies included in the study; |
| | | Financial Leverage | is a fundamental financial indicator in the financing decision of any company as it reflects an index of the degree of indebtedness of the company; it is calculated by reporting debts to the company's own capital according to the information provided through the variables included in the estimated models; |
| | Fixed Effects | Field of Activity | Variables used in order to enhance the relevance of the econometric model taking into account that both the field of activity and the dynamic of the economic environment represent key factors in explaining the management's decision regarding the annual report |
| | | Period | |

*Source*: Own projection, based on the analyzed data

As Hoogervost (2012) points out, annual reports are becoming increasingly complex, integrating both financial and non-financial information in order to give investors a clearer picture of how the company's resources are used and preserved.

Given the management's motivations to beautify the financial statements amid the negotiation of mandate contracts that provide for compensation and benefits in terms of positive results, Jones (2011) emphasizes the significant effect of the technique of presentation of financial statements, from the perspective of maximizing the informational value of the annual reports in their favor, either by omitting information or by distorting their presentation. One way to prevent these managers' cosmetics (to turn annual reports into real strategic marketing tools) is to analyze the content of these reports. This content analysis is no longer limited to outlining analytical models for analyzing financial data, given that annual reports incorporate a solid base of qualitative information that seeks to describe the effectiveness of the decision-making process, but also to a detailed analysis of issues. non-financial statements presented. In this direction, Beattie (2004) drew attention to the need for content analysis of annual reports by using *text mining* techniques.

## Construction of the econometric model

In this regard, in this study we will proceed similarly to Lang & Lawrence (2015) who verified the main determinants of the complexity of the text integrated in the annual reports. However, our study does not refer to the total number of words or to different indices specific to *text mining* techniques, but is limited to the analysis of the impact of the characteristics of the analyzed companies on the frequency of use of the most frequently selected keywords. For this purpose, we will proceed to the estimation of a generalized linear model which is defined by the relation:

$$\mu_i = \beta_0 + \beta_1 \cdot x_{1i} + \cdots + \beta_p \cdot x_{pi}$$

where a link function is used that describes how the mean of the dependent variable, E ($y_i$) = $\theta_i$ depends on the linear predictor g ($\theta_i$) = $\mu_i$ (Dobson & Barnett, 2008). At the same time for the estimation of the linear predictor a variance function is also used which describes how the variance, σ ($y_i$), depends on the mean σ ($y_i$) = Ø · σ (θ), with the dispersion parameter Ø constant.

In the study we will proceed to estimate a generalized linear model using as a link function the Poisson function specific to the probability distribution of the variable that expresses the probability of occurrence of a number of events in a given period, or in our case, the occurrence a keyword in the sample of annual reports analyzed.

We cannot use the classical linear regression method estimated by the OLS method given that the dependent variable does not follow a normal probability distribution. The fact that the dependent variable, in the case of the estimated models, is represented by the frequency of the keywords in the analyzed reports, the Poisson probability distribution is the most appropriate. In the case of the Poisson model, the dependent variable follows a Poisson distribution.

Under these conditions, $Y_i$ ~ Poisson ($\theta_i$), E ($y_i$) = $\theta_i$, σ ($\theta_i$) = $\theta_i$, and g ($\theta_i$) = log ($\mu_i$). This last relationship highlights an essential aspect of how to interpret the results.

Reformulated, our model, based on the information described in **Table no. 2** on the variables used becomes:

$$\mu_i = \beta_0 + \beta_1 \cdot Scor_{guvernanta\ 1i} + \sum_{k=1}^{3} \beta_{k+1} \cdot Control\ variables_{k_{1i}} + \sum_{k=1}^{2} \beta_{k+1} \cdot Efecte\ fixe_{k_{1i}}$$

Once the parameters of the model have been estimated, analyzed and interpreted, we will carry out a post-hoc analysis of the average differences regarding the audit committee concept precisely to see if there are substantial differences between the different areas of activity regarding the audit committee and its role in the organizational structure.

The estimation of the generalized linear model is done using SPSS 22.0.

# 3. Results and interpretations

## Described Statistics

In **Table no. 3** we summarize the main descriptive statistics regarding the frequency of use of selected keywords from the analyzed annual reports. They describe the management's preferences in preparing the annual reports, the role of the audit committee in the company, aspects of qualitative perception regarding the audit committee and the aspects of interest of the audit committee. These levels of analysis are outlined through the 14 keywords selected through the revision of the legislative framework on the audit committee grouped according to ***Figure no. 2***.

Thus, we note that the annual reports are oriented towards a prudent approach to the decision-making process giving internal control a central role precisely to prevent deficiencies in internal processes or non-compliance with internal policies and procedures, respectively non-compliance with existing legislation. The term *internal control* is the most used in the annual reports appearing on average about 59 times per report. At the same time, it is closely followed by the term *audit committee* which is used on average 55 times per report. At a greater distance is the term *risk management* which occurs on average about 35 times per report.

**Table no. 3. Descriptive statistics: keywords extracted from annual reports**

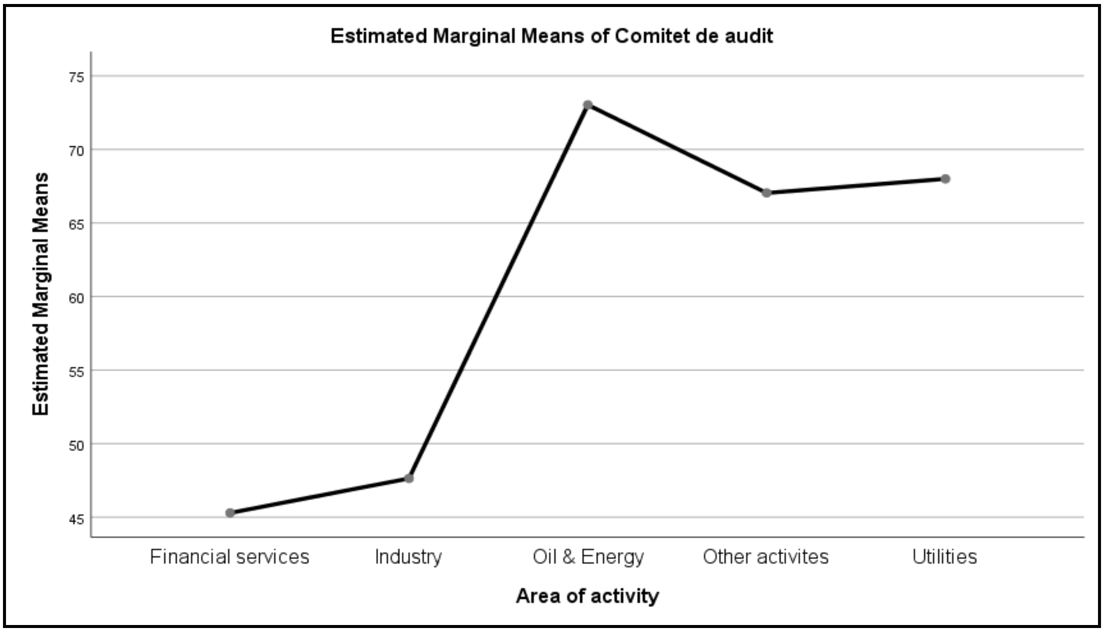
| Word group | Key words | Index correlation matrix | Average | Median | Std. Dev. | Min | Max | Fractions | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 25 | 75 |
| | Audit committee | (2) | 54.91 | 50 | 51.07 | 0 | 328 | 23 | 76 |
| Group 1 | Internal control | (7) | 59.09 | 46 | 60.46 | 0 | 438 | 26 | 73 |
| | Risk management | (3) | 35.40 | 25 | 37.88 | 0 | 309 | 14 | 48 |
| | Supervision | (11) | 17.44 | 6 | 39.47 | 0 | 406 | 1 | 15 |
| | Governance | (12) | 7.11 | 0 | 14.04 | 0 | 104 | 0 | 7 |
| | Monitoring | (6) | 3.91 | 1 | 8.89 | 0 | 63 | 0 | 4 |
| | Auditor selection | (13) | 2.54 | 1 | 4.35 | 0 | 47 | 0 | 4 |
| Group 2 | Competence | (8) | 13.80 | 0 | 36.19 | 0 | 332 | 0 | 4 |
| | Independence | (4) | 1.58 | 0 | 2.70 | 0 | 15 | 0 | 2 |
| | Integrity | (5) | 1.44 | 0 | 5.04 | 0 | 41 | 0 | 1 |
| | Trust | (16) | 0.38 | 0 | 1.02 | 0 | 6 | 0 | 0 |
| Group 3 | Transparency | (10) | 1.17 | 0 | 2.46 | 0 | 16 | 0 | 1 |
| | Misstatements | (15) | 1.11 | 0 | 2.53 | 0 | 17 | 0 | 0 |
| | Deficiencies | (14) | 0.27 | 0 | 0.65 | 0 | 4 | 0 | 0 |
| | Informs | (9) | 0.18 | 0 | 0.57 | 0 | 3 | 0 | 0 |

*Source*: Own projection, based on the data analyzed in SPSS 22.0

On the other hand, key terms such as *independence*, *integrity* or *trust* are significantly less common in annual reports averaging one per report.

These results should raise a number of question marks. First, it indicates to us that management considers the assurance obtained from external auditors to be sufficient, referring only sporadically to its own vision of the need to assure investors of an acceptable level of integrity. At the same time, they consider irrelevant the information on the implications of the independence of the departments that ensure and evaluate the risk management and functionality of the internal control systems through which investors could gain confidence in the management team and in the way of corporate financial communication.

**Figure no. 3. Representation of the average regarding the appearance of the term audit committee in reports**




*Source*: Own projection, based on the analyzed data

We also note that the term of *competence* is not considered to be as relevant in the presentation of annual reports with an average occurrence per report of approximately 14 times. In other words, the option of financial reporting managers is not aimed at clarifying the quality of human resources including the quality of the members of the audit committee or the management team.

Last but not least we find approximately one occurrence per report and for the key terms that reveal information on, either clues on some elements of fraud or clues on how the company's processes and organizational structure work to prevent these risks. Thus, key terms such as *misstatements* or *deficiency* are found at most once per report, although a better presentation of the related issues would provide a clearer picture of the company's mechanisms for preventing fraud or manipulation of reported data.

However, it seems that the practice of preparing annual reports differs significantly between areas of activity. After analyzing the information on the average occurrence of the key term audit committee in ***Figure no. 3***, we have found major differences between areas of activity such as the financial-banking sector compared to the extractive and energy industry sector. An explanation in this case would be the different legal framework to which companies in the two sectors of activity refer. It is well known that financial-banking regulations are much stricter regarding risk management and the implementation of internal control systems, which is why these companies address less the issue of the audit committee and the implications of its activity, precisely because there is a national much stricter regulatory framework compared to the extractive and energy industry.

After analyzing the statistics summarized in **Table no. 4**, we have found that the analyzed sample includes companies with a relatively modest level of profitability, with an average of 5.6%, with a level of 7.7% reached by about 75% of them. At the same time, we have noticed that our sample best characterizes the listed companies of medium size considering that the average construct regarding the size of the company of 19.93 is close to the median value of 19.43. In parallel we have observed a low level of indebtedness of the companies included in the sample given that 75% of companies have an average financial leverage of 0.826 much closer to the minimum value.

| Table no. 4. Descriptive statistics on the characteristics of economic entities | | | | | |
|---|---|---|---|---|---|
| | | Profitability | Size | Leverage | Corporate governance |
| *Index correlation matrix* | | (17) | (18) | (19) | (1) |
| N | | 255 | 255 | 255 | 255 |
| Average | | 0.056 | 19.93 | 0.924 | 23.44 |
| Standard deviation | | 0.049 | 1.935 | 1.708 | 14.37 |
| Min. | | 0.001 | 14.64 | 0.000 | 0 |
| Max. | | 0.292 | 25.19 | 9.96 | 36 |
| Fractions | 25 | 0.018 | 18.70 | 0.154 | 7 |
| | 50 | 0.044 | 19.43 | 0.367 | 32 |
| | 75 | 0.077 | 21.02 | 0.826 | 36 |

*Source*: Own projection, based on the data analyzed in SPSS 22.0

On the other hand, we find a relatively high level of corporate governance score, limited to the requirements of Chapter B of the “Apply or explain” statement. This indicator implies an increased interest of the company in ensuring an independent audit committee, composed of competent and experienced members, who demonstrate professional conduct and a consistent baggage of expertise. Under these conditions it is true that the average of the first 75% of companies reaches the maximum level of the score which indicates an increased degree of compliance of companies with the requirements of the BVB Governance Code. However, these issues are not sufficiently addressed in the annual reports if we correlate these results with statistics on the frequency of use of key terms such as *audit committee*, *risk management* or *internal control* as shown in **Table no. 3**.

## Correlation Analysis

In **Table no. 5** we present the results obtained regarding the existing correlations between the analyzed variables. **Table no. 3** and **Table no. 4** associate order indices for each variable included in the analysis.

According to the data on *Pearson* statistics, we observe a closer correlation, respectively 0.504, between the number of occurrences of the term *audit committee* and the number of occurrences of the term *internal control*. This result indicates that the supervision of activities to evaluate and monitor the effectiveness of internal control systems is a priority for the audit committee from the perspective of the report's issuers.

At the same time there is a closer correlation between the number of occurrences of the term *integrity* in the annual report and the number of occurrences of the terms *monitoring* (0.728) and *internal control* (0.649). In this way, the issuers of the annual report reveal the importance of integrity in the area of continuous monitoring of operations to be carried out in accordance with the legal framework and internal requirements. At the same time, they claim that integrity is a fundamental premise in the implementation and monitoring of an operational internal control system. Testing the design and operation of internal controls itself requires a reasonable level of integrity and independence of those responsible in this direction.

Equally the correlation of *0.779* between the number of uses of the term monitoring and the number of occurrences of the term *internal control* in the annual report reveals the need for continuous monitoring of the company's activity including through the implemented control systems.

We also identify a close correlation *(0.590)* between the number of occurrences of the term *internal control* and that of the term *transparency*. The truth is that an effective internal control system achieves its goal as long as it promotes a high level of transparency of the company. However, according to **Table no. 3** the term transparency is used sporadically which may mean that only some annual reports address this link.

