Universidad de Sevilla

Departamento de Contabilidad y Economía Financiera

Programa de doctorado

Gestión Estratégica y Negocios Internacionales

THE ROLE OF AUDIT COMMITTEE: ANALYSIS OF THE INFLUENCE OF FINANCIAL EXPERTISE

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Sevilla, 2021

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INTRODUCTION

I. Research motivation

The board of directors is a crucial corporate governance mechanism in the formulation and oversight of corporate strategies and, in the development of its activity, some of its functions are delegated to specific board committees. Particularly, the audit committee is the most recognized and mature of the board committees, and its origin is found in the 1940s in the United States, and in the early 1990s in Europe (Kaczmarek & Nyuur, 2016). Fama and Jensen (1983) consider that the audit committee is a mechanism dependent on the board of directors, whose basic function is to provide information for making strategic decisions in accounting matters, to deal with the relations with external auditors, and to manage internal control systems. DeZoort et al. (2002) defined the audit committee as an instrument with "qualified members with the authority and resources to protect stakeholder interests by ensuring reliable financial reporting, internal controls, and risk management through its diligent oversight efforts" (p. 41). In a similar vein, professional bodies have highlighted that the main functions of audit committees include the reinforcement of corporate transparency, the detection of opportunistic behaviors, and the monitoring of ethics and compliance with laws and regulations (PricewaterhouseCoopers, 2005).

This approach has been traditionally adopted by the previous literature, which has generally examined the effectiveness of audit committees as regards certain corporate decisions (Guay et al., 2016). In particular, one of the most important functions of the audit committee is to assist the board of directors in implementing the corporate reporting strategy (Dhaliwal et al., 2010). The previous literature emphasizes the need for firms to perform more transparent reporting processes to reduce informational asymmetries with their stakeholders, thereby minimizing so-called agency conflicts, and improving efficiency in capital markets (Healy & Palepu, 2001). This issue has acquired great importance, and for years regulatory bodies and professionals

have stressed the need to improve the information disclosed by companies. Specifically, the boards of directors and, specifically, the audit committees are responsible for the corporate reporting strategy. In this sense, there is a great debate at the level of regulators, academics and firms about the real impact of the board and the audit committee on the adoption of reporting initiatives.

Although many different theoretical approaches have been traditionally employed by empirical studies to explain how boards of directors contribute to corporate decisions (Pugliese et al., 2009), agency theory dominates when it comes to understanding the role of audit committees (Dhaliwal et al., 2010; Raimo et al., 2021). This perspective suggests that audit committees minimize agency costs by overseeing, controlling and monitoring functions in support of the shareholders (Jensen & Meckling, 1976).

The effectiveness of audit committees is strongly linked to their structure, activity and composition (Amorelli & García-Sánchez, 2020). In relation to audit committees' composition, the characteristics of directors and, particularly, their financial expertise, has increasingly caught the attention of regulators, professionals, and academics (García-Sánchez et al., 2017a). Specifically, after the recent wave of accounting scandals, policymakers and professionals have emphasized the need for more financial experts on audit committees to effectively perform their monitoring functions of the reporting process. In this regard, the majority of codes or rules issued in the developed countries have addressed this issue and highlighted the importance of financial expertise (Blue Ribbon Committee, 1999; Directive 2014/95/EU; Securities and Exchange Commission [SEC], 2003). Moreover, financial expertise has also been considered by international professional organizations as a decisive attribute for directors to improve board oversight and monitoring capabilities (Deloitte, 2018; Ernst & Young [EY], 2020). As a result, research on directors' financial expertise has significantly grown in the current century. While some studies have examined the determinants of audit committee members' financial expertise (Herranz et al., 2020;

Jeanjean & Stolowy, 2009), the vast majority of the investigations have analyzed the effects of this kind of expertise (Abbott et al., 2004; Badolato et al., 2014; Das et al., 2020; Zhang et al., 2007). A number of these studies have documented that audit committee financial expertise generally affects corporate reporting quality because financial experts improve the ability to monitor the reporting process (Bravo & Reguera-Alvarado, 2019; Li et al., 2012).

Under this scenario, audit committees represent a vital corporate governance mechanism with significant implications in financial markets. Given that the empirical evidence still remains open, more research is needed to reach accurate and generalizable findings that contribute to the understanding regarding the value of this committee. Specifically, the study of financial expertise as a relevant personal attribute of audit committee members has become an important question in this research area.

II. Research objectives

The main objective of this thesis is to investigate the impact of audit committees and, in particular, focus on their financial expertise. This main objective is divided into four different sub-objectives, which are addressed in four independent empirical studies:

1. Study 1: Bibliometric Analysis of the research on Audit Committees.

The objective of this study is to perform a systematic review of the literature on audit committees. Until now, the literature reviews carried out through bibliometric analysis have been limited to certain topics or even to the top accounting journals. For this reason, it is necessary to perform a complete literature review of audit committees, thus allowing a holistic understanding of both the trends followed in this field of research and their impact.

2. Study 2: Bibliometric Analysis of the research on financial expertise.

The objective of this study is to perform a systematic review of the literature on financial expertise as a significant attribute of directors. Despite the ever-increasing importance of board financial expertise, previous research has overlooked carrying out a systematic review of the literature on this matter. Therefore, this study will allow mapping the intellectual structure and research trends on this topic, leading to significant advances in knowledge in this branch of investigation.

3. Study 3: Audit Committee financial expertise and readability of the management report.

The objective of this study is to analyze the association between the audit committee directors' financial expertise and the readability of the management reports issued by the companies will be empirically analyzed, as well as the moderating effect that the meetings held by this committee may have on this relation. Despite the relevance of both the audit committee composition and information readability, studies concerning the impact of audit committee financial expertise on the readability of corporate financial reports are scarce. This study considers a double-view in the analysis of readability, which can conditioned by either managers' obfuscation, providing more confused information, or by an attempt of clarification by disclosing information that can require more detailed aspects of a firm's financial reality usually needing a high syntactical complexity.

4. Study 4: The disclosure of financial forward-looking information: Does the financial expertise of female directors make a difference?

The objective of this study is to examine the association between the financial expertise (considering both accounting and non-accounting) of female directors in the audit committee and the voluntary disclosure of financial forward-looking information. The association between gender diversity and the disclosure process still remains an open question in the literature. This study implies a step further

in the existing literature because we focus on one specific type of valuable information and on the specific financial expertise of female audit committee members.

In order to synthesize the objectives of this Thesis, a compilation of the studies carried out is presented as an annex (Annex 1), describing the objectives, the data used, the methodology followed, and the empirical analyses developed.

III. Research structure

In order to attain the objectives proposed, this thesis is divided into several parts so as to contextualize the most relevant concepts, introduce the theoretical framework in the field of study and explain each of the previously mentioned empirical studies. Specifically, this thesis is structured in six chapters:

The first chapter presents the conceptual framework of corporate governance, the boards of directors and, specifically, the audit committee and financial expertise attribute. In addition, the legal framework will be developed together with the theoretical framework.

The second chapter aims to synthesize the literature on audit committees to offer a clear picture of the publication patterns and intellectual structure in the audit committee area. To do this, a bibliometric analysis is performed, which allows mapping the scope and the conceptual structure of research in a systematic manner.

The third chapter means to present the characteristics and evolution of the research on board financial expertise. To that end, a bibliometric analysis is also used. The employing of these techniques provides systematization and replication processes that help to understand the progress of the discipline specifically in relation to this director attribute.

The fourth chapter intends to perform an empirical analysis to examine the impact of audit committee financial expertise, and particularly financial accounting expertise, on the readability of management reports.

The fifth chapter seeks to examine, through an empirical analysis, the association between the financial expertise, both accounting and non-accounting, of the female directors of the audit committee with the voluntary disclosure of prospective financial information.

Finally, the sixth chapter presents the main conclusions of the research performed, as well as its limitations and future lines of potential research.

CHAPTER 1

AUDIT COMMITTEE AND FINANCIAL EXPERTISE: CONTEXT

CHAPTER 1. AUDIT COMMITTEE AND FINANCIAL EXPERTISE: CONTEXT

This chapter aims to develop the context of the audit committee and financial expertise from a conceptual, legal, and theoretical approach. To that end, this Chapter consists of three Sections.

First, the most important definitions of corporate governance provided since its origin, based on different perspectives (organizational, financial, legal, and ethical) are presented, as well as other specific concepts regarding the internal and external mechanisms of corporate governance. In addition, the characteristics of the directors and the importance of the roles they must assume within the board of directors for the creation of business value, as well as the functioning and structure of the board members are discussed. In this way, a brief introduction is made of the different committees that can be found in companies, including the audit committee. Next, the concept of the audit committee is developed, together with its functions and the composition of its members. Finally, financial expertise is presented as a relevant professional characteristic in improving the performance of the audit committee's functions.

Second, the normative development at the international, European, and national levels will be presented. At the international level, the principles developed by the Organization for Economic Cooperation and Development (henceforth OECD) and the Securities and Exchange Commission (henceforth SEC) regulations will be dealt with as worldwide reference regulations. With regard to Europe, the evolution of different directives related to corporate governance over time will be presented. Finally, the recommendations made in Spain will be developed as well as progress toward the establishment of mandatory regulations.

Third, and to conclude, this chapter will explain the main theories that support the contribution to decision-making by the board of directors and, concretely,

the audit committee. Among the main ones we find agency theory, stewardship theory, stakeholder theory and resource dependence theory.

1.1. Conceptual framework

1.1.1. Corporate Governance

After the financial scandals that have occurred in recent years, corporate governance mechanisms have acquired a very relevant role in improving disclosure transparency and generating value in entities, increasing economic efficiency and investor confidence (Comisión Nacional del Mercado de Valores [CNMV], 2015; Pugliese et al. al., 2009; Williams, 2005).

The concept of corporate governance has evolved over the years, and the definitions provided have been wide and multidisciplinary in nature. In this regard, global economic institutions, professional organizations and the academic literature have defined corporate governance from different views, including organizational, financial, legal, or ethical perspectives, among others.

First, one finds an organizational perspective of corporate governance, where the relationships between the different organizations in the companies are highlighted. For the OECD (OECD, 1999), corporate governance "constitutes a key element to increase economic efficiency and boost growth, as well as to foster investor confidence". This institution defines corporate governance as “the system by which business corporations are directed and controlled” (OECD, 1999). In 2016, this organization published the Principles of Corporate Governance of the OECD and the G20, where the evolution in the definition of corporate governance can be observed: “The corporate governance of a company implies the establishment of a set of relationships between the management of the company, its board of directors, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set and the way to achieve them is determined and their achievement is supervised” (OECD, 2016). Deloitte (2021a)

defines corporate governance as "the set of rules, principles and procedures that regulate the structure and operation of the controlling bodies of a firm. Specifically, it establishes the relationships between the management, the board of directors, the shareholders, and the rest of the interested parties, and stipulates the rules that govern the decision-making process about the company for the generation of value".

Second, some previous literature has defined corporate governance from a financial perspective, centering on how shareholders will recoup their investment thanks to the management of the company. There is a focus in the literature where corporate governance is defined from a shareholder protection point of view. In this situation we find the definition of Garvey and Swan (1994), who defend that "governance determines how the firm's top decision makers (executives) actually administer such contracts (p. 139)". Shleifer and Vishny (1997) define corporate governance as "the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment (p.737)". Furthermore, corporate governance not only refers to the management in decision-making or the recovery of investment by shareholders, but also authors such as La Porta, Silanes and Shleifer (2000) view corporate governance as a set of mechanisms through which outside investors (shareholders) protect themselves from inside investors (managers).

Third, another approach in the definition of corporate governance in the previous literature concentrates on the legal approach. Along these lines we find authors such as Oman (2001), who defines corporate governance as a term related to private and public institutions that include laws, regulations and the business practices which govern the relationship between corporate managers and stakeholders. However, Larcker and Tayan (2011) present a definition along these lines but taking into account the conceptualization of agency theory as they consider corporate governance as "the collection of control mechanisms that an organization adopts to prevent or dissuade potentially self-interested managers from engaging in activities detrimental to the welfare of shareholders and stakeholders".

Fourth, corporate governance can also be defined from an ethical perspective. Hambrick et al. (2008) describe it as “formal structures, informal structures, and processes that exist in oversight roles and responsibilities in the corporate context”. A more current and complete definition of corporate governance is in the book published by Solomón (2020). This author defines corporate governance as “the system of checks and balances, both internal and external to companies, which ensures that companies discharge their accountability to all their stakeholders and act in a socially responsible way in all areas of their business activity”.

Despite the co-existence of multiple conceptual approaches, there is a consensus concerning the role of corporate governance in the creation of value for companies in terms of economic and social benefits. Corporate governance is undoubtedly helpful in the management of the relationship between firms and all their stakeholders, and in the assurance of corporate transparency. In the last three decades, there has been a strong regulatory reaction regarding corporate governance, and legislators have increasingly developed codes of good governance and other types of regulations. At the same time, the academic literature has intensified its activity concerning the study of the effects of these regulations and recommendations on organizations and financial markets.

Corporate governance can be implemented in organizations through different mechanisms, both internal and external. External corporate governance mechanisms are rules published by regulatory authorities in order to play a more active role in the practices of organizations (Deloitte, 2021b). One of the most important external mechanisms are the codes of good governance or good practices. These try to be a control and supervision system toward the management of the company. These codes are not regulatory, but they are a set of voluntary recommendations for firms. Some of the external mechanisms are:

- Regulation.
- Codes of good practices.
- Corporate control market.
- External auditors.
- Analysts.

On the other hand, the internal mechanisms of corporate governance refer to the shareholders' structure and the board of directors, as well as their committees and the corporate governance policy followed by the company itself:

- Board of directors.
- Committees: Audit, remuneration, nominations, executive, etc.
- Ownership structure.
- Incentives.

1.1.2. Board of Directors

The board of directors has been given special importance by regulators and academics as an internal mechanism that is particularly influential in corporate decisions and business performance (CNMV, 2015; Pugliese et al., 2009; Williams, 2005). The Spanish regulation defines the board of directors as the body in charge of the administration of the company ("*Real Decreto Legislativo 1/2010*", 2010). Basically, the published recommendations considered a "supervisory and control instrument, aimed at aligning the plans of those who manage society with the interests of those who contribute resources and bear business risk" (Comité Especial para el Estudio de un Código Etico de los Consejos de Administración de las Sociedades [CEECECAS,] 1998).

The separation of functions between ownership and control, within companies, raised the problem of the agency contract (Jensen & Meckling, 1976). This theory establishes that conflicts of interest may appear from the separation of functions.

On the one hand, shareholders seek to increase the value and profits of companies. On the other hand, managers will aim to improve their own interests. Agency problems cause information asymmetries in the markets, so it is necessary to look for control mechanisms to avoid this problem. According to agency theory, transparency in the disclosure and publication of business information through the representative bodies of companies is considered a very powerful mechanism to curb disclosure asymmetries. For this reason, the board of directors occupies a very important place in the corporate governance of companies, helping to generate value in companies and improve market confidence.

As developed by Johnson et al. (1996) in their research, the board of directors is a source for the creation of business value. By this, we can understand the role of the boards of directors from different perspectives, where they can develop several roles to fulfill their functions.

1. The first one is control. The boards of directors must control the management in the company performed by the administrators, so that the interests of the shareholders are not damaged. This is the basis of agency theory, where it is recognized that the interests of shareholders and managers are likely to be different; therefore, it is necessary, to avoid opportunism, for there to be a control body between these two parties (Jensen & Meckling, 1976).

2. The second role is the service function, referring to stewardship theory (Davis et al., 1997). This theory states that company managers do not have an opportunistic attitude but rather act according to the interests of the organization itself. This implies that the board of directors does not have to act as a controller but rather as part of strategy development, thus providing a service to the organization.

3. Third, one finds the role linking the organization and the environment. This idea conforms with resource dependence theory, which highlights that boards of directors can establish external relationships in a very close way, taking advantage of their influence and their own resources. Therefore, the members of the councils will be chosen according to their background, their contacts, and their own skills, as this will provide the board of directors with a powerful resource when it comes to interacting with agents outside the organization. The previous literature has extensively studied boards of directors according to the different theories outlined above. However, agency theory is undoubtedly the most relevant one in these studies.

In the analysis of boards of directors, both legislators and academia have consistently considered characteristics related to the functioning and structure of boards, as well as to the personal features of board members. A number of these characteristics are described in the following paragraphs.

In relation to the functioning and structure of boards, several aspects have been traditionally considered:

Board activity. Normally, in the literature, the activity of the board is considered as the number of meetings held during the year. Many authors consider that the more activity the boards of directors have, the more corporate control and management will improve (Lipton & Lorsch, 1992), as well as there being a better monitoring effect (Brick & Chidambaran, 2010). In addition, if we relate this to the disclosure of information, a greater number of meetings lead to a greater interest in information disclosure practices (Al-Mudhaki & Joshi, 2004) and therefore information asymmetries decrease. Therefore, it seems that directors are more involved in the reporting process. However, there are authors who also conclude that a broad activity of the committee can generate an excess in the tasks of the directors, which would negatively affect business performance (Vafeas, 1999).

Board independence. Different types of directors can be part of the board; executive directors and non-executive directors. First, executive directors are those who have managerial functions in the company or in a group of the company. Second, non-executive directors may be owners or independent directors. Proprietary directors are those who have a significant shareholding in the company or those who represent a group of shareholders with a significant stake. Specifically, independent directors, due to their personal or professional conditions, do not see their functions as being conditioned by the relationships of the company. In addition, these directors satisfy the interests of all stakeholders, not just shareholders, so the company lasts longer (Fuente et al., 2017).

Board size. The board of director's size is also a prominent feature. Generally, when companies are more complex, they tend to have larger boards of directors. However, there is no agreement in the research on how size can influence decision-making. On the one hand, some authors, such as Jensen (1993), state that coordination and organization in large groups hinder the functionality of the board. On the other hand, other authors, such as Lipton and Lorsch (1992), also argue that the larger the committees, the more time and effort they will devote to supervising business management.

Board committees. The boards of directors delegate some of their functions to specific committees, in this way they can achieve their objectives in a more efficient way. These committees are nothing more than delegated bodies dependent on the board of directors, with specific functions for certain knowledge matters. The objective of the creation of these committees is not to replace the board of directors in certain functions, rather their fundamental role is informative and consultative. These bodies would not have a decision-making capacity by themselves but should advise the board of directors so that it can develop its supervisory function more effectively. The effectiveness of the commissions will depend on the quality of the information and the degree of rigor and reliability with which it is prepared. Therefore, the independent nature of its members

must prevail in the committees, so it is recommended that the directors be exclusively external. Those most needed are audit, appointment, remuneration, and executive committees. Some recommendations present the different functions that committees should perform.

1. In the first place, the audit committee is in charge of “evaluating the company's accounting verification system, ensuring the independence of the external auditor and reviewing the internal control system”, in addition to “monitoring compliance with the rules that make up the company's governance system, periodically review its results and submit reform proposals to the board”.

2. Secondly, appointment and remuneration committees have the function of “taking care of the integrity of the selection process of the directors and senior executives of the company, ensuring that the candidatures fall on people who fit the profile of the vacancy”, as well as "assist the board in determining and supervising the remuneration policy for directors and senior executives of the company".

3. Along with the previous recommendations, companies, especially the more complex ones, tend to create an executive committee. The functions of this committee are mostly "executive for the adoption of binding agreements for the company within the scope of its delegation”. Unlike the previous committees, the executive committee, according to some recommendations, would indeed have the power to adopt resolutions on the administration and management of the company on behalf of the board of directors, thus being able to assume certain powers of the board of directors.

These functions are basic in the development of good governance practices. However, the board of directors has the power to entrust other functions to the committees. In the 1970s, the idea of necessity about the creation of different

committees in the United States was consolidated in such a way that listed companies were forced to have an audit committee. Nevertheless, in Europe it was not until the beginning of the current century that these instruments began to be promoted, and they become mandatory in listed companies.

In recent years, the importance of social responsibility has also been developed by corporate governance recommendations. Currently, it is recommended that a society committee take charge of matters related to corporate social responsibility (sustainability, social and environmental aspects), or even that a special committee be created for this area of knowledge.

Regarding the personal characteristics of board members, three groups can be identified (Johnson et al., 2013): (1) Demographics, (2) Human Capital, (3) Social Capital.

1. Demographic characteristics are the age, educational level and prestige of academic institutions and gender diversity, among others. These attributes have been related in the literature to cognition and decision-making within the council. In particular, age has been studied extensively because it is related to risk aversion and fear of change in business strategies, all together with the experience that they may have in this type of position according to age. Regarding education, this is especially related to the greatest innovation that the director can develop depending on the education received and the place where it was received. Finally, gender diversity has been a subject studied in depth in the previous literature, which is why it is known that it affects the dynamics of operation within the board of directors and the decision-making process within the board. These variables can be studied independently or together to see how they would affect different firm outcomes.

2. The attributes considered as Human Capital, normally refer to the directors' individual skills. Concerning this aspect, we can highlight both the industry experience and financial expertise. The first of them refers to the knowledge of the sector in which the company is located. If a director has experience in the sector, it will usually be related to an increase in sales and the market will react favorably to society. Financial expertise has been an important issue at the academic and regulatory level. There has been a lot of debate about how to identify a financial expert and how he/she differs from a financial expert accountant. Additionally, the advantages of having directors with financial expertise have been widely discussed in the literature. Given its connection with the objectives of this thesis, this attribute will be described in a separate section. Another attribute of the directors that must be considered is the organizational tenure, considered as the time that the role of director has been developed in the company. Regarding this, there are no conclusive studies, but it is known that the higher the dispersion in director tenure within the company, the higher the variety of opinions there will be in the board meetings.
3. Finally, the characteristics considered as Social Capital refer to the relationships established internally or externally. External relationships can affect the advice that directors offer and therefore affect the decision-making process. The relationships that managers establish with directors belonging to other companies are seen as a conduit to information. However, internal relationships are considered as an incentive for managers to work as a team as well as an improvement in the communication of information, although a very strong internal relationship could affect the independence of managers.

To conclude, Table 1.1 shows a summary of the different categories for the characteristics of the members of the board of directors.

Table 1.1. Roles, functioning and structure, and personal characteristics of board members.

	Board of directors
Roles	Control Service Function Link between the organization and the environment
Functioning and structure	Board activity Board independence Board size Board Committees
Personal characteristics	Demographics: Age, Education, Gender diversity Human Capital: Industry experience, Financial expertise, Organizational Tenure Social Capital: Ties to other firms, Personal relationships, and affiliations

Source: own elaboration adapted from Johnson et al., 2013.

1.1.3. Audit Committee

Following the financial scandal caused by the McKesson and Robbins, Inc. in 1938, the New York Stock Exchange (NYSE) a year later issued a report expressing the preference to select the external auditors by a special committee made up of directors independent of the board of directors. It is at this time that one of the main functions of the audit committee stands out, the relationship with external auditors. In addition, the need for the independence of the members of the audit committee is seen for the first time.

In 1940, the SEC, through the publication of Accounting Series Release No. 19, recommended that companies form an audit committee, with the function of ensuring the independence of the auditor. It was recommended that this committee be made up of independent directors to be able to appoint the auditors and establish the work route. Thereafter, the SEC published several reports with the intention of continuing to recommend and support the functionality of the audit committee for the company.

The financial scandals in the United States in the 1970s caused the financial authorities to tighten the recommendations and regulations once again on companies, especially in terms of information transparency. Control of the disclosure of company information falls on the audit committee, which is why it stands out as a necessary instrument for transparency in the information published by companies, both financial and non-financial. One of the aspects that stood out at this time in the information presented to stakeholders is the importance of notifying whether the company had an audit committee and therefore complied with the recommendations. If the company did not have an audit committee, it had to report why. This is known as the “comply or explain” criteria.

On the other hand, academic research began on the audit committee, which led to the publication of the first scientific articles on the subject. One of the first publications on the commission is the research carried out by Mautz and Neumann in 1970. The authors found that the boards of directors had greater confidence in the performance of the functions when they had an audit committee as a reporting and consulting body. For this reason, these companies were voluntarily in favor of forming an audit committee. In 1973, the NYSE published the “White paper” where it exposes the need for audit committees for companies, suggesting that the recommendation is insufficient. During subsequent years, professional bodies continued to opt for the voluntary creation of audit committees made up of independent members. Nonetheless, other functions apart from the relationship with external auditors began to be considered.

It was not until 1978 that the United States forced, for the first time in the world, the existence of an audit committee in listed companies. This obligation resulted in the essentiality of the audit committee for the board of directors, demonstrating that it is a tool that safeguards the interests of the shareholders.

In the European context, in the first codes of good governance the recommendation is clear about the creation of committees dependent on the board of directors in order to provide informative and consulting support in relation to issues in more specific areas. One of those most relevant committees is the audit committee. For this reason, in the United Kingdom the "Cadbury Report" in 1992 recommends the establishment of an audit committee (Committee on the Financial Aspects of Corporate Governance [CFACG], 1992). This report is taken as a reflection in the rest of the countries of Europe, therefore it is the beginning of the audit committee in the European Union.

The audit committee has definitely also been the cornerstone in the normative reform processes in recent years, both in Europe and Spain. As an example, we can highlight the Spanish Law *Ley 22/2015, de Auditoría de Cuentas,* and the new European auditing framework, considering the Commission Recommendation 2005/162/EC, Regulation (EU) 537/2014 and Directive 2014/56/EU.

The conceptual evolution of the audit committee has been linked to the active discussion concerning its functions and composition, which have become two key issues in the legal and professional spheres. Both of them are presented below.

1.1.3.1. Functions

The functions of the audit committee have evolved over the years, becoming responsible for several important tasks within a board, such as ensuring transparency in the information disclosed by the company and internal control and risk management.

The functions of the audit committee can be found in the form of recommendations through the different published good governance codes or in the regulations. National recommendations and standards are based on recommendations and Directives issued by international organizations such as the European Union or the corporate governance principles of the OECD and the G20 (2016). In the successive paragraphs, we will study the functions of the audit committee from the point of view of

national recommendations and regulations, as they include international objectives. To do this, we will take as a guide the publication of the CNMV in 2017 "Technical Guide 3/2017 on audit commissions of public interest entities". Public Interest Entities [1] include listed companies, certain financial entities that must have supervision and companies that exceed a certain size. This guide is quite comprehensive as it collects information from both the recommendations and the regulations with the aim of helping companies by summarizing all the recommendations and obligations for the audit committee.

First, we find four primary functions that the audit committee must perform: (1) the supervision of financial information, (2) the supervision of risk management and control, (3) the supervision of internal auditing, (4) the relationship with the external auditor.

1. To fulfill the financial reporting oversight function, directors must oversee the financial reporting process, understand the financial reporting internal control system, and evaluate its effectiveness. Institutional bodies are considered necessary to develop guidelines to understand the internal control system for financial information (CNMV, 2010). The audit committee can find a guide to conclude on the trust and reliability of the integrated system, since the board of directors is in charge of developing the system. The audit committee should also review, analyze, and comment on the financial statements and other relevant non-financial information with the management, the internal audit, and the external auditor. To do this, directors

[1] The Public Interest Entities are defined by Directive 2014/56/EU: " "public-interest entities" means: (a) entities governed by the law of a Member State whose transferable securities are admitted to trading on a regulated market of any Member State within the meaning of point 14 of Article 4(1) of Directive 2004/39/EC; (b) credit institutions as defined in point 1 of Article 3(1) of Directive 2013/36/EU of the European Parliament and of the Council (**), other than those referred to in Article 2 of that Directive; L 158/202 EN Official Journal of the European Union 27.5.2014 (c) insurance undertakings within the meaning of Article 2(1) of Directive 91/674/EEC; or (d) entities designated by Member States as public-interest entities, for instance undertakings that are of significant public relevance because of the nature of their business, their size or the number of their employees".

must apply their own judgment on the application of accounting policies, the clarity and integrity of the financial statements and other published non-financial information, relying on the use of internal information of the entity. Finally, the audit committee must establish and supervise a system that allows the audit committee to be informed of irregularities, especially those of financial and accounting importance. Thanks to technology, the audit committee has more facilities to implement an information channel for complaints.

2. The audit committee must evaluate and assess the effectiveness of the systems implemented in the company's organizational structure. In addition, the committee must have a comprehensive view of the company's internal control and risk management, for which it needs to verify the effectiveness of the systems for both financial and non-financial risks.
3. For the supervision of the internal audit, the audit committee must carry out tasks for the periodic analysis of the internal audit function (annually assess and approve its functions, action plans, propose the appointment, re-election, or dismissal of the person in charge of the area) or, where appropriate, if this specific area does not exist, the need for its implementation must be evaluated. In addition, the audit committee is in charge of approving the internal audit plan, ensuring that the most significant risks, both financial and non-financial, are considered, as well as the internal audit area having the human, financial and technological resources necessary to carry this out. Finally, to complete the supervision of the internal audit, the committee must consider the opinion on this matter of the other committees and the executive management.
4. The relationship with the account auditor is the last of the main functions, but not the least important, since it has been shown how this was the justification for the creation of the audit committee in entities. One of the tasks that this function entails is the process of selection and proposal for the

appointment of external auditors. The European Union regulates through Regulation (EU) 537/2014 of April 16 the obligations and responsibilities related to the selection process. On the other hand, the audit committee must ensure the independence of the account auditor. To do so the external auditors must sign a specific declaration on their independence and the audit committee must issue a report on the situation. Lastly, it is important for the committee to maintain a fluid and constant relationship with the entity's auditors.

1.1.3.2. Composition

Since the NYSE in 1938 first proposed the requirement to form an audit committee to control the relationship with external auditors, the need for the directors who form part of that commission to be independent has also been included. In the composition of the audit committee, we can find several characteristics, such as (1) independence, (2) audit committee size, or (3) competence.

1. The independent character of the directors has proven to be necessary in the delegated committees of the board of directors. The recommendations of international organizations in this regard are disparate. The OECD in its Principles for Corporate Governance recommends that one third of the committee's directors be independent (OECD, 1999). European recommendations on this matter suggest that there be only external directors, where a proportion between proprietary and independent directors is maintained, with the chairman of the committee being an independent director. In the United States, both the SEC, the NYSE and the National Association of Securities Dealers Automated Quotation (NASDAQ) agree that the audit committee should be composed of fully independent directors. Specifically, the mandatory regulations on the composition of the audit committee in Spain require that the audit committee be made up of non-executive directors, most of whom are independent, so the standard improves

the European recommendations by following more in line with the recommendations given in the United States.

2. The recommendations of international organizations for the size of the committee do not specify a number of directors for the composition, but rather that the audit committee be made up of a sufficient number of directors capable of giving an independent judgment on financial and non-financial information. However, the recommendations in Spain suggest a minimum of three members to form the audit committee. Spanish regulations leave the decision on the number of members that should make up the audit committee in the hands of the entities.
3. With regard to the competence that the members of the audit committee should have, the European recommendations say that the directors should have recent expertise on the financial and accounting issues of listed companies. On the other hand, from the recommendations given in the United States, it is suggested that the advisers have financial knowledge. However, the good governance code in Spain not only limits the competence of the directors to accounting and auditing but also adds financial and risk management knowledge. Additionally, regulations require at least one of the members of the audit committee to have accounting or auditing knowledge, or both, and the rest of the directors must have a minimum technical knowledge of the sector activity of the company. The financial expertise of the directors of the audit committee will be explained more thoroughly in the next section.

1.1.4. Financial Expertise

The audit committee is a very effective tool to minimize financial and operational risks and increase the quality of financial and non-financial information. In order for the function of the audit committee to become an effective activity, which adds value to the company and offers confidence to the markets, both the competent

bodies and the research in this area have tried to develop what type of directors are best trained for it. In this case, the financial expertise of the committee members can improve the oversight of the reporting process and can influence the disclosure of specific information to investors.

Financial expertise is a professional characteristic that is required of members of the audit committee today. The interests concerning this characteristic, like most issues related to corporate governance, was born as a recommendation in Anglo-Saxon countries at the end of the 20th century. The Cadbury report (1992), recommended that directors "need to have sufficient understanding of the issues to be dealt with by the committee to take an active part in its proceedings." This recommendation did not specify the type of understanding that directors should have when being capable of carrying out the assigned tasks. Clearly, these tasks are related to accounting and auditing areas, so the directors must be aware of these matters, although the recommendation does not specify it in this way. The fact that the members of the committee have knowledge that gives them the capacity to develop their tasks implies that the audit committee is effective.

In the United States, the Sarbanes-Oxley Act in 2002 launched a legislative proposal on the characteristics of the members of the audit committee (SEC, 2002). This proposal included issues such as the identification in the corporate reports of the components of the audit committee, the independence of the directors, the role of the chairman and director financial expertise. This proposal fails to directly address what was considered as financial experts but delegated it to the company. Therefore, the legislation did not identify whether being a financial expert includes knowledge of accounting or auditing. After receiving various comments and proposals from different people and organisms recognized in the matter, the differences between the concepts of accounting financial experts and non-accounting financial experts were highlighted (Defond, 2005; Krishnan & Lee, 2009). Therefore, what attributes must be considered to be a financial accounting expert? The answer is found in the SEC regulations in its

Sections 406 and 407 of the Sarbanes-Oxley Act of 2003 (SEC, 2003). The characteristics to consider a director as an "audit committee financial expert" are the following: (1) an understanding of the accounting principles and the financial statements, (2) an ability to evaluate the general application of these principles in relation to accounting for estimates, accruals and reserves, (3) experience in preparation, audit, analysis or evaluation of financial statements, as well as accounting problems with a certain degree of complexity that could arise, (4) experience with control and the internal procedure for preparing financial reports, (5) an understanding of the functions of the audit committee.

