



Instituto Superior de Contabilidade e Administração

Politécnico de Coimbra



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Ana Rute Rodrigues de Carvalho

Impact of intangibles assets on audit fees

Coimbra, abril de 2022



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Dissertação submetida ao Instituto Superior de Contabilidade e Administração de Coimbra para cumprimento dos requisitos necessários à obtenção do grau de **Mestre em Auditoria Empresarial e Pública** realizada sob a orientação da Professora Doutora Fernanda Cristina Pedrosa Alberto e coorientação da Professora Doutora Clara Margarida Pisco Viseu.

Coimbra, abril de 2022

TERMO DE RESPONSABILIDADE

Declaro ser a autora desta dissertação, que constitui um trabalho original e inédito, que nunca foi submetido a outra Instituição de ensino superior para obtenção de um grau acadêmico ou outra habilitação. Atesto ainda que todas as citações estão devidamente identificadas e que tenho consciência de que o plágio constitui uma grave falta de ética, que poderá resultar na anulação da presente dissertação.

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RESUMO

Os ativos intangíveis têm-se revelado uma peça chave para melhorar o valor de uma empresa, mostrando-se cruciais tanto para o mercado, em geral, como para todos os *stakeholders*. O seu reconhecimento e mensuração têm sido motivo de controvérsia, com vários autores a questionar o conservadorismo da IAS 38.

Esta dissertação tem como objetivo analisar a relação entre o volume de intangíveis nas empresas e o montante de honorários de auditoria, nas empresas cotadas da Zona Euro, utilizando uma metodologia de análise de dados de painel, extraídos das bases de dados *Orbis Europe* e *Audit Analytics*.

Os resultados sugerem uma relação significativa e positiva entre o volume de intangíveis e os honorários, depreendendo-se um maior esforço realizado pelo auditor e comprova que os critérios da IAS 38 são rígidos e de difícil aplicação nos dias de hoje.

Palavras-chave: ativos intangíveis; auditoria externa; honorários de auditoria; IAS 38; empresas cotadas; zona Euro.

ABSTRACT

Intangible assets have evidenced to be a valuable item to improve the company value, being crucial for the market, in general, and for all stakeholders. The recognition and measurement of intangibles have been a controversial question, with some authors criticizing the conservatism of IAS 38.

This study aims to study the relationship between the volume of this intangible assets and the amount of audit fees, in the listed companies of the Euro Zone, based on panel data extracted from the Orbis Europe and Audit Analytics.

The results suggest a significant and positive relationship between the volume of intangibles and fees, resulting in a greater effort on the part of the auditor and proves that the criteria of IAS 38 are rigid and difficult to apply today.

Keywords: audit fees; Euro Zone; financial audit; IAS 38; intangible assets; listed companies.

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List of acronyms

ASB	Accounting Standards Board
ASFR	Accounting Standard for Financial Reporting
EU	European Union
FAS	Financial Accounting Standards
FASB	Financial Accounting Standards Board
FRS	Financial Reporting Standard
GW	Goodwill
IA	Intangible Assets
IAS	International Accounting Standards
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
ISA	International Standard on Auditing
R&D	Research and Development
SOX	Sarbanes-Oxley Act
VIF	Variance Inflation Factors

INTRODUCTION

Intangible assets have been increasing their importance in the business environment and have been one of the main topics of research for decades. Increasingly, efforts have been made to better account for intangible assets, but without great successes, and at the audit level, little has been saying about the subject. There is a vast literature and research on the relationship of audit fees with business volume and value of companies. When assessing whether there is an impact of the dimension of intangible assets on the fees charged by auditors, we assume the difficulty that exists in evaluation them and, consequently, assessing the authenticity of the reports. This work intends to contribute to the knowledge of the interested parts that a challenge in the accounting and evaluation of these assets exists and thus elucidate the audit firms the need for guidance in pursuance to mitigate this difficulty.

The purpose of this research is to assess if the volume of intangible assets has some relationship with the amount of the audit fees. More specifically, this study aims to analyze whether the relationship between these two variables and positive, to verify that the auditor incurs greater efforts or is more afraid of incurring some type of litigation risk, that is, of issuing a wrong opinion when auditing these assets.

To achieve this objective, a methodology based on panel data analysis was adopted, about the listed companies of the Euro Zone, excluding companies from the financial sector and insurance companies, due to their particularities. The panel data integrated financial information of the companies, especially related to the volume and types of intangible assets, and data related to audit fees, between 2011 and 2019.

This dissertation is organized into four chapters. The first explain the regulations and standards applied to Intangible Assets (IA). The second chapter includes the revision of literature, which is divided into three sections, the first one to explain the concept of intangibles and the evolution to the present day, including problems in its measurement and disclosure, the second one regards what is the audit and audit fees and, finally, the third section explains the relation between intangible assets and audit fees. The third chapter is dedicated to the empirical study, explaining the methodology used and the hypothesis to test, and the sample's description. In the fourth chapter, are presented the results of the study and its discussion.

Finally, there are the main conclusions, limitations, and future research.

1 REGULATION OF INTANGIBLE ASSETS

For years, European accounting was guided by Council Directive 78/660/EEC of 25 July 1978, which concerned the annual accounts of some companies, complemented by Council Directive 83/349/EEC of 13 June 1983, which regulated the consolidated accounts. Financial institutions and insurance companies were regulated by specific directives, respectively, the Council Directive 86/635/EEC of 8 December 1986 and the Council Directive 91/674/EEC of 19 December 1991, which standardized the annual and consolidated accounts of these entities.

As none of these directives assure the high level of transparency and comparability of financial information of all listed companies in European Union (EU) (Yip & Young, 2012), appears Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002, which complemented the legislation in place, but it introduced one important change in European accounting regulation. Regulation (EC) No 1606/2002 requires all listed companies to prepare their consolidated financial statements in accordance with a single set of international standards, with this regulation, the EU aims to contribute to the harmonization of financial information of the listed European companies and to boost the securities markets. In other words, to obtain a greater level of transparency of financial information, to allow comparability of financial statements and the information contained therein, and to ensure the smooth functioning of the capital markets of the Member States and the internal market.

Thus, all companies whose securities are admitted to trading should prepare their consolidated financial statements according to the international standards issued by the International Accounting Standards Board (IASB), entitled International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS), as well as the complementary interpretations to these standards, when they are adopted by EU. These standards have the definitions, measurement, and recognition rules for all components of financial information.

The regulation also states that if the objective is to guarantee the competitiveness of capital markets, it is essential that the financial statements of EU companies are prepared under with international standards.

Concerning listed companies annual (individual) accounts and unlisted companies accounts, this grants the Member States the ability to demand or not to adopt the

IAS/IFRS. Once the international standards are applied, each Member State must adopt measures and procedures to ensure and evaluate the application of these standards (Regulation (EC) No 1606/2002).

According to this regulation, each accounting component has its accounting standard, so for intangible assets, is IAS 38 – Intangible assets.

This standard defines IA and aims to provide indications regarding their accounting treatment, that is, the criteria for recognition, initial and subsequent measurement.

- ***Definition***

According to IAS/IFRS, an asset is a resource controlled by an entity as a result of past events, which expects to provide economic benefits to the entity. An IA is an identifiable, non-monetary asset without physical substance.

- ***Initial recognition***

There are two ways to obtain IAs: internal and external, that is, they can be generated internally or acquired externally, and there are several forms of acquisition, these can be obtained separately, in a business combination, through a government grant or an exchange.

For the recognition as an asset, the element must satisfy (§18, IAS 38):

- a) the definition of IA, that it is a non-monetary asset, identifiable and without physical substance. That meets the criteria of identifiability (§12, IAS 38), control (§13, IAS 38), and the existence of future economic benefits (§17, IAS 38);
- b) it is probable that there will be future economic benefits from the asset and the cost of the asset can be reliably measured (§21, IAS 38).

These requirements apply to costs initially incurred to acquire or generate an IA internally and those incurred in the future to add to, replace part of or service it. Whenever it does not comply with these requirements, the asset must be recognized as an expense for the period.

- ***Measurement models***

After the initial recognition of the IA, there are two measurement models in which the company will choose the one that best suits its situation, and all intangible assets must be measured according to the same model: cost model or revaluation model.

In the cost model, intangible assets shall be measured at cost, less accumulated amortization, and any accumulated impairment losses (§74, IAS 38). In the revaluation model, the asset shall be carried at a revalued amount, which is a fair value at the date of the revaluation, less any accumulated amortization and any subsequent accumulated impairment losses (§75, IAS 38).

The revaluation model has some peculiarities that it does not allow:

- a) the revaluation of IA that has not recognized as an asset; or
- b) the initial recognition of IA for amounts other than cost (§76, IAS 38).

This model is only applied after the IA had been recognized at its cost, however, it can be applied to the entire asset, even if it only met half of the criteria in the middle of its development process (§77, IAS 38). As IAS 38 shows, it can also be applied to an IA that had been received through a government grant and recognized for a nominal amount.

If an IA revaluated, its carrying amount is modified to the revalued amount. At the date of the revaluation, the asset is addressed in one of the following ways (§80, IAS 38):

- a) the gross carrying amount adjusted in a manner consistent with the revaluation of the asset's carrying amount; or
- b) the accumulated amortization is eliminated against the gross carrying amount.

It should be noted that if there is no market for the asset and therefore it is not possible to revalue it, its carrying amount will be used, which will be the value of its cost, less all accumulated impairment losses and amortizations. If there is a revaluation of the asset, it must be recognized as profit or loss (§85, IAS 38).

Subsequently, the IA will be amortized. There are two types of assets, intangible assets with finite lives and those with indefinite useful lives. An asset with a finite useful life, its carrying amount should be allocated systematically to its life according to one of the three methods: the straight-line method, the degressive method, and the production unit method. The method chosen will have to be applied consistently over the different periods and is selected based on the future economic benefits arising. This amortization shall be recognized as a loss. An IA with an indefinite useful life should not be amortized but shall be tested for impairment.

About the impairment test, mandatory at least annually (§10, IAS 38), an impairment occurs when the recoverable amount (which is the highest fair value and use-value) of the

asset is less than its amount carrying (§8, IAS 38). If an impairment is recognized, it had to record as an expense for the period.