**Table no. 5. Correlation matrix**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | 1 | 0,097 | .273** | 0,069 | .178** | .236** | .307** | 0,086 | .188** | 0,109 | 0,120 | .152* | 0,073 | 0,068 | -0,007 | .182** | 0,068 | .334** | -0,012 |
| (2) | 0,097 | 1 | .341** | .354** | .207** | .257** | *.504*** | .228** | .167** | .225** | .372** | .223** | .475** | .198** | .310** | .159* | 0,068 | .141* | .161** |
| (3) | .273** | .341** | 1 | .155* | .276** | .349** | .392** | 0,011 | .123* | .189** | .214** | .270** | .262** | .125* | 0,074 | .289** | -0,003 | .216** | .239** |
| (4) | 0,069 | .354** | .155* | 1 | .202** | .195** | .431** | .157* | 0,110 | .407** | 0,027 | .322** | .286** | .201** | .302** | .330** | -0,066 | .174** | .318** |
| (5) | .178** | .207** | .276** | .202** | 1 | .728** | .649** | 0,077 | .145* | .285** | -0,011 | .222** | .262** | -0,080 | -0,005 | .139* | 0,068 | .159* | -0,052 |
| (6) | .236** | .257** | .349** | .195** | *.728*** | 1 | .779** | .243** | .246** | .394** | 0,070 | .270** | .261** | -0,035 | -0,079 | .294** | 0,100 | .200** | 0,082 |
| (7) | .307** | .504** | .392** | *.431*** | *.649*** | *.779*** | 1 | .393** | .319** | .590** | .217** | .458** | .449** | 0,118 | 0,109 | .447** | 0,093 | .273** | 0,077 |
| (8) | 0,086 | .228** | 0,011 | .157* | 0,077 | .243** | .393** | 1 | .172** | .218** | 0,045 | -0,110 | .163** | .178** | 0,084 | .179** | 0,022 | 0,118 | 0,045 |
| (9) | .188** | .167** | .123* | 0,110 | .145* | .246** | .319** | .172** | 1 | .351** | 0,033 | .151* | .163** | -0,033 | 0,027 | .181** | 0,046 | -0,003 | -0,041 |
| (10) | 0,109 | .225** | .189** | *.407*** | .285** | *.394*** | *.590*** | .218** | .351** | 1 | -0,091 | .620** | .498** | .128* | 0,064 | .648** | 0,082 | 0,030 | 0,009 |
| (11) | 0,120 | .372** | .214** | 0,027 | -0,011 | 0,070 | .217** | 0,045 | 0,033 | -0,091 | 1 | -0,087 | 0,068 | -0,008 | -0,085 | -0,024 | -0,042 | .317** | 0,045 |
| (12) | .152* | .223** | .270** | .322** | .222** | .270** | *.458*** | -0,110 | .151* | *.620*** | -0,087 | 1 | .397** | .209** | .142* | .518** | -0,006 | 0,018 | 0,082 |
| (13) | 0,073 | *.475*** | .262** | .286** | .262** | .261** | *.449*** | .163** | .163** | *.498*** | 0,068 | .397** | 1 | .232** | .172** | .376** | -0,006 | -0,006 | 0,109 |
| (14) | 0,068 | .198** | .125* | .201** | -0,080 | -0,035 | 0,118 | .178** | -0,033 | .128* | -0,008 | .209** | .232** | 1 | .366** | .152* | 0,045 | 0,056 | 0,087 |
| (15) | -0,007 | .310** | 0,074 | .302** | -0,005 | -0,079 | 0,109 | 0,084 | 0,027 | 0,064 | -0,085 | .142* | .172** | .366** | 1 | -0,001 | -0,071 | -0,073 | .154* |
| (16) | .182** | .159* | .289** | .330** | .139* | .294** | *.447*** | .179** | .181** | *.648*** | -0,024 | *.518*** | .376** | .152* | -0,001 | 1 | -0,045 | 0,117 | .210** |
| (17) | 0,068 | 0,068 | -0,003 | -0,066 | 0,068 | 0,100 | 0,093 | 0,022 | 0,046 | 0,082 | -0,042 | -0,006 | -0,006 | 0,045 | -0,071 | -0,045 | 1 | .125* | -.236** |
| (18) | .334** | .141* | .216** | .174** | .159* | .200** | .273** | 0,118 | -0,003 | 0,030 | .317** | 0,018 | -0,006 | 0,056 | -0,073 | 0,117 | .125* | 1 | .386** |
| (19) | -0,012 | .161** | .239** | .318** | -0,052 | 0,082 | 0,077 | 0,045 | -0,041 | 0,009 | 0,045 | 0,082 | 0,109 | 0,087 | .154* | .210** | -.236** | .386** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

*Source*: Own projection, based on the data analyzed in SPSS 22.0

As expected, there is a close correlation between the number of uses of the term *monitoring* and the terms *governance (0.620),* respectively *trust (0.648).* After all the purpose of monitoring processes is to provide investors with confidence signals about the company's compliance with the requirements of the legal framework and internal requirements arising from internal strategic policies, procedures and plans. This goal is one of the main pillars of corporate governance that lays the foundations for a harmonized combination of organizational processes and structures designed to achieve strategic and operational objectives.

The results obtained reflect the fact that there are no notable correlations between the number of occurrences of the analyzed key terms and the characteristics of the companies considered in the analysis, respectively the company's profitability, financing policy, amplitude of operations undertaken by the company or the degree of implementation of the minimum corporate governance requirements given by BVB Governance Code.

## The Analysis of Marginal Effects

Table no. 6 presents the results obtained for the estimated generalized linear model, considering as a link function the *Poisson* function. Given that the most common key terms in the annual reports are *audit committee*, *risk management* and *internal control*, we summarized the construction of econometric models only around them. In addition, it should be noted that the three key terms are closely related as the audit committee contributes to the company especially in the area of risk management and internal control systems of the company (Pickett, 2005). It is the audit committee that must ensure that the company's organizational structure and processes outline an appropriate risk management system designed to support the implementation of an internal control system in order to provide reasonable assurance about the company's objectives.

In the first model the association between the number of uses of the term *audit committee* and the characteristics of the company is analyzed. Overall, the results show that the logarithm of the number of occurrences of the audit committee term is significantly influenced by all factors taken into account, with a significance level of 5%. It is noted that a more frequent use of this term is found more often in the case of companies with a higher profitability (0.020), in the case of larger companies (0.042) and in the case of companies with a higher degree of indebtedness respectively (0.001). Under these conditions we can appreciate that managers want an indirect association of the results obtained with the existence of an adequate corporate governance framework which provides a reasonable assurance that these results describe a sustainable economic evolution of the company. However, these marginal effects on the logarithm of the number of occurrences of the term *audit committee* in annual reports is relatively small.

**Table no. 6. GLM model estimation results**

| Model | **Key words** (Dependent variables) | | | | | |
|---|---|---|---|---|---|---|
| | *Audit committee* | | *Risk management* | | *Internal control* | |
| **Independent variables** | *Coef.* | *St. dev.* | *Coef.* | *St. dev.* | *Coef.* | *St. dev.* |
| Constant | 3.420 | (0.14) | 4.405 | (0.18) | 4.706 | (0.12) |
| Corporate governance | -0.003 | (0.00) | 0.015 | (0.00) | 0.014 | (0.00) |
| Profitability (ROA) | 0.020 | (0.00) | *-0.004** | (0.00) | 0.011 | (0.00) |
| Entities size | 0.042 | (0.01) | -0.020 | (0.01) | 0.015 | (0.01) |
| Financial leverage | 0.001 | (0.00) | 0.001 | (0.00) | 0.001 | (0.00) |
| **Fixed effects**- *area of activity* | | | | | | |
| Financial services | -0.481 | (0.06) | -0.614 | (0.06) | -1.476 | (0.04) |
| Aeronautical and automotive | -0.233 | (0.06) | -0.769 | (0.06) | -1.482 | (0.04) |
| Oil and Energy | 0.198 | (0.06) | -0.740 | (0.06) | -0.761 | (0.03) |
| Other industry | 0.113 | (0.06) | -0.979 | (0.07) | -1.358 | (0.04) |
| **Fixed effects –** *time* | | | | | | |
| 2015 | -1.138 | (0.03) | -1.011 | (0.05) | -0.855 | (0.03) |
| 2016 | *-0.208** | (0.03) | -0.081 | (0.03) | *-0.038** | (0.02) |
| 2017 | -0.146 | (0.02) | -0.179 | (0.03) | -0.145 | (0.02) |
| 2018 | -0.172 | (0.02) | 0.107 | (0.03) | *-0.013** | (0.02) |
| 2019 | -1.138 | (0.03) | -1.011 | (0.05) | -0.855 | (0.03) |
| ** statistically insignificant for a significance level of 5%* | | | | | | |

*Source*: Own projection, based on the data analyzed in SPSS 22.0

It should be noted that the largest marginal effect (0.042) among company characteristics is determined by the variable that describes the size of the company. This result illustrates that managers understand the role of the audit committee in a company whose business model is much more complex, as is the case with companies operating in the extractive and energy fields. The Audit Committee is the one that makes a significant contribution to the ongoing oversight of organizational structures and processes designed to reduce the risks associated with this business model.

It should be noted that a high level of corporate governance score indicates a lower use of the term *audit committee* given a negative coefficient of -0.003, however relatively small. These results confirm once again that managers do not effectively manage corporate governance issues. Given that the sample analyzed is composed of companies that report a high degree of corporate governance score, but use the key term audit committee less, we believe that managers should turn their attention to corporate governance issues and illustrate more clearly the elements regarding the implications of the audit committee and of the risk management system and of the internal control system on the prospects of fulfilling the company's objectives.

On the other hand, we notice that the specificity of the fields of activity determines a much greater marginal effect than the individual characteristics of the analyzed companies, reason for which we appreciate that the way of drafting the annual reports is drawn rather by common practices established at the activity sectors. We note that, at the level of the extractive industry, managers prefer a more frequent use of the term *audit committee*, compared to the average of the entire sample of companies analyzed (0.198). In contrast, companies operating in the financial-banking sector use this term much less, compared to the average of the entire sample of companies analyzed (-0.481). However, if we look at the regression coefficients obtained for the other two key terms analyzed, we notice that both the financial-banking sector and the extractive and energy sectors describe similar preferences regarding the use of the key terms analyzed in the annual reports. These results reinforce our observation on the effects of regulatory differences in different business sectors. We must emphasize that the financial-banking sector is much better regulated than other sectors of activity which is why our expectations are that the annual reports will focus on disseminating information that reveals key issues for government regulatory and supervisory bodies. In these circumstances, managers have no interest in associating financial successes with the activities of the audit committee, but rather prefer to illustrate in the annual reports relevant information on compliance with the legal framework. These results do not confirm a derisory role of the audit committee within the company, but only reveal indirect indications of managers' preferences regarding the issues addressed in the annual reports.

Regarding the fixed effects determined by the time factor, we observe results similar to those determined by the specifics of the field of activity in which the analyzed companies operate. In other words, we appreciate that macroeconomic developments regardless of the sector of activity or the specificity of the business model, reveal throughout the sample that the issues addressed by the audit committee are not essential for company managers to be included in the annual reports. However, the fixed effects generated by the evolution of the economic context over time do not reveal significant differences from one year to the next.

Regarding the other key terms analyzed namely *risk management* and *internal control*, the results obtained are similar to those recorded for the *audit committee* term with a few exceptions. We note in this regard that the risk management aspects are insufficiently described in the annual reports by larger companies finding that there is a negative association between the logarithm of the number of occurrences of the term *risk management* and the size of the company (-0.020). This situation seems to be valid in all sectors of activity given that the fixed effects determined at the level of sectors of activity are similar.

At the same time, we notice in the case of companies operating in the extractive and energy industry we have noticed that the terms *risk management* and *internal control* are negatively influenced by the specifics of the industry. If in the case of the term *audit committee* we notice that the outlined practice at branch level provides a preference for the presentation in the annual reports of the issues regarding the audit committee, it seems that the terms *risk management* and *internal control* are not preferred by the issuers of the annual reports. These terms are less used in corporate reporting practice at the branch level compared to their average use at the company level. These results give us clues that the annual reports are true marketing tools used by managers. Managers prefer to highlight issues related to the audit committee, but do not pay attention to issues related to risk management or internal control systems despite these terms are closely linked from the perspective of theoretical models and the legal framework to the same extent. Managers choose to refer in the annual reports to the audit committee and its role within the companies. However, they omit the conclusive presentation of the risk management and internal control aspects which reveal exactly the implications of the audit committee's work within the company.

In **Table no. 7** we present the results obtained by performing the Wald Chi-Square test. These results prove the fact that the variables used in the GLM model are statistically significant. Overall, these results confirm that each influencing factor analyzed makes significant contributions to explaining the number of uses of key terms as p value = 0.

**Table no. 7. Validation of the effect of covariance variables**

| | Model | | | |
|---|---|---|---|---|
| | models | (1) | (2) | (3) |
| **Independent variables** | df | Wald Chi-Square | | |
| *Corporate governance score* | 1 | 17.6 | 213.30 | 299.92 |
| *Profitability (ROA)* | 1 | 121.1 | *2.99** | 37.29 |
| *Entities size* | 1 | 46.6 | 6.44 | 7.27 |
| *Financial leverage* | 1 | 268.3 | 308.00 | 196.22 |
| *Area of activity* | 4 | 724.4 | 229.95 | 2362.5 |
| *Time* | 4 | 1.107.5 | 655.55 | 795.08 |
| ** statistically insignificant for a significance level of 5%* | | | | |

*Source: Own projection, based on the data analyzed in SPSS 22.0*

The exception is ROA whose marginal effect on the dependent variable is not statistically significant as it exceeds the significance threshold of 5% considered in the analysis. This effect is also observed in the corresponding GLM model in **Table no. 6** where we can observe an insignificant influence.

Regarding the validation of the estimated models in **Table no. 8** we summarize the results regarding the statistics performed. Overall, we observe that all three models are statistically validated given that the test statistic $\aleph^2_{calculated}$ is less than the tabulated critical value, respectively $\aleph^2_{0.005;\,242}$ = 43.77 for a level of significance of 5%. We reach the same conclusion if we look at the statistics of the *Omnibus* test given that we have a *p value* close to *0*.

**Table no. 8. Validation of GLM models**

| | | (1) | (2) | (3) |
|---|---|---|---|---|
| Pearson Chi-Square | Value | 10.128 | 7764 | 8840 |
| | Df | 242 | 242 | 242 |
| | *Statistic* | 41.85 | 32.08 | 36.53 |
| Omnibus Test | Likelihood Ratio Chi-Square | 2.620 | 2306 | 5012 |
| | Df | 12 | 12 | 12 |
| | *Sig.* | 0.000 | 0.000 | 0.000 |

*Source*: Own projection, based on the data analyzed in SPSS 22.0

In other words, our models reasonably describe the association relationship between the logarithm of the number of occurrences of key terms in the annual reports and respectively the influencing factors considered in the analysis.

## Post-hoc analysis of differences

**Table no. 9** shows the results of the post-hoc analysis of differences between different business sectors in terms of the number of uses of the key audit committee term in the annual reports.

The use of the key term *audit committee* in the annual reports reveals the largest differences between the companies operating in the financial-banking sector compared to those in the extractive and energy industry (-34.24). These differences are followed in terms of amplitude by the differences between companies operating in the extractive and energy sectors compared to those operating in the automotive and aeronautical industries (-24.31). These negative differences reveal that in the annual reports of companies operating in the extractive and energy industries the term *audit committee* is more common compared to the annual reports of companies operating in the aerospace industry. These differences are even bigger if we refer to companies operating in the financial-banking sector.

