

**Monitoring of internal corporate governance systems by
audit committees, internal auditors and external auditors:
Sustainability-related evidence from Germany**

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Christoph Wehrhahn

born on 02.02.1992 in Hameln

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First supervisor and reviewer: Prof. Dr. Patrick Velte, Leuphana University Lüneburg

Second supervisor and reviewer: Prof. Dr. Marc Eulerich, University Duisburg-Essen

Third supervisor and reviewer: Prof. Dr. Inge Wulf, Clausthal University of Technology

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Table of contents

List of abbreviations.....	V
List of tables	VII
1. Introduction.....	1
1.1. Relevance of the research topic.....	1
1.2. Research gaps	9
1.3. Overview and summary of research articles	16
1.4. Course of the dissertation	23
2. Theoretical foundation	24
2.1. Agency theory	24
2.2. Resource-based theory	28
2.3. Systems theory	31
2.4. Integrated theoretical perspective.....	32
3. Regulatory background	35
3.1. US-American Sarbanes-Oxley Act (SOX).....	35
3.2. European regulations.....	38
3.3. German regulations	43
4. Literature review	50
4.1. Quantitative empirical research.....	50
4.2. Qualitative empirical research.....	53
4.2.1. Parties' role in monitoring financial reporting.....	54
4.2.2. Parties' role in monitoring sustainability reporting.....	59
5. Recommendations for future research and implications.....	62
5.1. The relationship between audit committees, internal auditors, and external auditors in consideration of ICS.....	62
5.2. The impact of European sustainability regulations on the degree of co-operation in sustainability-related monitoring among the three monitoring parties	66
5.3. Procedures and coordination mechanisms in monitoring sustainability-related ICS and RMS.....	70
5.4. Implications	73
5.4.1. Regulatory implications	73
5.4.2. Implications for practice.....	81
6. Conclusion	84
References	89

Annex 1: The relationship between audit committees, external auditors, and internal control systems: A literature review and a research agenda. (Article 1).....	111
Annex 2: Sustainability-related co-operation among audit committees, internal auditors and external auditors: a survey-based study. (Article 2)	153
Annex 3: How Do Internal Auditors, External Auditors, and Audit Committees Monitor Sustainability-Related Internal Control and Risk Management Systems? An Empirical Study. (Article 3)	211
Annex 4: Distribution of workload for Article 1.....	257

List of abbreviations

AktG	Aktiengesetz (German Stock Corporation Act)
AReG	Abschlussprüfungsreformgesetz (German Audit Reform Act)
BilMoG	Bilanzrechtsmodernisierungsgesetz (German Accounting Law Modernisation Act)
CAPEX	Capital expenditures
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CGS	Corporate Governance Systems
CMS	Compliance Management System
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CSDDD	Corporate Sustainability Due Diligence Directive
CSRD	Corporate Sustainability Reporting Directive
CSR	Corporate Social Responsibility
ERM	Enterprise Risk Management
ESG	Environmental, Social and Governance
ESRS	European Sustainability Reporting Standards
EU	European Union
FISG	Finanzmarktintegritätsstärkungsgesetz (German Financial Market Integrity Strengthening Act)
GCGC	German Corporate Governance Code
GmbH	Gesellschaft mit beschränkter Haftung (Limited liability company)
GRI	Global Reporting Initiative
HGB	Handelsgesetzbuch (German Commercial Code)
IAS	Internal Audit System
ICS	Internal Control System
IDW	Institute of Public Auditors in Germany
IT	Information Technology
KG	Kommanditgesellschaft (Limited partnership)

KonTraG	Gesetz zur Kontrolle und Transparenz im Unternehmensbereich (Act on Control and Transparency in Business)
LkSG	Lieferkettensorgfaltspflichtengesetz (German Supply Chain Due Diligence Act)
Mio.	Million
NFRD	Non-Financial Reporting Directive
OHG	Offene Handelsgesellschaft (General partnership)
OPEX	Operating expenditures
PAT	Principal Agent Theory
PIE	Public Interest Entity
RBT	Resource-Based Theory
RMS	Risk Management System
SAT	Stakeholder-Agency Theory
SEC	Securities and Exchange Commission
SOX	Sarbanes-Oxley Act
SME	Small and Medium-sized Enterprises
US	United States of America
VHB	Verband der Hochschullehrerinnen und Hochschullehrer für Betriebswirtschaft e.V.

List of tables

Table 1: Overview of research articles.....	17
Table 2: Impact on monitoring parties resulting from CSRD, CSDDD and Omnibus I.....	43
Table 3: German regulations – key implications for the monitoring parties	49

1. Introduction

1.1. Relevance of the research topic

Over the past decades, discussions on corporate governance and their monitoring mechanisms have undergone profound transformations in response to major corporate scandals, multiple regulatory interventions, and increasing stakeholder pressure (Pandey et al., 2023). High-profile accounting failures such as Wirecard fundamentally undermined trust in corporate reporting and revealed severe deficiencies in internal control and monitoring¹ structures (Teichmann et al., 2024). These events triggered a global regulatory cascade, resulting in significant consequences for both the internal corporate governance systems (CGS) of listed corporations and the three key monitoring parties of corporate financial and sustainability reporting: audit committees, internal auditors, and external auditors (e.g., Cohen et al., 2004). This dissertation focuses on public interest entities (PIEs)² in Germany and adopts a broad understanding of internal CGS as encompassing internal control systems (ICS) and risk management systems (RMS), with compliance management systems (CMS) forming a subset of the ICS and RMS. These systems collectively provide the organizational infrastructure for identifying, managing, and mitigating both financial and non-financial risks, as well as for ensuring reliable corporate reporting (e.g., Cancino et al., 2024). With respect to audit committees, this analysis concentrates on a two-tier system³ with audit committees as a specialized subset of the

¹ In this dissertation, ‘monitoring’ is conceptualized as an overarching term for continuous, ex post and ex nunc evaluative activity performed by the three monitoring parties (audit committees, internal auditors, and external auditors) and aimed at assessing the adequacy of corporate reporting and underlying internal corporate governance systems. Monitoring is analytically distinguished from auditing, which typically involves more formalized, periodic assurance engagements (in focus of internal and external auditors), and from oversight in a broader sense, which may also include advisory or strategic elements (in focus of audit committees). Furthermore, monitoring is conceptually distinguished from the term internal control in that internal control refers to the operational activities within the ICS, whereas monitoring reflects a higher-level function (for example, monitoring of the activities within the ICS by the three parties).

² Other legal forms (e.g., limited liability companies (GmbH) or partnerships (OHG, KG)) are excluded, as there is, for instance, no legal requirement to implement a supervisory board in these entities.

³ Compared to the one-tier system prevalent in Anglo-Saxon countries, where executive and non-executive directors are combined within a single board, a two-tier system encompasses dualistic structures that separate corporate control into two distinct, non-overlapping bodies: a management board and a supervisory board.

supervisory board, rather than on the supervisory board as a whole because core monitoring competencies and formal oversight responsibilities are typically concentrated at the audit committee⁴ level (DeZoort et al., 2002)⁵. Internal auditors are examined in their classical, in-house form (Ahlawat et al., 2004); outsourced internal audit arrangements are excluded due to their fundamentally different incentive and information structures. While the management board of PIEs in Germany bears formal responsibility for establishing internal CGS (§ 91 (3) AktG), its role is not treated as a separate analytical category. Instead, it is implicitly incorporated through the internal audit function, reflecting the practical reality that management boards frequently delegate monitoring tasks related to internal CGS to internal auditors. As a result, non-listed firms without internal audit functions are outside the scope of this dissertation. External auditors are examined with a focus on large international audit firms (big four) because PIEs are typically audited by big four firms and sustainability⁶ assurance capabilities are predominantly concentrated within these organizations (Iliopoulos and Wojcik, 2025). Finally, the empirical focus is on PIEs from the real economy⁷ which is motivated by both theoretical and practical considerations. Small and medium-sized enterprises (SME) often lack formalized corporate governance structures (e.g., Handley and Molloy, 2022), such as internal audit functions, audit committees, or comprehensive sustainability-related internal CGS, which limits the meaningful analysis of coordinated monitoring practices. PIEs, by contrast, are subject to the most stringent regulatory requirements and stakeholder scrutiny (e.g., van Brenk et al., 2022), making them an appropriate and relevant setting for examining the evolving interplay among audit committees, internal auditors, and external auditors in both financial and sustainability-related monitoring.

⁴ In Germany, there is such an oversight obligation for audit committees of public interest entities (PIE) since the Financial Market Integrity Strengthening Act (FISG).

⁵ Sustainability committees are not explicitly considered, as their primary role often lies in strategic guidance and advisory functions rather than in formal monitoring.

⁶ In the context of this dissertation, this term is synonymous with CSR.

⁷ Banks and insurance companies are not focused, as they are subject to different regulatory frameworks in comparison to the real economy.

The regulatory cascade triggered by corporate scandals began with the enactment of the US-American Sarbanes–Oxley Act (SOX) in 2002 (One Hundred Seventh Congress of the United States of America, 2002) which significantly strengthened requirements, inter alia, related to ICS (e.g., SOX Section 404), audit committee responsibilities (e.g., SOX Section 301), and external audit oversight (e.g., SOX Section 204), in US listed companies. Although the SOX was primarily rooted in a shareholder-oriented, financially focused governance environment (Su et al., 2022), its influence extended far beyond US borders and served as an important reference point for subsequent regulatory developments in other jurisdictions (e.g., Cohen et al., 2013). In the European Union (EU), SOX-inspired debates culminated in a series of regulatory initiatives often referred to as ‘EU-SOX’ (Böhmer, 2020), most notably the Directive 2006/43/EC and its subsequent amendments. While these measures similarly aimed to enhance the monitoring of ICS, they were embedded in a fundamentally different institutional context. Continental European corporate governance frameworks traditionally emphasize stakeholder orientation, strong internal monitoring mechanisms, and codified legal responsibilities (e.g., Bottenberg et al., 2017). As a result, EU regulations have combined financial reporting oversight with broader corporate governance considerations, such as compliance, risk management, and – more recently – sustainability issues.⁸ These developments illustrate a one-directional regulatory influence from the US to Europe in financial controls and auditing, whereas the reverse effect is limited (Pizzi and Caputo, 2025). In particular, US regulations on business reporting and corporate governance have not included sustainability issues⁹ in contrast to the EU level, a divergence that has become even more pronounced in recent years.

⁸ As a consequence of the 2008/09 financial crisis, the EU introduced additional corporate governance regulations independent of the SOX and, furthermore, implemented CSR regulations. These regulatory initiatives also promote the integration of CSR into corporate governance (sustainable corporate governance) including internal CGS.

⁹ Only fragmented regulatory frameworks exist, for example at the level of individual US states, such as the Corporate Climate Data Accountability Act (SB 253) in California.

The relevance of this research is further amplified by the profound regulatory shift initiated under the European Green Deal (European Commission, 2019). The Green Deal constitutes the EU's overarching strategy to transform its economy towards climate neutrality by 2050 and is accompanied by a comprehensive package of sustainability-related regulations. Central to this framework are the Taxonomy Regulation (Regulation 2020/852/EU), the Corporate Sustainability Reporting Directive (CSRD) (Directive 2022/2464/EU and Delegated Act 2023/2772/EU), the Corporate Sustainability Due Diligence Directive (CSDDD) (Directive 2024/1760/EU) and the Omnibus Simplification Package (Omnibus I) (COM/2025/81 final). Together, these initiatives fundamentally reshape corporate reporting and monitoring requirements by integrating sustainability information into the management report and extending monitoring obligations far beyond traditional financial reporting (Hummel and Jobst, 2024). From a monitoring perspective, the EU Green Deal significantly expands the responsibilities of audit committees, internal auditors, and external auditors regarding sustainability reporting and sustainable due diligence in the value chain. Corporations are required not only to disclose extensive sustainability information but also to establish and monitor underlying internal CGS that ensure the reliability, consistency, and completeness of both financial and sustainability-related data for the value chain. External auditors are increasingly expected to provide sustainability assurance services, while audit committees must oversee the effectiveness of sustainability-related reporting, internal CGS, and internal and external auditors. Internal auditors, in turn, are confronted with new expectations to assess sustainability-related processes, controls, and risks, often in areas characterized by high measurement uncertainty and evolving standards.

In addition to this regulatory pressure, the three parties are also facing increasing stakeholder pressure. Stakeholders demand reliable financial and sustainability information, along with robust ICS and RMS (Pizzi et al., 2022; Fiandrino et al., 2022). The three monitoring authorities

are required to oversee both financial and sustainability reporting, preferably through an integrated approach (e.g., Hichri, 2023), reflecting the increasing interdependence between financial and sustainability-related information. At the same time, stakeholders expect monitoring bodies to be equipped with sufficient expertise in finance, industry, and sustainability, as well as appropriate incentive structures. Incorporating stakeholder interests into the role definitions and composition of monitoring bodies not only enhances stakeholder satisfaction but also improves the quality of sustainability assurance (e.g., Garcia-Sanchez et al., 2022). In light of the expanded monitoring responsibilities arising from heightened stakeholder expectations and regulatory pressure, the traditional emphasis on financial and industry expertise must be broadened to include sustainability-related competencies (Velte, 2023a).

Within Europe, Germany represents a particularly instructive and theoretically rich setting for examining contemporary challenges in monitoring both financial and sustainability reporting. As the largest economy in the EU, Germany plays a central role in shaping and implementing EU-wide corporate governance and sustainability regulations. At the same time, it has repeatedly responded to corporate scandals with autonomous national reforms that go beyond minimum European requirements. The Wirecard scandal from 2020 constitutes a prominent example, revealing substantial failures in ICS, audit committee oversight, and external audit quality despite an ostensibly robust corporate governance framework (Teichmann et al., 2024). In response, the German legislator enacted the Financial Market Integrity Strengthening Act (FISG) (Deutscher Bundestag, 2021a), which significantly tightened requirements for internal CGS, expanded audit committee expertise requirements, and introduced explicit information access rights for audit committee chairs vis-à-vis internal CGS and the internal audit function. This regulatory trajectory underscores the uniqueness of the German setting for the present research.

Moreover, Germany is characterized by a mandatory two-tier board system for listed corporations, consisting of a management board and a supervisory board, within which the mandatory audit committee operates as a specialized subcommittee of the supervisory board. This structure differs fundamentally from one-tier systems prevalent in Anglo-Saxon countries, where executive and non-executive directors are combined within a single board. In the German two-tier, predominantly stakeholder-oriented corporate governance system (code law regime), internal auditors are organizationally subordinated to the management board, while audit committees act as agents of the supervisory board. This separation of roles tends to reduce the intensity and informality of co-operation between internal auditors, audit committees, and external auditors, particularly in comparison to Anglo-American one-tier systems and case law regimes. Consequently, the German context is especially well suited for investigating how collaboration among audit committees, internal auditors, and external auditors can be improved under conditions of heightened regulatory pressure. Furthermore, Germany's social market economy and the long-standing tradition of employee co-determination further distinguish its corporate governance environment (Bottenberg et al., 2017). Extensive employee representation on supervisory boards and strong stakeholder expectations have historically increased pressure for environmental and social reporting, even prior to the recent surge in EU sustainability regulation. Against this background, the German setting offers a rare combination of regulatory stringency, stakeholder orientation, and structural corporate governance complexity that has so far been underrepresented in empirical research, which has predominantly focused on one-tier, shareholder-oriented systems.

Existing literature reveals several interrelated research gaps. First, while prior dominantly quantitative studies provided valuable insights into the roles of audit committees and external auditors – particularly with regard to expertise characteristics and their impact on ICS (Zhang et al., 2007; Lisic et al., 2019; Sterin, 2020; Weickgenannt et al., 2021; Stephens, 2011; Haislip

et al., 2016; Khelif and Samaha, 2016) – they predominantly focused on unilateral or, at best, bilateral relationships (Inaam and Khamoussi, 2016; Malik, 2014). Internal auditors are often treated as subordinate actors or examined only in isolated dyadic relationships (Kotb et al., 2020; Mazza and Azzali, 2015), thereby neglecting the inherently multilateral and interdependent nature of corporate monitoring. Moreover, mechanisms such as mediating and moderating effects remain underexplored, with only few exceptions (Pérez-Cornejo et al., 2019; Ashfaq and Rui, 2019; Michelon et al., 2015). Second, despite significant regulatory developments regarding sustainability reporting and corresponding assurance (as explained above), sustainability-related monitoring remains insufficiently understood. Expanding regulatory requirements and increasing stakeholder expectations have substantially broadened the responsibilities of audit committees, internal auditors, and external auditors, requiring a more integrated approach to financial and sustainability information (Velte, 2023a; Pizzi et al., 2022; Fiandrino et al., 2022, Hichri et al., 2023). However, prior research is still largely rooted in financial reporting contexts (Cohen et al., 2010), limiting its transferability to sustainability domains. Although initial studies addressed the impact of combined assurance¹⁰ quality on external reporting qualities (i.e., integrated, sustainability and financial reports) (Donkor et al., 2021; Wang et al., 2020), they did not sufficiently capture the complexity arising from environmental and social issues. Third, the existing literature is methodologically and conceptually limited in capturing complex interactions among monitoring actors. Quantitative studies dominate the field and primarily examine individual characteristics such as expertise or independence, but fail to account for social dynamics, coordination processes, and informal interactions (McNulty et al., 2013). This limitation is particularly critical in light of increasing stakeholder pressure, which often manifests through expectations, scrutiny, and relational dynamics that require more qualitative and process-oriented approaches. Fourth, prior research

¹⁰ Combined assurance originates from the ‘three lines of defence’ model – a risk-management and governance framework that coordinates the assurance activities of the company’s management and different internal and external assurance providers to ensure assurance and reporting quality.

largely neglected trilateral interaction among audit committees, internal auditors, and external auditors. Existing qualitative studies predominantly focus on bilateral relationships (Sulaiman, 2017; Sulaiman and Yasin, 2022; Beasley et al., 2009), despite the fact that effective monitoring – especially in sustainability contexts – requires coordinated efforts across all three actors. At the same time, there is limited evidence on the specific competencies and resources required for sustainability-related monitoring. While financial expertise is well established (Zhang et al., 2007; Zaman et al., 2021), sustainability-specific capabilities and the influence of stakeholder expectations on their development remain insufficiently explored. Furthermore, although co-operation among monitoring actors is generally associated with improved assurance quality for financial data (Cohen et al., 2010; Zhou et al., 2019), little is known about how such collaboration unfolds under sustainability regulation.

The research gaps underlying this dissertation, which have been briefly outlined above, are further developed in detail in the following section. Consistent with the chronological structure of the included articles, the discussion begins with an examination of the relationships among audit committees, internal auditors, and external auditors in the context of ICS (Article 1). It then turns to the effects of European sustainability regulations (CSRD and CSDDD) on the extent of trilateral co-operation in sustainability-related monitoring, considering existing and lacking capabilities of the three monitoring parties and their collaborative potential (Article 2). Finally, the focus shifts to the concrete procedures and coordination mechanisms employed by these parties in monitoring sustainability-related internal CGS to ensure high-quality sustainability reporting (Article 3).

1.2. Research gaps

This dissertation pursues three distinct research objectives. These objectives extend across two key areas of interest: the monitoring of internal CGS by audit committees, internal auditors, and external auditors and the increasing relevance of sustainability-related aspects within this multilateral monitoring architecture. These domains are closely interconnected, as the expansion of sustainability regulation builds upon and transforms established monitoring structures originally developed for financial reporting (e.g., Fiandrino et al., 2022). Accordingly, the following sections outline the underlying research gaps, their interconnections, and their respective distinctions.

The first article provides the conceptual and theoretical foundation for the dissertation. As major corporate scandals (e.g., Wirecard) have undermined confidence in firms' governance and monitoring mechanisms (Teichmann et al., 2024), the importance of effective monitoring structures, particularly the role of ICS, became apparent. In response, regulatory initiatives such as the SOX have significantly strengthened the responsibilities of audit committees and external auditors in ensuring the reliability of financial reporting and the effectiveness of internal controls (DeFond and Francis, 2005; Li and Liu, 2024).

A substantial body of empirical research has examined the effectiveness of these monitoring parties, particularly focusing on how audit committee characteristics – such as financial expertise (Zhang et al., 2007), accounting expertise (Lisic et al., 2019), industry and legal expertise (Sterin, 2020), and experience (Weickgenannt et al., 2021) – influence ICS and vice versa. Similarly, prior studies have investigated the role of external auditors, demonstrating that external auditor characteristics such as industry expertise (Stephens, 2011), IT expertise (Haislip et al., 2016), and audit firm size (Khlif and Samaha, 2016) influence the detection and remediation of internal control weaknesses. In addition, prior studies stressed that high-quality

ICS reduce audit effort and costs, as reflected in lower audit fees and delays (Hoitash et al., 2008; Lu et al., 2011; Gontara et al., 2023).

Despite these single party-related insights, the existing literature remains conceptually fragmented. A dominant stream of research focuses on unilateral influences (e.g., audit committee or external auditors) on ICS or on bilateral relationships, particularly between audit committees and external auditors (Inaam and Khamoussi, 2016; Malik, 2014). While findings on these bilateral relationships are very valuable for research, they neglect the broader corporate governance system in which these monitoring parties operate. While some studies acknowledge the role of internal auditors, they are often treated as a subordinate component within ICS or examined only in isolated dyadic relationships (Kotb et al., 2020; Mazza and Azzali, 2015). This limited perspective fails to reflect the inherently multilateral and interdependent nature of corporate monitoring mechanisms.

Furthermore, prior research provided only limited insights into mechanisms such as mediating and moderating effects between the monitoring parties and ICS. Only a few studies explicitly incorporate such relationships – for instance, Pérez-Cornejo et al. (2019) analysed the mediating role of enterprise risk management (ERM) systems, while Ashfaq and Rui (2019) and Michelon et al. (2015) examined moderating effects of audit firm size and regulatory environments. The scarcity of such approaches restricts a comprehensive understanding of how different monitoring mechanisms interact and jointly affect overall monitoring quality.

Addressing these research gaps requires a shift from isolated or bilateral analyses toward a holistic understanding of corporate monitoring as a multilateral system. In particular, it is essential to explore how the three key monitoring actors – audit committees, internal auditors, and external auditors – interact within ICS, how they influence each other, and how these interactions shape overall monitoring quality:

Research objective 1: *Explore the relationship between audit committees, internal auditors, and external auditors in consideration of ICS to identify mutual influences among the parties and to develop an integrated perspective on firms' multilateral monitoring mechanisms.*

Turning toward the second research area of interest, the focus of the dissertation then shifts to the increasing relevance of sustainability aspects for the three monitoring parties resulting from significant expansions of sustainability-related regulation. In particular, the EU's regulatory initiatives, such as the CSRD and CSDDD impose extensive new requirements on firms regarding sustainability reporting, assurance, and due diligence processes across the value chain. These developments are embedded in the EU Green Deal project, which aims to achieve climate neutrality by 2050 and thereby intensifies expectations regarding sufficient monitoring of sustainability-related data (European Commission, 2019). At the same time, these regulatory developments are closely intertwined with increasing stakeholder pressure, demanding greater transparency, accountability, and credibility of sustainability disclosures (e.g., Garcia-Sanchez et al., 2022). As a result, audit committees, internal auditors, and external auditors face substantially expanded monitoring responsibilities. These include not only the sufficient monitoring of sustainability reporting but also the evaluation of underlying ICS and RMS related to sustainability matters (Aobdia and Yoon, 2026). Given the increasing interconnection between financial and sustainability information these monitoring tasks require a more integrated approach (e.g., Hichri, 2023), extending beyond the traditional focus on financial reporting and financial expertise (Velte, 2023a; Pizzi et al., 2022; Fiandrino et al., 2022).

However, this regulatory shift introduces fundamentally new challenges for the three monitoring parties. While they possess well-established competencies and resources in financial oversight due to decades of regulatory development (e.g., Cohen et al., 2010; Roussy

et al., 2020), sustainability-related monitoring – particularly in environmental domains – requires new forms of expertise and capabilities that are not yet fully developed (Dal Maso et al., 2020). These challenges are further intensified by stakeholder pressure, as firms are increasingly expected not only to comply with formal regulation but also to meet broader societal expectations regarding sustainability performance and transparency (Xiao and Shailer, 2022). This creates significant resource dependencies and the need for coordination and collaboration among the three parties (Barney, 1991; Grant, 1991). Despite these practical and regulatory developments, the existing literature exhibits several important shortcomings.

First, prior research has predominantly focused on the role of audit committees, internal auditors, and external auditors in financial reporting contexts, while largely neglecting sustainability-related oversight (e.g., Cohen et al., 2010). Although some studies have begun to examine sustainability and integrated reporting assurance (e.g., Donkor et al., 2021; Wang et al., 2020; Velte, 2024b), the transferability of insights from financial auditing to sustainability contexts remains insufficiently understood, particularly given the additional complexity of environmental and social issues. Second, the literature is heavily dominated by quantitative research designs (e.g., Khlif and Samaha, 2016; Lisic et al., 2019; Sterin, 2020; Weickgenannt et al. 2021; Gontara et al., 2023) which typically analyse individual characteristics of monitoring bodies (e.g., expertise, independence, diversity) but are limited in capturing complex interactions and social dynamics among them (McNulty et al., 2013). This limitation is particularly critical, as stakeholder demands often materialize through informal pressures, expectations, and interactions that require qualitative, process-oriented insights. Third, existing qualitative studies predominantly focus on bilateral relationships – such as between audit committees and internal auditors (e.g., Roussy et al., 2020; Sulaiman, 2017) or between internal and external auditors (e.g., Mubako and Muzorewa, 2019; Regoliosi and Martino, 2019; Argento et al., 2019) – while largely neglecting the trilateral interaction among all three

monitoring parties (e.g., Sulaiman and Yasin, 2022; Beasley et al., 2009). However, sustainability-related oversight under the CSRD and CSDDD requires coordinated efforts across all three actors, making a trilateral perspective essential. Fourth, prior research has insufficiently addressed the specific competencies and resources required for sustainability-related monitoring. While the importance of financial and industry expertise is well established (e.g., Zhang et al., 2007; Zaman et al., 2021), there is a lack of systematic evidence on sustainability-specific competencies – particularly in environmental domains – and on how resource constraints affect the ability of monitoring bodies to fulfil their expanded responsibilities. In addition, it remains unclear how stakeholder expectations influence the development and prioritization of such competencies within the three monitoring functions. Fifth, although some studies highlight the benefits of co-operation among monitoring actors for assurance quality (e.g., Cohen et al., 2010; Zhou et al., 2019), there is limited empirical evidence on how such co-operation unfolds in the context of sustainability regulation, how capability gaps influence collaboration, and how interdependencies among the three parties can be effectively managed.

Against this backdrop of increasing regulatory pressure, heightened stakeholder expectations, evolving capability requirements, and significant gaps in the existing literature, we stress a major research gap to integrate regulatory, organizational, and behavioural perspectives on sustainability-related monitoring:

Research objective 2: *Examine the impact of European sustainability regulations (CSRD and CSDDD) on the degree of co-operation in sustainability-related monitoring among audit committees, internal auditors, and external auditors, considering existing and lacking competencies and resources of the three monitoring parties and their collaborative potential.*

As emphasized in Article 2, sustainability reporting has become a comprehensively regulated and highly assurance-relevant domain, requiring robust internal control mechanisms to ensure the reliability of disclosed information (Gomez-Trujillo et al., 2020). In this evolving context, ICS and RMS – traditionally designed to safeguard financial reporting – are being extended to encompass sustainability-related data, processes, and risks (Harasheh and Provasi, 2023). This expansion substantially increases both the scope and complexity of these systems, as sustainability information is often less standardized, more qualitative, and embedded in cross-functional processes (Breijer et al., 2025). Consequently, appropriately designed and sufficiently monitored sustainability-related ICS and RMS are crucial for ensuring the completeness, accuracy, and reliability of sustainability disclosures. Within this setting, internal auditors, external auditors, and audit committees play a pivotal role in monitoring the adequacy and effectiveness of the ICS and RMS. Their responsibilities increasingly extend beyond traditional financial oversight to encompass sustainability-related processes and controls.

Despite this growing practical relevance, the existing literature provides only limited guidance on how such monitoring is actually carried out in the sustainability context. Prior research has generated valuable insights into the monitoring of financial ICS and RMS, highlighting, for example, the proactive and advisory role of internal auditors (Soh and Martinov-Bennie, 2011; Christensen, 2022), the importance of collaboration and mutual reliance between internal and external auditors (Regoliosi and Martino, 2019; Argento et al., 2019), and the coordinating and oversight function of audit committees (Sarens and De Beelde, 2006; Wu et al., 2014). However, these insights are largely derived from financial reporting settings – often within the US SOX environment – and are therefore only partially transferable to sustainability-related contexts, which are characterized by lower standardization, evolving regulatory requirements, and different assurance practices (Krishnan, 2005).

More importantly, the emerging body of research on sustainability-related ICS and RMS monitoring remains fragmented and underdeveloped. Existing studies tend to focus on individual monitoring actors rather than adopting an integrated perspective. For instance, research has examined internal auditors' growing involvement in sustainability assurance and their role in evaluating sustainability-related risks and controls (Trotman and Trotman, 2015; Rakipi and D'Onza, 2024), while other studies have explored external auditors' interpretive approaches ('sensemaking') when dealing with sustainability data (Bouten and Hoozée, 2025) or the increasing attention of audit committees to sustainability reporting quality (Benichou, 2024). However, these studies largely overlook how the three parties interact, coordinate, and jointly contribute to the monitoring of sustainability-related ICS and RMS.

This fragmentation reveals several critical research gaps. First, there is a lack of empirical evidence on the concrete procedures, practices, and interactions through which internal auditors, external auditors, and audit committees monitor sustainability-related ICS and RMS. While prior studies suggest that these actors are increasingly involved in sustainability assurance, they provide only limited insight into the specific monitoring activities performed and how these differ from or build upon financial ICS and RMS practices (Canning et al., 2018; Trotman and Trotman, 2015). Second, there is insufficient understanding of the coordination mechanisms and collaborative dynamics among the three monitoring parties. Existing literature emphasizes the importance of collaboration and trust in financial contexts (Regoliosi and Martino, 2019; Sarens et al., 2009), yet little is known about how such coordination unfolds in the more complex and less standardized sustainability domain. Third, the impact of sustainability-related ICS and RMS monitoring on reporting quality remains underexplored. Although prior research suggests that monitoring can enhance reporting reliability and corporate governance quality (Al-Shaer and Zaman, 2018; Benichou, 2024), empirical evidence

on how different monitoring actors jointly contribute to high-quality sustainability reporting is scarce.

While Article 2 emphasizes regulatory effects and perceived collaboration, Article 3 shifts the analytical focus to actual monitoring practices with a focus on sustainability-related ICS and RMS. The motivation for this objective lies in the limited empirical understanding of how sustainability-related ICS and RMS are monitored in practice, how responsibilities are allocated, and how information flows among the three parties (necessity for more corresponding empirical research highlighted by e.g., Soh and Martinov-Bennie, 2015, Trotman and Trotman, 2015, Canning et al., 2018):

***Research objective 3:** Examine how internal auditors, external auditors, and audit committees monitor sustainability-related ICS and RMS, with a focus on their concrete procedures and coordination mechanisms to ensure high-quality sustainability reporting.*

1.3. Overview and summary of research articles

This cumulative dissertation consists of three interrelated research articles that collectively address the overarching objective of conceptualizing and empirically examining efficient and effective monitoring of sustainability reporting by audit committees, internal auditors, and external auditors. While each article pursues a distinct research objective and employs a specific methodological approach, the three studies are closely aligned in terms of their institutional setting and emphasis on multilateral monitoring and collaboration. Table 1 provides an overview of the three articles, including their titles, methodological approaches, theoretical foundations, research objectives, samples, target journals, and publication status.

	Article 1	Article 2	Article 3
Title	The relationship between audit committees, external auditors, and internal control systems: A literature review and a research agenda.	Sustainability-related co-operation among audit committees, internal auditors and external auditors: a survey-based study.	How Do Internal Auditors, External Auditors, and Audit Committees Monitor Sustainability-Related Internal Control and Risk Management Systems? An Empirical Study.
Author(s) and points	Christoph Wehrhahn (0,67), Patrick Velte	Christoph Wehrhahn (1,0)	Christoph Wehrhahn (1,0)
Method	Literature Review	Empirical-qualitative study (survey)	Empirical-qualitative study (interviews)
Theory	Principal Agent Theory (PAT)	Stakeholder-Agency Theory (SAT) and Resource-based Theory (RBT)	RBT and Systems Theory
Content	Relationship between audit committees, internal auditors, and external auditors in consideration of ICS to identify mutual influences among the parties and to develop an integrated perspective on firms' multilateral monitoring mechanisms	Impact of European sustainability regulations (CSRD and CSDDD) on the degree of co-operation in sustainability-related monitoring among audit committees, internal auditors, and external auditors, considering existing and lacking competencies and resources of the three monitoring parties and their collaborative potential	Monitoring of sustainability-related ICS and RMS by internal auditors, external auditors, and audit committees, with a focus on their concrete procedures and coordination mechanisms to ensure high-quality sustainability reporting
Sample	71 empirical-quantitative studies (2005-2022)	112 German audit committee members, internal auditors and external auditors	12 German audit committee members, internal auditors and external auditors
Journal	Journal of Financial Reporting and Accounting	Meditari Accountancy Research	Corporate Social Responsibility and Environmental Management
Ranking (VHB)	C	C	C
Publication status	Published (online first)	Published	Under review

Table 1: Overview of research articles

The first article, entitled “*The relationship between audit committees, external auditors, and internal control systems: A literature review and a research agenda*”, provides the conceptual basis for the dissertation. The purpose of this article is to explore the relationships among audit committees, external auditors, internal auditors and internal control systems, with a particular focus on identifying mutual influences and interdependencies within firms' monitoring architectures. Drawing on 71 empirical-quantitative studies published between 2005 and 2022, the literature review systematically analyses how characteristics of audit committees and

external auditors – distinguished into competencies and incentives – relate to ICS quality and internal audit functions. Principal agent theory (PAT) (Jensen and Meckling, 1976; Ross, 1973) serves as the primary theoretical lens, reflecting the dominance of shareholder-oriented governance settings in the literature.