To achieve these attributes, the financial accounting expert must have accomplished this experience through ways such as his/her education, expertise in public accounting, auditing, being an accounting technician, or an accounting controller, as well as experience in the preparation, audit, or evaluation of financial statements, among others, either as his/her own job or as a supervisor, (SEC, 2003).

Once the necessary profiles of the members of the audit committee have been defined, the question remains as to who it is within a company that decides that the members proposed to occupy the positions of the audit committee have a sufficient capacity and comply with the provisions of the rule. The organ within the company in charge of considering whether the members of the audit committee are accounting, or non-accounting financial experts, is the board of directors. The board must claim any of the expertise described above as proof of the capacity and knowledge of the members of the committee or of at least one of the members. In addition, the Sarbanes-Oxley Act required that at least one of its members be an “audit committee financial expert” on the audit committee, thus highlighting his/her name in the reports and his/her status as an independent or executive director. However, if the entity does not have a director with the qualification of “audit committee financial expert”, the company must explain why. Thus, the obligation to "comply or explain" was included for compliance or not of having at least one director of the audit committee with financial expertise. This

regulation was the example for most of the recommendations and legislations released in many other countries.

Recommendations on the composition of the audit committee by financial accounting experts spread throughout Europe. In addition, there is a recommendation that, at least, the chairman is the one who must possess specific financial and accounting knowledge. In many regulations, these recommendations have become mandatory.

1.2. Legal framework

This section introduces the legal framework about corporate governance, and specifically the audit committee. To that end, a summary of the main regulations at the international, European, and national level is included.

Internationally, the importance of organizations such as the OECD will be discussed through the publication of the Principles for Corporate Governance. In addition, the value and significance of the SEC, the regulatory and supervisory body of financial markets in the United States, will be extensively discussed. Despite being a domestic body, it is extremely relevant at an international level since it has been a pioneer in the drafting of certain recommendations and laws, so it has been an example for other countries and institutions when creating their own legislation structure. Moreover, the appearance and evolution of good governance codes will be developed.

As regards Europe, it is essential to point out that the legislation is made up of recommendations and Directives. It should be reminded that the directives must be incorporated into the regulatory framework of each country individually, always complying with the objective of the Directive. However, the recommendations are not binding; that is, they do not have any legal consequences. In addition, Europe has published certain fundamental reports in the study of the evolution of the rights of shareholders and the rest of the stakeholders, which caused an evolution in European regulations together with the movement that had begun in the United States.

In the regulatory development of Spain, both the recommendations published in the codes of good governance over the years, as well as the evolution of the different laws that have been published on corporate governance and the audit committee, have been analyzed.

1.2.1. International

1.2.1.1. OECD

The OECD is an international organization that works to “establish international standards and propose solutions based on empirical data to various social, economic and environmental challenges”. The OECD in 1999 developed Principles for Corporate Governance. The ministers of the OECD member countries made the request for this regulatory development given the importance of investor confidence in the market and the transparency of information in corporate governance. The OECD Principles are listed as the first publication by an intergovernmental organization where good corporate governance is developed, although they are not binding. Therefore, they have served as a reference for different governments, public and private companies (whether listed or not), and other entities to develop corporate governance systems and best practices. These principles are intended to promote greater transparency, integrity, and compliance with the law, as well as to assist or guide governments to evaluate and improve the regulatory framework on corporate governance. Prior to these principles, there were already recommendations or codes of good governance or good practices at the national level in different countries. However, they represented a common international understanding regarding corporate governance matters. The content of the principles was divided into five thematic blocks: 1) Shareholders' rights; 2) Equitable treatment of shareholders; 3) The role of social interest groups; 4) Communication and information transparency; and 5) The responsibilities of the board of directors.

The evolution of the markets means that good corporate governance practices must be in continuous evolution and the OECD knew this. These principles

highlight the evolutionary and updating nature of corporate governance, so they will be adapted depending on the circumstances and the context. For example, the importance of business ethics and environmental and social concerns for business success was already recognized.

1.2.1.2. SEC

The Security Exchange Commission is a body equivalent to the CNMV in Spain. It is an independent body of the United States government, which regulates and supervises the financial markets according to federal laws, the stock market and the options market (SEC, 2018). The main role of the SEC is to protect investors and maintain integrity in the various markets. To do so, this body regulates the disclosure of information that companies must issue. Once again, the role of financial information in investor decision-making is emphasized, as a fundamental mechanism to avoid imperfections in capital markets.

From 1937 to 1982 the SEC issued Accounting Series Releases (ASRs). These publications are intended to clarify the accounting and auditing procedures required in the information disclosure process. These releases include guidelines and rules on corporate accounting, auditing policy, and information disclosure. In 1940, Accounting Series Release No. 19 recommended for the first time the establishment of an audit committee in companies. After the financial scandals of 1970, transparency in financial information is reinforced, with the audit committee in charge of this (Birkett, 1986). For this purpose, the SEC published the Accounting Series Releases Nos. 123 and 126. Additionally, in the Accounting Series Release No. 165 recommendation, issued by the SEC, the “comply or explain” criterion begins to be used in the information issued by the company.

More recently, in 2002 the SEC perform a major reform of business practice: the Sarbanes-Oxley Act (SOX). This regulation was made up of a series of reforms on corporate responsibility, the improvement of financial disclosure practices

and the fight against fraud. This regulation had two main objectives, improving the quality of the audit, and reducing fraud in companies in a profitable way for them. In Table 1.2, the sections of the regulations are presented and organized into nine themes established by Coates (2007).

Table 1.2. Sarbanes-Oxley Act of 2002: Summary of Provisions.

Sections	Topics
101-109	PCAOB's creation, oversight, funding, and tasks
302, 401-406, 408-409, 906	New disclosure rules, including control systems and officer certifications
201-209, 303	Regulations of public company auditors and auditor-client relationship
301, 304, 306, 407	Corporate governance for listed firms (audit committee rules, ban on officer loans)
501	Regulation of securities analysts
305, 601-604, 1103, 1105	SEC funding and powers
802, 807, 902-905, 1102, 1104, 1106	Criminal penalties
806,1107	Whistleblower protections
308, 803,804	Miscellaneous (time limits for securities fraud, bankruptcy, law, fair funds)

Source: Coates, 2007.

The financial problems that developed in recent decades in large companies showed not only that was it necessary for institutions such as the Financial Accounting Standards Board (FASB) or the SEC itself to tighten accounting standards, but that audits failed in their commitment to verify the financial information of the company. For this reason, and thus fulfilling the first objective of SOX, one of the novelties promoted by SOX was the creation of the Public Company Accounting Oversight Board (PCAOB), an institution with the objective of supervising and regulating auditing.

To reduce fraud in companies, the SEC also defined new disclosure rules in its regulations that strengthen incentives for companies to increase financial control expenses. In short, it calls for internal control systems, their disclosure, and also a report from the auditor. Regarding the internal control systems, the SOX only asks that the material weakness be evaluated and disclosed. This must be certified by both the CEO and the CFO of the company, so the incentive to invest in financial control systems is even greater. However, the improvement of the internal control systems implies a higher expense, in addition to an increase in the audit fees. This brought many criticisms of the regulations since the increase in spending for some companies, especially the smaller ones, would be very significant in their accounts, even more so when the long-term benefits of these incorporations, such as the lower risk of fraud and a more transparent information, cannot be measured easily. In summary, criticism of this regulation comes from the difficulty in measuring and quantifying the costs and benefits that it would cause in companies and in the market.

On the other hand, the SOX also included regulations on corporate governance in its sections. Specifically, each member of the audit committee was required to be independent. This requirement was used thereafter by other institutions such as the NYSE and the NASDAQ. Another obligation derived from this regulation is to report whether the audit committee had a “financial expert” among its members, as well as a code of ethics.

Ultimately, this standard represented a great change in companies and an advance for corporate governance, which led the rest of international organizations and the rest of the countries to take it as a reference to update their own regulation.

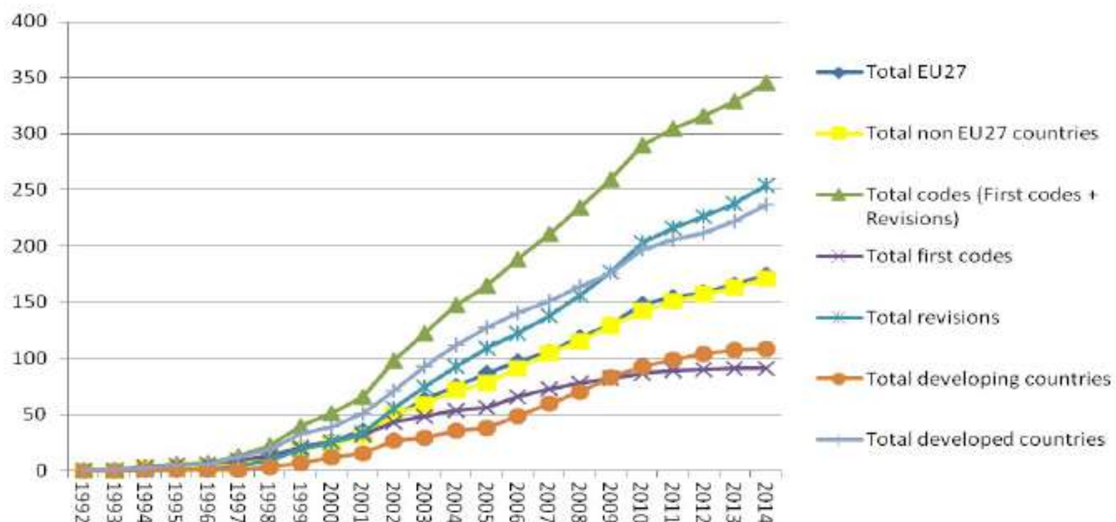
1.2.1.3. Codes of good governance.

The first drafting of a code of good governance emerged in the United States in the late 1970s. The Business Roundtable issued a report in January 1978 entitled “The Role and Composition of the Board of Directors of the Large Property

Corporation". Subsequently, the drafting of codes of good governance were located in the late 1980s and early 1990s. In 1989 the Hong-Kong Stock Exchange published the "Code of Best Practice, Listing Rules", thus being the first recognized code of good governance. In 1992 the "Cadbury Report" was published in the United Kingdom, being a reference view for future codes of good governance around the world (CFACG, 1992). This report already includes recommendations on the division of powers between the Chairman of the board and the Chief Executive, the externality of directors and non-executive directors. In addition, the concept of "comply or explain" was also included, that is, to carry out the recommendations set out by the code or to give a clear explanation of why that recommendation is not being met.

Since then, the majority of countries have adopted codes of corporate governance, and the number of these codes (including the first versions and the later revisions) has remarkably increased in the world over the last years. Figure 1.1 shows the exponential growth in corporate governance codes since the beginning of this century in developed countries. Although the number of codes in developing countries is lower, the upward trend in recent years is also clear.

Figure 1.1. Dissemination of good governance codes at the international level.



Source: Cuomo et al., 2016

Lopez Iturriaga & Pereira do Carmo (2006), perform a review of a total of 29 codes of good governance from different countries, where all the continents were represented. The financial systems of each of the countries were very different, so they divided the sample according to whether their financial system was an environment where the interests and guarantees of shareholders are favored, or on the contrary, the rights of investors are not so protected. The first case is what they call countries with a common legal tradition, and the second type are countries with a civil legal tradition. The conclusion they reached is that, despite being different financial systems, the codes of good governance could be divided into three different blocks: a) measures on assemblies, shareholder structure and control groups, b) measures related to the structure and responsibility of the board of directors, c) measures regarding the audit and financial information function.

1.2.2. European community standard

In the Constitutive Treaty of the European Community and in the Treaty on the Functioning of the European Union, reference has already been made to company law, starting with the right of establishment. In the following years, Europe published a series of twelve company law Directives on the protection of partners and third parties, mergers and divisions of public limited companies, individual annual accounts and consolidations and single-member limited liability companies. In the content of this set of standards we do not find any specification on corporate governance.

A major breakthrough in company law in Europe was the publication in 2003 of the Action Plan "Modernizing company law and improving corporate governance in the European Union - A plan for moving forward". The main objectives of this document published by the European Commission were to strengthen the rights of shareholders and third parties, and to stimulate the efficiency and competitiveness of companies at an international level. The Action Plan would allow the European Union to consolidate itself internationally in the area of corporate governance. So much so that

this document was made by sharing the objectives and principles of the Sarbanes-Oxley Act in the United States, some of which were already partly developed in the European documents and others needed a new impulse. The Action Plan defined some short-, medium-, and long-term priorities, of which in the short term we can find the improvement of information on corporate governance practices applied in companies. A year after its publication, the European Parliament supported the proposals suggested by this Action Plan, which led to the proposal of new rules and regulations, as well as the modification of others already in force. We can say that this is the beginning of the establishment in Europe of what we know today as corporate governance.

As a result of this Action Plan, the Commission's Recommendation of February 15, 2005, regarding the role of non-executive or supervisory administrators and that of the boards of directors or supervisory committees, applicable to listed companies, emerged. From this recommendation, member countries were encouraged to use the “comply or explain” principle, something that many of them were already applying. In addition, the formation of appointment, remuneration and audit committees was officially recommended to listed companies. In this regard, the document went further and defined the constitution, composition and functions that each of these committees should have. However, it is clearly established that the main function of these committees is to provide support to the board of directors to increase its effectiveness. These issues were already implemented as recommendations in some member countries since the 1990s, as is the case in Spain in its first Good Governance Codes. Recommendations were also included regarding the disclosure of information by the board of directors, such as the one referring to the Corporate Governance Report that companies must make public once a year. Another notable and controversial aspect for academics and regulators is the establishment of the need for education and expertise in finance and accounting for the components of the audit committee. Yet, the recommendation does not specify, as other international standards or documents do, how to establish the status of financial and accounting expert. Lastly, the independence

of the directors is also of great importance in the European Recommendation. The board of directors is asked to report on the status of independence of its directors and why this status is considered. In addition, a series of situations are recommended to consider establishing the independence of the director, although the personal circumstances of each director in question must always be contemplated. This set of recommendations was intended to support the recovery of market confidence as well as to establish solid corporate governance in the European Union.

Beyond the recommendations given, Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006, on the statutory audit of the annual accounts and consolidated accounts, included as a rule some of the recommendations on the audit committee. The transformation of some of these aspects into an obligation is given by the consideration of the audit committee as an effective internal control system that allows minimizing financial risks and increasing the quality of financial information. The creation of an audit committee for public interest entities was an aspect that was included in this Directive. This committee must have at least one independent member with education in accounting, auditing, or both. Again, technical competence was required of committee members, but what is considered a financial or accounting expert was not specified. In addition, the minimum functions of the committee were defined, such as the supervision of financial information, internal control, and the legal audit, as well as the relationship with the account auditor and the audit firm. This Directive was transposed in Spain through *Ley 12/2010, de 30 de junio, por la que se modifica la Ley 19/1988, de 12 de julio, de Auditoría de Cuentas, la Ley 24/1988, de 28 de julio, del Mercado de Valores y el texto refundido de la Ley de Sociedades Anónimas aprobado por el Real Decreto Legislativo 1564/1989, de 22 de diciembre, para su adaptación a la normativa comunitaria*.

Also in 2006, Directive 2006/46/EC of the European Parliament and of the Council of June 14, 2006 was published. This regulation has several objectives: to facilitate cross-border investment, to improve the comparability of annual accounts and

management reports in the UE and strengthen public trust in them. Regarding corporate governance, this regulation affects the improvement of information disclosure, including more content in company communications and increasing its quality and coherence. The supervision of the disclosure of information falls on the audit committee, which is why it is an issue that directly affects the corporate governance of companies, giving more and more importance to disclosure practices. As an example, the commitment to present the corporate governance report as part of the management report is included, in addition to specifying the minimum contents.

Subsequently, Directive 2014/56/EU of the European Parliament and of the Council of April 16, 2014 also amended Directive 2006/43/EC. The main objective of these regulations was to increase the importance of the independence of the companies' external auditors. In addition, the importance of the audit committee was highlighted, since with its supervisory functions it was possible to achieve a higher quality in external audits. For this reason, new functions of the audit committee were expanded and introduced. Among them, the committee no longer only had to supervise the financial information published but also had to present recommendations for improvement to protect the true image of the companies. In addition, it had to inform the board of directors, or the equivalent body, of the result of the audit and what the role of the committee had been in the drafting process. Lastly, it was highlighted that the audit committee was in charge of selecting the external auditors and ensuring their independence. This function is regulated more extensively in Regulation (EU) 537/2014, of April 16, 2014.

Furthermore, Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 was also published. This regulation is aimed at improving the coherence and comparability of the information disclosed by companies, in such a way that it includes the preparation of a statement of non-financial information. This document will be included together with the management report and must include environmental and social information on business activity, which will allow both the

profitability of the company and its impact on society to be measured. The social responsibility of companies is important for the interests of these, the shareholders, and the other interested parties, and this is what the board of directors makes clear. The European Commission published in 2017 the document "Guidelines on the presentation of non-financial reports" as a guide for preparing these non-financial information statements, with which it intends to support the improvement of confidence in the markets by increasing the transparency of the information, both financial and non-financial. The realization of the statement of non-financial information is important for the corporate governance of companies and since the audit committee is in charge of supervising financial information, it is natural that this same governing body be in charge of the supervision, review and establishment of improvements in this report.

1.2.3. Spanish Regulations

The importance of corporate governance mechanisms has been recognized by legislators and, as a result, has resulted in the publication of standards and recommendations at the international level. The CNMV is currently in charge of drawing up good governance codes, which contain the corporate governance recommendations. Before this institutional body existed, specialized commissions were in charge of this task. The CNMV was created under the *Ley 24/1988, de 28 de julio, del Mercado de Valores* and is the body in charge of the supervision and inspection of the Spanish stock markets. The objective of this body is to protect transparency in the markets so that investors are protected with respect to the market. To fulfill its objective, the CNMV receives the public information of the companies that must be entered in the Official Registries. The *Ley 31/2014, de 3 de diciembre, por la que se modifica la Ley de Sociedades de Capital para la mejora del gobierno corporativo*, which improve the corporate governance, attributed to the CNMV the necessary powers to carry out the supervision of some of the issues on the corporate governance of listed companies.

The CNMV also publishes different reports and guides to help the management bodies of companies to carry out their functions. For example, in 2017 it published the *Guía Técnica 3/2017 Sobre Comisiones De Auditoría De Entidades De Interés Público*, to guide the audit committee in the control and supervision of the company's internal control and its implementation in society. In 2013 it published the *Guía para la elaboración del informe de gestión de las entidades cotizadas*, which includes proposals for regulatory development and a voluntary framework of principles and good practices as well as recommendations for the minimum content to be included in the report of management.

1.2.3.1. Recommendations

The first code of good governance published in Spain was made in 1998 with 23 recommendations for voluntary assumption for listed companies, included in the report of the Special Commission for the study of an Ethical Code of the Boards of Directors of the Companies, known as the *Informe Olivencia* (CEECECAS, 1998). The recommendations included in this code are based mainly on the “Cadbury Report”, following the trends in the rest of Europe (CFACG, 1992). According to the *Informe Olivencia* the board of directors is considered to be a “supervisory and control instrument, aimed at aligning the plans of those who manage society with the interests of those who contribute resources and bear business risk”. Its content focuses on the composition, structure, and operation of the board of directors, in fact it was the first time when the need to create different committees, such as the audit committee and the appointment and remuneration committee, under the board of directors at the national level was specified. It also performs the functions of the aforementioned committees. Furthermore, the appointment and removal of directors, the information power and the director's remuneration, the board's relations with the markets and auditors, and publicity about the rules of corporate governance and its adjustment to the recommendations is included.

In 2003, the Report of the Special Commission for the promotion of transparency and security in the markets and listed companies was published, known as the *Código Aldama* (Comisión Aldama, 2003). This new report did not imply a new code but rather an improvement on the recommendations of the *Informe Olivencia*. In addition to recommending the creation of an audit committee and an appointments and remuneration committee, this report recommends the creation of an executive committee, especially for larger companies. The functions of this committee are mostly "executive for the adoption of binding agreements for the company within the scope of its delegation". This committee responds to the board of directors, though it is empowered to make agreements and manage the company on its behalf. This report also recommends, if necessary, depending on the characteristics of the company, creating a strategy and investment committee. The function of this committee corresponds to the analysis and monitoring of business risks, which is why it is quite important for the strategic and investment decisions of the company. Again, this committee will be informative and advisory to the board of directors. On the other hand, for the first time, the need for a regulation regarding the publication of an annual corporate governance report by companies was presented. Therefore, the need for other types of mechanisms is specified, in this case external ("hard law"), so that compliance with good practices is carried out by companies. In that same year, la *Ley 24/1988, de 28 de julio, del Mercado de Valores* was updated by the *Ley 44/2002, de 22 de noviembre, de Medidas de Reforma del Sistema Financiero*, which includes, among others, the obligation to publish an annual corporate governance report by listed companies, thus complying with the requirement of the *Código Aldama*. According to *Orden ECO/3722/2003, de 26 de diciembre,* the annual corporate governance report is a document whose purpose is to collect complete and reasoned information on the governance structures and practices in each company that enables knowing the data related to the decision-making processes and all others that reveal important aspects of corporate governance, so that the market, investors, and shareholders can get a true picture and an informed judgment of the company.

In 2006, the *Código Unificado de Buen Gobierno de las Sociedades Cotizadas* was presented, drawn up by the CNMV (CNMV, 2006). This unified code was made by *Orden ECO/3722/2003, de 26 de diciembre*, which includes, not only the previous recommendations, but also those formulated later by the corporate principles of the OECD and the European Commission. In addition, it will serve as a reference for companies to present the annual Corporate Governance Report, since the regulations did not clearly present the content and structure to be followed in the preparation of this report.

The new update of the *Ley 24/1988, del Mercado de Valores,* in 2013 also updated the *Código Unificado de Buen Gobierno de las Sociedades Cotizadas.* (CNMV, 2006). This update is motivated by the obligation of Spanish companies to include in their Annual Corporate Governance Report (mandatory from 2003) "the degree of compliance with the corporate governance recommendations or, where appropriate, the explanation for the lack of compliance with said recommendations", that is to say, the principle known as "comply or explain".

This update was only a preliminary to the new *Código Unificado de Buen Gobierno de las Sociedades Cotizadas* in 2015 (CNMV, 2015). Following the international financial crisis, corporate governance initiatives increased as a necessity in the face of good business management and more transparent information disclosure in order to increase the value of companies and improve economic efficiency. For this reason, since the Good Governance Code was updated in 2013, a commission of experts was created to develop a new code. The Good Governance Code approved in 2015 does not include some of the recommendations and definitions of the categories of directors that were specified in 2006, since they have already gone from being recommendations to regulations, thanks to the *Ley 31/2014, de 3 de Diciembre*, *por la que se modifica la Ley de Sociedades de Capital para la mejora del gobierno corporativo*. Some of the recommendations that have become Law focus on the powers of the general meeting of shareholders or the board of directors, or the operation of voting. A novel aspect in this

Code of good governance is the incorporation of recommendations on the functions that some committee must take for corporate social responsibility.

Lastly, regarding the evolution of good governance codes in Spain, in 2020 a new review of 20 of the 64 recommendations[2] that make up the Code was presented. The reviews revolved around four main topics: promoting the presence of women on boards of directors, the greater importance of non-financial information and sustainability, greater attention to reputational risks and, finally, aspects related to directors' remuneration (CNMV, 2020a). Furthermore, in this report, it is recommended that the functions of corporate governance, as well as social responsibility (sustainability, social and environmental aspects), be entrusted to a specific sustainability or social responsibility committee (CNMV, 2020b).

1.2.3.2. Mandatory rules

The study on corporate governance has improved over the last few years, so that advances in this matter have been reflected in an evolution of national regulations. Corporate governance does not have a specific rule, but it is included in the commercial rules of Spain. In recent years, an effort has been made to ensure that corporate governance be included in a unique text, and for this reason several updates have been derived in different regulations. The study of corporate governance today is still very active, so the laws are in continuous adaptation to the environment and as a result the transparency of information and the confidence of the markets is never diminished, quite the opposite.

One of the main laws where the corporate governance regulations are developed is the *Real Decreto Legislativo 1/2010, de 2 de julio, por el que se aprueba el texto refundido de la Ley de Sociedades de Capital* (henceforth LSC). These regulations regulate the operation of capital companies in Spain. Within the LSC we can

[2] The revised recommendations are as follows: 2, 4, 6, 7, 8, 14, 15, 22, 24, 37, 39, 41, 42, 45, 53, 54, 55, 59, 62 and 64

find two titles where aspects of corporate governance are developed. Title VI deals with the "administration of the company" in terms of administrators, their duties and responsibilities, the representation of the company and the board of directors. In Title XIV, the regulations regarding listed companies are presented, so the standard is more specific. This Title develops the rule on the specialties of the administration in this type of companies, such as the regulations of the board and its specialties, as well as the corporate information, the annual accounts, the management report, the corporate governance report, and the annual report on remuneration, as well as other special instruments.

The LSC defines the board of directors as the body in charge of the management and administration of the company (article 209). The board of directors must be composed of a minimum of three members, and the statute, or where appropriate the shareholders' meeting, may designate a minimum or maximum for the composition of the board. The appointment of these directors falls on the shareholders' meeting, and they must be selected favoring diversity among the directors, considering their age, gender, disability or education and professional expertise. Specifically, the rule states that the selection of female directors be facilitated, allowing the board of directors to be balanced. This is undoubtedly a rule that tries to break with the low participation of women in managerial positions, avoiding limiting the professional career of women, the so-called glass ceiling. Another regulation whose content was widely echoed in the recommendations prior to the regulation is the constitution of specialized commissions. Specifically, it is mandatory to set up, at least, the audit committee and the appointments and remuneration committee. The latter can form two separate commissions or a joint one. The constitution of these two committees as dependent bodies of the board of directors was required in Spain by the *Ley 44/2002, de 22 de noviembre, de Medidas de Reforma del Sistema Financiero,* which modifies the *Ley 24/1988, de 28 de julio, del Mercado de Valores*. Therefore, from then on,

companies with listed securities must have an audit committee and an appointments and remuneration committee, reporting to the board of directors.

The functions of the board of directors in public limited companies, according to the LSC, are: a) the supervision of the effective functioning of the committees that it has constituted, b) the determination of the general policies and strategies of the company, c) its own organization and operation, d) the formulation of the annual accounts and their presentation to the general meeting as well as any kind of report required by law, e) the appointment, remuneration and removal of the company's CEOs, as well as the establishment of the conditions of its contract, f) the convocation of the general shareholders' meeting and the preparation of the agenda and the proposed resolutions. The regulations extend these functions to the case of listed public limited companies, reinforcing their importance in matters such as the approval of the strategic or business plan, the determination of the risk control and management policy, as well as the corporate governance policy. In addition, the information disclosure systems become relevant, where the board must approve all information that is going to be public as well as perform the supervisory function during the process of preparing and presenting the financial information and the management report.

The LSC, despite being a consolidated text, was updated in 2014 by the *Ley 31/2014, de 3 de diciembre, por la que se modifica la Ley de Sociedades de Capital para la mejora del gobierno corporativo.* Corporate governance has increasingly taken on more importance for societies. Users see as positive that companies are transparent in their management and therefore good corporate governance practices have been updated to the needs and requests of the users themselves. For this reason, the regulations are constantly updated. Specifically, *Ley 31/2014* works to improve the standardization of corporate governance, transforming many of the recommendations of the codes of good governance into regulations. These actions were intended to increase the competitiveness of companies, both nationally and internationally, and improve trust and transparency for shareholders and investors. An important aspect that was

incorporated into the LSC was the duties of diligence and loyalty and the conflict of interest of the board of directors. The sense of the creation of the board of directors from the theoretical perspective of agency theory is to look after the interests of the shareholders. Typically, the interests of shareholders and managers are far from the same. For this reason, the board of directors is a good instrument to avoid opportunism (Jensen & Meckling, 1976). The regulations require as a basic obligation for managers "to adopt the necessary measures to avoid incurring in situations in which their interests, whether self-employed or employed, may conflict with the corporate interest and with their duties towards society". Therefore, the manager must refrain from carrying out transactions with the company, use his/her status as administrator of the company to carry out private operations, make use of the company's information for private purposes, take advantage of the company's business opportunities, or obtain advantages of third parties, or develop activities that cause competition to society.

In updating the LSC, new articles related to the specialties of the board of directors were introduced. Among them is the definition of the different categories of directors. In addition, articles referring to the constitution of different specialized commissions were also included, specifying their composition and functions. Finally, another important aspect that was introduced on the board of directors was a new regulatory section on directors' remuneration. The importance of normalizing the remuneration of directors was already highlighted in the *Ley 2/2011, de 4 de marzo, de Economía Sostenible*. This regulation advocated transparency in the remuneration systems of the directors to improve the corporate governance of companies. This regulation also aimed to promote and improve the disclosure of the company's social responsibility. In addition, it modified the *Ley 24/1988, de 28 de julio, del Mercado de Valores*. This amendment introduced the mandatory nature of the annual publication of a Corporate Governance Report together with a Remuneration Report as a relevant fact of the company. These reports are intended to detail the structure of the corporate governance system and its operation in practice, as well as giving a clear explanation of

the current and future remuneration policy. The *Ley 2/2011* only developed a minimum content for these reports since it will be *Orden ECO/461/2013* that describes the content and structure. All this regulatory development was incorporated into the LSC through the *Ley 31/2014*, presenting the regulations on corporate governance in a single legal text.

If we detail the regulations on the audit committee developed in the LSC, it will be the board of directors who will designate the size of the committee. This law highlights the importance of the independence of the members of the audit committee since they must be a majority and the independent nature of the directors will be promoted. Furthermore, it may only be made up of non-executive directors. Another significant aspect, which has already been presented in recommendations on corporate governance, is the importance of having a director with knowledge and expertise in accounting, auditing or both. In Spain, these characteristics for the members of the audit committee are required by the LSC. However, the regulations do not specify who may or may not be considered an "accounting financial expert", nor the characteristics that directors must meet. For this we must resort to the recommendations published by the CNMV. Regarding the functions of the audit committee, it should be reminded that the main ones are: the supervision of financial information, the supervision of risk management and control, the supervision of internal auditing, and the relationship with the external auditor. These have already been developed in the previous sections.

Another of the regulations that regulate part of corporate governance in Spain is the *Ley 22/2015, de 20 de julio, de Auditoría de Cuentas*, hereinafter Law on Auditing of Accounts. This regulation incorporates into Spanish Law Directive 2014/56/EU, of April 16 2014, and Regulation (EU) No. 537/2014, of April 6, 2014. The novelty in terms of corporate governance is the incorporation of the Requirement of Public Interest Entities, not only of public limited companies, to have an audit committee. This causes the LSC to be modified by means of the third additional provision, where this content is incorporated into the aforementioned regulations.

1.3. Theoretical framework

Although many different theoretical approaches have been traditionally employed by empirical studies to explain how boards of directors contribute to corporate decisions (Pugliese et al., 2009), agency theory dominates when it comes to understanding the role of audit committees (Dhaliwal et al., 2010; Raimo et al., 2021). However, there are other relevant theories that assist understanding the reasons that move boards of directors and their committees in making decisions, such as stewardship theory, stakeholder theory, and resource dependence theory. In the following paragraphs, some of the arguments derived from these theoretical approaches in relation to boards of directors are presented.

1.3.1. Agency Theory

Agency theory is the first theory associated with the corporate governance of companies. This arose from the separation of power between the ownership and management of the company, so it is associated with the organization, ownership and the distribution of power in society (Chambers et al., 2013). In the 18th century, Adam Smith already predicted the dangers that this separation of power could have for society (Smith, 1778). The theoretical foundation rests on the opposition of interests that the principals (shareholders) and agents (managers) may have personally (Jensen & Meckling, 1976). The partners will seek to increase the benefits of the partnership. On the other hand, managers will act and make decisions based on their own interests. Traditionally, the owners of the company have tried to incentivize the administrators through the delivery of company shares or incentives on the profits obtained, so that the interests of the two parties are more in line. However, to these incentives must be added the costs of control over administrators. Therefore, agency theory tries to solve two problems: (1) referring to the interests of the different actors in the conflict and the cost of verifying and controlling the reality of the actions of the administrators, (2) different attitudes toward risk (Eisenhardt, 1989).

To deal with agency problems, society must invest in information systems that allow the monitoring and control of the possible opportunism of administrators. These systems will have a high economic cost for society, which has caused agency theory to be partly criticized. A significant information system to control the management of the company and look after the interests of the shareholders is the board of directors (Fama & Jensen, 1983). This body is characterized by providing relevant information to the owners of the company, avoiding informational asymmetries that may occur between the principal and the agent, as well as those that may take place in the capital markets. If this problem is solved, the traditional incentives granted to administrators can evolve into compensation based on good practices and will not only be granted for the best performance of the company. This action is what is known as behavioral agency theory. Some authors identify this evolution as the cause of agency theory reaching now (Eisenhardt, 1989).

The board of directors must include specific control mechanisms to prevent mismanagement or inappropriate use of information by company managers. Two of the control mechanisms that avoid agency costs are transparency and the disclosure of company information. The responsibility for these control mechanisms rests with the audit committee, a body dependent on the board of directors. So, this committee itself will minimize agency costs through overseeing, controlling, and monitoring to favor shareholders (Jensen & Meckling, 1976). The monitoring ability of the audit committee relates with its composition and functioning, and, in this regard, several characteristics of this committee have received a great deal of attention, such as the frequency of its meetings, its size, the seniority of its members, and the experience of its members in the sector, in financial aspects, and in management, for example (Eisenhardt, 1989).