**Table no. 9. Analysis of differences in the use of the concept of audit committee**

| Area of activity | | Mean Difference | Std. Error | df |
|---|---|---|---|---|
| Financial services | Aero and auto industry | -9.93[a] | 1.281 | 1 |
| | Extractive industry | -34.24[a] | 1.674 | 1 |
| | Other activities | -28.58[a] | 1.540 | 1 |
| | Utilities | -21.78[a] | 3.265 | 1 |
| Aero and auto industry | Extractive industry | -24.31[a] | 1.728 | 1 |
| | Other activities | -18.65[a] | 1.401 | 1 |
| | Utilities | -11.85[a] | 3.338 | 1 |
| Extractive industry | Other activities | 5.66[a] | 2.028 | 1 |
| | Utilities | 12.46[a] | 3.413 | 1 |
| Other activities | Utilities | 6.80 | 3.536 | 1 |

*a. the differences are statistically significant for a significance level of 5%*

*Source*: Own projection, based on the data analyzed in SPSS 22.0

## Conclusions

The role of the audit committee is essential in ensuring the sustainability and sustainable development of companies in the current economic context. The present study aims at a more recent approach in the field of literature. Regarding the analysis of management reports in terms of content and presentation of financial information, we have studied the role of the audit committee in the financial reporting process of entities listed on the Bucharest Stock Exchange by analyzing the reports of the boards of directors or directorates from the perspective of the content and the way of presenting the information.

Thus, we have analyzed the annual reports of 51 entities listed on the regulated market of BVB in the period 2015-2019. To identify the keywords, we have analyzed the requirements of the legal framework applicable to audit committees and we have consequently built an econometric model using the Poisson probability distribution.

The post-hoc analysis of average differences was carried out precisely to see if there were substantial differences between the areas of activity in terms of the audit committee and its role in the organizational structure.

The results show that the annual reports focus on a prudent approach to decision-making giving internal control a central role, precisely to prevent deficiencies in internal processes or non-compliance with existing policies and procedures and the legislative framework in force.

However, these results should be carefully studied as they do not reflect a text association of the key terms analyzed but only an association of the number of occurrences in the annual report of these terms. An in-depth analysis of the annual reports can be performed with the help of specialized applications, which can measure the degree of association in the same sentence of the key terms used; that analysis was not the subject of our study.

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# A Measure of Tax Burden for the Companies Listed on the AeRo Segment of the Bucharest Stock Exchange


## Abstract

*Tax pressure can be calculated at the macroeconomic level, but also at the microeconomic level, by analysing the data provided by companies in their financial statements, or by authorities giving official statistics. In this study, the authors adapt a formula for the calculation of the effective tax rate, proposing, at the denominator, the taxes reported explicitly by companies in their profits and loss account, to which they added the reconstituted value of social and fiscal contributions of the employees. Also, unlike the literature so far, they divided these tax expenses to the sales (revenues) and not to any other indicators from the profit and loss account. The population analysed is represented by the companies listed on the AeRo market of BSE, in the period 2010-2019, a total of almost 3,000 observations. The results allowed them to notice a systematic increase in the share of the tax burden in sales, over the period taken into account. In verifying the effects of some variables proposed by the literature on the tax burden, the authors found that large firms have a lower tax burden, more profitable firms are more taxed than others, the tax burden is lower for more leveraged firms, and increasing the share of fixed assets in the balance sheet leads to an increase in the tax burden. In addition to the literature, they introduced a new variable - audit opinion - and found out that firms that receive modified audit opinions have a higher tax burden.*


***Key words:*** *tax burden; sales; Romanian companies listed on AeRo; effective tax rate*

***JEL Classification:*** *M40, H20*

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# Introduction

Financing the public expenditures requires the collection of budget revenues, especially in the form of taxes and contributions paid and/or borne by individuals or by companies. The level of taxes in an economy is determined by several variables: the level of public expenditures to be financed, the intentions of the state to intervene in the economy, etc. Taxation, understood as a system of rules on the establishment and collection of taxes and contributions, as well as the verification of the way in which taxpayers fulfil their tax obligations, is perceived differently by the various stakeholders: politicians, civil servants, businessmen, managers, investors, accountants, socially assisted persons of all kinds, civil society, the public, etc.

Approaches on taxation are imbued with political, ideological, economic, social, personal welfare considerations, depending on the position of each observer and the level of analysis retained. Thus, at the macroeconomic level, the formula of the tax rate is well-known, which measures the fiscal pressure by relating the state's fiscal revenues to the gross domestic product. The level of this tax rate is different between countries and regions and evolves over time. Numerous statistical data are available on this indicator. In **Table no. 1**, we took over from Eurostat a situation of the evolution of the percentage of fiscal revenues in GDP for the member countries of the European Union and the other countries of the European Economic Area, in the period 2010-2018. The data reported at European level puts Romania in a very good position, from the perspective of those who support the reduction of the tax pressure: if we order the percentages for 2018, Romania is in the penultimate position, with 27.1%, being followed only by Ireland, with 23.0%. Compared to the EU average of over 40%, we can comment in the sense that Romania is a country with low fiscal pressure or, if we approach things from the perspective of an ideology that strongly promotes state intervention, that Romania has an important potential to increase taxes and contributions to get closer to the European average. We also observed that the evolution of the tax pressure in Romania does not show very large shares of fiscal revenues in GDP: a maximum of 28.3% in 2011 and a minimum of 25.8% in 2017. If we average the 9 years of statistics presented in **Table no. 1** and we order again descending, Romania remains on the penultimate position, also ahead of Ireland, but the difference between the two countries is much smaller (less than 1 percentage point).

The various taxes that affect taxpayers in a country can be analysed at the macroeconomic level, but also at the level of each taxpayer or group of taxpayers, as well as taking into account one or more specific taxes. Often, when discussing the analysis of the contribution of entities and citizens to cover public spending, there is talk of the effective tax rate, calculated in various ways (Hanappi, 2018). The literature also attaches particular importance to the effects of taxation on investment projects, taking into account the income tax, but also the tax on dividends or interest granted to the creditors of the companies carrying out the respective projects, as well as any other taxes generated the specific conditions under which the investment is made or the particularities of the tax regime in the territories involved in making that investment. We could find average or marginal effective tax rates that serve as a guide for investors in choosing projects (Devereux & Griffith, 2003; Hanappi, 2018).

Our objective is to calculate and interpret indicators of tax pressure at microeconomic level, analysing data reported in the annual financial statements by Romanian companies listed on the alternative market (AeRO) of the Stock Exchange Bucharest (BSE).

The comparison with the macroeconomic situation could be useful, as long as the indicators used are comparable. Often, in the literature, the effective tax rate is analysed only on the basis of expenses or payments regarding the income tax (usually related to gross profit), the calculations being made either annually or cumulatively for many years. This approach is a natural consequence of the fact that the accounting-taxation relationship is analysed mainly in terms of income tax. However, Mintz & Chen (2014) recognize that, in theory, the calculation of an effective tax rate should take into account all taxes that influence accounting earnings; however, in practice, information on some taxes cannot be estimated, especially when setting effective forecast rates, to be taken into account in the analysis of investment projects. Park (2020) finds in the literature several models for measuring the tax burden, models that take into account, in addition to the profit tax, taxes/contributions related to salaries (labour taxes), consumption taxes, but also taxes such as on dividends or on interest. Thus, our intention is to propose an indicator that measures as fully as possible the fiscal pressure on the entities is justified, following the model of the macroeconomic indicators mentioned above, taking into account as many taxes and fees borne by the entities. To this end, we add to the study of Lazăr & Istrate (2018) which investigates the extent to which the performance of companies listed on the regulated market of BSE are influenced by the taxes and fees borne by these companies. The two authors construct a comprehensive variable to measure the tax burden of firms; they choose to combine the income tax with the labour contributions of employers and other taxes recognized by companies as expenses; the amount of these taxes divided by an indicator established on the basis of EBITDA. We will divide expenses with taxes - explicitly appearing in the financial statements of companies or reconstituted, by the volume of net sales, as a performance indicator that does not depend on accounting, financing, taxation or other operating options of entities. The analysed data come from companies listed on the AeRo market of the Bucharest Stock Exchange (BSE), for the period 2010-2019.

**Table no. 1. Share of the state revenues and social contributions in GDP PIB (%)**

| TIME/GEO | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|
| European Union – 28 countries (2013-2020) | 38.5 | 38.9 | 39.5 | 39.9 | 39.8 | 39.6 | 39.9 | 40.2 | 40.3 |
| Belgium | 46.0 | 46.9 | 47.8 | 48.6 | 48.2 | 47.4 | 46.6 | 47.0 | 47.2 |
| Bulgaria | 26.1 | 25.4 | 26.7 | 28.4 | 28.4 | 29.1 | 29.1 | 29.4 | 29.9 |
| Czechia | 32.7 | 33.8 | 34.3 | 34.8 | 33.9 | 34.1 | 34.8 | 35.4 | 36.2 |
| Denmark | 46.3 | 46.3 | 46.9 | 47.3 | 49.9 | 47.3 | 46.6 | 46.9 | 45.3 |
| Germany | 38.8 | 39.1 | 39.7 | 39.9 | 39.6 | 40.0 | 40.5 | 41.0 | 41.5 |
| Estonia | 33.1 | 31.4 | 31.7 | 31.7 | 32.1 | 33.3 | 33.8 | 32.9 | 33.0 |
| Ireland | 28.4 | 29.0 | 29.2 | 29.6 | 29.6 | 23.8 | 24.0 | 23.1 | 23.0 |
| Greece | 34.2 | 36.1 | 38.8 | 38.6 | 39.1 | 39.6 | 41.5 | 41.5 | 41.5 |
| Spain | 32.3 | 32.1 | 33.3 | 34.1 | 34.8 | 34.7 | 34.4 | 34.7 | 35.4 |
| France | 44.2 | 45.4 | 46.5 | 47.5 | 47.7 | 47.7 | 47.6 | 48.3 | 48.4 |
| Croatia | 36.0 | 35.2 | 35.9 | 36.4 | 36.7 | 37.3 | 37.8 | 37.8 | 38.6 |
| Italy | 41.5 | 41.4 | 43.4 | 43.5 | 43.2 | 43.1 | 42.4 | 42.1 | 42.1 |
| Cyprus | 31.7 | 31.7 | 31.7 | 31.8 | 33.8 | 33.2 | 32.4 | 33.3 | 33.8 |
| Latvia | 28.6 | 28.5 | 29.3 | 29.6 | 29.9 | 30.3 | 31.4 | 31.6 | 31.4 |
| Lithuania | 28.7 | 27.6 | 27.3 | 27.2 | 27.8 | 29.3 | 30.0 | 29.8 | 30.5 |
| Luxembourg | 38.9 | 38.5 | 39.8 | 39.6 | 38.9 | 38.4 | 38.3 | 39.1 | 41.2 |
| Hungary | 37.3 | 36.7 | 39.3 | 38.7 | 38.7 | 39.1 | 39.6 | 38.4 | 37.6 |
| Malta | 33.2 | 33.5 | 33.7 | 33.8 | 33.5 | 31.6 | 32.1 | 32.9 | 32.7 |
| Netherlands | 36.1 | 36.0 | 36.1 | 36.6 | 37.6 | 37.5 | 38.9 | 39.2 | 39.2 |
| Austria | 41.9 | 42.0 | 42.6 | 43.4 | 43.5 | 43.9 | 42.5 | 42.4 | 42.8 |
| Poland | 32.3 | 32.7 | 33.0 | 32.9 | 32.9 | 33.4 | 34.4 | 35.0 | 36.1 |
| Portugal | 33.7 | 35.4 | 34.4 | 37.1 | 37.0 | 37.0 | 36.6 | 36.5 | 37.2 |
| **Romania** | **27.1** | **28.3** | **27.8** | **27.4** | **27.5** | **28.1** | **26.6** | **25.8** | **27.1** |
| Slovenia | 38.3 | 37.8 | 38.2 | 37.8 | 37.7 | 37.9 | 38.0 | 37.6 | 37.9 |
| Slovakia | 28.3 | 29.2 | 28.8 | 31.1 | 32.0 | 32.8 | 33.3 | 34.3 | 34.3 |
| Finland | 40.7 | 41.9 | 42.5 | 43.5 | 43.6 | 43.6 | 43.9 | 43.1 | 42.4 |
| Sweden | 43.4 | 42.6 | 42.8 | 43.2 | 42.9 | 43.3 | 44.6 | 44.7 | 44.4 |
| United Kingdom | 34.8 | 35.2 | 34.3 | 34.2 | 33.8 | 34.1 | 34.7 | 35.0 | 35.1 |
| Iceland | 32.4 | 33.3 | 34.0 | 34.5 | 37.3 | 35.4 | 50.8 | 37.6 | 36.9 |
| Norway | 42.1 | 42.2 | 41.7 | 40.1 | 39.0 | 38.7 | 39.2 | 39.1 | 40.2 |
| Switzerland | 26.7 | 27.0 | 27.0 | 27.1 | 26.9 | 27.6 | 27.7 | 28.5 | 28.1 |

*Source*: Eurostat data, accessed at 29 July 2020, on the https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=gov_10a_taxag&lang=en#

To our knowledge, this is the first time that the tax pressure is analysed, through such an indicator, for companies listed on the alternative market of BSE. Even if the AeRo segment is less visible, the size of companies listed here, as well as the accounting rules applied (Romanian Accounting Standards - RAS) allow us to consider that the results better characterize the Romanian economic environment, than if we had analysed companies listed on the regulated market. Our results show a steady increase in this tax burden, calculated in two ways, even as the authorities have reduced tax rates for some components of the tax burden in recent years. We also note that the main component of the direct and reconstituted fiscal cost of companies is, by far, the labour taxes - somewhere around 80% of the total amounts owed by the company to various budgets. Thus, the average annual salary tax burden per employee has increased systematically in the last 10 years, almost doubling, mainly due to the increase of salaries in the Romanian economy. A similar rhythm, even if less pronounced, has the expenses with the income tax or its equivalents, respectively the expenses with other taxes and assimilated payments. Taking into account the traditional factors that the literature recommends as influencing the tax burden, we found out that large firms have a lower share of taxes in sales, that more profitable firms seem to be more taxed than others, increasing the share of fixed assets in the balance sheet leads to an increase in the tax burden, higher leverage leads to a lower tax burden and the modified audit opinion is associated with a higher tax burden.

In the following, there will be a literature review, a description of the population and of the methodology, the results and conclusions, followed by the references.

# 1. Literature review

Measuring tax pressure is a constant concern in the literature. The level to which taxes can be set in a state, the reactions of corporate or individual taxpayers, the computation of various indicators of tax pressure or effective tax rates, tax avoidance and the indicators that approximate it, the optimal structure of taxes, etc. are as many topics that directly or indirectly address the tax pressure, its measurement, determinants and consequences.

One such indicator is *the effective tax rate*, which is often limited to corporate income tax. There are several variants of calculating this indicator (see Armstrong et al., 2012; Istrate, 2016; Aronmwan, 2020; Balios et al., 2020 or Bustos-Contell, 2020 for details in the literature). For example, Aronmwan et al. (2020) find in the literature four ways to calculate the effective tax rate starting from the income tax:

- the effective accounting tax rate, calculated as the ratio between the total expense with the income tax (current tax and deferred tax) and the income before taxes;
- effective current tax rate: current income tax expense (deferred taxes are ignored) divided by the income before taxes;
- effective paid tax rate: the ratio between the tax actually paid (according to the cash flow statement) and the income before taxes;
- effective tax rate based on cash flows: the ratio between the tax paid and the cash flows from the operation (has the advantage of expressing the numerator and denominator in homogeneous units).