Many countries adopt IAS 38, but with some differences in the transposition of the standard, which can make a gap to the global harmonization, as in the case of Portugal, for example.

In Portugal, we have the Accounting Standard for Financial Reporting 6 (ASFR 6), and like other countries, it has some differences from the international standard.

The main difference concerns to the useful life and measurement subsequent. ASFR 6 defines it as finite or indefinite, but an IA with an indefinite life must be amortized over a maximum period of 10 years (§86 and §105), and the useful life must be revised; examples of IAs with an indefinite could be a trademark or goodwill (GW).

In addition, IAS 38 states that if an IA has a renewal period and if that cost is significant compared to future economic benefits, the entity shall, on the date of the renewal, recognize a new IA (§96). Still, § 98A, refers to the existence of “a rebuttable presumption that an amortization method that is based on the revenue generated by an activity that includes the use of an intangible asset is inappropriate”, being that the entity with the choice of the method of amortization can determine the limiting factor associated with the IA (§98C). ASFR 6 says nothing about this. In IAS 38, goodwill has to be tested about the impairment, and its subsequent value is the value of its acquisition less the impairment, instead, ASFR 6 amortized the goodwill for 10 years.

This kind of difference suggests that there is a gap in the global harmonization between the countries, which was the main goal of the international standards of IASB.

2 LITERATURE REVIEW

This chapter aims to present the literature review about the important topics for this research. Section 1 introduce the lector to the world of IA and their growing importance, because, as Sciences (2016) said, intangibles have now the same importance as tangible assets. We all know we need a building to work, and probably for most of the companies is the most valuable asset they had, but what about the list of clients, the marketing campaigns that sometimes cost more than a house, that is an example of the things who bring value for the firm (Martin, 2018). Nowadays, it is important to know that these expenses and investments are well express in financial information, stakeholders must know they can trust in the company's financials. And who can bring that trust, are the auditors, and for them to give an honest and independent opinion they must make sure that intangibles and the other financial statements are correct (Alrashidi, Baboukardos & Arun, 2021), so section 2 contains the literature about financial auditing and audit fees Finally, section 3 presents the literature review relating IA and audit fees.

2.1 The intangible assets in financial information

Intangible assets are one type of company holdings, many people didn't know their existence, but know what a brand is, what research means and know what allows the computer to function- the software and these are just some examples of what an intangible asset is. There are a few rules for making sure that we are staying in front of an intangible, and not in front of just an expense, and that is what is present in the financial information.

2.1.1 Concept ant types of intangible assets

To define an IA it is important firstly to know the concept of an asset: it is a resource that results from past events that the company has control over and that is expected to result in future economic benefits.

There are several types of assets, divided into two major groups: current assets, to which belong the assets or rights that do not remain in the company for more than one economic year, and non-current assets, which are intended to remain in the entity for more than one financial year, the economic period is the taxation period that the company has chosen to present its financial statements, this financial year usually lasts for one year (365 days or 360, commercial year). This second group includes the IA, for which, unlike the rest of the assets, they do not have a consensual definition. Ferreira (2014) even assume, that it

is one more of the accounting problems, the definition of IA is even one of the most complex areas in the financial world, also says that there are several discussions, and it is not easy to reach a conclusion that is to everyone's liking.

The IASB through IAS 38, as previously seen, gives the most general definition, that an IA is an identifiable asset, of a non-monetary nature and without physical substance, intended for the production, offering of goods or services, leasing to third parties, or for purposes administrative.

Another organization, the Accounting Standards Board (ASB) in the Financial Reporting Standard 10 (FRS 10), with a very similar definition, mentions that IA is an asset controlled by the entity through custody or otherwise legal rights and that they are non-monetary in nature, the Financial Accounting Standards Board (FASB), in the Statement of Financial Accounting Standards 142 (FAS 142), adds to this definition that these IAs are retained by companies for their use, such as in production, administration or even for rental.

For Schmidt and Santos (2002), IAs are assets that cannot be touched, and Lev (2001) states that these assets represent a potential future return, and that have no physical characteristics, as the standard mentions, but goes further, stating which also has no financial substance or, as Daum (2003) complete, it could be an investment. For Rodrigues (2011), this concept is often defined in the negative sense, that is, an IA is always one that is not a Tangible Fixed Asset. Ciprian, Valentin, Mădălina and Lucia (2012) explain that the IAs can be considered “hidden assets”, this is because even adding value to the company is not perceptible in the so-called traditional balance sheet. A characteristic that Grande, Stedile, Boff and Bezerra (2008) add to all these definitions is that these company assets are acquired to assist the companies operational plan and not for later sale.

IAs can be generated internally or acquired externally and subsequently measured in a company if they meet the requirements of IAS 38: the identifiability, control criteria and that guarantee future economic benefits (França de Sá, 2010). Here arises the first major issue regarding the recognition of IA, as they can be acquired externally, by separate acquisition, by business combination, or even by exchange or donation (Palmeira, 2016), their recognition becomes easier, but for internally generated assets, the situation is not simple, some of these assets according to the international standard are not able to be

recognized in the balance sheet. It involves a measurement issue. But, by the form they are acquired, we can then form two large groups (Dahmash, Durand & Watson, 2009): the identifiable IA that is recognized in the financial statements individually, and on the opposite side, the non-identifiable IA.

There are several types of IA, which we can initially divide as separable and non-separable assets (Zambon, Marzo & Girella, 2020), as we can see in figure 2.1.

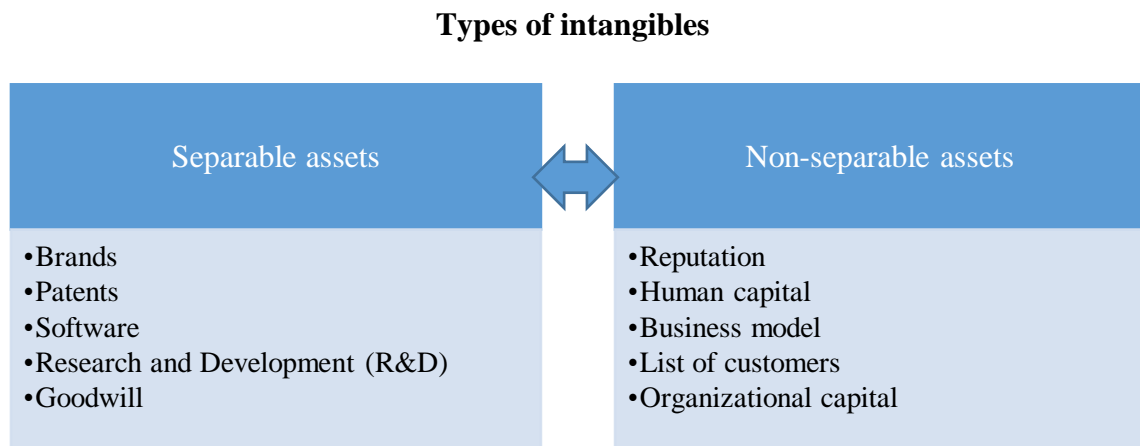


Figure 2.1: Types of intangibles.

Source: Own elaboration, based on Zambon, S., Marzo, G., & Girella, L. (2020). A literature Review on the Reporting of Intangibles February 2020. European Financial Reporting Advisory Group, February.

Then, in the separable assets, we can divide in assets which are implied by a direct recognition, GW, inputs from making intangible assets like the Research and Development (R&D) and the outputs produced such as patents (Datta, Jha & Kulchania, 2020).

2.1.2 Relevance of intangible assets for companies

IA has been growing their importance in our economic world. For Skinner (2008), an example of this is technology (tech) companies as Google, Apple, Samsung, and Microsoft, that are increasing their value if we compare the numbers of ten years ago; also, the most traditional companies are investing a lot more in knowledge-based assets to generate value. This growing concern for the unique and distinct has been noted all over the world and more and more the correct identification and valuation of IA is essential so that all users of the information provided by the financial statements, remove the same conclusions without tampering with the decision-making (Garcia-Ayuso, 2002). One of the defenders of this evolution, Ittner (2008) states that there is a conviction that

IA has become one of the main drivers of economic performance, which means that they are also increasingly considered in decision making.

The importance of intangible assets is not just in the balance sheet; today, to estimate a firm real value is used the price-to-book ratio to compare the book value and the market value of a company, and it is calculated with the following formula (Pae, Thornton & Welker, 2005):

$$\text{Price-to-Book Value} = \text{Share Price} / \text{Book Value}$$

Sometimes companies with highest book value are not the ones with the higher share price. Cañibano, Covarsí and Sánchez (1999) state that due to the strict criteria for recognition of intangible assets in the IAS 38, some are not reported as IA in the financial statements, increasing the difference between market value and book value.

One of the characteristics of IAs, as Castro (2015) said, is the fact that they are unique, they are specific to the company that owns them and have a uniqueness that tangible assets do not have, and therefore the concept of intangibility of an asset, which increases its importance and can even replace a tangible fixed asset in terms of value (Daum, 2003), and this value is normally calculated based on the future economic benefits that the asset can generate (Cañibano, Covarsí & Sánchez, 1999). The main objective of companies is not profit but the maximization of their value, so it is increasingly common to see companies evolving in brands, patents, research, that is, evolving their intangibility (Castro, 2015), also is a determining factor when it comes to market competitiveness, a company with a wide range of assets becomes distinct and some say special, which will set it apart from others in the same sector. The world has been investing more and more in the intangible, in the distinct and increasingly trying to escape the competitiveness in the sector, becoming unique in the middle (Sciences, 2016).

It can therefore be considered that IA affects the results of companies and, therefore, on their valuation, whether in value or reputation, no matter whether they are high- or low-tech companies (Magro, da Silva, Padilha, & Klann, 2017). Anyone can create their value by creating or acquiring IA, from the most complex to the most traditional, a good list of clients, innovative software, a brand, among many others, all of this not only increases its value on the stock market but also helps to make an investment in this company more attractive, communicating to its stakeholders a better version of who they are (Daum, 2003).

It seems that we have reached a new era in this universe, capitalism without capital (Rowe, 2019), IA has become the future of business (Zambom, Marzo, Girella, Abela & Nicola D'Albore, 2020).

A reliable valuation of accounting is the objective of every accountant, at least, it should be, and it has been increasingly one main topic of research, to understand what can change this reliability.