1.3.2. Stewardship Theory

Opposed to agency theory is stewardship theory, in which the managers of the company direct their efforts toward the well-being of the organization, with trust

between the managers and the owners of the company being the fundamental basis (Chambers et al., 2013). Davis et al. (1997), promoters of the theory, established that the interests of managers, the board of directors and shareholders are in line, so that the former seek rewards based on growth opportunities and personal achievements, rather than using opportunism as in agency theory. In the case of shareholders, they would be knowledgeable and willing to take risks derived from the delegation of control power to the company. In the case of the theoretical perspective of corporate governance, it is noteworthy that the board of directors should reduce the tasks of monitoring the performance of the company's managers and increase actions to develop the company's strategy (Cornforth, 2005). Nonetheless, this theory is not devoid of criticism, since certain authors, like its own promoters, present the possibility of a conflict in the role of non-executive directors in the face of the function of safeguarding the interests of the shareholders and at the same time maintaining a good relationship between managers and owners (Davis et al, 1997).

1.3.3. Stakeholder Theory

Confronted with criticism of agency theory, another dynamic of action was presented to explain corporate governance. Freeman (1984) established that managers could not make decisions based only on the interests of shareholders (minorities), but on the basis of all stakeholders in society. Eventually, the board of directors must become the agent of all stakeholders by presenting it from an agency perspective (Hill & Jones, 1992). Furthermore, managers should not only consider interests but also the consequences that certain corporate decisions could have for stakeholders in relation to the interests of other groups (Blair, 1996). In order for the administrators of the company to focus on the interests of all groups, it is first necessary to identify which are the significant stakeholders of the company (Chambers et al., 2013). However, there are authors who argue that it is impossible for management to be able to address the priorities of all stakeholders, so it must prioritize the interests of stakeholders (Mitchell et al., 1997). Therefore, for these researchers it is the managers who decide who is

important based on the perception that they receive about the most prominent user groups. Due to the importance of identifying stakeholders, Mitchell et al. (1997) present a form of recognition dividing the stakeholders into three groups: according to the power of the stakeholders to influence the company; according to the legitimacy of the stakeholders' relationship with the company; and according to the urgency of the stakeholder's claim on the company.

However, what are stakeholders for the company? What are their interests? One of the first definitions of stakeholders appears in the memorandum of the Stanford Research Institute (1963), referring to "those groups without whose support the organization would cease to exist". From then on, researchers turned to trying to explain and develop all those stakeholders and how to identify them. For Freeman (1984), those groups with interests placed in society could be internal or external. Internal stakeholders refer to owners, customers, employees, suppliers, etc. However, external stakeholders refer to regulators, governments, competitors, consumers, environment, Media, etc.

A later idea of Evan and Freeman (1988), establishes that stakeholder theory must advance in the sense that the interests of each group of stakeholders should be considered as an end in itself and not as a means, “and therefore, it must participate in determining the future direction of the company in which it has an interest” (Chambers et al., 2013). In summary, the participation of each stakeholder in the decision-making body of the company is defended, which leads to thinking that the board of directors and audit committee would be made up of different groups that will each defend their own interests, instead of drawing up a council management with experienced directors chosen according to their abilities and not their interests.

1.3.4. Resource Dependence Theory

Another theory that has also had repercussions in the literature is resource dependence theory. This theory was developed by Zahra and Pearce (1989), reasoning

that the main purpose of the board of directors was, together with the development of business strategy (Beasly et al., 2009), to take advantage of influence and resources. This theory is based on the dependence that companies have on each other, the added value of the experience of the directors, their skills, and their contacts. Another theoretical foundation is the ability to take advantage of the external relations of the company as well as the network of contacts that the members of the board can provide (Pfeffer & Salancik, 2003).

That said, the authors explained that directors should be appointed based on their previous experiences and their contacts. If the directors were appointed following these criteria, the advice, access to information, access to resources and the legitimacy that they can bring to society will be much more relevant (Chambers et al., 2013). Specifically in the audit committee, the most relevant resources would deal with experience, expertise, and other skills to develop better control and management in society (Madi et al., 2014). In addition, Hillman and Dalziel (2003) strengthened the advantage of resource dependence theory by verifying its effectiveness during the life cycle of companies, demonstrating its usefulness in the early days of society, such as in times of stress or slope.

CHAPTER 2

STUDY 1: BIBLIOMETRIC ANALYSIS OF THE RESEARCH ON THE AUDIT COMMITTEE

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2.1. Introduction

The audit committee plays a pivotal role for firms in the overseeing, monitoring, and advising regarding the implementation of internal control systems and the reporting process (Zalata et al., 2018). From a public policy perspective, both the functions and composition of audit committees have traditionally been on the agenda of regulators (DeZoort et al., 2003). As it was mentioned in the previous sections, audit committees are established as a best practice of corporate governance to underpin confidence in the financial markets and have gained great interest from policy-makers (Blue Ribbon Committee, 1999; European Commission, 2003, 2006, 2014; Financial Reporting Council (FRC), 2012; SEC, 2003), professional bodies (CFA Institute, 2015; Deloitte, 2018; PricewaterhouseCoopers, 2005), and academics alike (Dhaliwal, 2010; Fernando et al., 2020; Ghafran & O'Sullivan, 2017).

However, studies on this topic are highly fragmented and without a unique focus and, consequently, the evidence about the effects of audit committees remains far from definitive. Despite this, the literature has overlooked globally summarizing audit committee research. The lack of a comprehensive and systematic analysis of the previous literature impedes answering some relevant questions regarding the state of the art, in relation to the most explored contexts, the most influential authors and articles, and the evolution of the main topics and identification of trends within this stream of research.

This section addresses the first empirical analysis of this thesis, with the objective of synthesizing the literature on audit committee to guiding future thinking and research on this issue. Specifically, this objective is particularly relevant since, by using a bibliometric analysis, a clear picture of the publication patterns and intellectual structure in the audit committee area can be offered. The continued importance of audit

committees over a period of time supports the advantages of bibliometric analysis to provide a systemic review of this topic (Ferreira et al., 2016). In this regard, bibliometric analysis enables analyzing long periods and captures the evolution of the field, an aspect that is difficult to achieve with qualitative reviews (Hota et al., 2019; Pereira et al., 2021). Concretely, our bibliometric review includes a set of descriptive analyses and network analyses which leads to identifying the most influential articles, journals, authors, topics, and trends in this body of knowledge. It therefore provides valuable guidance for researchers to develop ideas and position their research from a theoretical and an empirical standpoint (Zheng & Kouwenberg, 2019). In particular, consistent with recent methodological approaches (Cisneros et al., 2018; Kent Baker et al., 2020; Zheng & Kouwenberg, 2019), the following research questions (RQ) have been established:

- RQ1: What is the volume of publications on audit committees over the years?
- RQ2: Which are the most productive countries?
- RQ3: Which are the most productive journals?
- RQ4: Which are the most productive and influential authors?
- RQ5: Which publications are the most cited in the research period?
- RQ6: What are the most important research topics studied by these authors?

Our study differs from previous research as, to the best of our knowledge, the prior literature has not employed a bibliometric analysis of audit committee research to evaluate the progress in the field and answer our RQs. In this sense, this thesis is the first to perform a comprehensive bibliometric analysis across the entire Web of Science (WOS) principal collections database for audit committee research, from its inception to the present time. In this study, 1,690 research publications from the Web of Science (WOS) between 1970 and 2020 will be analyzed by using VOSviewer software. In

addition to the examination of the publications by year, country, journal, author, a citation analysis, and a network analysis are performed.

The complementation of both descriptive and analytical approaches provides a novel landmark in audit committee research. Concretely, our study offers a holistic overview of the relevant research regarding audit committees and, in the light of the impact of the RQs, contributes to the literature regarding corporate governance in several ways. First, we identify publication patterns in the area by providing information about the documents published by year and country (RQ1 and RQ2). This allows detecting important milestones and events that may raise interest in audit committee studies and therefore anticipate fruitful research in the future. At the same time, this enables recognizing less explored institutional contexts that may need further research to attain conclusive evidence. Second, we identify the main journals that publish documents about audit committees (RQ3), the key publications concerning this topic and their linkages (RQ4 and RQ5), which remains fundamental for scholars in this field of research. Specifically, both academics and professionals can benefit from these analyses, which prove helpful to ascertain the most outstanding articles and findings in the area. Third, we offer a full picture of the most prominent themes and intellectual structure using a network analysis (RQ6). This is important to understand the flexibility and the multidisciplinary nature of audit committee research and can help academics to become more aware of the existence of different subfields of research, as well as encouraging more collaboration between researchers to prevent stagnation. Fourth, several clusters are algorithmically identified and a content analysis for the most cited papers of the last five years is developed (RQ6). This permit ascertaining the evolution of the research field and categorizing current research interests, thus shaping future research directions. In summary, our evidence extends the previous reviews on audit committees and means significant knowledge advancement, since we map the scope and the conceptual structure of research in a systematic manner.

2.2. Literature review

Research on audit committees has significantly increased and evolved, and its focus has moved through different stages. While in recent years the center was on the effect of the mere existence of an audit committee (Collier & Gregory, 1999; Kalbers & Fogarty, 1993; McMullen & Raghunandan, 1996), a second generation of studies addressed the independence of audit committee members (Abbott et al., 2000; Bronson et al., 2009; Klein, 2002a). In addition, recent streams of research have gone deeper into the composition and functioning of the audit committee by focusing on specific characteristics of its members (García-Sánchez et al., 2017b) and on certain interactions of this committee with other corporate governance mechanisms (Bravo & Reguera-Alvarado, 2019).

In particular, recent empirical evidence has emphasized the role of audit committees in the prevention of corporate fraud (Fernando et al., 2020; Wilbanks et al., 2017), the management of risks (Sun & Liu, 2014), the compliance with financial regulations (Sellami & Fendri, 2017), the implementation of whistleblowing policies (Kehinde & Osifo, 2017; Lee & Fargher, 2018), and the integrity of both financial reporting disclosures (Bronson et al., 2009; Pucheta-Martinez & García-Meca, 2014) and non-financial disclosures (Katmon et al., 2019; Maroun, 2020).

Nevertheless, empirical evidence still remains open and academics increasingly encourage further research to unravel the role of audit committees (Buallay & Al-Ajmi, 2019; Dwekat et al., 2020a; Oussii et al., 2019). Particularly, the role of the audit committee may be even more critical in the current economic context as, given the ever-increasing uncertainty and risks associated with firms, this committee has become crucial to safeguard ethics and compliance (KMPG, 2020; PricewaterhouseCoopers, 2020). Under this scenario of rapid changes, audit committees are crucial mechanisms to enhance trust and transparency in the markets (International Federation of

Accountants, 2019), and to monitor critical issues concerning risks faced by firms and key reporting implications (EY, 2020; KPMG, 2020).

Bibliometric analysis offers a unique opportunity to provide a full picture of research in audit committees and guide future investigations (Albort-Morant et al., 2018). Despite bibliometric analyses having been traditionally performed in many research areas, this technique is still incipient in the corporate governance field. A few studies have employed a bibliometric analysis to systematically review research concerning corporate governance (Durisin & Puzone, 2009; Huang & Ho, 2011) and the board of directors (Drago & Aliberti, 2018; Kent Baker et al., 2020; Zheng & Kouwenberg, 2019). In the context of audit committee research, previous reviews have limited to articles published solely in selected accounting journals or to the content analysis of certain topics, such as the relation between certain audit committee characteristics and financial reporting quality, voluntary disclosures, and financial performance (Behrend & Eulerich, 2019; Chen & Komal, 2018; Pomeroy & Thornton, 2008; Samaha et al., 2015; Velte, 2017). A close study was published by Behrend and Eulerich (2019), who only review the main articles in five accounting journals, which limits the scope of the findings, but the literature has overlooked performing a complete bibliometric analysis of this topic. Bibliometric analysis is particularly relevant given the sustained importance of audit committees over the last decades for regulators, companies, and academics, and the variety of disciplines and topics that have been related to audit committee research.

2.3. Data and methodology

2.3.1. Data

The sample of this analysis is composed of documents from the main collection[3] of the Thomson Reuters Web of Science database (WOS), widely considered

[3] Web Of Science Core Collection includes several different databases: Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI),

as the most influential database in scientific research, for the period 1900-2020[4]. In relation to the data gathering process, we focus on the publications including the term "Audit Committee". Second, similar to Kent Baker et al. (2020), we perform a broad search strategy, considering the title, abstract, and keywords, and filtering by certain WOS categories to ensure that our analysis does not include documents from other research realms and focuses only on the audit committees of firms. These categories are: Business, Business/Finance, Economics, Environmental Studies, Ethics, Law, Management, Multidisciplinary Science, Social Issues, Social Sciences Interdisciplinary, and Women's Studies. As a result, the initial number of documents (1,817) decreased, and the final sample is composed of 1,690 publications. The data selection process is reported in Table 2.1.

Table 2.1. Study 1: Data selection process.

	Database	**Search**	**Results**
First stage	ISI WOS (31-12-2020)	"Audit Committee"	1,817 documents
	Filters	**Categories**	
Second stage	WOS categories	Business, Business/Finance, Economics, Environmental Studies, Social Issues, Ethics, Law, Management, Multidisciplinary Science, Social Sciences Interdisciplinary, and Women's Studies	1,690 documents

Source: own elaboration.

Conference Proceedings Citation Index- Science (CPCI-S), Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH), Book Citation Index– Science (BKCI-S), Book Citation Index– Social Sciences & Humanities (BKCI-SSH), Emerging Sources Citation Index (ESCI), Current Chemical Reactions (CCR-EXPANDED), Index Chemicus (IC).

[4] The Web of Science collects information from 1900 to the present.

2.3.2. Methods

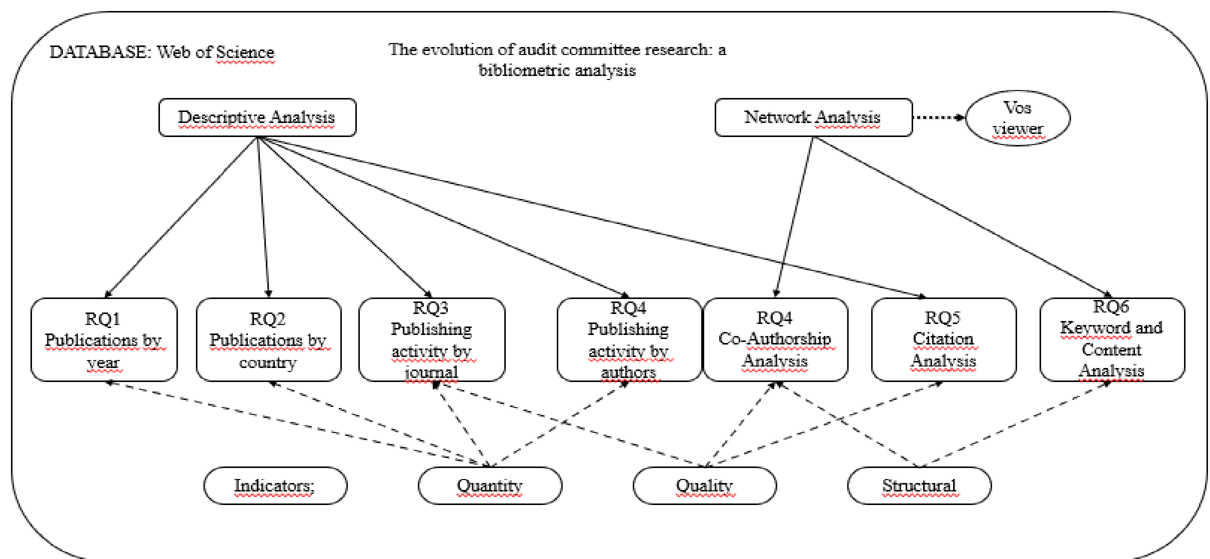
After sample selection, a comprehensive bibliometric analysis is performed. This technique is defined by Pritchard (1969) as “the application of mathematical and statistical methods to books and other media”. In particular, this type of analysis allows controlling and analyzing the research activity registered in different databases over large periods of time (Hota et al., 2019; Patra et al., 2006). Bibliometric analysis is increasingly employed to systematize research on a specific topic as well as its content-related structure, its historical development and its trends, thereby serving as a guideline for academics (Ferreira et al., 2016). The exploration and analysis of historical data enables researchers to identify possible "hidden patterns" in the previous literature, which remains significant for scholars to position their research efforts (Daim et al., 2006).

Our bibliometric analysis includes several sections to respond to every research question: the analysis of publications by year (RQ1); the analysis of research activity by country (RQ2); the analysis of publications by journal (RQ3); the analysis of the author productivity and impact (RQ4); a citation analysis (RQ5); and a network analysis to present the main themes in the research and the evolution of the most important trends (RQ6).

A bibliometric analysis consists of three types of indicators (Durieux & Gevenois, 2010): (1) quantity indicators, referring to productivity in research; (2) quality indicators, where the impact on the research is obtained; 3) structural indicators, which measure the connections of multiple variables. In this regard, quantity and quality indicators are used to address RQ1 to RQ5, while a network analysis, as a structural indicator, relates to RQ6 and shows the most relevant topics and intellectual structure, as well as their evolution, by connecting the keywords in the documents of our sample. In line with recent research (Kent Baker et al., 2020; Paul & Criado, 2020; Tunger & Eulerich, 2018; Zheng & Kouwenberg, 2019). Consistent with the recent literature

(Behrend & Euleric, 2019; Tunger & Eulerich, 2019; Zheng & Kouwenberg, 2019), the VOSviewer software is employed in our analysis. This software was designed for constructing and viewing bibliometric maps, and enables performing different actions such as zooming, scrolling, and searching as well as providing relevant graphical representations, which are significant advantages in comparison to other software (Van Eck & Waltman, 2010). The structure of our bibliometric analysis is presented in Figure 2.1.

Figure 2.1. Study 1: Research structure.



Source: own elaboration.

2.4. Results

Almost 87% of the publications are articles (1,468 documents) and 98% are written in English (1,652) since it is the language most used in the field of scientific publications. This section is divided into several parts concerning every research question.

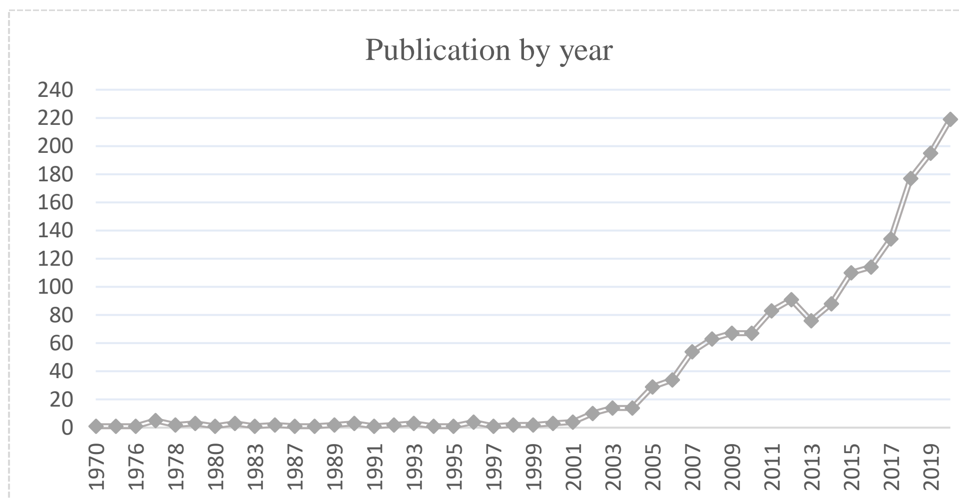
2.4.1. Publications by year (RQ1)

Despite the origin of audit committees dating back to 1940 in the United States, the first document published about this topic was in 1970. This publication, titled "Effective corporate audit committee" (Mautz & Neumann, 1970), coincided with several cases of corporate misconduct in the United States. Precisely, the occurrence of several financial scandals led to some countries actively encouraging the adoption of audit committees in their regulations in that decade (i.e., the United States, Canada, the United Kingdom). This fact confirmed the origin of audit committee research, remaining stable until the approval of the Sarbanes-Oxley Act (SEC, 2003), which reinforced the role of audit committees in the wake of significant corporate scandals and became a worldwide reference. In 2006, the European Union (Directive 2006/43/EC) started to establish requirements about audit committees, recognizing their importance to underpin market confidence. As a result, the research activity on this topic increased at the beginning of the current century. This rise in publications continued concurrently with the approval of important legislations on audit committees, such as the European Parliament resolution of 10 March 2009 and the Directive 2014/56/EU. In addition, the Directive 2014/95/EU promoted superior non-financial reporting practices to protect the interests of the stakeholders of firms. The European Securities and Markets Authority (ESMA, 2015) also encouraged the enhancement of the quality of disclosure, these being tasks directly linked to audit committees. At the same time, many professional organisms put an emphasis on audit committees as mechanisms to maintain reporting integrity. This may explain the dramatic increase in publications all over the world in the following years. The evolution of the number of publications per year is reported in Figure 2.2, which shows changes in research activity related to the main aforementioned milestones.

Although the volume of research on corporate governance has been generally growing over time, largely due to social and governmental concerns regarding this topic and to academic pressures to publish. Figure 2.3 underlines that the proportion

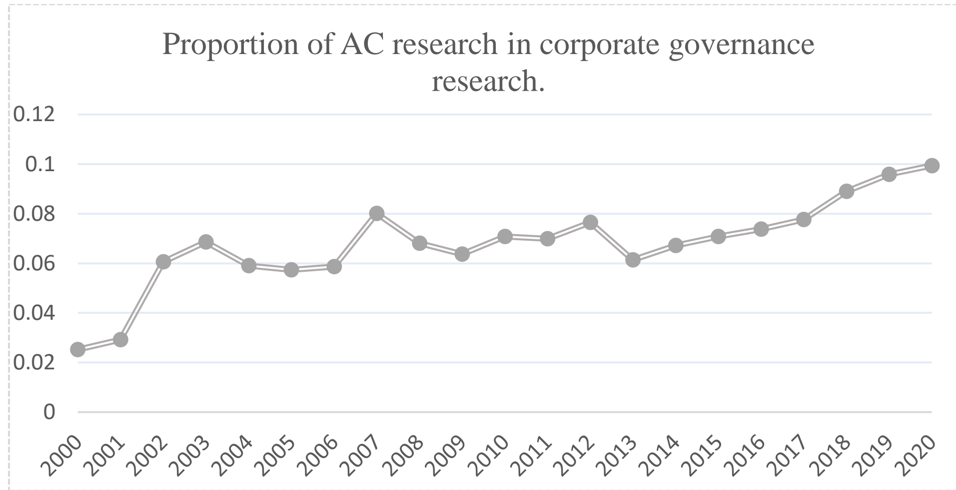
of research on audit committee has significantly increased in relation to the total research on corporate governance. While audit committee research represented about 2% of publications on corporate governance at the beginning of the century, in the years before and after the Sarbanes-Oxley Act it increased up to about 6%. Furthermore, research on audit committee reached about 8% of total research on corporate governance after the European Union's first legislation in 2006, and then has been maintained at about 6-7% until the last years when it has risen to 8-10%. Figure 2.3 shows the proportion of audit committee research in the corporate governance field, by replicating the previous search criteria in WOS for the term "Corporate Governance". Therefore, the effect that international legislations and professional discussions have had on this research field is clearly visible. Our findings are consistent with other bibliometric analyses, which suggest that research activity on corporate governance mechanisms is influenced by the implementation and the controversy of important regulations (Tunger & Eulerich, 2018; Zheng & Kouwenberg, 2019).

Figure 2.2. Study 1: Audit Committee publications by year.



Source: own elaboration.

Figure 2.3. Study 1: The proportion of audit committee research in the corporate governance field.



Source: own elaboration.

2.4.2. Publications by country (RQ2)

The number of publications by country[5] is presented in Table 2.2, and several conclusions can be drawn. First, audit committee research has become widespread since publications are found for a total of 81 countries. Second, most of the research has been performed in the Anglo-Saxon context, where audit committee regulations began, particularly in the United States (506 contributions). Audit committees have a longer tradition in these countries, and the Sarbanes-Oxley Act (SEC, 2003) had a significant effect on this research field, guiding further regulatory standards for audit committees in other countries. Moreover, US researchers have been generally proven to have better access to scientific journals and data, thus enhancing the visibility of their research (Albort-Morant et al., 2017). Third, the publications from emerging countries (Malaysia, China, Indonesia, Korea, Taiwan, Tunisia) are also numerous. These economies represent an important population and have gained economic and policy relevance, which has led to an increasing research interest in the

[5] It is necessary to specify that in the publications by country reference is made to the affiliation of the authors at the time of publication and not to their nationality

last decades. Specifically, in recent years some of these countries, inspired by developed economies, have also enacted regulations and recommendations to strengthen the functions of audit committees (Ahmed Haji, 2015; Almarayeh et al., 2020; Zgarni et al., 2016). Fourth, as expected, the volume of research within the European Union is also significant since the number of publications in this context have risen to 262 documents. However, the number of articles in individual European countries remains relatively low. Although some of these countries have a small population and therefore their research activity is expected to be lower, our evidence shows that research on audit committee still has room for development in many European settings.

Table 2.2. Study 1: Publication by countries.

Countries	TP	%	Countries	TP	%	Countries	TP	%
USA	506	23.64%	Brazil	17	0.79%	Switzerland	4	0.19%
Malaysia	173	8.08%	Bahrain	15	0.70%	Uganda	4	0.19%
Australia	171	7.99%	Iran	15	0.70%	Denmark*	3	0.14%
United Kingdom	139	6.50%	Lebanon	13	0.61%	Japan	3	0.14%
China	96	4.49%	Bangladesh	11	0.51%	Kenya	3	0.14%
Indonesia	90	4.21%	Kuwait	11	0.51%	Libya	3	0.14%
Canada	84	3.93%	Thailand	11	0.51%	Barbados	2	0.09%
Taiwan	52	2.43%	Vietnam	11	0.51%	Bosnia-Herzeg.	2	0.09%
New Zealand	48	2.24%	Ghana	10	0.47%	Czech Republic*	2	0.09%
Tunisia	45	2.10%	Jordan	10	0.47%	Iraq	2	0.09%
Spain*	41	1.92%	Turkey	10	0.47%	Kazakhstan	2	0.09%
Saudi Arabia	41	1.92%	Croatia*	9	0.42%	Latvia	2	0.09%
South Africa	35	1.64%	Cyprus*	9	0.42%	Lithuania*	2	0.09%
France*	32	1.50%	Greece*	9	0.42%	Syria	2	0.09%
India	28	1.31%	Poland*	9	0.42%	Tanzania	2	0.09%
Italy*	28	1.31%	Portugal*	8	0.37%	Austria*	1	0.05%
Singapore	27	1.26%	Sweden*	8	0.37%	Azerbaijan	1	0.05%
Pakistan	25	1.17%	Israel	6	0.28%	Brunei	1	0.05%
South Korea	25	1.17%	Norway	6	0.28%	Chile	1	0.05%
Romania*	24	1.12%	Qatar	6	0.28%	Colombia	1	0.05%
Nigeria	23	1.07%	Finland*	5	0.23%	Hungary*	1	0.05%
Egypt	22	1.03%	Ireland*	5	0.23%	Jamaica	1	0.05%
Germany*	22	1.03%	Oman	5	0.23%	Kosovo	1	0.05%
Belgium*	21	0.98%	Palestine	5	0.23%	Morocco	1	0.05%
Netherlands*	19	0.89%	Russia	5	0.23%	Namibia	1	0.05%

Countries	TP	%	Countries	TP	%	Countries	TP	%
U. Arab Emirates	18	0.84%	Slovenia*	4	0.19%	Ukraine	1	0.05%
Yemen	18	0.84%	Sri Lanka	4	0.19%	Zambia	1	0.05%

NOTES: TP= Total Publications; %= percentage over the total number of publications; The member countries of the European Union are identified with (*).

Source: own elaboration.

2.4.3. Publications by journal (RQ3)

The 1,690 articles on audit committee were published in 445 journals, which are classified in many different categories in the WOS. As reflected in Figure 2.1, both quantity and quality indicators are included in the analysis. In particular, the number of publications in every journal, its quartile and category, the impact factor (JCR) and the number of issues for each journal are shown in Table 2.3. Our findings highlight that audit committee research has received attention from some of the best journals in the field of Business, Finance, Management, and Ethics, which proves the multidisciplinary nature of the topic. The top ten leading journals publishing articles on audit committee are "Managerial Auditing Journal", "Auditing: A Journal of Practice & Theory", "Contemporary Accounting Research", "Accounting Review", "International Journal of Auditing", "Corporate Governance: the International Journal of Business in Society", "Corporate Governance: an International Review", "International Journal of Disclosure and Governance", "Accounting and Finance", and "Journal of Business Ethics".

2.4.4. Author productivity and influence (RQ4)

It is generally accepted that the number of publications indicates the productivity of the authors, while the number of citations suggests their impact on a research topic (Merigó & Yang, 2017). The analysis of author productivity and impact represents an effective methodology to signal the core ideas of a particular research area, and to identify the fundamental researchers and publications in the respective scientific field (Ferreira et al., 2016).

Table 2.3. Study 1: Publishing activity by journals and JCR by 2019.

Journals	TP	Quartile and Category JCR (2019)	Impact Factor- JCR (2019)	Issues
Managerial Auditing Journal	99	Q2 - Business, Finance Q3 - Management	1.87	9
Auditing:A Journal of Practice Theory	62	Q2 - Business, Finance	2.108	4
Contemporary Accounting Research	48	Q2 - Business, Finance	2.026	4
Accounting Review	46	Q1 - Business, Finance	3.993	6
International Journal of Auditing	44	Q3 - Business, Finance	1.034	3
Corporate Governance: the International Journal of Business in Society	44	-	-	6
Corporate Governance: An International Review	41	Q1 - Business, Finance Q3 - Business Q3 - Management	2.294	6
International Journal of Disclosure and Governance	34	-	-	4
Accounting and Finance	31	Q2 - Business, Finance	2.217	5
Journal of Business Ethics	23	Q1 - Ethics Q2 - Business	4.141	28
Advances in Accounting	22	-	-	4
Journal of Management Governance	21	-	-	4
Asian Review of Accounting	19	-	-	4
Australian Accounting Review	18	Q3 - Business, Finance	1.371	4
European Accounting Review	17	Q2 - Business, Finance	1.855	5
Journal of Accounting Auditing and Finance	17	-	-	4
Journal of Applied Accounting Research	17	-	-	4
Journal of Business Finance Accounting	17	Q3 - Business, Finance	1.473	10
Accounting Horizons	16	Q3 - Business, Finance	1.576	4
Advance Science Letters	16	Q2 - Multidisciplinary Science	1.253	12

NOTES: TP= Total Publications

Source: own elaboration.

In our study, there are 3,102 different authors who have published articles about "Audit Committee" in the WOS. Table 2.4 shows the 20 authors most cited and their total publications, as well as their affiliation. There are several authors with ten or more publications (Dana R. Hermanson, Joseph V. Carcello, Lawrence J. Abbot, Gary F. Peters), although the authors most cited are April Klein and Mark S. Beasley. The majority of the research has been performed in the United States.

Table 2.4. Study 1: Publishing activity by authors and organizations.