Plesko (2003) also identified a number of formulas proposed by various authors, that take into account, at the denominator, indicators which are based on the income before taxes, but with adjustments that try to make the income as relevant as possible. For example, these adjustments could refer to: the elimination of the income of the associates consolidated by the equity method and/or of the minority interests, the elimination of the extraordinary items or of those from interrupted operations, the reintegration of the interests and other taxes.

Given that there are jurisdictions where the contribution of corporate income tax to budget revenues is limited (Delgado et al., 2018), calculations that take only this tax into account may be irrelevant. For example, in Romania, according to data from annual budget executions, the income tax is the fourth tax, in terms of contribution to the state budget, far behind VAT and individuals’ income tax, and even slightly after excise duties. Thus, there are researches in the literature that complete the numerator and the denominator so as to calculate an effective tax rate that measures as well as possible the fiscal pressure to which companies are subject; an example can be found in the study of Lazăr & Istrate (2018), quoted above. Borden (2018) in the context of the US economy, after calculating and interpreting the effective tax rate withholding only the income tax for various forms of legal organization of companies (to which he adds the dividend tax distributed to shareholders), completes the calculations by adding labour taxes and net investment income tax. In turn, Elschner et al. (2005), in estimating the effective tax rate for 33 states, take into account income and capital taxes, to which are added the tax burden borne in connection with some wages as well as some property taxes. Aksoy Hazir (2019) reports current income tax charge to EBIT.

On the other hand, the inclusion in the tax pressure formula of other taxes than the income tax allows the partial avoidance of the difficulties that appear in the interpretation of this indicator: Dyreng et al. (2017), in another context, lists several procedures by which the income tax can be artificially reduced: transfers of profits to other jurisdictions, investments in assets that allow the activation of tax facilities (tax exemptions or reductions, accelerated depreciation, additional tax deductions ).

Among the factors that the literature identifies as determinants of the tax burden are: the size, leverage, capital intensity, profitability, liquidity, growth rate, industry, investment opportunities, market value and book value, shareholder structure, including state presence among shareholders, level of earnings management (Stickney & McGee, 1982; Callihan, 1994; Gupta & Newberry, 1997; Richardson & Lanis, 2007; Delgado et al., 2018; Fernandez-Rodriguez et al., 2019; Stamatopoulos, 2019; Balios et al., 2020, Fernandez-Rodriguez et al., 2020). Another association can be made between the tax burden and the accounting director's experience/expertise in accounting (Chen et al., 2020). Dyreng et al. (2017) take into account factors such as: the multinational character of the company, dimensions, research and development expenses, tangible assets, intangible assets, leverage, investments, advertising expenses, extraordinary items (if applicable). At another level, Fonseca-Diaz et al. (2019) propose factors related to OECD membership of the country, economic development and the quality of institutions. The sense of the influence is specific to each population/sample studied, so it is difficult to transfer from one context to another. That is why we will not formulate hypotheses that suggest any sense of the influences of the factors on the tax pressure. On the other hand, in the literature we found studies that test the effect of variables on the tax burden, possibly measured by the effective tax rate, but also studies by which the tax pressure is an independent variable, seeking to identify its effects on business performance, depending on various other control variables (Lazăr & Istrate, 2018). Ali Abas & Klemm (2013) also explains why investments, financing and tax facilities influence the effective tax rate: depending on the structure of investments, the return generated may be higher than depreciation and other specific costs incurred, and loan financing generates deductible borrowing costs; also, the facilities related to investments or other activities influence the effective tax rate, in such a way that it can even become negative (referring strictly to the profit tax).

## 2. Data and research methodology

This analysis focuses on the Romanian companies listed at the alternative market of BVB - AeRO, for the period 2010-2019. We started with year 2010, due to the availability of information about most companies listed on AeRo. The analysed population is described in **Table no. 2**. Compared to the 2,971 initial observations to which we had access - by manually collecting the data - we eliminated 74 observations due to the lack of indicators or due to the fact that they had a value of zero, unsuitable for establishing proportions. In **Table no. 2**, in addition to the number of companies for which we could calculate the share of the tax charges in sales, we chose to highlight the number of companies that reported profits in the analysed period, as well as the number of companies with positive equity. These data can give us an image of the average overall performance declared by the companies listed on AeRo. The large number of companies reporting losses (almost 40%) may suggest that, in those cases, we may not have an income tax and that the decision of the authorities to extend the obligation to pay revenues tax or to levy a specific tax may be justified by the state's intention to take something from companies with systematic losses. In these circumstances, if we calculated the effective tax rate only on the basis of corporate income tax, we would have to eliminate many observations and the results would be significantly influenced.

Lazăr & Istrate (2018) calculates an effective tax rate, as a measure of the tax burden, reporting an indicator that takes into account the taxes reported by the company as expenses (the numerator) to a denominator consisting of

EBITDA recalculated before taxes; at the numerator, they put the income tax expense to which are added the expenses with social contributions regarding the salaries borne by the employer, as well as the expenses with other taxes and assimilated payments. The data appear explicitly in the financial statements published by listed Romanian companies, in the format imposed by the Romanian Ministry of Finance and refer to the period 2000 - 2011. It should be noted that during this period, Romanian listed companies on the regulated market of BSE applied, in their individual financial statements, Romanian Accounting Standards (RAS); in fact, the authors explicitly state that they stopped with the data in 2011, precisely because, starting with 2012, the companies listed on the regulated market of BSE were required to apply IFRS in the individual financial statements, which had significant effects on the reported indicators, including those relating to taxes recorded as charges. On the other hand, the arguments brought by Lazăr and Istrate (2018) regarding the preference for EBITDA are convincing, but we accepted the criticisms brought by Bouwens et al. (2019) to this indicator, warning us that its excessive use can generate negative effects and that it is good to use it with caution.

**Table no. 2. The population analysed**

| Year | Total relevant observations | Profit companies | | Positive equity companies | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| **2019** | **247** | **169** | 68.42 | **235** | 95.14 |
| **2018** | **277** | **175** | 63.18 | **265** | 95.67 |
| **2017** | **286** | **170** | 59.44 | **275** | 96.15 |
| **2016** | **293** | **174** | 59.39 | **283** | 96.59 |
| **2015** | **294** | **186** | 63.27 | **286** | 97.28 |
| **2014** | **303** | **184** | 60.73 | **294** | 97.03 |
| **2013** | **304** | **177** | 58.22 | **294** | 96.71 |
| **2012** | **304** | **193** | 63.49 | **296** | 97.37 |
| **2011** | **298** | **202** | 67.79 | **290** | 97.32 |
| **2010** | **291** | **200** | 68.73 | **285** | 97.94 |
| Total | 2,897 | 1,830 | **63.17** | 2,803 | **96.76** |

*Source*: Own projection, based on data analysed

In this study, the data we used to calculate a tax pressure indicator (*Tax.press*) are the following:

- **on the numerator**, the tax burden borne by companies, composed of:
  - *Ch.tax.i/r/s* = income / revenues/ specific tax charge (it is only about current taxes, the accounting rules applied by the analysed companies not allowing the accounting of deferred taxes), as it appears explicitly in the profit and loss account prepared by the company in the format imposed by the Ministry of Finance: in most observations appears income tax, but in 2017, 2018 and 2019 the increase of the ceiling up to which companies pay revenues tax (at 500,000 euros, respectively at 1,000,000 euros) made some entities listed on AeRo become revenues tax payers (there are 142 such observations); also, in some situations, the activities carried out required the calculation and reporting, starting with 2017, of the specific tax (in 47 observations we identified the existence of such a tax);
  - *Ch.other.tax* = charges with other taxes and similar payments (from the corresponding line in the official profit and loss account), where local taxes are collected, but also some parts of VAT, contributions to special funds and possibly other taxes borne by companies;
  - *Employer.contrb* = the expenses regarding the social contributions of the employer; these appear explicitly in a line from the profit and loss account;
  - *Individ.contrib* = individual (employee's) labour tax and contributions, as I reconstituted them based on gross salaries and specific tax rates, applicable in the years studied. The rates of social contributions are known, and the calculation basis is the gross salaries, so the values can be established with

some accuracy. With regard to salaries tax, the calculation basis is the gross salary minus individual contributions and personal deduction. This is not possible to know this deduction, so I had to approximate a tax rate. The approximation was made in such a way as to get as close as possible to the annual percentage share published by INSSE (table FOM120A - Structural indicators in the statistics of earnings and labour cost - available at http://statistici.insse.ro:8077/tempo -online / # / pages / tables / insse-table) as a tax burden on labour costs (43.3% in 2010, 43.3% in 2011, 43.5% in 2012, 43.4% in 2013, 43.7% in 2014, 41.8% in 2015, 41.4% in 2016, 41.8% in 2017 and 41.9% in 2018). In the literature on effective tax rates, approximations are a fairly common practice, given that it often seeks to set an effective theoretical, predictive rate and must take into account variables on which it is difficult for authors to be certain (Ali Abbas & Klemm, 2013): fiscal facilities by sectors of activity and by activities (investments, exports, employment), tax depreciation regimes and fiscal depreciation periods, application of fiscal measures on fractions of fiscal year, inflation rate , economic growth, foreign investment, etc.). Elschner et al. (2005) also uses a simulation to take into account, in establishing an effective tax rate, the tax costs related to salaries;

- **at the denominator**, the sales; I consider that this indicator is the least manipulable (at most, some real earnings management techniques can be applied to it) and, therefore, the least subjective.

$$\mathit{Tax.press} = \frac{\mathit{Ch.tax.i/r/s} + \mathit{Ch.other.tax} + (\mathit{Employer.contrb} + \mathit{Individ.contrib.})}{\mathit{Sales}} \qquad (1)$$

In the case of the numerator of the formula 1, it is necessary to justify the presence of the fourth term - the tax and social contributions of the employees (*Individ.contrib.*). The first argument is about comparability: until 2017, social contributions were shared somewhat evenly between employer and employee. The employer bears a cumulative percentage of just over 28%, down to just over 23% since the end of 2014), while the employee had to bear 16.5% social contributions and 16% revenue tax - the calculation basis for the latter however, was different from the basis for calculating contributions. Starting with 2018, with the decrease of the income tax rate to 10%, the social contributions passed almost entirely to the employee, so they are no longer explicitly reported as employer expenses, but included in the gross salary expense (for the employer, it remained a share of 2.25%, to which are added some amounts for the situations in which they were employees working in special conditions). I believe that, in order to ensure the comparability over time of the total tax burden and, in particular, of the tax burden on salaries, the best solution is to cumulate the employer's contributions - taken from the profit and loss account - with the reconstituted employee contributions, calculated depending on the contribution rates and payroll tax valid in the analysed periods. We chose to take into account the salary tax, because, despite the relatively low rate - 16% and 10%, respectively, in 2018 - this is an important variable to consider when negotiating between employee and employer. On the other hand, the small share of companies with activity in the of buildings sector or in the creation of computer programs means that the tax facilities specific to these types of activities do not significantly affect the data reported by us. This combination of the tax burden of the employer and the employee is also used in official statistical reporting.

Unlike many other studies that calculate, interpret and correlate effective tax rates, the indicator I use does not allow to identify possible tax avoidance (or tax aggressiveness) in which the company would be involved, in the absence of a reference, face from which to verify possible deviations.

The data were collected manually and, as a first step, I calculate the tax pressure rate for each observation (firm-year), relating the tax charges to the sales reported by companies each year. These calculations resulted in extremely diverse percentages, with a minimum of over -3,000% and a maximum of over 13,000%. I winsorized these outliers, bringing them to the level of the 5th percentile and the 95th percentile, respectively.

Referring only to corporate income tax, Dyreng et al. (2008) propose to cumulate both the declared tax and the income before taxes over the entire analysed period or sub-periods, which allows the release of a long-term indicator that avoids the volatility that may occur from year to year. We also applied this methodology, cumulating, in a second level of our analysis, the data related to the denominator and the numerator, for the period available for each company: generally 10 years, but there are also companies for which the data were available for a shorter period.

In order to highlight the evolution in time of the fiscal burden determined by applying formula no. 1, compared to other indicators, I calculated an index from year to year for both numerator and denominator, but also an average growth index for the analysed period.

Continuing the analysis and taking into account what the literature proposes, I grouped the companies according to size, using, for this, the total assets, to try to highlight any particularities of the companies according to their size, in terms of the fiscal pressure calculated by formula no. 1. I also took into account the profitability of companies (ROA), calculated as the ratio between net income and total assets, in order to identify the extent to which this profitability correlates with fiscal pressure. Balios et al. (2020) find significant influences of company size, capital intensity and ROA on the tax burden limited to corporate income tax. I also add in the analysis the capital intensity (fixed assets / total assets). Even if it is sometimes observed that the degree of leverage does not have a significant influence on the fiscal burden, I analyse the variable, in order to test the specificity of the Romanian situation. Fernandez-Rodriguez et al. (2019) also introduce the audit among the factors that could affect the effective tax rate; I also use the audit variable but, unlike the invoked study - which analyses the audited companies vs. the unaudited ones, I separate the type of audit opinion - modified vs. unmodified - in the analysis of the fiscal pressure.

In the literature, when calculating the effective tax rate on corporate income tax, the numerator is the tax expense, as it is reported in the income statement. However, in order to eliminate some of the consequences of accrual accounting, the tax paid is also used as a numerator – the information is taken from the statement of cash flows and allows to establish, especially in the long run, a more accurate picture of the company's contribution to public budgets. Unfortunately, I can't do the same for several reasons:

- first, I should find the information on all the taxes withheld in formula no. 1 and paid by the company - not only the profit tax, or this information is not, available;
- on the other hand, even if a little over 70% of the observations report a statement of cash flows explicitly, the information on the profit/income tax paid is reported in less than half of them; the less information appears on social contributions and other taxes analysed.

Returning to the macroeconomic situation (fiscal pressure rates in **Table no. 1**), I notice that, under the conditions of the formula I opted for, I do not ensure the comparability of macroeconomic data with those calculated at the level of individual enterprises. There are several explanations. First, for the individual firms analysed, I only partially consider indirect taxes, especially VAT and excise duties, due to the fact that they affect only to a very small extent the firms' expenses and, when they are expensed, they are often found in structures other than those through which taxes are explicitly reported. For example, the value added tax that the company cannot deduct is sometimes recorded in other taxes charge, but it happens to become an element of the cost of the goods and services involved, i.e., to be recorded on the charges related to those goods and services. Secondly, in **Table no. 1** we have the taxes collected both from enterprises and from other categories of taxpayers (individuals, non-profit organizations, public institutions, etc.). Third, the denominator used at the macroeconomic level is GDP, while at the level of individual entities I used sales; however, the microeconomic equivalent of GDP is not sales, but rather added value. All these elements force us to be careful in comparing the rates of fiscal pressure used at the macro and microeconomic level.

## 3. Results and discussions

In this subchapter, I present the main results that appeared following the application of formula no. 1 in the case of available data. I first averaged the indicators for all the observations, after eliminating the outliers. After that, I cumulated the figures for all the observations from a year and rerun the formula, to see to what extent the trends are confirmed.