2.1.3 Problems of measurement and disclosure the intangible assets

However, something has threatened this reliability, over time, it appears that there is a certain flaw.

Martin (2013) considered a gap in the recognition of IA as an asset, which does not allow a true and appropriate image of the asset value, calling into question one of the mandatory characteristics of accounting, the reliability of financial statements which makes this topic an important challenge for today's accountants. If the assets are not properly accounted for, the information reported is not true, and as a result, there may be increased difficulties in estimating the company's value.

Therefore, there is a problem regarding the recognition of IA, some authors consider IAS 38 too traditional and too rigid, Lev and Zarowin (1999), point out strong criticisms of the standard, for example, the fact that certain elements are not considered an asset which add value to the company, such as human capital, an IA that is still very little intangibly valued, the list of customers and partners, limiting the balance sheet value, and thus underestimating the performance of companies. This difficulty in accounting for this type of asset causes a difference between the company's value externally, in the market, and its book value (Martin, 2018). We can say that these intangibles are difficult to not be recognized, and probably hard to estimate their value, but you can see the increasing difficult because of the law.

Martin (2018) gives two excellent examples of this, on his study, where he shows that Samsung, a company which invests a lot of money in developing new products, in 2016, the firm only recognized as an asset less than 5% of what was spent in R&D. And like Samsung there are others like Novartis, a pharmaceutical company which spent about nine billion dollars on internal R&D and none of which was capitalized.

In the same way, there is a problem in R&D expenses, the same happens with advertising campaigns; for accountants, publicity is a company expense, more specific a service acquired externally, but some companies believe that the spending on this marketing has economic benefits for the entity for more than one economic year, and some business niches even tend to defer the costs of introducing a new product or service on the market, for a period of two and even three years, which is inadvisable by the auditors, and at the time of the audit, they inform the entities that do not approve these types of deferrals (Putra, 2009).

Although some authors have an opinion that there is not a problem in IA, for Skinner (2009), the main goal of the financial statements is not to report the value of the entity, does it not need for example the intervention of FASB, the evaluation of the firm's value is up to market participants. But the majority are very convinced that there is some trouble there, the intangibility of firms is increasing, and how many more intangibles they have more difficult is to be able to identify if the market value is correct, and that is also a problem in the financial positions of the companies (Lev & Gu, 2016).

For the other stakeholders, is important to know the fair value of the company, like Itner (2008) said, the conviction that the IA are the next step to improve the economic development, makes the firms use the value of IA in the decisions making, so the fair value of IA is more important now than there ever been.

2.2 Financial auditing and audit fees

Nobody wants to run a company whose image does not match the real, nobody invests in something they do not trust, much less nobody buys when there are no guarantees, so auditing companies is important to ensure all this (Alrashidi, Baboukardos & Arun, 2021).

A financial audit is a process, performed by an auditor or audit team to verify the assertions of the financial information (Almeida, 2019). Assertions are statements about something that happened, in most cases they are implied but can be expressed representations, like International Standard on Auditing (ISA) 315, in the case of accounting information assertions there are three types of categories of assertions, and every assertion relevant is an assertion that the auditor identified risks of material misstatement, assertions in:

- Assertions on classes of transactions and disclosures relating to the audit period:

- Occurrence - the disclosed events actually took place and are due to the reporting entity;
 - Completeness - all transactions and events that should have been recorded, in fact, they have been recorded;
 - Accuracy - the transactions, when recorded by the entity or just disclosed, were recorded for the correct and adequate amount;
 - Cutoff - all events occurred by/in the entity were recorded in the period in which they occurred;
 - Classification - the correct accounts were used in the disclosure of events;
 - Presentation - the transactions and disclosures were described in a clear and understandable way.
- Assertions about account balances, and related disclosures, at the period end:
 - Existence - all asset, liability and equity interests exist;
 - Rights and obligations - for the assets the entity controls and/or hold the rights, and all liabilities are obligations of the firm;
 - Completeness - all assets, liabilities and equity interests that should have been recorded, in fact, they have been recorded;
 - Accuracy, valuation and allocation – assets, liabilities and equity interests were included in the financial statements with the correct and adequate amount and also all the adjustments and related disclosures were measured and described correctly;
 - Classification - the correct accounts were used to record the assets, liabilities and equity interests;
 - Presentation – all the assets, liabilities and equity interests were described in a clear and understandable way on the financial statements.
 - Assertions about disclosures:
 - It is possible that all the above assertions, adapted as appropriate, will be used by the auditor when considering the different types of misstatements that may occur in disclosures not directly related to obtained classes of transactions, events, or account balances.

Although in a not-so-old past, this was not the main objective of an audit, given the economic situation before, the real goal was to detect fraud.

The big event that opened the eyes to possible change was the Enron debacle just ten years ago (Albert, 2005). The audit team, Arthur Andersen, issue a clean opinion about the financial statements of Enron, and after that was proved that Enron practice fraud, add to the "incentives", the audit was proved not to be independent, Arthur Andersen's employees also destroyed documents related to Enron and thanks to that one of the largest auditing companies also went bankrupt (Yuhao, 2010).

Since this scandal many others followed, and even if it was a bad thing for all the economy and trust issues in audit, was also the beginning of change, former United States President George W Bush issued the law Sarbanes-Oxley Act (SOX) in 2002 (Costa, 2018), this established strict rules for many organism, but also for the auditors, new independence rules, and increase the supervision of the profession (Silva & Robles Junior, 2008).

Nowadays, after all the changes in auditing regulations, including standards, and new regulatory organisms, this one has gained a new cause, a new purpose: to guarantee the credibility and reliability of the financial statements (Teck-Heang & Alin, 2008).

It is then up to the auditing company to assess the accounts of the companies and assign the "certificate" that the financial information has a reliable and appropriate image (if so confirmed), so the auditor's opinion is crucial for all stakeholders, like the governing board, current and potential investors, customers, suppliers, financial institutions, regulatory bodies, courts and workers (Maclean, 2014). This service supply is conducted by laws/regulations.

In the context of the EU, two important documents for the auditing profession were published in 2014: Directive 2014/56/EU, of April 16 2014, and Regulation no. 537/2014, of April 16 2014. Those documents made the use of international auditing standards mandatory for all companies, as an exception, national standards may be implemented, only when an international standard for a specific matter has not been adopted (Almeida, 2019).

The performance of the functions by the audit team involves a consideration, that is, fees. In 2005, there was no longer a table that stipulates the fees of auditors (Cunha, Inácio & Vieira, 2017); thus, for 16 years, the auditor has been responsible for stipulating the amount to be received for his services. The factors influencing the determination of this amount are something that concerns all those involved in the auditing profession, as these same fees can jeopardize their independence: if they are too high, they may suggest

corruption, and if they are too low, it may mean that the auditor did not perform sufficient work to issue an adequate opinion (Cunha, Inácio & Vieira, 2017), there are no limits for the fees, but the price that the auditor put on his effort should not be disloyal, for the profession and for his colleagues.

The auditor to do what he does shall comply with five fundamental principles, like the International Federation of Accountants International code of ethics, on section 110 explain: integrity, the auditor must be honest and straightforward; objectivity never work in a conflict of interests that compromise his profession, be objective; always maintain professional knowledge and skills updated and act diligently; confidentiality probably the most important principle, the professional has to respect the confidentiality of the information; professional behaviour, the auditor must comply with all laws and regulations inherent in the profession and avoid any action that discredits the person and profession (IFAC, 2021).

The auditor, to carry out a work that is free from any type of collusion, fraud, or personal incentive, must make an ethical and professional decision, a decision influenced by cultural, professional, and values norms (Madeira, 2003), in other words, the audit team must perform based on the principles.

So, the auditor has the objective of verifying that the financial statements are free from material misstatements, according to ISA 320, a misstatement is considered material when, individually or in the aggregate, and its omission, influence the opinion and, consequently, the decision to be taken by the information user. The auditor's verification finish with the issuance of a report with his opinion, an opinion which is not free from risk, there is always the risk that is not appropriate or correct, the audit risk (ISA 200), this risk can be either positive or negative, in other words, the auditor can affirm that the financial information is in an appropriate and valid image when it does not present or the contrary and the company's financials have not any distortions.

As mentioned in ISA 200, audit risk is calculated using the formula:

$$\text{Audit Risk} = \text{Risk of material misstatement} \times \text{Detection Risk}$$

In turn, the risk of material misstatement is the relation between inherent risk and control risk (Vasile & Croitoru, 2020). As mentioned in ISA 200, inherent risk is the risk that in no way depends on the auditor's work, nor can he minimize it, it is the risk that exists before any control is implemented by the company.

Control risk is the risk that material misstatement will occur after all the company's controls have been applied, these two risks then comprise the risk of material misstatement, which is the risk that the financial statements are materially misstated before the audit engagement therefore the only risk that composes the audit risk that the auditor can control is the detection risk that will allow to increase or decrease the risk that the auditor wants to incur in issuing a wrong opinion. The detection risk is then the risk that the procedures performed by the auditor do not detect material misstatements (ISA 200; Costa, 2018). Thus, for the auditor to have a low audit risk, the relationship between the risk of material misstatement and detection will have to be inverse. The risk can be reduced, but never zero (Alves, 2015).

Audit risk has an inverse relationship with materiality: a high audit risk implies low materiality (ISA 320) there is an interconnection between risk, materiality, and evidence. If the auditor is willing to take a higher risk will not perform as much work and obtain less evidence, therefore, will decrease materiality.

The organizations risk is now more diversified than ever been, risk is the possibility of some damage, lost or unpleasant and undesired situation, voluntary or involuntary (Ricciardi, 2004), the risk can be driven by external or internal factors (Dobler, 2008).

Audit risk can be reduced by obtaining enough and sufficient proves (ISA 200; ISA 500). According to ISA 500, there are seven types of evidence that the auditor can obtain during their work:

- Inspection: physical analysis (paper or electronic) of company documents.
- Observation: observe a process or how the company acts in a certain procedure.
- External confirmations: there is a standard dedicated to this type of evidence, ISA 505, this is evidence sent directly to the auditor of an independent third party such as a bank or a supplier.
- Recalculation: verification of arithmetic values of accounting records and documents.
- Re-execution: a type of test similar to recalculation, it is a test in which the auditor performs a control/process of the company again and checks if it is per what was stipulated.