The findings reveal a dynamic trilateral network of monitoring relationships in which ICS quality plays a central mediating role. In particular, the literature review shows that audit committee competencies – particularly financial, accounting, industry, legal, and IT expertise – have a predominantly positive effect on ICS quality, as reflected in fewer disclosed internal control weaknesses and more effective remediation (e.g., Zhang et al., 2007; Lisic et al., 2019; Ashraf et al., 2020). Incentive-related characteristics, such as independence and multiple directorships, also contribute to higher ICS quality, although results are more heterogeneous in this category (e.g., Goh, 2009; Cheng et al., 2019). Importantly, ICS quality is not merely an outcome variable but also feeds back into corporate governance structures: firms with weak ICS quality tend to strengthen audit committee independence, expertise, and size in subsequent periods (Johnstone et al., 2011; Goh and Li, 2013). For external auditors, the findings reveal a similarly complex and dynamic relationship with ICS quality. While big four auditors and auditors with industry or IT expertise are more likely to detect internal control weaknesses (e.g., Bedard et al., 2009; Haislip et al., 2016), high ICS quality in turn reduces audit fees, audit hours, and the likelihood of modified opinions (e.g., Hoitash et al., 2008; Elder et al., 2009). These results point to a substitutive relationship in which strong internal corporate governance structures – coordinated by competent audit committees – can alleviate external audit effort (Malik, 2014), with ICS quality acting as a central mediating mechanism.

Synthesizing these findings, Article 1 conceptualizes monitoring as a dynamic triangle of interdependent monitoring actors in which competencies and incentives of audit committees and internal and external auditors are mutually reinforcing over time. This integrative

perspective highlights the importance of a three-party coalition coordinated by the audit committee (Cohen et al., 2004; Velte, 2017) and provides the theoretical baseline for extending monitoring research beyond financial reporting towards sustainability-related contexts.

A key contribution of the article lies in highlighting the importance of an integrative three-party coalition among audit committees, internal auditors, and external auditors, rather than isolated or purely bilateral monitoring arrangements. Moreover, the paper extends the traditional financial reporting focus of prior research by explicitly incorporating sustainability and fraud considerations into the discussion of monitoring roles and competencies. By developing a forward-looking research agenda, Article 1 establishes the conceptual foundation for the subsequent empirical analyses in the dissertation. The article has been jointly developed with Patrick Velte and has been published in the *Journal of Financial Reporting and Accounting* (ranked “C” in the VHB publication media rating 2024 for the section ‘Accounting’).

The second article, “*Sustainability-related co-operation among audit committees, internal auditors and external auditors: a survey-based study*”, empirically examines the impact of EU sustainability regulations on collaboration among the three monitoring parties. Using data from 112 German audit committee members, internal auditors, and external auditors, the study investigates how sustainability-related regulatory pressure – particularly stemming from the CSRD and CSDDD – affects competencies, resource availability, and cooperative behaviour among the parties. The theoretical framework combines stakeholder-agency theory (SAT) (Hill and Jones, 1992) and resource-based theory (RBT) (Barney, 1991; Grant, 1991), thereby extending the predominantly shareholder-focused perspective of PAT considered in prior quantitative research (see Article 1) and accounting for capability constraints and stakeholder expectations with regard to sustainability reporting.

The findings indicate that across all three parties, strong competencies were reported in traditional domains such as financial and industry expertise, reflecting their long-standing involvement in financial reporting oversight (Velte, 2023a). In contrast, substantial competency gaps emerged in environmental domains, particularly regarding biodiversity and ecosystems, and water and marine resources.¹¹ These deficiencies were consistent across audit committees, internal auditors, and external auditors and highlight that sustainability regulation confronts monitoring parties with knowledge requirements outside their traditional expertise. Social topics – especially those related to the own workforce – were assessed more positively, reflecting Germany’s stakeholder-oriented governance model and strong employee co-determination traditions. From a resource perspective, the parties generally reported moderate-to-strong financial and personnel resources, but notable limitations in technical resources, particularly with regard to sustainability-specific tools. Crucially, the findings reveal that collaboration is perceived as both necessary and problematic. While all three parties recognize the potential of increased co-operation to mitigate capability and resource constraints – consistent with RBT – actual collaboration is often hindered by limited communication, role ambiguity, and divergent self-assessments. Each party tends to overestimate its own competencies while simultaneously expecting other parties to compensate for existing gaps. This dynamic not only constrains effective collaboration but may also foster resentment and undermine long-term capability building. At the same time, the audit committee emerges as the central coordinating actor within the tripartite structure. Although it has limited potential to directly alleviate the workload of internal and external auditors, it relies heavily on both parties for sustainability-related monitoring and assumes responsibility for allocating tasks, setting priorities, and orchestrating co-operation (e.g., Beasley et al., 2009; Sulaiman and Yasin, 2022).

¹¹ With regard to expertise, a distinction was made based on the European Sustainability Reporting Standards (ESRS): environment (climate change, pollution, water and marine resources, biodiversity and ecosystems, and resource use and circular economy), social (own workforce, workers in the value chain, affected communities, and consumers and end-users), and governance (business conduct).

Internal and external auditors thus function primarily as auxiliary monitoring bodies whose effectiveness depends on coordinated action rather than unilateral efforts. Article 2 thus provides important empirical evidence on how regulatory pressure reshapes collaboration patterns and exposes capability gaps among monitoring actors. The second article has been developed as a single-author paper. The article has been published in *Meditari Accountancy Research* (ranked “C” in the VHB publication media rating 2024 for the section ‘Accounting’).

The third article, entitled “*How Do Internal Auditors, External Auditors, and Audit Committees Monitor Sustainability-Related Internal Control and Risk Management Systems? An Empirical Study*”, adopts an exploratory qualitative approach to examine monitoring practices in depth. Based on 12 semi-structured expert interviews with internal auditors, external auditors, and audit committee members in Germany, the study explores how sustainability-related ICS and RMS are monitored in practice, which procedures are applied, and how coordination among the three parties is organized. RBT (Barney, 1991; Grant, 1991) and systems theory (Luhmann, 1984; von Bertalanffy, 1968) provide the conceptual foundation, enabling the analysis of sustainability-related monitoring as both a capability-driven process and a dynamic system of interrelated actors.

The findings show that internal auditors were found to play a pivotal role in operationalizing sustainability-related monitoring. They integrate sustainability risks into audit planning and conduct targeted audits of sustainability-related ICS and RMS. Beyond assurance, internal auditors act as advisors and change agents by identifying control weaknesses, improving documentation, and embedding sustainability-related controls into existing ICS and RMS. Their iterative, risk-oriented approach is widely perceived as a key driver of sustainability reporting quality, particularly in organizational units with limited reporting experience. External auditors apply standardized system audit approaches adapted to sustainability

contexts, often supported by proprietary tools and in-house environmental experts. While current sustainability assurance engagements are largely limited to limited assurance, external auditors emphasize the strategic importance of robust sustainability-related ICS and RMS as a prerequisite for high-quality reporting. Several interviewees advocated for mandatory audits of sustainability-related ICS and RMS, highlighting potential synergies with financial audits, such as integrated documentation, streamlined procedures, and improved audit trails (Gramling et al., 2010). Audit committees, in turn, exercise their monitoring role primarily through intensive interaction with internal and external auditors. They approve audit plans, demand transparency regarding sustainability risks, and increasingly engage directly with sustainability departments. Rather than relying predominantly on formal audits of internal CGS, audit committees often prefer readiness checks and principle-based assessments as more cost-effective and informative instruments. These findings underscore the audit committee's role as a coordinator and integrator of monitoring inputs, rather than as a direct executor of monitoring activities. Through these coordinated procedures, the three parties jointly enhance the reliability, completeness, and accuracy of sustainability-related information, thereby improving overall sustainability reporting quality.

The qualitative findings of Article 3 provide micro-level insights that complement and deepen the survey-based results of Article 2. This article represents one of the first empirical studies to provide in-depth insights into the status quo of sustainability-related internal control and risk management monitoring by all three monitoring bodies simultaneously. The third article has also been developed as a single-author paper. The article has been submitted to *Corporate Social Responsibility and Environmental Management* (ranked "C" in the VHB publication media rating 2024 for the section 'Accounting').

Taken together, the three articles offer a coherent and cumulative contribution to the literature on monitoring by audit committees, internal auditors and external auditors. Article 1 establishes

the conceptual and theoretical foundation, Article 2 empirically examines regulatory-driven co-operation under sustainability pressure, and Article 3 provides rich qualitative insights into actual sustainability-related monitoring practices and coordination mechanisms. By combining different theoretical perspectives, methodologies, and levels of analysis, the dissertation advances understanding of how audit committees, internal auditors, and external auditors jointly contribute to effective monitoring in an increasingly sustainability-oriented corporate governance environment.

1.4. Course of the dissertation

This dissertation is structured as follows. Section 1 introduces the research topic by outlining its relevance, defining the research objectives, and providing an overview of the included research articles. This introductory chapter establishes the motivation for the dissertation and situates the research within the broader academic and regulatory context. Section 2 presents the theoretical foundation of the dissertation. It introduces PAT and SAT, RBT, and systems theory as the primary theoretical lenses used to analyse the roles and interactions of audit committees, internal auditors, and external auditors. These perspectives are subsequently integrated into a comprehensive theoretical framework that captures both incentive-related and capability-based aspects of monitoring as well as their systemic interdependencies. Section 3 outlines the regulatory background relevant to the dissertation. It provides an overview of key regulatory developments in the US, Europe, and Germany, with a particular focus on financial reporting, sustainability reporting, and internal CGS. This section highlights similarities and differences across regulatory regimes and underscores their implications for monitoring practices. Section 4 reviews the literature on the roles of audit committees, internal auditors, and external auditors in monitoring financial and sustainability reporting. While section 4.1 synthesizes the empirical-quantitative literature, emphasizing established findings as well as structural

limitations that constrain the transferability of results to sustainability-related contexts, section 4.2 reviews empirical-qualitative research. Section 4.2.1 focuses on the parties' roles in monitoring financial reporting, while Section 4.2.2 examines their roles in sustainability reporting. Together, these sections identify key research gaps and provide the basis for the empirical analyses conducted in this dissertation. Section 5 presents the key research results and discusses their implications. Section 5.1 analyses the relationship between audit committees, internal auditors, and external auditors with regard to ICS, focusing on their roles, interactions, and coordination in monitoring activities (Article 1). Section 5.2 examines the impact of EU sustainability regulations on the degree of co-operation among the three monitoring parties, particularly in the context of sustainability-related oversight (Article 2). Section 5.3 outlines the procedures and coordination mechanisms applied in monitoring sustainability-related ICS and RMS (Article 3). Section 5.4 discusses the implications of the results. Section 5.4.1 addresses regulatory implications, while Section 5.4.2 highlights implications for practice. Section 6 concludes the dissertation by summarizing the main findings and contributions. It also provides an outlook on future developments in research, regulation, and practice, particularly in light of evolving sustainability requirements and corporate governance frameworks.

2. Theoretical foundation

2.1. Agency theory

While this dissertation primarily draws on SAT (Hill and Jones, 1992), the PAT (Jensen and Meckling, 1976; Ross, 1973) provides an essential conceptual foundation for understanding how the central role of SAT is derived in addressing the defined research objectives. The PAT is rooted in the shareholder value paradigm and aims at the efficient enforcement of owners'

interests (principals) vis-à-vis those of management (agents). The theory predicts agency problems (conflicts of interest and information asymmetries¹²) exist that give rise to incomplete contracts between principals and agents. At this point, corporate governance mechanisms are expected to reduce information asymmetries through appropriate incentive, monitoring, and information systems, or through signalling and screening mechanisms (e.g., Spence, 1973). Audit committees and external auditors both play a central role as key monitoring mechanisms (Chow and Rice, 1982; DeFond and Zhang, 2014). Their monitoring involvement – e.g., through commissioning and performing an external audit of financial and sustainability reports – mitigates conflicts of interest and information asymmetries between management and owners (Jensen and Meckling, 1976). To further alleviate such agency problems, internal auditors as well as internal CGS serve as important information tools for executive directors (Cohen et al., 2004). While top management bears primary responsibility for designing and maintaining appropriate internal CGS, these systems are subject to monitoring by internal auditors, audit committees, and external auditors.

Building on the two-tier agency framework proposed by Tirole (1986), audit committees act as agents of shareholders with a mandate to monitor executive directors. Consequently, audit committees have a vested interest in robust internal CGS, as such systems not only facilitate monitoring but also shape managerial incentives and value creation processes (Zahra et al., 2007). External auditors, in their role as gatekeepers for shareholders (Kraakman, 1986), as well as internal auditors, in their role as monitoring agents that reduces information asymmetries, e.g. through ensuring the effectiveness of ICS, complement the monitoring function of audit committees. At the same time, audit committees, internal auditors, and external auditors are themselves economically motivated agents (Antle, 1982), leading to the

¹² In the theoretical literature, four types of information asymmetries are identified: (1) hidden characteristics, (2) hidden actions, (3) hidden information, and (4) hidden intentions. These asymmetries can give rise to challenges such as adverse selection, moral hazard, or exploitation risk (e.g., Jensen and Meckling, 1976; Jensen and Meckling, 1979).

risk of impaired independence, e.g., through the formation of coalitions with executive directors, to the detriment of shareholders.

While shareholder-focused PAT provides a powerful framework to analyse opportunism and monitoring under information asymmetry, its explanatory power is limited in sustainability contexts, long-term horizons, and strong regulatory and stakeholder pressure. Consequently, SAT (Hill and Jones, 1992) offers a more suitable analytical lens, as it explicitly accounts for pluralistic stakeholder interests. According to SAT, the monitoring functions performed by audit committees, internal auditors, and external auditors are of critical importance not only to shareholders as principals, but also to a broader set of stakeholders (Velte, 2025b). Stakeholders increasingly depend on credible financial and sustainability information, as well as on the robustness of the underlying internal CGS (Fiandrino et al., 2022) as a basis for their own risk assessments and decisions.¹³ Given the growing interdependence between financial and sustainability information, effective monitoring by the three monitoring bodies should ideally adopt an integrated perspective that encompasses both reporting domains (e.g., Hichri, 2023). This is mainly because (non) financial reports rely on overlapping processes and internal CGS so that integrated audits generate synergies for both preparation and monitoring of financial and sustainability reporting.

At the same time, stakeholders expect monitoring bodies to be endowed with appropriate financial, industry, and sustainability skills, as well as with suitable incentive structures. Incorporating stakeholder interests into the mandate and composition of monitoring bodies not only enhances stakeholder reputation but also contributes to high-quality financial audit and sustainability assurance (e.g., Garcia-Sanchez et al., 2022) because the monitoring parties are better able to assess the data and to monitor it with higher levels of reliability (Abu Afifa et al.,

¹³ For example, whether suppliers, customers, or banks choose to enter into business relationships with the firm, or whether employees are willing to enter into an employment relationship with the firm.

2025). Considering the expanding monitoring responsibilities associated with sustainability issues – driven by regulatory and stakeholder pressure – the traditional emphasis on financial and industry expertise for audit committees is broadened to include sustainability-specific competencies (Velte, 2023a).

This shift from traditional monitoring functions toward addressing sustainability-related regulatory requirements and stakeholder demands gives rise to new resource dependencies and incentive structures among the monitoring parties. For example, individual monitoring parties may lack sustainability-related expertise and resources required to adequately monitor complex environmental and social issues, thereby increasing incentives to collaborate with other monitoring bodies to compensate for sustainability-related capability gaps. Consequently, each of the three monitoring authorities has an interest in ensuring that the others possess sufficient environmental and social expertise to discharge their sustainability-related responsibilities effectively. In line with the new sustainability reporting requirements (European Sustainability Reporting Standards - ESRS), this includes environmental competencies within climate change, pollution, water and marine resources, biodiversity and ecosystems, resource use and circular economy. As no single monitoring body is likely to meet these requirements in isolation, mutually reinforcing incentives may be created through coordinated and clearly delineated oversight arrangements. For instance, provided that adequate sustainability-related capabilities are in place, internal auditors could focus on monitoring sustainability-related ICS, while external auditors provide assurance over the RMS, with these roles alternating in subsequent periods. Such coordinated approaches may reduce redundant efforts, free up scarce resources, and thereby strengthen incentives for effective and efficient sustainability-related monitoring.

Within this agency-theoretical context, expectation gaps (e.g., Naynar et al., 2018) are of significant relevance for the monitoring performed by the three parties (Deepal and Jayamaha, 2022). From a SAT perspective, expectation gaps primarily arise because stakeholders tend to

overestimate the scope and effectiveness of monitoring and assurance mechanisms performed by external auditors (Porter, 1993). Although stakeholders' expectation gaps primarily focus on external auditors, certain elements can also be referred to audit committees and internal auditors. Alongside external auditors, these parties contribute significantly to the adequate monitoring of both financial and sustainability reporting. For instance, audit committees are responsible for appointing external auditors (DeAngelo, 1981) and coordinating as well as overseeing the audit process (e.g., Livne et al., 2024). Internal auditors, in turn, may support external auditors by evaluating and monitoring the ICS (e.g., Regoliosi and Martino, 2019), thereby influencing the overall monitoring performance. Consequently, audit committees, internal auditors, and external auditors are expected to prevent managerial opportunism, ensure high-quality reporting, and safeguard corporate value creation. However, these expectations often exceed the formal mandates, resources, and assurance levels embedded in monitoring systems, especially regarding sustainability information (Pizzi et al., 2024). Unlike financial reporting, sustainability data are characterised by higher measurement uncertainty, less mature control environments, evolving regulatory interpretations and limited credibility (Xiao and Shailer, 2022). As a result, stakeholders frequently transfer established financial reporting expectations to sustainability contexts, thereby widening the expectation gap between perceived and actual monitoring outcomes.

2.2. Resource-based theory

In addition to agency-theoretical perspectives, the RBT (Barney, 1991; Grant, 1991) provides a valuable lens for analysing the multilateral interaction among audit committees, internal auditors, and external auditors. RBT complements the previously discussed theories by shifting the focus from incentives and control to the distribution, availability, and deployment of resources across the three monitoring actors. Each of the parties commands distinct bundles of

resources and capabilities that can contribute to the effectiveness of sustainable corporate governance and, ultimately, to firms' long-term viability and competitiveness.

Audit committees should primarily include governance-related competencies, including financial expertise (Zhang et al., 2007) and industry skills (Zaman et al., 2021), to support internal auditors and external auditors, e.g., by providing strategic guidance in risk assessments or by prioritizing audit areas. At the same time, audit committees – particularly within Germany's two-tier system – are subject to pronounced resource constraints, as their members typically serve on a part-time basis, in contrast to the full-time boards commonly found in one-tier systems.

In contrast, external auditors support the audit committee (e.g., Dobija, 2015; Sulaiman and Yasin, 2022) and can thus be conceptualized as an internal resource contributing to the firm's overall monitoring architecture. They possess specialized expertise in statutory financial audits and, increasingly, in sustainability assurance. This is especially evident among large international audit firms, whereas small and medium-sized audit practices often face limitations in offering sustainability assurance services due to restricted human and financial resources. Leveraging their accumulated experience and technical expertise (Westermann et al., 2015), external auditors can enhance the quality of financial audit and sustainability assurance, particularly given the growing interconnections between financial and sustainability information that ultimately converge in the audited annual report (Hichri et al., 2023).

Internal auditors likewise hold distinctive resources and capabilities, including in-depth organisational knowledge and internal audit expertise (Oussi and Taktak, 2018), to assess the effectiveness of internal CGS and identify operational weaknesses. These capabilities can also be applied to processes underlying sustainability information, such as the measurement and monitoring of sustainability-related metrics (Krasodomska et al., 2021). While all monitoring actors have accumulated substantial experience in the oversight and assurance of financial

information due to decades of expanding financial regulation (e.g., Cohen et al., 2010; Roussy et al., 2020), the supervision of sustainability-related data and processes remain relatively novel domains for all parties.

From an RBT perspective, the effective allocation and deployment of resources – typically categorized as physical capital (e.g., technological infrastructure of internal auditors), human capital (e.g., trained monitoring personnel with financial- and sustainability-related expertise), and organizational capital (e.g., coordination and control systems, particularly for audit committee to orchestrate the oversight) – are critical determinants of value creation (Barney, 1991). However, the optimal use of these resources is often constrained by legal, organizational, or economic limitations. Within the tripartite monitoring relationship, it is therefore essential to allocate scarce resources, such as personnel with environmental or social expertise, in a manner that maximizes their contribution to both financial and sustainability-related monitoring and assurance. One potential approach involves the coordinated engagement of specialized experts (e.g., environmental scientists) who can address complex sustainability issues and thereby reduce the burden on each of the three monitoring bodies.

The interactions among audit committees, internal auditors, and external auditors may be either substitutive or complementary (Velte, 2017). Substitution occurs when the monitoring efforts of one party (e.g., internal audit activities) compensate for deficiencies in another party's oversight (e.g., limited engagement by the audit committee). In such cases, inadequate monitoring by one actor necessitates intensified efforts by the others. Although some empirical studies provide evidence suggesting a substitutive relationship (e.g., Barua et al., 2010), this type of relationship between the parties is often neglected. In contrast, and consistent with the RBT, interactions may also be complementary. Complementarity arises when monitoring tasks are deliberately allocated to a single party – for example, when ICS are reviewed either by internal auditors or external auditors, but not by both. Such arrangements presuppose a

willingness to cooperate and a sufficient level of mutual trust, as none of the monitoring parties can fully absolve itself of its overarching oversight responsibilities.

2.3. Systems theory

Supplementing the explained theories, systems theory (Luhmann, 1984; von Bertalanffy, 1968) conceptualizes organizations as complex, adaptive systems composed of multiple interdependent subsystems that continuously interact and adjust to internal and external stimuli. Since Adams (1993) had already applied this theory in a very comprehensive manner to internal auditors and ICS, it appeared particularly valuable, insightful, and innovative to extend its application to the context of all three monitoring parties and internal CGS. Drawing on the principles of general systems theory (von Bertalanffy, 1968) and their application to monitoring and control contexts (Adams, 1993), internal CGS can be classified as purposive systems aimed at mitigating both financial and sustainability-related business risks and ensuring that financial and sustainability reporting is produced in an efficient, effective, and economically viable manner (Simnett et al., 2009).

From a systems-theoretical perspective, internal CGS as well as audit committees, internal auditors, and external auditors constitute interlinked subsystems within the broader corporate governance architecture. These subsystems interact closely with financial and sustainability reporting structures and with one another. A core function of this interaction lies in the obligation of the three monitoring bodies to evaluate the adequacy and effectiveness of internal CGS, which forms the essential foundation for the reliability of financial and sustainability disclosures (Simnett et al., 2015).

Importantly, the role of audit committees, internal auditors, and external auditors extends beyond passive observation and ex post assessment. Through formalized feedback mechanisms,

reporting lines, and iterative control processes (von Bertalanffy, 1968), these actors actively shape the design, continuous improvement, and operational performance of internal CGS. At the same time, their actions influence the monitoring intensity, focus, and procedures adopted by the other parties. For example, internal auditors may identify emerging sustainability risks during their reviews of internal CGS and communicate early warning signals, thereby triggering adaptive responses by both external auditors and audit committees (Eulerich et al., 2019). Similarly, findings reported by external auditors regarding deficiencies in processes and controls used to measure sustainability indicators may prompt revisions in the audit committee's oversight practices and priorities (Cohen et al., 2004). Moreover, audit committees act as central coordination nodes within the system by initiating additional or targeted audit activities to be carried out by internal or external auditors (Cohen et al., 2010). Such interventions may be based on prior audit findings, changes in the regulatory environment, or sudden exogenous shocks, such as environmental incidents or natural disasters affecting company operations. In this way, systems theory highlights the dynamic, recursive, and mutually reinforcing nature of interactions among financial and sustainability-related internal CGS and the three monitoring authorities.

2.4. Integrated theoretical perspective

Taken in isolation, each of the three theoretical perspectives discussed above – agency theory, RBT, and systems theory – offers valuable but partial insights into the roles and interactions of audit committees, internal auditors, and external auditors in financial and sustainability-related monitoring. An integrated perspective is therefore required to adequately capture the complexity, dynamics, and normative expansion of contemporary monitoring practices, particularly in the context of sustainability regulation and reporting. This integrative perspective directly supports the overarching aim of this dissertation by enabling a

comprehensive analysis of multilateral relationships among monitoring parties (*Research objective 1*), their co-operation under sustainability regulation (*Research objective 2*), and their concrete monitoring practices and coordination mechanisms (*Research objective 3*).

While PAT (Jensen and Meckling, 1976; Ross, 1973) focuses on delegation relationships, information asymmetries, and monitoring as a means of mitigating opportunistic behaviour, SAT extends this agency framework to a pluralistic governance environment in which multiple stakeholder groups act as principals with heterogeneous and partly conflicting objectives (Hill and Jones, 1992). This extension is particularly relevant in sustainability contexts, where corporate activities generate externalities and where monitoring bodies are increasingly expected to account for environmental and social impacts alongside financial performance. Stakeholders increasingly expect monitoring bodies to possess strong financial, industry-specific, and sustainability expertise (Velte, 2023a), supported by appropriate incentive structures. Consequently, an integration of stakeholder interests into the mandate and composition of these bodies strengthens stakeholder trust and improves the quality of financial and sustainability assurance (e.g., Garcia-Sanchez et al., 2022), as competent parties can assess and oversee data more reliably. In this regard, SAT provides a conceptual foundation for *Research objective 2* by explaining how increasing stakeholder pressure and regulatory demands shape the expectations placed on audit committees, internal auditors, and external auditors and, consequently, influence their incentives to engage in sustainability-related co-operation. At the same time, SAT informs *Research objective 1* by highlighting how differing stakeholder interests may create tensions or alignment mechanisms that affect the relationships among the three monitoring parties.

However, SAT is limited in explaining how monitoring is actually performed under conditions of constrained expertise, scarce resources, and expanding regulatory demands. This is where RBT provides an essential complement. By shifting the analytical focus from incentives and

relationships to the distribution and deployment of resources and capabilities (Barney, 1991; Grant, 1991), RBT highlights that the effectiveness of financial and sustainability-related monitoring depends not only on formal mandates but also on whether audit committees, internal auditors, and external auditors possess – and can mobilize – the requisite financial and sustainability-related expertise. In this sense, RBT explains why collaboration among the three parties becomes both necessary and potentially efficiency-enhancing, particularly when no single actor is able to meet sustainability-related monitoring requirements in isolation. Accordingly, RBT directly contributes to *Research objective 2* by explaining how differences in existing and lacking competencies and resources shape the need for and extent of co-operation among monitoring actors under sustainability regulation. Furthermore, RBT contributes to *Research objective 3* by providing a theoretical lens to analyse how resource constraints and capability gaps influence the design and execution of concrete monitoring procedures and practices in sustainability-related ICS and RMS.

However, neither SAT nor RBT fully capture the dynamic and recursive nature of interactions among monitoring actors and internal CGS. Systems theory addresses this gap by conceptualizing corporate governance as a set of interdependent subsystems that continuously interact through feedback loops, information flows, and adaptive responses (von Bertalanffy, 1968). From this perspective, audit committees, internal auditors, external auditors are not merely contractual or resource-bearing entities, but functionally differentiated components of an overarching corporate governance system. Their interactions are iterative rather than linear, and monitoring outcomes emerge from ongoing coordination, mutual adjustment, and learning processes rather than from isolated control actions (Adams, 1993). Systems theory thus provides a dynamic lens that integrates the incentive logic of agency theory with the capability logic of RBT. This perspective is particularly relevant for *Research objective 1*, as it enables the analysis of mutual influences and interdependencies among the three monitoring parties

within ICS. Moreover, it directly supports *Research objective 3* by offering a framework to examine how monitoring is operationalized through concrete coordination mechanisms, information flows, and iterative processes in sustainability-related ICS and RMS.

Overall, the use of multiple theoretical lenses is not merely additive but necessary. SAT explains why monitoring is demanded and how stakeholder interest affect the monitoring parties; RBT explains whether monitoring actors are capable of fulfilling these demands given their resource endowments; and systems theory explains how monitoring is operationalized through dynamic interactions. Together, these perspectives provide a coherent theoretical foundation for addressing all three research objectives by linking stakeholder-driven expectations (*Research objective 2*), resource-based capabilities and constraints (*Research objectives 2 and 3*), and system-level interactions and coordination mechanisms (*Research objectives 1 and 3*). Only by integrating these perspectives is it possible to develop a comprehensive theoretical framework that reflects the economic, organizational, and societal dimensions of both financial and sustainability-related monitoring.

3. Regulatory background

3.1. US-American Sarbanes-Oxley Act (SOX)

In 2002, the US legislator enacted the SOX (One Hundred Seventh Congress of the United States of America, 2002) which explicitly addressed, inter alia, various requirements for audit committees, external auditors and the establishment and monitoring of internal CGS (e.g., Sections 204, 301, 302, and 404). Regarding audit committees, the SOX initially introduced audit committee requirements and its responsibilities (Section 301). All members of the audit committee must, from a financial perspective, be independent of the executive directors and may likewise not serve as members of the executive directors (Section 301 (3A)). In addition

to these stringent independence requirements – designed to substitute for the absence of a supervisory board in the US one-tier system – the regulations of the US Securities and Exchange Commission (SEC) impose a disclosure obligation requiring companies to indicate whether at least one financial expert¹⁴ serves on the audit committee (SEC, 2003). Section 301 merely codifies the obligation of the audit committee to establish procedures for handling complaints and for receiving confidential or anonymous submissions by employees regarding accounting, auditing, or accounting-related internal controls (whistleblowing).¹⁵ Whistleblowing constitutes a subset of the CMS, with responsibility for establishing this subset of the internal CGS assigned to the audit committee within the US one-tier system.

Regarding external auditors, the SOX expanded the substantive responsibilities of external auditors, particularly in relation to internal controls. Under Section 404(b), external auditors must assure to and report on management's assessment of the effectiveness of internal control over financial reporting. This requirement substantially increased the scope, documentation, and audit obligations of external auditors and elevated the importance of internal control audits as an integral component of the financial statement audit. In addition, Section 204 requires external auditors to report all identified audit findings to the audit committee. Furthermore, the SOX significantly tightened external auditors' independence requirements (Section 201). Audit firms are prohibited from simultaneously providing certain non-audit services to their audit clients. Permissible non-audit services must be pre-approved by the audit committee, thereby strengthening the committee's supervisory role over the external auditor. These measures were intended to mitigate conflicts of interest and restore investor confidence following major

¹⁴ The SEC established the following cumulative requirements for qualification as a financial expert: knowledge of accounting principles and financial statements; the ability to assess the application of accounting standards in specific areas (e.g., estimates, accruals, and reserves, including earnings management practices); experience in the preparation, auditing, or analysis of financial statements; knowledge of internal control systems and financial reporting processes; and an understanding of the functions of the audit committee (SEC, 2003).

¹⁵ Although SOX introduced a mandatory requirement for all companies listed on US stock exchanges to establish an audit committee, Section 301 does not explicitly assign responsibility to the audit committee for overseeing the internal CGS.

accounting scandals. Further independence safeguards were introduced through mandatory rotation requirements (Section 203), requiring the lead audit partner and the reviewing partner to rotate off the engagement after five consecutive years.

Regarding internal CGS, Section 302 codifies obligations relating to the establishment, monitoring, and reporting of internal controls as another subset of the internal CGS, to be fulfilled by the Chief Executive Officer (CEO), the Chief Financial Officer (CFO), or comparable executive officers. In addition to regular reporting on the effectiveness of internal controls over financial reporting, these officers are required to inform both the audit committee and external auditor of any significant deficiencies in such controls. Section 404 establishes a direct link between appropriate ICS and financial reporting. Accordingly, the annual evaluation of effectiveness and the related disclosures by the CEO and CFO in the annual report are limited to ICS related to financial reporting. To ensure the reliability of these disclosures and stated above, Section 404 further requires the external auditor to conduct an annual audit of management's assessment of the effectiveness of internal controls over financial reporting. To operationalize internal control structures, the SEC adopted its Final Rules, in which it introduced, inter alia, the concept of 'Internal Control over Financial Reporting'. In doing so, the SEC drew on the practice-oriented Internal Control – Integrated Framework developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO I). In addition to this internal control framework, guidance on COSO ERM (COSO II) was published in 2004. The COSO II framework integrated internal control concepts into enterprise-wide risk management systems.

3.2. European regulations

As a reaction to the SOX, the European Directive 2006/43/EC – often referred to as ‘EU-SOX’ – introduced a general requirement for PIEs¹⁶ to establish audit committees, subject to certain member state options (European Parliament and the Council, 2006). Article 41 of the Directive defined the core responsibilities of the audit committee as the monitoring of the financial reporting process; the oversight of the effectiveness of the ICS, the RMS, and the internal audit system (IAS); the supervision of the external audit of the annual financial statements, in particular with regard to the independence of the external auditor and the provision of non-audit services; as well as the issuance of recommendations concerning the proposal for the appointment of the external auditor. Analogous to the SOX, independence and financial expertise were emphasized as two key attributes in the composition of audit committees. As a minimum requirement, however, the 2006 reform merely mandated the presence of at least one independent member possessing expertise in accounting and/or auditing (financial expert) (Art. 41 (1) Directive 2006/43/EC). By contrast, the EU Directive does not impose an explicit obligation to establish internal CGS structures. The EU regulation likewise did not codify an obligation for the external auditor to audit the internal CGS. Pursuant to Article 41 (4) of Directive 2006/43/EC, the external auditor is merely required to report to the audit committee on the key findings arising from the external audit, in particular on material weaknesses in the internal control system related to the financial reporting process.

In response to the 2008–2009 financial crisis, the European Commission included additional regulations on external auditors and audit committees of PIEs. While the member state options regarding the establishment of an audit committee and the minimum requirement of a single financial expert remained unchanged, Article 39 of Directive 2014/56/EU introduced additional substantive requirements. Specifically, the members of the audit committee, taken as a whole,

¹⁶ For both, companies with one-tier or two-tier systems.

must be familiar with the sector in which the undertaking operates (industry expertise), and the audit committee must comprise a majority of independent members. This requirement also applies to the chair of the audit committee (Art. 39 (1) Directive 2014/56/EU). However, the Directive incorporated significant member state options, such as the possibility of waiving the independence requirements in two-tier systems, provided that all members of the audit committee are simultaneously members of the supervisory board (Art. 39 (2), (5) Directive 2014/56/EU). Furthermore, the EU Directive expanded and specified the audit committee's responsibilities regarding the oversight of financial reporting and external audit. In particular, the audit committee is required to explain how the external auditor contributed to the integrity of the financial reporting process and the audit committee must explicitly monitor the financial reporting process itself (Art. 39 (6) Directive 2014/56/EU).