### 3.1. Total tax burden for companies listed on AeRo

Before calculating percentages on the tax burden, I chose to present the cumulative values of its main components (**Table no. 3**).

| Table no. 3. Total tax charges, by components | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year | Total charges on taxes and contributions | Income/ revenues/ specific tax | | Other taxes | | Total labour taxes and contributions | |
| | | Values | % | Values | % | Values | % |
| **2019** | 797.592.017 | 71.547.936 | 8.97 | 108.926.416 | 13.66 | 617.117.665 | 77.37 |
| **2018** | 794.394.928 | 66.509.895 | 8.37 | 101.624.599 | 12.79 | 626.260.434 | 78.83 |
| **2017** | 735.880.201 | 54.302.643 | 7.38 | 90.815.553 | 12.34 | 590.762.005 | 80.28 |
| **2016** | 696.583.563 | 48.592.997 | 6.98 | 90.606.273 | 13.01 | 557.384.293 | 80.02 |
| **2015** | 690.725.806 | 53.954.986 | 7.81 | 82.928.229 | 12.01 | 553.842.591 | 80.18 |
| **2014** | 732.480.021 | 42.596.864 | 5.82 | 92.036.268 | 12.57 | 597.846.889 | 81.62 |
| **2013** | 761.630.391 | 49.502.349 | 6.50 | 88.585.019 | 11.63 | 623.543.023 | 81.87 |
| **2012** | 782.251.964 | 49.673.996 | 6.35 | 87.504.036 | 11.19 | 645.073.932 | 82.46 |
| **2011** | 774.279.395 | 65.758.957 | 8.49 | 85.963.982 | 11.10 | 622.556.456 | 80.40 |
| **2010** | 728.383.778 | 48.944.888 | 6.72 | 82.140.021 | 11.28 | 597.298.869 | 82.00 |

*Source*: Own projection, based on data analysed

The taxes and contributions related to the salaries - which include, both employer and reconstituted employee contributions (including individual income tax) - are by far the main component of the tax obligations that entities have to pay to various public budgets. The relative decrease in the share of this component in recent years can be explained both by the decrease in contribution rates (the first decrease in 2014, the second in 2018, the latter being accompanied by the reduction from 16% to 10% of individual income tax), but also by the significant decrease of the average number of employees during the analysed period (**Table no. 5**).

The income/revenues/specific tax also has an increasing trend, especially in recent years (after the peak of 2011). We do not aim to identify the determinants of this increase; however, it is certain that the significant increase in the number of companies that have become revenues taxpayers since 2017, but especially in 2018, have influenced this aspect. In the case of the population I analyse, I identified 39 companies that, in the first year of application of revenues tax or specific tax, recognized a tax charge given that, in the previous year, the net accounting income tax had been zero. Other 27 companies found an increase in the tax due after the change of classification as revenues tax or specific tax payers. It is true that in other 36 cases, the tax decreased after the change of classification.

For the other taxes, the increase in the last two years could be explained by the fact that the first three years of application of Law 227/2015 (the new Tax Code), which stipulates that the tax on non-residential buildings owned by legal entities is calculated at an increased rate if the revaluation is not done. But, in order to avoid this increased rate, some companies have fiscally revalued the buildings and the increase of the fiscal (tax) values may have led to the increase of the buildings tax due.

## 3.2. Tax pressure in relation to sales, during 2010-2019

In order to emphasize the tax pressure, applying the formula no. 1, I calculated the ratio between the total tax burden and sales for all 2,897 available observations. The results are extremely dispersed, that is many outliers appear, which can seriously affect the interpretation of the results.

### *3.2.1. Individual calculations on each observation*

The percentage averages of the tax pressure by years and by total period are centralized in **Table no. 4**. According to the figures reported in **Table no. 4**, there is a relatively constant increase in the tax burden relative to sales, with a maximum in 2018 and a minimum in 2012. It is interesting to see what factors could explain this increase. Analysing the evolution of the sales for the companies forming the population of the study, I tried to identify a trend, calculating, first, the growth rate from year to year, by reporting the sales from year n to the sales from year n-1, where possible. Next, in a simplistic way, I calculated the average rate for each company, as a simple arithmetic mean of the annual rates. Thus, I found 307 observations in which I identified average rates of change in sales, of which 124 are below 1, which shows an average decrease in sales for the period 2010-2019 (with a percentage of about 11%), the remaining 183 being above 1 - average increase in sales (by 12%). The average is also slightly above 1, reflecting a very slight increase in sales. If we keep only the ends of the analysed time interval for each company - in general, 2010 and 2019 - we can calculate an average growth rate for each company, somewhat more rigorous mathematically, but which does not take into account the variations from year to year, which can be important.

**Table no. 4. Tax pressure for the companies listed on AeRo**

| Year | Number of observations | The average Tax. press unwinsorized (%) | The average Tax. press winsorized at 5th and 95th percentiles (%) |
|---|---|---|---|
| 2019 | 247 | 82.52 | 24.02 |
| 2018 | 277 | 157.71 | 24.89 |
| 2017 | 286 | 54.37 | 22.89 |
| 2016 | 293 | 52.79 | 21.67 |
| 2015 | 294 | 55.28 | 20.37 |
| 2014 | 303 | 21.91 | 20.07 |
| 2013 | 304 | 57.08 | 20.92 |
| 2012 | 304 | 27.73 | 19.46 |
| 2011 | 298 | 36.64 | 19.69 |
| 2010 | 291 | 52.08 | 19.85 |
| **Total** | **2,897** | **58.62** | **21.30** |

*Source: Own projection, based on data analysed*

Although the results of this approach cannot be considered very robust, I made the calculations by setting the growth rate in another way: I took the most recent sales (usually 2019), I compared it to the oldest sales (of rule, 2010) and I obtained a growth index for the analysed period, from which I extracted the root with an index equal to the duration in years of the period (usually 10 years). This time, the average pace - as far as can be considered credible - is below 1 for 175 companies, reflecting a decrease in sales in 2019 compared to 2010 (the average decrease is just over 12%); 136 companies have indices greater than 1, i.e., they have increases in sales in 2019 compared to 2010 (with an average increase of just over 9%). On average, based on this methodology, I obtained an index of 0.9719, which almost reflects a stagnant to a decline in sales in 2010-2019.

In both ways of calculating the growth rate of sales, the averages are very close to 1, which allows us to appreciate that the denominator of our formula is not the main cause of the increase in tax pressure from somewhere up to 20% in the first part of the interval, just over 24% in the last part of the interval. Thus, we should conclude that the numerator, i.e. the tax burden borne by the companies listed on AeRo, decisively influences the increase of the tax pressure rate during the analysed period.

Applying the same methodology to the data on the three components of the numerator, I observe, indeed, that:

- the labour related taxes have an average growth rate quite close to that calculated for sales, given that the average number of employees decreases significantly during the period; this situation is explained by the increase of the average wages during the analysed period, stimulated by the strong increase of the minimum wage on the economy, but also by the evolutions on the labour market;
- the significant increase of other charges with taxes, where local taxes are found, but also contributions to special funds, part of the non-deductible value added tax and others;
- the increase, as a whole, of the amounts reported as income/revenues/specific tax.

Following a methodology proposed in the literature for the calculations of the effective tax rates, I cumulated, for each company, the indicators from the denominator and from the numerator. Taking into account these cumulative figures for each company, I found 312 observations (distinct companies for the whole period), and the ratio between the cumulative tax burden and sales reaches (after bringing the extremes to the 5th percentile and the 95th percentile) to 19.85%, very close of the average weight reported in **Table no. 4**.

### *3.2.2. Cumulating the individual figures by years*

The very numerous outliers, even if they were brought to the 5th and 95th percentiles, could influence the results presented in **Table no. 4**. In order to verify whether the increasing trend of the tax pressure found in **Table no. 4** is confirmed, I also opted to cumulate the main indicators by years, after which I calculate the annual average, dividing the total indicator by the number of companies for which I had observations in that year. After applying formula no. 1, I chose to present several indicators, in order to highlight other trends than the total fiscal burden (**Table no. 5**).

The trend remains the same – the increase of the tax burden of companies on AeRo is confirmed: from 9.42% (in 2010), followed by a minimum of 8.43% (in 2011), I found 10.96% in 2019, preceded by a maximum of 12.06% in 2018. The main explanation, given the moderate increase in sales, comes mainly from the significant increase in wages (at an average annual rate of 6.54%, different from that published by the authorities, but explicable by the size of our population) and, consequently, the related social and fiscal contributions, even in the conditions of an almost equally significant decrease in the average number of employees (at an average annual rate of 4.53%). By the way, given the evolution of the number of employees and of the sales, there is a clear increase in productivity during 2010-2019. On the other hand, the decrease in the average number of employees can be an indicator of the fact that the efforts to make companies more efficient are almost always materialized in the reduction on the number of the employees. This increase in average salaries also confirms the results of Robu et al. (2015), for other Romanian companies and for a period that includes six years, of which the last two are the first of those retained by us.

**Table no. 5. Annual averages for some indicators**

| Year | Annual tax burden, in average (lei) | Sales, in annual average (lei) | Tax pressure (%) col.1/ col.2 | Evolution of the average gross annual salary* (lei) | Evolution of the average number of employees, as an annual average** | Evolution of the average annual labour tax burden, per employee (lei)*** | Evolution of the average of other taxes (lei) | Evolution of average charges with income tax or assimilated (lei) |
|---|---|---|---|---|---|---|---|---|
| *0* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| **2019** | 3,229,117 | 30,130,108 | 10.72 | 56,540 | 107 | 23,590 | 440,998 | 289,668 |
| **2018** | 2,867,852 | 24,338,026 | 11.78 | 50,834 | 108 | 21,283 | 366,876 | 240,108 |
| **2017** | 2,573,008 | 25,700,310 | 10.01 | 48,269 | 111 | 20,191 | 317,537 | 189,869 |
| **2016** | 2,377,418 | 22,937,512 | 10.36 | 43,111 | 114 | 18,049 | 309,236 | 165,846 |
| **2015** | 2,349,408 | 25,685,535 | 9.15 | 38,568 | 123 | 16,213 | 284,001 | 183,520 |
| **2014** | 2,417,426 | 25,697,633 | 9.41 | 35,871 | 130 | 15,467 | 307,814 | 140,584 |
| **2013** | 2,505,067 | 26,472,281 | 9.46 | 33,690 | 139 | 14,874 | 299,274 | 162,837 |
| **2012** | 2,573,197 | 28,197,600 | 9.13 | 32,999 | 150 | 14,569 | 292,656 | 163,401 |
| **2011** | 2,598,253 | 31,589,442 | 8.23 | 31,245 | 157 | 13,597 | 292,394 | 220,668 |
| **2010** | 2,503,037 | 27,234,582 | 9.19 | 30,001 | 171 | 13,025 | 294,409 | 168,195 |

* I divided the total salary expense by the average number of employees; I collected the results for all the companies in one year and divided the amount by the number of companies with valid observations in that year. The change in 2018 - the transfer of contributions to employees - does not affect the calculations, because I take into account the total salary costs. Overall, the figures are very close to those reported by official statistics on the Tempo online platform.

** The sum of the average number of employees of all companies in a year was divided by the number of companies with available data in that year.

*** The total tax burden related to the salaries (company contributions plus reconstituted employee contributions) added up for all companies in a year was divided by the average number of employees in that year, after which it was divided by the number of companies in the year.

Source: Own projection, based on data analysed

### 3.3. Tax pressure depending on the size of the company

In many papers studying the effective tax rate (based mainly on the income tax), one of the determinants of the rate is the size of the company. Depending on the context and the population analysed, conclusions are proposed that state the evolution in the same direction of the two variables, but there are also studies that find opposite evolutions (Richardson & Lanis, 2007), with explanations coming from the theory of political costs (the large companies are more exposed, more visible and therefore, the authorities can try to tax them more) or from the theory of political power (large companies have substantial resources that allow them to even orient the tax regulations in a way that is favourable to them).

As we did not propose an econometric model in which to assign coefficients to various variables, including the size of the firm, the analysed observations were divided into two groups, depending on the dimensions measured by the total assets; all companies report in lei, so there were no difficulties in identifying the median: just over 19 million lei. I considered that the companies with total assets below the median are small companies, while the companies with assets above the median are large (according to the model proposed, in another context, by Allali & Romero, 2013).

Applying the formula no. 1 for each observation and averaging the two panels of companies, we obtain a tax pressure of 21.26% for small companies and 14.88% for the large ones. The difference seems to be significant, in the sense that small firms have to give up a larger share of sales in favour of public budgets. These results are also confirmed if we apply the second procedure, cumulating the total tax burden and sales by years and by the two categories of companies.

The results, reported in **Table no. 6** also shows us that, for large companies, the ratio between the total tax burden and sales is significantly lower than in the case of small companies. Another interesting result of this analysis is the observation of the pace of evolution of the share of tax burden in sales: while in large companies we see a relatively steady increase from 2010 to 2019 (with a minimum of 7.72% in 2011 and a maximum of 11.31% in 2018), for small companies, the evolution is less linear, with the percentage in 2019 below that of 2010, under the conditions of a minimum of 14.17% in 2015 and a maximum of 17.28% in 2018.

**Table no. 6. Values and percentages, according to the size of the companies**

| Year | Cumulative average tax burden (lei) | | Cumulative average sales (lei) | | Average tax burden (%) | |
|---|---|---|---|---|---|---|
| | Small firms | Large firms | Small firms | Large firms | Small firms | Large firms |
| **2019** | 654,240 | 5,436,155 | 4,012,811 | 52,516,364 | 16.30 | 10.35 |
| **2018** | 616,553 | 5,018,239 | 3,568,320 | 44,371,218 | 17.28 | 11.31 |
| **2017** | 617,311 | 4,370,936 | 3,579,774 | 46,039,327 | 17.24 | 9.49 |
| **2016** | 602,090 | 4,116,822 | 3,885,998 | 41,602,846 | 15.49 | 9.90 |
| **2015** | 615,780 | 4,103,548 | 4,347,036 | 47,316,342 | 14.17 | 8.67 |
| **2014** | 626,812 | 4,104,783 | 4,364,312 | 45,800,186 | 14.36 | 8.96 |
| **2013** | 614,080 | 4,370,112 | 4,120,228 | 48,518,190 | 14.90 | 9.01 |
| **2012** | 672,512 | 4,525,753 | 4,566,579 | 52,458,781 | 14.73 | 8.63 |
| **2011** | 672,055 | 4,526,728 | 4,552,170 | 58,626,715 | 14.76 | 7.72 |
| **2010** | 698,168 | 4,343,494 | 4,158,739 | 50,791,171 | 16.79 | 8.55 |

*Source*: Own projection, based on data analysed

It seems that large companies manage better their tax burdens related to the sales, even in the conditions in which the average salaries granted by large companies are, each year, on average, at least 12% higher than for small companies (the gap reaches up to over 26% in 2012). These results confirm the results in the literature that propose as a hypothesis a negative link between size and the tax burden (Fernandez-Rodriguez et al., 2020). The differences between large and small firms are also found in the structure of the total tax burden – for large firms, the share of income/revenues/specific tax exceeds by more than two percentage points the share of the same component in small firms. The latter, on the other hand, have salary contributions and other taxes with slightly higher weights than for companies with above-average assets (**Table no. 7**).

| Table no. 7. Weights of the components of the total tax burden, depending on the size of the companies | | | | | | |
|---|---|---|---|---|---|---|
| Year | The structure of the tax burden for firms with assets below the median (%) | | | The structure of the tax burden for firms with assets above the median (%) | | |
| | Labour taxes | Other taxes | Income/revenues/ specific tax | Labour taxes | Other taxes | Income/revenues/ specific tax |
| **2019** | 79.98 | 14.99 | 5.03 | 77.10 | 13.52 | 9.38 |
| **2018** | 78.72 | 14.57 | 6.71 | 78.85 | 12.57 | 8.58 |
| **2017** | 78.57 | 14.58 | 6.85 | 81.25 | 11.23 | 7.52 |
| **2016** | 80.38 | 12.99 | 6.63 | 79.96 | 13.01 | 7.02 |
| **2015** | 83.20 | 11.32 | 5.49 | 79.71 | 12.12 | 8.17 |
| **2014** | 83.48 | 12.00 | 4.52 | 81.35 | 12.65 | 6.00 |
| **2013** | 82.70 | 12.27 | 5.03 | 81.76 | 11.52 | 6.71 |
| **2012** | 83.09 | 12.85 | 4.06 | 82.37 | 10.93 | 6.70 |
| **2011** | 82.52 | 12.14 | 5.34 | 80.10 | 10.94 | 8.96 |
| **2010** | 82.56 | 11.39 | 6.05 | 81.90 | 11.26 | 6.83 |

*Source*: Own projection, based on data analysed

The fact that the most pronounced differences, at least in recent years, are found in the case of income/revenues/specific tax shows that small companies achieve limited performance compared to large ones or that they better hide their taxable base. We can also comment in the sense that the income tax, even if it has the role of bringing money to the budget, regardless of the profits made by the respective companies, has a lower yield than another equivalent direct tax. Probably, however, the differences would be even bigger if they had not increased from 100,000 euros to 500,000 euros and then to 1,000,000 euros, the ceiling up to which companies are paying revenues tax.