- Analytical procedures: there is a standard dedicated to these procedures: ISA 520. Analytical procedures are assessments of possible relationships between financial and non-financial information, as well as analysis of fluctuations and inconsistent relationships considered relevant.
- Inquiry: it is the art of asking, one of the most used tests in the world of auditing, it is about questioning employees, partners, administrators, people who know the business, this way of obtaining knowledge of certain points of the company can be formally in writing or just orally, later the answers obtained will have to be analyzed.

This evidence can be obtained through two procedures: risk assessment procedures and additional audit procedures, that is tests of controls and substantive procedures which include tests of details and substantive analytical procedures (ISA 300, 315, and 500).

Audit risk can be minimized by the auditor with his work along the auditing phases, but this risk is assessed at the audit planning stage.

Thus, the audit, for most authors, comprises five phases, as is the case of the PWC company (2017), but Almeida (2019) is even more specific and goes into detail, adding that the audit comprises 6 phases:

- Planning: the first phase, common to both theories, is the most important phase in knowing the client, defining a strategy to minimize audit risk, and developing the plan that auditors will follow throughout their work. At this stage is elaborated a formal acceptance of the client.
- Tests of controls: verify and evaluate the internal control procedures that the company applies to assess control risk.
- Substantive procedures: procedures to detect material misstatements at the level of assertions.
- Completing an audit: a phase that complements the planning and all the work that the auditor has already done, the so-called “fieldwork” after the three previous stages and before the issuance of the final reports, the auditors still have to assess the continuity of the company, summarize all the misstatements that they found and, disclosed to the governing body and that did not involve any change, evaluate these misstatements and their impact on the FS and provide knowledge of all subsequent events from the issuance of the FS to the date of the report of audit.

- Finally, the preparation of audit reports/Legal Certification of Accounts.

For PWC (2017), after the planning stage, we have the risk assessment where identify the risks that could lead to a material misstatement in the financial statements about their knowledge of the business and the company followed by the audit strategy and plan where the auditor tests the controls and plan the entire audit based on the risks of material misstatement found and then the gathering evidence level which through skepticism and professional judgment auditors gather evidence based on tests. Finally, the auditors end the audit by issuing their opinion based on all tests and procedures they performed during the audit.

The two authors, despite mentioning different phases, understand the same meaning: planning, auditing, and issuing an opinion and despite appearing to be sequential phases, all these phases interact and relate to each other.

It is then in the planning phase that the threats to an audit with a low level of risk are minimized, that the client is accepted, this acceptance involves an understanding between the management body and the auditor (Arens, Elder, Beasley & Hogan, 2017).

After all this first assessment and since the audit is a service provision, it is necessary that this understanding between the company and the audit team, be express in writing, in a letter of commitment, or through (the most common form) a contract for the provision of services (Baldacchino, Attard & Cassar, 2011). The letter of commitment should contain seven themes according to ISA 210: objective and scope of the audit, responsibilities of the auditor, responsibilities of management as well as identification of the applicable financial reporting framework, the responsibility of management to provide us with access to all information, the full cooperation of management and its employees, finally the agreed fees and invoicing, this letter must be signed by both interested parties.

The fees must reflect the work, and everything necessary to carry out that work, and it is not allowed in any way to be paid in kind, nor is the fee allowed to be contingent. The way fees are calculated is still a debating theme.

Different authors (Cunha et al.,2017; Chan, Ezzamel, & Gwilliam, 1993; Chaney et al., 2000; Al-Harshani, 2008) assert that the size and complexity of the company probably influence the audit fees because higher fees mean greater effort and work required of the auditor. Blankley, Hurtt and MacGregor (2012) complete this idea, saying that lower fees mean lower effort which could result in a restatement. The effort seems to be the most

common variable to calculate the fees (Niemi, 2005). Firth (1985) confirms that audit fees depend on the hours to be worked by the audit team, and Nanette (2011) adds, high fees may mean that the auditor, to cover future legal costs, charges a risk premium or else that more audit work is needed to investigate certain areas. On the other hand, Friis and Nielsen (2010) state that the value provided by audit services is independent of the size of the company.

There are also those who relate the amount of taxes to audit fees, stating that there is a positive relationship between both; it is the case of Halperin and Lai (2015), after SOX has been implemented, they claim that higher taxes mean an increase in fees. For Lauck, Rakestraw and Stein (2020) it is not a calculation that depends on complexity alone, size, or taxes, it is a complicated process to calculate since it depends on all these factors and many others interconnected.

Chen, Keung and Lin (2019) go into detail stating that there is a positive relationship between goodwill-related disclosures and audit fees. They also allege that audit fees depend on the risk of litigation and the effort of the auditor. And he is not the only one to say that risk can and is one of the factors that auditors pay attention to when calculating their counterparts, a study from Bell, Landsman and Shackelford in 2001 and other in 2016 by Bedard and Johnstone also affirm that the risk of manipulation and litigation in auditors' clients is a weighting factor when calculating their fees.

Also, the study of Yao, Percy and Hu (2015) find that fees tend to increase when non-financial investments are measured at fair value, as well as revaluations of these assets. Datta, Jha and Kulchania (2019) state that a greater number of IA means an increase in audit fees.

2.3 Intangible assets and audit fees

Auditors do their work by areas and the IA are included in non-financial investments area. This is one of the areas that, despite not having the greatest number of transactions, has the highest ones with great importance on the balance sheet and with the highest value (Almeida, 2019).

The literature analyzed above concludes that, in addition to being extremely important, intangibles have had a growing appreciation within the business environment, this growing recognition brings risks to companies and the audit firm.

One of the biggest risks associate with auditing intangibles is the risk of manipulation by the Management Body because it depends on a series of procedures that have a direct implication on the company's results, which is the case: change in the useful life or residual value of the asset which will change amortization expenses and change expenses for the year; capitalization of expenses that should be considered as expenses for the year, such as research and/or development expenses before they satisfy the concept of an intangible asset and non-accounting of impairment losses (Almeida, 2019).

The beginning of the use of IAS 38 brought changes in the recognition of IA, which made the process even more difficult (Leote, 2016), as well as IFRS 3 for GW acquired through business combinations.

For example, R&D expenses should not be capitalized as an asset, whereas certain development cost should be considered an asset, but this criteria defers between countries (Stolowy & Cazavan-Jeny, 2001). Another change was the establishment of an indefinite useful life and acquired GW was before amortized like every other IA and is now tested for impairment every year (Leote, 2016).

Internally generated intangibles such, for example, GW, brands, customer lists cannot be recognized as IA, because it is not possible to disassociate them from the cost of the business, and thus they are not capitalized (Rodrigues, 2001). IAS 38 limits what is or is not an IA, not considering the list of customers and the rest mentioned as assets, even if they bring value to the company (Cañibano et al, 1999).

IAS 38 has a conservative character (Gomes, Serra & Ferreira, 2005), and so many assets are not capitalized, and one of the reasons is because an IA does not create value by itself, it comes from the rights of ownership that the company has and the business in which the company fits (Melymuka, 2004), for example: a car manufacturing company (if it only develops this activity) acquired a vaccine patent, and just the patent does not bring economic benefits to the company because of business type of the firm, it does not should be classified as IA, but in a pharmaceutical industry it should be capitalized (if fulfill the other requirements).

It is also difficult to prove that the company has all the property rights in these assets, as is the case with the customers' list (França de Sá, 2010).

Other problems auditor will face when auditing these assets, many of them associated with the recognition criteria of IAS 38:

- Changes in the business that make IA unusable (Rodrigues, 2001);
- Measurement of IA, as stated by Guerreiro (1989), all measurements involve a certain degree of uncertainty, but IA involve an even greater uncertainty because it is something very subjective;
- Undue recognition of IA, calculation of the cost of IA, is not as easy as a tangible asset (Visvanathan, 2017);
- Revaluation of IA that does not exist in the active market (Almeida, 2019);
- Capitalization of research and/or development expenses is, for Skinner (2008), one of the biggest difficulties is the capitalization of these expenses, since it is difficult to estimate future benefits from them;
- Recognition and impairment testing of the GW, because to recognize the GW the auditor must verify its existence, ownership, and verify the price of its purchase. After that it is important to ensure if the impairment test is correct, the impairment test involves a lot of subjectivity and complexity (Ramanna & Watts, 2012);
- Recognition of an IA in the case of acquisition by business combination, because it can only be recognized when the fair value can be reliably measured (Visvanathan, 2017);
- Recognition of an IA when it is not, because the internally generated GW, R&D expenses that do not meet the definition of IA (Dinh, Eierle, Schultze & Steeger, 2015).

Even with these problems, auditor must obtain proof that the intangibles exist and are reliably measured. As seen in the previous chapter, there are two means of obtaining evidence (test of controls and substantive procedures), in this case (ISA 500; ISA 520; Almeida, 2019; Costa 2018; Arens, Elder, Beasley & Hogan, 2017):

- **Tests of controls:** for example, in the case of intangibles, check whether the company has records of fixed assets with information on the acquisition value, year of acquisition, year in which they started to be used, their useful life, or amortization rate.
- **Substantive procedures:** in these procedures we have the different types of evidence to use.

To test the ownership of intangible assets, some of the procedures are to verify the contract or other supporting documents like the asset acquisition invoice, depending on

the volume of acquisitions. Through the analysis of the supporting documentation from the accounting movements, we can assess whether the transactions are correct, recalculate the losses and gains and verify the justification for the disposals, write-offs, and claims and verify the due registration in the map of capital gains or losses when takes place and the effective derecognition of the asset in the accounting and the amortization charts, through the amortization charts we confirm the actuality of the depreciation rates if the accumulated depreciation, of the period and the total value of the asset is following the accounting.

Concerning their measurement, confirm that the acquisition values are following the invoice and that the amortizations were made correctly.

Another type of evidence used is external circularization, by sending letters or e-mails to investment providers to test the veracity of the accounting balance. During this procedure, the auditor must control the sending of the letters. If he does not get answers, he can perform alternative procedures for the non-answers, for example: through the analysis of payments made in N+1 of N documents.

When we verify the investment providers, we verify that purchases/returns made to this supplier are validated. Another way to audit is to check for fluctuations in balances and check for abnormalities, through an analytical review.