However, Article 39 of Directive 2014/56/EU introduced a partial relaxation of audit committee oversight duties. While audit committees remained responsible for monitoring the effectiveness of the ICS and RMS, their oversight with respect to internal audit was limited to the internal audit function, rather than an IAS¹⁷ (Nonnenmacher, 2015). Moreover, mandatory oversight was confined to those subsystems that relate to financial reporting. Although this narrowing of audit committee responsibilities compared to Directive 2006/43/EC should not obscure the fact that, within the two-tier system, the supervisory board remains responsible for overseeing the entire internal CGS – including sustainability reporting-related components – unless such preparatory tasks are delegated to another committee. Following Directive 2014/56/EU, neither the establishment obligations of the management board nor the audit obligations of the external auditor with regard to the internal CGS were expanded.

¹⁷ While the internal audit function refers to the organizational unit, team, or department within a firm that is responsible for performing independent audit activities, the IAS denotes the structured framework comprising the set of methods, policies, and procedures according to which these audits are conducted.

Furthermore, the EU pushed regulatory efforts to steer companies toward a stronger sustainability orientation. The Non-Financial Reporting Directive (NFRD)¹⁸ adopted in 2014 required specific PIEs¹⁹ to prepare a non-financial declaration starting with the 2017 financial year. Following the launch of the EU Green Deal, the EU Taxonomy Regulation was introduced in 2020 as a EU-wide classification system for environmentally sustainable economic activities. Since the 2021 financial year, companies subject to the NFRD have been required under Article 8 of the Taxonomy Regulation to supplement their non-financial declaration with three key environmental performance indicators. By disclosing their taxonomy eligibility (from the 2021 financial year onward) and taxonomy alignment (from the 2022 financial year onward), stakeholders are able to assess whether, and to what extent, corporate activities are associated with economic activities classified as environmentally sustainable. This assessment is enabled through mandatory disclosures on the proportion of ‘green’ turnover, operating expenditures (OPEX), and capital expenditures (CAPEX).

At the end of 2022, the CSRD²⁰ was adopted, introducing a comprehensive and mandatorily assured sustainability report – including taxonomy-related disclosures – as an integral part of the management report (Kosi and Relard, 2024; Hummel and Jobst, 2024). In July 2023, the CSRD reporting requirements were further specified through a first set of ESRS (Commission Delegated Regulation (EU) 2023/2772). These standards comprise the following categories within the environmental (E), social (S) and governance (G) domains: climate change (ESRS E1), pollution (ESRS E2), water and marine resources (ESRS E3), biodiversity and ecosystems

¹⁸ The NFRD remains applicable in some EU Member States due to the delayed implementation of the CSRD.

¹⁹ With more than 500 employees and more than 25 Mio. Euro balance sheet sum or more than 50 Mio. Euro sales. Also non-capital market-oriented big financial institutions and insurances.

²⁰ Compared to the NFRD-scope (see footnote 19), the CSRD extended the scope as follows: 1. Wave (fiscal year 2024): big capital market-oriented corporations with > 500 employees (NFRD-related firms), 2. Wave (fiscal year 2025): big corporations (> 250 employees, revenues > €50 mio., total assets > €25 mio.; at least 2 of the 3 criteria are met), 3. Wave (fiscal year 2026): capital market-oriented small and medium-sized corporations (> 10 employees, > €0,9 mio. revenues, > €0,45 mio. total assets; at least 2 of the 3 criteria are met), 4. Wave (fiscal year 2028): Non-EU-(group) corporations > €150 mio. (consolidated) revenues with CSRD-required EU subsidiaries or branch within the EU with revenues > €40 mio.

(ESRS E4), resource use and circular economy (ESRS E5), own workforce (ESRS S1), workers in the value chain (ESRS S2), affected communities (ESRS S3), consumers and end-users (ESRS S4), business conduct (ESRS G1).

Moreover, after prolonged discussions, the CSDDD was adopted in 2024. The CSDDD targets large European firms (such as those employing more than 1,000 employees and generating over EUR 450 million in annual turnover) but also extends to non-EU companies with significant turnover within the EU, thereby establishing its global reach (Petrovic, 2025). The CSDDD introduces extensive due diligence requirements, obliging firms to identify, prevent, and address adverse impacts on human rights and environmental protection across both their own operations and their value chains. In addition, the CSDDD requires covered companies to develop and implement a climate transition plan aligned with the 1.5°C target of the Paris Agreement, explicitly linking this obligation to the EU's climate neutrality objective for 2050. The requirements further include – in line with ESRS 2 under CSRD – the obligation to report on the extension of ICS and RMS to cover sustainability aspects.

In contrast, the German legislator had already enacted the Supply Chain Due Diligence Act ('LkSG') in 2021 (Deutscher Bundestag, 2021b), which introduced comparatively less ambitious risk management and compliance obligations. The core of the due diligence obligations resulting from the LkSG comprises supply chain-related risk management pursuant to § 4 (1) LkSG. To this end, sections 4 et seq. LkSG set out a structured process that includes the establishment of a RMS, the designation of an internal responsibility within the enterprise (§ 4 (3) LkSG), the conduct of regular risk analyses (§ 5 LkSG), the adoption of a policy statement (§ 6 (2) LkSG), and the implementation of preventive and remedial measures (§ 6 (1),(3),(4) and § 7 (1-3) LkSG). In addition, the LkSG requires the establishment of a complaints procedure (§ 8 LkSG) as well as comprehensive documentation and external reporting (§ 10 LkSG).

Unlike the NFRD, the Taxonomy Regulation, the CSRD and the CSDDD – in their initial versions – extended their scope beyond specific PIEs to also include non-listed SMEs. These firms had previously often lacked experience with sustainability reporting and sustainability-related ICS and RMS across the value chain. Unsurprisingly, the Taxonomy Regulation, the CSRD and the CSDDD faced substantial criticism from SMEs, particularly during the implementation phase. At the same time, new geopolitical challenges²¹ emerged at the EU level, which called the resilience of global supply chains into question.

Against this backdrop, the European Commission announced an ‘Omnibus’ initiative at the end of 2024, aiming to substantially reduce the regulatory burden on affected companies through bureaucratic simplification of the aforementioned sustainability regulations and thereby strengthen the competitiveness of firms within EU member states (Nicolo et al., 2025). On 26 February 2025, the European Commission published its proposals for an Omnibus I package to amend the CSRD, CSDDD, and Taxonomy Regulation. While certain elements of the Omnibus I were adopted shortly thereafter, the so-called ‘Substance Proposal’ – which primarily focuses on the scope of application of sustainability-related due diligence and reporting obligations – was reached only at the end of December 2025 following contentious negotiations.

On the one hand, the requirements resulting from the CSRD and CSDDD lead to increased duties for audit committees, internal auditors and external auditors. These obligations comprise the monitoring of due diligence processes throughout a company’s value chain according to the CSDDD, including underlying sustainability-related ICS and RMS, as well as CSR assurance according to the CSRD, emphasising the interconnections between sustainability reporting and sustainable supply chain duties. On the other hand, the revisions of the ‘Substance Proposal’ of the Omnibus I emphasize the significant regulatory reductions for monitoring parties, e.g.,

²¹ E.g., the war between Russia and Ukraine and the inauguration of the Trump administration in the United States, which further marked a radical retreat from sustainability initiatives (e.g., executive actions against diversity).

through the removal of the originally planned mandatory transition from limited to reasonable assurance. The impacts are illustrated in Table 2 (based on Wehrhahn, 2026; Velte and Wulf, 2026).

	CSRD	CSDDD	Omnibus I
Impact on monitoring parties	• Monitoring / assurance of sustainability reports in line with the CSRD/ESRS • Substantive assurance obligation by the external auditor • Member states may choose to engage an additional auditor or authorize other external accredited assurance providers • First step: limited assurance; second step: reasonable assurance level in 2028	• Monitoring due diligence throughout a company's value chain, including underlying sustainability-related ICS and RMS	Key reliefs: • CSRD: Removal of the originally planned mandatory transition from limited to reasonable assurance • CSDDD: Reduction of sustainability-related due diligence obligations, primarily through the elimination of climate transition plans aligned with the Paris Climate Agreement

Table 2: Impact on monitoring parties resulting from CSRD, CSDDD and Omnibus I

3.3. German regulations

Similar to the SOX, The German legislator had already enacted the 'KonTraG' in 1998, leading to specifications of management board's obligations under § 91 (2) AktG and to expand audit responsibilities of the statutory auditor under § 317 (4) HGB, albeit only with respect to listed stock corporations (Velte, 2021). Pursuant to § 91 (2) AktG, the management board is required to establish an early warning system, so that developments endangering the continued existence of the company are identified at an early stage. The prevailing view in the academic literature limits management board obligations under § 91 (2) AktG to the adoption of suitable measures for the early identification of going-concern-threatening developments; accordingly, the statute

does not require a full ICS and RMS. Nevertheless, the explanatory memorandum to the KonTraG linked the obligation to ensure an adequate internal audit function to § 91 (2) AktG, even though this obligation was not explicitly codified. Although the KonTraG did not further specify the supervisory board's monitoring duties, it introduced an explicit audit obligation for the statutory auditor under § 317 (4) HGB. However, this obligation does not extend to a comprehensive RMS, but is instead limited to compliance with § 91 (2) AktG. § 317 (4) HGB was further supplemented by reporting obligations requiring the statutory auditor to disclose the audit results in a separate section of the audit report pursuant to § 321 (4) HGB. In this context, the external auditor must indicate whether measures are necessary to improve the early warning system. By contrast, the audit opinion pursuant to § 322 (2) HGB is limited to the disclosure of risks threatening the company's continued existence.

As a national transposition of EU Directive 2006/43/EC, the 'BilMoG' introduced the audit committee into German corporate law for the first time, without establishing a mandatory requirement for listed stock corporations to set up such a committee. Pursuant to § 100 (5) in conjunction with § 107 (4) AktG (old version), capital market-oriented corporations as defined in former § 264d HGB were required – consistent with the EU framework – to appoint at least one independent financial expert to the supervisory board or audit committee. In addition, the statutory representatives of capital market-oriented corporations within the meaning of § 264d HGB were required to disclose the key features of the ICS and RMS, limited to the financial reporting process, in the management report pursuant to § 289 (4) HGB. The audit committee's oversight responsibilities with respect to the internal CGS were codified in § 107 (3), sentence 2, AktG, with the concepts of ICS, IAS, and RMS being included on an equal footing, in line with the EU Directive. However, the explanatory memorandum to BilMoG clarifies that the internal audit system constitutes a subset of the ICS. Unlike the RMS and the IAS, the explanatory memorandum provides only a definitional delineation of the ICS. According to this

definition, the ICS comprises ‘the principles, procedures, and measures designed to ensure the effectiveness and efficiency of business operations, the reliability of financial reporting, and compliance with the relevant legal requirements.’ While the audit responsibilities of the statutory external auditor under § 317 (4) HGB remained unchanged, the BilMoG expanded the external auditor’s reporting obligations as follows: in the context of the external auditor’s mandatory attendance at meetings of the supervisory board or audit committee dealing with financial reporting, the statutory external auditor is required under § 171 (1) AktG to report on material weaknesses in the ICS and RMS relating to the financial reporting process.

With the adoption of the ‘AReG’, the independence requirement for audit committee members in German stock corporations was removed. In line with the EU Directive 2014/56/EU, the statutory definition of financial expertise was expanded in § 100 (5) AktG to include industry-specific expertise. However, the German legislator did not introduce any amendments with respect to the internal CGS. In contrast to the narrowing approach adopted by the EU, the audit committee’s oversight obligation under § 107 (3), sentence 2, AktG continues to extend to the entire internal CGS, including system components that are not directly related to financial reporting.

In response to the Wirecard scandal, the German legislator opted for an autonomous corporate governance reform by enacting the ‘FISG’. For listed stock corporations, a specific provision was introduced in § 91 (3) AktG, mandating the establishment of a ICS and RMS that are appropriate to the scope of the company’s business activities and its risk profile and that operate effectively. According to the explanatory memorandum, the RMS is deemed effective if it is suitable for identifying, managing, and mitigating all material risks. For non-listed stock corporations, § 91 (2) AktG remains applicable. While the statutory definition of the ICS continues to rely, from a definitional perspective, on the explanatory memorandum to the BilMoG, the FISG does not specify how a comprehensive RMS is to be designed in practice,

nor does it clearly delineate the relationship between § 91 (3) and § 91 (2) AktG. It also remains unclear to what extent internal auditors or an IAS, as well as the CMS, constitute mandatory subsets of the ICS.

The FISG also tightened the regulatory framework governing audit committees. PIEs are required under § 316a, sentence 2, HGB to establish an audit committee. For stock-listed corporations, the minimum requirement of one financial expert under § 100 (5) AktG was increased to two financial experts, with at least one member possessing expertise in the field of accounting and another in the field of external auditing. In addition, § 107 (4) AktG codified a statutory right of access to information for the chair of the audit committee from the heads of the internal CGS. By contrast, the FISG did not amend the audit committee's monitoring duties under § 107 (3), sentence 2, AktG, nor did it expand the audit and reporting obligations of the external auditor with respect to the internal CGS under § 317 (4), 321 (4), and 322 (2) HGB, as well as Section 171 (1) AktG.

For listed stock corporations, the German Corporate Governance Code (GCGC) assumes particular significance in addition to statutory requirements under corporate and commercial law, as compliance with the GCGC must be declared through a formal declaration of conformity pursuant to § 161 AktG. The 2019 version of the Code already stipulated – prior to the enactment of the FISG – the implementation of an appropriate and effective ICS and RMS as a core principle and as an authoritative interpretation of § 91 (2) AktG. Moreover, the GCGC explicitly emphasized the management board's responsibility for compliance. Section A.2 of the 2019 GCGC further issued recommendations for the establishment of a CMS, including whistleblowing mechanisms, and for the disclosure of its fundamental features. In addition, the GCGC contains Principle 16, which requires the management board to provide the supervisory board with regular, timely, and comprehensive reporting on all matters relevant to the company, particularly with regard to risk management and compliance. With respect to the interpretation

of § 107 (3) sentence 2 AktG, the monitoring of compliance was explicitly identified as a responsibility of the audit committee (Recommendation D.3). Another recommendation (D.5) addresses the joint deliberation of the chair of the supervisory board and the chair of the management board on issues related to risk management and compliance. Furthermore, Principle 18 of the GCGC clarifies that the external auditor supports the supervisory board in its oversight of the ICS and RMS as they relate to financial reporting.

In May 2022, a revised version of the GCGC was published that, in addition to incorporating the amendments required by the FISG, explicitly integrates sustainability into the internal corporate governance framework of listed stock corporations. Within this revision, the CMS is aligned with the company's risk profile as a subset of the ICS and RMS (Principle 5). Furthermore, A.3 introduces a new recommendation to align the ICS and RMS with both financial and sustainability-related risks, where such alignment is already mandated by law (the LkSG). This explicitly includes the processes and systems used to collect and process sustainability-related data. Another new recommendation (A.5) requires the management board to describe, in the management report, the key features of the entire ICS and RMS – not limited to financial reporting – and to provide an assessment of the appropriateness and effectiveness of these systems. In this respect, the GCGC moves closer to the SOX, under which CEOs and CFOs are required to assess the effectiveness of internal controls; however, unlike SOX, the German approach extends beyond financial reporting. In line with the expanded responsibilities of the management board regarding the internal CGS, Principle 6 obliges the supervisory board to take sustainability issues into account in both its monitoring and advisory duties, including oversight of the internal CGS. According to Principle 4, the management board remains responsible for ensuring effective internal monitoring of the ICS and RMS, including the CMS. In practice, this monitoring function is typically performed by the internal audit function, although the GCGC does not explicitly mandate the establishment of an internal audit function.

At a minimum, the audit committee must be informed about the internal audit plan and key audit findings at least once per year.

The key implications of these German regulations – presented in chronological order (KonTraG, BilMoG, AReG, and FISG), and the revision of the GCGC – on both audit committees and external auditors, as well as on the co-operation among the monitoring parties, are summarized in Table 3 (based on Velte, 2022; Velte, 2021).

Regulation / legal basis	Implications for audit committees	Implications for external auditors	Implications for co-operation among monitoring parties
KonTraG (1998)	No explicit concretization of audit committees' monitoring role	- Assessment limited to risk warning system (§91 (2) AktG; §317 (4) HGB) - Reporting obligations within external audit report and audit opinion (§321 (4) HGB; §322 (2) HGB)	- Limited formalized co-operation - Interaction mainly bilateral (management ↔ external auditor) - No structured triadic coordination framework
BilMoG (2009)	- Establishment of audit committee - Formal oversight duties regarding ICS, IAS, RMS (§ 100 (5) and § 107 (4) AktG; § 107(3) AktG; § 289(4) HGB)	Obligation to report material weaknesses within ICS and RMS related to financial reporting to supervisory board (§ 171 (1) AktG)	- First institutionalization of triangular connections (audit committee – external auditor – management/internal audit) - Strengthened coordination in monitoring financial reporting
AReG (2016)	Obligation to supplement financial expertise with industry expertise within audit committees (§100 (5) AktG)	No changes to audit scope or duties	No structural changes in coordination mechanisms
FISG (2021)	- Obligation to implement two financial experts within audit committees (§ 100 (5) AktG and § 316a HGB) - Enhanced information rights regarding internal CGS (§107 (4) AktG)	- No extension of audit scope - Existing reporting obligations unchanged	- Strengthening of co-operation through: - Improved information flows (e.g., audit committees direct information access rights) - Greater reliance on internal audit reports
German Corporate Governance Code (GCGC) (2019)	Expanded soft-law responsibilities regarding CMS oversight (recommendation D.3)	Supporting role for audit committees in monitoring of ICS/RMS related to financial reporting (principle 17 (now 18))	- Encourages regular dialogue between audit committees, management, and external auditors - Promotes integration of CMS into monitoring discussions
German Corporate Governance Code (GCGC) (2022)	Extended monitoring duties due to additional requirements to consider sustainability aspects within monitoring (principle 6)	Indirect involvement via broader scope of internal CGS (extended by sustainability aspects)	Further expansion of co-operation by including sustainability aspects

Table 3: German regulations – key implications for the monitoring parties

4. Literature review

4.1. Quantitative empirical research

In line with the objectives of this dissertation and the underlying qualitative research design, the focus of this literature review is on qualitative research on the parties' role in monitoring financial and sustainability reporting in consideration of the types of relationships between the parties (complementary vs. substitutive). However, as a preliminary step, this section points out relevant quantitative literature to demonstrate the individual influence of the monitoring parties' characteristics on financial and sustainability reporting.

A substantial body of quantitative empirical research has examined the monitoring role of audit committees, internal auditors and external auditors in combination with financial-related ICS²². As extensively highlighted in Article 1, prior studies provided evidence on how the competencies and incentives of audit committees (e.g., financial, accounting, industry, legal, or IT expertise (Zhang et al., 2007; Lisic et al., 2019; Sterin, 2020; Ashraf et al., 2020) or independence (Ashfaq and Rui, 2019)) and external auditors (e.g., experience (Bedard et al., 2009), industry expertise (Stephens, 2011) or independence (Zhang et al., 2007)) positively influence ICS quality, as measured by internal control weaknesses, remediation activities, or internal control disclosures (e.g., Zhang et al., 2007; Johnstone et al., 2011; Almaqoushi and Powell, 2021). In contrast to the literature review in Article 1 with a focus on the influence of the monitoring parties on ICS quality, there is more research emphasizing the parties' influence on further aspects related to financial reporting (e.g., audit committees' impact on corporate governance quality, consisting of financial reporting quality, internal audit quality and external audit quality (Velte, 2017); the impact of external auditors on firms' financial restatements (Velte, 2023b); the impact of internal auditors on financial reporting quality (Alzeban, 2019)).

²² Within quantitative literature, internal auditors are often seen as a part of ICS due to their involvement in designing, implementing, and executing the internal controls.

Collectively, this body of research suggested that the three monitoring parties play a pivotal role in financial reporting and its monitoring, exerting influence through a range of mechanisms, including their respective competencies and incentives.

Furthermore, there are multiple quantitative studies examining the influence of audit committees' characteristics (emphasized in a literature review by Velte, 2025a) and external auditors' characteristics (emphasized in a literature review by Velte, 2026) on CSR outcomes, which can be divided in CSR performance, reporting and assurance. For audit committees, findings *inter alia* highlighted that audit committee expertise has a positive impact on CSR reporting (for financial expertise e.g., Pucheta-Martinez et al., 2021; Pozzoli et al., 2022) and CSR assurance (for financial expertise e.g., Al-Shaer and Zaman, 2018; Dwekat et al., 2022; Uyar et al., 2023; for industry expertise e.g., Zaman et al., 2021). Further, there is a positive relationship between audit committee independence and CSR reporting (e.g., Buallay and Al-Ajmi, 2020; Appuhami and Tashakor, 2017) as well as meeting frequency and CSR assurance (e.g., Al-Shaer and Zaman, 2018; Dwekat et al., 2022; Zaman et al., 2021).

Findings regarding external auditors indicated that the use of big four audit firms as financial auditors increases the level of CSR reporting (e.g., Ananzeh, 2022; Lee et al., 2026). Further, there is a positive impact of financial auditors' industry expertise (Hammami and Zadeh, 2020) and sustainability expertise (Liu et al., 2024) on CSR reporting. As external auditors' incentives, audit fees improve the level of CSR reporting (e.g., Chen et al. 2016; Hammami and Zadeh 2020; Pucheta-Martinez et al. 2019). In addition, CSR assurance is positively associated with audit fees (Chen et al., 2016), the joint provision of financial audits and CSR assurance services (Ruiz-Barbadillo and Martínez-Ferrero, 2020), and the involvement of big four audit firms as CSR assurance providers (Fernández-Feijóo et al., 2016; Sierra-García et al., 2015; Zorio et al., 2013). Consistent with SAT, financial auditors foster the voluntary adoption of CSR assurance and support higher assurance quality (Velte, 2026). Within the scope of this

dissertation, however, only the influence of the monitoring parties on internal CGS is examined in this context. Focusing on internal CGS constitutes a necessary intermediate step toward subsequent analyses on the effects of monitoring parties on CSR outcomes (examples see above).

Despite its breadth, prior studies exhibit several structural limitations that restrict its applicability to fully explore the tripartite relationship between audit committees, internal auditors and external. First and highlighted in Article 1, prior research has overwhelmingly focused on the monitoring of financial reporting and internal control over financial reporting, relying on SOX-related disclosures such as material weaknesses and remediation outcomes as primary proxies for ICS quality (e.g., Zhang et al., 2007; Bedard et al., 2009). A substantial part of the literature is embedded in SOX-specific regulatory environments, particularly the US setting, where enforcement intensity and disclosure requirements differ markedly from those applicable to the focus of this dissertation. Second, much of the empirical evidence is grounded in one-tier systems and shareholder-oriented settings, implicitly drawing on assumptions consistent with PAT. Third, although the literature acknowledges interdependencies among monitoring actors, most quantitative studies examine only one or, at most, two of the three key parties at a time (e.g., Zhang et al., 2007; Ettredge et al., 2011). Comprehensive empirical analyses capturing the joint interaction of audit committees, internal auditors, and external auditors remain scarce. Forth, publicly available databases do not provide sufficiently detailed information on specific competencies, incentives, and coordination mechanisms of all three parties, especially for internal auditors.

In particular, information on e.g., the concrete sustainability expertise²³ of these actors is largely unavailable due to weak or non-existent disclosure requirements, resulting in a substantial

²³ Prior literature operationalizes sustainability expertise of monitoring actors primarily through indirect proxies, although the specific measures differ across audit committees, internal auditors, and external auditors. For audit committees, sustainability expertise is typically proxied by general forms of expertise such as financial expertise or industry expertise (e.g., Pucheta-Martínez et al., 2021; Al-Shaer and Zaman, 2018; Zaman et al., 2021),

information gap. Accordingly, these challenges underscore the necessity of qualitative research approaches including primary data collection, as implemented in Article 2 and Article 3 of this dissertation.

4.2. Qualitative empirical research

Consistent with the objectives of this dissertation, the following two subsections review relevant qualitative studies that provide insights into the collaboration among audit committees, internal auditors, and external auditors. The subsections cover the parties' individual impacts on monitoring financial reporting (Section 4.2.1.) as well as sustainability reporting (Section 4.2.2), respectively. A crucial aspect of this review is the distinction between complementary and substitutive relationships, as these different forms of collaboration have important implications for the effectiveness of monitoring mechanisms. As research on the role of the three monitoring parties in the context of financial reporting – e.g., due to the considerably longer history of financial reporting compared to sustainability reporting – is more extensive than research related to sustainability reporting, and as the potential benefits of co-operation among these parties are to be highlighted, the literature in Section 4.2.1 is structured according to bilateral forms of collaboration (e.g., audit committee and internal audit; audit committee and external audit). This bilateral structure implicitly presupposes the possibility of both complementary interactions (where each party's role is distinct but mutually reinforcing) and substitutive interactions (where one party compensates for deficiencies in the role or

reflecting the assumption that broader monitoring competencies can be transferred to sustainability-related contexts. For internal auditors, sustainability expertise is rarely measured directly and is instead inferred from their involvement in sustainability-related activities, such as the integration of ESG risks into audit plans or their role in evaluating sustainability-related ICS (e.g., Rakipi and D'Onza, 2024), thereby capturing experiential and process-based learning effects. For external auditors, sustainability expertise is most commonly operationalized through indirect proxies such as big four affiliation (e.g., Zorio et al., 2013), prior sustainability assurance experience (e.g., Hammami and Zadeh, 2020; Liu et al., 2024), and industry specialization (e.g., Hammami and Zadeh, 2020), reflecting resource endowment and learning effects rather than directly observable competencies.

engagement of another party). By contrast, Section 4.2.2 organizes the literature by individual parties (audit committee, internal audit, external audit), reflecting the limited extent of existing qualitative research focusing on sustainability-related collaboration. Given that research on sustainability reporting is still in its early stages, the challenge lies in understanding whether and how the three parties coordinate their efforts and whether these interactions tend to be more complementary (enhancing each other's strengths) or substitutive (filling gaps in each other's responsibilities). The aim of this review is to demonstrate the necessity for research on the trilateral interplay between the parties in consideration of the types of their relationships (complementary vs. substitutive), particularly concerning sustainability-related matters.

4.2.1. Parties' role in monitoring financial reporting

Qualitative research on the role of the three parties in monitoring financial reporting has predominantly examined bilateral relationships among audit committees, internal auditors, and external auditors, providing important insights into how collaboration shapes monitoring effectiveness. A recurring theme across these studies is that the quality of oversight depends not only on formal structures but also on competencies, informal interactions, and trust-based relationships among the parties.

With respect to *audit committees and internal auditors*, prior studies emphasized the central role of audit committees in enabling effective internal audit work. Roussy et al. (2020) – based on interviews with audit committee chairs and chief audit executives – showed that internal audit effectiveness hinges on the combined competencies and agility of the internal audit function, which in turn allows internal auditors to educate and support audit committees more effectively. This reciprocal strengthening of competencies and monitoring quality points to a complementary relationship, as both parties enhance each other's monitoring effectiveness rather than compensating for deficiencies. Similarly, Sulaiman (2017) used semi-structured

interviews with audit committee members and external auditors (partner-level) and highlighted that the effectiveness of audit committees as monitoring mechanisms depends heavily on the competencies of audit committee chairs, underscoring the importance of individual capabilities in strengthening oversight quality. To the extent that internal auditors provide expertise and informational support that augments the audit committee's monitoring capacity, the relationship can likewise be characterized as complementary. However, qualitative evidence also pointed to structural weaknesses in this relationship. Mat Zain and Subramaniam (2007) conducted interviews with heads of the internal audit function and documented limited informal communication and private meetings between audit committees and internal auditors, calling for clearer reporting lines and more clearly defined responsibilities. Such structural deficiencies may give rise to substitutive dynamics, insofar as internal auditors may need to intensify their monitoring efforts when audit committee engagement is limited, or vice versa. Several studies stressed that informal interactions are nevertheless crucial. Zaman and Sarens (2013) – through a questionnaire survey of chief audit executives – found that joint meetings and informal discussions of audit risks enhance internal audit quality, audit committee independence, and the audit chair's knowledge and experience. Likewise, the close relationship between the chief internal audit executive and the audit committee chair has been identified with the help of semi-structures interviews as a key driver of internal audit effectiveness (Soh and Martinov-Bennie, 2011). These findings again suggest a predominantly complementary relationship, as co-operation and trust enable an efficient allocation of monitoring tasks without unnecessary duplication. Audit committees frequently rely on internal auditors for assurance regarding the internal control environment, particularly due to internal auditors' organizational knowledge and proximity to operational processes (Sarens and De Beelde, 2006; Sarens et al., 2009). Such reliance reflects a form of complementarity, where monitoring responsibilities are deliberately allocated according to expertise. Trust, interpersonal skills, and informal communication are therefore repeatedly identified as critical enablers of effective assurance provision. At the same

time and based on semi-structured interviews with chief audit executives, internal auditors face role conflicts arising from competing expectations of audit committees and executive management, which may undermine their independence and effectiveness (Khelil and Khlif, 2022). In situations where weakened independence reduces monitoring effectiveness, other parties may need to compensate, indicating potential substitutive tendencies within the governance structure.

Regarding *audit committees and external auditors*, qualitative studies consistently underlined the importance of strong, trust-based relationships. Based on semi-structured interviews, Sulaiman (2017) showed that open and trustful discussions between audit committees and external auditors are essential for effective oversight. This interaction is indicative of a complementary relationship, as both actors contribute distinct but mutually reinforcing monitoring functions. Within the external audit process, audit committees actively use their personal authority to foster trust, encourage information exchange, and coordinate monitoring activities (Dobija, 2015; Sulaiman and Yasin, 2022). Such coordination reflects complementarity, since monitoring efforts are aligned and strategically distributed rather than duplicated. Salleh and Stewart (2012) further identified through a case study the audit committee's mediating role in resolving disputes between external auditors and management, using techniques such as agenda setting, information gathering, guidance, and problem-solving. Here, the audit committee complements the external auditor's assurance role by strengthening its position vis-à-vis management. The importance of audit committee support is particularly evident in challenging contexts. Cohen et al. (2020) – through semi-structured interview with external auditors (partner-level) – showed that external auditors often face resistance from management when identifying and reporting internal control weaknesses. Strong audit committee backing is therefore critical to safeguarding audit quality, especially in sensitive areas such as internal control and governance systems. In such cases, the audit committee's

intensified involvement may assume a substitutive character, as it compensates for constraints faced by the external auditor in dealing with management resistance. These findings highlighted the reciprocal and supportive nature of the relationship and suggest that effective collaboration can enhance both financial reporting quality and corresponding monitoring quality. Overall, however, the relationship is predominantly complementary, as both parties retain distinct monitoring responsibilities while reinforcing each other's effectiveness.

With respect to *internal auditors and external auditors*, empirical studies indicated that collaboration is shaped by assessments of competence, objectivity, and performance. External auditors evaluate internal auditors' capabilities to determine whether reliance on their work is appropriate (Mubako and Muzorewa, 2019 (using survey questionnaires); Regoliosi and Martino, 2019 (using survey questionnaires and interviews)). When external auditors rely on internal audit work to avoid duplication and increase efficiency, this reflects a complementary relationship, as monitoring tasks are intentionally allocated to the party best positioned to perform them. While such reliance can reduce duplication of effort and enhance efficiency, empirical evidence suggested that interaction between the two parties often remains limited (Mubako and Muzorewa, 2019). Weak internal audit quality, regulatory barriers, or insufficient trust may prevent external auditors from fully leveraging internal audit work. Under such conditions, monitoring efforts may become more substitutive, as external auditors expand their own audit procedures to compensate for perceived deficiencies in internal audit quality. Nevertheless, under conditions of high internal audit competence and objectivity, collaboration can generate substantial benefits. Regoliosi and Martino (2019) showed that effective co-operation increases control reliability and reduces redundancy, although full trust is not always achieved. Argento et al. (2019) further demonstrated – based on semi-structures interviews and questionnaires – that external auditors increasingly rely on internal auditors' work related to controls and processes within internal CGS to gain efficiency. Christensen (2022), drawing on

a single-case study in a large financial institution, illustrated that internal auditors can also foster trust-based co-operation and facilitate incremental improvements in internal controls, thereby supporting organizational learning and change. These findings consistently point toward complementarity, as both assurance providers coordinate their activities and leverage their respective expertise. However, such close collaboration may blur professional boundaries and risk compromising external auditors' objectivity if internal audit work is used uncritically. In extreme cases, excessive reliance without sufficient independent verification could create dysfunctional substitution, where one party effectively replaces rather than complements the other's oversight.

Only a small number of qualitative studies explicitly addressed all three monitoring parties simultaneously. Studies such as Compernelle (2018) and Oussi et al. (2019) remain rare, despite the growing recognition of the interconnected nature of monitoring activities. Interview-based evidence suggested that audit committees play a pivotal role in orchestrating trilateral collaboration by exercising authority, ensuring access to key internal and external actors, and allocating sufficient time for comprehensive review processes (Beasley et al., 2009). Such orchestration reflects a systemic form of complementarity, as the audit committee coordinates and aligns the monitoring efforts of internal and external auditors. Cohen et al. (2010) further argued with the help of semi-structured interviews that stronger alliances between audit committees, internal auditors, and external auditors enhance the governance environment, pointing toward the potential value of intensified trilateral co-operation. This perspective is consistent with a predominantly complementary corporate governance structure, although substitutive mechanisms may still emerge where weaknesses in one monitoring function necessitate compensatory efforts by the others.

4.2.2. Parties' role in monitoring sustainability reporting

In contrast to the extensive qualitative literature on monitoring parties' role in financial reporting, corresponding research regarding monitoring of sustainability reporting remains limited and fragmented. While monitoring of financial data is based on a highly standardized, long-time regulated, and mature environment with clear measurement rules and well-established monitoring practices, monitoring of sustainability-related data is less standardized, more subjective, and still evolving, often relying on estimates, fragmented internal CGS, and lower assurance levels. As a result, the monitoring parties play a more interpretative, developmental, and interdisciplinary role. Existing studies primarily focus on individual monitoring actors, with only scarce evidence on collaborative or trilateral monitoring practices. Audit committees are increasingly recognized as central actors in sustainability oversight, serving as an interface between the board of directors, internal auditors, and external auditors. This coordinating function already suggests a potentially complementary relationship, as the audit committee aligns and structures the sustainability-related monitoring efforts of different monitoring parties rather than replacing them. Trotman and Trotman (2015) – based on interviews with audit committee members, senior accountants, internal auditors and consultants – found that audit committees are becoming more attentive to the quality of sustainability-related processes and reporting, calling for more detailed research into their monitoring role. To the extent that audit committees strengthen monitoring without duplicating operational assurance tasks, their role can be interpreted as complementary to that of internal and external auditors. More broadly, Benichou (2024) analysed case studies, recent events and examples of governance practices and suggested that strong collaboration between audit committees and boards enhances long-term sustainability-related corporate governance quality, provided that sufficient sustainability-related information flows and effective internal CGS are in place. Such collaboration reflects a complementary structure, where responsibilities are deliberately

distributed across monitoring parties and rely on mutual trust and information sharing. However, if sustainability-related expertise at board level is weak, audit committees may need to intensify their involvement, thereby assuming a more substitutive role.