## 3.4. Tax pressure depending on the profitability of the company

The return on assets, calculated as the ratio between the net income and the total assets (ROA), allowed the calculation of a median of 0.36% for the 2,897 available observations. Many low-profit companies have losses, which makes them not pay income tax; at most they reported revenues or specific tax in the last years of the analysed period. Indeed, out of the 1,448 companies with below-average economic profitability, 1,067 (73.69%) report net losses and, of these, 225 have income tax expense, 67 reporting for revenues tax or specific tax. The tax pressure calculated by applying the formula no. 1 (after winsorizing the outliers) and taking into account all available observations is 26.14% for companies with low profitability and 16.69% for those with high profitability. The cumulation by year of the fiscal burden and its components allow us to observe a trend: for companies with low profitability, the tax pressure is generally increasing for the period 2010-2019, with a minimum of 7.85 %, in 2010 and with a maximum of 12.70% in 2018. On the contrary, for companies with above-average profitability, the evolution is quite irregular, with an insignificant difference in 2019 compared to 2010, but with a maximum of 12.39 % in 2016 and with a minimum of 8.38% in 2011. The fact that high-profit firms report a lower tax pressure than others, despite the higher corporate tax they pay, may result from their ability to manage its activity in such a way as to diminish the fiscal burden. This kind of explanation appears, in the context of profit tax, in studies that find the ability of some companies to report high performance and low (profit) taxes (Hanlon, 2005; Chen et al., 2020).

As we can expect, the structure of the total tax burden shows a much lower share of income/revenues/specific tax for companies with low profitability, compared to those profitable above the median - **Table no. 8**.

**Table no. 8. Weights of the components of the total tax burden, depending on the ROA**

| Year | The structure of the tax burden for firms below median ROA (%) | | | The structure of the tax burden for firms above median ROA (%) | | |
|---|---|---|---|---|---|---|
| | Labour taxes | Other taxes | Income/ revenues/ specific tax | Labour taxes | Other taxes | Income/ revenues/ specific tax |
| **2019** | 83.86 | 11.23 | 4.91 | 72.48 | 15.49 | 12.03 |
| **2018** | 85.39 | 13.90 | 0.71 | 75.19 | 12.17 | 12.64 |
| **2017** | 83.81 | 15.49 | 0.70 | 78.32 | 10.59 | 11.09 |
| **2016** | 83.62 | 15.23 | 1.15 | 76.67 | 10.94 | 12.40 |
| **2015** | 83.81 | 14.28 | 1.91 | 77.44 | 10.45 | 12.11 |
| **2014** | 86.51 | 13.20 | 0.29 | 77.85 | 12.08 | 10.08 |
| **2013** | 84.72 | 14.64 | 0.64 | 79.58 | 9.22 | 11.20 |
| **2012** | 86.12 | 12.52 | 1.36 | 78.88 | 9.88 | 11.24 |
| **2011** | 86.54 | 12.72 | 0.73 | 76.95 | 10.18 | 12.87 |
| **2010** | 83.83 | 14.28 | 1.89 | 80.69 | 9.14 | 10.16 |

*Source*: Own projection, based on data analysed

## 3.5. Tax pressure depending on the leverage

The company's financing decisions have an impact on the performance, but also on the total volume of taxes paid by companies. If we consider only the deductibility of the borrowing costs, we find a direct effect of external financing on corporate income tax. On the other hand, if the financing relates to investment projects, then it is possible that fixed assets will increase, as will the number of employees, which could lead to increases in other taxes, as well as increases in labour tax, as sales increase. The reporting system used by Romanian companies listed on AeRo - a system imposed by the Ministry of Finance - is characterized by a financial statement form common to all companies, with some small variations. I chose to calculate the leverage as a ratio between total liabilities and total assets and not by withholding long-term liabilities, as it appears in the literature (Balios et al., 2020).

Basically, from the total assets - calculated by us as the sum between fixed assets, current assets and prepaid expenses - I deducted the equity - taken from the balance sheet - and I divide the difference by the total assets. The results are between a minimum leverage of 0.04% and a maximum of 975.40%, for an average of 34.56%. The median is 25.58%, so I apply formula no. 1 for companies below the median, separately from the companies above the median.

From the results of the application of formula no. 1 and after winsorizing the outliers, the average tax burden of companies with low leverage is 25.77%, significantly above the average tax burden of companies with high leverage (above average), 17.13% (without winsorizing the outliers the differences are even greater, in the same sense). Higher leverage leads to a lower tax burden, probably due to the borrowing costs which are usually deductible in calculating corporate income tax. This explanation is also confirmed by the significantly higher share of corporate income tax in the total tax burden for low leveraged companies (**Table no. 9**).

| Table no. 9. Weights of the components of the total tax burden, depending on the leverage | | | | | | |
|---|---|---|---|---|---|---|
| Year | The structure of the tax burden for firms with below-median leverage (%) | | | The structure of the tax burden for firms with above-median leverage (%) | | |
| | Labour taxes | Other taxes | Income/revenues/ specific tax | Labour taxes | Other taxes | Income/revenues/ specific tax |
| **2019** | 71.35 | 17.08 | 11.58 | 79.90 | 12.22 | 7.88 |
| **2018** | 71.93 | 17.31 | 10.76 | 82.24 | 10.57 | 7.20 |
| **2017** | 73.25 | 15.32 | 11.44 | 83.92 | 10.80 | 5.28 |
| **2016** | 70.71 | 16.08 | 13.22 | 84.78 | 11.44 | 3.78 |
| **2015** | 73.46 | 15.52 | 11.02 | 83.71 | 10.16 | 6.13 |
| **2014** | 72.78 | 15.62 | 11.60 | 86.13 | 11.01 | 2.87 |
| **2013** | 75.52 | 14.48 | 10.00 | 84.13 | 10.62 | 5.25 |
| **2012** | 78.67 | 13.01 | 8.32 | 84.53 | 10.20 | 5.27 |
| **2011** | 75.95 | 13.92 | 10.13 | 82.13 | 10.00 | 7.86 |
| **2010** | 80.30 | 12.21 | 7.49 | 83.05 | 10.70 | 6.24 |

*Source*: Own projection, based on data analysed

## 3.6. Tax pressure depending on the capital intensity

In the literature (from what I found, starting with Stickney & McGee, 1982), a variable that is frequently introduced in the analysis of companies' performance, but also of tax pressure and its consequences, is the share of various components of the assets in the total assets: the fixed assets or a component of them (tangible, intangible…), but smaller structures such as capitalized development expenses or even inventories can also be taken into account. I use a variable consisting in the share of total net fixed assets in the total assets. It is useful to say that, in Romania, from the fixed assets, the tangible ones are, by far the most important, rarely finding intangible or financial with significant weights. And here, I separate the companies below the median from those above the median of that weight. Thus, the median share of net fixed assets in the total assets is 68.35%, in the conditions of an average of 64.13%, a minimum of 0.00% (we have 6 observations with balance sheets in which net fixed assets are zero) and a maximum of 99.67%.

Applying formula no. 1 of each individual observation and averaging the two categories of companies (below the median vs. above the median of the share of fixed assets in assets), we observe a clear difference, in the sense that companies with fixed assets below the median report a significantly lower tax burden (17.51%) than companies with fixed assets above the median (25.12%). The structure of the tax burden also shows significant differences between the two categories of firms (**Table no. 10**).

| Table no. 10. Structure of the total tax burden, depending on the share of fixed assets in total assets | | | | | | |
|---|---|---|---|---|---|---|
| Year | The structure of the tax burden for companies with the share of fixed assets below the median (%) | | | The structure of the tax burden for companies with the share of fixed assets above the median (%) | | |
| | Labour taxes | Other taxes | Income/revenues/ specific tax | Labour taxes | Other taxes | Income/revenues/ specific tax |
| **2019** | 79.42 | 12.52 | 8.06 | 73.40 | 15.86 | 10.74 |
| **2018** | 83.59 | 9.66 | 6.75 | 71.04 | 17.93 | 11.04 |
| **2017** | 85.19 | 9.33 | 5.48 | 73.78 | 16.33 | 9.89 |
| **2016** | 83.16 | 9.84 | 7.00 | 76.35 | 16.70 | 6.95 |
| **2015** | 83.30 | 8.92 | 7.78 | 74.93 | 17.21 | 7.85 |
| **2014** | 85.06 | 9.03 | 5.91 | 75.88 | 18.46 | 5.66 |
| **2013** | 85.07 | 9.82 | 5.11 | 78.62 | 13.47 | 7.91 |
| **2012** | 85.48 | 8.55 | 5.97 | 76.90 | 16.06 | 7.05 |
| **2011** | 82.86 | 8.35 | 8.80 | 75.80 | 16.27 | 7.93 |
| **2010** | 84.51 | 9.42 | 6.07 | 77.19 | 14.85 | 7.97 |

*Source*: Own projection, based on data analysed

If many buildings, land and means of transport are found in fixed assets, their high values - especially following the systematic revaluation of buildings - lead to important local taxes on buildings, which may explain the high percentages of other taxes for companies with more fixed assets; at the same time, large fixed assets also mean high depreciation expenses, so - in the case of their tax deduction - the profit tax may be lower.

### 3.7. Tax pressure depending on the audit opinion

From the 2,897 observations for which we could calculate the tax pressure indicator applying formula no. 1, I found only 2,440 with the available audit report: this does not necessarily mean that the other companies are not audited (to analyse them as Fernandez-Rodriguez et al., 2019), but that I did not have access to those reports.

Of these 2,440 observations, in 564 cases (23.11%) I find a modified opinion (most such opinions are qualified, but there are also 9 adverse opinions - for 8 different companies - as well as 8 situations of disclaimer of opinion - for 5 different companies). The other 1,876 observations contain audit reports with clean opinions, even if, in some cases, there is an emphasis of matters paragraph (there are 587 such cases). The modified opinion is justified by the fact that the auditor is not convinced that he had all the data to enable him to assess that the accounting rules were followed exactly.

Overall, applying the formula no. 1 for each individual observation, I reached, after winsorizing the outliers to the 5th and 95th percentiles, a tax pressure of over 28%, in the case of observations with modified opinions, while, for observations with unmodified opinions, the rate is almost 20%. The difference seems to be significant. And after the cumulation by years of the total tax burden, respectively, of the sales, the tax pressure rates are obviously higher for the companies that received modified audit opinions and with a more irregular distribution in time (a minimum of 7.09% in 2011 and a maximum of 20.97% in 2016), compared to companies with clean opinions, where the evolution of percentages is much tighter: a minimum of 7.60% in 2015, and a maximum of 11.50% in 2018. Regarding the share of the components of the tax burden, companies with modified audit opinions report more expenses with other taxes and less income/revenues/specific tax, but with about the same tax burden on salaries (**Table no. 11**).

**Table no. 11. Components of the total tax burden, depending on the type of audit opinion**

| Year | The structure of the tax burden for observations with modified audit opinion (%) | | | The structure of the tax burden for observations with unmodified audit opinion (%) | | |
|---|---|---|---|---|---|---|
| | Labour taxes | Other taxes | Income/ revenues/ specific tax | Labour taxes | Other taxes | Income/ revenues/ specific tax |
| **2019** | 78.58 | 15.35 | 6.08 | 76.95 | 13.21 | 9.84 |
| **2018** | 79.09 | 15.87 | 5.04 | 78.81 | 12.26 | 8.93 |
| **2017** | 76.13 | 18.65 | 5.22 | 81.30 | 11.27 | 7.43 |
| **2016** | 78.53 | 18.67 | 2.80 | 80.32 | 11.51 | 8.17 |
| **2015** | 75.58 | 12.69 | 11.73 | 82.03 | 11.80 | 6.17 |
| **2014** | 81.65 | 11.92 | 6.44 | 81.38 | 12.97 | 5.65 |
| **2013** | 81.94 | 10.94 | 7.12 | 81.97 | 11.70 | 6.33 |
| **2012** | 85.48 | 9.50 | 5.02 | 80.50 | 11.89 | 7.62 |
| **2011** | 82.89 | 11.89 | 5.22 | 79.55 | 10.67 | 9.78 |
| **2010** | 82.75 | 12.16 | 5.09 | 81.92 | 10.75 | 7.32 |

*Source*: Own projection, based on data analysed

## Conclusions

The literature includes numerous studies that calculate an effective tax rate based on corporate income tax, especially due to the ease with which this rate can be calculated and compared to the legal tax rate. However, taking into account only the income tax, the analysis and interpretation of the tax burden or the effective tax rate may lead to results that do not necessarily reflect the company's contribution to public budgets. Thus, many studies complement the variables by which the tax pressure is measured, including other taxes borne, directly or indirectly, by the company and taking them into consideration can provide a better picture of the corporate fiscal effort. In this study, I add to the denominator and numerator of the tax pressure formula some elements that, I believe, better characterize the fiscal effort of enterprises. Thus, at the numerator, I considered three main categories of taxes: income tax or assimilated, other taxes, as well as social and fiscal contributions on salaries, as I found them directly or I could reconstitute them from the information provided in the official financial statements of the companies. I chose the denominator to be the sales made by the company every year. The indicator has the advantage of being more difficult to manipulate, but it also has a major disadvantage - it does not allow comparisons with any indicators established on the basis of legal tax rates. The analysed population consists of companies listed on the AeRo alternative market of the Bucharest Stock Exchange, from where I found 2,897 observations, for a period of 10 years (2010-2019). The large share (almost 40%) of companies with losses - which probably do not have to pay income tax - makes the mix of taxes I analyse to seem even more appropriate in the analysis of the fiscal pressure. Comparing with the Lazăr & Istrate (2018) study, I add to the numerator the fiscal contributions of the employees and replaced he denominator by the sales. This option is also justified by the radical change in the regime of these contributions in Romania, at the beginning of 2018, by transferring them directly to the employee, which makes it no longer appear explicitly in the financial statements.