According to ISA 500, the inspection of IA can verify its existence, but cannot verify the valuation or the rights and obligations that the company has of the asset.

Analyzing invoices of the acquisition or sale of assets to prove their correct valuation, that they are in the correct account, if they are acquired in the year of the financial statements that no IA is yet to be registered, that all additions and disposals in the accounting effectively correspond to purchases and sales of assets and if the company has all the rights and obligations of that asset and if all these movements are correctly recorded in the accounting, validate legal ownership records such as contracts we can test the assertions of existence and occurrence, fullness and termination, rights and obligations, accuracy, classification, valuation, and imputation. Subsequently, verify that the amount shown in the accounting is correctly explained in the balance sheet and the corresponding notes in the Annex we are testing the assertion presentation and disclosure.

Auditing intangibles is not an easy task and that is why when we relate the volume of IA with audit fees, we can answer whether in fact auditors demand a higher value of fees

when auditing firms with a high value of IA and thus respond to the challenge of 21st-century accounting, and reporting that auditing IA requires a greater effort from the auditor as this is a gray area of accounting that needs greater attention from regulatory bodies (Prabhawa & Nasih, 2021).

3 EMPIRICAL STUDY

This chapter aims to verify if the volume of IA has a significant impact on audit fees in listed companies in the Euro Zone. Section 1 explains the methodology used and our research hypothesis. Section 2 presents the statistical model, and the explanation of the variables used. Section 3 explains the selection of the sample and presents the descriptive statistics, as well as the different tests performed until reaching the final model that will be estimated in the next section.

If we verify a positive impact of IA on audit fees, a greater volume of IA gives rise to a greater amount charged by auditing companies, we find that the auditor has a greater effort in this type of work, which involves a greater risk of litigation in the auditor's opinion.

3.1 Research methodology and hypothesis

This work is based on a study accomplished by Datta, Jha and Kulchania (2020) to American companies, which suggested that there is a positive relationship between the volume of IA and audit fees.

Our research focuses on listed companies of the Euro Zone, that are not studied as we know, so we could expand the analysis of this topic and to provide a new point of view in this debate on the traditionality of the IAS 38 and the difficulty of auditors in carrying out their work.

The listed companies of the Euro Zone were extracted from the *Orbis Europe* database like all the other non-audit-related variables. Audit fees and the other audit variables were extracted from *Audit Analytics* database. The period considered for the data selected was between 2011 and 2019.

From *Orbis Europe* was selected the listed companies from the Euro Zone, and with the Microsoft Excel software, the data were organized and the non-financial and non-insurance companies by the description of business (industry). Subsequently, we selected some variables to calculate the ones that we needed, for example, the database does not have the total of liabilities, so had to extract total non-current liabilities and total current liabilities and sum them up.

On the database *Audit Analytics*, we selected the listed companies from the Euro Zone and extracted information for audit fees and for auditor change, two different data. After

organizing the databases, it was necessary to match the two ones. The companies did not have the same name (they were not similar written) or code that would automatically allow them to be linked, we manually verified the name of the companies in the audit database to match the companies in the economic database.

Therefore, based on the previous literature review, companies with a greater volume of IA lead the auditor to charge more fees for their service, which leads us to the following hypothesis to be studied in this research:

Hypothesis 1 (H1): The IA have a significant and positive impact on the audit fees.

3.2 Empirical model

In this study, panel data regression was applied since these regression models allow the simultaneous analysis of variations in variables over time and between different individuals. Panel data contains observations about different cross sections across time. To test the research hypothesis, we used the empirical model, based on the study of Datta, Jha and Kulchania (2020):

$$\begin{aligned} LN(AUDIT FEES) &= \beta_0 + \beta_1 LN(IA) + \beta_2 LN(ASSETS) + \beta_3 NETDEBT + \beta_4 ROA \\ &+ \beta_5 EBT + \beta_6 CF + \beta_7 BIG4 + \beta_8 LOSS + \beta_9 ACHANGE + \varepsilon \end{aligned}$$

The variable definitions are:

$LN(AUDITFEES)$ = Natural logarithm of the audit fee charge by the external auditor;

$LN(IA)$ = Natural logarithm of the IA on the balance sheet of the firm;

$LN(ASSETS)$ = Natural logarithm of the total assets of the firm;

$NETDEBT$ = Total of debts of the firm compared with the total of liquid assets;

ROA = Return on assets, ratio between EBITDA/Total Assets, indicates a rentability of a company;

EBT = Total of earnings before taxes;

CF = Cash-flow of the firm on the fiscal year;

$BIG4$ = 1 if the audit company is one of the BIG 4 (PricewaterhouseCoopers, Ernst & Young, Delloite & Touche or KPMG), and 0 if not;

$LOSS$ = 1 if ROA is negative, and 0 if not;

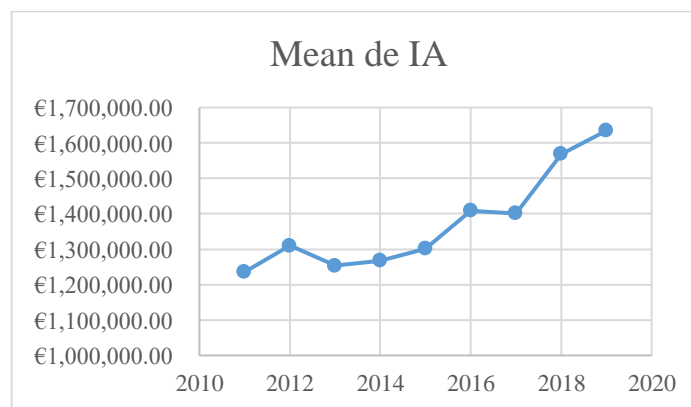
$ACHANGE$ = 1 if the auditor changes in the fiscal year, and 0 if not.

3.3 Sample construction and descriptive analysis

The sample encompasses the listed companies from the Euro Zone, except the insurance and financial companies, for the period 2011-2019.

At first the total number of observations was 89.172, excluding insurance and financial companies, end-up with 46.442 observations, then excluding companies with no intangible assets and intersect with the information from *Audit Analytics*, we ended up with a sample of 10.767 observations.

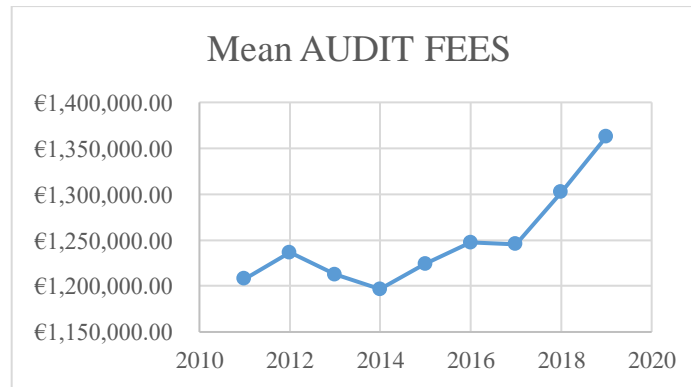
Based on our data we can see, firstly, the increasing volume of IA on our sample, where the mean of IA in 2011 was 1.231.738 € and in 2019 was 1.634.796 €, a thirty two percent of rise in just nine years (Graphic 1).



Graphic 1 Mean volume of Intangible Assets from Listed companies (except financial and insurance) from Orbis Europe database between 2011 and 2019.

Source: Own elaboration.

The amount paid to auditor has also increased over the years just in 2013 had a little decrease but after that was every year a little higher (Graphic 2). With both graphics we cannot see if there is a relationship between IA and audit fees, but we can observe that both variables increase from 2011 and 2019.



Graphic 2 Mean volume of Audit Fees charged to Listed companies (except financial and insurance) from Orbis Europe database between 2011 and 2019.

Source: Own elaboration

Table 1 shows the descriptive statistics of the variables of the initial model. The variable *INTANGIBLE ASSETS* takes values from 1 euro to 171,381 thousand of euros, and the average of this variable is the average is 1,385 thousand of euros. The average value of audit fees charged to listed companies in the euro area is around 1,251 thousand euros, as we can see from the descriptive analysis of *AUDIT FEES*.

On *AUDIT FEES*, we can also verify the values are between 1 thousand euro and 52.600 thousand of euros, and since the median is on 275.000 euros, half are under 275.000 euros and the other half above 275.000 euros.

This variable presents values for all observations (which was one of the selection criteria for the sample used). We can also verify that the values of *ASSETS* and *TLE* (total of liabilities and equity of the firm) are the same, which confirms the accounting data since the total of assets (*ASSETS*) is equal to the sum of equity and liabilities (*TLE*).

NETDEBT is the ratio which compares the total of debt from a company and her liquid assets, in other words, measure how well a firm can pay all debts if they were due immediately and how much money will stand if all the debts were paid off. This ratio is calculated by the subtraction of all liabilities (short and long term) and the liquid instruments which are easily convert in cash.

With the statistics results we can see that our sample includes companies with a good liquidity and others with a low capacity to pay the debts, the ones with *NETDEBT* negative.

The profitability of a company can be measured by the ROA ratio, and we can notice, on the table 1 that are companies with ROA negative, the minimum was -98,4% and maximum 85,56%, which show the variety of companies from our sample.

Table 1 Summary Statistics Values in thousands of euros

	N	Mean	SD	Min	Max	25th Percentile	Median	75th Percentile
<i>ASSETS</i>	10767	5874	21688	0	488071	144	558	2617
<i>TLE</i>	10767	5874	21688	0	488071	144	558	2617
<i>NETDEBT</i>	10767	1240	6380	-8061	158776	-1	48	411
<i>IA</i>	10767	1385	6083	0	171381	4	52	385
<i>CF</i>	10658	430	1657	-4627	37205	7	36	193
<i>ROA</i>	10720	2,3%	10,7%	-98,4%	85,56%	0,07%	3,2%	6,1%
<i>TL</i>	10766	3872	15298	0	364420	70	305	1596
<i>EQ</i>	10766	2003	6947	-2165	123651	53	210	1016
<i>AUDITFEES</i>	10767	1251	3323	1	52600	105	275	832

Source: Own elaboration, based on database analysis.