Research on internal auditors highlights their evolving role in sustainability assurance and monitoring of sustainability-related internal CGS. Trotman and Trotman (2015) showed that internal auditors increasingly support sustainability-related processes, particularly by establishing best practices for determining sustainability-related key performance indicators. This development points toward complementarity, as internal auditors contribute process-oriented expertise that complements the strategic oversight exercised by audit committees and the assurance role of external auditors. Survey evidence suggested that the positioning and responsibilities of internal auditors in sustainability contexts require careful scrutiny to ensure role clarity and effectiveness (Soh and Martinov-Bennie, 2015). Where role boundaries are clearly defined, sustainability-related monitoring can follow a complementary logic; however, unclear mandates may lead to substitutive dynamics, for instance if internal auditors fill gaps left by insufficient audit committee engagement. Internal auditors are also increasingly valued as providers of sustainability assurance, for instance by supporting the design and implementation of reporting structures for climate-related risks (Simpson et al., 2016). Empirical evidence of a case study further indicated that internal audit functions enhance the reliability of sustainability reports (Gu et al., 2023). Such assurance activities are largely complementary when they strengthen internal control structures that are later subject to oversight by audit committees or assurance by external auditors. Additional qualitative studies emphasized internal auditors' role in evaluating sustainability-related internal CGS and assisting management in designing appropriate internal controls to mitigate sustainability risks (Rakipi and D'Onza, 2024, based in interviews with audit committee members, CEOs and chief audit executives). Engelbrecht et al. (2018) highlighted based on interviews with chief audit

executives the largely untapped potential of internal auditors in integrated reporting²⁴, identifying roles ranging from ensuring data integrity to detecting weaknesses in sustainability-related internal control structures. If internal auditors proactively close control gaps that would otherwise remain unaddressed, their activities may temporarily take on a substitutive character. In well-functioning monitoring systems, however, these tasks are better understood as complementary contributions within an integrated assurance framework. Despite these insights, research remains limited regarding how internal auditors collaborate with other monitoring parties in sustainability contexts. Consequently, it remains unclear whether sustainability-related monitoring structures are predominantly characterized by complementarity (deliberate task allocation and coordination) or by substitution (compensatory efforts in response to governance weaknesses).

Finally, external auditors are becoming increasingly involved in sustainability assurance as demand for external verification of sustainability reports grows. Canning et al. (2018) documented in a case study that external auditors are developing monitoring approaches for sustainability-related processes and controls that mirror the rigor of financial audits. When external auditors assure sustainability information based on systems and controls previously established and reviewed by internal auditors, the relationship can be interpreted as complementary, with clearly differentiated but mutually reinforcing assurance roles. Bouten and Hoozée (2025), based on case studies within big four audit firms, showed that external auditors engage in sensemaking when interpreting sustainability-related data, developing individualized frameworks shaped by client interaction, team dynamics, and institutional contexts. While these interpretive practices enable flexibility, they may also lead to inconsistencies across audit teams or firms, with potential implications for sustainability reporting quality. If such inconsistencies weaken assurance reliability, audit committees or

²⁴ Integrated reporting is a holistic concept that combines traditional financial reporting with non-financial reporting elements, such as sustainability reporting, risk management reporting and corporate governance aspects.

internal auditors may need to intensify their monitoring activities, giving rise to substitutive mechanisms. Conversely, where interpretive processes are transparently communicated and embedded in monitoring structures, they can operate within a complementary framework of coordinated monitoring.

Overall, the qualitative literature on monitoring parties' role in sustainability reporting underscores a substantial research gap. While the influence of individual roles and activities of audit committees, internal auditors, and external auditors on sustainability assurance are increasingly examined, little is known about how these parties coordinate their sustainability-related monitoring activities, which procedures they employ, and how such collaboration affects the quality of sustainability reporting. In particular, it remains largely unexplored whether sustainability-related monitoring is structured predominantly as a system of complementary task allocation – consistent with a RBT perspective – or whether substitutive dynamics prevail, with one actor compensating for weaknesses in another's monitoring function. This lack of evidence reinforces the need for qualitative research explicitly focusing on the trilateral interplay among the three monitoring actors in monitoring both financial and sustainability-related reporting.

5. Recommendations for future research and implications

5.1. The relationship between audit committees, internal auditors, and external auditors in consideration of ICS

Research objective 1 was to explore the relationship between audit committees, internal auditors, and external auditors in consideration of ICS to identify mutual influences among the monitoring parties. Drawing on PAT (Jensen and Meckling, 1976; Ross, 1973), the findings indicated that audit committee competencies – particularly financial, accounting, industry, and

IT expertise – are consistently associated with higher ICS quality (e.g., Zhang et al., 2007; Lisic et al., 2019; Ashraf et al., 2020; Weickgenannt et al., 2021). Enhanced ICS quality, in turn, reduces audit fees, audit delay, and the likelihood of modified opinions (Hoitash et al., 2008; Elder et al., 2009; Lu et al., 2011). At the same time, external auditor competencies also improve ICS quality (Bedard et al., 2009; Stephens, 2011), suggesting reciprocal dynamics. Overall, the evidence supports an integrated, trilateral monitoring framework in which ICS quality acts as a central transmission mechanism linking audit committee and external auditor characteristics. Effective corporate monitoring therefore depends not on isolated bilateral relationships, but on the coordinated configuration of competencies and incentives across the monitoring parties (Cohen et al., 2004; Cohen et al., 2010).

Despite the integrative insights generated, several limitations must be acknowledged. Audit committees traditionally oversee financial reporting, ICS and co-operation with external auditors (Klein, 2002). Although environmental and social risks significantly affect ICS and corporate governance structures (Su et al., 2022), prior research has largely focused on financial reporting and traditional control mechanisms. Regulatory frameworks such as the Global Reporting Initiative (GRI) standards and the NFRD in prior years, as well as recent requirements like the CSRD, have substantially expanded sustainability reporting obligations. In addition, emerging supply chain due diligence laws (e.g., CSDDD) increase sustainability-related control requirements globally. However, empirical research has not yet sufficiently examined how these regulatory changes affect the design and quality of ICS and how audit committees, internal auditors, and external auditors influence this sustainability-related ICS quality and vice versa. While some studies show that internal audit expertise improves ICS quality (Oussi and Taktak, 2018) and that audit committee competencies enhance sustainability reporting (Zaman et al., 2021; Velte, 2018), evidence remains fragmented. Research on sustainability-specific competencies within internal audit functions is still scarce

(Tumwebaze et al., 2022). Similarly, although external auditor characteristics influence sustainability disclosure (Pucheta-Martinez et al., 2019) and sustainability engagement may affect internal control audit opinions (Blanco et al., 2024), little is known about how sustainability expertise within audit committees and external auditors affects ICS quality under expanded sustainability requirements. Moreover, the question of whether financial auditors should also provide sustainability assurance – and the related independence implications – remains underexplored (Cohen and Simnett, 2015).

Future research should adopt an integrated corporate governance perspective that simultaneously examines ICS, audit committees, internal auditors, and external auditors under various frameworks (e.g., GRI, NFRD, CSRD, Omnibus I). Studies should investigate how firms' ICS are expanded to incorporate sustainability-related risks, supply chain due diligence, and sustainability-related control mechanisms over time and how monitoring parties affected this development. Further, they should explore the impact of this sustainability-related ICS adaption on the three monitoring parties and evaluate whether joint provision of financial audit and sustainability assurance enhances efficiency or creates independence risks (Cohen and Simnett, 2015). Methodologically, mixed-method designs (see *Research opportunity 1*) appear particularly suitable as they complement the dominant quantitative research tradition in this field with valuable qualitative insights (Mahmood et al., 2018). Qualitative approaches such as interviews (Rakipi and D'Onza, 2024) or survey questionnaires with audit committee members, internal auditors, and external auditors could elaborate monitoring parties' role under different regulatory requirements (e.g., NFRD vs. CSRD) and corresponding organizational adaptations (e.g., changes in competencies, training, resources) in successively integrating sustainability aspects within ICS. These insights could then be transformed into quantitative variables and tested using regression analyses (Ackermann, 2017).

Research opportunity 1: *Implement a mixed-method research design investigating the monitoring parties' role in integration of sustainability aspects within ICS under different regulatory requirements and its reverse impact on the three monitoring parties.*

A significant limitation of Article 1 lies in its exclusive focus on the three monitoring parties – audit committees, internal auditors, and external auditors – in consideration of ICS. While this perspective provides valuable insights into the design and interdependencies within tripartite monitoring, it does not fully capture the role of executive management, which is ultimately responsible for designing, implementing, and operating internal CGS – including ICS – in practice (David et al., 2025). Further, this actor can also affect corporate governance in line with the corporate governance ‘mosaic’ (Cohen et al., 2004). Excluding executive management omits a critical perspective on how internal controls are embedded within organizational processes, how trade-offs between regulatory compliance and operational feasibility are managed, and how CGS-related information is generated, validated, and communicated internally. Executive management acts as the primary interface between strategic intent and operational execution (David et al., 2025), and therefore plays a decisive role in shaping the effectiveness, usability, and acceptance of internal CGS. Moreover, management’s incentives, risk perceptions, and resource allocation decisions are likely to influence not only the quality of financial and sustainability reporting, but also the extent to which monitoring recommendations by internal auditors and external auditors are implemented.

Incorporating executive management as a fourth party in future research (see *Research opportunity 2*), e.g., through additional in-depth interviews with members of executive management, would offer several advantages. First, it would allow researchers to identify potential misalignments or expectation gaps between management and monitoring bodies, for instance regarding the perceived usefulness of internal CGS, the costs of implementation, or

the prioritization of risks. Second, it would provide deeper insights into organizational learning processes, particularly how audit findings are translated into concrete managerial actions and system improvements. Third, including management perspectives may reveal informal practices and internal dynamics that remain largely invisible to e.g., external auditors, but are crucial for understanding the actual functioning of internal CGS.

***Research opportunity 2:** Conduct extended studies on the three monitoring parties by including executive management to examine how managerial incentives, risk perceptions, and resource allocation shape the design and effectiveness of internal control systems and potential misalignments with monitoring bodies.*

5.2. The impact of European sustainability regulations on the degree of co-operation in sustainability-related monitoring among the three monitoring parties

Research objective 2 relates to the impact of European sustainability regulations (CSRD and CSDDD) on the degree of co-operation among audit committees, internal auditors, and external auditors, considering existing and lacking competencies and resources of the three monitoring parties and their collaborative potential. The findings indicated that the CSRD and CSDDD substantially intensify interdependencies among the three monitoring parties. While all actors report strong financial and industry expertise, significant competence gaps emerge in environmental domains, especially water and marine resources and biodiversity and ecosystems. Given that sustainability information and related due diligence processes must now be subject to structured monitoring and assurance, these deficits create new resource dependencies. In line with SAT (Hill and Jones, 1992), increased stakeholder and regulatory pressure expands monitoring expectations beyond traditional financial oversight. From a RBT

perspective (Barney, 1991; Grant, 1991), scarce environmental expertise becomes a critical resource that no single party fully commands, thereby necessitating collaboration.

Three core regulatory effects on co-operation could be identified. First, sustainability regulations enhance structural complementarity. Internal auditors are particularly suited to review sustainability-related ICS and RMS and underlying processes (Trotman and Trotman, 2015), external auditors contribute assurance expertise and benchmarking capabilities, and audit committees assume a strategic coordinating role (Beasley et al., 2009; Sulaiman and Yasin, 2022). Second, the need for intensified communication and information sharing becomes evident. Across all bilateral relationships, insufficient sustainability-related dialogue (e.g., regarding carbon emission risks or materiality assessments) was identified as a central barrier to effective collaboration. Third, asymmetric self-assessments constrain co-operation. Each party tends to evaluate its own sustainability-related contribution more favourably than that of the others, consistent with concerns about self-assessment bias (Lerner and Tetlock, 1999). This dynamic encourages responsibility shifting and substitutional behaviour, thereby undermining trust-based complementarities. While these findings provide valuable insights into the regulatory impact on trilateral co-operation between the parties, several limitations must be acknowledged.

Given the German two-tier, code-law setting of Article 2, comparative research is essential. Within future research, comparative studies are needed to explore how sustainability-related monitoring practices differ across corporate governance regimes and institutional environments (Brammer et al., 2012) and between one- and two-tier systems. This is particularly important because structural differences between one- and two-tier systems shape the distribution of power (e.g., stronger separation between management and supervisory boards in two-tier systems) and thereby can affect the independence, intensity of monitoring, and information flows among monitoring actors, all of which are central determinants of effective sustainability-

related monitoring. Researchers should additionally explore how sustainability-related monitoring practices differ between legal systems, particularly between code-law and case-law regimes. Code-law regimes, with their more formalized and prescriptive frameworks, may strengthen the independence and clarity of responsibilities among monitoring parties, whereas case-law regimes, characterized by flexible rules and precedent-based regulation, may allow greater autonomy but also introduce higher risks of opportunistic behaviour. In this context, future researchers could conduct a significant number of in-depth interviews (more than compared to Article 3: 12 interviews) with experts from all three monitoring parties, but from different countries with various institutional environments (see *Research opportunity 1*). A high total number of interviews is fruitful and important in this context as this is an adequate way to generate a solid database for each specific institutional environment, especially needed for sufficient comparisons. In this way, meaningful and valuable insights regarding the differences (e.g., two-tier vs. one-tier; code-law vs. case-law) in the collaboration among the monitoring parties could be identified and systematically examined.

Research opportunity 1: *Conduct in-depth interviews with audit committees, internal auditors, and external auditors from different institutional environments (e.g., two-tier vs. one-tier system, code-law vs. case-law) and compare the impacts of individual institutional settings on the collaboration among the three parties.*

Furthermore, the reliance on self-reported survey data of Article 2 introduces the risk of response and overconfidence bias (e.g., Lerner and Tetlock, 1999). The documented divergence between self- and external assessments suggests that actual competence gaps and collaboration deficits may be more pronounced than reported.

To address this limitation associated with response and overestimation bias, future studies should increasingly rely on in-depth case studies conducted within individual organizations that

involve all three monitoring parties (see *Research opportunity 2*). Case study designs offer context-rich insights that help uncover discrepancies between stated perceptions and actual practices. Through triangulation and detailed analysis, they enhance accountability among participants (Lerner and Tetlock, 1999) and facilitate a more nuanced understanding of actors' roles, constraints, and interdependencies. Within this setting, future research could examine how the three parties collaborate in single firm-related practice, including the frequency and depth of discussions on sustainability-related issues and the mechanisms used to manage conflicts of interest arising from opportunistic behaviour or excessive self-interest. A critical dimension in this regard is independence (e.g., Cohen and Simnett, 2015): while collaboration may strengthen monitoring effectiveness, it can simultaneously threaten objectivity if parties are influenced by management pressure, mutual reliance, or reputational concerns. Addressing such independence-related tensions is therefore essential to safeguarding the credibility and reliability of sustainability reporting. Beyond this adaptation, the use of case studies should explore how the three monitoring parties approach the monitoring and assurance of complex environmental topics – such as water and marine resources or biodiversity and ecosystems – in practice. This includes examining how existing expertise gaps are addressed, to what extent external environmental specialists are involved, how environmental issue-related coordination among the parties is organized, and which challenges persist in real-world settings.

Research opportunity 2: *Conduct in-depth case studies within individual firms to examine how audit committees, internal auditors, and external auditors coordinate sustainability-related monitoring activities in firm-based practice. Analyse how sustainability-related expertise and information are shared, and how potential conflicts of interest are managed while maintaining parties' independence.*

5.3. Procedures and coordination mechanisms in monitoring sustainability-related ICS and RMS

Research in Article 3 examined how internal auditors, external auditors, and audit committees monitor sustainability-related ICS and RMS, focusing on their concrete procedures and coordination mechanisms to ensure high-quality sustainability reporting. The findings revealed a structured, cyclical monitoring architecture characterized by differentiated roles and formalized feedback loops. Internal auditors embed sustainability aspects into iterative, risk-based audit planning. Sustainability-related risks are incorporated into annual audit plans and selectively deepened depending on materiality and system maturity. Audit procedures include targeted reviews of environmental metrics, expansion of risk audits to physical and transitional risks, and continuous coordination with sustainability departments. Beyond assurance, internal auditors act as catalysts by identifying control weaknesses and initiating improvements, thereby strengthening internal CGS design and audit-readiness (e.g., Soh and Martinov-Bennie, 2011; Christensen, 2022). External auditors apply a structured three-phase system audit logic (readiness check, assessment of design adequacy, assessment of operational effectiveness) to sustainability-related ICS and RMS. While grounded in established external audit frameworks, sustainability topics require interpretive adaptation from external auditors, echoing the sensemaking perspective identified by Canning et al. (2018) and Bouten and Hoozée (2025). Audit committees function as strategic coordinators. They approve audit plans, challenge management on sustainability-related risk oversight, commission readiness assessments of internal CGS, and mandate follow-up audits when weaknesses are detected. Through structured dialogue with both assurance providers, they shape audit priorities and ensure remediation accountability, thereby operationalizing their integrative governance role (Wu et al., 2014; Benichou, 2024). Overall, the monitoring process operates as a self-reinforcing cycle. This configuration reflects systems-theoretical principles of interdependence and feedback (von

Bertalanffy, 1968) while simultaneously combining complementary capabilities into a collective corporate governance resource that enhances sustainability reporting quality (Barney, 1991; Grant, 1991).

The data underlying in Article 3 is exclusively derived from PIEs in the real economy and from big four audit firms. While this setting is particularly relevant given the regulatory pressure, it reflects organizations that typically possess comparatively advanced monitoring structures, greater resource endowments, and higher levels of formalization in their internal CGS and assurance environments. This focus raises important questions regarding the generalizability of the findings to other organizational contexts.

In particular, SMEs and non-big four audit firms operate under substantially different structural conditions. SMEs, for instance, often face resource constraints, lower levels of formalization, and less sophisticated internal CGS, which may significantly affect the design and effectiveness of sustainability-related internal CGS as well as the roles of internal auditors and audit committees (SMEs frequently lack an internal audit function and/or an audit committee). Similarly, non-big four audit firms may differ in terms of available sustainability expertise, technological capabilities, and access to multidisciplinary teams, potentially influencing the quality and scope of sustainability assurance.

Against this backdrop, a promising research opportunity emerges to systematically investigate how monitoring of sustainability-related internal CGS varies across these underexplored contexts (see *Research opportunity 1*. Future research could, e.g., based on survey-questionnaires, examine how monitoring parties compensate for limited expertise and whether the cyclical monitoring process identified in Article 3 holds in resource-constrained environments. As SMEs often lack an internal audit function or audit committees, the questionnaires could instead be completed by members of the supervisory board. In the absence of an audit committee, these members are responsible for overall oversight and can therefore

provide valuable insights. These responses could be meaningfully complemented by additional questionnaires completed by non-big four external auditors, thereby providing a more comprehensive understanding of how sustainability-related internal systems are monitored in SMEs. Moreover, comparative studies across firm sizes, industries, and auditor types could provide deeper insights into contextual contingencies that shape the effectiveness of sustainability-related monitoring.

Research opportunity 1: *Examine how monitoring of sustainability-related internal CGS is designed and enacted in SMEs and firms audited by non-big four auditors, with a particular focus on how constraints in resources and competencies shape alternative monitoring practices.*

As the findings related to *Research objective 3* are based exclusively on a specific (German) setting, expanding the empirical setting would offer valuable avenues for future research. In addition, the absence of sector-specific differentiation limits insights into industry-related variations in environmental expertise needs (e.g., biodiversity relevance in extractive industries versus service sectors). These limitations indicate that the observed collaboration dynamics should be interpreted as context-sensitive and potentially evolving alongside regulatory refinement. Consequently, a broader analysis (e.g., on the basis of advanced survey questionnaires filled by the three monitoring parties) encompassing multiple EU countries would be particularly relevant in light of harmonized European sustainability regulations, as a cross-national perspective could reveal country-specific nuances in the collaboration among the three monitoring parties and extend the generalizability of the results beyond Germany. In such a comparison it would be especially insightful to consider different sectors and systematically work out sector-specific differences with regard to environmental expertise of the monitoring parties. In addition, examining settings outside the European Union would be equally

worthwhile, given the growing global importance of sustainability issues and related reporting requirements in regions such as Asia or the United States (see *Research opportunity 2*).

Research opportunity 2: *Expand the empirical scope beyond Germany by conducting a cross-national and cross-sectoral analysis across multiple EU countries and selected non-EU regions (e.g., the United States and Asia) to systematically examine country- and sector-specific differences in monitoring parties' environmental expertise and collaboration dynamics under varying regulatory requirements.*

5.4. Implications

5.4.1. Regulatory implications

In light of the currently insufficient sustainability-related competencies among audit committee members, internal auditors, and external auditors, both European and German policymakers should consider regulatory measures that ensure the systematic integration of sustainability expertise across all three monitoring parties. This need directly reflects the dissertation's integrative perspective on a dynamic, interdependent monitoring triangle, in which competencies across monitoring parties mutually reinforce overall monitoring effectiveness (*Research objective 1*; Article 1). In particular, environmental sustainability expertise should be explicitly addressed as this is especially needed to transition the global economy to a climate-neutral model in the long run. Empirical evidence from Article 2 shows that substantial competency gaps persist across all three monitoring parties, particularly in environmental domains such as biodiversity and ecosystems as well as water and marine resources, highlighting a critical misalignment between regulatory demands and existing capabilities (*Research objective 2*). Importantly, these competency gaps were identified as a key barrier to effective collaboration and to the consistent monitoring of sustainability-related internal CGS,

as all three parties tend to rely on each other to compensate for missing expertise (Article 2). For audit committees, this could involve mandating the inclusion of sustainability experts, analogous to existing requirements for financial expertise (Velte, 2023a). Even though the GCGC, in its soft-law recommendations, calls for the integration of sustainability expertise within the audit committee, the expansion of audit committee responsibilities through the CSRD creates a structural mismatch between regulatory duties and formally required competencies. While existing legal German frameworks, such as the AktG, explicitly mandate financial expertise within the audit committee, no equivalent requirement exists for sustainability-related expertise. Given that audit committees are now tasked with monitoring sustainability reporting and internal CGS in this domain, the absence of a corresponding expertise requirement risks undermining the effectiveness of monitoring. This is especially critical as qualitative evidence (Article 3) indicates that audit committees primarily rely on internal and external auditors for sustainability-related monitoring inputs and thus depend heavily on their own ability to interpret and coordinate these inputs effectively (*Research objective 3*). Strengthening audit committee expertise would therefore not only improve monitoring quality but also enhance their ability to actively coordinate collaboration and align monitoring activities across the three parties. From a functional perspective, the increasing complexity, judgment intensity, and decision-usefulness of sustainability information suggest that sustainability expertise has become analogous to financial expertise, thereby justifying its formal recognition in hard law. For external auditors, regulatory initiatives – e.g., coming from the Institute of Public Auditors in Germany (IDW) – may require a further expansion of scope to explicitly incorporate sustainability-related matters with a specific focus on environmental issues within the content of job-related examinations (e.g., how to deal with biodiversity issues). Such measures would address the empirically observed gaps in environmental expertise while also strengthening external auditors' ability to detect weaknesses in sustainability-related ICS, similar to their established role in financial contexts (Article 1; Article 2) This is particularly

relevant as external auditors were found to apply standardized system audits that can significantly enhance the robustness and comparability of sustainability-related internal CGS (Article 3). By contrast, internal auditors remain largely unregulated across jurisdictions, suggesting the need for legislative intervention. Policymaker such as the Institute for Internal Auditors could consider mandating sustainability-related certification programs for internal auditors and introducing reporting requirements on internal audit competencies. This is particularly important given the pivotal role of internal auditors identified in Article 3, where they act as key operational drivers of sustainability-related monitoring by integrating sustainability risks into audit planning, conducting targeted sustainability-related audits, and functioning as advisors and change agents within ICS and RMS (Research objective 3). Given this central role, strengthening internal auditors' sustainability expertise is likely to have the most direct impact on improving the effectiveness of internal CGS monitoring and on closing existing control gaps. Such disclosures would incentivize firms to equip their internal audit functions with adequate expertise and resources.

Beyond these implications focusing on parties' sustainability expertise, the dissertation also raises broader questions regarding the future trajectory of sustainability regulation and monitoring in Europe. These questions have gained particular relevance in light of the recent Omnibus regulation, which substantially revises and consolidates key elements of the EU sustainability regulatory framework. The EU Green Deal (European Commission, 2019) originally represented an ambitious and comprehensive policy framework aimed at aligning economic activity with environmental sustainability, social responsibility, and long-term value creation. Instruments such as the EU Taxonomy Regulation, the CSRD, and the CSDDD were designed to operationalize this ambition by increasing transparency, comparability, and accountability in corporate sustainability reporting. Implicitly, these regulations assumed that enhanced disclosure and strengthened monitoring mechanisms would contribute to better

corporate decision-making and, ultimately, to mitigating climate change and social risks. The Omnibus regulation marks a significant recalibration of this trajectory (Nicolo et al., 2025). By streamlining reporting and monitoring obligations, narrowing the scope of affected firms, and reducing granularity in certain reporting requirements, the Omnibus approach seeks to lower administrative burdens and enhance regulatory feasibility, particularly for SMEs. While these objectives are economically and politically understandable, the findings of this dissertation suggest that such regulatory retrenchment is not without consequences.

From a corporate perspective, the reduced scope and intensity of sustainability reporting requirements imply that a substantial number of firms will either fall outside mandatory reporting and assurance regimes or face significantly weakened obligations (Velte and Wulf, 2026). This risk creating a dual landscape in which sustainability-related monitoring becomes concentrated among large PIEs, while SMEs – often embedded in global supply chains – remain largely unmonitored. Such fragmentation is particularly problematic in light of the survey findings (Article 2), which show that collaboration among monitoring parties is already constrained by limited communication, role ambiguity, and divergent self-assessments. A reduction in regulatory pressure may further weaken incentives to overcome these coordination barriers. In particular, weaker regulatory requirements may reduce the need for structured interaction and joint monitoring activities, thereby reinforcing siloed approaches and limiting the effectiveness of internal CGS monitoring across the parties. For all three monitoring parties, this fragmentation undermines incentives to invest in sustainability-related competencies, resources, and tools, as regulatory demand becomes less predictable and less comprehensive.

From a societal perspective, the Omnibus regulation may dilute the transformative potential of the EU Green Deal. If sustainability reporting and particularly sustainability-related monitoring becomes less standardized and less comprehensive, the informational basis for capital allocation, stakeholder engagement, and public policy evaluation weakens. Given that

sustainability reporting quality is strongly dependent on the effectiveness of underlying ICS and RMS and their monitoring by the three parties (*Research objective 3*; Article 3), any weakening of monitoring requirements may have direct negative implications for the reliability and decision-usefulness of disclosed information. This underscores that strengthening internal CGS and their coordinated monitoring is not only a firm-level issue but also a prerequisite for achieving broader societal sustainability objectives. In the long term, this may impair the EU's ability to effectively address systemic challenges such as climate change, biodiversity loss, and social inequality, particularly if sustainability reporting is increasingly framed as a compliance burden rather than as an integral component of corporate accountability.

In light of the aforementioned omnibus initiative, EU regulators should avoid further weakening or diluting existing provisions, as such actions risk undermining the objectives of the Green Deal and intensifying the current legal uncertainty faced by affected companies and particularly the monitoring parties. This is particularly relevant given that Article 2 demonstrates that regulatory pressure is a key driver of both sustainability-related capability development and co-operation among monitoring actors (*Research objective 2*). While efforts to reduce administrative burdens and streamline regulatory requirements are understandable, regulators should adhere to their stated commitments in order to preserve their credibility – particularly with regard to the target of achieving climate neutrality by 2050. Regarding the potential implications of the omnibus initiative for stakeholder pressure, it may be argued that simplified and less stringent regulations could, to some extent, alleviate external pressure. Nevertheless, key stakeholders – especially banks, insurance companies, and investors – are likely to continue demanding sustainability-related disclosures, with a particular emphasis on climate-related information. Consequently, both affected companies and particularly the three monitoring bodies should refrain from scaling back their sustainability-related efforts.

With a focus on Germany, a critical regulatory lever for strengthening sustainability oversight would be the legal introduction of for PIEs mandatory annual audits of both financial-related (as highlighted by Velte, 2022) and sustainability-related internal CGS by external auditors. This recommendation is strongly supported by the qualitative findings of Article 3, where several experts explicitly advocated for mandatory audits of sustainability-related ICS and RMS in order to enhance sustainability reporting reliability and create synergies with financial audits (*Research objective 3*). Such mandatory system audits would directly strengthen the monitoring of internal CGS by creating consistent audit trails, increasing transparency of control deficiencies, and enforcing minimum quality standards across firms. At the same time, internal auditors should be encouraged to conduct periodic reviews of these systems. Due to this regulatory requirement to conduct such system audits, findings will inevitably arise (particularly after the initial audits). Companies may then use these findings as an impetus to progressively enhance their internal CGS, thereby improving them over time. In the long run, this process is expected to increase the quality of both financial and particularly sustainability reporting, as the reported data will become more reliable as a result of improved underlying systems. These measures would help alleviate the audit committee's workload by distributing oversight responsibilities more evenly across the three monitoring parties. At the same time, they reinforce the role of the audit committee as the central coordinating actor within the monitoring triangle, as highlighted in both Article 1 and Article 2. More broadly, the GCGC could encourage the development and implementation of coordinated audit programs involving audit committees, internal auditors, and external auditors. Such programs could commence with a joint risk assessment covering all financial-related and sustainability-related processes, controls, and internal CGS, mandating the involvement of external experts (e.g., climate scientists) where necessary. This directly addresses the coordination deficits and communication barriers identified in Article 2. To further improve collaboration, such coordinated programs should explicitly define roles and responsibilities of each party, introduce

shared documentation standards, and require regular cross-functional meetings to reduce role ambiguity and misaligned expectations identified in the empirical findings. Based on this assessment, audit priorities could be jointly defined under the strategic oversight of the audit committee. While internal and external auditors conduct their complementary audit procedures, regularly scheduled coordination meetings could serve as platforms to iteratively adjust monitoring activities in response to emerging risks or preliminary findings and to integrate external expertise in areas of heightened complexity. Such iterative and risk-oriented monitoring approaches closely reflect the practices observed in Article 3. These structured interaction mechanisms are crucial to transform collaboration from an ad hoc necessity into an institutionalized corporate governance process that enhances the effectiveness of internal CGS monitoring. It should be noted, however, that the implementation of such coordinated monitoring mechanisms is considerably more straightforward in one-tier governance systems than in two-tier systems. In one-tier systems, the board bears full responsibility for corporate oversight and typically maintains close relationships with internal auditors, facilitating coordinated audit activities. In contrast, in two-tier systems, audit committees operate as more detached oversight bodies vis-à-vis the management board, which complicates intensive coordination across monitoring functions.

To further institutionalize coordination among monitoring actors, regulators in Germany could require companies by law to disclose how internal audit findings – e.g., on sustainability-related internal CGS – are communicated to audit committees and external auditors, thereby formalizing feedback loops across monitoring functions. In addition, regulators and standard setters – e.g., the IDW – should promote the gradual convergence of sustainability and financial assurance frameworks. A phased transition from limited to reasonable assurance for sustainability reporting would balance credibility with proportionality and allow audit firms to progressively develop the necessary expertise (Canning et al., 2018). Such a transition is

consistent with the observed need to build sustainability-related competencies and resources over time (Article 2). Finally, German regulators could support these efforts by mandating annual disclosures on the maturity of both financial and sustainability-related internal CGS, including audit committees' evaluations of identified control deficiencies. Audit committees, in turn, should incorporate the results of internal CGS monitoring conducted by internal or external auditors into their strategic planning processes and increasingly rely on digital dashboards to enable real-time monitoring of sustainability-related risks and performance indicators.

In the German context, a promising 'second-best' solution lies in a targeted strengthening of the GCGC as a complementary governance framework in the post-Omnibus environment. Specifically, the GCGC could be revised to more explicitly address sustainability-related monitoring responsibilities and collaboration structures after Omnibus regulations. One key recommendation is to formally recognize internal auditors as an integral component within the Code. While the internal auditors already play a central role in sustainability-related monitoring in practice, as demonstrated by this dissertation, its position remains underspecified in the current GCGG. Given their pivotal operational and advisory role identified in Article 3, a clearer formalization of internal audit responsibilities would significantly enhance the effectiveness of sustainability-related monitoring (*Research objective 3*). Explicitly defining internal audit responsibilities with regard to sustainability-related internal CGS would enhance clarity, accountability, and coordination. In addition, the Code could more clearly articulate expectations regarding co-operation among audit committees, internal auditors, and external auditors in sustainability contexts. This is particularly important in light of the collaboration challenges identified in Article 2, including role ambiguity and misaligned self-assessments. Rather than treating sustainability monitoring as an ancillary task, the GCGC could emphasize structured interaction, information sharing, and aligned audit planning as corporate governance

best practices. Comparative insights from other jurisdictions, such as Austria – where governance codes and professional standards more increasingly highlight internal audit function’s involvement in corporations monitoring (Velte, 2022) – suggest that such an approach is both feasible and effective. By strengthening soft-law governance mechanisms, Germany could partially offset the regulatory dilution introduced by the Omnibus regulation while preserving flexibility and proportionality. Given Germany’s two-tier board structure and stakeholder-oriented governance tradition, such an approach is particularly well suited to fostering coordinated sustainability monitoring without imposing rigid one-size-fits-all solutions.