Author by citation	TP	Citations	Organization
Klein, April	3	1,756	New York University
Beasley, Mark S.	4	1,719	Instituto de Astrofisica de Canarias
Carcello, Joseph V.	14	1,675	University of Tennessee System
Neal, Terry L.	9	1,463	University of Tennessee System
Abbott, Lawrence J.	10	1,291	University of Pennsylvania
Peters, Gary F.	10	1,247	University of Arkansas System
Parker, Susan	9	1,232	Santa Clara University
Hermanson, Dana R.	19	1,124	Kennesaw State University
Bedard, Jean	9	1,093	Laval University
DaDalt, Peter J.	1	850	Susquehanna Univ
Davidson, Wallace N., III	1	850	Southern Illinois University
Xie, B	1	850	Southern Illinois University
Vafeas, Nikos	6	731	University of Cyprus
McVay, Sarah E.	2	549	University of Washington
Anderson, Ronald C.	1	548	Temple University
Mansi, Sattar A.	1	548	Virginia Polytechnic Institute & State University
Reeb, David M.	1	548	National University of Singapore
Doyle, Jeffrey T.	1	488	National Research Council Canada
Ge, Weili	1	488	University of Washington
Karamanou, Irene	2	484	University of Cyprus

NOTES: TP= Total Publications

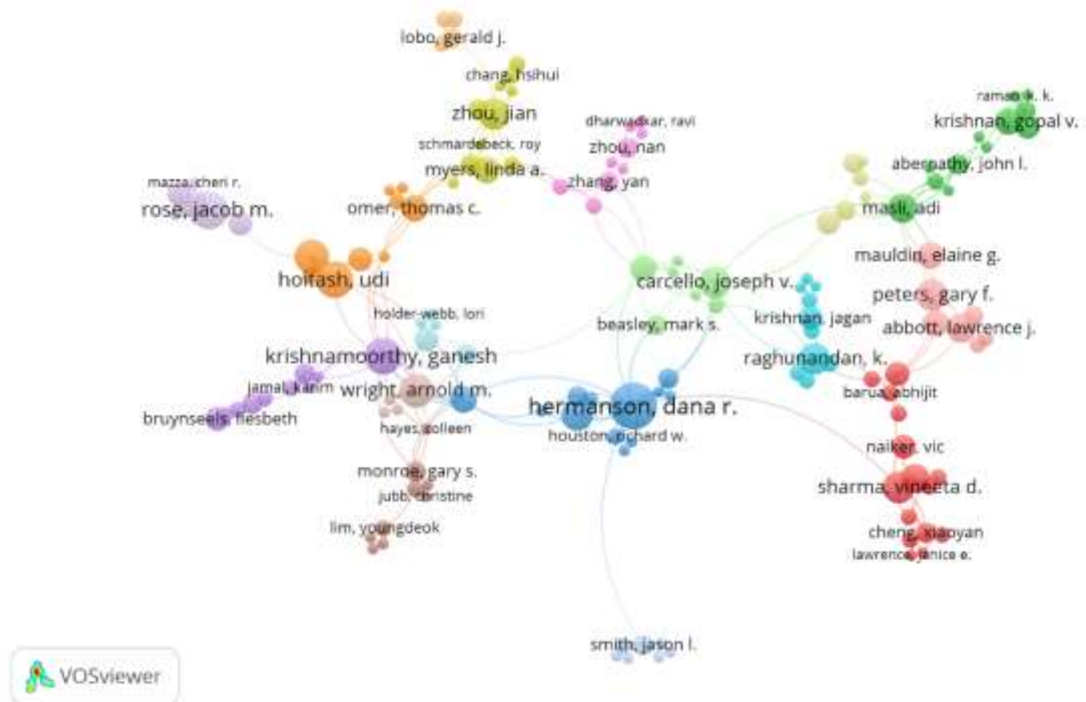
Source: own elaboration

In addition, a co-authorship analysis is performed to examine the relationships that the authors have with each other when two of them have jointly produced a document (Barabâsi, et al., 2002). Therefore, only those publications that

have two or more authors are considered, while those documents with only one author are discarded since no network is being established between researchers (Perianes-Rodríguez et al., 2016). This type of analysis is receiving increasing attention due to the change in the dynamics of publishing. In the last few decades, cooperation between authors has been increased by specialization in research studies and the use of more specific and complex methodologies (Cisneros et al., 2018; Cortés-Sánchez, 2020). The co-authorship network can be analyzed from units of analysis such as the authors themselves, the organizations, and the countries (Kent Baker et al., 2020). In this study, authors will be used as a unit of measurement for author relationships.

A total number of 114 authors appear to be connected by publishing documents together. Figure 2.4 presents the network visualization of co-authorship analysis. Authors from the periphery are not connected to the network of co-authorship, so the central position in the network of authors denotes a great impact in the literature. Some of the most influential authors are Hermanson, Carcello, and Beasley. The largest nodes show those authors who have published the most. Table 2.4 shows that Hermanson has contributed 19 publications to the scientific literature, for which he has worked with more authors and it is logical for him to appear in the center of the co-authorship map. On the other hand, as specified in the previous section, Klein is the author with the most citations (1,756), publishing three documents. One of them is the most cited in our database (Klein, 2002b), but she does not appear in the co-authorship map because she is the sole author of her articles. There are several homogeneous networks of authors who are usually limited to their own countries, which suggests that further cross-country collaboration among researchers may be beneficial to develop more conclusive and generalizable evidence on audit committees.

Figure 2.4. Study 1: Network visualization of co-authorship analysis from 144 authors.



Source: own elaboration.

2.4.5. Citation analysis (RQ5)

This analysis shows the academic impact of publications on audit committees and provides crucial information for literature reviews. Citation is considered to be a growth factor for a research domain which signals the impact of the source and specific theme cited, and also contributes to the intellectual influence of its contributor (Pattnaik et al., 2020). In this study, the top 20 most influential papers are shown in Table 2.5, by indicating the number of times that these publications are cited.

Our findings highlight that only five papers have received more than 500 citations, while in other disciplines the number of citations of the most influential

documents exceeds 1,000 (Merigó & Yang, 2017). Within local[6] citations, the papers by Klein (2002b) and Beasley (1996) exceed a thousand cites, 1,532 and 1,356, respectively. Immediately after, Xie et al. (2003) and Anderson et al. (2004) have received 850 and 548 citations. Consequently, these publications are the most influential in our sample.

Klein (2002b), Xie et al. (2003), and Anderson et al. (2004) are pioneers in analyzing the relationship between the audit committee and financial information quality, based on the assertions from SEC and NASDAQ regulations. Beasley (1996) anticipated the rise in research interest in the 2000s about audit committees by examining their effect on the prevention of fraud in financial statements. As a result, these papers became a key reference for further articles concerning audit committees. The dramatic increase in research activity on this topic since the beginning of this century, due to the succession of major financial scandals and the approval of the Sarbanes-Oxley Act (SEC, 2003), can explain the impact of these publications. The most recent publication that appears in Table 2.5 refers to the paper by Khan et al. (2013), which clearly differs from the previous ones by considering the role of audit committees in relation to corporate social responsibility.

2.4.6. Network analysis (RQ6)

This is a structural indicator that enables us to recognize the trends that the authors themselves have developed in the subject of their publications (Zupic & Čater, 2015). Specifically, this analysis uses a technique based on the creation of a word co-occurrence map supported by text data. This map encompasses research on all the topics related to audit committees and allows discovering the structure of this line of research and classifying the publications into meaningful categories.

[6] Local citations show the significance of an article within the network of articles studied.

Table 2.5. Study 1: Top 20 documents most cited.

Publication	Reference	TC	Journal
Audit committee, board of director characteristics, and earnings management.	Klein (2002b)	1,532	*Journal of Accounting and Economics*,
An empirical analysis of the relation between the board of director composition and financial statement fraud.	Beasley (1996)	1,356	*Accounting Review*
Earnings management and corporate governance: the role of the board and the audit committee.	Xie et al. (2003)	850	*Journal of Corporate Finance*
Board characteristics, accounting report integrity, and the cost of debt.	Anderson et al. (2004)	548	*Journal of Accounting and Economics*
Audit committee characteristics and restatements.	Abbott et al. (2004)	518	*Auditing: A Journal of Practice & Theory*
Accruals quality and internal control over financial reporting.	Doyle et al. (2007)	488	*The Accounting Review*
The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis.	Karamanou and Vafeas (2005)	483	*Journal of Accounting Research*
Restoring trust after fraud: Does corporate governance matter?	Farber (2005)	441	*The Accounting Review*
The effect of audit committee expertise, independence, and activity on aggressive earnings management.	Bedard et al. (2004)	439	*Auditing: A Journal of Practice & Theory*
Does the market value financial expertise on audit committees of boards of directors?	Defond et al. (2005)	407	*Journal of Accounting Research*
Board monitoring and earnings management: do outside directors influence abnormal accruals?	Peasnell et al. (2005)	406	*Journal of Business Finance & Accounting*
Consequences of financial reporting failure for outside directors: Evidence from accounting restatements and audit committee members.	Srinivasan (2005)	398	*Journal of Accounting Research*
Founding family ownership and earnings quality.	Wang (2006)	392	*Journal of Accounting Research*

Publication	Reference	TC	Journal
Board characteristics and audit fees.	Carcello et al. (2002)	386	*Contemporary Accounting Research*
The role of information and financial reporting in corporate governance and debt contracting.	Armstrong et al. (2010)	384	*Journal of Accounting and Economics*
Audit committee quality and internal control: An empirical analysis.	Krishnan (2005)	342	*The Accounting Review*
Corporate governance and corporate social responsibility disclosures: Evidence from an emerging economy.	Khan et al. (2013)	342	*Journal of Business Ethics*
Female Directors and Earnings Quality	Srinidhi et al. (2011)	314	*Contemporary Accounting Research*
Factors influencing voluntary corporate disclosure by Kenyan companies.	Barako et al. (2006)	297	*Corporate Governance: An International Review*
Audit committee composition and auditor reporting.	Carcello and Neal (2000)	296	*The Accounting Review*

NOTES: TC= Total Citations

Source: own elaboration

In our analysis, 497 different keywords which have been repeated a minimum of 10 times in the titles and abstracts of the documents regarding audit committees in our sample have been analyzed by VOSviewer. The top 20 keywords that co-occur with audit committee are shown in Table 2.6. The main keywords are “Auditor” (256 occurrences), “Management” (246), “Earnings Management” (219), “Audit Committee Member” (173), “Corporate Governance Mechanism” (155), and “Board Size” (152).

In addition, the network analysis, carried out with VOSviewer, reveals the existence of three main research clusters. These are presented in Figure 2.5. Although this figure shows a reduced number of words due to the overlapping of the most representative nodes, the network analysis has considered all the words, and this has

permitted identifying the main research themes concerning audit committees as well as illustrating their connections.

Table 2.6. Study 1: The 20 keywords that co-occur the most.

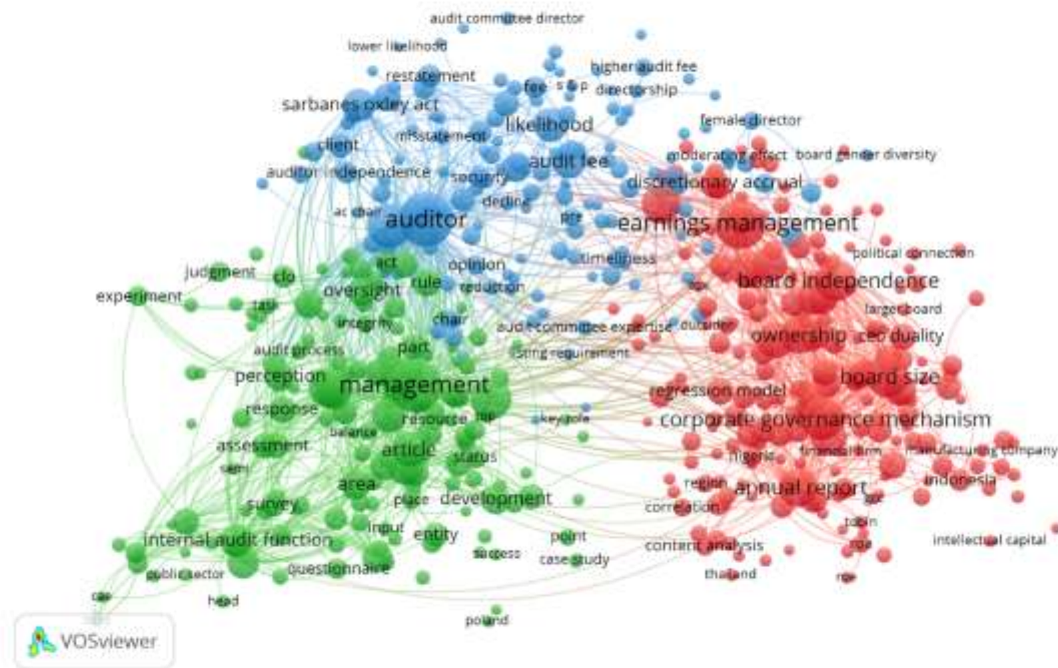
Keywords	Occurrences
Auditor	256
Management	246
Earnings Management	219
Audit Committee Member	173
Corporate Governance Mechanism	155
Board Size	152
Report	147
Board Independence	145
Earning	132
Process	131
Annual Report	128
Ownership	121
Committee Independence	114
Regression	113
Perspective	111
External Auditor	108
Index	108
Article	105
Proportion	105
Likelihood	103

Source: own elaboration.

First, we identify a cluster (blue) where the investigation on audit committees focuses on their legal requirements (“SEC”, “SOX”, “NYSE”), their relations with auditors (“Compensation”, “Fee”), and their effect on financial decisions (“Misstatement”, “Likelihood of fraud” or “Restatements”, “Audit report”). These topics seem to be related to the primary functions of audit committees. Second, we also observe a cluster (green) that relates the audit committee with management and organizational issues, such as “Internal audit function”, “Risk management”, “Duty”, “Oversight”, “Culture”, or “Development”. Third, another cluster (red) examines the audit committee from a corporate governance view (“Board size”, “Board

independence", "CEO duality", "Agency theory", "Ownership") and an ethical and social perspective ("Earnings management", "Manipulation", "Corporate social responsibility"). These clusters are generally core issues in corporate governance codes, and our analysis adds specific evidence concerning the most prominent research topics within each cluster. This is important to position academic debates on audit committees.

Figure 2.5. Study 1: The network analysis of keywords of the entire period.



Source: own elaboration.

Furthermore, in order to understand the development of audit committee research and its current trends, a more in-depth analysis is performed to examine how these clusters have evolved. On the one hand, this cluster analysis is replicated only for the last five years, which proves important to ascertain the evolution of every cluster. On the other hand, we replicated this analysis for short periods of time to detect a potential turning point in this line of research.

As regards the analysis of the last five years, from 2016 to 2020, the keywords graph is presented in Figure 2.6. The three aforementioned clusters are again

identified, but there are important differences between Figure 2.5 and Figure 2.6, which allows enhancing our knowledge concerning current research interests as well as future trends. First, a new cluster (yellow) appears, with specific relations between “Management” and several ethical issues, such as “Earnings management” and “Manipulation”. Second, it is highlighted that there are more relations between the keywords derived from corporate governance (red cluster), and the size of the nodes is larger, so the occurrence of this type of words is greater than the rest. Therefore, studies lean towards research focused on corporate governance and board structure to the detriment of other research topics. Clustering displays a series of keywords such as "Audit committee independence", “Audit committee meeting”, “Corporate governance practice”, "Report", or "Good corporate governance". In addition, keywords referring to the methodology used also stand out in the red cluster, showing that these investigations are being carried out with different techniques in methodology. Third, it can be observed that in the cluster referring to legal requirements and relations with auditors (blue), several words have been introduced referring to the financial and accounting expertise of the directors (“Financial Expert”, “Accounting Expertise”, “CFO”), their gender (“Female Directors”, “Woman”), and related to financial reports (“Financial Reporting”, “Audit Report”). Finally, the cluster (green) where the investigations on audit committee focus on an organizational perspective is in decline, since there are fewer keywords and fewer connections.

Moreover, a significant change in research trends is detected in the period 2010-2015. In this regard, Figure 2.7 specifically shows the evolution of research activity related to every cluster in that period. It can be observed that, in the last years of that time interval, research activity on the audit committee placed a strong emphasis on issues related to corporate governance and the audit committee’s ethical and social roles. As commented above, this trend is consolidated in current audit committee research.

Figure 2.6. Study 1: The network analysis of keywords of the period 2016-2020.

Source: own elaboration.

Figure 2.7. Study 1: The network overlay analysis of keywords of the period 2010-2015.

Source: own elaboration.

In addition, Table 2.7 presents a content analysis of the 20 most cited publications between 2016 and 2020, which helps to understand the specific nature of the research conducted in the last five years. Taking into consideration the objective of every document, each publication is classified into one of the clusters obtained in the network analysis: (1) legal requirements and relations with auditors; (2) risk, control, and combined assurance; (3) corporate governance; (4) management and ethics. Most of the documents are included in the corporate governance cluster and, accordingly, these articles tend to focus on "corporate social responsibility", "board attributes", "ownership structure", "board diversity", "financial reporting quality", "firm performance", or "mandatory and voluntary disclosure”.

In summary, this network analysis significantly broadens the perspective on audit committee research and helps to ascertain the knowledge structure and the potential gaps to advance in future investigations.

Table 2.7. Study 1: Content analysis of the 20 most cited publications between 2016 and 2020.

Nº	References	TC	Keywords	Main Cluster	Objetives	Results
1	Shaukat, A., Qiu, Y., & Trojanowski, G. (2016). Board attributes, corporate social responsibility strategy, and corporate environmental and social performance. *Journal of Business Ethics*, *135*(3), 569-585.	107	Board of directors; Corporate governance; Corporate social responsibility (CSR); Resource based view (RBV); Resource dependence theory (RDT); Structural equation modeling (SEM).	Corporate governance	To develop a theoretical model that makes explicit the links between a firm's CSR related board attributes, its board CSR strategy, and its environmental and social performance.	The greater the CSR orientation of the board (as measured by the board's independence, gender diversity, and financial expertise on audit committee), the more proactive and comprehensive the firm's CSR strategy, and the higher its environmental and social performance.
2	Chatterjee, A., & Pollock, T. G. (2017). Master of puppets: How narcissistic CEOs construct their professional worlds. *Academy of Management Review*, *42*(4), 703-725.	53	Top management team; Chief executive officers; Self-evaluations; Interpersonal influence; Charismatic leadership; Threatened egotism; Board appointments; Social influence; Firm reputation; Audit committee	Risk, control, and assurance.	To explore how narcissistic CEOs address two powerful and conflicting needs: the need for acclaim and the need to dominate others.	The authors show how CEOs' narcissism can influence their status, and illustrate how CEOs' narcissistic tendencies lead to their pursuit of celebrity in the media
3	Ntim, C. G., Soobaroyen, T., & Broad, M. J. (2017). Governance structures, voluntary disclosures and public accountability: The case of UK higher education institutions. *Accounting, Auditing & Accountability Journal*.	51	Governance; UK; Universities; Disclosure; Accountability; Higher education institutions.	Corporate governance	To investigate the extent of voluntary disclosures in UK higher education institutions' (HEIs) annual reports and examine whether internal governance structures influence disclosure in the period following major reform and funding constraints.	The authors find a large degree of variability in the level of voluntary disclosures by universities and an overall relatively low level of PATI (44 per cent), particularly with regards to the disclosure of teaching/research outcomes. The authors also find that audit committee quality, governing board diversity, governor independence and the presence of a governance committee are associated with the level of disclosure.

Nº	References	TC	Keywords	Main Cluster	Objetives	Results
4	Andreou, P. C., Antoniou, C., Horton, J., & Louca, C. (2016). Corporate governance and firm-specific stock price crashes. *European Financial Management*, *22*(5), 916-956.	50	Crash risk; Corporate governance; Agency risk; Information environment.	Corporate governance	To investigate whether ownership structure, accounting opacity, board structure & processes and managerial incentives attributes relate to a future stock price crash risk.	Principal component analysis of the 21 attributes that comprise these four corporate governance dimensions reveals that they can explain between 13.1% and 23.0% of a one standard deviation in crash risk.
5	Rinaldi, L., Unerman, J., & De Villiers, C. (2018). Evaluating the integrated reporting journey: insights, gaps and agendas for future research. *Accounting, Auditing & Accountability Journal*.	47	IIRC; Case studies; Integrated reporting; Development of integrated reporting; Idea journey.	Corporate governance	To identify the key challenges, opportunities, strengths and weaknesses experienced by the integrated reporting (IR) idea since the International Integrated Reporting Council (IIRC)'s Discussion Paper was published in late 2011.	A key insight of the paper is that the academic literature has not yet covered all the stages of the IR idea journey. The highest proportion of articles provide insights into the generation and production phases of this journey, while there is relatively little research into the impact phase of the IR idea.
6	Pucheta-Martínez, M. C., Bel-Oms, I., & Olcina-Sempere, G. (2016). Corporate governance, female directors and quality of financial information. *Business Ethics: A European Review*, *25*(4), 363-385.	41	Audit committee characteristics; Earnings management; Gender-differences; Ownership structure; Business students; Firm value; Board; Association; Behavior; Women.	Corporate governance	To examine whether gender diversity on audit committees influences financial reporting quality by using panel data of Spanish listed firms.	This study provides evidence to support the hypotheses that the percentage of females on ACs reduces the probability of qualifications due to errors, non-compliance or the omission of information. Furthermore, the results also find that the percentage of female directors on ACs, the percentage of independent female directors on ACs and ACs chaired by females increase the likelihood of further transparency by disclosing audit reports with uncertainties and scope limitation qualifications.

Nº	References	TC	Keywords	Main Cluster	Objetives	Results
7	Gull, A. A., Nekhili, M., Nagati, H., & Chtioui, T. (2018). Beyond gender diversity: How specific attributes of female directors affect earnings management. *The British Accounting Review, 50*(3), 255-274.	39	Female directors; Statutory attributes; Demographic attributes; Earnings management.	Management and ethics	To investigate the relationship between female directors and earnings management by considering their specific (statutory and demographic) attributes.	We first find that the presence of female directors deters managers from managing earnings. However, this finding does not hold when the statutory and demographic attributes of female directors are taken into account, thus showing that the detection and the correction of earnings management requires particular competencies and skills.
8	Al-Hadi, A., Hasan, M. M., & Habib, A. (2016). Risk committee, firm life cycle, and market risk disclosures. *Corporate Governance: An International Review, 24*(2), 145-170.	39	Corporate Governance; Risk Committee; Firm Life Cycle; Market Risk Disclosure.	Corporate governance.	To investigate whether the existence of a separate risk committee and risk committee characteristics is associated with market risk disclosures. It also tests whether the role of a risk committee in affecting market risk disclosures varies for different firm life cycle stages.	Firms with a separate risk committee are associated with greater market risk disclosures, an effect that is more pronounced for mature-stage firms. Furthermore, findings suggest that risk committee qualifications and size have a significant positive impact on market risk disclosures.
9	He, X., Pittman, J. A., Rui, O. M., & Wu, D. (2017). Do social ties between external auditors and audit committee members affect audit quality*? The Accounting Review, 92*(5), 61-87.	38	Social ties; External auditors; Audit committee.	Legal requirements and relations with auditors.	To examine whether social ties between engagement auditors and audit committee members shape audit outcomes.	The evidence implies that social ties between engagement auditors and audit committee members impair audit quality. In additional results consistent with expectations, it is generally found that this relation is concentrated where social ties are more salient, or firm governance is relatively poor and agency conflicts are more severe.

Nº	References	TC	Keywords	Main Cluster	Objetives	Results
10	Fauver, L., Hung, M., Li, X., & Taboada, A. G. (2017). Board reforms and firm value: Worldwide evidence. *Journal of Financial Economics, 125*(1), 120-142.	37	Cross-country study; Firm value; Board reforms.	Corporate governance	To examine the impact of corporate board reforms on firm value in 41 countries.	Board reforms increase firm value. Reforms involving board and audit committee independence, but not reforms involving a separation of chairman and chief executive officer positions, drive the valuation increases.
11	Dienes, D., & Velte, P. (2016). The impact of supervisory board composition on CSR reporting. Evidence from the German two-tier system. *Sustainability, 8*(1), 63.	37	CSR reporting; Corporate governance; Gender diversity; Supervisory board composition.	Corporate governance	Analyzing the link between board composition and CSR reporting in Germany as a representative model of the European two-tier system.	Gender diversity has a positive impact on CSR disclosure intensity, which is in line with prior studies on one-tier systems.
12	Katmon, N., Mohamad, Z. Z., Norwani, N. M., & Al Farooque, O. (2019). Comprehensive board diversity and quality of corporate social responsibility disclosure: evidence from an emerging market. *Journal of Business Ethics, 157*(2), 447-481.	31	Comprehensive board diversity; Corporate social responsibility disclosure; Agency theory; Resource dependency theory; Endogeneity.	Corporate governance	To examine the relationship between wide-ranging board diversity and the quality of corporate social responsibility (CSR) disclosure variables in Malaysia.	The study documents a significant positive effect of board education level and board tenure diversity on the quality of CSR disclosure.

Nº	References	TC	Keywords	Main Cluster	Objetives	Results
13	Detthamrong, U., Chancharat, N., & Vithessonthi, C. (2017). Corporate governance, capital structure and firm performance: Evidence from Thailand. *Research in International Business and Finance, 42*, 689-709.	31	Corporate governance; Financial leverage; Firm performance; Mediator variable.	Corporate governance	To examine the relationship between corporate governance and firm performance for a panel sample of 493 firms of non-financial firms in Thailand during the period 2001–2014.	The authors find that for the full sample, corporate governance is not associated with financial leverage and firm performance. When firms are split into small and large firm subsamples, some influence of corporate governance is observed.
14	Alnabsha, A., Abdou, H. A., Ntim, C. G., & Elamer, A. A. (2018). Corporate boards, ownership structures and corporate disclosures. *Journal of Applied Accounting Research, 19*(1), 20-41.	30	Corporate governance; Content analysis; Voluntary disclosure narrative; Board and ownership structures; Corporate disclosure behavior; Multi-theoretical perspective.	Corporate governance	To investigate the effect of corporate board attributes, ownership structure and firm-level characteristics on both corporate mandatory and voluntary disclosure behavior.	First, the authors find that board size, board composition, the frequency of board meetings and the presence of an audit committee have an impact on the level of corporate disclosure. Second, the results indicate that ownership structures have a non-linear effect on the level of corporate disclosure. Finally, the authors document that firm age, liquidity, listing status, industry type and auditor type are positively associated with the level of corporate disclosure.
15	Wahid, A. S. (2019). The effects and the mechanisms of board gender diversity: Evidence from financial manipulation. *Journal of Business Ethics, 159*(3), 705-725.	29	Corporate governance; Board of directors; Gender; Board composition; Board diversity; Accounting quality; Restatement.	Legal requirements and relations with auditors.	To examine the impact of board gender diversity on financial misconduct.	The findings suggest that firms with gender-diverse boards commit fewer financial reporting mistakes and engage in less fraud. The findings hold after accounting for the potentially endogenous nature of board demographic characteristics via the instrumental variable approach.

Nº	References	TC	Keywords	Main Cluster	Objetives	Results
16	Lai, K. M., Srinidhi, B., Gul, F. A., & Tsui, J. S. (2017). Board gender diversity, auditor fees, and auditor choice. Contemporary *Accounting Research, 34*(3), 1681-1714.	29	Corporate governance; Industry specialization; Earnings management; Directors; Women; Independence; Performance; Committee; Quality; Risk	Legal requirements and relations with auditors.	To examine whether the presence of female directors and female audit committee members affects audit quality in terms of audit effort and auditor choice by using observations from a sample of U.S. firms, spanning the years 2001–2011.	The authors find, after controlling for endogeneity and other board, firm, and industry characteristics, that firms with gender-diverse boards (audit committees) pay 6 percent (8 percent) higher audit fees and are 6 percent (7 percent) more likely to choose specialist auditors compared to all-male boards (audit committees).
17	Alotaibi, K. O., & Hussainey, K. (2016). Determinants of CSR disclosure quantity and quality: Evidence from non-financial listed firms in Saudi Arabia. *International Journal of Disclosure and Governance, 13*(4), 364-393.	28	Corporate Social Responsibility (CSR); Determinants; Di sclosure; Corporate governance; Saudi Arabia.	Corporate governance	To examine the practice of Corporate Social Responsibility (CSR) Disclosure in a Saudi Arabian context. This study has two particular objectives. First, it aims to measure the level of CSR disclosure quantity and quality. Second, it aims to investigate the determinants of CSR disclosure quantity and quality in a Saudi Arabian context.	The study found that Saudi Arabian firms provided higher levels of CSR disclosure quantity; however, the quality of the disclosure was relatively low. In addition, the study found that CSR disclosure quantity was positively associated with board size and the size of the audit committee. However, this is negatively associated with the percentage of governmental ownership and the size of the remuneration committee. In contrast, the quality of CSR disclosure was positively associated with the board size and the percentage of managerial ownership. However, the study found a negative association with the percentage of independent directors.
18	Habib, A., Hasan, M. M., & Jiang, H. (2018). Stock price crash risk: review of the empirical literature. *Accounting & Finance, 58*, 211-251.	27	Stock price crash risk; Financial reporting; Corporate governance; Non-formal institutions.	Risk, control, and assurance.	The authors survey the burgeoning literature on the determinants and consequences of a firmspecific future stock price crash risk in the EEUU, as well as in foreign countries	Despite a large body of research on the determinants of crash risk, very little research attention has been directed toward understanding the consequences of a stock price crash.

Nº	References	TC	Keywords	Main Cluster	Objetives	Results
19	Elghuweel, M. I., Ntim, C. G., Opong, K. K., & Avison, L. (2017). Corporate governance, Islamic governance and earnings management in Oman. *Journal of Accounting in Emerging Economies*.	27	Oman; Corporate governance; Earnings management; Quantitative research; Behavioral theory; Islamic governance.	Management and ethics	To examine the impact of corporate (CG) and Islamic (IG) governance mechanisms on corporate earnings management (EM) behavior in Oman.	First, the authors find that, better-governed corporations tend to engage significantly less in EM than their governed counterparts. Second, the evidence suggests that corporations that depict greater commitment toward incorporating Islamic religious beliefs and values into their operations through the establishment of an IG committee tend to engage significantly less in EM than their counterparts. Finally, the authors do not find any evidence that board size, audit firm size, the presence of a CG committee and gender diversity have a significant relationship with the extent of EM.
20	De Villiers, C., & Hsiao, P. C. K. (2018). A review of accounting research in Australasia. *Accounting & Finance, 58*(4), 993-1026.	26	Accounting; Australia; Journal rankings; New Zealand; Research.	Corporate governance	To examine recent accounting research published in 10 journals: Abacus; Accounting and Finance; Accounting Forum; Accounting History; Accounting, Auditing and Accountability Journal; Australian Accounting Review; Int. Journal of Auditing; Meditari Accountancy Research; Pacific Accounting Review; Qualitative Research in Accounting and Management	The paper identifies the most cited recent articles (2015–2017), and the most prolific authors, universities and geographical regions. It then reveals trends in research areas and relevance of recent accounting articles.

NOTES: TC= Total Citations
Source: own elaboration.

2.5. Conclusion

This study offers a unique perspective on audit committee research by performing a bibliometric analysis of 1,690 publications since the origin of the WOS, which shows a holistic picture regarding the existing research and its historical development. In particular, it provides further understanding about audit committee research and generates additional sources of knowledge by offering novel insights regarding the intellectual structure of research on this topic. In this section, we summarize our findings and implications, present the main limitations of the study, and suggest future research directions.

Our bibliometric review contributes to theory and practice by responding to specific research questions. First, our analysis reveals that the audit committee knowledge base remained stable in the last century but has grown exponentially since the beginning of the present century. The study of a long period of time has enabled us to identify the origin of audit committee research as well as the main milestones that have led to an increase in research activity. Particularly, we underline that professional bodies have increasingly emphasized audit committees as pivotal mechanisms to maintain business confidence in the current context, and this may offer stimulating research opportunities. Second, our findings show that the majority of documents have been published in the United States and in other Anglo-Saxon countries. However, further research might explore other institutional environments with different characteristics, such as individual continental European countries and emerging economies. Third, our analysis indicates that audit committee research has been developed across several different disciplines, including Business, Finance, Management, Ethics, Economics, and Environmental Sciences, among others. Fourth, our evidence demonstrates that authors and institutions globally contribute to the literature on audit committees. The identification of the main authors in the research field is crucial to understand the intellectual structure of this area. Furthermore, our results point to relatively little collaboration among authors, especially across nations.

This evidence may encourage researchers to enhance their international collaboration to expand global frameworks regarding audit committees. Fifth, our review also includes a citation analysis that provides information concerning the most cited papers and the journal where they have been published, which proves decisive in any literature review. Sixth, our analysis examines the evolution of audit committee research and our findings identify important patterns related to the historical development of the discipline. In this regard, we find several main research clusters that have evolved in recent years. Particularly, the cluster focused on the corporate governance of audit committees has received ever-increasing attention in the last decade. This offers scholars both a useful framework for positioning their research and a basis for recognizing and addressing gaps in the existing literature. Concretely, we encourage future researchers to further explore the ethical role of audit committees. In a scenario where uncertainty and economic instability have increased dramatically, audit committees remain essential to support the integrity of reports, the oversight of risks and fraud, and ethics and compliance matters.

Our study has relevant theoretical implications for academics since, bibliometric analysis has been proved to be powerful in order to handle massive documents to build a scientific structure of research topics (Feng et al., 2017; Zupic & Čater, 2015). This has important implications for scholars to understand the extent of audit committee research, developing trends, and its evolution over time. In particular, researchers can benefit from our findings to position their future research and identify key collaboration opportunities. In addition, given the increasing importance of the assessment of scientific production and, from a practical point of view, bibliometric studies have become an emergent and helpful discipline in both the faculty recruiting process and the definition of the global research strategy of universities and research organisms (Merediz-Solà & Bariviera, 2019). Furthermore, our evidence may also serve to professional bodies and policymakers to guide their future recommendations and legislations in the light of the current trends in audit committee research.

Our study also has certain limitations. First, this study includes research collected in the WOS, and other databases might also be considered in future investigations. Second, bibliometric reviews focus on statistical analyses, but the content of the documents analyzed is generally beyond the scope of this analysis. Although we reviewed the most cited articles in the last 5 years, further research might broaden this content analysis, or be particularly focused on research on audit committees from a social or ethical view, which remains unexplored. However, despite these limitations, our study rigorously develops a complete conceptual map of the literature on audit committees and provides insightful research opportunities.

CHAPTER 3

STUDY 2: BIBLIOMETRIC ANALYSIS OF THE RESEARCH ON FINANCIAL EXPERTISE

CHAPTER 3. STUDY 2: BIBLIOMETRIC ANALYSIS OF THE RESEARCH ON FINANCIAL EXPERTISE

3.1. Introduction

The effectiveness of boards is strongly linked to their composition (Amorelli & García-Sánchez, 2020) and, particularly, the financial expertise of directors has increasingly caught the attention of regulators, professionals, and academics. In this regard, the majority of codes or rules issued in the developed countries have called for the presence of financial experts on the board of directors in order to enhance its monitoring functions (Blue Ribbon Committee, 1999; SEC, 2003; Directive 2014/95/EU). As a result, research on directors' financial expertise has significantly grown in the current century. While some studies have examined the determinants of board members financial expertise (Herranz et al., 2020; Jeanjean & Stolowy, 2009), the vast majority of the papers have analyzed the effects of this kind of expertise (Abbott et al., 2004; Badolato et al., 2014; Das et al., 2020; Zhang et al., 2007).