The model also contains dummy variables, such as *BIG4*, *LOSS*, *YEAREND* (1 if the fiscal year ends in December, and 0 if not), *ACHANGE* and *ARESIGNED* (1 if the change on auditor is because he resigned), which allows to introduce in the model qualitative factors. When analyzing the frequency table (Table 2), we can see that most audit firms were one of the *BIG4*, that is, 6917 of the 10767 observations (64%) correspond to one of the four audit companies: PricewaterhouseCoopers, Ernst & Young, Deloitte & Touche or KPMG.

Only eight companies have a different fiscal year-end than December, which maintains consistency in the data and is not a significant value, so it is not important to be included in the model. Most observations, i.e., per year, mostly 80% have a positive return on equity. It is also important to note that out of 759 auditor changes detected, only one had the auditor renounce the contract.

Table 2 Binary Variables Frequency

		Frequency	Percentage
BIG4	0	3850	35,76
	1	6917	64,24
LOSS	0	8611	80,33
	1	2109	19,67
YEAREND	0	8	0,07
	1	10759	99,93
ACHANGE	0	10008	93,0
	1	759	7,0
ARESIGNED	0	758	7,04
	1	1	0,01

Source: Own elaboration, based on database analysis.

Through the analysis of correlations, in Table 3, we can verify that there is a significant positive correlation between *INTANGIBLE ASSETS* and *AUDIT FEES*, being 0,456. What we can also verify is that audit fees are positively related to *ASSETS*, *NETDEBT*, *CF* and *EBT* which is in line with what was previously seen throughout the literature review that shows that audit fees are related to the size of the company, the complexity, the debt (higher risk), and firm's value (Cunha et al.,2017; Chan, Ezzamel, & Gwilliam, 1993; Chaney et al., 2000; Al-Harshani, 2008; Bell, Landsman & Shackelford (2001); Bedard and Johnstone (2016); Malele, Letsoalo & Mafu (2021)).

Table 3 Correlation Matrix

	NETDEBT	CF	LNIA	ROA	EBT	LNASSETS	AUDITFEES
NETDEBT	--						
CF	,789**	--					
LNIA	,284**	,371**	--				
ROA	0,001	,060**	0,149**	--			
EBT	,630**	,856**	,315**	,093**	--		
LNASSETS	,386**	,481**	,771**	,181**	,414**	--	
AUDITFEES	,591**	,721**	,456**	,024*	,617**	,559**	--

** . Significant correlation at the 0.01 level.

* . Significant correlation at the 0.05 level.

Source: Own elaboration, based on database analysis.

The absence of multicollinearity is an important assumption of the regression model. The existence of collinearity between variables could be a problem. If independent variables have a perfect collinearity, it will not be possible to estimate the model (Alin, 2010).

To detect multicollinearity, we can analyze two useful statistics that are reciprocals of each other: Variance Inflation Factors (VIF) and Tolerance (Franke, 2010). According to several authors, including Daoud (2018), if VIF is equal to 1 the variables are not correlated, if it is between 1 and 5 (included) is moderately correlated and if VIF is superior to 5 is highly correlated. If the variables are highly correlated, and if it redundant it should not be included in the model.

As the variable *CF* present a VIF equal to 6,263 (>5), it was excluded from the model (Table 4).

Table 4 Multicollinearity – Model 1

	Tolerance	VIF
NETDEBT	0,369	2,711
CF	0,160	6,263
LN(IA)	0,406	2,463
ROA	0,955	1,047
EBT	0,262	3,820
LN(ASSETS)	0,357	2,804

Source: Own elaboration, based on database analysis.

By removing this variable, it was considered the following model:

$$\begin{aligned}
 &LN(AUDIT FEES) \\
 &= \beta_0 + \beta_1 LN(IA) + \beta_2 LN(ASSETS) + \beta_3 NETDEBT + \beta_4 ROA \\
 &+ \beta_5 EBT + \beta_6 BIG4 + \beta_7 LOSS + \beta_8 ACHANGE + \varepsilon
 \end{aligned}$$

In order to test if we can estimate de final model, we must confirm if without *CF*, there is no more collinearity between independent variables (Table 5). According results of Table 5 we conclude there is no multicollinearity.

Table 5 Multicollinearity – Final model

	Tolerância	VIF
NETDE	0,577	1,733
ln_IA	0,408	2,451
ROA	0,956	1,046
EBT	0,565	1,770
LNTA	0,363	2,752

Source: Own elaboration, based on database analysis.

4 RESULTS AND DISCUSSION

This chapter aims to analysis and discuss the results, relating with literature review.

Table 6 shows the results of the regression using the entire sample from the Final Model.

Table 6 Regression Results

Dependent Variable = LN(AUDITFEES)				
	Estimate	Std.	t-value	p-value
(Intercept)	5.0489e+00***	5.2668e-02	95.8637	0.0000
NETDEBT	-9.1438e-10	1.4144e-09	-0.6465	0.5179
LN(IA)	1.3805e-01***	2.9876e-03	46.2084	0.0000
ROA	-3.0335e-03***	8.1299e-04	-3.7313	0.0001
EBT	7.1030e-08***	7.8911e-09	9.0013	0.0000
LN(ASSETS)	4.5424e-01***	5.3492e-03	84.9180	0.0000
BIG4	1.1335e-01***	1.5009e-02	7.5517	0.0000
LOSS	2.1089e-01***	2.2039e-02	9.5687	0.0000
ACHANGE	-1.1333e-01***	2.6764e-02	-4.2344	0.0000

R-Squared: 0.80362
 Adj. R-Squared: 0.80348
 F-statistic: 5479.03 on 8 and 10711 DF, p-value=0.0000, the model is globally significant.

Source: Own elaboration, based on database

R-Squared or R^2 is interpreted as representing the percentage of variation in the dependent variable explained by variation in the independent variables, 80% of the variance for the *AUDITFEES* is explained by the independent variables in the regression model. By the F-statistic we can confirm the model is globally significant.

P-Value is equals to 0.000 in almost every variable, which means they are all significant, except *NETDEBT*. The variable *NETDEBT* not be significant means that the audit fees do not depend on the company's capacity of pay off her debts.

According to Table 6, the IA variable has a positive effect on the fees charged by the auditor, so these results support our hypothesis, H1.

We are in fact proving that there is an impact of the volume of IA on audit fees, and this impact is positive, that is, a greater volume of IA causes an increase in the fees charged by external auditors, which is in line with the study of Datta, Jha and Kulchania (2020). These authors observed that there is this type of positive impact studying the effects on

listed companies of the United States of America, using intangibles with one of the independent variables but also some alternative measures of intangibles to verify if these results were verified. The proxies used were based on the study by Barth, Kasznik and McNichols (2001), which were Goodwill (GW), research and development (R&D) expenses and advertising campaigns (ADV), all normalized by total assets, that is, $GW/ASSETS$, $R\&D/ASSETS$ and $ADV/ASSETS$.

In this study, we do not analyze the hypothesis with proxies due to insufficient data. In fact, there was no available information in the selected databases about *ADV*, for *GW*, after the sample selection, we did not obtain any observations and in the case of *R&D* only 13 observations which is not relevant.

Firms usually adopt a statement based on the balance sheet, so the variable *ASSETS* it is a suitable measure for dimension and complexity of the company, as many authors defend (Brinn, Peel & Roberts, 1992; Carson, Fargher, Simon & Taylor, 2004; Chan, Ezzamel & Gwilliam, 1993; Joshi & Al-Bastaki, 2000; Gist, 1992; Simon, 2005; Simon & Taylor, 2002). Analysing the results of Table 6, we can observe that the size of the company has a significant and positive effect on the audit fees too.

The regression results also show that *EBT* is also positively related with the audit fees, i.e., with an increasing of earnings before taxes, audit fees also increase. Also, Malele, Letsoalo and Mafu (2021) prove that *EBT* has a positive effect on fees charged by the auditors, using this variable as a determinant of a firm dimension and complexity.

With these results, we can sustain that dimension is part of the consideration by the audit team when discussing the fees.

Intangible Assets, or the volume of them on the firm are not, alone, a proper measure to set company's complexity or dimension, and the result obtained from intangibles: having a significant positive coefficient, prove that companies with more intangibles have a higher fee charged by the auditors. This relation could be due for several possible reasons: audit team have more work or difficulty or higher risk of incur in an incorrect opinion when auditing these kinds of companies, because of intangibles subjectivity, the correct and optimized impairment test of GW, capitalization of R&D expenses, and all the risk evolving Management Body decisions.

These results are also in line with a more recent study of Prabhawa and Nasih (2021), which proved the existence of an impact of IA on audit fees in Indonesian companies, a

study with 656 observations from 2010-2018. Visvanathan (2017) also concluded the same for companies of the *Compustat* database, studying the period between 2010 and 2015.

In the last nine years (2011-2019) the volume of IA in the listed companies from Euro Zone has been increasing like we show in the Graphic 1. The importance of IA is increasing in the same proportion with the authors bringing the problems of its measurement and evaluation to the discussion and creating more literature about intangibles. This research will add more data to the problems of measurement IA, which is not only a problem for accountants and the firm's Management Body, is also a dilemma for the auditors and every stakeholder. Audit an organization with higher volume of IA is more demanding for the auditors.

CONCLUSIONS

There is increasing recognition of the importance of IA in the valuation of companies in their uniqueness and ability to establish competitive advantages, but something challenges the ownership and measurement of these assets. The international accounting standard IAS 38 is strict in its criteria, and definition of an intangible asset is limited to the present day. The auditors remain without a formed opinion, a few studies exist that relate auditors' opinions on these assets, and therefore the best way to verify that there is an added difficulty in auditing intangibles is through the analysis of auditors' fees.

Therefore, this research concludes that companies with a greater volume of IA are charged a greater amount of fees for external audit services. We also found that auditors' fees are positively related to the total assets, which several authors defend that is one of the measures used to calculate the effort used in the service.

As auditors charge higher amounts to companies with more intangibles, we concluded that the auditor actually has a greater effort to audit these companies or that the risk of litigation is greater, which leads us to conclude that, just as it is not easy to audit, accounting is also not easy, or it is an area with a greater potential of manipulation by the Management Body, for example, in the case of capitalization expenses that are not assets. This difficulty is directly related to IAS 38 or the FASB's audit and reporting guidelines.