A first finding is that the share of social and fiscal contributions on salaries is by far the most consistent in the total tax burden of companies listed on AeRo: around 80%, followed, at a great distance, by other taxes (somewhere between 11% and 13%) and, finally, by the income tax or assimilated (between 6% and 9%).

Turning to the calculation of the tax pressure rate, making the calculations for each observation, I found a slightly increasing share of taxes in sales, from almost 20% (in 2010) to just over 24% (in 2019). These values are obtained after winsorizing the 5th and 95th percentiles. After calculating the growth rates of the individual indicators, I notice that the explanation for the increase in the tax burden is given by the increase in taxes and not by the indicator from the denominator - sales. If we apply the formula based on the absolute data accumulated per year, we reach a result that confirms the systematic increase of fiscal pressure during the analysed period, especially by increasing social and fiscal contributions on wages, generated by very clear average wages growth, more intense than decreasing the average number of employees.

Continuing the analysis, I applied the same methodology to highlight the possible effect of some explanatory factors on the fiscal pressure:

- after dividing the observations in two sub-samples, separated by the median of the total assets, I calculated significantly different percentages of tax pressure for large firms than for small ones: the tax burden for large firms appears to be significantly lower compared to small ones;
- taking into account the profitability of companies (ROA) and separating the observations into two categories (below and above the median) shows us that companies with high profitability have a significantly higher tax burden than those with low profitability;
- leverage (calculated as the ratio between total liabilities and total assets) is an important factor influencing the tax burden and our calculations show a lower fiscal pressure for more leveraged companies than for those with below-median leverage;
- I also calculate the share of fixed assets in total assets, and the results show a significantly lower fiscal pressure for companies with a capital intensity below the median;
- a new variable, which I did not find in the literature, is the audit opinion - modified vs. unmodified; I found that the companies that receive modified opinions have a higher share of taxes in the sales than the companies that receive unmodified opinions.

Among the limitations of this study, I mention the descriptive character of the research, the small population size, which makes it difficult to generalize the results, summary statistical processing (lack of setting correlations between the analysed variables), lack of a reference average or marginal effective rate, according to the models proposed based on the work of Devereux et Griffith, 2003) with which to compare the calculated fiscal pressure rates. All these can represent as many future research directions, to which we can add the introduction in the analysis of some companies from other emerging states, possibly from Central and Eastern Europe.

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# Fair Value Complexity and the Audit Risk

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## Abstract

*This paper checks if the auditors in an emergent context, where the fair value (FV) concept, its implementation and audit are relatively new, are aware of the estimation risk induced by the valuation process (the FV provider and FV disclosure), depending on the quality of internal control (IC). An experiment was applied to a group of auditors and master students, using two elements pertaining to FV reporting: "Valuation attributes and sensitivity of data", respectively "Methods, assumptions and model". This experiment revealed that: (1) FV audit risk is lower when the estimation is made by an external, instead of an internal valuator; (2) the master's students, compared to more experienced professional auditors, manifest an overconfidence in the external Valuation Report in terms of valuation attributes, data availability and solutions adopted to test the sensitivity of value; (3) the audit risk is lower when the valuator is external and hence the auditors verify in detail the information provided in the Valuation Report as inputs and methods applied; (4) when IC is strong as quality, the verification of methods, assumptions and model induces for auditors a higher risk than the other FV disclosed component, valuation attributes and sensitivity of data, in the case of management estimation.*

***Key words:*** *fair value measurement (valuation); audit risk; valuation methodology; valuation attributes*

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## Introduction

Our research analyses the magnitude of audit risk when it comes to fair value (FV) estimate in relation to valuation process issues, supposed to be assessed by the auditors. Auditors apply specific tests on FV provided by companies' managers for financial reporting purpose. Aside the evaluation of management assumptions, these tests also must focus on the data/inputs used and valuation methods applied. Our main research question is if the appeal to an external valuator induces a lesser audit risk of FV estimation compared to the case when the assessment was performed by an internal valuator. Both external and internal valuators are the experts used by management to provide FV estimation. Another research question is if the valuation methodology (Methods, assumptions and model) disclosed in the valuation report can induce a higher audit risk and additional effort for the auditor compared to the other component of disclosure, Valuation attributes and sensitivity of data.

The subject raised and still raises interest even after the International Auditing and Assurance Standards Board (IAASB) publishing its new version of ISA 540 *Auditing accounting estimates and related disclosures* in 2019, with December as the initial date of application. Because, earlier, the professional body was accused it did not provide enough guidance in order to minimize the audit risk related to the uncertainty of estimates, the new ISA 540 (2019) brings a major revision of the earlier version, aiming to enhance requirements for risk assessment procedures and the auditors' work effort in responding to the assessed risks of material misstatement (IAASB, 2017).

The researchers are also aware of the specific nature of estimates. They argue that it is important to investigate the impact on the audit process of the risks related to FV estimate in relation with FV influential factors (*e.g.,* Christensen et al., 2012; Bratten et al., 2013). Cannon & Bedard (2017) and Glover et al. (2017) attest auditors' tendency to significantly rely on external valuation experts' work, hence drifting the need for further guidance for auditors in their work with valuators. Therefore, the factor we analyse is FV provider extended to the whole valuation process. Other factors which we treat tangentially are FV complexity and management bias, presumed to be significant sources of risk for the audit profession (Christensen et al., 2012; Bratten et al., 2013; Griffin, 2014; Brink et al., 2016). Because there are mixed results in the literature regarding the contribution of the quality of internal control (IC) on these issues (Brown-Liburd et al, 2014; Joe et al., 2017), we also integrated it in our model.

The investigation is conducted by an experiment applied to auditors as well to master level students. In this way we can compare auditors and master students' perceptions and also observe the specialized knowledge provided to future professionals. Other contributions of our research relate to enriching literature with new insides from an emergent context where FV as concept and implementation are relatively new, and respectively to audit and valuation practices and the linkage between the two professions.

The following sections present an analysis of literature and applicable audit standards, explain the proposed analysis framework, and provide and comment the obtained empirical results.

## Influential factors of FV estimation risk

If we refer to objective causes, FV is considered complex and volatile, due to the sophisticated nature of some assets that are valued, namely the input data used, collected from the market and constantly evolving. These characteristics increase the risk of estimation and hence the risk of auditing FV. In addition, some subjective causes that amplify these risks must be considered. Specific literature identified such influential factors, *i.e.,* estimation uncertainty, managerial bias, professional scepticism, fair value estimate provider, standards guidance, and auditors understanding of the valuation process (*e.g.,* Bratten et al., 2013 or Doliya & Singh, 2016). According to our research questions, we are interested in FV provider, FV complexity, and management bias in estimating fair value.

In relation to the *FV complexity*, Bratten et al. (2013) assert about estimations that they represent an unstructured task with complex nature, uncertain realisation, which does not have an objective verifiability. Also, there are some elements which are particularly complex due their unicity which leads to the lack of market comparable. In the audit process, auditors assess the reasonability of the management's valuation model and assumptions. ISA 540 (2019) mentions that complexity arises when there are multiple valuation attributes and multiple or non-linear relationships between them. The revised standard further states that complexity also exists in relation to the method, when multiple sources of data, assumptions or valuation concepts or techniques need to be used in determining the outputs of the estimation process.

The concept of *management (managerial) bias* is related to management assumptions which are subjective in nature, as valuation models and inputs selected (Christensen et al., 2012; Bratten et al., 2013; Griffin, 2014; Brink et al., 2016). The management of audited companies is involved in estimation when using an internal expert/valuator. The subjectivism inherent to the valuation process *per se* may stir, in each of its steps, value manipulations. In order to adjust management bias effects, Martin et al. (2006) consider that the auditor must have the knowledge on how managers can induce, voluntary or not, errors in FV estimation. The same authors agree on the difficulty of such a task due to the lack of complete knowledge about how the information are combined to form management judgement. Management bias is difficult to detect also due to the FV complexity task (Bratten et al., 2013) and estimation uncertainty (Griffin, 2014).

## New requirements of the international auditing standards

IAASB has shown significant interest on the use of 'external information sources' which is equivalent to the use of the work of specialists, including valuators. This was a specific requirement, a complement to the other ones concerning the audit of accounting estimates, aiming to amend the extant auditing standard ISA 540 (IAASB, 2017). The intention was to strengthen the requirements for the auditor to evaluate as well the work of management's and auditor's expert (in the case of the auditor's expert, it is about the employed and auditor-engaged specialist), including establishing a risk-based approach in such cases. We are interested in the first case, the management's expert.

The standards' general message is that management's failure to use specialized skills and knowledge, including engaging an expert, increases control risks. The extant ISA 540 required, between the four responses to the risk of material misstatement relating to an accounting estimate, to test how management made the accounting estimate. Regulators and other key stakeholders in the audit process, especially financial institutions, asked for a revision of ISA 540; therefore, IAASB developed the updated version (IAASB, 2019). In this document, IAASB adopted an approach that includes, among others, and when the inherent risk is not low, further audit procedures to obtain audit evidence about certain matters in applicable circumstances when one or more factors represent the reason for the assessment of the risk of material misstatement. Particularly, control over models is viewed as critical in auditing accounting estimates. If we link the prescriptions of the revised ISA 540 on how management makes accounting estimates (classified in the standard as one of the risk assessment activity) to FV measurement, we basically reach the equivalent of the whole valuation process that has to be controlled. Detailing, para. 10 (e) of ISA 540 (2019) includes as requirements the verification of: the use of methods, selection of the assumptions, data used (including the sources), the specialized skills and knowledge applied by the management (including the use of an expert), the risk of management bias, the estimation uncertainty addressed by the management and the need for a change in estimates addressed by the management. We subsumed all these audit specific steps into our research framework.

The topicality of our research objective is also suggested by IAASB's other planned actions to revise its standards. Hence, as a consequence of reviewing ISA 540, IAASB decided to propose changes to ISA 500 for third-party pricing and non-pricing sources, under a new name, external information sources. There are pricing services for financial instruments, governmental organizations, central banks or stock exchanges data. The exposed reason is the increasing use of accounting estimates of large volume data, derived from complex information technology systems or provided by sources traditionally included in the financial reporting process (IAASB, 2017). For this reason, the professional body is preoccupied to develop recommendations for auditors in this vein. At the same time, although it does not treat this case in the revised ISA 540, IAASB is aware of the need to revise in the future ISA 500, including for the distinction between external information sources and management's expert. The extant ISA 500 disentangle these two notions, but not in a clear way. According to this standard, the management's expert is an individual or organisation that possess specific expertise which is applied in making an estimate for the financial statements. If the individual or organisation provides prices (the new ISA 540 also includes here the non-pricing sources) data regarding private transactions, not otherwise available to the entity, which the entity uses in its own estimation methods, such information do not lead to the work of management's expert (IAASB, 2018 – ISA 500).

## Research framework

In order to cover the valuation process issues, in the framework we propose, the dependent variable which we found to be appropriate is *A higher risk of misstatement of the estimation* and the independent variables are 'FV provider' and 'FV disclosure'. ISA 540 and the literature suggested the relevance of the delimitation of valuator type, external expert versus management expert. Also, our choice for the variable 'FV disclosure' is inspired by the quantifiable elements suggested to auditors in ISA 540, when verifying an accounting estimate for a financial statement item, *i.e.,* the relevant quantitative and qualitative valuation attributes and the sources of data that would provide appropriate measures of those attributes. Therefore, we designed two components of 'FV disclosure', *i.e., Focus on inputs characteristics, their source, risk of their volatility,* and *Focus on valuation methods, assumptions and models.* The dependent variable was quantified by the participants on a 7-point Likert scale, anchored by 1 (very low likelihood of a higher risk of misstatement) and 7 (very high likelihood of a higher risk of misstatement).

The effects of the association between the dependent and independent variables form a matrix of 2x2 form, derived in two circumstances, depending on the *quality of the internal control* (IC). IC assessment and reliance is a key component of the audit process (Earley at al., 2008). According to the literature, the results of which we aim to test, we classify the quality (efficacy or compliance) of IC, in two categories: *week*, when some weaknesses were observed, under the form of deficiency, significant deficiency, or material weakness; and *strong* IC, otherwise.

As case materials, for the external valuation provider, *i.e.,* the valuator that assists the management in FV measurement, we used a standard Valuation Report (according to valuation standards applicable in Romania, SEV prescribed by the National Association of Authorized Romanian Valuers - ANEVAR). The subject of the Valuation Document is real estate (a building), which is valued for financial reporting purposes, by using the income and cost approach. For the internal valuation provider, namely management's own estimation, based on its employees/experts' opinions, we created a 'Management Valuation Worksheet' which was further used. For the item FV disclosure, we provided, apart the valuation document, a list of auditor steps to verify FV estimate disclosure, as inputs, methods and assumptions for the measurement.

In our inquiry, we deal with the case of the auditee's valuator, both in the case of a valuation generated internally by the auditee (auditee's management estimation), and of an estimation provided by an external consultant of the auditee (auditee's management's expert). This is because we believe that the work of the valuator that assists the auditor – the auditor's expert according to ISA 620 – is integrated in the audit process' global effort. Furthermore, this case does not lead to a real delimitation between the interested parties in the audit of fair value. Besides that, the ways to act and the efforts of the auditor differ in magnitude and nature when he verifies the valuation provided by the auditee versus when he evaluates the adequacy of his own expert's work. We chose to focus on the most demanding task for the auditor, which has the potential to induce the higher risks for the audit of estimates. In short, by FV estimate provider, we understand both the management who performs the valuation through its employees, and an external specialist including the pricing services which provide valuation expertise and data.

The experiment framework and the case materials – that result in 8 iterations – are presented in **Table no. 1**.

| Table no. 1. Case materials | | |
|---|---|---|
| FV disclosure components and documents received by the participants | FV provider | |
| | External valuation expert (Third party) | Internal valuation expert (Management estimation) |
| | Conditioned by the type of IC: week or strong (a and b) | |
| *Component 1 of FV disclosure named* ***Valuation attributes and sensitivity of data*** *(VASD).*<br>Valuation Document* and a list of issues to control**:<br>• Relevant quantitative and qualitative valuation attributes;<br>• Extent to which observable data is available to measure relevant valuation attributes;<br>• Method to develop information about the sensitivity of the estimate to possible variations in the initial data. | Case 1/ a, b | Case 2/ a, b |
| *Component 2 of FV disclosure named* ***Methods, assumption and model*** *(MAM).*<br>Valuation Document* and the following list of issues to control**:<br>• Selection of methods;<br>• Selection of assumptions;<br>• Models' content. | Case 3/ a, b | Case 4/ a, b |

* the Valuation Document is a Valuation Report if the valuation is performed by an external expert, respectively a Management Valuation Worksheet if the valuation is performed by an internal expert (management estimation); ** inspired from ISA 540 (540), section Application and others explanatory material: A36-49; we consider it as hints for auditors to control these valuation stages.