5.4.2. Implications for practice

The three monitoring parties should place greater emphasis on strengthening not only sustainability-related expertise but also the broader configuration of capabilities, resources and collaborative arrangements underpinning both effective financial and particularly sustainability-related monitoring. This aligns with *Research objective 1*, which seeks to explore mutual influences among audit committees, internal auditors, and external auditors, and *Research objective 2*, which addresses how European sustainability (CSRD and CSDDD) regulations affect collaboration. Accordingly, capability development should extend beyond isolated training initiatives and skills within traditional fields (e.g. financial expertise, industry expertise) to encompass a comprehensive approach that integrates advanced sustainability education (e.g., De Silva et al., 2024), systematic upskilling of existing staff – particularly in the environmental domain (see Christ et al., 2021 for evidence on internal auditors) – and the targeted recruitment of specialists with sustainability-related expertise, such as environmental scientists or climate experts. A differentiated assessment across sustainability dimensions indicates that skill and resource deficiencies are most pronounced in environmental areas,

whereas social objectives generally exhibit comparatively lower capability gaps. This reflects findings from Article 2 showing symmetric competency gaps across the three parties (*Research objective 2*), and Article 3 highlighting the operational implications of these gaps for sustainability-related ICS and RMS (*Research objective 3*). This imbalance can largely be attributed to the fact that environmental topics have historically played only a limited role in the routine activities of audit committees, internal auditors, and external auditors and, as a result, have not been fully integrated into their established competence profiles or monitoring practices (Velte, 2024). While investments in sustainability capabilities – such as the employment of environmental experts – are therefore indispensable, they are often constrained by substantial financial barriers, particularly in periods characterized by overlapping global crises. These constraints are especially acute for SMEs and for small or medium-sized audit firms, which frequently lack the financial and human resources required to meet expanding sustainability-related obligations. Moreover, internal CGS within SMEs tend to be less developed than those of PIEs, as prior EU regulatory initiatives primarily targeted the latter. Consequently, extending existing internal CGS to adequately incorporate sustainability-related elements poses a disproportionate challenge for SMEs and requires significant additional resources. In practice, this situation is likely to increase SMEs' reliance on external consultants and environmental experts, potentially creating long-term dependencies that are difficult to reverse and may impose sustained financial burdens. Against this backdrop, the three monitoring parties should pursue a targeted and coherent approach to closing sustainability-related capability and resource gaps, explicitly considering potential synergies and complementarities among their respective roles.

Audit committees, in particular, should strengthen their monitoring function by institutionalising regular and structured reporting on financial-related and particularly sustainability-related internal CGS. Consistent with *Research objective 1*, this enables audit

committees to coordinate mutual monitoring efforts and foster a complementary allocation of responsibilities among the three parties. This includes requiring an explicit reporting on the assessments of internal CGS maturity from both internal and external auditors. On the basis of such a reporting, they could coordinate the timely remediation of potentially identified weaknesses within internal CGS, thereby reinforcing accountability and continuous improvement in sustainability-related processes and control mechanisms (*Research objective 3*) (Benichou, 2024). Furthermore, the audit committee's orchestration role, highlighted in Articles 2 and 3, is primarily complementary: it aligns monitoring efforts without replacing operational tasks of internal or external auditors.

Internal auditors should further strengthen their role as managements' partners to develop strong internal CGS by systematically integrating sustainability-related aspects into existing internal CGS. This operationalizes *Research objective 3* by detailing procedures for embedding sustainability risks into audit planning and reporting. Through collaboration with a company's sustainability department (e.g., incorporating proactively reported sustainability-related risks into their audit plan) and their 'multiplier' role in communicating sustainability-related findings within internal CGS across the company, they could reinforce their expanding advisory and coordination function consistent with emerging internal audit literature (Christensen, 2022). Conducting structured readiness assessments of sustainability-related internal CGS on at least a yearly basis, could enable internal auditors to identify deficiencies at an early stage and support companies in preparing for external audit engagements. This function as both a sustainability-related quality assurer and a quality-enhancing change agent expands the traditional view of internal auditors' role in monitoring financial data (Soh and Martinov-Bennie, 2011). These activities exemplify a complementary relationship with audit committees and external auditors, as internal auditors operationally strengthen internal CGS while the other parties coordinate or assure their outputs (*Research objective 1, Research objective 3*).

External auditors, by contrast, should increasingly rely on multidisciplinary audit teams that combine financial, technical, and particularly environmental expertise to meet the extended requirements (e.g., sufficiently assure complex environmental data like metrics on biodiversity) coming from multiple stakeholder groups. Early-stage collaboration with internal auditors and audit committees during planning ensures efficient resource allocation, minimizes redundancy, and strengthens complementary interactions (*Research objective 3*). While current sustainability assurance engagements are largely restricted to limited assurance, external auditors emphasize the strategic importance of robust sustainability-related internal CGS as a prerequisite for high-quality reporting. In cases where internal auditors or audit committees cannot fully address gaps, external auditors may temporarily assume substitutive roles, highlighting the dynamic interplay of complementary and substitutive mechanisms under regulatory pressures (*Research objective 2, Research objective 3*) (Bouten and Hoozée, 2025; Cohen et al., 2020).

6. Conclusion

Over the course of this dissertation, three interrelated research objectives have been addressed, each contributing to a broader understanding of trilateral corporate monitoring in the context of expanding sustainability regulation. While Article 1 establishes the conceptual foundation of multilateral monitoring relationships, Articles 2 and 3 extend this perspective into the domain of sustainability. Together, the studies respond to the regulatory transformation initiated decades ago by frameworks such as the SOX and, more recently, the CSRD and CSDDD.

The first article emphasized the interdependencies among audit committees, internal auditors, external auditors in consideration of ICS. Synthesizing 71 empirical quantitative studies, the findings indicate that monitoring effectiveness is not attributable to individual monitoring procedures but rather emerges from the interaction of monitoring parties' competencies,

incentives, and ICS quality. Prior research consistently shows that audit committee expertise enhances ICS quality (Zhang et al., 2007; Lisic et al., 2019). At the same time, high-quality ICS reduce audit effort and audit fees (Hoitash et al., 2008; Elder et al., 2009). However, the literature remains fragmented, largely focusing on unilateral or dyadic relationships and predominantly situated in US financial reporting settings (DeFond and Francis, 2005). In response, Article 1 provided a conceptual reframing of corporate monitoring as a trilateral monitoring architecture coordinated through ICS. The article contributes by shifting the analytical focus from isolated monitoring parties to systemic interdependencies and by outlining a research agenda that explicitly calls for extending monitoring research into sustainability-related domains (Cohen et al., 2010).

Building on this conceptual foundation, the second article explored sustainability-related co-operation among audit committees, internal auditors, and external auditors in Germany. In light of increasing regulatory pressure under the CSRD and CSDDD, the study examined, on the basis of survey questionnaires, how sustainability regulation reshapes the monitoring parties' capabilities structures and coordination demands. The results indicate that while monitoring actors possess strong financial and industry-related expertise – reflecting decades of financial reporting regulation – significant capability gaps remain in environmental domains, particularly biodiversity and ecosystems as well as water and marine resources. From a RBT perspective (Barney, 1991; Grant, 1991), these asymmetries increase interdependencies among the monitoring parties and intensify the need for co-operation. Yet, collaboration is often constrained by role ambiguity and communication barriers, consistent with existing qualitative research (Beasley et al., 2009; Sulaiman and Yasin, 2022). The audit committee emerges as a central coordination hub, but its effectiveness depends on the complementary expertise and information flows provided by internal and external auditors. Article 2 contributes by demonstrating that sustainability regulation does not merely expand disclosure requirements

but transforms the underlying corporate monitoring architecture. Extending SAT (Hill and Jones, 1992), the study shows that regulatory change alters both incentive structures and capability configurations of the monitoring parties by stressing the need to consider environmental capabilities in the work and profiles of all three parties. It also highlights the importance of audits of sustainability-related internal CGS co-ordinated by the audit committee and performed by internal and external auditors. Sustainability-related monitoring thus emerges as a collective capability challenge rather than a unilateral compliance task (Garcia-Sanchez et al., 2022; Pizzi et al., 2022).

The third article then complemented the survey-based evidence with qualitative insights into the concrete monitoring procedures performed regarding sustainability-related ICS and RMS. Based on semi-structured interviews, the study illustrates how trilateral sustainability-related monitoring is enacted in practice. Internal auditors integrate sustainability risks into audit planning and increasingly assume advisory and change-agent roles. External auditors adapt system-audit approaches to sustainability assurance, emphasizing the foundational importance of robust ICS and RMS. Audit committees primarily coordinate and integrate monitoring inputs, reinforcing their role as oversight orchestrators. Rather than replicating financial audit routines, sustainability-related monitoring evolves through iterative learning and incremental institutionalization. Consistent with systems theory (von Bertalanffy, 1968; Adams, 1993), the findings highlight feedback loops and adaptive adjustments among monitoring actors. Article 3 advances the literature by uncovering the procedural and interactional dynamics that remain largely invisible in quantitative research (McNulty et al., 2013). This study is among the first to empirically investigate the status quo of sustainability-related ICRMS monitoring by these three bodies. It empirically substantiates the assumptions developed in Article 1 and enriches the perceptual evidence from Article 2 with process-oriented insights.

Beyond the individual findings, the dissertation offers several overarching contributions. First, it emphasizes the importance of an integrative three-party coalition of monitoring authorities in ensuring high-quality corporate governance and fostering synergistic effects within a dynamic, multilateral monitoring process. Second, it provides rare empirical evidence on the interaction among audit committees, internal auditors, and external auditors in sustainability contexts, moving beyond the predominantly dyadic focus of prior corporate governance research (Cohen et al., 2010). Third, it demonstrates that sustainability regulation reshapes monitoring structures at a systemic level rather than merely extending reporting obligations (Hummel and Jobst, 2024; Velte, 2023a).

In addition to its contributions, the findings entail managerial and regulatory relevance. From a regulatory perspective, the empirical analyses largely reflect an early-stage implementation phase of European sustainability legislation. Similar to ongoing debates surrounding the practical scope and timing of the CSRD and CSDDD, adjustments to reporting and assurance requirements (e.g., due to Omnibus I) may substantially influence monitoring structures. Given the dynamic nature of European sustainability regulations, projections concerning its long-term trajectory remain subject to uncertainty. Therefore, this dissertation has focused on analysing the regulatory status quo without engaging in speculative assessments of future political developments. From a managerial perspective, the findings suggest that firms should invest in sustainability-related competencies, strengthen resources needed for sustainability transformation, and formalize coordination mechanisms among all three monitoring actors. Audit committees, in particular, are required to assume an integrative role that goes beyond formal oversight toward active orchestration of sustainability-related monitoring performed by internal and external auditors.

In conclusion, this dissertation demonstrates that sustainability-related monitoring represents a structural transformation of corporate governance rather than a marginal extension of financial

oversight. While regulatory developments such as the Omnibus regulation may alter the formal framework conditions, the fundamental need for coordinated, CGS-based, and competence-driven monitoring remains unchanged. Ensuring the credibility of both financial and sustainability reporting in this evolving environment will therefore depend not only on regulation but also on the ability of coordinated monitoring structures – supported by both hard and soft law – to adapt, learn, and collaborate.

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Annex 1: The relationship between audit committees, external auditors, and internal control systems: A literature review and a research agenda. (Article 1)

Abstract²⁵

Purpose: This paper focuses on the relationship between audit committees, external auditors, and internal control systems (ICS) and strives to point out mutual influences between the instances to provide an integrated perspective for firms' multilateral monitoring mechanisms. Furthermore, the study emphasizes the incorporation of sustainability and fraud considerations into the traditional roles of audit committees and auditors.

Design/methodology/approach: This structured literature review is based on 71 empirical-quantitative studies published in high-quality journals between 2005 and 2022. Considering the classification of ICS into ICS quality and internal audit function, the studies are analyzed with regard to audit committees' and external auditors' characteristics, divided into incentives and competencies, as well as their mutual relationships.

Findings: The study highlights a dynamic trilateral network of relationships between monitoring authorities and primarily shows that audit committees equipped with adequate competencies generate a substitutive effect for external auditors by reducing their efforts, while ICS quality serves as a possible mediator in this network of relationships. The establishment of an integrative three-party coalition of competent and adequately incentivized monitoring parties is essential to guarantee sufficient and appropriate ICS and overall corporate governance quality.

Originality: We contribute to prior research by highlighting the importance of an integrative three-party coalition of monitoring authorities to ensure corporate governance quality and to generate synergy effects within a dynamic multilateral monitoring process. Furthermore, we

²⁵ The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

offer cutting-edge implications by stressing the need for consideration of sustainability and fraud aspects in the traditional work and profiles of audit committees and auditors.

Practical implications: The findings should prompt legislators and firms to ensure a deeper collaboration between audit committees, internal auditors, and external auditors to generate synergy effects and economies of scale within the integrative monitoring process. Legislators should develop stricter requirements for competencies of audit committees and auditors. These should include a holistic triad of sustainability, fraud, and digital expertise as well as mandatory forensic procedures performed by all monitoring bodies.

Keywords: internal control systems, internal audit function, audit committees, external auditors, corporate governance

1 Introduction

Multiple financial scandals in the last decades (e.g., Enron or Wirecard) have led to damaged public trust in firms, their monitoring mechanisms, and the corresponding monitoring bodies (e.g., Rezaee, 2005). Because of the Enron scandal, the U.S. regulator set international standards with the implementation of the Sarbanes-Oxley Act (SOX, 2002), establishing disclosure and auditing requirements regarding internal control systems (ICS) of U.S.-listed firms; this law was a catalyst for other international legislators (e.g., DeFond and Francis, 2005). Within the adequate monitoring of ICS, audit committees and auditors play a significant role by ensuring financial reporting quality (e.g., Li and Liu, 2024) and consequently by preventing potential misconduct and corporate scandals. Due to this increased relevance, we focus our literature review on audit committees and auditors and analyze the effects of their individual characteristics on ICS quality and vice versa. This research focus is of great importance, as existing literature and legislation mainly relates solely to the bilateral

cooperation between audit committees and external auditors (e.g., Inaam and Khamoussi, 2016). The role of internal auditors within this relationship is often considered subordinated or merely within a bilateral relation (e.g., Kotb *et al.*, 2020).

Utilizing principal agent theory (PAT) (Jensen and Meckling, 1976; Ross, 1973) and considering described gaps within existing literature, we aim to reveal mutual influences between audit committees, external auditors and ICS to provide an integrated perspective for firms' multilateral monitoring mechanisms. In addition, we strive for insights with regard to incorporating sustainability and fraud considerations into the traditional roles of audit committees and auditors. Consequently, we derived the following research questions (RQ):

RQ1: What influence do audit committees' competencies and incentives have on ICS quality?

RQ2: What influence does ICS quality has on audit committees' competencies and incentives?

RQ3: What influence do external auditors' competencies and incentives have on ICS quality?

RQ4: What influence does ICS quality has on external auditors' competencies and incentives?

In contrast to prior literature, we make the following main contributions to prior research. First, to guarantee an adequate comparability, we rely on post-SOX empirical-quantitative research on the relationship between audit committees, external auditors, and ICS quality, stressing the need for a specific literature review of these multilateral relationships. Placing the focus on the post-SOX era is important, because this law generated fundamental corporate governance regulations for the auditing parties and necessitated mandatory disclosure of internal control weaknesses (SOX, 2002). Second, we show a clear structure of included variables for each monitoring institution and illustrate their mutual relations. This is of great importance because the existing post-SOX literature and legislation mainly pertain solely to a bilateral cooperation (mainly between the audit committee and the external auditor; e.g., Malik, 2014) without any integration of the ICS. Third, we develop an integrative research framework to stress synergies

between audit committees, external auditors, and ICS to generate efficiency and effectiveness benefits. We list and structure the various audit committee, auditor, and ICS variables and deduce limitations and recommendations for future research to guide researchers for innovative designs.

Our review of 71 empirical quantitative studies stresses a dominance of U.S. studies and relies on established processes (e.g., Denyer *et al.*, 2008). We highlight a dynamic trilateral network of relationships between the monitoring authorities and primarily indicate that the audit committee's incentives and particularly their competencies have a positive effect on ICS quality. Within the category of competencies, the audit committee's expertise, experience, and size represent the primary influence factors (e.g., Weickgenannt *et al.*, 2021). Moreover, an increased ICS quality clearly affects the external auditor's competencies and particularly their incentives, leading to decreases in audit fees, audit delay, auditor rotation and improved auditor reporting (e.g., Hogan and Wilkins, 2008). Consequently, an audit committee equipped with high competencies generates, over the path of ICS quality, positive effects for external audits. In addition, also other directions of effects within the focused monitoring triangle are possible, even though they indicate not as homogeneous findings as previously mentioned direction. For instance, likewise experienced (Bedard *et al.*, 2009) and competent (e.g., Haislip *et al.*, 2016) external auditors can affect ICS quality and thereon create relieving effects for audit committees. The results of our research make a practical contribution to the prior literature as they can raise the firms' awareness of the economic benefits of specific competence staffing and of appropriate incentives of the monitoring bodies. This refers not only to the parties' capabilities with regard to the monitoring of financial reporting, but also to the incorporation of sustainability and fraud considerations within their traditional roles. Furthermore, our findings should motivate legislators, firms, and monitoring bodies to increase the collaborative

behavior of audit committees, external auditors, and the ICS to generate synergy effects and economies of scale within the monitoring process.

We structured our literature review as follows: First, we present an agency-theoretical, a normative, and a research framework (section 2). Second, we explain the main steps of our data selection process (section 3) and proceed to highlight the findings and key results of our literature review (section 4). Then, we discuss limitations and recommendations for future research (section 5) and end with a summary of our literature review (section 6).

2 Theoretical basis and research framework

As most included studies focused on the PAT (Jensen and Meckling, 1976; Ross, 1973), we also relied on this theoretical framework (e.g., Goh, 2009; Hoitash *et al.*, 2009, Mitra *et al.*, 2015; Khlif and Samaha, 2016; Pérez-Cornejo *et al.*, 2019; Eulaiwi *et al.*, 2022). According to the PAT, both audit committees and external auditors represent monitoring and bonding parties (Chow and Rice, 1982). Both authorities reduce conflicts of interest and asymmetric information between management and investors that would otherwise result in moral hazards and self-serving activities (Jensen and Meckling, 1976). In order to reduce such agency conflicts, ICS including the internal audit function support boards of directors (Cohen *et al.*, 2004). While management is obliged to ensure appropriate ICS, these systems are supervised and influenced by internal auditors, audit committees, and external auditors. According to the double-tier PAT (Tirole, 1986) audit committees as agents of shareholders are responsible for supervising the executive directors. Thus, audit committees are also interested in sufficient ICS, as they contain monitoring activities and value drivers for the top management itself (Zahra *et al.*, 2007). In order to appropriately monitor existing ICS, the audit committee needs to be equipped with adequate competencies. Competencies such as the audit committee's expertise, experience, and size enhance ICS quality (e.g., Hoitash *et al.*, 2009) and contribute to reducing

agency conflicts. While the external auditor is a gatekeeper for shareholders (Kraakman, 1986), this party also supports the audit committee, e.g., relating to financial reporting. As an agent for shareholders and the audit committee, the external auditor's competencies and incentives also influence ICS and vice versa. Due to mutual relations between the instances, they can affect each other such that high-quality ICS influenced by the audit committee may lead to better efficiency and effectiveness of external audits. Consequently, audit committees, internal auditors, and external auditors are economically acting agents (Antle, 1982). They may violate the independence rules by forming a coalition with the board of directors, leading to disadvantages for the shareholders. Consequently, further principal agent conflicts between the parties arise and a mutual multi-stage monitoring becomes necessary to reduce those conflicts, leading to possible doubled work and inefficiencies within the monitoring and auditing process.

These agency-theoretical assumptions have also been included in several regulatory reform initiatives of corporate governance during the last decades. Fundamental regulations according to the SOX 2002 should strengthen corporate governance quality and include regulations for audit committees (e.g., SOX section 301, 2002) and external auditors (e.g., SOX section 204, 2002). Among other rules, the SOX requires listed corporations to disclose whether audit committees have at least one financial expert (Bilal *et al.*, 2018) and to include fully independent members. The SOX also extended the set-up and monitoring requirements for ICS, leading to extended audit requirements for external auditors (e.g., SOX section 404(b), 2002).

On this theoretical and normative basis, we develop a research framework to structure the main characteristics of audit committees, ICS, and external auditors (see Figure 1). For the structure of the characteristics, we rely on the existing framework for external auditors by DeFond and Zhang (2014) and adapted the framework for all parties by dividing the research proxies into 1) incentives and 2) competencies. We structure the ICS variables into 1) disclosure of internal control weaknesses, 2) remediation of internal control weaknesses, and 3) others. Similar to

other studies (e.g., Chalmers *et al.*, 2019), we interpret the ICS quality of firms with disclosed internal control weaknesses as low. However, successful remediations of internal control weaknesses indicate high ICS quality. Due to our expanded view of ICS and in contrast to ICS in a narrow sense, we included the very few studies dealing with enterprise risk management (ERM) systems and compliance management systems as ‘other proxies.’ Only very few quantitative studies exist on the influence of internal auditor characteristics on ICS quality and vice versa (e.g., Mazza and Azzali, 2015). This is mainly because the internal audit function is often seen as a part of ICS (e.g., Eulerich *et al.*, 2015) due to its involvement in designing, implementing, and executing the internal controls. For this reason, we included the internal audit function in the ICS within our framework.

INSERT FIGURE 1 HERE

3 Research Methods

We conduct a systematic literature review of empirical articles examining the relationship between audit committees, external auditors, and ICS. To perform our systematic review, we relied on established processes (Denyer and Tranfield, 2009; Denyer *et al.*, 2008; Seuring and Müller, 2008) and followed a structured approach (e.g., similar to Elmarzouky *et al.*, 2024; Ashrafi *et al.*, 2020; Tseng *et al.*, 2020) (see Figure 2).

INSERT FIGURE 2 HERE

3.1 Search method and criteria for including studies

First, we clarified our research objective in order to set criteria for including studies in the review. Compared to prior literature reviews in ICS research (Cohen *et al.*, 2004; Schneider *et al.*, 2009; Asare *et al.*, 2013; Chalmers *et al.*, 2019), this review focuses on the relationship between audit committees, external auditors, and ICS. Second, we identified the core theory (PAT) in the research field based on our knowledge of previous studies. Third, we searched

within international databases instead of predefining journals: Google Scholar, Web of Science and Social Science Research Network (SSRN). Due to described criteria for including studies, our search string encompassed the following relevant keywords: “internal control(s)”, “risk management”, “risk management system”, “internal audit function”, “internal audit(s)”, “audit committee(s)”, “external audit(s)”, “audit(s)”, “corporate governance” and related terms.

3.2 Criteria for excluding studies and final sample selection

As a fourth step, we set the exclusion criteria. We did not restrict the country of origin of the studies but focused on publications that have at least one year of their sample period after the implementation of the SOX rules on audit committees, external auditors, and ICS. Despite significant studies within pre-SOX period (e.g., Krishnan, 2005), a focus on post-SOX period is important because there is a lack of comparability between pre- and post-SOX studies due to the substantial regulatory changes in 2002 including fundamental reforms for the audit parties and mandatory disclosure of internal control weaknesses. We limited the search to quantitative empirical studies as the dominant research method and our focus on finding economic relations between individual variables. Besides a few experiments and partial use of surveys, most of included studies are archival based. Only studies that were published in English journals listed in two well-known journal rankings (‘Academic Journal Guide 2021’ or ‘Australian Business Deans Council (ABDC) 2022 list’) were considered. We focused on articles in which at least one dependent or independent variable is to be related to ICS quality together with either audit committees and external auditors and did not accept articles that included other variables. Fifth, we scanned the titles of the articles within a precursory analysis, and on this basis, we decided which abstracts to read. We excluded articles that matched our exclusion criteria. In a next step, we scanned the theory and method sections of the remaining articles and, again, eliminated studies that matched the exclusion criteria. The screening process resulted in a final sample of 71 studies. An overview of the final sample, organized by publication year, country, and

journal, can be found in Table 1. The dominance of the U.S. setting should be noted. Sixth, we analyzed the studies according to the relevant variables and matched them to our previously developed framework. Significant findings, the corresponding influence direction, and an integrative research perspective were the focus of this review. The separate process steps including the corresponding work performed are shown in Figure 2.

INSERT TABLE I HERE

4 Findings

4.1 The influence of audit committees' competencies and incentives on ICS quality (answering RQ1)

The studies indicate that both the audit committee's incentives and in particular their competencies have a predominantly positive effect on ICS quality. Within the category of competences, audit committee's expertise generates an especially positive impact on ICS quality. Financial expertise (e.g., Zhang *et al.*, 2007²⁶) and also other types of expertise such as accounting expertise (Lisic *et al.*, 2019), industry and legal expertise (Sterin, 2020) or IT expertise (Ashraf *et al.*, 2020) lead to higher ICS quality in form of a lower number or probability of internal control weakness disclosures or remediations of prior weaknesses. Furthermore, the audit committee's experience (e.g., Weickgenannt *et al.*, 2021), size (e.g., Munsif *et al.*, 2013), and total quality as a measure of audit committee factors (Almaqoushi and Powell, 2021) improve ICS quality. Heterogeneous results exist for audit committee's meeting frequency and diversity. While some studies indicate a positive effect of a higher meeting frequency (e.g., Khlif and Samaha, 2016) on ICS quality, others show opposite results (e.g., Krishnan and Visvanathan, 2007). Furthermore, studies (e.g., Chen *et al.*, 2016) stressed that a

²⁶ Most cited article with regard to the influence of audit committees on ICS quality (and vice versa): Zhang *et al.*, 2007 (1.245 citations); least cited article with regard to the influence of audit committees on ICS quality (and vice versa): Sterin, 2020 (17 citations) (updated on 15th August 2024).

more diverse audit committee (e.g., higher proportion of females) leads to higher ICS quality. However, Ashfaq and Rui (2019) stressed a negative effect of audit committee diversity on internal control disclosure.

Within the category of incentives, we find many different factors on ICS quality. On the one hand, the audit committee's independence improves ICS quality either through better remediation of prior internal control weaknesses (Goh, 2009) or through enhancing ERM system quality (Pérez-Cornejo *et al.*, 2019). On the other hand, the independence of audit committee's chair leads to either better (Ashfaq and Rui, 2019) or weaker (Michelon *et al.*, 2015) internal control disclosures. Remediations of internal control weaknesses were also more likely if the chair of the board also serves on the audit committee (Johnstone *et al.*, 2011). Multiple audit committee directorships (Cheng *et al.*, 2019) and the fact that the corresponding audit committee membership is the largest (Khoo *et al.*, 2020) improves ICS quality. Furthermore, social ties between the audit committee and the chief executive officer (Bruynseels and Cardinaels, 2014) as well as audit committee turnover (Johnstone *et al.*, 2011) lead to higher ICS quality. Heterogenous results exist for the audit committee's stock compensation and ownership. While a greater percentage of audit committee shareholdings of firm stock is positively associated with the remediation of internal control weaknesses (Johnstone *et al.*, 2011), audit committees with stock option plans are associated with internal control weaknesses (Cullinan *et al.*, 2010) and thus weaker ICS quality. Moreover, results indicate that audit committee's shareholding has a significant negative relationship with internal control disclosure (Ashfaq and Rui, 2019).

4.2 The influence of ICS quality on audit committees' competencies and incentives (answering RQ2)

Results from the very few existing studies on the influence of ICS quality on audit committees indicate that low ICS quality leads to higher audit committee turnover (e.g., Johnstone *et al.*,

2011). Furthermore, firms with a weak ICS quality show greater improvements in audit committee's independence, accounting financial expertise and size compared to control firm without internal control weaknesses (Goh and Li, 2013).

4.3 The influence of external auditors' competencies and incentives on ICS quality (answering RQ3)

The findings of relevant research papers show predominantly heterogeneous results on the effect of external auditor's competencies and incentives on ICS quality. Within the category of competencies, auditor's size, expertise, and experience has been researched most frequently. While some studies indicate that a larger audit firm size leads to greater material weakness disclosure (e.g., Bedard *et al.*, 2009), other studies show the opposite effect (e.g., López *et al.*, 2013). Furthermore, there is evidence that audits performed by Big 4 audit firms lead to higher internal control quality (e.g., Khlif and Samaha, 2016), but also to a lower likelihood of internal control weakness remediation (Chan *et al.*, 2009) and higher compliance costs (Krishnan *et al.*, 2008). Regarding external auditor's expertise and experience, industry expertise (Stephens, 2011) and auditor's section 404 experience (Bedard *et al.*, 2009) lead to greater material weaknesses disclosure. This effect demonstrates that specialized and experienced auditors are more likely to identify internal control weaknesses. In addition, auditor's IT expertise (Haislip *et al.*, 2016) implicates a greater likelihood of material weakness remediation.

Regarding the incentives of external auditors, the effect of (non) audit fees as well as auditor tenure and rotation on ICS quality was studied most frequently. While unexpected audit fees are significantly associated with material internal control weaknesses (Albring *et al.*, 2018), firms with increased non-audit fees due to purchased tax non-audit services have an improved internal control quality (De Simone *et al.*, 2015). Furthermore, higher auditor independence is

also a determinant of internal control weaknesses (Zhang *et al.*, 2007²⁷) or early warning of internal control deficiencies (Hermanson and Ye, 2009).

Within the category tenure and rotation, existing research indicates that firms with a longer client-auditor tenure have lower incidence of internal control weaknesses (e.g., Chen *et al.*, 2016), while more auditor changes characterize firms that report internal control weaknesses (Krishnan and Visvanathan, 2007). Moreover, firms engaging new auditors are more likely to remediate their internal control weaknesses effectively (Liu and Huang, 2020) or are more likely to receive an improved report of internal control over financial reporting (Ettredge *et al.*, 2011).

4.4 The influence of ICS quality on external auditors' competencies and incentives (answering RQ4)

Prior research results on the effects of ICS quality on the external auditor's incentives and competencies are rather homogeneous. This mainly relates to the influence on the external auditor's incentives. The most frequently researched categories within auditor's incentives are (lack of) audit fees, the auditor-client relationship, tenure, and rotation. Auditor independence, which is included in the (lack of) audit fee category, has also been researched in some studies, but only in terms of the influence of external auditors on ICS. Results indicate that a higher ICS quality significantly reduces audit fees (e.g., Hoitash *et al.*, 2008; Lu *et al.*, 2011). Higher ICS quality also leads to reduced audit hours or audit delays (e.g., Gontara *et al.*, 2023²⁸) and thus improves the auditor-client relationship. Furthermore, high ICS quality extends audit tenure or reduces auditor rotation (e.g., Ettredge *et al.*, 2011).

²⁷ Most cited article with regard to the influence of external auditors on ICS quality (and vice versa): Zhang *et al.*, 2007 (1.245 citations); least cited article with regard to the influence of external auditors on ICS quality (and vice versa): Eulaiwi *et al.*, 2022 (6 citations) (updated on 15th August 2024).

²⁸ Not included due to defined exclusion criteria (see section 3).

Within the category of competencies, high ICS quality through fewer internal control weaknesses generates a positive effect on auditor reporting by decreasing the likelihood for modified audit opinions (Elder *et al.*, 2009) or going-concern audit opinions (Jiang *et al.*, 2010). Moreover, higher ICS quality reduces the effort of external auditors by decreasing the extent of evidence necessary for testing the operating effectiveness of compensation controls or the level of precision needed in a compensation control to prevent or detect potential material misstatements (Gramling *et al.*, 2010).

4.5 Concluding remarks on the interplay of audit committees, ICS, and external auditors

In summary, the audit committee's characteristics have, over the path of ICS quality, an indirect effect on the external auditor's characteristics and vice versa. Consequently, predominantly audit committees with high competencies generate a positive effect on external audits by reducing audit fees, audit delays, and auditor rotation. This substitutive impact (e.g., Malik, 2014) of an adequately equipped and well incentivized audit committee can relieve external auditors by reducing their effort, while the ICS serves as a possible mediator in this network of relationships. However, the relieving effect will become apparent with a time lag, particularly after first-time adoption. Due to dynamic relationships within this triangle of monitoring authorities (see figure 3), also other directions of effects are possible, even though they show not as homogeneous results as previously mentioned direction. For instance, likewise experienced and competent auditors can achieve relieving effects for audit committees via improved ICS quality. These reflections indicate that firms should be interested in equipping their audit committees and auditors with comprehensive competences (e.g., financial expertise) to reduce agency conflicts and generate benefits.

In this respect, audit committees will coordinate (e.g., Lin *et al.*, 2008) the monitoring activities of internal and external auditors more closely to generate advantages for all three instances. A cooperation of these monitoring parties promoted by audit committees (Velte, 2017) to make

use of synergy effects (e.g., by mutual relief through competence sharing or shared efforts within separate audit procedures) and economies of scale requires sufficient and appropriate competencies and incentives of the involved parties. Due to the interdependences of competencies and incentives (DeFond and Zhang, 2014) of these parties, the connectivity is important to achieve such added value within this multilateral relationship. The establishment of an intensive three-party coalition could achieve a doubled support by external and internal auditors for the audit committee (Cohen *et al.*, 2004; Cohen *et al.*, 2010) that could lead to improved corporate governance quality and reduced agency problems.

INSERT FIGURE 3 HERE

4.6 Findings' connection to a research agenda

As evident from the findings presented in sections 4.1 to 4.5, the results of the included studies predominantly focus on the traditional role of the entities responsible for monitoring financial reporting. However, this reveals significant research gaps concerning non-financial reporting, particularly regarding the integration of sustainability and fraud considerations within the interrelationships of the involved parties. For instance, similar to financial expertise (e.g., Zhang *et al.*, 2007), the presence of sustainability expertise within the audit committee could possibly enhance the quality of an ICS that incorporates sustainability aspects. This, in turn, could lead to benefits such as reduced audit fees (e.g., Krishnan *et al.*, 2008 regarding audit fees for financial reporting) for with respect to external audit of the sustainability report. Moreover, corresponding monitoring authorities frequently encounter challenges related to (management) fraud, which must be addressed to ensure the integrity and quality of non-financial reporting. In alignment with the practices of authorities with specialized IT expertise (e.g., Ashraf *et al.*, 2020), e.g., enhancing the forensic accounting education of involved parties could lead to improvements in the quality ICS, thereby benefiting the overall monitoring process.

5 Limitations and recommendations for future research

Based on this review, several limitations and recommendations for further research can be formulated. Recommendations cover both content and methodology to encourage future researchers to rely on a developed research framework and gather more comprehensive results concerning the integrative influence of monitoring authorities on ICS and vice versa. In the following, we concentrate on sustainability and fraud aspects and the need for more moderator and mediator analyses as major identified research gaps in our literature review.