Despite the ever-increasing importance of board financial expertise, previous research has overlooked carrying out a systematic review of the literature on this matter. The aim of this section, related to the second objective of the empirical analysis of this thesis, is to run a bibliometric analysis in order to present the characteristics and evolution of the publications as well as the intellectual structure of the research on board financial expertise. As explained in the previous section, the use of bibliometric techniques provides systematization and replication processes that help understanding the advancement of the discipline by analyzing long periods, which is difficult with qualitative reviews (Aparicio et al., 2019; Hota et al., 2019). In particular, bibliometric methods enable measuring different aspects of publications (authors, keywords, citations, institutional collaboration, among others) to evaluate research on a specific topic and identify its evolution through time

as well as emergent trends and gap opportunities (Klarin et al., 2020; Merediz-Solà & Bariviera, 2019; Zupic & Čater, 2015). In line with the previous section and consistent with similar recent bibliometric analyses (Cisneros et al., 2018; Kent Baker et al., 2020; Zheng & Kouwenberg, 2019), our study addresses the following research questions (RQ) concerning the research on board financial expertise:

- RQ1: What is the volume of publication over the years?
- RQ2: Which are the most productive countries?
- RQ3: Which are the most productive journals?
- RQ4: Who are the most productive and influential authors?
- RQ5: Which publications are the most cited in the research period?
- RQ6: What are the most important research topics studied by these authors?

Our study makes several contributions to the literature. First, we identify publication standards in a recent, but consolidated branch of research concerning board financial expertise. The proliferation of studies on that matter merits a systematic review to analyze and evaluate the progress in this research area. Second, the information segmented by years and by countries (RQ1 and RQ2) helps to detect the most important events and contexts in the research on financial expertise. In this regard, our study summarizes the main international regulations or recommendations on board financial expertise and offers a guide for scholars to understand how research has reacted to changes in legislation or professional recommendations. Third, the identification of the top journals, authors, and their connections (RQ3 and RQ4) is crucial to ascertain scientific productivity and provides value information to position future studies on board financial expertise. Fourth, we recognize the most relevant publications in the field and categorize the main themes and current dynamics of research on board financial expertise (RQ5 and RQ6). The knowledge regarding research trends will help academics to learn about past and current

research interests, which proves vital in shaping future research directions. Additionally, to the best of our knowledge, our study is the first to carry out a bibliometric analysis on directors' financial expertise. In this regard, our evidence means a significant advance in knowledge and enables mapping intellectual structure and research trends in this topic.

3.2. Literature review

As it was aforementioned in the previous sections, in recent years, the relevance of the directors' financial expertise has been underlined by a number of regulatory and professional bodies across the world. Moreover, financial expertise has also been considered for international professional organizations as a decisive attribute for directors to improve board oversight and monitoring capabilities (Deloitte, 2018; EY, 2020).

As a result, in the current century research on financial expertise has awakened great interest. In this regard, although most of the regulations and recommendations concerning financial expertise refer to the audit committee, this expertise may be important in the exercise of monitoring responsibilities by the board of directors in general and, therefore, the previous literature has examined the relevance of financial expertise for both the audit committee (Badolato et al., 2014; Chen & Komal, 2018; Khemakhem & Fontaine, 2019; Krishnan & Lee, 2009;) and the board (Güner et al., 2008; Minton et al., 2014; Sarwar et al., 2018). This branch of research has generally examined the effect of directors' financial expertise on the oversight of different corporate policies. Particularly, researchers have investigated the impact of financial expertise on earnings management (Badolato et al., 2014; Zalata et al., 2018), accounting restatement (Abbott, 2004; Das et al., 2020), the quality of financial disclosures (Chychyla et al., 2019; Mangena & Pike, 2005), voluntary disclosures (Abad & Bravo, 2018; Helfaya & Moussa, 2017), and internal control (Lisic et al., 2019; Zhang et al., 2007).

Nonetheless, despite the proliferation of studies on board financial expertise, the previous research has overlooked qualitative and quantitative reviews in this line of research. Only a few studies perform a content analysis of the papers that have examined the effect of financial expertise on specific financial outcomes, such as earnings managements (Chen & Komal, 2018) or the timeliness of financial reporting (Baatwah et al., 2013). Our study fills a gap in the literature by employing a bibliometric analysis to assess scientific production in this research area. Bibliometric analyses have been proved to be an important tool for the academic community in the evaluation of the research progress of a topic (Ellegaard & Wallin, 2015) and still remain an emergent discipline in corporate governance research.

In this regard, Durisin and Puzone (2009) used bibliometric methodologies, such as author citation analysis and author co-citation analysis, to analyze research activity on corporate governance in different journals to demonstrate “whether corporate governance research is rather a subject of multi-disciplinary research or whether it exhibits the traits of a discipline”. Huang and Ho (2011) also reviewed research on the corporate governance field, developing a publication analysis using the Social Science Citation Index from 1992 to 2008. In recent years, given the ever-increasing importance of board of directors in the academic sphere, Zheng and Kouwenberg (2019) performed a bibliometric analysis to identify the theoretical evolution and intellectual structure of knowledge about boards. More specifically, bibliometric analyses have also been taken as an approach to evaluate the evolution of research on particular board characteristics that have gained interest recently, such as board interlocking (Smith & Sarabi, 2020), board diversity (Kent Baker et al., 2020) and the relationship between board characteristics and corporate social responsibility (Dwekat et al., 2020b). Therefore, our study complements this literature by focusing on directors` financial expertise, which has received growing attention in the last decades from regulators, companies, and academics.

3.3. Data and methodology

3.3.1. Data

The initial sample of this analysis consisted of 294 documents collected from the main collection of ISI Thomson Reuters' Web of Science (WOS) for the entire period available, from 1900 to 2020. The documents regarding financial expertise have been compiled through a search in December 2020 in the topic field in titles, abstracts, and keywords (Zheng & Kouwenberg, 2019), by the expressions "financial expertise" or "financial experts" and restricted to the studies that contain the terms "audit committee" or "board of directors" or "board". In order to ensure that the documents analyzed were related to the business sphere, the approach employed by Kent Baker et al. (2020) was adopted, and therefore we focused on the following research categories: Business, Business/Finance, Economics, Environmental Studies, Ethics, Law, Management, Multidisciplinary Science, Social Issues, Social Sciences Interdisciplinary, and Women's Studies. As a result, the final sample is composed of 287 documents. The data selection process is summarized in Table 3.1.

Table 3.1. Study 2: Data selection process.

	Database	**Search criteria**	**Results**
First stage	ISI WOS 31/12/2020	"Financial Expertise" OR "Financial Experts", AND "Audit committee" OR "Board of directors" OR "Board".	294 documents
	Filters	**Categories**	
Second stage	WOS categories	Business, Business/Finance, Economics, Environmental Studies, Ethics, Law, Management, Multidisciplinary Science, Social Issues, Social Sciences Interdisciplinary, and Women's Studies	287 documents

Source: own elaboration.

3.3.2. Methods

This section also contains bibliometric methods, which have become relevant in assessing institutional investigation and positioning future academic research (Daim et al., 2006; Ellegaard & Wallin, 2015). Specifically, in order to respond to our research questions, this study presents different sections: the analysis of publications by year (RQ1); the analysis of research activity by country (RQ2); the analysis of publications by journal (RQ3); the analysis of the author's productivity and its influence (RQ4); a citation analysis (RQ5); and a content analysis to present the main themes in this stream of research and the evolution of the most important trends (RQ6). Table 3.2 presents the structure of the methodology. It is important to remind that bibliometric analysis is based on a set of indicators that enable objectively measuring different aspects of publications, and allow a comparability between researchers, research groups, publications and organizations (Haustein & Larivière, 2015).There are three types of indicators (Durieux & Gevenois, 2010): (1) quantity, referring to the productivity of any unit of measure; (2) quality, which determines the impact of the research; (3) structural, which examines connections between publications, authors, or keywords.

Table 3.2. Study 2: Research questions, type of analysis, and indicators.

RQs	Description	Analysis	Indicators
RQ1	Publications by year	Descriptive Analysis	Quantity
RQ2	Publications by country	Descriptive Analysis	Quantity
RQ3	Publishing activity by journal	Descriptive Analysis	Quantity; Quality
RQ4	Publishing activity by authors	Descriptive Analysis	Quantity
	Co-Authorship Analysis	Network Analysis	Structural
RQ5	Citation Analysis	Descriptive Analysis	Quantity
RQ6	Content Analysis	Network Analysis	Structural

NOTES: The data come from ISI Thomson Reuters' Web of Science (WOS) database.
Source: own elaboration.

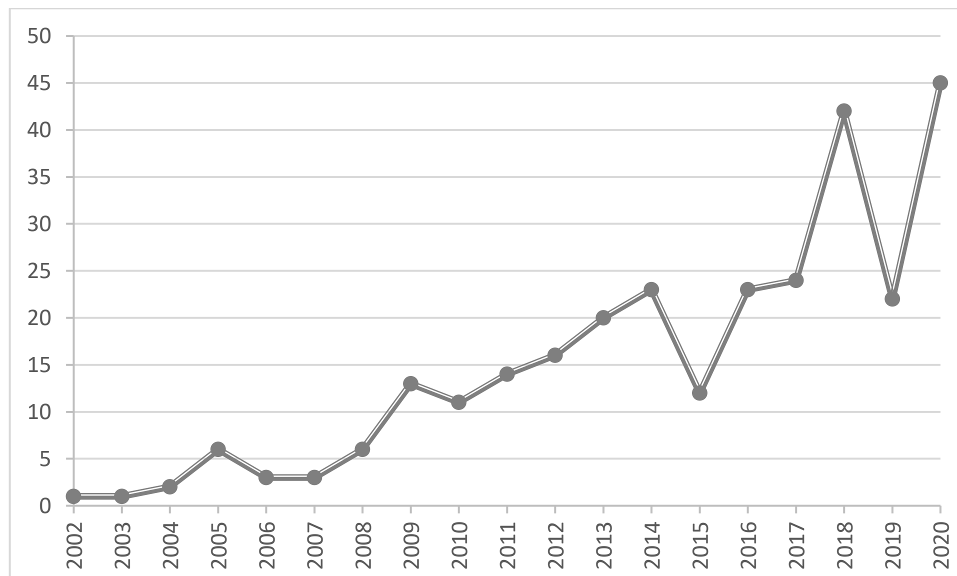
3.4. Results

Almost 90% of the publications are articles (259 documents) and 98% are written in English (284) since this is the most used language in the field of scientific publications. This section is divided into several parts concerning every research question.

3.4.1. Publication by year (RQ1)

Although the search started in 1900, when the WOS was launched, the first publication about board financial expertise dates from 2002. Particularly, the paper "*Evaluating financial reporting quality: the effects of financial expertise vs. financial literacy*" by Linda McDaniel, Roger D. Martin and Laureen A. Maines, signals the beginning of this research topic. Figure 3.1 shows the evolution of research activity on financial expertise in the period 2002 to 2020, and several stages can be detected, where the effect of different international regulations on this specific research area is clearly visible.

Figure 3.1. Study 2: Publications by year.



Source: own elaboration.

First, during the period 2002-2008 the number of publications remained relatively stable, but low. The initial research on financial expertise was likely to appear due to the issuance of important legislations on that matter as a response to the succession of financial scandals, such as the Blue Ribbon Committee (BRC, 1999) in the United Kingdom and the Sarbanes-Oxley Act (SOX) in the United States (SEC, 2003). In the US context, NYSE (2004) and NASDAQ (2004) requirements strengthened the role of financial experts.

Second, in the period 2009-2014, research on board financial expertise rose significantly. In 2009, more than 10 documents were published, and in 2013 the barrier of 20 publications was surpassed. As the failure of various internal governance mechanisms has frequently been cited among the key contributing factors to the 2007-2008 financial crisis (Minton et al., 2014), the study of board attributes gained great interests in this period. The controversial initial definitions of financial expertise and the inconclusive previous results (Abad & Bravo, 2018; Dhaliwal et al., 2010), as well as the first legislations in the European context about this topic, still limited to certain entities, may have also contributed to this rise in the number of publications.

Third, regardless of the one-off decrease in 2015, in the last five years research activity on financial expertise has been strengthened and significantly higher than in previous years. Indeed, 74% of the documents were published between 2016 and 2020, which underlines the importance of financial expertise in recent research, and several reasons may be found to explain this increase. The Directive 2014/56/EU introduced into the discussion the relevance of financial expertise as a corporate governance mechanism for European firms. The Directive 2014/95/EU promoted superior non-financial reporting practices, and the European Securities and Markets Authority (ESMA, 2015) also encouraged the enhancement of the quality of disclosure, these being tasks directly linked to audit committees. In addition, the positive trend in research activity may be also affected by those publications from

emerging economies, where the regulation of corporate governance, and especially the audit committee, arrived later (Almarayeh et al., 2020; Zgarni et al., 2016).

3.4.2. Publications by country (RQ2)

The analysis of the number of publications by country, which is shown in Table 3.3, highlights several relevant findings. First, research on financial expertise is scattered across countries. A total of 52 countries contribute to the knowledge of this area. Second, Anglo-Saxon countries are the main contributors. More than a half of the publications are from the United States (107), United Kingdom (36) and Australia (29). In these countries the basis for the research on financial experts emerged under the influence of the Blue Ribbon Committee (BRC, 1999) and the Sarbanes-Oxley Act (SEC, 2003). Third, research activity on financial expertise is also significant in emerging countries, some of them appearing in the top positions in Table 3.3. In line with the legislations from developed economies, regulations on corporate governance and audit committee functions have also been recently promulgated in emerging countries (Almarayeh et al., 2020; Zgarni et al., 2016). Finally, in the European Union context there is a noteworthy low level of research activity on this matter. Only Spain has published more than 10 documents. This is particularly surprising, considering the legislations and the recommendations from professional bodies concerning financial expertise commented on in the previous sections. Therefore, it is clearly visible that the development of research on financial experts may need to be increased in the European Union countries.

3.4.3. Publications by journal (RQ3)

The 287 documents from our sample have been published in 136 journals. The number of publications, the quartile and category, the impact factor (JCR), and the number of issues for each journal are shown in Table 3.4. The main categories where these journals are classified are Business, Finance, Economics, and Management, which shows the disciplinary character of this branch of investigation.

Table 3.3 Publication by countries

Countries	TP	Countries	TP	Countries	TP
USA	107	Switzerland	4	Greece*	1
United Kingdom	36	Italy*	3	Hungary*	1
Malaysia	31	Jordan	3	Ireland*	1
Australia	29	U. Arab Emirates	3	Japan	1
China	20	Bahrain	2	Kazakhstan	1
Canada	14	Belgium*	2	Lebanon	1
Spain*	11	Bosnia Herceg	2	Morocco	1
Taiwan	11	Egypt	2	Oman	1
South Korea	10	Finland*	2	Palestine	1
Iran	8	Ghana	2	Poland*	1
Tunisia	8	India	2	Qatar	1
Germany*	7	Israel	2	Romania*	1
Netherlands*	6	Kenya	2	Singapore	1
New Zealand	6	Nigeria	2	South Africa	1
Saudi Arabia	6	Russia	2	Sweden*	1
Yemen	5	Uganda	2	Thailand	1
France*	4	Belarus	1		
Pakistan	4	Brazil	1		

NOTES: TP= Total Publications; The member countries of the European Union are identified with (*).

Source: own elaboration.

The top 10 most relevant journals publishing articles on financial expertise are “Managerial Auditing Journal”, “Accounting Review”, “Auditing: A Journal of Practice & Theory”, “International Journal of Auditing”, “Contemporary Accounting Research”, “Accounting and Finance”, “Advances in Accounting”, “Corporate Governance: An International Review”, “Corporate Governance: The International Journal of Business in Society”, and “Accounting Horizons”. Table 3.4 highlights that most of these journals belong to the Business and Finance category, many of them ranked in the first and second quartile, which serves to signal the high impact of research on financial expertise.

Table 3.4. Study 2: Publishing activity by journals and JCR information.

Journals	TP	Quartile and Area: JCR (2019)	Impact Factor JCR (2019)	Issues
Managerial Auditing Journal	16	Q2 – Business, Finance Q3 -Management	1.870	9
Accounting Review	11	Q1 - Business, Finance	3.993	6
Auditing: A Journal of Practice & Theory	12	Q2 - Business, Finance	2.108	4
International Journal of Auditing	8	Q3 - Business, Finance	1.034	3
Contemporary Accounting Research	7	Q2 - Business, Finance	2.026	4
Accounting and Finance	6	Q2 – Business, Finance	2.217	5
Advances in Accounting	5	-	-	4
Corporate Governance: An International Review	5	Q1 - Business, Finance Q3 - Business Q3 - Management	2.294	6
Corporate Governance: The International Journal of Business in Society	5	-	-	6
Accounting Horizons	4	Q3 – Business, Finance	1.576	4
Journal of Accounting and Public Policy	5	Q1 – Business, Finance Q2 – Public Administration	2.351	6
Journal of Accounting Auditing and Finance	5	-	-	4
Journal of Accounting Economics	7	Q1 - Business, Finance Q1 - Economics	3.723	4
Journal of Applied Accounting Research	4	-	-	4
Journal of Corporate Finance	6	Q1 - Business, Finance	2.521	6
Accounting Research Journal	4	-	-	4
Advanced Science Letters	4	Q2 – Multidisciplinary Science	1.253	
Australian Accounting Review	4	Q3 – Business, Finance	1.371	4
Cogent Business Management	4	-		1
International Journal of Disclosure and Governance	4	-		4

NOTES: TP: Total Publications. JCR: Journal Citation Report

Source: own elaboration.

3.4.4. Authors' productivity and influence (RQ4)

This analysis presents an effective way of identifying the most relevant researchers of a topic, by considering both their number of publications and their citations (Ferreira et al., 2016). In particular, productivity is associated with the number of publications from a researcher, while the citations reflect the influence that authors have in a specific field of research (Merigó & Yang, 2017).

Specifically, there are 648 authors who have contributed to research on financial expertise. Table 3.5 shows the information of the 20 authors with the most publications and the total citations, as well as their affiliation. There are four authors with 5 publications each (Musa Mangena, Venancio Tauringana, Saeed R. Baatwah, and Gopal Krishnan). However, the most cited authors in this top 20 are Lawrence Abbott, Jagan Krishnan, Gopal Krishnan, Vic Naiker, and Udi Hoitash.

Nevertheless, there are authors who have fewer publications and are not in this table, although they have influential research with a high number of citations. In this regard, the six authors who have the most citations regardless of the number of the publications are: Lawrence Abbott (742), Susan Parker (742) Gary F. Peters (742), Anud Agrawal (465), Sahiba Chadha (465) and David B. Farber (434).

The information about authors can be expanded from the perspective of co-authorship analysis, which consists of studying the collaborations that two or more authors make between them when they publish together (Barabâsi et al., 2002). At this stage, those studies that only have one author cannot be analyzed since there is no network (Perianes-Rodriguez et al., 2016). Cooperation between authors is relevant considering that the specialization of the research and the complex methodologies increasingly lead to the need for an alliance between authors (Cisneros et al., 2018).

The results from Figure 3.2 present a total of 648 authors, connected by 212 different clusters. The largest of the connection group, which is shown in Figure

3.3, has a total of 19 authors. The nodes more centered in each of the clusters represent the influence of these authors. In addition, those authors who have published more are represented with the largest nodes.

It can be observed that there is no extensive collaboration between the different authors in this branch of research. These findings suggest that a greater network between authors, countries and different organizations could be beneficial for the extension and development of conclusive scientific evidence on financial expertise.

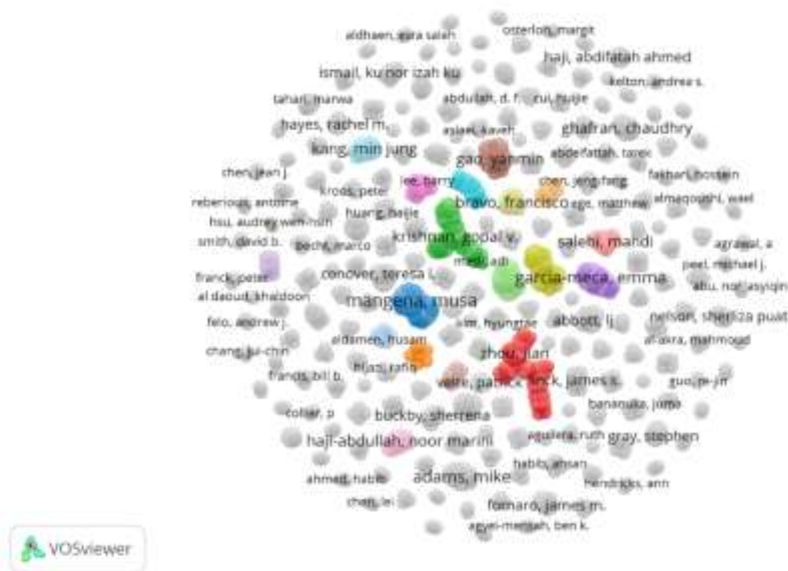
Table 3.5. Study 2: Publishing activity by authors and organizations.

Author by citation	TP	Citations	Organization
Baatwah, Saeed Rabea	5	9	Shaqra University
Krishnan, Gopal	5	367	Bentley Univ
Mangena, Musa	5	118	University of Nottingham
Tauringana, Venancio	5	65	Southampton Solent University
Adams, Mike	4	19	University of Bath
Bravo, Francisco	4	9	University of Seville
Garcia-Meca, Emma	4	36	Universidad Politecnica de Cartagena
Salehi, Mandi	4	17	Ferdowsi University Mashhad
Abbott, Lawrence	3	742	University of Pennsylvania
Gao, Yanmin	3	41	University of Alberta
Garcia-Sanchez, Isabel-Maria	3	31	University of Salamanca
Ghafran, Chaudhry	3	68	University of Sheffield
Haji-Abdullah, Noor Marini	3	8	Univ Teknol MARA
Hoitash, Udi	3	286	Northeastern University
Jiang, Wei	3	17	Columbia University
Kang, Min-Jung	3	5	Sungshin Women's University
Krishnan, Jagan	3	402	Temple University
Naiker, Vic	3	356	University of Melbourne
Raghunandan, Kannan.	3	240	Florida International University
Salleh, Zalailah	3	17	Universiti Malaysia Terengganu

NOTE: TP: Total Publications

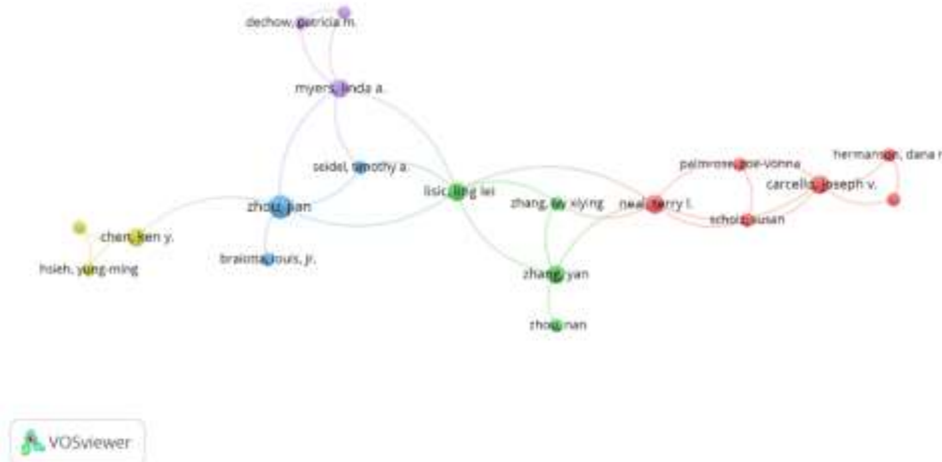
Source: own elaboration.

Figure 3.2. Study 2: Network visualization of co-authorship analysis from 648 authors.



Source: own elaboration.

Figure 3.3. Study 2: Network visualization of co-authorship analysis from 19 authors.



Source: own elaboration.

3.4.5. Citation analysis (RQ5)

As explained in previous sections, the aim of citation analysis is to show the influence of publications on financial expertise in the literature (Merigó & Yang, 2017). Citation analysis has been extensively used to judge the impact of publications and as a measure of the scientific quality of researchers and institutions (Ellegaard & Wallin, 2015). At the same time, this analysis remains crucial for scholars to map the previous literature and position their research. Specifically, the analysis focuses on showing local citations, verifying the impact on the publications studied in this research (Kent Baker et al., 2020). Table 3.6 shows the 20 most cited documents.

As financial expertise is a specific attribute of board of directors and audit committees, and most of the research on this matter has been conducted recently, it is not surprising that the number of citations is not especially high. Only Abbot et al. (2004) exceed 500 citations (505). The papers by Agrawal and Chadha (2005), Farber (2005), and Bédard et al. (2004) exceed four hundred citations (465, 434, and 430 respectively). These are the most influential publications in our sample.

Table 3.6. Study 2: Top 20 documents and authors most cited.

Publication	Reference	TC	Journal
Audit committee characteristics and restatements.	Abbott *et al*. (2004)	505	*Auditing: A Journal of Practice & Theory*
Corporate governance and accounting scandals.	Agrawal and Chadha (2005)	465	*Journal of Law and Economics*
Restoring Trust after Fraud: Does Corporate Governance Matter?	Farber (2005)	434	*The Accounting Review*
The effect of audit committee expertise, independence, and activity on aggressive earnings management.	Bédard *et al*. (2004)	430	*Auditing: A Journal of Practice & Theory*
Does the market value financial expertise on audit committees of boards of directors?	DeFond *et al*. (2005)	397	*Journal of Accounting Research*

Publication	Reference	TC	Journal
Audit committee quality and internal control: An empirical analysis.	Krishnan (2005)	333	*The Accounting Review*
The association between audit committee characteristics and audit fees.	Abbott *et al*. (2003)	237	*Auditing: A Journal of Practice & Theory*
Financial expertise of directors.	Guner *et al*. (2008)	225	*Journal of Financial Economics*
Corporate Governance and Internal Control over Financial Reporting: A Comparison of Regulatory Regimes.	Hoitash *et al*. (2009)	219	*The Accounting Review*
The effects and unintended consequences of the Sarbanes-Oxley Act on the supply and demand for directors.	Linck *et al*. (2009)	217	*The Review of Financial Studies*
Does the SOX definition of an accounting expert matter? The association between audit committee directors' accounting expertise and accounting conservatism.	Krishnan and Visvanathan (2008)	209	*Contemporary Accounting Research*
The Association Between Accruals Quality and the Characteristics of Accounting Experts and Mix of Expertise on Audit Committees.	Dhaliwal *et al*. (2010)	204	*Contemporary Accounting Research*
The impact of corporate governance on Internet financial reporting	Kelton and Yang (2008)	157	*Journal of Accounting and Public Policy*
Corporate Governance Research in Accounting and Auditing: Insights, Practice Implications, and Future Research Directions.	Carcello *et al*. (2011)	130	*Auditing: A Journal of Practice & Theory*
Fair value accounting and gains from asset securitizations: A convenient earnings management tool with compensation side-benefits.	Dechow *et al*. (2010)	125	*Journal of Accounting and Economics*
Audit Committees, Boards of Directors, and Remediation of Material Weaknesses in Internal Control.	Goh (2009)	122	*Contemporary Accounting Research*
The value of independent directors: Evidence from sudden deaths.	Nguyen and Nielsen (2010)	117	*Journal of Accounting and Economics*

Publication	Reference	TC	Journal
Evaluating financial reporting quality: The effects of financial expertise vs. financial literacy.	McDaniel *et al.* (2002)	112	*The Accounting Review*
Can corporate governance deter management from manipulating earnings? Evidence from related-party sales transactions in China	Lo *et al.* (2010)	105	*Journal of Corporate Finance*
Audit committee financial expertise and earnings management: The role of status.	Badolato *et al.* (2014)	103	*Journal of Accounting and Economics*

NOTE: TC: Total Citations

Source: own elaboration.

3.4.6. Content analysis (RQ6)

In this thesis, as it was developed before, the network analysis leads us to identify the most important topics studied, therefore it allows us to perform a content analysis in relation to the literature concerning financial expertise. Particularly, Table 3.7 summarizes the main research themes in this branch of literature, and interesting conclusions may be drawn. Specifically, the content analysis is performed for three different periods of time (2002-2020, 2010-2020, and 2018-2020), which allows detecting potential research trends.

On the one hand, several general findings can be highlighted. First, most of the papers of the total sample, selected through the primary search criteria (considering financial expertise and both boards of directors and audit committees), have been published in the last decade (252 out of 287), and especially in the last three years (109 out of 287). Second, when the initial search is particularly restricted to audit committees, our findings show that the majority of the publications, about 70% in all the periods, refer to audit committee financial expertise. Legislations and recommendations from regulators and professionals focus on this matter and, accordingly, academics tend to examine the role of financial experts in the audit committee (Abbott et al., 2004; Abernathy et al., 2014; Bravo & Reguera-Alvarado,

2019; García-Sánchez et al., 2017a). Third, the number of publications that specifically deal with accounting financial expertise may be particularly low and have been published in the last decade (Das et al., 2020). The controversy concerning the broad definition of financial expertise provided by the SOX (Dhaliwal et al., 2010; Krishnan & Visvanathan, 2008) and the approval of European legislations explicitly focusing on the relevance of accounting expertise might be determinant in the increase of this piece of research. However, only about 10% of the papers (30 out of 287) have addressed this specific type of financial expertise, thus resulting in encouraging research opportunities to unravel the role of financial experts.

On the other hand, the main boundaries of research regarding financial expertise are reviewed, and our results reveal that publications mostly analyze the effects of financial expertise on different firm outcomes, this research being highly fragmented and without a unique focus. In this regard, the previous literature has predominantly focused on the impact of financial expertise on financial decisions made by boards and traditional functions assigned to the audit committee, such as earnings quality (Badolato *et al*., 2014; Chan et al., 2013), the financial reporting process (Hesarzadeh & Rajabalizadeh, 2020; Velte, 2018), risk oversight (García-Sánchez et al., 2017a), internal control (Almaqoushi & Powell, 2020; Zhang et al., 2007), relations with external auditors (Salleh & Stewart, 2012), and firm financial performance (Aldamen et al., 2012; Huang et al., 2016). Particularly, a significant number of studies regarding financial expertise consider the topics of "earnings quality/earnings management/earnings conservatism" (34.1%), "financial reporting/financial disclosure" (27.5%), "risk" (20.6%), "internal control" (20.2%), "auditor/external auditor" (18.5%), and "firm financial performance" (15.0%). While the inclusion of some of these terms ("risk", "auditor/external auditor", "firm financial performance") have been slightly enhanced in the most recent studies, the frequency of use of other topics ("earnings quality/earnings management/earnings conservatism", "financial reporting/financial disclosure", and "internal control")

have decreased, which can denote a progressive loss in research interest. In addition, our findings highlight that there is a new trend, still incipient, related to social and ethical issues, such as "gender diversity" (Bravo & Alcaide-Ruiz, 2019), "corporate social responsibility" (Appuhami & Tashakor, 2017), "ethics" (García-Sánchez et al., 2017b), "sustainability" (Buallay & Al-Ajmi, 2020) and "voluntary disclosure" (Mohammadi et al., 2020). Although the number of publications regarding these topics remains relatively low for the entire period, resulting in 51 papers altogether, all of them have been published in the last decade, and significantly in the last three years (33 publications). Therefore, the publications regarding financial expertise that consider any of these topics mean over 30% of the research activity for the last three years, which underlines the novelty and relevance of these issues and, at the same time, encourages scholars to explore these lines of research to find out insightful evidence.

Moreover, Table 3.7 confirms that the number of studies that include the term "theory" remains low, which suggests that the main body of current research regarding financial expertise is mainly empirical, without putting the emphasis on theoretical foundations. In this regard, agency theory is predominantly employed in this research area. In addition, the low number of publications that consider the terms "interaction" or "moderation" is surprising. Recent studies have emphasized the need to consider the moderation of the context to provide more conclusive evidence on the role of directors so that policy-makers and practitioners can make their legislations and recommendations more effective (Bravo & Reguera-Alvarado, 2019; Jain & Jamali, 2016; Zona et al., 2013). However, despite being theoretically clear, there is scarce empirical evidence on how the context, firm characteristics, or board characteristics can moderate the influence of financial experts.

Table 3.7. Study 2: Content Analysis.