*Source*: Authors' projection

# Substantiation of research hypotheses

Divergent opinions can be observed on the appeal to an external valuation expert and its effects on the financial reporting quality and audit process. Besides preponderant favourable opinions such as enhanced reliability, objectivity and, in general, quality of the financial information, and also inclination to verify in detail the values provided by valuation reports - so an increasing quality of audit (Muller and Riedl, 2002; King, 2006; Deloitte, 2010; Salzsieder, 2016; IAASB, 2017), some reserved were also expressed about the benefits of using such external services. The questions of our research derive from the study of the sensitive aspects identified by the regulatory bodies of the profession and in the literature.

Particularly, King (2006) asserts more objectivity in the case of use of an external versus internal valuator. Also, FV estimation is viewed as less risky if it is generated by an external source, according to Brink et al. (2016). Therefore, our first empirical hypothesis is:

*H1: Overall, the risk of estimating FV is lower when the estimation is made by an external evaluator versus management.*

Regulators, such as the Public Company Accounting Oversight Board - PCAOB (2011) and SEC (2011), are concerned about the auditors' inclination to focus exaggeratedly on valuators reports, neglecting their own verification steps or audit procedures. Joe et al. (2017) reckon other weaknesses if the data disclosed in the valuation report are significant in quantity, in the case of a high risk of the client's IC. In this case, the auditor is inclined not to proceed to supplementary tests, for example checking the subjective inputs, but rather focus on other details and objective inputs. Finally, the nature and volume of the tests auditors will apply to verify FV are influenced by the valuation report content, in the case of a week IC of their client, conducting to an over reliance on the valuation report. Martin et al. (2006) reviewed a number of studies that affirmed that a person confidence increases with the amount of information they use. We believe that this inclination to rely on consultants' reports is justified by the auditors' consideration of a lower risk of estimating FV if they have a valuation report of an external consultant available (report supposed to contain a higher volume and quality of information compared to management's valuation document) and when the IC is weaker. Hence, our next empirical hypothesis, derived from H1 (H1a) is:

*H1a: When IC is week as quality, auditors manifest an overconfidence in the external Valuation Document (Valuation Report) in terms of valuation attributes, data availability and solutions adopted to test the sensitivity of value (the first variable of FV disclosure, VASD).*

Salzsieder (2016) argues that if the recourse to valuators is known, auditors manifest a tendency to verify in detail the values provided by the Valuation Reports. In the same vein, Martin et al. (2006) evoke the tendency of auditors toward a confirmation bias (search for information that supports, and not refutes, a previously belief or preference, *i.e.* management assumptions). To infirm the confirmation bias, an auditor is supposed to gather supporting data to arrive at FV inputs and distinguish between internal and external sources and ways of processing the inputs for the valuation models. Therefore, our next empirical hypothesis, also derived from H1 (H1b) is:

*H1b: Overall, the audit risk is lower when the valuator is extern and hence the auditor verifies in detail the information provided in the Valuation Report as inputs and methods applied (the second variable of FV disclosure, MAM).*

Besides the first empirical hypothesis, we developed a second one, linked to the components of the Valuation Document and to auditors' expertise in properties valuation methodology. Bratten et al. (2013) think that the lack of valuation knowledge of auditors, explicable by the complexity of FV, is one of the elements affecting the audit process performance and the ability of auditors to find and incorporate in their judgement management bias in FV estimation. IAASB, in its updated ISA 540, highlights the need for specialized skills or knowledge earlier in the auditing process, in relation to either the understanding or with the identification and evaluation of the risks of material misstatement (IAASB, 2017). Concerning IC over FV measurement, Martin et al. (2006) reckon that controls related to FV estimate require considerable audit work, consistent (each year) to understand and evaluate, and that the specific information and control processes needed to support FV estimate is very specialized. Therefore, we believe that, if internal control is strong as quality (even the internal controls related specifically to FV estimate), the auditor can focus on the Valuation Report and its components. We want to see which component would require more audit effort and our hypothesis is the following:

*H2: When IC is strong as quality, the verification of Methods, assumptions and model (MAM) induces a higher risk than the other FV disclose component, Valuation attributes and sensitivity of data (VASD).*

For all the research hypotheses, we vary the type of IC quality, respectively the respondents. For the IC quality, we look to other studies results linked to a week IC which were mentioned previously. For the respondents, we intend to observe similarities and dissimilarities between the perceptions of practicing auditors and students. Besides, we test whether the involvement of students as subjects in audit studies is really relevant.

## Study participants

The case materials were checked with two experimented auditors and, after some clarifications, we ruled the experiment with two groups of participants. The first group was formed out of 160 students enrolled in a relevant university in Romania, master's degree, first year, three specialisations, *i.e.* on audit, accounting and property valuation. The students had completed at the bachelors and master's level two courses in the field of auditing and two other courses in the field of valuation of assets and business, attesting their competencies related to the topic under investigation. The second group of participants was formed out of 76 experimented auditors registered under the Chamber of Financial Auditors in Romania (CAFR). The experimental materials have been completed through direct meetings in the fall of 2019. In the last part of the meeting, we asked the participants - auditors to fill in a short demographic survey in order to observe their understanding of the valuation process. The descriptive statistics revealed that the audit experience is higher than 10 years for 43% of the participants; that their experience in FV auditing as number of cases / reports is lesser than 15 for the whole activity; that the frequency of training courses on FV (often, but rather occasionally) denote a percentage of 63%, respectively, that they have used the services of a valuator (internal, of the audit firm, or external) frequently and occasionally, preponderantly (66%).

## Experiment results

As statistical tests we used, besides descriptive statistics that we mentioned above, univariate analysis and respectively, mean values and simple effects test. The results of the univariate analysis with the dependent variable are presented in **Table no. 2**.

**Table no. 2. Univariate analysis results with 'A higher risk of misstatement of FV estimation' as dependent variable (ANOVA)**

| Panel 1 - auditors | | | | |
|---|---|---|---|---|
| ***Independent variables*** | *Sum of squares* | *df* | *F* | *p-value* |
| **FV disclosure** | 0.071 | 1 | 0.038 | 0.847 |
| **FV provider** | 4.051 | 1 | 2.185 | 0.150 |
| **IC** | 28.135 | 1 | 15.176 | 0.001*** |
| **FV disclosure x FV provider** | 6.475 | 1 | 3.492 | 0.071* |
| **FV disclosure x IC** | 2.269 | 1 | 1.224 | 0.277 |
| **FV provider x IC** | 1.635 | 1 | 0.882 | 0.355 |
| **FV provider x FV disclosure x IC** | 6.346 | 1 | 3.423 | 0.074* |
| ($R^2$=0.337; $R^2$adj=0.176) | | | | |
| **Panel 2 - students** | | | | |
| ***Independent variables*** | *Sum of squares* | *df* | *F* | *p-value* |
| **FV disclosure** | 4.050 | 1 | 1.848 | 0.178 |
| **FV provider** | 7.200 | 1 | 3.285 | 0.074* |
| **IC** | 22.050 | 1 | 10.061 | 0.002** |
| **FV disclosure x FV provider** | 0.200 | 1 | 0.091 | 0.763 |
| **FV disclosure x IC** | 0.450 | 1 | 0.205 | 0.652 |
| **FV provider x IC** | 0.800 | 1 | 0.365 | 0.548 |
| **FV provider x FV disclosure x IC** | 5.000 | 1 | 2.281 | 0.135 |
| ($R^2$=0.201; $R^2$adj=0.124) | | | | |

***Significant at 1%, **Significant at 5%, *Significant at 10%.

Source: Authors' projection

Univariate analysis indicates the significance of the quality of IC both for *auditors* and for *students* (*p-value*=0.001, and 0.002 respectively) when it comes to assess the risk of FV estimation. Apparently, the choices to reporting by the valuation expert of valuation results in the Valuation Document (FV disclosure) and also the type of valuator (FV provider) do not have significant impact on *auditors* if these variables act separately. But FV disclosure ways are important for auditors when linked to FV provider (internal or external) (*p-value*=0.071), and also when the quality of IC is added (*p-value*=0.074). Instead, the *students* differentiate FV provider independently from association with other variables (*p-value*=0.074). Also, students do not react significantly to the FV disclosure elements, which are related to the audit process specific to the audit practice.

The simple effects test and mean values allocated to participants' perceptions provide results for auditors, as well for students and verify our research hypotheses.

For the auditors, H1 is confirmed for 3 from 4 cases (**Table no. 3**, Panels 1a and 1b) if we look at the means. The exception is VASD, if IC is strong. This indicates that auditors rely on management assumptions, as well on the reliability of input data used in the estimation provided by this one. H1 is also confirmed for students, as means observed in Panels 2a and 2b: 3 from 4 cases, and equal perceptions for the 4th.

Related to H1a, auditors seem to manifest confidence in an external valuator, but not confirmed by statistical evidence (only by means), for none of the components of FV disclosure of interest, when the IC is week. Hence, for the auditors, H1a is invalidated. Instead H1a is validated for the students (*p-value*=0.066).

H1b is validated for auditors, in the case of one of two components of FV disclosure, namely MAM (*p-value*=0.020) and of a strong IC. The same results, based on means, could be observed for students, but without statistical significance. Therefore, P1b is not validated in the case of students.

H2 is validated in the case of auditors for FV estimation provided by management (*p-value*=0.050). For students, H2 is confirmed only by mean values, without statistical significance, and also for the case of management's estimation.

**Table no. 3. Means and simple effects for 'A higher risk of misstatement of FV estimation' as dependent variable**

| Panel 1a – auditors - when IC is week | | | |
|---|---|---|---|
| | FV provider | | |
| FV disclosure | Use of a valuation external expert | Management estimation | Test of simple effects |
| Valuation attributes and sensitivity of data | 5.17[a] | 5.40 | F= 0.096 |
| | (0.477)[b] | (0.510) | p= 0.761 |
| | n=6 | n=5 | |
| Methods, assumptions and model | 4.75[a] | 5.00 | F= 0.090 |
| | (0.250)[b] | (0.775) | p= 0.768 |
| | n=4 | n=5 | |
| Test of simple effects | F= 0.269 | F= 0.258 | |
| | p= 0.611 | p= 0.618 | |
| **Panel 1b – auditors - when IC is strong** | | | |
| | FV provider | | |
| FV disclosure | Use of a valuation external expert | Management estimation | Test of simple effects |
| Valuation attributes and sensitivity of data | 3.33[a] | 2.75 | F= 0.371 |
| | (0.615)[b] | (0.750) | p= 0.552 |
| | n=6 | n=4 | |
| Methods, assumptions and model | 2.25[a] | 5.00 | F= 6.868 |
| | (0.250)[b] | (1.000) | p= 0.020** |
| | n=4 | n=4 | |
| Test of simple effects | F= 1.279 | F= 4.597 | |
| | p= 0.277 | p= 0.050** | |
| **Panel 2a – students - when IC is week** | | | |
| | FV provider | | |
| FV disclosure | Use of a valuation external expert | Management estimation | Test of simple effects |
| Valuation attributes and sensitivity of data | 3.10[a] | 4.50 | F= 3.600 |
| | (0.623)[b] | (0.477) | p= 0.066* |
| | n=10 | n=10 | |
| Methods, assumptions and model | 4.30[a] | 4.50 | F= 0.073 |
| | (0.517)[b] | (0.453) | p= 0.788 |
| | n=10 | n=10 | |
| Test of simple effects | F= 2.645 | F= 0.000 | |
| | p= 0.113 | p= 1.000 | |
| **Panel 2b – students - when IC is strong** | | | |
| | FV provider | | |
| FV disclosure | Use of a valuation external expert | Management estimation | Test of simple effects |
| Valuation attributes and sensitivity of data | 2.90[a] | 2.90 | F= 0.000 |
| | (0.233)[b] | (0.407) | p= 1.000 |
| | n=10 | n=10 | |
| Methods, assumptions and model | 2.80[a] | 3.60 | F= 1.926 |
| | (0.442)[b] | (0.499) | p= 0.174 |
| | n=10 | n=10 | |
| Test of simple effects | F= 0.030 | F= 1.475 | |
| | p= 0.863 | p= 0.232 | |

[a] mean; [b] standard error

***Significant at 1%, **Significant at 5%, *Significant at 10%.

*Source*: Authors' projection

## Conclusion

Our research documents the perception of the professionals and master's students in the field of audit and property valuation on the audit risk when it comes to FV estimation.

Firstly, our results argue, both in the case of auditors and students, that they see a lesser audit risk when the valuation is provided by an external valuator, instead of an internal one (management's estimation), confirming prior literature on the subject. We also emphasize for students, a good understanding of the objectives, concepts and methodology in audit and valuation areas, even in the absence of practical experience.

Secondly, detailing the above observation, we notice for the students, not for the auditors, an overconfidence in the Valuation Report provided by a consultant, and hence a lesser audit risk, when the internal control has a weaker quality. We believe that they perceive the external valuation more objective and credible. Therefore, if they had the status of auditors, they would not have to make an additional audit effort to discover FV misstatements. This statement is valid for the FV disclosure component, Valuation attributes and sensitivity of data. This is not a positive aspect, according to the literature, and we explain this view, in the case of students, due to the lack of audit practical experience. Other results are linked to auditors and their perception on the valuation methodology. They rely more on the external valuation that has the potential to reduce their own audit estimation risk, because it seems that they verify in detail the values provided in the Report as input data and valuation methods applied by the valuator (the component of FV disclosure, Methods, assumptions and model).

Thirdly, auditors are more careful about FV estimation provided by managers, when it comes to valuation methodology, which, apparently cannot give as many technical details in its Valuation Document compared to an external valuator. Hence, the audit risk and additional audit effort are higher in the case of methodology as in the other case, of Valuation attributes and sensitivity of data.

In conclusion, the assertions in literature and professional bodies (King, 2006; PCAOB, 2011; SEC, 2011; Brink et al., 2016) are empirically validated by our research, sometimes nuanced in relation to the internal control quality (Brown-Liburd et al., 2014; Joe et al., 2017), to the components of FV disclosure and to the type of participants.

These results must be discussed in the light of FV influencing factors that the literature evoked, and particularly the link between FV provider and FV disclosure on the one hand, and FV complexity and management bias on the other hand. We believe that in our study, FV presents a higher complexity due to the approach we used for real estate estimation, revenue and cost, instead of market approach, which is more accessible. In these conditions, we followed which of the two components of FV disclosure induces bigger concerns for the auditors; it seems that the component Methods, assumptions and model. We argue that one of the explanations is the valuation methodology and its specificities. Auditors understanding of the valuation process is a premise for the quality of audit of the valuation process. In relation to management bias, we determined that auditors are aware of management subjectivism and the need to make a larger audit effort when the FV provider is external (but hired by the management) and not internal. We believe that through a more consistent verification effort, there are premises that management bias would be easier to detect. This, especially in the context of auditors enriching their experience with other cases of fair value estimation which, so far, were not provided sufficiently by the market. A last observation refers to the future potential auditors, the students at master's level, in business. It seems that they represent an alternative for the empirical studies in audit, their general perceptions being close to those of professionals. In our view, the differences in hypotheses validation are explainable by their lack of practical practice.

The results of our study must be considered in the context of the inherent subjectivity of developing and implementing an experiment. Future developments of the analysis should consider extending the experiment to a higher number of participants.

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