5.1 Sustainability aspects

The historical duty of audit committees is to supervise the financial reporting process, including the related ICS and the cooperation with external auditors (e.g., Klein, 2002). However, in addition to financial risks, environmental and social risks also have a great impact on ICS and vice versa (Su *et al.*, 2022) and affect the corresponding monitoring bodies. Already existing frameworks and regulations (e.g., sustainability reporting standards by the Global Reporting Initiative (GRI) or the Non-Financial Reporting Directive (NFRD) issued by the EU) motivate the involvement of all three parties in corporate sustainability issues. As audit committees need to supervise not only financial but also corporate social responsibility (CSR) reporting, they should closely interact with internal and external auditors. Both internal and external auditors support the ensuring of the related sustainability data, but also need to be coordinated and monitored by audit committees. Furthermore, new global sustainability reporting standards by the International Sustainability Standards Board (ISSB) stress the responsibilities of the monitoring institutions. These new standards mainly rely on the environmental, social, and governance (ESG) concept and thus require specific disclosure on the interaction between audit committees, ICS, and external auditors due to corporate environmental and social goals. In addition, region-specific regulators also implement stricter sustainability reporting rules (e.g., the EU Corporate Sustainability Reporting Directive (CSRD) or the U.S. climate disclosure

rules developed by the Securities and Exchange Commission (SEC)). We also stress the increased regulations due to corporate sustainability due diligence related to sustainable value chains of the firms in many countries recently. The ICS must include these requirements for an adequate and sustainable supply chain management.

Due to these regulatory initiatives, ICS and the cooperation of audit committees and auditors need to be expanded in several respects. First, ICS need to be expanded to include advanced ESG matters. Second, it needs to be ensured that the contents of ESG reports are correctly disclosed and linked with management systems. Third, as CSR assurance is not automatically linked to professional accountants, the pros and cons of selecting the existing financial auditor for CSR assurance have to be evaluated (e.g., Cohen and Simnett, 2015). For these reasons, advanced requirements for the incentives and competency profiles of audit committees and internal and external auditors do exist. While top management must ensure the appropriateness of ICS, the internal audit function (De Simone *et al.*, 2021) has a major impact on realizing a sufficient quality of ICS. An effective internal audit function needs to be equipped with extended competencies (e.g., sustainability expertise) and increased resources to fulfill a pivotal function within the process of increased ESG requirements (Aureli *et al.*, 2020).

While few research results (e.g., Oussi and Taktak, 2018) indicate that expertise within the internal audit function generates a positive effect on ICS quality, we still know very little about the internal audit function and ESG aspects (e.g., Tumwebaze *et al.*, 2022). Furthermore, a few research results show that audit committee characteristics contribute to ensuring high sustainability (e.g., Zaman *et al.*, 2021). Among others, the audit committee's sustainability expertise has a positive impact on the readability of integrated reports as an interaction of material financial and ESG information (Velte, 2018). Further results indicate that specific auditor characteristics (e.g., size and audit fees) have a positive influence on CSR disclosure (e.g., Pucheta-Martinez *et al.*, 2019) and that clients' CSR involvement can have different

effects on the quality of internal control audit opinions (Blanco *et al.*, 2024). However, we know very little about the impact of sustainability expertise within audit committees as well as audit teams on ICS quality, particularly regarding the described ICS sustainability expansion. Such increased expertise is needed to fulfil existing and upcoming corporate sustainability requirements and thus can improve ICS quality, e.g., to ensure the appropriate content of mandatory CSR disclosures and related management processes.

Overall, we recommend innovative research designs that emphasize an integrated perspective by considering both ICS, including internal auditors, as well as audit committee and external auditor factors with a focus on prior (e.g., GRI or EU NFRD) and new requirements for sustainability reporting (e.g., EU CSRD or ISSB). This design should include mixed research methods. Following other authors that used qualitative methods in audit committee and audit research (e.g., Rakipi and D'Onza, 2024), the required data can be collected through questionnaires or interviews. The experts should report on how they deal with upcoming sustainability regulations and what consequences they expect in comparison to existing requirements. Possible consequences could comprise aspects such as changes in personnel profiles and equipment, employee training, or legal responsibility. The types of the individual's expertise (financial, industrial, and sustainability), their independence, and the type of relationship with each other auditing parties (complementary or substitutive) should also be considered within this exploration. The collected data or parts of it could be transformed into quantitative data and evaluated with regression analyses (e.g., Ackermann, 2017). In this way, future researchers may find new results concerning how monitoring authorities can relieve each other with a view to advanced ESG requirements within high quality ICS and a sufficiently lean auditing process.

5.2 Fraud aspects

The ESG concept assumes sufficient corporate governance mechanisms, as governance (G) constitutes the basis for successful future environmental (E) and social (S) strategies. However, corresponding monitoring authorities are often confronted with (management) fraud issues that must be prevented to provide sufficient ESG quality. While little research stresses the impact of audit committees or auditors on fraud events (e.g., Khoufi and Khoufi, 2018), there is a strong need for a more detailed analysis of fraud events (often used as a dummy variable), not only related to external auditors (e.g., Trompeter *et al.*, 2013) but also in combination with audit committees and the internal audit function (Velte, 2023b). This is of great importance because all auditing parties are responsible for fraud prevention and have also been involved in cases of top management fraud (Zahra *et al.*, 2007).

In this regard, we recommend future researchers to focus on digitalization and big data techniques (e.g., artificial intelligence, data mining, or other advanced data analytics) within monitoring and auditing activities of audit committees and internal and external auditors to find new insights for a more efficient and effective (top management) fraud prevention. While Eilifsen *et al.* (2020) stressed that the use of audit data analytics is still relatively limited in practice, these techniques are important within fraud detection because they enable the authorities to recognize critical contents (e.g., critical posting combinations) in an efficient way. Authorities equipped with IT expertise (e.g., Ashraf *et al.*, 2020) can use these advantages even better and may increase overall monitoring quality. In addition, we encourage researchers to address the forensic accounting education (Tiwari and Debnath, 2017) of the involved auditing parties.

Yet, it is challenging to find sufficient fraud measures in archival research because fraud events are rather rare in firms' practice (Velte, 2023a). While alternative measures such as the presence of fraud charges under regulatory interventions (e.g., Karpoff *et al.*, 2017) are limited due to a low number of applied studies, future researchers should use alternate methods to generate

findings, e.g., the use of automatized textual analyses with Python. Similar to the above-mentioned sustainability issues, we recommend researchers lean on existing studies of fraud detection and prevention techniques (e.g., Eilifsen *et al.*, 2020) and collect qualitative data via questionnaires or interviews with experts. The participants should report about their individual forensic accounting knowledge (inclusive IT-expertise), their self-used fraud preventing and detecting methods, and the proportion of digitalization and big data techniques within these methods. Furthermore, they should estimate both their own perceptions of responsibility within fraud prevention and detection as well as the perceptions of responsibility of other auditing parties. Information deficits that could arise though bias problems should always be considered within the evaluation of collected data. These variables should be included into quantitative designs to analyze potential determinants or consequences of those corporate governance factors. On this way, future researchers could elaborate the intersections of the auditing body's knowledge, methods, tools, and perceptions for a collaborative and efficient fraud prevention in terms of high-quality ICS.

5.3 Mediator and moderator analyses

Finally, we stress the need for more moderator and mediator analyses. As audit committees and external auditors represent interdependent monitoring authorities, it would be of great interest to analyze the impacts of various mediator or moderator variables on ICS quality (inclusive sustainability aspects). For example, audit fees or auditor size can cause a moderating or mediating effect on the audit committee's positive influence on ICS quality. On the other hand, an audit committee's characteristics such as independence or expertise could also represent moderators or mediators for the interaction of external auditors and ICS quality. Within the review we note very few studies that include such analyses. For example, Ashfaq and Rui (2019) included audit firm size as a moderator on the interrelation between audit committee quality and ICS, while Li and Li (2020) used audit committee tenure or gender diversity as

moderating variables. Michelin *et al.* (2015) included the regulatory environment as a moderator, while Lisic *et al.* (2016) examined the moderating effect of CEO power within their research on audit committee effectiveness and ICS quality. Eulaiwi *et al.* (2022) implemented the existence of lawsuits or anti-fraud policies as moderator variables within an examination of the effect of whistleblower governance on audit fees. Pérez-Cornejo *et al.* (2019) represents the only study in our review with a mediator variable; the authors analyzed the mediating effect of ERM system quality on the relationship between audit committee characteristics and corporate reputation. Due to this lack of studies we encourage future researchers to include additional moderator and mediator variables within the research on the multilateral relationships of the three auditing parties. These variables should comprehend the individual competencies or incentives of the parties.

6 Discussion

6.1 Summary

We conducted a systematic literature review of 71 empirical-quantitative studies on the link between audit committees, external auditors, and ICS based on an agency theoretical framework. While principal agent theory assumes that audit committees and external auditors represent monitoring and binding authorities (Chow and Rice, 1982) to reduce agency conflicts, ICS including the internal audit function also represent a significant factor. The characteristics of those monitoring bodies are of great importance to prevent such conflicts within a mutual multi-stage monitoring process. Our motivation to conduct this literature review on these monitoring authorities was to develop an integrative research framework and demonstrate the need for collaboration between the instances to increase overall corporate governance quality through synergies within a multilateral monitoring process. Furthermore, we aimed to sensitize incorporating sustainability and fraud considerations into the traditional roles of audit

committees and auditors. We developed a research framework referring to DeFond and Zhang (2014) and divided the characteristics of the monitoring bodies into incentives and competencies. We included the internal audit function as part of the ICS in line with prior research and analyzed the influence of the audit committee's and external auditor's incentives and competencies on ICS quality and vice versa.

Our review of U.S.-dominated studies primarily highlights that specific audit committee's incentives and competencies cause a positive effect on ICS quality. This mainly relates to audit committee expertise, experience, and size (e.g., Hoitash *et al.*, 2009, Goh, 2009). In turn, ICS quality affects the external auditor's competencies and particularly their incentives, and leads to decreased audit fees, audit delay, auditor rotation, and improved auditor reporting (e.g., Elder *et al.*, 2009). Consequently, audit committees equipped with high competencies (e.g., financial expertise or IT-expertise) generate, over the path of ICS, a substitutive effect for external auditors by reducing their efforts, while ICS serve as a possible mediator. Furthermore, multiple other directions of effects within the dynamic trilateral network of relationships exist, even though they show not as homogeneous results as previously mentioned direction.

Based on the results of the literature review, we stressed the limitations of prior research and developed useful recommendations for future research. In this context, we included both content-specific and methodological suggestions. Our recommendations focused on sustainability and fraud issues within a holistic research approach by integrating all three monitoring bodies due to increased corporate sustainability regulations from an international perspective. This relates to both sustainability reporting and sustainable supply chain management duties. We recommend data collection via questionnaires or interviews considering the types of individual's expertise, the type of relationship (complementary or substitutive), and individual's self-assessment as well as the assessment by the other auditing parties and the integration in future quantitative research. Furthermore, we stress the need for

more mediator and moderator analyses (e.g., Islam *et al.*, 2023) to explore the interrelations between audit committees, internal auditors, ICS, and external auditors.

Finally, we stress the limitations of this analysis. First, narrative literature reviews are limited in contrast to meta-analyses. As meta-analyses intend to measure the overall statistical significance of specific relationships based on multiple single-study results (e.g., Greenberg, 1992), we focused our review on a narrative analysis of underlying results mainly due to overly heterogeneous proxies within the included studies. Future researchers should conduct quantitative meta-analyses on specific relationships (e.g., the impact of audit committees on ICS) within our research framework. Second, almost all included studies represent single-country studies with regional samples (primarily USA), leading to a limited transferability to other regimes.

6.2 Practical implications

The study has main implications for legislators and standard setters as well as practitioners (similar to other studies, e.g., Elmarzouky *et al.*, 2023). The results indicate that competently equipped and usefully incentivized audit committees and auditors lead to higher ICS quality and that ICS quality leads to better audit efficiency. Thus, practitioners should strive to consider these findings by ensuring adequate competencies (e.g., financial, sustainability, and IT expertise) and incentives (e.g., independence) for those auditing bodies. While it is useful to include advanced expertise requirements for audit committees and external auditors, legislators should develop extended demands for competencies of the audit committee and internal auditors. The advanced requirements should include a holistic triad of sustainability, fraud, and IT expertise, because these combined competencies are needed to realize the going-concern principle of the firm and stay innovative. All parties' efforts should encompass comprehensive ESG as well as fraud detection training and the further development of current staff (e.g., internal auditors as noted by Christ *et al.*, 2021). Additionally, they should consider recruiting

new personnel with specialized sustainability competencies, such as biologists or climate scientists. Internal and external auditors might also consider utilizing specialized software tools for auditing non-financial reporting or conducting forensic investigations. This could be particularly relevant for the oversight of management systems (ICS, risk management system, compliance management system), as these systems play a crucial role in ensuring the quality of both financial and non-financial reporting.

Legislators and standard setters might consider requiring the presence of sustainability expertise within each of the three parties. Within audit committees, this could be achieved by integrating a sustainability expert, analogous to the inclusion of financial experts (Velte, 2023c). External auditors may need to broaden the scope of their examinations to encompass sustainability-related aspects as they need to fulfil extended requirements within auditing the new sustainability report according to CSRD. Given that internal auditing remains relatively unregulated globally, legislators should consider mandating certification programs focused on sustainability for internal auditors. Policymakers may also discuss mandatory forensic audit procedures performed by external and internal auditors that could also be monitored by audit committees or adopt more restrictive standards to improve the International Standards on Auditing with a focus on fraud prevention (e.g., Elmarzouky *et al.*, 2022 with a focus on key audit matters). Moreover, it should be kept in mind that the connectivity of both competencies and incentives is of great importance to achieve required firm improvements. Overall, regulators should recognize audit committees, internal auditors, and external auditors as a three-party coalition of good corporate governance and should boost their practical cooperation in financial and ESG topics.

6.3 Theoretical implications

Potential theoretical development could involve a shift in research focus from shareholders (PAT) to other stakeholders (stakeholder-agency theory, as proposed by Hill and Jones in 1992). Given that a company has implicit obligations toward its stakeholders and society, management and all relevant oversight authorities should be motivated to implement and assess CSR structures and processes within the management framework, including high-quality ICS (Dowling and Pfeffer, 1975). In this context, stakeholders demand robust financial and non-financial reporting, as well as an associated ICS (e.g., Fiandrino *et al.*, 2022) that are subject to oversight by the three independent parties. The implementation of a comprehensive financial and non-financial reporting framework, alongside effective fraud detection and prevention mechanisms, is anticipated to enhance overall financial and non-financial performance, thereby improving the firm's reputation. Stakeholders further expect that monitoring bodies are equipped with adequate expertise, such as financial, sustainability, IT, and fraud-prevention knowledge, along with appropriate incentives. Incorporating stakeholder interests into the job profiles and composition criteria of these oversight bodies may lead to increased stakeholder satisfaction

Furthermore, the behavioral agency theory, based on the work of Wiseman and Gomez-Mejia (1998) and developed by Pepper and Gore (2015) could offer a theoretical development. As an extension of traditional agency theory, behavioral agency theory further considers psychological and behavioral factors, such as loss aversion (Wiseman and Gomez-Mejia, 1998) and perceived justice (Bosse and Phillips, 2016), that influence the behavior of agents. All three parties are individually motivated by a combination of economic incentives (e.g., audit fees for external auditors or budget for internal auditors), psychological factors (e.g., each party tries to minimize its own effort while searching for individual benefits) and social influences (e.g., social ties between audit committee members and external auditors due to prior careers). These

factors can lead to behavioral risks that impair the effectiveness of appropriate monitoring. Due to these risks, open communication and a clear separation of responsibilities between the three parties are necessary to minimize misconduct or conflicts of interest. An understanding of behavioral incentives could help to develop measures that promote more objective and independent monitoring.

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Table I Count of cited published papers

Panel A: by publication year

Total 71:	2022: 1
	2021: 4
	2020: 5
	2019: 6
	2018: 8
	2017: 3
	2016: 5
	2015: 5
	2014: 2
	2013: 3
	2012: 2
	2011: 6
	2010: 4
	2009: 7
	2008: 5
	2007: 2
	2006: 2
	2005: 1

Panel B: by region:

Total 71:	Cross-country setting: 2
	USA: 52
	Other regimes: 17

Panel C: by journal:

Total 71:	Abacus: 1
	Accounting & Finance: 2
	Accounting Forum: 1
	Accounting Horizons: 4
	Advances in Accounting: 2
	Asia-Pacific Journal of Accounting & Economics: 2
	Auditing: A Journal of Practice & Theory: 10
	Contemporary Accounting Research: 8
	European Management Journal: 1
	Finance Research Letters: 1
	International Business Review: 1
	International Journal of Accounting: 1
	International Journal of Accounting and Information Management: 1
	International Journal of Accounting Information Systems: 1
	International Journal of Auditing: 7
	Journal of Accounting and Public Policy: 1
	Journal of Accounting, Auditing & Finance: 3
	Journal of Applied Accounting Research: 1
	Journal of Business Finance & Accounting: 1
	Journal of Cleaner Production: 1
	Journal of Contemporary Accounting & Economics: 3

	Journal of Financial Reporting and Accounting: 1
	Journal of Public Budgeting, Accounting & Financial Management: 1
	Managerial Auditing Journal: 6
	Research in Accounting Regulation: 1
	The Accounting Review: 8
	The European Journal of Finance: 1

Figure 1 Research Framework

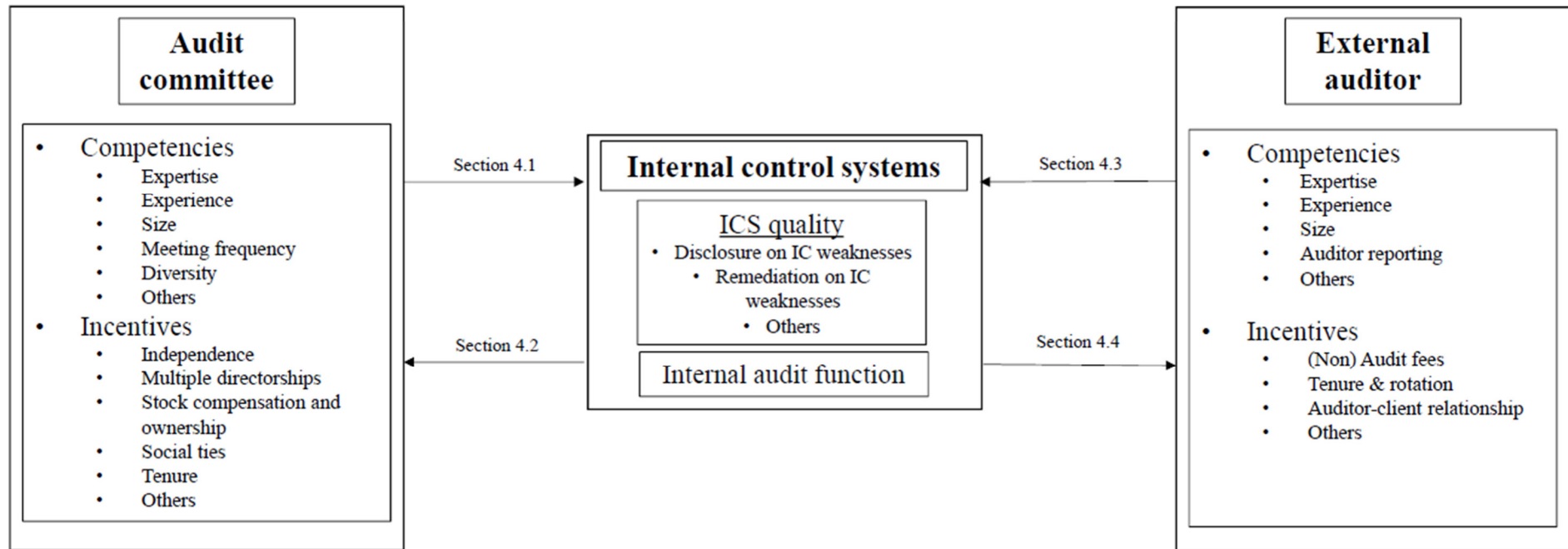


Figure 1 Research framework

Figure 2 Data Selection Process

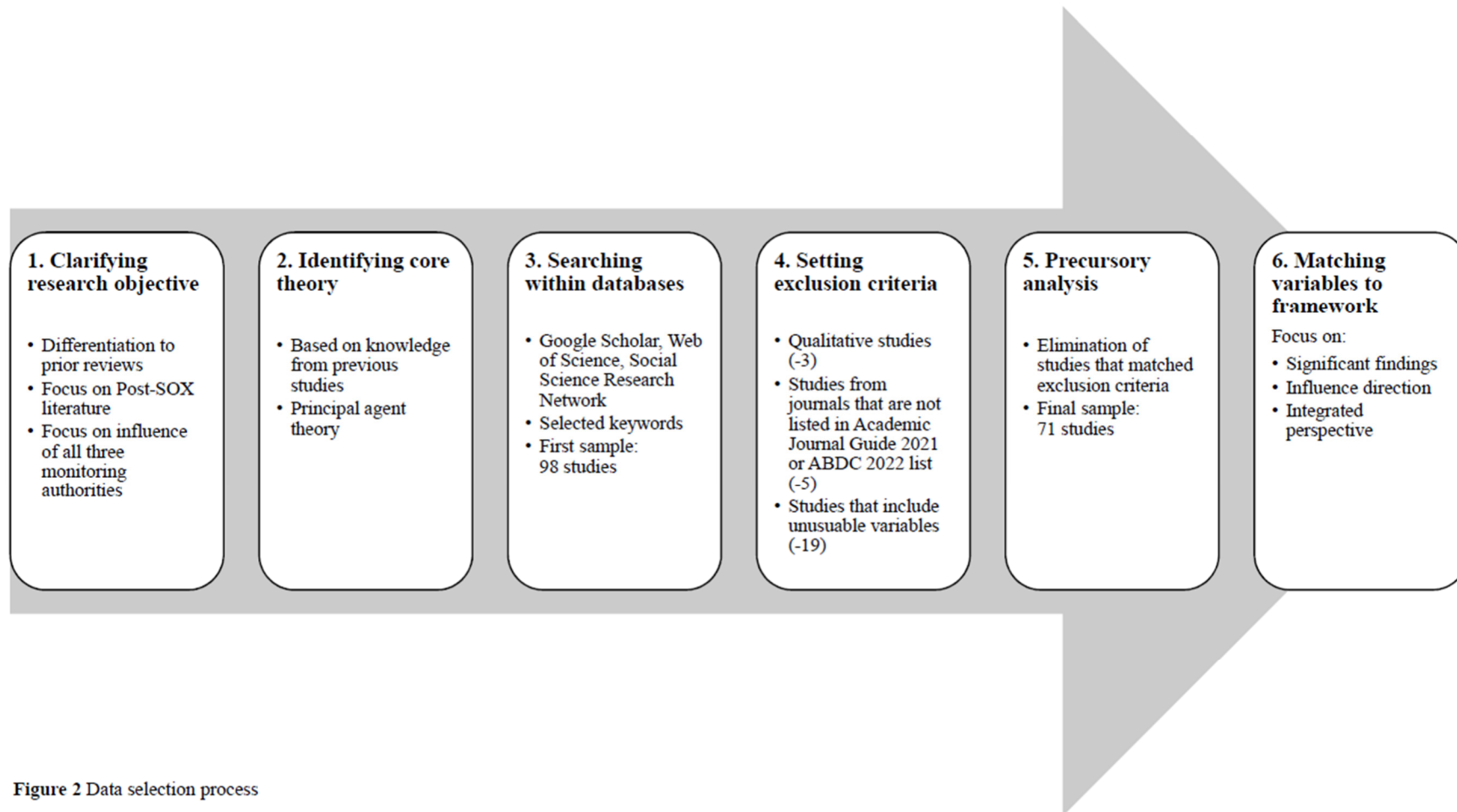


Figure 2 Data selection process

Figure 3 Main findings

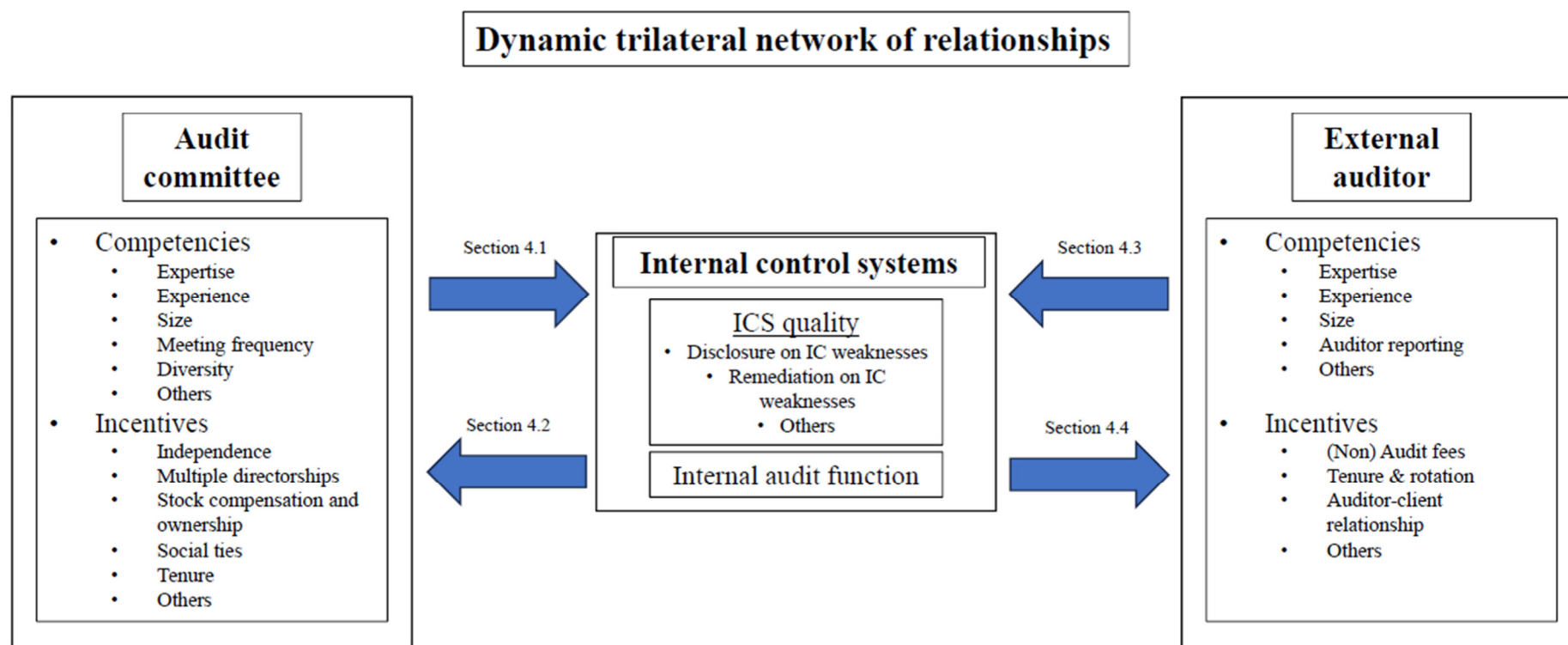


Figure 3 Main findings

Annex 2: Sustainability-related co-operation among audit committees, internal auditors and external auditors: a survey-based study. (Article 2)

Abstract²⁹

Purpose: This paper examines the impact of European sustainability regulations on the degree of co-operation among audit committees, internal auditors and external auditors.

Design/methodology/approach: The study is based on online questionnaires completed by 112 German audit committee members, internal auditors and external auditors adopting a research approach with qualitative components.

Findings: The study reveals that although the three authorities have strengths within financial and industry expertise and possess a solid base of financial, personnel and technical resources, they have deficiencies in dealing with social and, notably environmental issues such as water and marine resources as well as biodiversity and ecosystems. However, increased sustainability-related communication and opportunities for collaboration could positively impact sustainability oversight. The parties could mutually alleviate their workloads by involving environmental experts or by conducting aligned audits of sustainability-related internal control and risk management systems performed by internal and external auditors under the strategic oversight of the audit committee. Despite potential benefits, parties tend to overestimate their own capabilities and seek assistance from one another for environmental issues, hindering effective co-operation and fostering resentment.

Originality: This research contributes by stressing the need to consider environmental capabilities in the work and profiles of all three parties. It also highlights the importance of

²⁹ The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

audits of sustainability-related internal control and risk management systems co-ordinated by the audit committee and performed by internal and external auditors.

Keywords: Audit committee, Internal audit, External audit, Corporate governance, Sustainability

1. Introduction

In recent discussions on corporate governance (e.g., Pandey *et al.*, 2023), environmental, social, and governance (ESG) ^[30] has steadily been gaining prominence (e.g. Cho *et al.*, 2015), resulting in the global expansion of corporate sustainability regulations. The European Union (EU) Green Deal project aims to make the European economy climate-neutral by 2050, intensifying corporate sustainability efforts alongside global initiatives ^[31]. This has resulted in substantial corporate sustainability regulations, as illustrated in Table I ^[32], that emphasise the interconnections between sustainability reporting and sustainable supply chain duties, leading to increased demands put on three significant monitoring authorities: audit committees, internal auditors and external auditors. These obligations comprise the monitoring of due diligence processes throughout a company's value chain according to the Corporate Sustainability Due Diligence Directive (CSDDD), including underlying sustainability-related internal control system (ICS) and risk management system (RMS), as well as corporate social responsibility (CSR) assurance according to the Corporate Sustainability Reporting Directive (CSRD).

³⁰ The concept of environmental, social, and governance (ESG) sets criteria for the strategic goals of businesses across three dimensions: environmental responsibility, social responsibility, and corporate governance. This has emerged as a widely acknowledged and important metric for assessing the sustainable development of companies around the world.

³¹ For example, the Sustainability Standards developed by the International Sustainability Standards Board, the Climate Disclosure Rule issued by the United States Securities and Exchange Commission and the Modern Slavery Act within the United Kingdom or Australia.

³² These regulations essentially encompass the Corporate Sustainability Reporting Directive (CSRD) including the European Sustainability Reporting Standards (ESRS) and the Corporate Sustainability Due Diligence Directive (CSDDD). While the CSRD requires companies to publish an extensive sustainability report as a mandatory component of the management report, the CSDDD aims to address sustainability-related due diligence in companies' value chains, which must also be explained in the CSRD sustainability report.

On February 26, 2025, the EU commission published a proposal for an omnibus package in order to achieve significant bureaucratic relief for companies by weakening their reporting obligations regarding sustainability regulations.

Drawing on stakeholder-agency theory (SAT) (Hill and Jones, 1992) and resource-based theory (RBT) (Barney, 1991; Grant, 1991), this study examines what competencies and resources the three monitoring parties possess or lack in striving to meet the requirements of the CSRD and CSDDD. It also explores their collaborative potential in monitoring sustainability reports and related management systems. To date, the tripartite relationship among audit committees, internal auditors and external auditors has primarily been examined in the context of financial reporting (e.g. Cohen *et al.*, 2010) but not with respect to CSR. A focus on sustainability is of great interest due to the additional requirements ^[33] that need to be fulfilled by monitoring authorities. In addition, research on the three authorities is dominated by quantitative methods (McNulty *et al.*, 2013), often considering only one or two of the three parties in their investigations, as shown in a range of literature reviews (e.g. Wehrhahn and Velte, 2024). Because quantitative approaches are limited in their ability to capture complex interactions and social dynamics among the three parties – which is essential to achieving the objectives of this study – more research with qualitative components on this subject is needed. Moreover, because previous qualitative studies have tended to focus on bilateral relationships (e.g. Sulaiman and Yasin, 2022) and have not included sustainability-related issues (e.g. Beasley *et al.*, 2009), we stress the need to consider the individual capabilities of and interactions between all three authorities, as the work of all three parties is crucial to ensure sufficient sustainability-related oversight. This is particularly significant in light of the CSRD and CSDDD because the challenges related to the parties’ monitoring procedures are increasing for social and, especially, environmental matters. Against the backdrop of the climate neutrality objective outlined in the

³³ The impact of the regulations on the monitoring parties are illustrated in Table I. Although internal auditors are not directly addressed by the regulation, they are nonetheless required to expand their monitoring activities to include sustainability-related issues. Similarly, external financial auditors are not necessarily mandated to audit the new sustainability reports, as this responsibility may be assigned to other external assurers from audit firms or even alternative providers outside the external audit profession (voting right for EU member states).

European Green Deal, they have to deal with new and more comprehensive topics ^[34]. It is therefore pressing to analyse how the authorities, both individually and collectively, deal with these challenges.

Based on the above considerations, this study addresses the following research questions (RQ):

RQ1: What competencies and resources do the three parties possess to ensure adequate monitoring of sustainability reports and related management systems based on the CSRD and CSDDD?

RQ2: How can collaboration and mutual support between the three parties regarding these monitoring duties be improved?

The data were collected through online questionnaires completed by 112 German professionals from all three parties between July and August 2023. Because these regulations are not only applicable to public interest entities (PIEs), this study focused on participants working for both PIEs and non-PIEs out of various branches that are, due to company size, subject to the regulations as well as for big four and small and medium-sized audit firms. The focus on Germany stems from its position as the EU's largest economy, its mandatory two-tier board structure and a long-standing tradition of stakeholder-driven environmental reporting. These features align closely with the CSRD and CSDDD, as stakeholder-oriented governance systems may exhibit a stronger commitment to sustainability regulation.

The study's findings reveal that the three authorities feel that they already possess substantial individual competencies, including financial and industry expertise, as well as the financial, personnel or technical resources required to fulfil their sustainability-related monitoring duties. However, various deficiencies are apparent. Inadequacies in professional expertise and practical experience are especially evident in the environmental domain, particularly regarding

³⁴ Due to the significant increase in requirements for environmental and social matters (compared to governance matters, which are closer to the traditional professional fields of the parties), this study focuses on E and S, neglecting G.

water and marine resources as well as biodiversity and ecosystems^[35]. Adequate expertise and experience are crucial in these areas, as companies' environmental data must be subject to assurance. This underscores the necessity of targeted training and recruitment efforts for all three parties in these areas. Nevertheless, several potential avenues for collaboration and mutual support have been identified. While improving communication and information sharing on sustainability-related issues – e.g. risks in determining carbon emissions correctly – among all three authorities is crucial to ensure better sustainability-related collaboration, the authorities could co-ordinate the involvement of experts, such as climate scientists, to address the EU Green Deal. They could, for instance, assess the materiality of various environmental issues for the corresponding company or evaluate greenhouse gas emissions adequately. Despite these benefits, self-assessments of existing sustainability-related capabilities and collaboration potential often differ significantly among the parties. Authorities tend to overestimate their own performance regarding sustainability oversight, shift the responsibility for performing comprehensive assurance of sustainability-related data to others and seek assistance from one another. This may not only jeopardise the development of competence but also foster resentment within the three-party relationship, thus hindering effective collaboration. Based on studies' limitations, this paper offers multiple recommendations for researchers, regulators and practitioners.

The paper proceeds as follows: Section 2 outlines SAT and RBT; Section 3 reviews the literature on the three parties; Section 4 presents the methodology; Section 5 presents the findings; Section 6 discusses limitations and offers recommendations; and Section 7 concludes.

INSERT TABLE I HERE

³⁵ These are environmental subcategories within the ESRS.