Stages 1º	2º	3º	NP (2002-2020)	PT (2002-2020)	NP (2010-2020)	PT (2010-2020)	NP (2018-2020)	PT (2018-2020)
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"		287		252		109	
"Financial Expertise" AND "Financial Experts"	AND "Audit Committee"		205	71.4%	174	69.0%	75	68.8%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Earnings Quality" or "Earnings Management" or "Earnings Conservatism"	98	34.1%	88	34.9%	35	32.1%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Financial Reporting" or "Financial Disclosure"	79	27.5%	64	25.4%	23	21.1%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Risk"	59	20.6%	54	21.4%	27	24.8%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Internal Control"	58	20.2%	50	19.8%	18	16.5%

Stages 1º	2º	3º	NP (2002-2020)	PT (2002-2020)	NP (2010-2020)	PT (2010-2020)	NP (2018-2020)	PT (2018-2020)
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Auditor" or "External Auditor"	53	18.5%	40	15.9%	22	20.2%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Firm financial performance"	43	15.0%	41	16.3%	21	19.3%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Theory"	42	14.6%	42	16.7%	22	20.2%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Board Independence" or "Independence Directors"	33	11.5%	29	11.5%	15	13.8%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Accounting Expertise" or "Accounting Expert"	30	10.5%	29	11.5%	16	14.7%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Gender" or "Gender Diversity"	24	8.4%	24	9.5%	15	13.8%

Stages 1º	2º	3º	NP (2002-2020)	PT (2002-2020)	NP (2010-2020)	PT (2010-2020)	NP (2018-2020)	PT (2018-2020)
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Agency Theory"	21	7.3%	21	8.3%	8	7.3%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Firm value" or "Market Value"	12	4.2%	10	4.0%	6	5.5%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Interaction" or "Moderation"	9	3.1%	8	3.2%	4	3.7%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Voluntary Disclosure"	8	2.8%	8	3.2%	5	4.6%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Corporate Social Responsibility"	7	2.4%	7	2.8%	5	4.6%
"Financial Expertise" AND "Financial Experts"	AND "Audit committee" OR "Board of directors" OR "Board"	"Sustainability"	7	2.4%	7	2.8%	6	5.5%

Stages 1º	2º	3º	NP (2002-2020)	PT (2002-2020)	NP (2010-2020)	PT (2010-2020)	NP (2018-2020)	PT (2018-2020)
“Financial Expertise” AND “Financial Experts”	AND “Audit committee” OR “Board of directors” OR “Board”	“Ethic” or “Ethics”	5	1.7%	5	2.0%	2	1.8%
“Financial Expertise” AND “Financial Experts”	AND “Audit committee” OR “Board of directors” OR “Board”	“Resources Dependence”	4	1.4%	4	1.6%	0	0.0%
“Financial Expertise” AND “Financial Experts”	AND “Audit committee” OR “Board of directors” OR “Board”	“Stakeholders Theory”	3	1.0%	3	1.2%	2	1.8%
“Financial Expertise” AND “Financial Experts”	AND “Audit committee” OR “Board of directors” OR “Board”	“Audit Fee”	3	1.0%	3	1.2%	2	1.8%
“Financial Expertise” AND “Financial Experts”	AND “Audit committee” OR “Board of directors” OR “Board”	“Accounting Fraud” or “Accounting restatement”	2	0.7%	2	0.8%	1	0.9%

NOTES: NP: Number of publications in this period. PT: Percentage over the total publications in this period.

Source: own elaboration.

3.5 Conclusion

This study offers a unique and global vision concerning research on financial expertise by performing a bibliometric analysis of the 287 publications obtained from the main collection of the WOS, which enables mapping the intellectual structure of this research line, evaluating its progress, and identifying current and future research trends. In this case, this analysis is particularly relevant since boards and audit committee attributes are at the center of regulatory and professional debates, including director financial expertise, and research activity on this topic has gained increasing interest. In this section, the main findings and implications are highlighted, as well as the potential future lines of research on this topic.

Our bibliometric analysis addresses several specific research questions and interesting evidence, with direct implications for academics, has been found. First, research activity has grown exponentially, especially in the last decade. The review of almost two decades of investigation has revealed the origin of this research line and the legislations and recommendations that may explain its expansion. Second, research on financial expertise has been predominantly developed in the US context and in other Anglo-Saxon countries. In addition, this topic has also gained interest in emerging economies. However, despite the approval of specific legislations and the ever-increasing academic attention on this matter, financial expertise remains under researched in the European Union setting. This evidence provides encouraging opportunities for scholars to offer a full picture of the role of financial experts from an international point of view. Third, the analysis of publishing activity by journal remains helpful for academics in orienting their research. In this regard, although the main journals that contain publications on this topic are in the Business and Finance category, our study suggests that the future research trends may also consider social and ethical views, and this may enable positioning research on financial expertise in journals with a broader scope, thereby

increasing the multidisciplinary nature of this stream of research. Fourth, the analysis of authors' productivity and influence proves vital for scholars to have an updated review of the literature, considering the most influential authors and therefore understanding the intellectual structure of this research line. This analysis also reveals that research networks in this research area are generally small and limited to their own research groups or professional organizations. This encourages the creation of new working relationships and the expansion of collaborations. Fifth, the citation analysis proves vital to an understanding of the most notable and influential publications in this research field, which remains necessary for scholars to understand research gaps and position their efforts. Sixth, the content analysis shows the most frequent themes in the literature regarding financial expertise. The consideration of different periods allows identifying the progressive transaction toward topics more related to corporate social responsibility or ethical perspectives. This analysis also reveals that research on specific accounting financial expertise might be expanded to obtain a more comprehensive view of the role of financial experts. Moreover, our findings also highlight that future investigations may strengthen theoretical frameworks and methodologies by considering that the influence of financial experts is likely to be moderated by contextual factors.

In addition to these implications for academics, in line with the comments from Chapter 2, it is important to highlight that the increasing importance of the assessment of scientific production has made bibliometric studies also have significant implications for universities and policy-makers. For instance, in faculty recruiting processes, in setting the research strategies of universities and research organisms, in the ranking of research departments and institutions, or in the assignment of funds (Ellegaard & Wallin; 2015).

Nonetheless, this analysis obviously presents has certain limitations, which are similar to the ones described for the previous bibliometric analysis explained in Chapter 2. First, this study analyzes the documents included in the WOS

database, and other databases can be considered for future research. Second, bibliometric research analyzes the documents based on the number of citations and the number of publications, without considering the content of the document. Third, our search criteria are based on our literature review, and other keywords could emerge in the future.

CHAPTER 4

STUDY 3: AUDIT COMMITTEE FINANCIAL EXPERTISE AND READABILITY OF THE MANAGEMENT REPORTS

CHAPTER 4. STUDY 3: AUDIT COMMITTEE FINANCIAL EXPERTISE AND READABILITY OF THE MANAGEMENT REPORTS

4.1. Introduction

The main objective of this chapter is to examine the impact of financial experts in the audit committee, considering not only financial expertise in the broad sense but also specific accounting financial expertise, on the readability of management reports.

Previous research documents that audit committee financial expertise generally has a relevant effect on corporate reporting quality because financial experts improve the ability to monitor the reporting process (Abbott et al., 2004; Bravo & Reguera-Alvarado, 2019; Li et al., 2012; Mangena & Pike, 2005).

Nevertheless, corporate reporting can be measured by different dimensions, such as information readability, which refers to syntactical complexity (Jones & Smith, 2014). The higher the syntactical complexity the lower the readability. In recent years, information readability has become an important information attribute for both regulators and researchers since textual disclosures represent a significant proportion of firms` reporting practices (Lo et al., 2017). In this sense, the International Financial Reporting Standards (IFRS), as well as several regulatory bodies, have stressed the need to consider information readability in the preparation of financial reports (ESMA, 2015; SEC, 2007). As a result, a recent stream of the accounting literature has analyzed lexical characteristics of narrative disclosures (De Franco et al., 2015; Hesarzadeh et al., 2019; Hesarzadeh & Rajabalizadeh, 2020; Lang & Stice-Lawrence, 2015; Li, 2008; Melloni et al., 2017;). The majority of the accounting readability studies have focused on the annual report (including the notes to the financial statements, the Chairperson`s letter, and the audit report), and the integrated reports (Stone & Lodhia, 2019). Research tends to find

low levels of readability in accounting communications, especially after the introduction of the IFRS (Richard et al., 2015).

Despite the relevance of both the audit committee composition and information readability, studies concerning the impact of audit committee financial expertise on the readability of corporate financial reports are scarce. In particular, our study is close to Velte (2018b), who finds that audit committee financial expertise leads to an increase in the readability of integrated reports because this kind of expertise strengthens the monitoring and oversight of the reporting process, thereby reducing agency costs. This approach is consistent with many other papers which assume that low levels of readability are explained by managers' obfuscation and opportunistic behaviors (Li, 2008; Lo et al., 2017; Xu et al., 2019). However, another cause for low levels of readability may be the provision of additional useful information, which leads to disclosures with specific terminology, or that can require more complex information (Hesarzadeh et al., 2019).

Therefore, there are two opposite arguments in the literature. On the one hand, managers' obfuscation can result in opportunistic incentives to mask adverse information by using longer sentences or more complex language (Tan et al., 2015). This reduction in information readability increases uncertainty and has negative consequences in the capital markets. On the other hand, the disclosure of information that can require detailed aspects of a firm's financial reality usually requires a high syntactical complexity (Bloomfield, 2008). However, the lower discretionary readability related to higher clarification can help to minimize uncertainty and have positive effects on the capital markets (Hesarzadeh et al., 2019). Therefore, under an agency perspective, the well- documented improvement in audit committee monitoring abilities due to the influence of financial experts may lead to two competing effects. First, audit committee financial expertise would help to oversee the reporting process, thereby reducing managers' opportunism and enhancing information readability. Second, audit committee financial experts could exert a

higher influence on the reporting process, not only reducing managers' opportunism, but also actively promoting the disclosure of specific information for investors, which would increase syntactical complexity. In this scenario, audit committee financial experts would reduce information readability.

Our study extends Velte (2018b) by proposing a negative effect of audit committee financial expertise on the information readability of financial reports. In line with Hesarzadeh et al. (2019), we argue that audit committee financial experts mitigate agency costs by monitoring the reporting process, but this may reduce the readability of documents that demand the disclosure of intrinsically complex information. Consistent with previous accounting readability research (Ben-Amar & Belgacem, 2018; Hesarzadeh et al., 2019; Li, 2008; Lo et al., 2017), we focus on the management report, which is an influential source of information for investors, with a high richness of narrative disclosures, and where managers enjoy a great level of discretion concerning the verbiage in reporting information. The Spanish regulation of the management report and its content is based on international documents, such as the "IFRS Practice Statement on Management Commentary", issued by the IASB (2010), and the "General Principles Regarding Disclosure of Management's Discussion and Analysis of Financial Condition and Results of Operations", issued by the IOSCO (2003). Irrespective of the terminology used in different countries, the management report is equivalent to other documents, like the Management Discussion and Analysis (MD&A) in the United States or the Operating and Financial Review (OFR) in the United Kingdom (CNMV, 2013). The common objective of these reports is to show, from a managers' view, qualitative information about a company's operations and financial conditions relevant to the markets. Specifically, in the Spanish management report the management must provide complementary information on financial statements. In this regard, this report shall include references and additional explanations about the figures shown in the financial statements, including financial and other key performance indicators,

company financial risk management objectives and policies, and future projections. The previous literature has highlighted the importance of audit committee's in reviewing and discussing this report (Keinath & Walo, 2008). In this sense, we posit that audit committee financial expertise can exert a major influence on the oversight of management reports, thus leading not only to reducing managers' opportunism, but also to assuring the completeness of the disclosures required in this document. As most of these disclosures lead to a high syntactical complexity, an active role of audit committee financial experts in the monitoring of management reports will reduce their readability.

In addition, our analysis also extends the previous literature by examining both non-accounting financial expertise and specific accounting financial expertise. This topic remains relevant due to regulatory and professional debates regarding the importance of accounting expertise. While in the United States the Securities Exchange Commission initially included a broad definition of financial expertise based on the Sarbanes-Oxley Act (SOX) (SEC, 2003), in the European context, recent reforms have narrowed this definition, focusing on accounting expertise (Directive 2014/56/EU). In this regard, at least one member of the audit committee should be a financial expert with specific accounting expertise in order to reinforce the AC's technical competence. Professional bodies have also advocated the incorporation of accounting financial experts into the audit committee (Deloitte, 2018). Moreover, we also broaden the previous research by analyzing how the intensity of the AC's activity, measured by the number of meetings, may moderate the relationship between financial expertise and the information readability. This remains a significant issue since recent research has highlighted the need to consider the context in order to gain a clearer insight into the influence of directors (Bravo & Reguera-Alvarado, 2019; Zona et al., 2013). Specifically, audit committee activity has become an important issue for professionals and regulators (Deloitte, 2018; Directive 2014/56/EU), which have suggested in their recommendations and

legislations the need for audit committee's to meet frequently to perform their duties effectively.

The sample of this analysis is composed of the firms listed on the Madrid Stock Exchange (IGBM) for the period 2013 to 2015. This sample provides an especially interesting scenario because the characteristics of Spanish firms, such as high ownership concentration, unitary board system and voluntary good governance practices, are likely to lead to significant agency conflicts (Manzaneque et al., 2016). Therefore, the Spanish context is particularly relevant for the analysis of the effect of corporate governance mechanisms on reporting practices. While some research has been conducted recently on information readability in Spain (Moreno & Casasola, 2016; Suárez Fernández, 2016), the effects of audit committee on the readability of corporate reports remains unexplored. Additionally, the data about the financial expertise has been hand-collected by individually analyzing the biographies of audit committee members.

Our results indicate that there is a negative association between the readability of management reports and audit committee audit committee financial expertise, which is stronger for accounting financial expertise. Moreover, the audit committee activity moderates this relationship. These findings contribute to the accounting literature in several ways. First, our evidence suggests that, in addition to mitigating managers' obfuscation, audit committee financial experts actively monitor and influence the management report through the disclosure of specific information, such as business operations, the economic environment, the associated business risks, and future financial projections, increasing the syntactical complexity of reports and thus reducing information readability. Therefore, we reinforce the idea that agency theory can have different implications in the analysis of information readability. In this regard, a reduction of agency costs can lead to a reduction in information readability, which is strictly based on syntactical complexity, especially in documents that required disclosures of a complex nature. This will have implications

in terms of actions that can be taken by regulators concerning firms' information readability, and for academics in the definition of theoretical frameworks to analyze the determinants of information readability. Second, our results contribute to the aforementioned debates about the definition of financial expertise by highlighting the stronger influence of financial experts with specific accounting expertise on the reporting process. Third, our findings also emphasize that the study of the influence of audit committee members requires the consideration of the context, and that the one-size-fits-all approach may be inappropriate for all cases. In particular, our evidence strengthens the professional and regulatory discussions concerning the need for the audit committee to meet regularly, since the involvement and the effect of financial experts on reporting practices appear to be amplified by the greater activity of the audit committee.

4.2. Literature review and hypothesis development

One of the most important functions of the audit committee is to assist the board of directors in implementing the corporate reporting strategy. Specifically, after the recent wave of accounting scandals, policymakers and professionals have emphasized the need for more financial experts on audit committees to perform their monitoring functions of the reporting process effectively (FRC 2015; SEC 2003). The previous literature indicates that audit committee financial expertise helps to mitigate earnings management (Badolato et al., 2014; Tanyi & Smith, 2014), and leads to a better internal control (Zhang et al., 2007), less restatements of earnings (Abbott, 2004), reduces bank insolvency risk-taking (García-Sánchez et al., 2017) and more accounting conservatism (García-Sánchez et al., 2017; Krishnan and Visvanathan, 2008). Other studies have reported that financial experts in the audit committee may contribute to improving voluntary disclosure practices (Abad & Bravo, 2018; Ahmed Haji, 2015), the issuance of management forecasts (Chan et al., 2013), and the timeliness of accounting information (Abernathy et al., 2014). A recent study (Velte, 2018b) has suggested that audit committee financial expertise is

crucial in the monitoring of the reporting process, and this leads to an enhancement of the readability of integrated reports.

Consistent with the approach proposed by Hesarzadeh et al. (2019), our study extends this research by examining the association between audit committee financial expertise and information readability under an agency perspective which, unlike most of previous studies, considers that the monitoring ability of audit committee financial experts may result in a lower readability. In particular, we argue that an active participation of audit committee financial experts in the oversight of management reports would reduce their readability, given the intrinsic complexity of the disclosures required in these documents. An explanation for this assertion is that readability is traditionally defined as the ease of reading a text due to the style of writing (Klare, 1963), which is related to syntactical complexity (De Souza et al., 2019). The relation between readability and understandability is controversial. While understandability considers a number of factors that may affect reader understanding (expertise, knowledge, or familiarity about the matter, among others), readability mainly focuses on syntactical complexity and is generally based on the sentence and word length (Stone & Lodhia, 2019). In this sense, researchers and policymakers have contemplated the use of formulas, such as the Fog Index, calculated as a combination of two variables related to sentence length and word length, to measure the readability of corporate reports (Loughran & McDonald, 2014). The two metrics that integrate this formula may be influenced by either manager discretion (obfuscation and opportunistic behavior) or as a result of providing additional useful information (Hesarzadeh et al., 2019). Indeed, the recent literature increasingly suggests that reduced readability may be due to a greater extent to the specification of relevant and complex information for investors and legislators with business terminology, as well as the disclosure of specific information on financial and

accounting operations[7] (Bloomfield, 2008; Guay et al., 2016; Jang & Rho, 2016; Loughran & McDonald, 2014).

Concretely, when the monitoring mechanisms are better, the disclosure of this kind of information can be accentuated in order to reduce agency costs (Guay et al., 2016; Li, 2008). This may be particularly relevant for management reports, which are required to analyze the information from the financial statements, and to include financial indicators and estimates, as well as information on financial risks. Both academics and firms have acknowledged that audit committees actively engage in reviewing and discussing the content of these documents (Cohen et al., 2007; Keinath & Walo, 2008; Lee & Park, 2019). As the monitoring abilities are expected to be intensified because of the financial expertise of audit committee members, in our study we expect that audit committee financial experts play an active role in the oversight of management reports, and this leads to an increase of syntactical complexity, thus reducing their information readability.

In regard to our first hypothesis, the previous literature generally indicates that the valuable skills and knowledge of financial experts may provide the audit committee with the ability to better monitor the reporting of a firm and to serve the interests of the shareholders (Güner et al., 2008). Acommittee members with financial expertise are also supposed to improve internal controls and promote the disclosure of additional information to prevent possible litigation and scrutiny from policymakers (García-Sánchez et al., 2017). Therefore, financial experts are expected to play an active role in the reporting process, particularly encouraging the audit committee to be more critical in analyzing corporate reporting (Sarwar et al., 2018) and providing information relevant for investors and policymakers (Abad & Bravo, 2018). In line with the previous arguments, this engagement with the reporting process is expected to be high for financial mandatory reports, such as the

[7] This information may improve understandability and reduce uncertainty, but it is expected to require longer sentences and words, which will increase syntactical complexity and reduce information readability.

management reports. In particular, audit committee financial experts can encourage a superior monitoring of management reports to meet higher reporting standards (Lee & Park, 2019). Consistent with the approach proposed by recent research (Hesarzadeh et al., 2019), we posit that, given the complexity of the disclosures required in the management report, the active participation of audit committee financial experts will lead to detailed comments of firms' financial reality, with specific terminology, which generally demand longer sentences. Furthermore, financial disclosures may contain polysyllable words, such as consolidated, corporation, expenses, interest, management, liabilities, operations, revenue, securities, subsidiaries (Loughran & McDonald, 2014). These words lead to an increase in syntactical complexity, although they are presumably easy for investors to comprehend. For instance, directors with financial expertise have the necessary knowledge to promote the communication of the specific disclosures required in the management report concerning business operations or the business environment (Xie et al., 2003), about the associated risks of future financial operations (Harris & Raviv, 1990), the consequences of financial decisions (Tanyi & Smith, 2014), and the discussion of the information concerning business projections (Badolato et al., 2014) and financial estimates (Abernathy et al., 2014). Regardless of the usefulness of this information, syntactical complexity is expected to increase, thus reducing the readability of these documents. Therefore, the following hypothesis is formulated:

H1: There is a negative association between audit committee financial expertise and the management report readability.

Beyond the wide definition of financial expertise, there is a growing international debate on the relevance of specific accounting financial expertise, which is likely to increase the technical competence of the audit committee (Directive 2014/56/EU; Deloitte, 2018). In this sense, empirical research shows that those financial experts with explicit accounting expertise are more effective in monitoring financial reports (Dhaliwal et al., 2010; Ghafran & O'Sullivan, 2017). In

particular, audit committee members with accounting financial expertise can better understand and oversee annual accounts and associated documents, such as the management report (Zhang et al., 2007), and therefore encourage the audit committee to provide a high level of the information demanded in these reports. Specifically, directors with accounting expertise are in a better position to promote in the management report more accurate information about accounting variables (Baatwah et al., 2015), a deeper discussion of the evolution of the financial statements (Tanyi & Smith, 2014), and detailed information about future business projections and earnings forecasts (Abad & Bravo, 2018; Chan et al., 2013). Furthermore, accounting experts may also assist audit committees to meet greater standards regarding the disclosure of certain issues related to consolidation accounting, mergers and acquisitions, financial assets, derivatives or hedging, or any other hard aspect derived from the adoption of IFRS (Chasan & Rubenfeld, 2015; DeFond et al., 2005). Therefore, audit committee accounting experts are likely to exert a higher monitoring of management reports, thus leading to specific disclosures which will increase syntactical complexity to a greater extent. Hence, we expect that the reduction in the readability of management reports will be more accentuated due to audit committee accounting experts, and the following hypothesis is formulated:

H2: The association between audit committee financial expertise and the management report readability is stronger (weaker) for audit committee accounting financial expertise (non-accounting financial expertise).

Furthermore, as an additional objective, this study provides a more in-depth analysis of the role played by audit committee financial expertise (including accounting financial expertise) by examining whether the intensity of the activity of this committee may moderate the effect that financial experts have on reporting practices. This is a relevant issue for several reasons. First, recent research emphasizes the need to employ contextual analysis to understand the influence of directors in the reporting process (Veltrop et al., 2018; Zona et al., 2013). Therefore,

financial experts may have a more active role in the reporting process depending on the context in which they work. Specifically, the audit committee supervises the elaboration and presentation of the reporting process, thus the more audit committee activity, the higher the monitoring effect (Deloitte, 2018; Monterrey & Sánchez, 2008). In this regard, the intensity of the activity of the audit committee, which can improve the dedication, coordination and commitment of audit committee members, is expected to affect the way financial experts oversee the reporting process (Bravo & Reguera-Alvarado, 2019). Previous research has generally used the number of meetings as a measure of the activity and/or diligence of a board or committee, under the assumption that more activity contributes to better monitoring (Brick & Chidambaran, 2010) and enhances directors' involvement in the reporting process (Vafeas, 1999). Frequent meetings are expected to lead to a greater control over disclosure practices and encourage the audit committee to improve the information in the financial statements and management reports (Al-Mudhaki & Joshi, 2004). Specifically, financial experts in audit committees that hold many meetings are likely to allocate more time to analyzing and addressing information needs and specific disclosure requirements and promoting the disclosure of additional information in the management report (Naseem et al., 2017). Consistent with the previous arguments, financial experts will have a stronger influence on reporting practices in firms with a higher audit committee activity, and therefore the following hypothesis is formulated:

H3: The association between audit committee financial expertise and the management report readability is influenced by audit committee activity.

4.3 Data and methodology

4.3.1 Sample and Data

The sample of this analysis is composed of firms listed on the Madrid Stock Exchange for the period 2013-2015. The period of analysis has been selected

due to the entry into force in Spain during 2016 of the Directive 2014/95/UE, regarding the disclosure of non-financial information, which may bias our results by influencing the information presented in the management reports. We focus on the management report, which has mainly a narrative nature and must be supervised by the audit committee (Lo et al., 2017). In order to enhance the comparability of our study, we selected those management reports written in English. Once the management reports were downloaded from the company's websites, the parsing process defined by Loughran and McDonald (2014) was followed. To that end, the management reports initially need to be edited in order to eliminate numbers, titles, graphics, acronyms and even the company's name, since these could distort readability measures.

Data about financial expertise were hand-collected by examining 778 audit committee members' biographies in the corporate governance reports, or by using other sources such as Bloomberg Business Week and LinkedIn, if necessary. On average, four directors were analyzed for every audit committee. Moreover, information about audit committee meetings and other financial data were extracted from corporate governance reports and the DataStream database, respectively.

A number of observations were missed because some firms failed to disclose their management reports in English, or some firms provided these reports in a non-editable format. The sample selection procedure is described in Table 4.1. As a result, an unbalanced dataset with 188 observations for the whole period (from 73 different companies) was obtained. The sample size has been proven to have enough statistical power in many recent studies using regression analyses techniques (Martínez-Blasco et al., 2017; Pavlopoulos et al., 2019). In our study, readability scores are calculated concerning the management reports published one-year ahead of the independent variables to mitigate endogeneity concerns derived from reverse causality (Ben-Amar & McIlkenny, 2015; Cabeza-García et al., 2018).

Table 4.1. Study 3: Sample selection procedure.

	Number of firms			
	2013	**2014**	**2015**	**Total**
Total firms listed in Madrid Stock Exchange	161	161	161	483
Excluding firms without management reports in English or in a valid format	102	94	99	295
Total firms in the sample analysed	59	67	62	188

Source: own elaboration.

4.3.2 Dependent variable: Fog Index

The Fog Index (Fog) is used to measure the readability of management reports. This index has been widely used in recent research in the management and finance literature (Ajina et al., 2016; Ben-Amar & Belgacem, 2018; Hesarzadeh & Rajabalizadeh, 2020; Li, 2008; Lehavy et al., 2011; Lo et al., 2017; Muslu et al., 2017; Velte, 2018b). This index evaluates text linguistic complexity as a function of the average sentence size and the proportion of complex words (those that contain three or more syllables) per sentence, and it is calculated by the following formula:

Fog Index = 0.4 * (average words per sentence + percentage of "complex words")

Assuming that the text is well-written and logical, research generally considers that the Fog Index captures text complexity (Ajina et al., 2016) and the higher the value, the lower the readability. The index establishes several different categories for the analysis of the readability levels, and in order to make them comparable with other readability indices the recent literature (Li, 2008; Velte, 2018b) suggests the interpretation of the index scores as follows: Fog values higher than 18 mean that the text is very difficult to read; scores between 14 and 18 imply that the text is difficult to read; between 12 and 14 would be ideal; between 10 and 12 acceptable; and between 8 and 10 childish.

In order to increase the robustness of our empirical study, a sensitivity analysis is performed by employing an alternative dependent variable, the Smog Index (Smog), which has been also highlighted as relevant in capturing the readability of company reports (Fakhfakh, 2016; Muslu et al., 2017; Nazari et al., 2017). This index also analyzes readability based on syntactical complexity by considering the number of polysyllabic words (those that have four or more syllables) in the text (McLaughlin, 1969), and it is calculated as follows:

$$\text{Smog Index} = 3 + (\text{number of polysyllabic words} * 30 \text{ sentences})^{1/2}$$

The interpretation of the scores obtained by the Smog Index is divided into four categories: values over 19 mean that the text has a low readability; between 17 and 18 refer to an intermediate-difficult level; between 13 and 16 would be intermediate-easy; and under 12 texts are easy to read.

Moreover, additional analyses are carried out, including other readability measures, which will enable drawing more in-depth conclusions. On the one hand, the two metrics of the Fog index, length (Length), and complex words (Complex_words), are included since this helps to understand the readability scores (Hesarzadeh & Bazrafshan, 2019). On the other hand, the number of pages (Number_pages) has been considered as a proxy for information readability (De Souza et al., 2019).

4.3.3 Explanatory variables

Our main explanatory variables are related to audit committee financial expertise. Specifically, we consider accounting financial expertise (AFE) and non-accounting financial expertise (NAFE). Following recent research (Abernathy et al., 2014; Badolato et al., 2014), in order to classify an audit committee member as an accounting financial expert that person needs to have a professional certification in accounting, including Chief Financial Officer, Accounting Officer, Certified Public

Accountant, Chief Accountant, Chartered Accountant, Head of Accounting, Vice-President of Accounting. Second, non-accounting financial experts have held supervisory and finance positions, such as Chief Executive Officer, President, Banker, Analyst, Loan Officer, Investment Manager, Fund Manager, Asset Manager, Treasurer, Finance Director, Manager Finance, and Vice-President Finance. AFE is the percentage of audit committee members with specific accounting expertise and NAFE is the proportion of non-accounting financial experts in the audit committee. A supplemental variable that incorporates both types of financial expertise is also considered in this study, as the proportion of audit committee members with any kind of financial expertise (FE).

4.3.4 Moderating variable and other control variables

Our moderating variable, related to audit committee activity (Ac_meetings), is defined as the number of meetings of the audit committee in a year. Based on recent studies on the determinants of information readability (Ben-Amar & Belgacem, 2018; Velte, 2018b), several control variables are also considered: firm size, leverage, profitability, firm growth, firm age, number of segments, and industry. Firm size (Size) is measured as the logarithm of total assets. Leverage (Leverage) is calculated as the ratio of total debt to assets. Profitability (Profitability) refers to the return on assets. Firm growth (Growth) is measured as the change in net sales. The age of the company (Firmage) is calculated from when the company started its business. The number of business segments (Segments) is measured as the number of segments. Finally, the industry (Sector) is a dichotomous variable based on the industry classification provided by the Madrid Stock Exchange. Table 4.2 provides a summary of all the variables and their definitions.

Table 4.2. Study 3: Definition of variables.

Variables	Definition
Dependent Variables	
Fog	Gunning Fog Index
Smog	Smog Index
Length	Average words per sentence
Complex_words	Percent of words with three or more syllables
Number_pages	Number of pages of the management report
Explanatory Variables	
FE	Proportion of members in the audit committee with financial expertise
AFE	Proportion of members in the audit committee with accounting financial expertise
NAFE	Proportion of members in the audit committee with non-accounting financial expertise.
Control Variables	
Ac_meetings	Number of meetings of the audit committee in a year
Size	Logarithm of the total assets
Leverage	Ratio of total debt to assets
Profitability	Return on assets
Growth	Change in net sales
Firmage	The number of years since the formation of the firm
Segments	Number of business segments
Sector	Dummy variables for each industry
Year	Dummy variables for each year

Source: own elaboration.

4.3.5 Research model

To test the hypotheses formulated, we employ a fixed effect panel data estimation model for the regression analysis where the readability of management

reports, a dependent variable, is regressed on explanatory and control variables. The Hausman test was used to select the most appropriate estimation method: fixed effects or random effects. The models used in the empirical analysis are represented as follows:

Model 1: Readability measures = f (control variables)

Model 2: Readability measures = f (FE, control variables)

Model 3: Readability measures = f (AFE, control variables)

Model 4: Readability measures = f (NAFE, control variables)

Model 5: Readability measures = f (AFE, NAFE, control variables)

Model 1 includes only the control variables. Model 2 considers a broad definition of financial expertise which aggregates both accounting and non-accounting expertise. Models 3 and 4 alternatively include specific accounting financial expertise and non-accounting financial expertise. Model 5 includes these two variables together to avoid biases of omission.

4.4 Results

4.4.1 Descriptive statistics and correlations

Table 4.3 provides the main descriptive statistics for our variables. As regards the main measure of the readability of management reports, the average value of the Fog Index is 18.22, which highlights that management reports are very difficult to read because they have a high complexity. This value is similar to those found by other studies on the readability of management reports in other countries in the European Union or in the United States (Ajina et al., 2016; Ben-Amar & Belgacem, 2018; Melloni et al., 2017). With respect to the Smog index, an average of 14.239 is obtained. This score corresponds to texts with an "Intermediate-easy" level in terms of readability, which shows important differences with respect to the Fog

Index. The previous literature also shows differences between the Fog and Smog Indices due to their calculation and underline that Smog scores tend to report a higher readability than Fog values (Nazari et al., 2017). On the other hand, our results also highlight that only 36.1% of the audit committee members have financial expertise. Particularly, only 17.4% of the directors are accounting financial experts, and 18.7% of the directors are non-accounting financial experts. In addition, our findings show that audit committees, on average, held nine meetings per year.

Table 4.3. Study 3: Descriptive Statistics.

	Mean	Standard deviation	Q1	Median	Q3
Fog	18.220	2.007	17.3	18.35	19.5
Smog	14.239	1.456	13.525	14.3	15.1
Length	25.350	4.499	23.005	25.79	28.31
Complex_words	20.201	2.268	19.003	20.24	21.475
Number_pages	30.415	30.584	10	21	34
FE	0.361	0.285	0.2	0.333	0.575
AFE	0.174	0.181	0	0.2	0.333
NAFE	0.187	0.210	0	0.2	0.333
Ac_meetings	9.543	4.818	6	9	12
Size	14.875	3.732	13.779	15.037	16.997
Leverage	0.669	0.277	0.527	0.709	0.882
Growth	0.036	0.124	-0.033	0.021	0.086
Profitability	5.149	5.731	1.475	3.875	6.94
Firmage	57.447	49.301	24.5	43	74.5
Segments	3.622	1.743	3	3	4

NOTES: See Table 4.2 for the definition of all the variables.
Source: own elaboration.

The sample correlations between all the variables are reported in Table 4.4. The Fog and Smog Index are correlated, as could be expected. The bivariate correlations show that the proportion of financial experts in the audit committee is positively associated with the values of readability indices, which means that audit

committee financial expertise is negatively related to the readability of management reports, as predicted in the theoretical framework. As expected, the variable FE shows a positive association with both AFE and NAFE. Nevertheless, the correlation coefficients show that the variables AFE and NAFE are not correlated. In addition, we fail to find a positive bivariate correlation between the readability of management reports and most of the control variables, except for firm size and the number of segments. Overall, none of the independent variables show a significantly high correlation, which suggests multicollinearity is not likely to be an issue in our regression models[8].

[8] Generally, multicollinearity is considered to be a problem if a correlation between independent variables is higher than 0.7 (Cooper & Schindler, 2003).