We still conclude that it is a challenge to audit IA and there should be a change in the current regulation, with the growth of these assets, which is a challenge today could easily become a problem in the future.

According to our knowledge, this is the first study that relates the auditors' fees with the volume of firms' IA of listed companies in the Euro Zone, giving, in this sense, an important contribution for regulators, companies, auditors and stakeholders about this relevant asset for most of companies.

Throughout this work, some limitations were found. One of them was related to the access to databases, more specifically to *Audit Analytics*; in fact, regarding listed companies, auditors' fees and auditors' opinion can be found in the annual reports that are public, but for a significant sample this means of obtaining it is not feasible, however, the database had limited access which did not allow more extensive research.

Also, due to the lack of observations it was not possible to calculate proxies of the IA, which would be an added value, to find out if assets such as GW, as R&D expenses and also as advertising campaigns would have the same impact on fees.

For future research, it would be interesting to verify the impact of IA using the aforementioned proxies, as well as to make the research more exhaustive, to test if this impact also occurs in European listed companies, without restricting it only to the Euro Zone, and also in non-listed companies.

REFERENCES

- Albert, Nagy (2005). Mandatory Audit Firm Turnover, Financial Reporting Quality, and Client Bargaining Power: The Case of Arthur Andersen. *Accounting Horizons*, 19 (2): 51–68.
- Al-Harshani, M. O. (2008). The pricing of audit services: Evidence from Kuwait. *Managerial Auditing Journal*, 23(7), 685–696.
<https://doi.org/10.1108/02686900810890643>
- Alin, A. (2010). Multicollinearity. Wiley Interdisciplinary Reviews. *Computational Statistics*, 2(3), 370–374.
<https://doi.org/10.1002/wics.84>
- Almeida, B. (2019). *Manual de auditoria financeira* (3.a edição). Lisboa: Escolar Editora.
- Alrashidi, R., Baboukardos, D., & Arun, T. (2021). Audit fees, non-audit fees and access to finance: Evidence from India. *Journal of International Accounting, Auditing and Taxation*, 43.
<https://doi.org/10.1016/j.intaccudtax.2021.100397>
- Alves, J. (2015). *Princípios e prática de auditoria e revisão de contas* (1.a edição). Lisboa: Edições Silabo.
- Arens, A., Elder, R., Beasley, M. & Hogan, C. (2017). *Auditing and Assurance Services – An Integrated Approach* (16th edition). England: Pearson Education Limited.
- Baldacchino, P. J., Attard, M. & Cassar, F. (2014). - Factors influencing external audit fees in Malta. *Occasional Papers on Islands and Small States 2*, University of Malta.
<https://www.um.edu.mt/library/oar/bitstream/123456789/18815/1/FACTORS%20INFLUENCING%20EXTERNAL%20AUDIT%20FEES%20IN%20MALTA.pdf>
- Barth, M., Kasznik, R., McNichols, M. (2001). Analyst coverage and intangible assets. *Journal of Accounting Research*, 39, 1–34.
- Bedard, Jean & Johnstone, Karla. (2006). Earnings Manipulation Risk, Corporate Governance Risk, and Auditors' Planning and Pricing Decisions. *The Accounting Review*, 79.
- Bell, T. B., Landsman, W. R., & Shackelford, D. A. (2001). Auditors' perceived business risk and audit fees: Analysis and evidence. *Journal of Accounting Research*, 39(1), 35–43.
<https://doi.org/10.1111/1475-679X.00002>

- Blankley, A. I., Hurtt, D. N., & MacGregor, J. E. (2012). Abnormal audit fees and restatements. *Auditing*, 31(1), 79–96.
<https://doi.org/10.2308/ajpt-10210>
- Brinn, T., Peel, M. J., & Roberts, R. (1992). Determinants of the External Audit Fee of UK Unquoted Companies - Some New Evidence. *Management Research News*, 15(8), 14–17.
<https://doi.org/10.1108/eb028255>
- Cañibano, L., Covarsí, A., & Sánchez, M. P. (1999). La Relevancia de los Intangibles para la Valoración y la Gestión de Empresas: Revisión de la Literatura. *Revista Española de Financiación y Contabilidad*, 100, 17-88.
- Carson, E., Fargher, N., Simon, D. T., & Taylor, M. H. (2004). Audit Fees and Market Segmentation - Further Evidence on How Client Size Matters within the Context of Audit Fee Models. *International Journal of Auditing*, 8(1), 79–91.
<https://doi.org/10.1111/j.1099-1123.2004.00159.x>
- Castro, J.M.O. (2015). *O tratamento contabilístico-fiscal dos ativos intangíveis*. (Dissertação de Mestrado em Direito Fiscal, Universidade Católica do Porto). Repositório aberto da Universidade do Porto.
<https://repositorio.ucp.pt/bitstream/10400.14/18650/1/O%20tratamento%20contabil%20C3%ADstico-fiscal%20dos%20ativos%20intang%20C3%ADveis.pdf>
- Chan, P., Ezzamel, M., & Gwilliam, D. (1993). Determinants of Audit Fees for Quoted UK Companies. *Journal of Business Finance & Accounting*, 20(6), 765–786.
<https://doi.org/10.1111/j.1468-5957.1993.tb00292.x>
- Chaney, P. K., Jeter, D. C., & Shivakumar, L. (2005). Audit Pricing in Private Firms. *SSRN Electronic Journal*, 615.
<https://doi.org/10.2139/ssrn.304941>
- Chen, V. Y. S., Keung, E. C., & Lin, I. M. (2019). Disclosure of fair value measurement in goodwill impairment test and audit fees. *Journal of Contemporary Accounting and Economics*, 15(3), 100160.
<https://doi.org/10.1016/j.jcae.2019.100160>
- Ciprian, G. G., Valentin, R., Mădălina, G. A., & Lucia, V. M. (2012). From Visible to Hidden Intangible Assets. *Procedia - Social and Behavioral Sciences*, 62, 682–688.
<https://doi.org/10.1016/j.sbspro.2012.09.116>
- CNC (2009). Accounting Standard for Financial Reporting 6. Diário da República, 2.a série, 173 - 7 de Setembro de 2009.

- Costa, C. (2018). *Auditoria Financeira – Teoria & Prática* (12^a Edição). Lisboa: Rei dos Livros.
- EU (1978). Fourth Council Directive 78/660/EEC of 25 July 1978 based on Article 54 (3) (g) of the Treaty on the annual accounts of certain types of companies.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31978L0660>
- EU (1983). Seventh Council Directive 83/349/EEC of 13 June 1983 based on the Article 54 (3) (g) of the Treaty on consolidated accounts.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31983L0349>
- EU (1986). Council Directive 86/635/EEC of 8 December 1986 on the annual accounts and consolidated accounts of banks and other financial institutions.
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31986L0635>
- EU (1991). Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31991L0674>
- EU (2002). Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002 on the application of international accounting standards.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002R1606>
- EU (2014a). Directive 2014/56/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0056>
- EU (2014b). Regulation (EU) No 537/2014 of the European Parliament and of the Council of 16 April 2014 on specific requirements regarding statutory audit of public-interest entities and repealing Commission Decision 2005/909/EC Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014R0537>
- Cunha, Inácio & Vieira (2017). Determinante dos honorários de auditoria para Portugal e Espanha, *Congresso internacional de contabilidade e auditoria XVI*. Aveiro.
<https://ria.ua.pt/handle/10773/21338>
- Dahmash, F. N., Durand, R. B., & Watson, J. (2009). The value relevance and reliability of reported goodwill and identifiable intangible assets. *British Accounting Review*, 41(2), 120–137.
<https://doi.org/10.1016/j.bar.2009.03.002>

- Daoud, J. I. (2018). Multicollinearity and Regression Analysis. *Journal of Physics: Conference Series*, 949(1), 0–6.
<https://doi.org/10.1088/1742-6596/949/1/012009>
- Datta, S., Jha, A., & Kulchania, M. (2020). On accounting's twenty-first century challenge: evidence on the relation between intangible assets and audit fees. *Review of Quantitative Finance and Accounting* (55), 123-162.
<https://doi.org/10.1007/s11156-019-00839-y>
- Daum, J. H. (2003). *Intangible Assets and value creation*. England Editora: Wiley.
- Dinh, T., Eierle, B., Schultze, W., & Steeger, L. (2015). Analysts Forecasts: The Case of IAS 38. *Journal of International Financial Management & Accounting*, 26(3), 257–293.
- Dobler, M. (2008). Incentives for risk reporting – A discretionary disclosure and a cheap talk approach. *The International Journal of Accounting* (43), 184 – 206.
- Zambon, S., Marzo, G., & Girella, L. (2020). A literature Review on the Reporting of Intangibles. European Financial Reporting Advisory Group, February 2020.
- Ferreira, F. (2014). A divulgação da informação financeira sobre recursos humanos e a sua influência no desempenho. - o caso das empresas portuguesas cotadas no Euronext Lisboa (Tese de Mestrado em Contabilidade e Fiscalidade Empresarial). Coimbra: Instituto Superior de Contabilidade e Administração de Coimbra
- Financial Accounting Standards Board (2001), Financial Accounting Standards 142
- Firth, M. (1985). An Analysis of Audit Fees and Their Determinants in New-Zealand. *A Journal of Practice and Theory*, 4, 23-37.
- França de Sá, C. S. V. (2010). Activos Intangíveis: Impacto da Adopção das IAS ao nível das Despesas de I&D (Dissertação de Mestrado em Contabilidade Ramo de Fiscalidade). Aveiro: Universidade de Aveiro.
- Friis, O., & Nielsen, M. (2010). Audit fees and IFRS accounting Is information costly? *Discussion Papers on Business and Economics*.
https://www.researchgate.net/publication/241759597_Audit_fees_and_IFRS_accounting_-_Is_information_costly
- Garcia-Ayuso, M. (2003). Factors Explaining the Inefficient Valuation of Intangibles. *Accounting, Auditing and Accountability* 1, 57-69.
- Gist, W. E. (1992). Explaining Variability in External Audit Fees. *Accounting and Business Research*, 23(89), 79–84. <https://doi.org/10.1080/00014788.1992.9729863>