2. Theoretical foundation

2.1 Stakeholder-agency theory

While we observed a predominant use of classical agency theory (Jensen and Meckling, 1976; Ross, 1973) in previous research, we stress the need for the recognition of SAT (Hill and Jones, 1992) for the reasons presented below.

The monitoring duties of audit committees, internal auditors and external auditors are crucial not only for shareholders as principals but also for other stakeholders. Stakeholders require reliable financial and sustainability information as well as related ICS and RMS (Pizzi *et al.*, 2022; Fiandrino *et al.*, 2022). The three monitoring authorities must oversee both financial and sustainability reporting, ideally in an integrated manner, given the growing interconnectedness of financial and sustainability-related information. However, stakeholders expect the establishment of monitoring parties that possess adequate expertise in finance, industry and sustainability, along with appropriate incentives. Including stakeholder interest in the monitoring bodies' job and composition profiles leads to not only greater stakeholder satisfaction but also a higher quality of sustainability assurance. Given the increased monitoring responsibilities related to sustainability issues resulting from both stakeholder and regulatory pressure, the traditional focus on financial and industry expertise ^[36] must be expanded to include sustainability expertise (Velte, 2023). Furthermore, this transition from traditional audit functions to the incorporation of sustainability-specific challenges results in the creation of new resource dependencies (e.g. lacking resources for sufficient monitoring of environmental issues within each party) and incentives (e.g. collaborating with other parties to close their sustainability-related capability gaps) among the parties ^[37]. Accordingly, each of the three

³⁶ Financial expertise (industry expertise) is characterized by the ability to appropriately address the complexities of financial reporting (within specific industries) (Zhang *et al.*, 2007). Financial and industry expertise are mandatory for audit committees of PIEs in Germany. For external auditors, such expertise is assumed based on strict qualification requirements (e.g., examinations). By contrast, there are no mandatory regulations regarding these competencies for internal auditors. Sustainability expertise remains voluntary for all three parties.

³⁷ The aim of addressing RQ1 and RQ2 was to obtain detailed insights into existing or lacking competencies and resources as well as collaboration potential.

authorities should ensure that the other parties possess sufficient capabilities within the environmental and social domains to perform their duties effectively with regard to sustainability regulation. In particular, this should include the environmental expertise needed to transition the European economy to a climate-neutral model by 2050. As neither party will fulfil the requirements individually, mutual incentives could be created through the parties agreeing on defined audit areas. For instance, provided that the parties possess adequate sustainability-related capabilities, internal auditors could monitor the sustainability-related ICS, while external auditors could assure the RMS, and this could be reversed in the following year. In this way, both parties would have less effort that would tie up resources and thus an incentive.

2.2 Resource-based theory

In connection with SAT, RBT (Barney, 1991; Grant, 1991) should be applied to the multilateral relationship among audit committees, internal auditors and external auditors. This is primarily because RBT complements SAT by shedding light on the mutual monitoring relationships between the three parties from the perspective of the resources available to each of them. Each of the three authorities possesses specific resources and capabilities (see *RQ1*) that can contribute to the improvement of the quality of sustainable corporate governance. This, in turn, may strengthen the long-term survival and competitiveness of firms, as a strategic focus on ESG topics can, for instance, lead to increased resilience to future risks. For example, audit committees' competencies, such as academic financial expertise (Zhang *et al.*, 2007), industry expertise (Zaman *et al.*, 2021) and practical experience within finance (Weickgenannt *et al.*, 2021), provide support to the other bodies, e.g. through strategic risk assessments performed by audit committees for specific audit areas. However, it is crucial to emphasise that audit committees, in particular as part of the supervisory board in Germany's two-tier system, have limited resources. This is because, unlike the full-time supervisory board within a one-tier system, they serve on a part-time basis. By contrast, external auditors have specific expertise in

financial audits and sustainability assurance services. This is particularly true for big four audit firms, whereas small and medium-sized firms often face limitations in providing sustainability assurance services due to restricted personnel and financial resources. Through their experience and expertise (Westermann *et al.*, 2015), external auditors can contribute to improving the quality of financial and sustainability assurance due to the connectivity between financial and sustainability information ^[38], as all information ends up in the annual report that needs to be audited. Similarly, the internal auditors have their own resources and capabilities, such as internal audit know-how (Oussi and Taktak, 2018) to monitor ICS or RMS and identify weaknesses, which could also be used for monitoring processes that are crucial for determining sustainability-related data, such as carbon emissions (Krasodomska *et al.*, 2021). While the parties have been able to gain extensive experience and competencies in the supervision and auditing of financial data (e.g., Cohen *et al.*, 2010; Roussy *et al.*, 2020) given the growth of financial regulation over the last decades, oversight and assurance of sustainability-related data, including the underlying processes, are quite new to them.

In the context of RBT, the allocation of existing resources – classified into physical capital resources (e.g. physical technology), human capital resources (e.g. training and experience of employees) and organisational capital resources (e.g. co-ordinating systems) – plays a significant role (Barney, 1991). RBT emphasises the importance of efficiently utilising and allocating such resources to maximise benefits, which is, in practice, often restricted by constraints of a legal or economic nature, for example. In the tripartite relationship, it is essential to allocate resources, such as personnel with environmental or social expertise, appropriately to ensure that they are effectively utilized and make the greatest contribution to the audit process. This could also be achieved through the co-ordinated involvement of, for example,

³⁸ This connectivity is also exemplified by the EU Taxonomy Regulation, which requires companies to report on three green key performance indicators – sales, capital expenditures, and operating expenditures. For each of these, firms must disclose the proportion that is considered environmentally sustainable (taxonomy-eligible or taxonomy-aligned).

environmental experts who can address complex environmental issues and thereby alleviate the burden on all three parties. However, the relationships between the three parties can be substitutive or complementary (Velte 2017). A substitutive relationship exists when the results of one party's efforts (e.g. an internal audit) can substitute the efforts of another (e.g. the audit committee). Put differently, if one party does not provide sufficient oversight, the other parties must compensate by increasing their own oversight efforts. In line with RBT and the focus of this study, interactions can also have a complementary function, for example, if specific audit procedures (e.g. audit of sustainability-related ICS) are performed either by the internal auditors or the external auditors, and not by both. This approach assumes a motivation for collaboration (see *RQ2*) and a certain level of trust among the parties because no party may exculpate itself from monitoring duties.

3. Literature review

In line with the objectives of this study and the associated *RQs* presented, the following two subsections provide an overview of relevant studies that have yielded insights into the competencies and resources of audit committees, internal auditors and external auditors or into collaborations between the three. The subsections cover the authorities' individual impacts on financial reporting (Section 3.1) and on integrated reporting ^[39] as well as sustainability reporting (Section 3.2), respectively. The aim of this review is to demonstrate the necessity for research on the trilateral interplay between the parties, particularly concerning sustainability-related matters.

3.1 Audit committees', internal auditors' and external auditors' role in financial reporting

³⁹ Integrated reporting is a holistic concept that combines traditional financial reporting with non-financial reporting elements, such as sustainability reporting, risk management reporting and corporate governance aspects.

Existing research on audit committees', internal auditors' and external auditors' role in financial reporting predominantly consists of quantitative studies, focusing on parties' individual attributes (e.g. financial expertise, independence or diversity). For instance, audit committees' financial expertise (Zhang *et al.*, 2007), accounting expertise (Lisic *et al.*, 2019) and industry expertise (Sterin, 2020), as well as audit committee experience (Weickgenannt *et al.*, 2021), contribute to higher ICS quality, which is largely shaped by internal auditors due to their central role in the design, implementation and execution of internal controls (Eulerich *et al.*, 2015). Furthermore, external audits performed by big four audit firms lead to higher ICS quality (Khlif and Samaha, 2016), which in turn leads to reduced audit hours and audit delays (Gontara *et al.*, 2023), thus improving the auditor–client relationship. Previous literature reviews (e.g. Wehrhahn and Velte, 2024, Chalmers *et al.*, 2019, Cohen *et al.*, 2004) have shed further light on quantitative studies on the tripartite association among audit committees, internal auditors and external auditors in the context of monitoring financial data, revealing their mutual interdependencies.

By contrast, qualitative studies – especially those aligned with all three parties' role in financial reporting – remain scarce. Previous qualitative studies have predominantly examined bilateral interactions, and relatively few have explored the dynamics of trilateral relationship structures. Prior qualitative studies focusing on bilateral relations, for instance, have stressed that the effectiveness of internal audits relies on the combined competencies and agility of the internal audit function, resulting in effective education of the audit committee (Roussy *et al.*, 2020). Meanwhile, the effectiveness of the audit committee's role as a monitoring mechanism in ensuring the quality of a financial audit depends on the competencies possessed by the audit committee chairpersons (Sulaiman, 2017), which means that the individual capabilities of monitoring parties play a significant role in improving oversight standards. However, Mat Zain and Subramaniam (2007) suggested that informal communication and private meetings

between internal auditors and audit committees are limited, indicating a need for clearer reporting lines with well-defined time schedules and responsibilities (i.e. who must report to whom). These findings underscore the crucial leadership role played by audit committees in supporting auditors, e.g. through assistance in determining risks or strategic co-ordination of the entire monitoring process. Supporting this, informal interactions between audit committees and internal auditors, e.g. joint meetings to discuss audit risks, enhance internal audit quality, audit committee independence and the audit chair's knowledge and experience (Zaman and Sarens, 2013). Additionally, the close relationship between the chief internal audit executive and the audit committee chair is widely acknowledged as a key driver of internal audit effectiveness (Soh and Martinov-Bennie, 2011).

Semi-structured interviews conducted by Sulaiman (2017) with audit committee members and external auditors revealed that the effectiveness of the audit committee depends on the quality of its relationships with external auditors, such as having open and trustful discussions about sensitive matters or concerns, underscoring the significance of audit-related interactions between the monitoring bodies. Within the external audit oversight process (Dobija, 2015), the audit committee uses its personal power base to develop relationships of trust with external and internal auditors and to promote the exchange of information with them (Sulaiman and Yasin, 2022). Furthermore, Salleh and Stewart (2012) found that the audit committee acts as a mediator in the resolution of disagreements between the external auditor and the client. The mediation techniques applied include agenda setting, information gathering, providing guidance and problem-solving.

With respect to internal and external auditors, prior research has shown that external auditors assess the objectivity, competence, and performance of internal auditors to determine the extent to which reliance on their work is appropriate (Mubako and Muzorewa, 2019; Regoliosi and Martino, 2019), leading to the conclusion that the capabilities of one monitoring body have the

potential to lessen the burden of responsibility on the others. Furthermore, Mubako and Muzorewa (2019) revealed limited interaction between internal and external auditors, indicating that external auditors do not fully utilise the internal audit function, resulting in inefficiencies in this relationship. This limited interaction could be due to weak internal audit quality or regulatory barriers that prevent the external auditor from using the internal auditor's work. However, Regoliosi and Martino (2019) stressed that under the condition of objective, competent and well performing internal auditors, mutual collaboration between internal and external auditors increases the reliability of controls, avoids duplication of work, and has the potential to provide mutual support.

Qualitative studies that focus on data collected from all three parties (e.g., Compernelle, 2018; Oussi *et al.*, 2019) are rare. However, several studies, despite not being based on a database generated from all three parties, shed light on the capabilities, behaviours or interactions of the monitoring bodies. An interview-based study with audit committee members highlighted the importance of the audit committee exercising its authority by effectively overseeing the internal or external auditor, having access to key internal and external parties (resources), and allocating time to conduct a comprehensive review of the audited financial information (Beasley *et al.*, 2009). Additionally, Cohen *et al.* (2010) emphasised that stronger alliances between audit committees and both internal and external auditors have improved the governance environment^[40], supporting calls for enhanced trilateral collaboration regarding increased demands from sustainability regulations.

3.2 Audit committees', internal auditors' and external auditors' role in integrated reporting and sustainability reporting

⁴⁰ The corporate governance environment encompasses a set of factors (e.g. competencies or resources of monitoring authorities) that influence the oversight and assurance functions within organizations.

Compared to studies that have predominantly focused on the supervision of financial reports and corresponding ICS and RMS, some other studies have already shown a strong association between combined assurance ^[41] quality (Zhou *et al.*, 2019) and integrated reporting quality in South Africa (Donkor *et al.*, 2021). Consequently, mutual co-operation among all three parties could have a positive effect on the assurance of sustainability-related data according to the CSRD and CSDDD, such as trust-building efforts (Krasodomska *et al.*, 2025) – similar to when auditing financial data because the new sustainability report according to the CSRD is a mandatory part of the management report and therefore in close connection with financial data. This transferability of positive effects can become even more crucial when the financial auditor also serves as the sustainability assessor (Bouten and Hoozée, 2025), as this can potentially leverage even more synergies, e.g. through fewer communication barriers between the audit teams (financial-related team and sustainability-related team).

Recent studies employing quantitative analyses or literature reviews have also underscored the relevance of the three parties in the context of CSR assurance. For example, Velte (2024b) highlighted that audit committee composition – comprising variables such as effectiveness, age, expertise, education and experience, gender diversity and independence – and CSR assurance are positively linked. While audit committee quality – measured by four characteristics, including independence, diligence, expertise and size – has been shown to positively influence integrated reporting assurance in South Africa (Wang *et al.*, 2020), further evidence suggests that audit committees' financial expertise enhances CSR assurance (Uyar *et al.*, 2023). Additionally, audit committees' industry-specific expertise has been found to have a positive effect on CSR assurance in New Zealand (Zaman *et al.*, 2021). Similarly, the internal audit

⁴¹ According to the Institute of Directors in South Africa (IoDSA), combined assurance originates from the 'three lines of defense' model – a risk-management and governance framework that coordinates the assurance activities of the company's management and different internal and external assurance providers to ensure assurance and reporting quality. This integrated assurance framework has been implemented in South Africa, where listed companies prepare the combined assurance statement detailing how they have coordinated their assurance activities to ensure the quality of their integrated annual reports.

function's assurance contributes to the credibility of sustainability-related information (Moalla and Dammak, 2023). Furthermore, Boiral *et al.* (2023) found that internal audits are perceived as more effective than external assurance in guiding, advising on, and monitoring sustainability issues, thereby contributing to the enhanced accuracy and reliability of sustainability-related information. In addition, external auditors from the big four audit firms were identified as key drivers of both sustainability disclosure and alignment (Simnett *et al.*, 2025).

The number of studies employing a qualitative design remains significantly lower compared to those using a quantitative approach. Trotman and Trotman (2015) conducted interviews with audit committee members, senior accountants, internal auditors, and external audit partners to gain insights into the present role of internal auditors in reporting on greenhouse gas and energy usage. Their findings revealed various positions from the groups of participants and indicated an increased significance of internal audits within monitoring processes regarding sustainability-related data. Simpson *et al.* (2016) stressed that companies appreciate the fact that the internal audit function provides assurance of sustainability reports. Furthermore, internal audit functions were found to increase the reliability of sustainability-related reports (Gu *et al.*, 2023). Rakipi and D'Onza (2024) conducted interviews with audit committee members, chief executive officers and chief audit executives to investigate the role of the internal audit function in sustainability-related processes and risks. They emphasised that multiple possible combinations of the maturity ^[42] of companies' sustainability-related practices and the chief audit executive's perception of the internal audit stakeholders' salience dictate the nature of the internal auditor's involvement in sustainability. However, these studies considered the respective parties (e.g. internal auditors) as separate entities and largely neglected the examination of collaborative interactions among them. Thus, there is a pressing need for research considering qualitative components and focusing on the monitoring of

⁴² For example, organizations are low in maturity if their ESG goals are limited to compliance with existing laws.

sustainability reporting that considers the capabilities and resources of all three parties as well as their trilateral relationship.

4. Research design

The data using in this study were collected through online questionnaires (similar to Ehalaiye *et al.*, 2020) completed by audit committees, internal auditors and external auditors in Germany. This focus on the German setting can be explained as follows: Germany, as the largest economy in the EU, has a mandatory two-tier board structure for companies with a long tradition of environmental reporting pressure from stakeholders (Braasch and Velte, 2022). This is of particular interest with regard to the CSRD and CSDDD ^[43] because in two-tier and predominantly stakeholder-oriented structures, which are contrary to the Anglo-Saxon shareholder model seen in one-tier systems, the relationship between internal auditors (subordinated to the management board) and the audit committee tends to be less intensive in co-operation, thereby calling for improvement-proposals of sustainability-related collaboration. Moreover, previous research has predominantly focused on one-tier systems rather than two-tier systems. Furthermore, Germany has a social market economy system with extensive opportunities for employee co-determination (e.g. Bottenberg *et al.*, 2017), leading to a focus on specific social topics such as their own workforce among the participants. Because the CSDDD and the CSRD – which has a much broader range of users compared to the CSDDD – are not only applicable to PIEs ^[44] as illustrated in Table I, this study focuses on participants working for both PIEs (76%) and non-PIEs (24%) out of various branches that are, due to

⁴³ At the time of data collection, the CSRD and CSDDD had not yet been transposed into German law. However, since the financial year 2017, selected PIEs have been required to comply with the Non-Financial Reporting Directive (NFRD). Furthermore, Germany implemented its national supply chain act (Lieferkettensorgfaltspflichtengesetz) in 2021, which has resulted in an increased sensitivity to sustainable supply chain issues compared to other countries.

⁴⁴ Since the Wirecard scandal in Germany, PIEs have been legally required to establish an audit committee. In the absence of such a committee, the supervisory board assumes the corresponding oversight responsibilities.

company size subject to the obligations resulting from the CSRD and CSDDD as well as for big four (59%) and smaller audit companies (41%).

Questionnaires were chosen over other qualitative methods (e.g. in-depth interviews or case studies) to reach a broad sample, allow triangulation (Maxwell, 2013) and gain a generalisable overview across the three parties instead of focusing on a few individual cases.

Considering the within SAT and RBT identified challenges and potentials for the parties, the survey questions were intentionally derived from a self-imposed framework that includes the underlying regulatory changes (Table I). The derivation and formulation of the questions were primarily guided by EU regulations, with a particular emphasis on the structure and content of the European Sustainability Reporting Standards (ESRS), for which an initial set was adopted in 2023 and through which the CSRD is operationalised. An initial version of the questionnaire was administered to a pilot group of three persons, one from each group, and subsequent revisions were made based on the findings obtained from this preliminary testing. The questionnaire consisted both closed and open-ended questions to maximise the amount of insight gleaned from the participants. The closed questions presented the participants with a 5-point Likert scale (similar to Botica Redmayne *et al.*, 2023) ranging from 1 (most favourable) to 5 (least favourable). The responses to the open-ended questions were coded before the data were analysed.

The questionnaire was divided into two parts, each pertaining to one of this study's two *RQs*. Table II provides a simplified overview of the questionnaire's structure, including the key topics and explanations regarding the data being collected and the types of questions.

INSERT TABLE II HERE

In the first part of the questionnaire (which pertained to *RQ1*), the same questions were presented to all monitoring parties. These questions primarily focused on their perceptions of their competencies (professional expertise and practical experience) and resources. The

structure of the first part of the questionnaire was based mainly on the topic-specific ESRS. The standards were put into the following subcategories and were adopted for the questionnaire: environment (climate change, pollution, water and marine resources, biodiversity and ecosystems, and resource use and circular economy), social (own workforce, workers in the value chain, affected communities, and consumers and end-users), and governance (business conduct) (European Commission, 2023).

The second part of the questionnaire (which pertained to *RQ2*) consisted of individual questions for each party that primarily focused on the quality of collaboration between the parties and corresponding improvement potential. In this context, the participants were asked to assess not only their own work but also the work of the other parties with regard to requirements from sustainability regulations. Furthermore, they were asked to provide specific suggestions on how to achieve more effective and efficient collaboration between the parties with regard to the monitoring of sustainability reporting and sustainability-related ICS and RMS. This section focused on identifying the authorities' potential for co-operation and mutual support, considering the parties' respective self-perceptions and perceptions of each other.

After a pilot test involving five professionals ^[45], which yielded a positive outcome regarding reliability and validity, the questionnaire was sent via LimeSurvey to various professionals employed by at least one of the three parties and was filled out by 252 participants between July and August 2023. The questionnaire was distributed with the assistance of contact persons from the professional associations of each party to ensure that only individuals actively working within one of the three parties participated in the survey. Due to incompleteness or invalid responses (e.g. the same answer to every question), 140 questionnaires were excluded from the final sample, which consisted of 112 questionnaires. The replies were generated by 46 external auditors, 33 internal auditors and 33 audit committee members with an average age of 50.1

⁴⁵ Two audit committee members, two external auditors, and one internal auditor participated in the pilot test.

years (56.4, 53.1, and 43.4 years, respectively) and an average of 18.4 years of professional experience (19.1, 19.7, 17.1 years, respectively). The participants consist of 64.3% male (57.6%, 63.6%, 69.6%, respectively) and 37.7% female (42.4%, 36.4%, 30.4%, respectively) experts.

The data were analysed using qualitative content analysis following Mayring (2014), ensuring a structured and transparent approach focused on competencies, resources, responsibilities and collaboration.

5. Findings

5.1 Capabilities

5.1.1 Competencies

In light of growing monitoring responsibilities related to sustainability, driven by both stakeholder expectations and regulatory requirements, the traditional emphasis on financial and industry expertise must be broadened to encompass sustainability expertise (Velte, 2023). The findings ^[46] of our research indicate that audit committees, internal auditors and external auditors exhibit multiple competencies. Specifically, each of the entities demonstrates a substantial level of expertise in the financial (1.84) and industrial domains (1.87). However, upon analysing the subcategories in the environmental and social domains, combined with the fact that sustainability expertise remains voluntary for all three parties, it became clear that although some competencies are evident, numerous deficiencies were observable across all three bodies. Regarding environmental topics, a noticeable shortfall in professional expertise and practical experience ^[47] is apparent regarding water and marine resources (3.47 and 3.62,

⁴⁶ The major findings related to *RQ1* are presented in tables and figures. Each of the tables presents the average responses based on a 5-point Likert scale ranging from 1 (very high, i.e. most favourable) to 5 (very low, i.e. least favourable).

⁴⁷ While professional expertise is characterized by an academic focus, practical experience primarily concerns work experience.

respectively) as well as biodiversity and ecosystems (3.42 and 3.65, respectively). In the case of the remaining subcategories (climate change, pollution and resource use and circular economy), deficiencies were also observed across all bodies, albeit to a lesser extent, possibly due to the higher proximity of the topics to participants' daily routines (e.g. resource use and circular economy is more present in person's daily live than water and marine resources). The weaknesses related to all environmental topics perhaps exist because the parties are confronted with new requirements that lie outside of their traditional fields of competences, given that the primary focus of their oversight activities has thus far been on financial data.

In the social domain, the parties describe relatively stronger competencies, possibly because – compared to the environmental domain – less scientific or specific technical knowledge is required. This is particularly pronounced in the own workforce subcategory in terms of both expertise (2.13) and experience (2.17) and may be due to the comparatively high importance placed on employee co-determination in Germany^[48]. Conversely, in the workers in the value chain (2.49, 2.63), affected communities (2.68, 2.86), and consumers and end-users (2.71, 2.84) subcategories, the competencies displayed by the three entities are at a more moderate level, with audit committees achieving the highest scores and internal auditors obtaining the lowest scores. Compared to the own workforce category, these subcategories have so far been less emphasised in the responsibilities of the parties, thereby presenting greater challenges in terms of engagement and oversight.

The findings on the competencies of the three parties are summarised in Table III below.

INSERT TABLE III HERE

⁴⁸ In Germany, one-third (half) of the supervisory boards of corporations with more than 500 (2,000) employees must consist of employee representatives.

5.1.2 Resources

The participants' responses reveal that the three entities possess a moderate-to-well-established resource base to address the challenge of monitoring sustainability reporting and sustainable supply chain duties (Table IV). To highlight differences in the available resources needed to meet the requirements of the two regulations – and thus illustrate the respective extent of the challenges – the findings related to the CSRD and those related to the CSDDD are presented separately. The resources encompass financial, personnel, and technical aspects, with all the parties in question displaying relatively stronger capabilities in terms of financial resources (2.40 for the CSRD and 2.58 for the CSDDD), followed by personnel resources (2.76, 2.79). This indicates that the parties generally possess a moderate-to-well-established financial and personnel resources, which can be attributed to their long-standing involvement in the monitoring of financial data. However, a few limitations are evident in relation to technical resources (2.90, 2.92). This may be due to the fact that many technical tools specifically related to the requirements of the CSRD and CSDDD were still under development at the time of the data collection and that the parties – particularly internal and external auditors – had often not yet implemented a final solution for technical support in sustainability-related monitoring. The fact that the vast majority of scores related to the CSDDD are weaker than those related to the CSRD suggests that the parties perceive the requirements of the CSDDD to be more demanding and feel less prepared to meet them than those of the CSRD. The findings on the resources of the three parties are summarised in Table IV below.

INSERT TABLE IV HERE

To address potential shortages in personnel resources, members of all three entities expressed a moderate-to-high (2.63) likelihood of introducing individuals with scientific proficiencies into their respective organisations. Furthermore, they evaluated the likelihood of collaborating with external environmental specialists as being medium to high (2.41) because such experts could

alleviate the burden on all parties by efficiently dealing with complex environmental issues. Within this framework, they anticipated a medium-to-high (2.75) probability of inter-party coordination concerning the selection of experts. This approach could support each party in building up their resources to enable the meeting of future requirements.

5.1.3 Conclusions regarding RQ1

The findings reveal that audit committees, internal auditors and external auditors assess themselves as already being equipped with a range of rudimentary competencies and resources to fulfil the requirements of the CSRD and CSDDD. In terms of competencies, notable strengths include high levels of financial (1.84) and industry expertise (1.87). These strengths within traditional fields can be attributed to the parties' experience accumulated over many years in monitoring and auditing financial reporting. In addition, all parties reported that they exhibit a solid level of professional expertise and practical experience in the social domain, particularly regarding their own workforce (2.15) because – compared to the environmental domain – less scientific or specific technical knowledge is required. Regarding resources, it was observed that the authorities possess a high-to-moderate level of financial (2.49), human (2.78) and technological (2.91) resources to enable adequate sustainability oversight. This led to the conclusion that the parties generally possess solid resources to meet sustainability-related challenges, possibly resulting from their long-standing involvement in the monitoring of financial data.

Significant shortcomings were evident among all three parties regarding competencies in the environmental field. While there is still a moderately sufficient level of professional expertise and practical experience in subcategories such as climate change (2.63), pollution (2.99) and resource use and circular economy (3.05), there are pronounced gaps in competency. Hence, there is room for improvement, especially in the categories of water and marine resources (3.55)

and biodiversity and ecosystems (3.54). These competency gaps can be attributed to the fact that the environmental subcategories addressed fall outside the traditional scope of responsibilities of the monitoring parties, e.g. oversight of financial data with financial expertise (1.84), and that these parties have not previously been required to meet sustainability-related regulations to such extent ^[49]. However, as a result of both new regulatory requirements and stakeholder pressure, according to SAT, the monitoring parties are now compelled to close these gaps effectively to ensure adequate oversight of sustainability-related data. From an RBT perspective, effective sustainability oversight depends on developing and coordinating scarce, valuable capabilities – especially environmental expertise – and fostering greater interdependence among monitoring bodies and external sustainability specialists. Existing gaps, particularly in terms of personnel resources with sufficient capabilities for meeting environmental goals, could be filled by developing expertise internally through internal training, via the recruitment of specialised personnel with technical environmental expertise or by engaging with external agents such as service providers that specialise in environmental issues. However, it is crucial to emphasise that many small and medium-sized audit firms and their small and medium-sized enterprises (SME) clients may be unable to achieve this, as they are subject to greater financial and personnel restrictions than large corporations. For SMEs, this could result in an increased use of external consulting firms and environmental experts, which can, despite potential positive effects such as progressing along the authority’s learning curve, lead to long-term dependency. This dependency on a fourth party can lead to negative consequences for SMEs, as the services will be difficult for them to replace in practice and will also lead to an increased financial burden. Furthermore, due to the current shortage of skilled personnel in many industrialised countries, even larger companies may have difficulties finding staff with suitable sustainability expertise. For these reasons and in line with RBT, it would be

⁴⁹ Some survey-participants have likely been subject to the NFRD since 2017 or the EU Taxonomy Regulation since 2021; however, the CSRD and CSDDD introduce significantly more extensive requirements.

beneficial for all parties to co-ordinate the involvement of external experts and thus mitigate their individual limitations in terms of competencies and resources. This could be particularly significant, given that the current legal situation (draft version) in Germany allows only audit firms (and not alternative assurance providers) to perform sustainability assurance in accordance with the CSRD. It is likely that other EU member states will adopt this regulation as well, meaning that auditors and other monitoring bodies will possibly depend on the assistance of external environmental experts.

Figure 1 illustrates the extent of both adequate and substandard competencies and resources among the parties. Given the minimal disparities in the competencies and resources within individual categories across the three bodies, the illustration has been simplified and aggregated for all three.

INSERT FIGURE 1 HERE

5.2 Collaboration

Building on the capabilities outlined in Section 5.1, a more nuanced understanding of the tripartite collaboration is essential to identifying opportunities for mutual support among the three monitoring bodies. Such collaboration may enhance individual effectiveness and contribute to stronger sustainable corporate governance, which was emphasised by Cohen *et al.* (2010) in the context of financial audits. To present the findings clearly, each bilateral relationship is examined using summary tables (table V, table VI, table VII) that integrate responses from both closed ^[50] and open-ended survey questions on collaboration potential.

⁵⁰ The participants' responses to the closed questions are based on a 5-point Likert scale ranging from 1 (very high, i.e. most favourable) to 5 (very low, i.e. least favourable).

5.2.1 Potential areas of co-operation

5.2.1.1 Audit committees and internal auditors

Both audit committee members and internal auditors rated the extent of (3.25, 3.18) and satisfaction (3.06, 2.64) with their collaboration as moderate. Key areas for improvement include enhanced communication and information sharing, echoing prior findings that critically emphasised limited informal communication between both parties (Mat Zain and Subramaniam, 2007). Audit committees emphasised the need for greater internal audit expertise regarding sustainability issues and regulatory guidance, while internal auditors called for stronger sustainability-related engagement (e.g. a higher priority for environmental issues within risk assessments) from audit committees.

Considering the benefits of the internal auditors' work in improving the effectiveness and efficiency of audit committees, and thus the potential burden alleviation it offers to these committees, members of both parties hold very similar viewpoints. They generally assessed the utility (2.38, 2.53) and potential for mutual alleviation of responsibilities (2.50, 2.64) as high to moderate, particularly in the context of sustainability matters (2.44, 2.44). Both authorities tended to see meaningful support for audit committees in relation to requirements from sustainability regulations, such as the assurance of ICS and RMS as well as underlying processes conducted by internal auditors. Furthermore, audit committee members requested the alleviation of responsibilities and workload through internal auditors collecting corresponding data and ensuring its quality.

However, the parties adopted a more critical stance towards the utility of the audit committees' work aiming to enhance the effectiveness and efficiency of the internal audit and the associated potential for providing support. A possible explanation is that audit committees within two-tier systems have constrained resources, as their members typically serve on a part-time basis. In particular, participants in the internal auditor group regarded their utility as moderate to low

(3.15), indicating limited potential for alleviating the other bodies' workloads (3.48). The assessments by audit committee members were somewhat more favourable (2.72–2.75), though they also perceived only limited potential for relieving the other bodies' workloads (3.53). While some participants suggested that audit committees can provide support to the internal audit in overarching strategic areas, such as identifying risk areas or setting priorities, the majority of members from both bodies indicated that there is no meaningful support that audit committees can offer to the internal audit in the context of sustainability reporting and sustainable supply chain duties.

INSERT TABLE V HERE

5.2.1.2 Audit committees and external auditors

Audit committee members and external auditors perceived the extent of existing collaboration as moderate (audit committee: 2.69, external auditors: 3.11), with external auditors indicating slightly lower satisfaction (3.15) than audit committee members (2.66). External auditors, in particular, expressed more critical sentiments and a marginally lower level of satisfaction with collaborative efforts to date. This may be attributable to their professional role (Simnett et al., 2025), which is frequently to provide services to audit committees and act on their behalf, despite not being formally mandated or discharged by them.

Both bodies identified opportunities to enhance their collaborative efforts in the open-ended questions. Audit committee members often highlighted the potential for improvement in the form of extended sustainability-related competencies or additional training for external auditors. Conversely, external auditors expressed a need to enhance their competencies or provide further training to audit committees. Additionally, they frequently called for greater acceptance of forthcoming sustainability issues among audit committees. Both parties request

increased and enhanced communication as well as more frequent information sharing, a finding that aligns with that of Sulaiman (2017) in the context of auditing financial data.

Although the two parties exhibited many similar perspectives, they viewed the mutual benefits of their respective contributions differently. Both the audit committee members and external auditors regarded the contributions of external auditors to be highly beneficial to enhancing the effectiveness and efficiency of audit committees, both in the broader context (1.88, 1.84) and directly concerning the CSRD and CSDDD (2.02, 1.88). The two authorities were equally optimistic about the potential support external auditors could bring to audit committees. Nevertheless, it is noteworthy that external auditors tended to rate the benefits of their own work and the potential for reducing the workload more favourably (1.96) than audit committee members rated them (2.22).

The parties also highlighted various areas where external auditors could provide valuable assistance to audit committees in relation to sustainability regulations. Both groups underscored the importance of external auditors engaging in the detailed assurance of the new sustainability reports and performing audits on ICS and RMS. While members of audit committees also emphasised elements such as deep expertise and data accuracy as areas where their workload could be reduced, external auditors consistently highlighted the importance of enhancing audit committee skills and introducing benchmarking as an effective strategy to support audit committees.

Conversely, both parties appraised the advantages of audit committees' contributions to the effectiveness and efficiency of the external auditors, as well as the potential for support being provided, as relatively modest. On average, the external auditors offered slightly more favourable assessments (2.60–2.93) than the audit committees (2.64–3.34). Both bodies acknowledged that the setting of audit priorities and risk assessments by audit committees could

support external auditors. However, they predominantly emphasised that audit committees are unable to meaningfully alleviate external auditors' sustainability regulation-related challenges.

INSERT TABLE VI HERE

5.2.1.3 Internal auditors and external auditors

Both internal and external auditors expressed critical views regarding their existing collaborations. They assessed the extent of collaboration as limited (internal auditors: 3.73, external auditors: 3.80) and were mutually dissatisfied with it (3.15, 3.17).

With regard to the existing potential for improvement in collaboration, both parties identified enhanced communication and increased information sharing in their responses to open-ended questions. Additionally, external auditors emphasised increased competence and ongoing education for internal auditors as areas of improvement. They also advocated for a more coordinated audit programme to optimise collaboration.