Table 4.4. Study 3. Pearson's Correlation Matrix.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	***Fog***	1													
2	***Smog***	0.959***	1												
3	***Length***	0.892***	0.905***	1											
4	***Complex_words***	0.443***	0.327***	-0.010	1										
5	***Number_pages***	0.074	0.087	-0.004	0.171**	1									
6	***FE***	0.140*	0.175**	0.142*	0.028	0.227***	1								
7	***AFE***	0.104	0.117	0.148**	-0.065	0.132*	0.677***	1							
8	***NAFE***	0.101	0.136*	0.065	0.095	0.195***	0.773***	0.056	1						
9	***Ac_meetings***	0.068	0.089	0.099	-0.047	0.327***	0.037	-0.048	0.091	1					
10	***Size***	0.159**	0.171**	0.128*	0.101	0.467***	0.145**	-0.107	0.289***	0.397***	1				
11	***Leverage***	-0.106	-0.085	-0.062	-0.110	0.300***	-0.014	-0.109	0.075	0.415***	0.662***	1			
12	***Profitability***	0.106	0.117	0.093	0.050	-0.241*	0.077	0.047	0.063	-0.101	-0.015	-0.153**	1		
13	***Growth***	0.002	-0.009	-0.022	0.049	-0.080	0.062	0.019	0.068	-0.110	-0.002	0.013	-0.005	1	
14	***Firmage***	0.059	0.006	0.027	0.077	0.083	-0.142*	-0.083	-0.121*	0.106	-0.008	-0.002	-0.059	-0.014	1
15	***Segments***	-0.205***	-0.144**	-0.128*	-0.199***	0.228***	-0.082	-0.0914	-0.032	0.275***	0.213***	0.444***	-0.204***	-0.070	0.244***

NOTES: See Table 4.2 for the definition of all the variables. *p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Source: own elaboration.

4.4.2. Multivariate analysis

The results of the multivariate analysis are presented in Table 4.5. Model 1 only considers the control variables. Specifically, a negative relationship between the readability of management reports (higher values of the Fog Index) and both firm size and firm age is found. In line with prior studies, larger and older firms tend to have greater complexities and therefore longer and less readable reports (De Franco, 2015; Li, 2008). An unexpected positive association between business segments and information readability is also found (Li, 2008). Results from Model 2 show a negative and significant association between audit committee financial expertise and the readability of management reports, thus accepting our hypothesis H1. As predicted, financial experts in the audit committee are likely to exert a strong monitoring of the reporting process and promote the disclosure of additional specific information for investors and policymakers (García-Sánchez et al., 2017; Güner et al., 2008), which may increase the complexity of these reports. Models 3, 4 and 5 examine the effect of specific audit committee financial expertise on the readability of management reports. The results indicate that only AFE (and not NAFE) is significantly related to the readability of management reports. Firms with a higher proportion of accounting financial experts in the audit committee disclose more complex, and therefore less readable, management reports. Hence, our hypothesis H2 can be accepted.

The regression analysis confirms that financial expertise, and particularly accounting financial expertise, individually helps to explain the variations in readability scores. In particular, adjusted R2 increases in the models that incorporate a broad definition of financial expertise, and especially in the models containing AFE.

Table 4.5. Study 3: Results of the regression of information readability and audit committee financial expertise.

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	16.392 (13.89) ***	15.756 (12.91) ***	15.685 (12.72) ***	16.312 (13.71) ***	15.577 (12.51) ***
FE		1.430 (2.12) **			
AFE			1.805 (1.77) *		1.877 (1.83) *
NAFE				1.044 (1.21)	1.113 (1.83)
Ac_meetings	0.016 (0.49)	0.011 (0.35)	0.011 (0.33)	0.016 (0.48)	0.010 (0.30)
Size	0.217 (3.01) ***	0.181 (2.47) **	0.210 (2.94) ***	0.19 (2.63) **	0.186 (2.52) **
Leverage	-1.210 (-1.21)	-0.678 (-0.66)	-0.89 (-0.88)	-1.009 (-0.99)	-0.654 (-0.64)
Profitability	-0.025 (-0.99)	-0.026 (-1.04)	-0.024 (-0.94)	-0.027 (-1.05)	-0.025 (-1.01)
Growth	0.147 (0.15)	-0.059 (-0.06)	-0.025 (-0.03)	0.096 (0.10)	-0.085 (-0.09)
Firmage	0.008 (1.84) *	0.008 (1.98) **	0.008 (1.89) *	0.008 (1.91) *	0.008 (1.96) **
Segments	-0.314 (-2.48) **	-0.309 (-2.45) **	-0.306 (-2.44) **	-0.315 (-2.47) **	-0.307 (-2.43) **
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.200	0.206	0.218	0.195	0.212
F test	(21.34) *	(25.93) **	(25.00) **	(22.48) *	(26.24) **

NOTES: Model 1: Fog = f (control variables); Model 2: Fog = f (FE, control variables); Model 3: Fog = f (AFE, control variables); Model 4: Fog = f (NAFE, control variables); Model 5: Fog = f (AFE, NAFE, control variables)

See Table 4.2 for the definition of all the variables. *p-value<0.1; ** p-value<0.05; *** p-value<0.01.

Source: own elaboration.

In addition, Table 4.6 presents the results from the regression analyses including the interaction of the variables related to financial expertise with the number of audit committee meetings (Ac_meetings). In relation to financial expertise, defined in a broad sense, Model 2 confirms that the relationship between audit committee financial expertise and readability scores is significant only for audit committees with more frequent meetings. In the same way, Models 3, 4, and 5 confirm that audit committee activity influences the association between audit committee AFE and the readability of management reports. Therefore, Hypothesis 3 can be supported. These results suggest that audit committees that meet more frequently facilitate financial experts having a greater influence on management reports (Al-Mudhaki & Joshi, 2004).

Table 4.6. Study 3: Relationship between information readability and audit committee financial expertise including the moderating effect of AC meetings.

	Model 2	Model 3	Model 4	Model 5
Constant	16.504 (12.82) ***	16.545 (12.55) ***	16.303 (13.60) ***	16.613 (12.37) ***
FE	-0.749 (-0.56)			
AFE		-0.937 (-0.53)		-1.354 (-0.75)
NAFE			1.232 (0.67)	0.282 (0.15)
FE_meetings	0.223 (1.91) *			
AFE_meetings		0.256 (1.90) *		0.314 (2.23) **
NAFE_meetings			-0.017 (-0.11)	0.108 (0.70)
Ac_meetings	-0.084 (-1.40)	-0.067 (-1.27)	0.018 (0.47)	-0.100 (-1.64)
Size	0.196 (2.65) **	0.213 (2.96) ***	0.194 (2.57) **	0.191 (2.45) **
Leverage	-0.715 (-0.70)	-0.785 (-0.77)	-0.988 (-0.96)	-0.534 (-0.51)

	Model 2	Model 3	Model 4	Model 5
Profitability	-0.027 (-1.06)	-0.024 (-095)	-0.027 (-1.05)	-0.026 (-1.04)
Growth	-0.309 (-0.32)	-0.193 (-0.20)	0.102 (0.11)	-0.344 (-0.36)
Firmage	0.009 (2.05) **	0.008 (1.85) *	0.008 (1.89) **	0.008 (1.97) **
Segments	-0.300281 (-2.38) **	-0.317 (-2.51) **	-0.317 (-2.46) **	-0.312 (-2.43) **
Year	YES	YES	YES	YES
Sector	YES	YES	YES	YES
Adjusted R-sq	0.201	0.199	0.1949	0.197
F test	(29.57) **	(28.22) **	(22.29)	(30.70) **

NOTES: Model 1: Fog = f (control variables); Model 2: Fog = f (FE, control variables); Model 3: Fog = f (AFE, control variables); Model 4: Fog = f (NAFE, control variables); Model 5: Fog = f (AFE, NAFE, control variables)

See Table 4.2 for the definition of all the variables. *p-value<0.1; ** p-value<0.05; *** p-value<0.01.

Source: own elaboration.

4.4.3. Additional tests and endogeneity analysis

Additional sensibility analysis and robustness tests were performed to ensure that our findings are not influenced by our empirical design. First, a sensitivity analysis is performed, where the Smog Index is employed as a dependent variable (Smog). The results, reported in the Table 4.7, confirm the existence of a negative association between audit committee financial expertise, especially AFE, and the readability of management reports. Other additional tests have been performed including the variables Length, Complex_words, and Number_pages as dependent variables (De Souza et al., 2019; Hesarzadeh & Bazrafshan, 2019; Luo et al., 2018). The results are presented in Table 4.8, divided into three different panels. These results show that there is a significant and positive association between Length and both financial expertise in a broad sense and particularly AFE. Moreover, AFE is also positively associated with Number_pages. In contrast, financial expertise appears to be unrelated to Complex_words. These findings serve to explain the reasons behind the reduction in readability due to the audit committee financial

expertise by indicating that, specifically, audit committees with accounting financial experts tend to include longer explanations in the management reports which are, as a result, more extensive.

Table 4.7. Study 3: Sensitivity analysis with Smog Index.

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant.	13.164 (15.58) ***	12.648 (14.49) ***	12.630 (14.26) ***	13.103 (15.40) ***	12.545 (14.03) ***
FE		1.111 (2.29) **			
AFE			1.361 (1.85) *		1.419 (1.92) *
NAFE				0.843 (1.35)	0.896 (1.44)
Ac_meetings	0.015 (0.63)	0.012 (0.48)	0.012 (0.46)	0.016 (0.62)	0.011 (0.43)
Size	0.157 (3.03) ***	0.130 (2.45) **	0.152 (2.96) ***	0.139 (2.61) ***	0.133 (2.49) **
Leverage	-1.117 (-1.55)	-0.692 (-0.94)	-0.872 (-1.20)	-0.949 (-1.30)	-0.675 (-0.91)
Profitability	-0.009 (-0.51)	-011 (-0.58)	-0.008 (-0.48)	-0.011 (-0.59)	-0.010 (-0.56)
Growth	0.171 (0.24)	0.004 (0.00)	0.042 (0.06)	0.122 (0.17)	0.013 (-0.02)
Firmage	0.004 (1.26)	0.004 (1.43)	0.004 (1.31)	0.004 (1.36)	0.004 (1.40)
Segments	-0.146 (-1.61)	-0.143 (-1.58)	-0.140 (-1.56)	-0.148 (-1.62)	-0.142 (-1.56)
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.187	0.191	0.200	0.184	0.194
F test	(19.29)	(24.52) **	(23.11) *	(20.81) *	(24.75) **

NOTES: Model 1: Smog = f (control variables); Model 2: Smog = f (FE, control variables); Model 3: Smog = f (AFE, control variables); Model 4: Smog = f (NAFE, control variables); Model 5: Smog = f (AFE, NAFE, control variables)

See Table 4.2 for the definition of all the variables. *p-value<0.1; ** p-value<0.05; *** p-value<0.01.

Source: own elaboration.

Table 4.8. Study 3: Regression analysis with Length, Complex_words and Number_pages.

Panel A: Results of the regression of Length and audit committee financial expertise.

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant.	21.324 (8.17) ***	19.975 (7.44) ***	19.532 (7.22) ***	21.213 (8.06) ***	19.398 (7.10) ***
FE		2.890 (1.93) **			
AFE			4.479 (1.98) **		4.551 (2.00) **
NAFE				1.607 (0.82)	1.6736 (0.87)
Ac_meetings	0.073 (0.91)	0.064 (0.80)	0.063 (0.78)	0.071 (0.89)	0.060 (0.76)
Size	0.423 (2.64) ***	0.354 (2.17) **	0.413 (2.63) ***	0.389 (2.34) **	0.375 (2.30) **
Leverage	-2.081 (-0.93)	-1.001 (-0.44)	-1.360 (-0.61)	-1.737 (-0.76)	-0.973 (-0.43)
Profitability	-0.025 (-0.42)	-0.028 (-0.49)	-0.024 (-0.41)	-0.028 (-0.47)	-0.027 (-0.45)
Growth	0.562 (0.24)	0.102 (0.04)	0.098 (0.04)	0.475 (0.21)	0.002 (0.00)
Firmage	0.015 (1.60)	0.016 (1.75) *	0.015 (1.67) *	0.016 (1.65) *	0.016 (1.72) *
Segments	-0.562 (-2.01) **	-0.555 (-2.00) **	-0.542 (-1.98) **	-0.566 (-2.01) **	-0.546 (-1.97) **
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.147	0.176	0.176	0.143	0.171
F test	(16.46)	(20.55)	(21.49) *	(16.02)	(21.80)

Panel B: Results of the regression of Complex_words and audit committee financial expertise.

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant.	19.974 (14.39) ***	19.632 (13.68) ***	19.855 (13.75) ***	19.868 (14.23) ***	19.708 (13.54) ***
FE		0.766 (1.04)			
AFE			0.361 (0.33)		0.473 (0.43)
NAFE				0.922 (1.01)	0.961 (1.05)
Ac_meetings	-0.014 (-0.45)	-0.016 (-0.53)	-0.015 (-0.48)	-0.014 (-0.45)	-0.015 (-0.49)
Size	0.113 (1.41)	0.095 (1.15)	0.110 (1.36)	0.099 (1.21)	0.094 (1.14)
Leverage	-1.398 (-1.26)	-1.173 (-1.03)	-1.329 (-1.17)	-1.303 (-1.17)	-1.209 (-1.06)
Profitability	-0.047 (-2.01) **	-0.046 (-1.98) **	-0.046 (-1.97) **	-0.048 (-2.05) **	-0.047 (-2.00) **
Growth	-0.641 (-0.78)	-0.727 (-0.88)	-0.67725 (-0.81)	-0.655 (-0.80)	-0.702 (-0.84)
Firmage	0.005 (0.85)	0.005 (0.89)	0.005 (0.84)	0.005 (0.90)	0.005 (0.90)
Segments	-0.214 (-1.49)	-0.209 (-1.46)	-0.213 (-1.48)	-0.211 (-1.47)	-0.210 (-1.45)
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.168	0.166	0.166	0.169	0.167
F test	(20.17)	(21.14)	(20.12)	(21.13)	(21.16)

Panel C: Results of the regression of Number_pages and audit committee financial expertise.

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant.	7.198 (0.46)	4.517 (0.29)	0.713 (0.05)	8.325 (0.53)	1.716 (0.11)
FE		5.044 (0.67)			
AFE			19.828 (1.78) **		19.223 (1.71) *
NAFE				-6.376 (-0.69)	-4.223 (-0.46)
Ac_meetings	-0.234 (-0.80)	-0.244 (-0.82)	-0.298 (-1.00)	-0.239 (-0.82)	-0.300 (-1.01)
Size	1.696 (2.02) **	1.622 (1.89) *	1.530 (1.82) *	1.750 (2.06) *	1.569 (1.84) *
Leverage	-8.628 (-0.74)	-7.670 (-0.65)	-5.042 (-0.43)	-8.744 (-0.75)	-5.244 (-0.44)
Profitability	-0.237 (-1.08)	-0.234 (-1.06)	-0.197 (-0.89)	-0.230 (-1.05)	-0.194 (-0.87)
Growth	1.040 (0.12)	0.439 (0.05)	-1.171 (-0.13)	1.037 (0.12)	-1.088 (-0.12)
Firmage	0.028 (0.42)	0.030 (0.46)	0.029 (0.46)	0.023 (0.39)	0.028 (0.43)
Segments	3.397 (2.23) **	3.422 (2.25) **	3.372 (2.23) **	3.352 (2.19) **	3.342 (2.20) **
Year	YES	YES	YES	YES	YES
Sector	YES	YES	YES	YES	YES
Adjusted R-sq	0.340	0.354	0.363	0.331	0.357
F test	(41.38) ***	(42.54) ***	(46.11) ***	(41.31) ***	(45.74) ***

NOTES: See Table 4.2 for the definition of all the variables. *p-value<0.1; ** p-value<0.05; *** p-value<0.01.

Source: own elaboration.

Moreover, although we have one-year lagged our independent variables, this may not be enough to reduce endogeneity concerns, as factors affecting information readability and the presence of financial experts on the audit committee may be endogenously determined, which could bias our regression analysis (Mangena et al., 2020). As a result, an additional analysis, presented in Table 4.9, is performed to ensure that the readability of management reports and directors` characteristics are not endogenously determined. Consistent with the related literature (Abernathy et al., 2014; Muslu et al., 2017), a probit regression is estimated to determine the predicted probability of having an audit committee member with financial expertise. The dependent variable is a dummy variable that equals one if the firm has at least one financial expert in the audit committee and zero otherwise. In line with prior evidence, we consider several determinants of the presence of financial experts in the audit committee (Abernathy et al., 2014; Dhaliwal et al., 2010): corporate governance quality, firm size, leverage, profitability and firm growth.

The probit regression enables calculating the Inverse Mills ratio (the ratio of the probability density function to the cumulative distribution function), and we include it as an additional explanatory variable in the models (Mills). The dependent variable, Fog, remains negatively associated with audit committee financial expertise, and especially with the AFE of audit committee members. Nevertheless, the readability of management reports is not associated with non-accounting financial experts. The significance and direction of the main explanatory variables and the control variables remain basically unchanged after the inclusion of the Inverse Mills ratio in the equation. These results reject the existence of endogeneity problems and confirm that financial experts in the audit committee, particularly those with specific accounting expertise, lead to the disclosure of more complex and less readable management reports.

Table 4.9. Study 3: Endogeneity analysis.

	Model 2	Model 3	Model 4	Model 5
Constant.	15.478 (12.52) ***	15.465 (12.39) ***	16.052 (13.29) ***	15.345 (12.16) ***
FE	1.429 (2.12) **			
AFE		1.766 (1.73) *		1.843 (1.79) *
NAFE			1.066 (1.23)	1.138 (1.32)
Ac_meetings	0.012 (0.37)	0.012 (0.36)	0.017 (0.50)	0.011 (0.33)
Size	0.255 (2.83) ***	0.280 (3.18) ***	0.271 (2.98) ***	0.258 (2.85) ***
Leverage	-1.708 (-1.35)	-1.886 (-1.51)	-2.068 (-1.64)	-1.672 (-1.32)
Profitability	-0.049 (-1.65)	-0.045 (-1.53)	-0.050 (-1.68) *	-0.048 (-1.61)
Growth	0.464 (0.46)	0.480 (0.47)	0.633 (0.62)	0.433 (0.42)
Firmage	0.009 (2.03) **	0.008 (1.94) *	0.008 (1.97) **	0.008 (2.01) **
Segments	-0.338 (-2.63) ***	-0.334 (-2.62) ***	-0.345 (-2.66) ***	-0.336 (-2.61) ***
Mills	0.893 (1.44)	0.862 (1.39)	0.920 (1.47)	0.882 (1.42)
Year	YES	YES	YES	YES
Sector	YES	YES	YES	YES
Adjusted R-sq	0.202	0.214	0.193	0.207
F test	(27.83) **	(26.70) *	(24.48)	(28.05) *

NOTES: Model 2: Fog = f (FE, control variables); Model 3: Fog = f (AFE, control variables); Model 4: Fog = f (NAFE, control variables); Model 5: Fog = f (AFE, NAFE, control variables)

See Table 4.2 for the definition of all the variables. *p-value<0.1; ** p-value<0.05; *** p-value<0.01.

Source: own elaboration.

4.5. Discussion

These findings extend the literature on both audit committee financial expertise and the determinants of information readability. First, the regulatory and professional discussions about the relevance of directors' financial expertise have attracted attention from academics, and the previous literature commented on mainly focused on the effect of audit committee financial expertise on accounting quality or specific disclosures. Our study adds evidence to recent research on the impact of audit committee financial expertise on information readability. Unlike Velte (2018b), we argue that audit committee financial experts may have an active role in the oversight of mandatory financial reports, such as the management reports, thus leading to a reduction in their readability. This can be explained by a greater engagement of audit committee financial experts in reviewing the management report, enhancing specific disclosures to meet higher standards, which is likely to increase syntactical complexity. Our study is in line with recent studies which support that information readability may not be necessarily related to managers' obfuscation, but lower readability can be also associated with the disclosure of additional complex information that is expected to be useful for investors and policymakers (Guay et al., 2016; Hesarzadeh et al., 2019; Loughran & McDonald, 2014).

In particular, due to their specific knowledge and expertise, financial experts are in a better position to understand certain complex issues and they may encourage the audit committee to include in the management report detailed information regarding financial operations, the economic environment, associated risks, or about business projections (Badolato et al., 2014; Xie et al., 2003). As

expected, financial experts with explicit accounting expertise exert a stronger monitoring of annual accounts and associated reports and may have a stronger effect on the oversight of management reports (Baatwah et al., 2015; Dhaliwal et al., 2010; Zhang et al., 2007). These results are consistent with previous evidence suggesting that accounting experts intensify the monitoring activity of ACs (Dhaliwal et al., 2010; Ghafran & O'Sullivan, 2017). Particularly, these experts have advanced knowledge in accounting and auditing, and they make a greater emphasis on the need to include technical information in corporate reports (Scarpati, 2003). For instance, they are more likely to induce disclosures in the management report of the evolution of the financial statements, financial projections, earnings forecasts, and other accounting issues such as mergers and acquisitions, financial assets, derivatives, or hedging (Abad & Bravo, 2018; Tanyi & Smith, 2014). Specifically, this kind of information may require more extended explanations and longer documents.

An additional implicit debate that may arise from our evidence is related to the controversial association between readability and understandability (Stone & Lodhia, 2019). Irrespective of the understandability and usefulness of certain disclosures, information readability can be low since formulas to measure it generally focus on the analysis of the syntactical complexity (word length and sentence length). In this regard, this analysis adds evidence to the considerable discussion among academics on the concept of readability (Courtis, 2004; Stone & Parker, 2013).

Moreover, consistent with recent research, our evidence also confirms that contextual factors moderate the role of audit committee members (Bravo & Reguera-Alvarado, 2019; Li, 2008) and, concretely, the frequency of audit committee meetings is vital to examine the influence of its members in corporate reporting decisions. Particularly, our results suggest that the audit committee activity is likely to affect the degree of dedication and coordination of its members and, therefore, the way financial experts oversee management reports.

In addition, our study complements readability studies, as while information readability has become an important issue for policymakers, previous studies have focused mainly on financial attributes (Lehavy et al., 2011; Li, 2008) and gender diversity (Ginesti et al., 2018; Velte, 2018a) as potential determinants of readability levels.

4.6. Conclusion

Our study presents new empirical evidence regarding the impact of audit committee on reporting practices. In particular, we broaden the previous research by examining the relation between audit committee financial expertise and reporting readability, which has become a relevant information attribute for academics and policymakers. We find that the presence of financial experts in the audit committee, especially accounting financial experts, reduces the readability of management reports. All the management reports examined were written in English in order to enhance the comparability of our findings in an international context and make our evidence more generalizable. A number of sensitivity analysis and additional tests have been performed and our results remain robust.

This study has several implications which are both practical and academic. First, the effect of financial experts in the audit committee on reporting practices has recently attracted great attention from academics, professionals, and regulators. Our findings extend the debates about the role of financial experts, specifically those with accounting expertise, in the audit committee. These audit committees with a higher proportion of accounting experts have a greater influence on management reports by promoting the disclosure of additional information. This could help regulators and professionals to guide their requirements and recommendations about directors' qualifications. At the same time, stakeholders may demand that nomination committees appoint directors with specific characteristics. Second, our evidence emphasizes the need for regulators and researchers to further

explore the effects of information readability. As previously discussed, readability and understandability are often unrelated. There is no academic consensus on how closely the readability reflects the actual understanding process. While understandability considers certain characteristics of the reader (such as prior knowledge, reading ability, interests), the concept of readability excludes these factors and focuses on a syntactic analysis of a text (Jones & Shoemaker, 1994). As readability scores are based on the writing style instead of the content of information, we support the idea that the consequences of reporting readability, especially when using readability formulas, need to be carefully interpreted. For instance, in many cases, the disclosure of specific information related to financial, or accounting issues may be useful for investors and reduce uncertainty, but also may increase syntactical complexity by extending reports and thus reducing the information readability. In this line, Loughran and McDonald (2014) highlight that accounting and financial explanations are likely to increase syntactical complexity (and the Fog Index may indicate low levels of readability), although this kind of disclosures are commonly understood and helpful for investors.

In addition, our evidence also presents significant implications due to the consideration of the context in which the financial experts work to better understand their impact on information readability. Therefore, researchers should be aware that the traditional one-size-fits-all approach may be inappropriate to examine the effects of audit committees. As a result, more contextual research will assist both professionals and policymakers by refining their specific recommendations about the composition of audit committees. In particular, we suggest that studies examining the effect of audit committee on reporting practices need to take into consideration the activity of this committee. These findings are expected to encourage policymakers and professional bodies to more explicitly include audit committee activity as an important issue in their legislations, codes of governance, and recommendations.

This research presents interesting avenues for future research. First, future studies could investigate different contexts. In addition, other moderating factors apart from audit committee activity could also be examined. Therefore, we think our investigation offers a valuable insight into accounting issues because the influence of audit committee financial expertise on reporting practices remains a relevant and open question in the literature.

CHAPTER 5

STUDY 4: THE DISCLOSURE OF FINANCIAL FORWARD-LOOKING INFORMATION. DOES THE FINANCIAL EXPERTISE OF FEMALE DIRECTORS MAKE A DIFFERENCE?

CHAPTER 5. STUDY 4: THE DISCLOSURE OF FINANCIAL FORWARD-LOOKING INFORMATION. DOES THE FINANCIAL EXPERTISE OF FEMALE DIRECTORS MAKE A DIFFERENCE?

5.1. Introduction

A growing number of studies have examined whether gender diversity may impact on strategic decisions and have an economic contribution (Adams & Ferreira 2009; Kılıç & Kuzey, 2016; Kirsch, 2018). Specifically, some researchers posit that female directors influence the voluntary disclosure practices of firms (Tejedo-Romero et al., 2017). Given the importance of voluntary information in capital markets (Healy & Palepu, 2001) and the ongoing debate on gender diversity, this relationship is relevant for academics, firms, and regulators. Nonetheless, the association between gender diversity and the disclosure process still remains an open question in the literature for several reasons. First, disclosure practices include a variety of information which has different characteristics, and not all types of information may be relevant for investors and have an effect on capital markets (Bravo et al., 2012; Dutta & Nezlobin, 2017). Second, the literature generally fails to examine the specific characteristics of female directors (i.e., background, maturity, expertise), which can clearly affect their contributions to the boardroom (Gull et al., 2017; Zelechowski & Bilimoria, 2004).

The main objective of this chapter is to examine the association between the financial expertise (accounting and non-accounting) of female directors in the audit committee and the voluntary disclosure of financial forward-looking information. This implies a step further in the existing literature because we focus on one specific type of valuable information and we also posit that the role of female directors in the disclosure process is likely to depend on their personal attributes. Therefore, this study extends the literature by answering the following question: is it the gender diversity or the specific financial expertise of female directors which

matters in the disclosure process of financial information? The selection of voluntary financial forward-looking information provides an interesting scenario to better understand the role of female directors because this information has been traditionally considered as highly important for both companies and capital market agents (Hirst et al., 2008; Hussainey & Aal-Eisa, 2009). The main novelty of this research is the consideration of specific financial expertise (accounting and non-accounting) of female directors as a crucial characteristic to explain their potential influence on financial disclosure practices.

Our sample is composed of the companies belonging to the Standard & Poor's 100 Index in 2016. Content analysis techniques are used to manually analyze forward-looking information disclosed by firms in the voluntary annual reports. In addition, a unique set of data is used since the information about the financial expertise of female audit committee members is also hand-collected by examining 374 directors' biographies. Our results fail to find an association between the presence of women on the audit committee and the disclosure of financial forward-looking information. Notwithstanding, our findings highlight that the disclosure of this information is associated with the presence of female audit committee members with financial expertise, both accounting and non-accounting. We thus contribute to the debate concerning whether the presence of women on boards' committees is merely an ethical issue or whether it simply reflects compliance with governance recommendations. This evidence also contributes to the corporate governance literature by clarifying the role of women's characteristics, such as financial expertise, in the disclosure process. Therefore, our results complement the previous literature by suggesting that the impact of female directors without considering their personal attributes may lead to inconclusive results, since the financial expertise of women on the audit committee appears to be determinant for disclosure strategies.

5.2. Literature review and hypothesis development

Although many studies focus on gender diversity in the boardroom, audit committees appear to be crucial in the oversight and preparation of the voluntary information disclosed by firms (Li et al., 2012; Samaha et al., 2015). Only a few studies have examined the relationship between female audit committee members and the reporting process, but they usually focus on mandatory reporting practices (García-Sánchez et al., 2017; Srinidhi et al., 2011). All the same, the previous literature has extensively documented that voluntary disclosures are useful for investors and extremely beneficial in the capital markets (Chung et al., 2017; Healy & Palepu, 2001). In this sense, voluntary forward-looking disclosures appear to be important for all stakeholders, comprising future projections on both financial and non-financial items (Kılıç & Kuzey, 2018), and for companies since these disclosures may help to create value for firms (Garanina & Dumay, 2017). Despite the relevance of this issue, the existing research on gender diversity and voluntary disclosures is scant and, especially, the literature fails to provide conclusive empirical evidence on the association between gender diversity on the audit committee and forward-looking disclosure practices. Specifically, the disclosure of financial forward-looking information may be beneficial for companies and also extremely valuable for investors and regulators (Hirst et al., 2008). This kind of information may be potentially informative for investors, thereby improving the anticipation of future earnings, share prices and a firm's future performance (Hassanein et al., 2018; Hussainey & Aal-Eisa, 2009). Moreover, this information is also likely to have a positive impact on firm outcomes by enhancing the accuracy in analysts' forecasts, increasing analyst following and reducing information risk (Graham et al., 2005).

Due to the multidisciplinary nature of the topic, no single theory can provide a complete framework to explain the relation between gender diversity and disclosure decisions (Pugliese et al., 2009). Recent research has extensively used agency theory and resource dependence theory to explain the potential influence of

gender diversity on disclosure practices (Ammer & Ahmad-Zaluki, 2017; García-Sánchez et al., 2017). From an agency perspective, female directors may improve the monitoring activity of audit committees because women tend to be more independent (Adams & Ferreira, 2009), carry out their duties with greater involvement (Huse & Solberg, 2006), and display better reporting discipline (Srinidhi et al., 2011). On the other hand, consistent with the resource dependence theory, female audit committee members may bring strategic resources to the audit committees on which they serve (Campbell & Mínguez-Vera, 2008), which may lead to generating new ideas and increasing ethical sensitivity and, as a result, improving voluntary disclosure practices (Tejedo-Romero et al., 2017).

However, the application of these theories might not be generalizable to all cases, since the monitoring and advising functions of female audit committee members can be ineffective for specific disclosure practices if they lack certain personal attributes beyond their gender. For instance, in order to improve the disclosure of financial information, audit committee members need to be able to understand and correctly interpret this kind of information (Karamanou & Vafeas, 2005). Consistent with the previous literature (Aguilera & Cuervo-Cazurra, 2009), we posit that for the adequate fulfillment of their tasks, female directors are expected to have concrete expertise and, specifically, financial expertise is likely to be a crucial attribute for female audit committee members in order to effectively perform their monitoring and advising functions in relation to financial forward-looking disclosure practices.

In the US context, audit committee financial expertise has long been a topic of interest for regulators and academics (Abernathy et al., 2014; SEC, 2003). The previous literature has generally documented a positive relationship between the reporting of financial information and the presence of audit committee members with financial expertise (Abernathy et al., 2014; Dhaliwal et al., 2010). Under an agency approach, the domain-specific knowledge of audit committee financial experts

provides them with an effective means of monitoring financial reporting practices and reducing associated agency costs (Krishnan & Visvanathan 2008). In particular, financial forward-looking disclosure practices require a high degree of financial sophistication, and female audit committee members with financial expertise may be expected to better oversee the reporting of this information (DeFond et al., 2005). In addition, from a resource dependence theory, female financial experts are better prepared for advising the audit committees on developing strategies regarding the disclosure of financial information (Beasley et al., 2009). Furthermore, female audit committee members with financial expertise have the necessary skills to evaluate and discuss estimates and assumptions involved in the disclosure of financial forward-looking information and hence to promote these disclosure practices (Badolato et al., 2014).

Since previous research has claimed that the SEC includes a definition of financial expertise that has been controversial among academia, including both accounting expertise and non-accounting expertise, we differentiate between both types of financial expertise. In line with the previous arguments, we posit that financial expertise provides women with the necessary skills to oversee and influence the preparation of financial forward-looking information. As the disclosure of this kind of information includes both accounting and non-accounting issues, the following hypotheses are formulated:

H1: The presence of female directors with financial expertise on the audit committee is positively associated with the voluntary disclosure of financial forward-looking information.

H1a: The presence of female directors with accounting financial expertise on the audit committee is positively associated with the voluntary disclosure of financial forward-looking information.

H1b: The presence of female directors with non-accounting financial expertise on the audit committee is positively associated with the voluntary disclosure of financial forward-looking information.

5.3. Data and methodology

5.3.1. Sample and data

The sample of this analysis was made up of the companies included in the Standard & Poor's 100 Index in 2016. The selection of the largest companies is adopted in the majority of research since these firms are highly representative and are more likely to make voluntary disclosures (Brammer & Pavelin, 2004). Consistent with previous studies (Hussainey & Aal-Eisa,2009), the documents analyzed were the voluntary annual reports downloaded from the companies' websites. The voluntary annual report (also called annual review) mainly includes narrative sections such as: Financial Highlights, Summary Results, Chair's Statement, Chief Executive Officer's Review, Operating and Financial Review, Financial Review, Financial Director's Report, Finance Review, Business Review, and Operating Review. The entire voluntary annual reports of every company included in the sample were read and analyzed.