- Gomes, P. (2005). Activos intangíveis: o grau de adaptação das empresas portuguesas cotadas na Euronext relativamente à IAS 38 Intangible assets. *Contabilidade e Gestão*, 2, 15–53.
- Grande, J., Stedile, R., Boff, M. & Bezerra, F. (2008). Caracterização das diferentes formas de tratamento dos Ativos Intangíveis e do Goodwill nos países do Mercosul. XII Seminário em Administração, São Paulo.
<http://sistema.semead.com.br/11semead/resultado/trabalhosPDF/832.pdf>
- Guerreiro, R. (1989). Modelo conceitual de sistema de informação de gestão económica: uma contribuição para a teoria da comunicação da contabilidade (Tese de Doutoramento em Contabilidade). São Paulo: Faculdade de Economia, Administração e Contabilidade.
- Halperin, R., & Lai, K. W. (2015). The relation between auditor-provided tax service fees and audit fees after the sarbanes-oxley act: From the perspective of cross-selling of services. *Journal of Accounting, Auditing and Finance*, 30(3), 341–372.
<https://doi.org/10.1177/0148558X14560900>
- International Auditing and Assurance Standards Board - IAASB (2004a), International Standard on Auditing 300.
- IAASB (2004b), International Standard on Auditing 320.
- IFAC. (2021). *Handbook of the International Code of Ethics for Professional Accountants including International Independence Standards*. New York.
- International Auditing and Assurance Standards Board (2007), International Standard on Auditing 200
- International Auditing and Assurance Standards Board (2009), International Standard on Auditing 500
- International Auditing and Assurance Standards Board (2009), International Standard on Auditing 505
- International Auditing and Assurance Standards Board (2009), International Standard on Auditing 520
- International Auditing and Assurance Standards Board (2019), International Standard on Auditing 315, revised
- International Accounting Standards Board (2001), International Accounting Standards 38
- International Accounting Standards Board (2013), Financial Reporting Standard 10

- Ittner, C.(2008). Does measuring intangibles for management purposes improve performance? A review of the evidence. *Accounting and Business Research*, 38(3), 261–272. <https://doi.org/10.1080/00014788.2008.9663338>
- Joshi, P. L., & AL-Bastaki, H. (2000). Determinants of Audit Fees: Evidence from the Companies Listed in Bahrain. *International Journal of Auditing*, 4(2), 129–138. <https://doi.org/10.1111/1099-1123.00308>
- Lauck, J., Rakestraw, J., & Stein, S. (2020). Do audit fees reflect unique characteristics of individual executives?. *Accounting Horizons*, 34(4), 105–124. <https://doi.org/10.2308/HORIZONS-19-193>
- Leote, F. (2016). A Relevância dos Intangíveis na Avaliação das Empresas da Euronext (Tese de Doutoramento em Gestão). Évora: Universidade de Évora- Instituto de Investigação e Formação Avançada.
- Lev B, Gu F (2016). *The end of accounting and the path forward for investors and managers*. Wiley.
- Lev B, Zarowin P (1999). The boundaries of financial reporting and how to extend them. *Journal of Accounting Research*, 37.
- Lev, B. (2001). *Intangibles: Management, Measurement, and Reporting*. Brookings Institution Press, Washington DC. Available at https://books.google.pt/books?hl=pt-PT&lr=&id=NjFey_RlwblC&oi=fnd&pg=PA1&ots=QUUru17r6O&sig=5tULQ_iKSfKB3JHUnT1rh32hVdw&redir_esc=y#v=onepage&q&f=false
- Maclean, S. (2014). Examining Auditing as an Essential Element of Financial Management and Good Governance in Local Government. *Africa's Public Service Delivery and Performance Review*, 2(2), 82. <https://doi.org/10.4102/apsdpr.v2i2.53>
- Madeira, P. J. (2003). Ética e Deontologia - Uma Visão aplicada a profissionais de gestão e contabilidade. *Jornal do Técnico de Contas e da Empresa*, 453, 211–219. <http://repositorio.ipcb.pt/bitstream/10400.11/963/1/Etica.pdf>
- Magro, C. B. D., da Silva, A., Padilha, D., & Klann, R. C. (2017). Relevância dos ativos intangíveis em empresas de alta e baixa tecnologia. *Nova Economia*, 27(3), 609–640. <https://doi.org/10.1590/0103-6351/3214>
- Malele, V., Letsoalo, M. E., & Mafu, M. (2021). Determinants of audit fees: Evidence from Compustat database from 2009-2019. In 2021 IEEE 24th International Conference on Information Fusion, 1–6. <https://doi.org/10.23919/FUSION49465.2021.9626872>

- Martin, R. (2018). Financial reporting is struggling to keep pace with the way companies operate – a problem reflected in the patchy treatment of intangible assets. *Accounting and Business Magazine*, February, 58-59.
- Melymuka, K. (2004). Measuring Intangible Assets. *Computerworld*, 38(6),42.
- Nanette, B. (2011). Corporate audit fees up? Beware of trouble ahead. *Reuters*, online publication.
<https://www.reuters.com/article/us-accounting-audit-fees>
- Niemi, L. (2005). Audit effort and fees under concentrated client ownership: Evidence from four international audit firms. *International Journal of Accounting*, 40(4), 303–323. <https://doi.org/10.1016/j.intacc.2005.09.006>
- Pae, J., Thornton, D., & Welker, M. (2005). The link between earnings conservatism and balance sheet conservatism. *Contemporary Accounting Research*, 22(3), 693–717.
- Palmeira, M. (2016). *Os ativos intangíveis e a performance das empresas cotadas em Portugal*. (Dissertação de Mestrado em Contabilidade e Finanças, Instituto Politécnico de Setúbal). Repositório aberto do Instituto Politécnico de Setúbal.
<https://comum.rcaap.pt/handle/10400.26/17229>
- Prabhawa, A. A., & Nasih, M. (2021). Intangible assets, risk management committee, and audit fee. *Cogent Economics and Finance*, 9(1).
<https://doi.org/10.1080/23322039.2021.1956140>
- Putra, L.D. (2009). Accounting For Intangible Assets [IAS 38] With Case Examples. *Mediterranean Journal of Social Sciences*, 5(24), 52-55.
<http://accounting-financial-tax.com/2009/03/accounting-for-intangible-assets-ias-38-with-case-examples/>
- PwC. (2017). Understanding a financial statement audit. *Annales Universitatis Apulensis Series Oeconomica*, 1(May), 1–9.
- Ramanna, K., & Watts, R. L. (2012). Evidence on the use of unverifiable estimates in required goodwill impairment. *Review of Accounting Studies*, 17(4), 749–780.
<https://doi.org/10.1007/s11142-012-9188-5>
- Ricciardi, V. (2004). *A risk perception primer: A narrative research review of the risk perception literature in behavioral accounting and behavioral finance*. (Dissertação de Mestrado, Golden Gate University).
https://www.academia.edu/413592/A_Risk_Perception_Primer_A_Narrative_Research_Review_of_the_Risk_Perception_Literature_In_Behavioral_Accounting_and_Behavioral_Finance

- Rodrigues, A.M.G. (2011). Activos Intangíveis -Algumas Reflexões Contabilísticas e Fiscais. Estudos em memória do Prof. Doutor J. L. Saldanha Sanches. *Revista de Contabilidade do Mestrado em Ciências Contábeis da UERJ*, 18, 469 -520.
- Rodrigues, L.L. (2001). O Capital Intelectual nas Empresas Portuguesas Cotadas na Bolsa: Análise do Rácio Valor de Mercado/ Valor Contabilístico. *Portuguese Journal of Management Studies*, Vol. VI, n.º 2, 143-160.
- Rowe, E. (2019). Capitalism without capital: the intangible economy of education reform. *Discourse*, 40(2), 271–279.
<https://doi.org/10.1080/01596306.2019.1569883>
- Schmidt, P. & Santos, J. (2003), Ativos intangíveis – análise das principais alterações introduzidas pelos FAS 141 e 142. *ConTexto, Porto Alegre*, 3(4), 1o semestre 2003.
- Sciences, H. (2016). Disclosure dos ativos intangíveis das empresas britânicas e a investigação da sua relação com as empresas de auditoria e os setores de atuação. *Revista CEPPG*, 23, 51-82.
- Silva, A. G. da, & Robles Junior, A. (2008). Os impactos na atividade de auditoria independente com a introdução da lei Sarbanes-Oxley. *Revista Contabilidade & Finanças*, 19(48), 112–127.
<https://doi.org/10.1590/s1519-70772008000300010>
- Simon, D. T., & Taylor, M. H. (2002). A Survey of Audit Pricing in Ireland. *International Journal of Auditing*, 6(1), 3–12.
<https://doi.org/10.1111/j.1099-1123.2002.tb00002.x>
- Simon, D.T. (2005). The Market for Audit Services in Germany. *The Journal of Applied Business Research*, 21(3), Summer, 9-14.
- Skinner, D.J. (2008). Accounting for intangibles - a critical review of policy recommendations. *Account Bus Res*, 38, 191–204.
- Teck-Heang, L., & Ali, A. M. (2008). The evolution of auditing: An analysis of the historical development. *Journal of Modern Accounting and Auditing*, 4(1243), 1548–6583.
- Vasile, E., & Croitoru, I. (2020). Financial Statements. *Internal Auditing & Risk Management*, 4(4), 51–59.
<https://doi.org/10.5281/zenodo.4383076>
- Visvanathan, G. (2017). Intangible assets on the balance sheet and audit fees. *International Journal of Disclosure and Governance*, 14(3), 241–250.
<https://doi.org/10.1057/s41310-017-0023-x>

- Yao, D. F. T., Percy, M., & Hu, F. (2015). Fair value accounting for non-current assets and audit fees: Evidence from Australian companies. *Journal of Contemporary Accounting and Economics*, 11(1), 31–45.
<https://doi.org/10.1016/j.jcae.2014.12.003>
- Yuhao, L. (2010). The Case Analysis of the Scandal of Enron. *International Journal of Business and Management* 5, No. 10.
<https://www.ccsenet.org/journal/index.php/ijbm/article/view/7627>
- Yip, R. W. Y., Young, D. (2012). Does mandatory IFRS adoption improve information comparability? *Accounting Review*, 87(5), 1767–1789.
<https://doi.org/10.2308/accr-50192>