Content analysis techniques were undertaken to measure voluntary financial forward-looking disclosures. A frequent limitation of studies that use content analysis of companies` reports by employing hand-collected data is the sample size, since the process is a very time-consuming task. Nonetheless, manual analysis leads to an increase in the quality of the results because it enables disclosures to be fully understood through the consideration of the whole context (Milne & Adler, 1999), and minimizes the problems that machine-based procedures introduce regarding the identification and interpretation of information (Beattie & Thompson, 2007).

Information about female directors was also manually collected by examining the biography of every director. These biographies were obtained from the firms’ proxy statements and, where necessary, by examining other public sources such as *Bloomberg Business Week* and the official websites of other companies where these directors served. Specifically, we researched the biographies of 374 audit committee members. The financial variables were downloaded from the Datastream database. The final sample was made up of 85 firms, which is similar to many other studies that employ hand-collected techniques (Jindal & Kumar, 2012; Lazzaretti et al., 2013; Kılıç & Kuzey, 2018).

5.3.2. Dependent variable: Financial Forward-looking information

Forward-looking disclosure refers to current plans and future forecasts that enable investors and other users to assess a company’s future financial performance (Aljifri & Hussainey, 2007). Forward-looking disclosure involves both financial and non-financial information. This study focuses on the disclosure of financial forward-looking information (which is likely to require financial expertise), such as earnings forecasts, expected revenues, anticipated cash flows, or any other financial indicator. In line with the suggestions from professional organisms (SEC, 2003) and the previous literature (Bozzolan et al., 2009; Kılıç & Kuzey, 2018), a list of the specific information items is designed for the identification of financial forward-looking disclosures. These items and several sentences as examples of the coding procedure are provided in Table 5.1.

Table 5.1. Study 4: Examples of the coding procedure.

Sentence	Item
"Separately, in 2017, we expect our Digital software orders to be over $5 billion, with growth of 20% to 30%, a valuable franchise." (General Electric Company)	1. Financial impact of production activities
"In 2016, we announced a companion investment in Beaumont, Texas, that will further increase metallocene polyethylene capacity." (Exxon Mobil Corporation)	2. Future investments
"The results of the UK referendum and the US elections will likely be felt over 2017 and beyond, and require continued care in managing the firm's exposures, not just in financial markets but in credit portfolios." (Barclays PLC)	3. Financial risk exposure
"Your Board remains confident in Aviva's ability to deliver on our commitment to increase the dividend payout ratio to 50% of operating earnings per share in 2017." (Aviva PLC)	4. Dividends distribution
"We believe that strong execution against all three drivers will place our updated financial targets firmly within reach, including: a 10 percent ROTCE excluding our disallowed Deferred Tax Assets in 2018; and a 10 percent ROTCE including our DTA in 2019. Longer term, we believe Citi is capable of generating a 14% ROTCE." (City Group Inc)	5. Profitability ratios
"While the resulting negative mark-to-market movements on these hedging instruments are recorded in 2016, the related increases in fee income that arise from the higher asset values managed, will be recognised and reported in future years." (Prudential PLC)	6. Cash-flows and earnings
"The Group's funding structure remains conservative with limited refinancing requirements over the next few years." (Standard Chartered PLC)	7. Financial structure
"Additive manufacturing can reduce GE's product cost by $3 billion to $5 billion over the next decade and create new performance entitlement." (General Motors)	8. Costs evolution / distribution
"... plans for a new share buyback program of up to $3 bn from 2017 through 2019." (ABB Limited)	9. Shares and market capitalization

Source: own elaboration.

The inherent subjectivity of disclosure indices using content analysis is a common handicap of this type of measures, and therefore it is required that the coding procedure be reliable to draw valid conclusions (Milne & Adler, 1999). Therefore, the main criteria for the coding process were initially discussed by the two researchers to minimize ambiguity (Kilian & Hennings, 2014). Moreover, this study employs both stability and reproducibility tests to check the reliability of financial forward-looking disclosures. The stability test was performed by one researcher through two rounds, carried out on different dates, of the coding of annual reports. In order to conduct the reproducibility test, three annual reports were again analyzed by these independent researchers by using Scott's pi coefficient (Krippendorff, 1980) and the results were satisfactory.

5.3.3. Explanatory variables

In line with the SEC's definition of financial expertise (disclosure required by Sections 406 & 407 of the Sarbanes-Oxley Act of 2002), we considered a female audit committee member to have accounting expertise if she has a professional certification in accounting, including CPAs, CFOs, CAOs, controllers and auditors. The CEO position was excluded since it does not provide accounting expertise (Bédard et al., 2004). Based on the methodology proposed by Krishnan and Lee (2009) and Dhaliwal et al., (2010), among others, the variable accounting expertise of female audit committee members (Gender_AFE) is defined as a dummy variable that takes the value of 1 if there is at least one female accounting expert on the audit committee and 0 otherwise. Second, the remaining female audit committee financial experts were classified as "non-accounting financial experts". The variable non-accounting expertise of female audit committee members (Gender_NAFE) is also defined as a dummy variable that takes the value of 1 if there is at least one female non-accounting financial expert on the audit committee and 0 otherwise. Finally, the variable financial expertise of female audit committee members

(Gender_FE) encompasses both accounting and non-accounting expertise and is defined as a dummy variable that takes the value of 1 if there is at least one female audit committee member with any kind financial expertise and 0 otherwise.

5.3.4. Control variables

Consistent with previous meta-analyses of voluntary disclosure studies and the previous research on forward-looking information disclosure (Alkhatib, 2014; Al-Najjar & Abed, 2014; Khlif & Hussainey, 2016), several control variables are considered to be related to the disclosure of this information: firm size, leverage, profitability, audit committee size, gender diversity in the audit committee, and industry. We used the log of total assets as an indicator of firm size (SIZE). The ratio of total debt to total assets was employed to measure the companies' leverage (LEV). Moreover, return on assets (ROA) was used to measure profitability. In addition, the audit committee size and gender diversity in the audit committee were also introduced as control variables, since the likelihood of a firm having a female financial expert is higher for larger audit committees and for audit committees with a higher presence of women. We defined the audit committee size (ACSIZE) as the number of audit committee members and gender diversity on the audit committee as the percentage of female directors in the audit committee. Finally, industry dummies were created by using SIC codes.

5.3.5. Research model

To investigate the associations proposed in the research hypotheses, we performed a multivariate ordinary least squares (OLS) regression. The following five models are represented as follows:

Model 1: FFLD = f (control variables)

Model 2: FFLD = f (Gender_FE, control variables)

Model 3: FFLD = f (Gender_AFE, control variables)

Model 4: FFLD = f (Gender_NAFE, control variables)

Model 5: FFLD = f (Gender_NAFE, Gender_AFE, control variables)

FFLD refers to financial forward-looking disclosures. In order to guarantee that our results are robust in the use of different measures for forward-looking disclosures, all the models were run for our two disclosure measures: the FFLD_level and the FFLD_cov. Model 1 includes the control variables. Models 2, 3 and 4 also include individually the financial expertise of the women on the AC. Model 2 tests the association proposed in hypothesis H1. Models 3 and 4 split the financial expertise of female audit committee members into accounting (Gender_AFE) and non-accounting (Gender_NAFE) and tests the relationships proposed in hypotheses H1a and H1b. In order to prevent omitted variable bias, Model 5 includes both Gender_AFE and Gender_NAFE in the same specification, which would allow for formal testing as to whether their effects are statistically different from each other. The definition of the dependent variables, the explanatory variables, and the control variables is reported in Table 5.2.

Table 5.2. Study 4: Definition of variables.

Variables	Definition
Dependent Variables	
FFLD_level	Number of sentences with financial forward-looking information
FFLD_cov	Number of items disclosed by a company divided by the total number of items that a company may disclose
Explanatory Variables	
Gender_FE	Dummy variable 1 if there is at least one female financial expert on the audit committee and 0 otherwise
Gender_AFE	Dummy variable 1 if there is at least one female accounting financial expert on the audit committee and 0 otherwise
Gender_NAFE	Dummy variable 1 if there is at least one female non-accounting financial expert on the audit committee and 0 otherwise

Variables	Definition
Control Variables	
SIZE	Total assets (logarithm)
LEV	Ratio total debt to total assets
ROA	Return on assets
ACSIZE	Number of audit committee members.
AC_Gender	Percentage of female directors in the audit committee.

Source: own elaboration.

5.4. Results

5.4.1. Descriptive statistics and correlations

The descriptive statistics are reported in Table 5.3. As regards the measures for information disclosure, the results show a significant variability in the quantity (FFLD_level) and the coverage (FFLD_cov) of the financial forward-looking information disclosed by firms. Women are clearly underrepresented, since female directors only average 26.3% of total audit committee membership. The results also highlight that 51% of the ACs analyzed have a female director with a financial expertise. Yet, most of them are non-accounting financial experts. Descriptive statistics point out that only 15% of the audit committees have a female accounting expert and 44% of the audit committees have female non-accounting experts. The percentage of firms with female audit committee financial experts (Gender_FE) is higher than the sum of Gender_AFE and Gender_NAFE because a few firms have an audit committee composed of women with both accounting and non-accounting expertise.

Table 5.3. Study 4: Descriptive Statistics.

	Mean	Standard deviation	Minimum	Maximum
FFLD_level	4,02	5,25	0	24
FFLD_cov	0,24	0,24	0	0,89
Gender_FE	0,52	0,50	0	1
Gender_AFE	0,15	0,36	0	1
Gender_NAFE	0,45	0,50	0	1
SIZE	8,38	0,92	7,07	11,47
LEV	0,74	0,16	0,16	0,99
ROA	0,07	0,07	-0,06	0,33
ACSIZE	4,4	1,07	3	8
AC_Gender	0,26	0,2	0	0,75

Source: own elaboration

Table 5.4 shows the Pearson coefficients for the main variables included in the model. The disclosure of financial forward-looking information (FFLD_level and FFLD_cov) is not associated with the proportion of female directors on the audit committee. Nonetheless, the presence of women on the audit committee with financial expertise (either accounting expertise or non-accounting) seems to be related to the disclosure of financial forward-looking information. In addition, the variables for female audit committee members with accounting expertise and female audit committee members with non-accounting financial expertise are not correlated. Obviously, the variable Gender_FE is positively correlated with both Gender_AFE and Gender_NAFE. These results highlight the role of the female audit committee members considered financial experts in the disclosure process. Of the control variables, the disclosure of financial forward-looking information appears to be positively related with the firm's size and negatively related with the firm's profitability. This table also confirms the lack of collinearity problems since,

multicollinearity is generally considered to be a problem if a correlation is 0.7 or more in the correlation matrix formed by the independent variables (Cooper & Schindler, 2003).

5.4.2. Multivariate analysis

Tables 5.5 and 5.6 contain the results obtained in the multivariate analysis for the five models previously explained. The level of financial forward-looking information (FFLD_level) and the coverage of this kind of information (FFLD_cov) are considered as dependent variables in Tables 5.5 and 5.6 respectively. First, we highlight that all the Models fail to find an association between the FFLD_level and the FFLD_cov and the proportion of women on the audit committee. A number of studies have supported a positive relationship between the quality of financial reporting and gender diversity on boards or audit committees (García-Sánchez et al., 2017; Srinidhi et al., 2011), but our findings suggest that intrinsic characteristics linked to women appear to be insufficient for audit committees that include women to enhance voluntary disclosures on financial forward-looking information. Consistent with the previous literature (Aguilera & Cuervo-Cazurra, 2009), specific expertise could be determinant for female audit committee members for their involvement in particular corporate strategies. Although female directors may improve the audit committee's monitoring and advising functions (Ammer & Ahmad-Zaluki, 2017; García-Sánchez et al., 2017), according to our results, gender per se seems to be not enough to have an effect on particular reporting policies.

Table 5.4. Study 4: Pearson Correlation Matrix.

		1	2	3	4	5	6	7	8	9	10
1	AC_Gender	1.000									
2	Gender_AFE	0,278**	1.000								
3	Gender_NAFE	0,524***	0,078	1.000							
4	Gender_FE	0,54***	0,41***	0,868***	1.000						
5	ACSIZE	-0,012	0,024	0,173	0,141	1.000					
6	SIZE	0,046	0,075	0,097	0,042	-0,139	1.000				
7	LEV	0,309***	0,024	0,192*	0,158	-0,166	0,318***	1.000			
8	ROA	-0,244**	-0,062	-0,106	-0,084	0,169	-0,429 ***	-0,388***	1.000		
9	FFLD_level	0,077	0,343***	0,186*	0,221**	0,015	0,368***	0,127	-0,342***	1.000	
10	FFLD_Cov	0,118	0,379***	0,256**	0,297***	-0,007	0,323***	0,065	-0,327***	0,897***	1.000

NOTES: See Table 5.2 for the definition of the explanatory variables. *p-value<0.1; ** p-value<0.05; *** p-value<0.01

Source: own elaboration.

Table 5.5. Study 4: Multiple Regression Analysis (FFLD_level).

	Model 1	**Model 2**	**Model 3**	**Model 4**
Constant.	-9.068 (-1.29)	-8.313 (-1.25)	-6.76 (-0.96)	-7.355 (-1.07)
Gender_FE				2.81 (-0.77)
Gender_NAFE			2.216 (1.70) *	
Gender_AFE		4.485 (3.05) ***		
AC_Gender	1.226 (0.42)	-1.573 (-0.54)	-1.486 (-0.45)	-2.573 (-0.77) **
SIZE	1.614** (2.28)	1.457 (2.16) **	1.451 (2.05) **	1.478 (2.13) **
LEV	-2.682 (-0.72)	-1.688 (-0.47)	-2.944 (-0.80)	-2.643 (-0.72)
ROA	-16.070* (-1.69)	-16.475 (-1.83) *	1.754 (0.35)	-15.69 (-1.69) ***
ACSIZE	0.375 (0.73)	0.352 (0.72)	0.1421 (0.27)	0.137 (0.27)
Industry effect	YES	YES	YES	YES
Adjusted R^2	0.144	0.231	0.166	0.187
F (p-value)	2.42**	3.29***	2.52***	2.76***

NOTES: Model 1:

$$Coverage_index_i = \alpha + \beta_1 Audit_committee_size_i + \beta_2 Board_independence_i + \beta_3 Firm_size_i + \beta_4 Leverage_i + \beta_5 ROA_i + \beta_6 Industry_i + \varepsilon$$

Model 2:

$$Coverage_index_i = \alpha + \beta_1 Accounting_expertise_i + \beta_2 Audit_committee_size_i + \beta_3 Board_independence + \beta_4 Firm_size_i + \beta_5 Leverage_i + \beta_6 ROA_i + \beta_7 Industry_i + \varepsilon$$

See Table 5.2 for the definition of the explanatory variables. The industry effect is controlled with industry dummies. Coefficients of industry dummies are not included for parsimony. P-values are shown in parentheses. * p-value<0.1; ** p-value<0.05; *** p-value<0.01

Source: own elaboration.

Table 5.6. Study 4: Multiple Regression Analysis (FFLD_cov).

	Model 1	**Model 2**	**Model 3**	**Model 4**
Constant.	-0.223 (-0.67)	-0.185 (-0.59)	-0.067 (-0.21)	-0.115 (-0.36)
Gender_FE				0.178 (3.04) ***
Gender_NAFE			0.149 (2.47) **	
Gender_AFE		0.228 (3.29) **		
AC_Gender	0.141 (1.01)	-0.001 (-0.01)	-0.042 (0.28)	-0.1 (-0.65)
SIZE	0.071 (2.10) **	0.063 (1.98) *	0.059 (1.82) *	0.062 (1.94) *
LEV	-0.224 (-1.26)	-0.173 (1.03)	-0.241 (1.40)	-0.221 (-1.31)
ROA	-0.78 (-1.73) *	-0.801 (1.89) *	-0.769 (-1.77) *	-0.756 (-1.77) *
ACSIZE	0.009 (0.38)	0.008 (0.35)	-0.006 (-0.27)	-0.006 (-0.25)
Industry effect	YES	YES	YES	YES
Adjusted R^2	0.103	0.208	0.16	0.193
F (p-value)	1.97**	3.01***	2.46**	2.83***

NOTES: Model 1:

$$Coverage_index_i = \alpha + \beta_1 Audit_committee_size_i + \beta_2 Board_independence_i + \beta_3 Firm_size_i + \beta_4 Leverage_i + \beta_5 ROA_i + \beta_6 Industry_i + \varepsilon$$

Model 2:

$$Coverage_index_i = \alpha + \beta_1 Accounting_expertise_i + \beta_2 Audit_committee_size_i + \beta_3 Board_independence + \beta_4 Firm_size_i + \beta_5 Leverage_i + \beta_6 ROA_i + \beta_7 Industry_i + \varepsilon$$

See Table 5.2 for the definition of the explanatory variables. The industry effect is controlled with industry dummies. Coefficients of industry dummies are not included for parsimony. P-values are shown in parentheses. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01

Source: own elaboration.

Finally, a robustness check was conducted using alternative measures for the financial expertise of female audit committee members by taking into consideration the proportion of accounting female audit committee experts and non-accounting female audit committee members (Abernathy et al., 2014). Given that firms with female financial experts on the audit committee (both accounting and non-accounting) generally had only one woman with financial expertise, the results are very similar and confirm the association between the financial expertise of female audit committee members and the disclosure of financial forward-looking information (the results are not shown in the tables).

5.5. Discussion

Particularly, we extend the previous literature by highlighting that the impact of gender diversity on the audit committee without considering the personal attributes of female directors, such as their expertise, can lead to inconclusive results in relation to the role of women directors in the disclosure process. Specifically, gender diversity on the audit committee does not make a difference in the disclosure of financial forward-looking information. Financial forward-looking information has become relevant in capital markets, but the preparation and interpretation of this information is complex and requires specific skills and expertise for the audit committee.

On the other hand, consistent with recent research (Gull et al., 2017), specific attributes of women directors appear to be relevant to understand their influence on their disclosure process. In particular, the previous literature has highlighted that financial expertise is likely to be crucial for audit committee members in the fulfillment of their tasks (Abernathy et al., 2014; Salehi et al., 2016). Our results underline that financial expertise is a key attribute for female audit committee members in the explanation of how women may influence the disclosure of financial forward-looking information. First, the specific knowledge of financial

experts can improve their monitoring abilities of financial reporting practices (Krishnan & Visvanathan, 2008) and their capacity to oversee specific disclosures strategies regarding financial information (DeFond et al., 2005). On the other hand, given that financial experts have relevant skills to evaluate and discuss the information about financial projections (Badolato et al, 2014), female financial experts are also likely to adapt a proactive role in the improvement of financial forward-looking disclosures.

Our evidence contributes to the literature on gender diversity and specifically to the ongoing debate regarding the participation of female directors in corporate disclosure strategies. In this sense, recent research (Abad et al., 2017; Ammer & Ahmad-Zaluki, 2017; García-Sánchez et al., 2017; Pucheta-Martínez et al., 2016; Tejedo-Romero et al., 2017) has highlighted that gender diversity can have an effect on information asymmetries, earnings forecasts, earnings quality, or voluntary disclosures. Particularly, our results show a positive association between the disclosure of financial forward-looking information (both the FFLD_level and the FFLD_cov) and the presence of women with financial expertise on the audit committee, irrespective of the kind of financial expertise. Financial expertise appears to be positively associated with the FFLD_level (at the level of 5%) and the FFLD_cov (at the level of 1%). Therefore, female audit committee members with financial expertise play an important role in influencing disclosure strategies that provide forward-looking information containing projections and financial data useful for investors. Hence, Hypothesis H1 is supported.

In addition, this study also presents academic contributions by extending prior research since we analyze both the accounting financial expertise and the non-accounting financial expertise of female audit committee members. Both Gender_AFE and Gender_NAFE appear to be associated with the measures for financial forward-looking information, so the hypotheses H1a and H1b can be accepted. In particular, the association between female audit committee financial

experts and the disclosure of financial forward-looking information is slightly stronger for female audit committee members with accounting expertise. The relationship between Gender_AFE and both the FFLD_level and the FFLD_cov is significant at the 1% level in all the models. Therefore, women accounting experts on the audit committee seem to be in a better position to improve financial forward-looking information. Our results are consistent with the previous empirical evidence which posits that accounting expertise may be particularly important for audit committee members because disclosure practices which they are responsible for, including financial forward-looking information, require a relatively high degree of accounting sophistication (Dhaliwal et al., 2010). In this sense, the prior literature has suggested that accounting expertise may be crucial for the audit committee to report more accurate financial projections (Karamanou & Vafeas, 2005), to evaluate the evolution of financial statements and the impact of economic decisions (Tanyi & Smith, 2014), and to improve the capacity of this committee to discuss and assess financial estimations (Abernathy et al., 2014). Our results complement the prior literature by contributing to the debate about the role of accounting experts. In particular, accounting expertise is crucial for female audit committee members in the improvement of financial forward-looking disclosures, which are likely to contain estimates on accounting variables and projections about financial statements. Therefore, we extend previous research by highlighting that female audit committee members with specific accounting expertise may considerably enhance audit committee members' capacity to understand the technical financial issues facing their companies and evaluate significant accounting and financial issues to improve the disclosure of financial forward-looking information. Previous studies have also indicated that the presence of accounting financial experts on the audit committee is significantly associated with more accurate analysts' earnings forecasts (Abernathy et al., 2014). We also complement the previous literature since one possible explanation for the association between the financial expertise of directors and analysts' forecast accuracy may be the disclosure of financial projections.

In general terms, our findings present a relevant contribution to the literature for two main reasons: the increasing debate regarding female directors in corporate disclosure strategies, and the importance of voluntary disclosure, specifically, financial forward-looking information in the capital markets

5.6. Conclusion

This study provides new empirical evidence concerning the effect of gender diversity on the audit committee on the quality of voluntary disclosures. We extend the previous research and provide deep insights into the relation between board gender diversity and voluntary disclosures by examining how the financial expertise of female audit committee members can affect the disclosure of financial forward-looking information. This issue remains relevant for academics, firms and regulators for several reasons. First, in recent years the impact of female directors on strategic decisions and economic outcomes has been largely discussed by researchers, professional organisms and regulatory bodies (Kılıç & Kuzey, 2016; Kirsch, 2018). Second, the influence of personal attributes to understand the role of female directors on boards or committees remains an open question (Gull et al., 2017). There is notably an ongoing debate about the benefits of having financial experts on the audit committee (Abernathy et al., 2014), but empirical evidence on the financial expertise of female directors is scarce. Third, voluntary disclosures have traditionally been seen as crucial to improve decision-making processes (Chung et al., 2017) and financial forward-looking information is likely to be valuable for firms, investors and capital markets in general (Hassanein et al., 2018).

Our results fail to find an association between gender diversity on the audit committee and the disclosure of financial forward-looking information. Yet, the disclosure of this information appears to be related with the financial expertise of female audit committee members, especially with their accounting expertise. These findings have direct implications for researchers, firms and policy makers. The

academic implications are related with the need for a consideration of the personal attributes of directors in order to study their role in the boardroom or on board committees. The main practical implications concern shareholders, stakeholders, and regulators. Low female representation and social pressure may lead to gender bias, as public organisms legislate or recommend on the presence of women in boards. Nonetheless, requiring only a specific proportion of women may be counter-productive to obtain qualified board members. Therefore, this evidence presents major contributions for the design of effective governance structures, especially in terms of gender diversity, which has become of societal importance. Important implications of our evidence are that specific strategic decisions, such as financial forward-looking disclosure practices, require particular competencies and expertise, and the appointment of women to corporate boards and subcommittees should be based more on their expertise than on the compliance of corporate governance recommendations or quotas. Given the importance of financial forward-looking information in the capital markets, these findings will help policy makers and managers to implement effective corporate governance structures and will have direct implications for the selection of audit committee members. In addition to the contribution to the debate on the role of female directors, this study also strengthens the academic and professional discussion on the benefits obtained from having a financial expert serving on the AC. It could also help the SEC and other organisms to narrow the definition of financial expertise to specifically consider accounting expertise. Finally, this study also adds to prior research on the determinants of forward-looking disclosures, which is expected to have both academic and practical implications.

Like most studies, this research is subject to certain limitations. For instance, we focus only on US listed companies for one year, and disclosure practices may be influenced by the type of firms, the industry, the institutional context, and the year of analysis. Therefore, we must exercise caution when seeking to extrapolate

our results. Furthermore, another common limitation in studies using content analysis techniques is related to disclosure indices, which are affected by inherent subjectivity. However, several reliability tests were carried out in order to minimize the subjectivity of our disclosure measure and additional robustness tests were performed in order to ensure that our results were not driven by our experimental design. Given the novelty of our study, we think that our findings create encouraging opportunities for future research. This research may be extended by analyzing different institutional contexts, different kind of information, or examining the influence of other female directors` characteristics in the disclosure process. Additionally, future studies could also explore how the characteristics of the audit committee, the board of directors, or the CEO moderate the role of female audit committee members in the implementation of corporate disclosure strategies, since the decisions made by women in the audit committee are likely to depend on the context in which they work.

CHAPTER 6

CONCLUSIONS

CHAPTER 6. CONCLUSIONS

This thesis deals with two major lines of research, corporate governance and information disclosure, which have been addressed from different perspectives and have acquired an important role in various research areas, including accounting, business, economics, ethics, finance, law, management, among others. In particular, the evolution of the business world, the occurrence of severe financial scandals of large firms, and the increased regulation in recent years, have led to a rise in the academic interest in both audit committees and the corporate reporting process. Despite the literature having investigated many topics related to this corporate governance mechanism, evidence remains far from definitive, and more findings are required in order to obtain a better picture of this issue. In this regard, this thesis begins with an initial chapter that contextualizes the conceptual, legal, and theoretical positions concerning the audit committee, and this is followed by four chapters that include independent empirical studies. Specifically, each of these studies provides valuable findings to extend the previous literature. As a summary, it can be highlighted:

- Chapter 2. Study 1: Bibliometric Analysis of the Audit Committee.

A systematic review of the literature on the audit committee has been developed. This study serves to position the research in the area of corporate governance and identify gaps and opportunities to expand this line of research, since it offers new perspectives on the intellectual structure. In particular, the audit committee continues to be a fundamental and significant mechanism, according to professional bodies, to maintain the confidence of the markets as it supports better decision-making in the company. This is why it is necessary to continue researching in this area. In addition, the importance of going more thoroughly into the exploration of the ethical and social role that audit committees can play is emphasized, even more so in a context of political, economic, and social tension. For

this reason, it is essential to promote research in different contexts, such as in emerging economies. Likewise, for greater knowledge, the collaboration and exchange of information between researchers from around the globe is essential.

- Chapter 3. Study 2: Bibliometric Analysis of financial expertise.

A systematic review of the literature has been developed on financial expertise as a relevant attribute of directors. This study has served to guide the research toward the analysis of the characteristics of the directors of the committee, and is a current topic in the discussions of regulators and professional entities. Due to the increased interest in this topic, the academia has paid more attention to it, and it has been the object of study for the last 20 years. For this reason, it is encouraging to continue to increase awareness about this topic and provide a complete picture of financial expertise in the audit committee. It is essential to improve the networks of authors who work on this subject, since they are usually small and limited. The results obtained show that the latest research tends to consider an approach toward social responsibility, more specifically toward ethical aspects in the company. Therefore, as in the audit committee, it is encouraged to investigate the role of financial experts in the audit committee and their involvement with the ethical and social perspective of the company. On the other hand, the results also present a need for research on strengthening the theories discussed, since they are not conclusive.

- Chapter 4. Study 3: Audit Committee financial expertise and readability of the management report.

This study analyzes the relationship between the financial expertise of the audit committee and the readability of the management reports. The results obtained highlight that financial experts, specifically financial accounting experts, influence the information disclosure process, since they affect readability. The relationship found is negative, so the financial expertise increases the syntactic complexity. However, this should not be a negative indication for the company as

financial experts advocate presenting financial or accounting issues that are useful to investors and thus reduce uncertainty, despite having a more syntactically complex terminology.

Furthermore, it is obtained that the moderating aspect of the audit committee's activity in the relationship between financial expertise and readability implies a greater participation of directors in the information disclosure process. Therefore, it is recommended that future investigations, as well as future regulations, consider the work context of directors in the audit committee, since they can be an aggravating factor in the relations studied.

Finally, it is necessary to emphasize caution in the interpretation of readability, since this is an analysis based on the style of writing and not on the content of the information. Therefore, care must be taken in interpreting the results of the readability indexes.

- Chapter 5. Study 4: The disclosure of financial forward-looking information: Does the financial expertise of female directors make a difference?

The relationship between board gender diversity and voluntary disclosures has been analyzed by examining how the financial expertise of the audit committee members may affect the disclosure of financial forward-looking information. The results obtained do not show that women have an effect on financial forward-looking information unless they have financial expertise (accounting or non-accounting). These results show that it is necessary to nurture the audit committee of directors with particular skills and expertise. Therefore, the appointment of women to committees must be justified by their expertise rather than in meeting quotas. In this way, quality is ensured in the committees for decision-making.

All these findings from the previous empirical studies are expected to have direct implications, specifically discussed in each of the previous chapters, at

the academic, professional and regulatory levels, which is essential when assessing the role of scientific research (Leydesdorff & Meyer, 2007). From scientific-technical, business and public points of views, each of the works represents an advance with respect to the existing empirical evidence. In a global way, these works aspire to mobilize the complementary knowledge of various scientific fields, since the studies developed have a marked multidisciplinary nature.

To sum up, the main implications extracted from the empirical analyses performed in this thesis are reiterated by considering, on the one hand, bibliometric analyses, and on the other hand, the other analyses about the effects of audit committees. In this regard, taking into consideration the two bibliometric analyses, the following can be highlighted:

- They suggest that the theoretical foundation can be gone into more thoroughly and more relevant theories added. These works offer evidence on seeking deeper and more diverse theoretical foundations.
- They offer more up-to-date information on how research in this area should be updated in fruitful lines.
- The reflection of expanding the research networks among authors is presented to achieve a higher quality in the results.

In relation to the other two studies developed (study 3 and study 4), both of them conclude with the need to analyze the characteristics related to the expertise of the directors, and the different institutional contexts, as well as the activity of the audit committee. In addition, these works represent new evidence to explain the role of directors in the disclosure of information and extend the use of agency theory as the main theory for corporate governance, especially for the audit committee. From a business perspective, the results can help companies to gain a better understanding of corporate governance mechanisms and matters related to the selection strategies of

audit committee members. On the other hand, regulators could benefit from this evidence to clarify certain issues related to the boards of directors and thus improve their initiatives in relation to the corporate governance of companies. In the political sphere, both in Spain and in neighboring countries, there is a firm conviction that good corporate governance is the basis for the functioning of the markets, since it favors credibility and stability, and helps to promote growth and wealth generation. Likewise, corporate governance is an important factor in the long term to guarantee sustainability and the ability to create jobs.

Due to the importance of the issues raised where the audit committee mechanisms are essential for decision-making and the confidence of the markets, we are in a scenario where there is a great opportunity to intensify the study on these issues, detailed in each one of the chapters. This research is relevant from different perspectives and within future lines of research there are relevant challenges for academia.

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ANNEX

ANNEX 1: SYNTHESIS OF THE STUDIES DEVELOPED

Study	Objective	Data	Methodology
Study 1: Bibliometric Analysis of the research on the Audit Committee.	Perform a systematic review of the literature on the audit committee, thus allowing a holistic understanding of both the trends followed in this field of research and their bibliometric impact.	1,690 documents from Thomson Reuters Web of Science database for the period 1900 – 2020.	Bibliometric Analysis: Publications by year; Publications by country; Publishing activity by journal; Publishing activity by authors; Co-Authorship analysis; Keywords and content analysis.
Study 2: Bibliometric Analysis of the research on director financial expertise.	Perform a systematic review of the literature on financial expertise as a significant attribute of directors. Therefore, this study will allow mapping the intellectual structure and research trends on this topic, thus leading to significant advances in knowledge in this branch of investigation.	287 documents from Thomson Reuters Web of Science database for the period 1900 – 2020.	Bibliometric Analysis: Publications by year; Publications by country; Publishing activity by journal; Publishing activity by authors; Co-Authorship analysis; Keywords and content analysis.
Study 3: Audit Committee financial expertise and readability of the management report.	Analyze the association between the director's financial expertise of the audit committee and the management reports readability issued by the companies, as well as the moderating effect that the meetings held by this committee may have in this relation.	Firms listed on the Madrid Stock Exchange for the period 2013-2015 (188 firm-year observations). Specifically, 788 audit committee members' biographies were hand-collected and individually examined.	Fixed effect panel data estimation model for regression analysis. • Dependent variable: readability of management report. • Explanatory variables: Accounting Financial Expert, Non-Accounting Financial Expert, Financial Expert.
Study 4: The disclosure of financial forward-looking information: does the financial expertise of female directors make a difference?	Examine the association between the financial expertise (considering both accounting and non-accounting) of female directors in the audit committee and the voluntary disclosure of financial forward-looking information.	Firms from Standard & Poor's Index in 2016 (85 observations). Specifically, 374 biographies from female audit committee directors were hand-collected and individually examined.	Multivariate ordinary least squares (OLS) regressions. • Dependent variable: financial forward-looking information. • Explanatory variable: Accounting expertise of female audit committee members, Non-accounting expertise of female audit committee members Financial expertise of female audit committee members.

Source: own elaboration.