Examining the parties' perceptions of their own work in terms of its utility to the other party, both bodies held the value of their own work in higher regard than that of the other party. While external auditors considered the utility of their own work for the effectiveness and efficiency of internal audits, both in general (2.37) and with respect to sustainability issues (2.40) as high, internal auditors assessed this utility as moderate (3.03, 3.06). Similarly, internal auditors were more critical (3.06) than external auditors (2.78) when it comes to the potential support they could provide for internal audits. Some internal audit participants acknowledged that external auditors could provide support through means such as benchmarking with other companies or meaningful information sharing. Nevertheless, their predominant view was that there is only very limited potential for workload reduction concerning sustainability-related requirements. External auditors indicated that they could share the workload of internal auditors with respect

to sustainability matters through the meaningful sharing of information, defining an audit's area of focus, determining materiality and auditing ICS and RMS.

Regarding the utility of the internal audit's work (Boiral *et al.*, 2023) for the effectiveness and efficiency of external auditors, as well as their potential to provide support, internal auditors perceived a higher utility (2.58–2.67) and greater potential for the provision of support than external auditors (2.63–2.89). While external auditors primarily indicated that internal audit can provide support by auditing ICS and RMS, internal auditors were convinced that external auditors can adopt the audit results of internal auditors (cf. Regoliosi and Martino, 2019), thus lessening their workload.

INSERT TABLE VII HERE

5.2.2 Conclusions regarding RQ2

In a comprehensive analysis of the existing findings, several avenues for co-operation regarding sustainability regulations emerged.

First, improved communication and enhanced information sharing on sustainability-related issues – such as meetings to align audit focus or risk assessments in determining carbon emissions correctly – can enhance collaboration between all three parties. Beyond trilateral exchange, bilateral co-operation (e.g. co-ordinating audit procedures or aligning audits of sustainability-related ICS) offers mutual benefits in line with RBT and reflects the parties' complementary roles (Velte, 2017) because specific audit procedures are performed, for example either by the internal auditors or the external auditors, leading to a certain level of trust among the parties because no party may exculpate itself from monitoring duties. Regarding environmental matters such as climate change goals (Ehalaiye *et al.*, 2025) to achieve the targets of the EU Green Deal, the authorities could co-ordinate the involvement of experts, such as

climate scientists, to assess the materiality of specific issues for the company in question or, if climate change issues are adjudged to be material, to evaluate them (e.g. evaluate greenhouse gas emissions adequately). Furthermore, internal auditors can review the underlying processes and systems to determine greenhouse gas emissions (Trotman and Trotman, 2015) and present the results of their audit to external auditors to increase the efficiency of the sustainability-related audit (cf. Regoliosi and Martino, 2019). Such joint provisions represent a concrete operationalisation of resource complementarity and inter-organisational learning, which aligns with RBT. As parties specialise and develop sustainability-related capabilities, they become increasingly dependent on one another for specific knowledge and technical expertise. Therefore, sustained collaboration is not only functional – it becomes a structural necessity for fulfilling regulatory expectations.

It is worth noting, however, that the audit committee plays a distinct role (Beasley *et al.*, 2009; Sulaiman and Yasin, 2022) within this tripartite structure. While it has limited potential to provide support to other bodies (average: 3.51 for internal auditors, 3.14 for external auditors), it relies heavily on the assistance of internal and external auditors, which means that it often takes on the role of the coordinator of which body takes on which responsibilities. By contrast, internal (average: 2.57) and external (average: 2.09) auditors serve in auxiliary roles for the audit committee, which in turn assumes overall responsibility for oversight and coordinates the activities of the other two parties, with a focus on comprehensive monitoring.

However, certain challenges in achieving collaboration have also become evident. First, it is striking that the self-assessments and external evaluations of all three parties frequently diverge significantly. Each party tends to rate its own performance more favourably than the other parties. The reasons for this excessively positive self-perception are multifaceted and diverse (e.g. overestimation, lack of awareness, a dearth of self-reflection or even opportunism on the part of the individual authorities). Each party attempts to shift responsibility to some extent and

simultaneously seeks assistance from the other authorities (as a substitutional effect). The most notable example of this was the overwhelming majority of audit committee members and internal and external auditors who, when asked about improving collaboration, pointed to the other two parties' need to develop their competence and receive training. From an RBT viewpoint, this perception also indicates the recognition of resource bottlenecks, with each party projecting its deficits outward while expecting others to compensate. This dynamic undermines collaborative capacity and long-term capability building. Holistically, these attitudes may not only jeopardise competence building but also foster resentment within the three-party relationship, thus hindering effective collaboration and resulting in negative consequences for the overall quality of corporate governance.

6. Limitations and recommendations

6.1 Limitations

This study was conducted in a German setting. Germany has long been classified as a developed country with internal governance structures and codes for companies characterized by a two-tier system, i.e. in which there is an organisational separation of the management board and supervisory board. This is relevant in the context of the trilateral relationship between the parties, as the role of the audit committee is significantly less pronounced in the two-tier system than in the one-tier system, particularly with regard to its relationship with internal auditors, due to the organisational separation of the management board and the supervisory board. In addition, it has a social market economy system with increased stakeholder orientation and extensive opportunities for employee co-determination (e.g., Bottenberg *et al.*, 2017). Consequently, this study focused on a two-tier board system with a predominantly stakeholder-oriented structure, which differs fundamentally from the Anglo-Saxon shareholder orientation in which the one-tier systems could lead to more capital-driven results and less sensitivity to

sustainability-related issues. The results of this study may be influenced by specific characteristics inherent in the German context, such as a higher sensitivity to sustainable supply chain issues than other countries due to German national supply chain act implemented in 2021. Despite several limitations related to the German context, the findings can nevertheless be meaningfully generalised to the broader European context. This generalisability is primarily justified by the fact that the CSRD and CSDDD apply to companies across Europe and that the three parties are confronted with the same regulatory requirements. However, it is important to note that the implications for the three parties may differ in European countries with a one-tier system versus those with a two-tier system due to the factors outlined above. Since the participants in this study were not limited by specific characteristics (e.g. only those working in the automotive sector), there are further limitations regarding having a focus on particular sectors, industries or company size. As a result, this study cannot provide detailed comparative analyses of results across different sectors or different-sized companies.

Furthermore, the survey was limited due to potential response bias, as the parties were asked to assess not only the performance of the other parties concerned but also their own performance or themselves. This resulted in an overestimation of the parties' own performance, especially when assessing competencies and collaboration, which may have distorted the results. These problems arising from self-assessment bias due to low levels of accountability (Lerner and Tetlock, 1999) may affect not only inter-party collaboration but also the implementation of sustainability regulations and the overall quality of corporate governance. For instance, the overestimation of one's own competencies could lead to an underestimation of the new sustainability-related requirements, resulting in inadequate implementation of sustainability-related duties. This, in turn, may cause the parties to perform sustainability-related oversight insufficiently, as they may falsely signal expertise that they do not actually possess. Moreover,

such overconfidence could foster opportunistic behaviour or mutual accusations among the parties, thereby significantly impairing effective inter-party collaboration.

An additional limitation has emerged in recent months due to the recent EU Commission's omnibus package. This initiative includes, among other things, a significant reduction in the scope and corresponding requirements of the CSRD. Since the survey underlying this study was conducted prior to the announcement of the omnibus initiative, the findings may have been partially affected by these forthcoming regulatory changes. Nevertheless, the insights and recommendations provided in this study remain highly relevant to the ongoing discourse on the appropriate oversight of sustainability-related data. This is because the fundamental responsibilities of the three monitoring parties continue to apply, albeit in a partially weakened form (e.g. no mandatory transition to reasonable assurance from 2028), and sustainability-related co-operation among them remains urgently needed.

6.2 Recommendations for future research

Based on the findings, several recommendations for further research can be offered. Recommendations concerning the triadic relationship between monitoring authorities are both methodological and content-related.

Building on the previously discussed insufficiency of prior qualitative studies (McNulty *et al.*, 2013), researchers are encouraged to intensify qualitative research in this area and simultaneously counter the existing limitations of this study. The use of in-depth interviews involving multiple audit committee members, internal auditors and external auditors would be particularly illuminating, as this would yield additional and more profound insights into the collaborations between these parties. These interviews could, for instance, focus on how the parties specifically approach the monitoring and assurance of complex environmental issues,

such as water and marine resources or biodiversity and ecosystems, how they close existing gaps in corresponding expertise, the extent to which they co-operate with external environmental specialists, the extent to which they coordinate with other parties, or what problems still exist in practice. Mixed-method studies are also recommended, as they would complement the prevailing quantitative research approach in this field with a qualitative component (e.g. Mahmood *et al.*, 2018). Data could be collected through questionnaires or interviews, and sections of the responses could be transformed into quantitative data followed by regression analyses (e.g. Ackermann, 2017). In this way, future researchers may find new results concerning how monitoring authorities can relieve each other, with a view to advanced sustainability-related requirements within a lean auditing process (Eulerich *et al.*, 2015). To address the limitation associated with response bias, case studies should be conducted within selected individual companies that include all three parties involved. Case studies serve as a critical instrument to identify and mitigate overestimation bias by providing context-rich insights that reveal discrepancies between perceived and actual practices. Through triangulation and in-depth analysis, they make participants more accountable (Lerner and Tetlock, 1999), allowing for a more nuanced understanding of actors' roles and limitations, thereby fostering reflective self-assessment and more accurate representations of organisational realities. In this context, future research should also focus on other but related content such as how the three parties collaborate in overseeing ICS and RMS within selected firms – specifically, how monitoring processes and procedures are structured – and the extent to which (encompassing frequency and level of detail) the oversight bodies communicate with one another.

Since this study was conducted in a German context, an alternative or expanded setting would be of interest for further research. Such an expansion should encompass a broad range of EU countries, particularly in the context of European sustainability regulations, as a cross-national setting would reveal country-specific nuances in the collaboration of the three parties and

extend the findings outside of Germany. Settings beyond the EU should also be considered, as the significance of sustainability-related issues and corresponding sustainability reporting is steadily increasing globally in regions and countries such as the United States. This could be particularly enlightening in various corporate governance structures (e.g. the one-tier system in the United States), as the three bodies, in comparison to the German two-tier system, operate under different foundational structures and may exhibit distinct behaviours.

6.3 Regulatory recommendations

In light of the existing and insufficient competencies among audit committee members, internal auditors and external auditors, policymakers should consider mandating the presence of sustainability expertise within each of the three parties, particularly those focusing on environmental sustainability. While this could be achieved in audit committees by integrating a sustainability expert, similarly to how financial experts are integrated (Velte, 2023), external auditors may need to expand the content of their examinations to include sustainability-related items. Furthermore, the establishment of CSR committees, which currently exist on a voluntary basis in some firms, could be driven by regulatory initiatives. To enhance sustainability-related oversight quality, these committees should be closely aligned with audit committees and foster strong inter-committee collaboration. Internal audit remains relatively unregulated worldwide^[51], which should prompt legislators to consider mandating sustainability-related certificate programmes for internal auditors. Additionally, reporting obligations concerning the competencies within the internal audit function should be contemplated, as this would incentivise companies to equip their internal audit function with adequate competencies and resources. In line with recent regulatory developments (see, e.g. Carungu *et al.*, 2025),

⁵¹ Although there are globally recognized standards and guidelines developed by professional associations and organizations (global internal audit standards), there is neither a uniform regulatory authority nor a set of established standards that is internationally legally binding.

legislators and standard setters such as the Global Sustainability Standards Board, the International Sustainability Standards Board and the European Financial Reporting Advisory Group should advocate for internationally harmonised rules for the parties to enhance the quality of sustainability-related data oversight not only within the EU but also globally. This could be achieved, for instance, through closer collaboration among these standard setters in the form of regular meetings, during which issues such as materiality, overlapping topics and opportunities for harmonisation are discussed and negotiated.

Another crucial regulatory component aimed at enhancing sustainability oversight would be the mandatory annual audit of ICS and RMS by external auditors. Similarly, internal auditors could be encouraged to periodically monitor management systems, as they have a major impact on sustainability outputs (Su *et al.*, 2022) and internal audit effectiveness has a significant positive relationship with sustainability assurance (Amoako *et al.*, 2023). This would alleviate the audit committee's time burden from being solely responsible for ICS and RMS oversight. Overall, legislators could also encourage the three parties to develop and implement a co-ordinated audit programme. This programme could begin with a joint risk assessment of all sustainability-related processes, controls and management systems, in which external experts (e.g. climate scientists) would be mandatorily involved. Based on this assessment, audit priorities could be jointly defined under the strategic oversight of the audit committee. While internal auditors and external auditors carry out their co-ordinated and complementary audit procedures, regularly held audit meetings could serve as a platform from which to iteratively adjust the monitoring measures in response to preliminary findings or emerging risks and to involve external experts in particularly critical or highly complex issues. It is important to note, however, that these recommendations are significantly easier to implement within a one-tier system than a two-tier system. In a one-tier system, the board is fully responsible for corporate oversight, including having a close relationship with internal auditors, which facilitates activities such as co-

ordinated audit programmes. By contrast, the audit committee in a two-tier system functions as an independent oversight body and monitors the management board from a more detached position, making such co-ordination more complex.

In light of the aforementioned omnibus initiative, it is advisable for EU regulators to refrain from further weakening or diluting existing provisions, as this could undermine the objectives of the Green Deal and exacerbate the prevailing legal uncertainty among affected companies and oversight bodies. While arguments in favour of reducing bureaucratic burden and simplifying regulations are understandable, regulators should remain committed to their self-imposed targets to maintain their own credibility as regulators, particularly the goal of achieving climate neutrality by 2050. With regard to the potential impact of the omnibus initiative on stakeholder pressure, one could argue that weakened and simplified regulations may, to some extent, reduce external pressure. However, many stakeholders – particularly banks, insurance companies, and investors – are expected to continue demanding ESG-related information, especially climate-related data. Therefore, affected companies, as well as the three monitoring bodies, should not scale back their sustainability-related efforts.

6.4 Practical recommendations

The three parties should seriously consider enhancing not only their sustainability-related competencies but also a combination of factors such as available resources and collaboration. For this reason, the parties' enhancements should encompass both rigorous sustainability-related training, including enhancing digital knowledge (De Silva *et al.*, 2024), developing existing personnel (see, Christ *et al.*, 2021 for a study on internal auditors) particularly in the environmental domain and the recruitment of new personnel with related sustainability competencies (e.g. biologists or climate scientists). A comparison of the need for improvement within the individual sub-areas of sustainability shows that the corresponding gaps in skills and

resources are most serious in environmental goals, while social areas have comparatively less need for improvement. This is probably because environmental aspects were, until now, not part of the daily working routines of the three parties and were therefore not part of their competence and activity profiles (Velte, 2024a). Although sustainability-related investments, such as hiring environmental experts, are extremely important, there are major financial barriers for many companies, especially in times of multiple global crises. In particular, compared to large corporations, SMEs and small or medium-sized audit firms often struggle to achieve appropriate levels of competencies and resources to fulfil sustainability-related requirements due to financial and personnel constraints. Furthermore, existing ICS and RMS at SMEs are generally weaker than in PIEs, as previous EU regulations were aimed at PIEs. Consequently, an appropriate expansion of these management systems to include sustainability-related aspects is particularly challenging for SMEs and demands even more resources. For SMEs, this will likely lead to a greater reliance on external consulting firms and environmental experts, which could result in long-term dependency. This dependency may have negative consequences for SMEs, as these services are difficult to replace in practice and can lead to increased financial burdens. The parties should, therefore, ensure that they close sustainability related competence and resource gaps in a targeted and logical manner, considering potential synergy with the other parties.

7. Conclusion

This survey-based research was conducted to gain insights into sustainability-related collaboration among audit committees, internal auditors and external auditors by answering the following *RQs*:

RQ1: What competencies and resources do the three parties possess to ensure adequate monitoring of sustainability reports and related management systems based on the CSRD and CSDDD?

RQ2: How can collaboration and mutual support between the three parties regarding these monitoring duties be improved?

Given the prevailing focus on financial reporting and the predominance in prior research of quantitative methods, which are often limited in their ability to capture the complexities of interactions and social dynamics among the authorities (McNulty et al., 2013), this study adopted an approach with qualitative components to examine sustainability-related monitoring by these three parties. This focus is particularly relevant in light of the CSRD and CSDDD, which indirectly place expanded responsibilities on the parties, especially in the environmental domain. The study also addressed a gap in existing qualitative research, which tends to examine only bilateral relationships (Sulaiman, 2017), thereby overlooking the capabilities and dynamics of trilateral collaboration.

Based on SAT (Hill and Jones, 1992) and RBT (Barney, 1991; Grant, 1991), data collection was carried out via online questionnaires completed by 112 German professionals from both PIEs and non-PIEs as well as the big four and small and medium-sized audit firms. Germany was chosen for its economic significance, two-tier board system and strong stakeholder-driven reporting tradition.

The results pertaining to *RQ1* showed that, while all parties possess substantial financial and industry expertise, as well as the basic resources needed to fulfil their tasks related to financial data, there are various deficits in their ability to adequately meet sustainability requirements. These deficiencies are evident in the context of social and environmental issues, particularly water and marine resources as well as biodiversity and ecosystems. The findings complement previous literature, which predominantly highlights the positive linkage of individual

capabilities (e.g. financial expertise) with financial audit and CSR assurance, by drawing attention to capability gaps. In this context, increased stakeholder pressure according to SAT compels monitoring bodies to address these gaps in line with RBT in an effective and efficient manner. Regarding *RQ2*, multiple options for sustainability-related collaboration and mutual support were identified to strengthen overall sustainability oversight while generating benefits for all parties. These benefits could be realised by improving communication and information sharing with a focus on sustainability-related issues among all three bodies or, for instance, in line with RBT, by co-ordinating the involvement of ecologists or biologists to assess the impact of company activities on biodiversity. These findings extend previous literature, which has primarily examined bilateral relationships among the parties involved and their influence on financial reporting oversight, by shifting the focus towards sustainability-related reporting and incorporating the interaction of all three parties. The audit committee plays a co-ordinating role within this tripartite relationship and often depends on the work (e.g. audit of sustainability-related ICS) done by internal and external auditors. However, parties tend to overestimate their own performance, shift the responsibility for adequate assurance of sustainability-related data onto others and demand assistance from one another. This may not only hinder the development of competencies in environmental and social domains but may also lead to resentment among the parties involved, ultimately obstructing effective collaboration. This study contributes to SAT by demonstrating that ambiguous accountability structures and biased self-evaluations among oversight bodies can obstruct co-ordinated action and weaken the quality of sustainability-related oversight. It also refines RBT by highlighting how sustainability-specific challenges create new resource dependencies, particularly those related to environmental expertise. The findings demonstrate that co-ordinated collaboration and strategic resource alignment are essential for addressing the complex demands of sustainability regulation.

Based on these findings and limitations of this study, the paper offers multiple recommendations to researchers, regulators and practitioners. Future researchers are encouraged to carry out more qualitative research on the triadic relationship between the parties with a particular emphasis on sustainability-related issues. It is recommended that regulators consider mandating sustainability expertise within audit committees and among internal auditors and external auditors to ensure the appropriate monitoring of sustainability-related processes and data. Practitioners are advised to enhance their competencies through training and the recruitment of experts or by conducting aligned assurance of sustainability-related ICS and RMS since ICS provide the first assurance for sustainability-related matters (Harasheh and Provasi, 2023).

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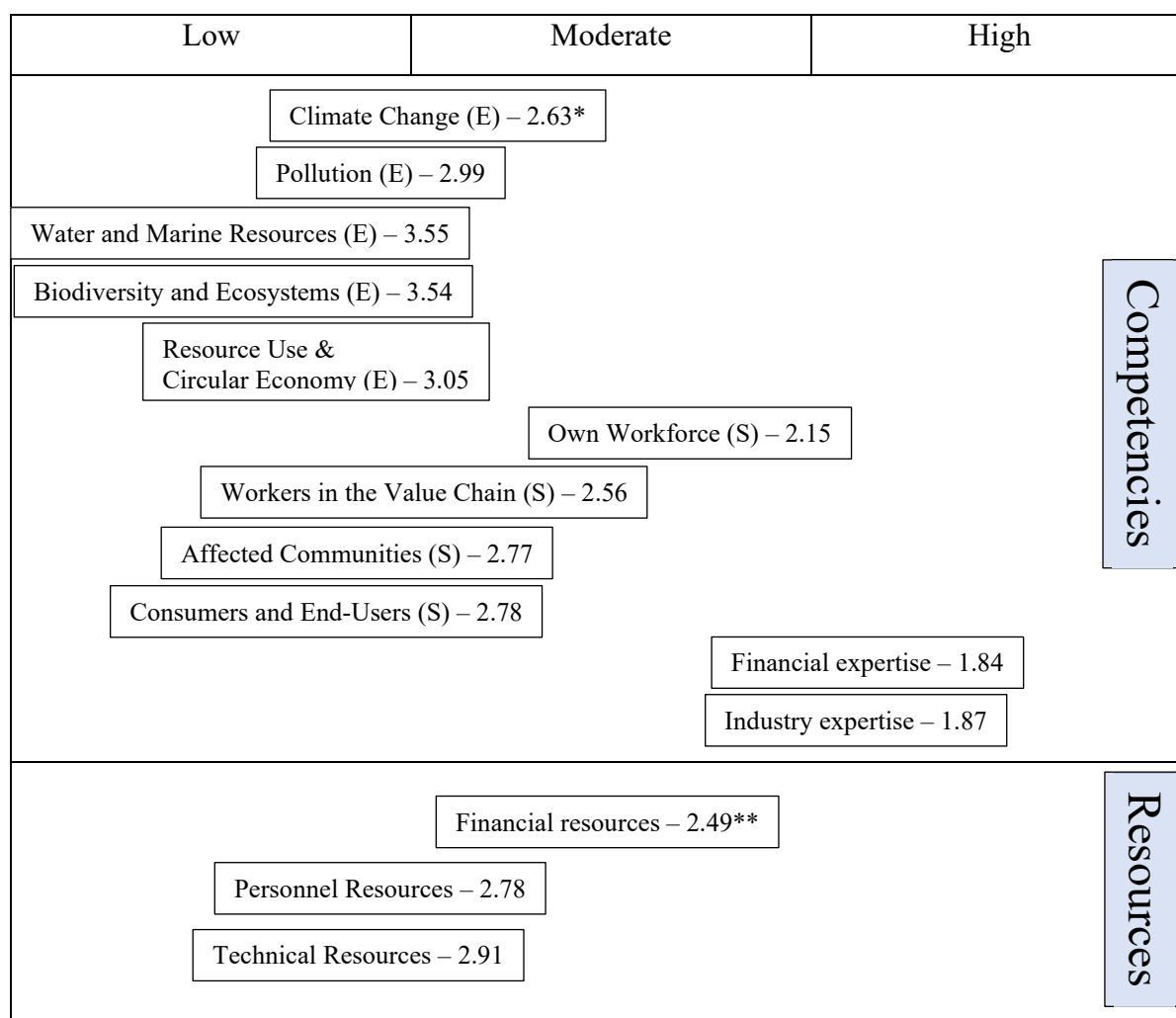


Figure 1: Capabilities of the parties

* respectively average of responses on professional expertise and practical experience

** respectively average of responses to fulfil CSRD and CSDDD

	CSRD	CSDDD
Scope and first application	• <u>Fiscal year 2024:</u> big capital market-oriented corporations with > 500 employees (NFRD-related firms) • <u>Fiscal year 2025:</u> big corporations* (> 250 employees, revenues > €50 mio., total assets > €25 mio.; at least 2 of the 3 criteria are met) • <u>Fiscal year 2026:</u> capital market-oriented small and medium-sized corporations (> 10 employees, > €0,9 mio. revenues, > €0,45 mio. total assets; at least 2 of the 3 criteria are met); option to start with business year 2028 • <u>Fiscal year 2028:</u> Non-EU-(group) corporations > €150 mio. (consolidated) revenues with CSRD-required EU subsidiaries or branch within the EU with revenues > €40 mio.	Companies from EU-member states: • <u>2027:</u> corporations with > 5.000 employees and revenues > €1.500 mio. • <u>2028:</u> corporations with > 3.000 employees and revenues > €900 mio. • <u>2029:</u> corporations with > 1.000 employees and revenues > €450 mio. Companies from non-EU-member states that operates within the EU: • <u>2027:</u> corporations with revenues > €1.500 mio. • <u>2028:</u> corporations with revenues > €900 mio. • <u>2029:</u> corporations with revenues > €450 mio. Further: companies within the EU with franchise or license agreements with independent companies from non-EU-member states with license fees > €22,5 mio. and revenues > €80 mio.
Duties for corporations and Framework	• Publication of an extensive sustainability report as a mandatory component of the management report • Mandatory application of the European Sustainability Reporting Standards (ESRS) • industry-specific ESRS, Listed (L)SME, and Voluntary (V)SME standards	• Implementation of sufficient sustainability-related due diligence in the company's value chain that needs to be explained in the CSRD sustainability report
Impact on monitoring parties	• Monitoring/auditing new sustainability reports in line with all requirements of the CSRD • Substantive assurance obligation by the external auditor • Member states may choose to engage an additional auditor or authorize other external accredited assurance providers • First step: limited assurance; second step: reasonable assurance level in 2028	• Monitoring due diligence throughout a company's value chain, including underlying sustainability-related internal control systems and risk management systems

Table I: Overview CSRD and CSDDD (before omnibus simplification package)

Section	Topic	Data asked for	Type of questions
A:	Personal information	Personal data; e.g., age, gender.	Closed and open
B:	Individual information	Party-specific data e.g., Audit Committee: role as a financial expert: yes or no; Internal Auditors: size and industry of the company; External Auditors: big four: yes or no.	Closed (yes / no) and open
Part No. 1			
C:	Competencies	Competence-specific data like professional expertise (academic focus) and practical experience (focus on working experience) within the domains environmental (E) and social (S), e.g., E: climate change, pollution etc. S: own workforce, workers in the value chain etc..	Closed (5-point Likert scale)
D:	Resources	Resource-specific data; e.g., financial, personnel or technical resources.	Closed (5-point Likert scale)
E-G:	Responsibilities	Data regarding responsibilities for the audit of sustainability report or internal control and risk management systems including potential new expectation gap.	Closed (5-point Likert scale) and open
Part No. 2			
H-I:	Collaboration	Data regarding mutual collaboration potential between the parties; e.g., concrete suggestions for improvement in cooperation, assessments on the benefit of own work and work of other parties etc..	Closed (5-point Likert scale) and open

Table II: Questionnaire structure and key topics

	Audit committees	Internal auditors	External auditors	Total
Financial expertise	1.94	2.03	1.83	1.84
Industry expertise	1.55	1.85	1.91	1.87
Professional expertise (environment)				
Climate change	2.48	2.76	2.46	2.55
Pollution	2.85	2.88	3.00	2.92
Water and marine resources	3.58	3.58	3.33	3.47
Biodiversity and ecosystems	3.36	3.64	3.30	3.42
Resource use and circular economy	2.85	3.03	2.93	2.94
Practical experience (environment)				
Climate change	2.61	2.85	2.70	2.71
Pollution	3.55	2.97	3.22	3.05
Water and marine resources	2.91	3.64	3.65	3.62
Biodiversity and ecosystems	3.52	3.82	3.63	3.65
Resource use and circular economy	2.91	3.18	3.33	3.16
Professional expertise (social)				
Own workforce	2.06	2.12	2.17	2.13
Workers in the value chain	2.48	2.48	2.50	2.49
Affected communities	2.39	2.94	2.70	2.68
Consumers and end-users	2.33	3.00	2.76	2.71
Practical experience (social)				
Own workforce	2.15	2.21	2.15	2.17
Workers in the value chain	2.61	2.67	2.63	2.63
Affected communities	2.58	3.12	2.87	2.86
Consumers and end-users	2.58	3.03	2.89	2.84

Table III: Parties' competencies within environmental and social domain

	Audit committees	Internal auditors	External auditors	Total
Resources to fulfil CSRD requirements				
Financial resources	2.52	2.70	2.11	2.40
Personnel resources	2.61	3.03	2.67	2.76
Technical resources	2.91	3.06	2.78	2.90
Resources to fulfil CSDDD requirements				
Financial resources	2.67	2.73	2.41	2.58
Personnel resources	2.70	3.03	2.70	2.79
Technical resources	3.06	2.88	2.85	2.92

Table IV: Parties' financial, personnel and technical resources to fulfil ESG requirements

	Audit committees	Internal auditors
Extent of existing collaboration	3.25	3.18
Satisfaction with existing collaboration	3.06	2.64
Benefit of audit committee's work for the effectiveness and efficiency of internal auditors	2.72	3.15
Benefit of audit committee's work for the effectiveness and efficiency of the internal auditors with regard to CSRD and CSDDD	2.75	3.15
Relief potential for internal auditors	3.53	3.48
Benefit of internal auditor's work for the effectiveness and efficiency of audit committees	2.38	2.53
Benefit of internal auditor's work for the effectiveness and efficiency of audit committees with regard to CSRD and CSDDD	2.44	2.44
Relief potential for audit committees	2.50	2.64

Table V: Audit committees' and internal auditors' assessments on collaboration and mutual relief potential

	Audit committees	External auditors
Extent of existing collaboration	2.69	3.11
Satisfaction with existing collaboration	2.66	3.15
Benefit of audit committee's work for the effectiveness and efficiency of the external auditors	2.64	2.60
Benefit of audit committee's work for the effectiveness and efficiency of the external auditors with regard to CSRD and CSDDD	2.78	2.63
Relief potential for external auditors	3.34	2.93
Benefit of external auditor's work for the effectiveness and efficiency of audit committees	1.88	1.84
Benefit of external auditor's work for the effectiveness and efficiency of audit committees with regard to CSRD and CSDDD	2.02	1.88
Relief potential for audit committees	2.22	1.96

Table VI: Audit committees' and external auditors' assessments on collaboration and mutual relief potential

	Internal auditors	External auditors
Extent of existing collaboration	3.73	3.80
Satisfaction with existing collaboration	3.15	3.17
Benefit of external auditor's work for the effectiveness and efficiency of the internal auditors	3.03	2.37
Benefit of external auditor's work for the effectiveness and efficiency of the internal auditors with regard to CSRD and CSDDD	3.06	2.40
Relief potential for internal auditors	3.06	2.78
Benefit of internal auditor's work for the effectiveness and efficiency of external auditors	2.58	2.63
Benefit of internal auditor's work for the effectiveness and efficiency of external auditors with regard to CSRD and CSDDD	2.58	2.70
Relief potential for external auditors	2.67	2.89

Table VII: Internal auditors' and external auditors' assessments on collaboration and mutual relief potential

Annex 3: How Do Internal Auditors, External Auditors, and Audit Committees Monitor Sustainability-Related Internal Control and Risk Management Systems? An Empirical Study. (Article 3)

Abstract⁵²

This study examines how internal auditors, external auditors, and audit committees monitor sustainability-related internal control and risk management systems (ICRMSs). It explores their procedures and emphasizes how the parties coordinate to ensure high-quality sustainability reporting. Using an exploratory qualitative approach, the study is based on 12 semi-structured expert interviews with internal auditors, external auditors, and audit committee members in Germany. Systems theory and resource-based theory are utilized to conceptualize sustainability-related monitoring as both a systemic process between the three parties and a resource-based capability to improve sustainability reporting quality. The study shows that internal auditors increasingly embed sustainability aspects into their audit procedures and act as catalysts for sustainability-related ICRMSs by identifying system weaknesses and initiating improvements. External auditors adapt established ICRMS-related audit procedures to sustainability issues by using proprietary audit tools and in-house environmental expertise, promoting more robust and audit-ready structures. Audit committees strengthen sustainability-related monitoring by commissioning readiness assessments of sustainability-related ICRMSs, shaping the sustainability focus of audit plans by involving the sustainability department, and instructing follow-up audits to be conducted on identified weaknesses. By strengthening the systems in this manner, the reliability, completeness, and accuracy of reported sustainability-related information are enhanced by coordinated procedures from all three parties, thereby improving the overall quality of sustainability reporting. This study is among the first to

⁵² The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

empirically investigate the status quo of sustainability-related ICRMS monitoring by these three bodies.

Keywords: Internal audit, External audit, Audit Committee, Internal control system, Risk management system

1. Introduction

As sustainability reporting becomes increasingly codified through international frameworks,⁵³ its reliability is no longer a voluntary matter of corporate reputation (Gomez-Trujillo et al., 2020) but a core element of a company's internal control and risk management systems (ICRMSs⁵⁴). In this context, ICRMSs – traditionally designed to address financial reporting risks – are increasingly essential for ensuring the reliability of sustainability reporting (e.g., Harasheh & Provasi, 2023). Because sustainability reporting expands the scope and complexity of financial reporting,⁵⁵ ICRMSs must support consistent sustainability-related data generation, robust control activities, and systematic identification of sustainability-related risks. Accordingly, appropriately designed sustainability-related ICRMSs could enhance the reliability, completeness, and accuracy of reported sustainability-related information, thereby improving the overall quality of sustainability reporting. Recent regulatory developments

⁵³ For example, the sustainability standards developed by the International Sustainability Standards Board or the European Sustainability Reporting Standards (ESRS) developed by the European Financial Reporting Advisory Group.

⁵⁴ Researchers typically distinguish internal control systems (ICSs) from risk management systems (RMSs) grounded in enterprise risk management (ERM) based on scope and purpose. An ICS is conceptualized as a process-oriented mechanism designed to ensure reliable business reporting and regulatory compliance (Cohen et al., 2017), whereas an RMS/ERM represents a firm-wide, strategic approach to identifying and managing a broad portfolio of risks (Beasley et al., 2005). This distinction is grounded in frameworks published by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), with the Internal Control – Integrated Framework (COSO, 2013) defining the components of an ICS and the Enterprise Risk Management – Integrating with Strategy and Performance framework (COSO, 2017) articulating ERM's strategic orientation. Because all three parties are responsible for monitoring both systems (ICSs and RMSs), the paper uses the abbreviation ICRMSs as a simplified and uniform reference to them.

⁵⁵ Yet organizations face substantial sustainability-related challenges, including immature sustainability-related data, limited standardization for non-financial metrics, and capability gaps in functions unaccustomed to sustainability-related control and risk processes.

intensify these demands by requiring external assurance of sustainability reports and comprehensive risk assessments across value chains. In this context, internal auditors, external auditors,⁵⁶ and audit committees play significant roles in ensuring the appropriateness and effectiveness of ICRMSs as they monitor financial and sustainability reporting. As emerging sustainability-related regulations and extended cross-functional responsibilities between the parties create a heightened need for coordinated monitoring, a triadic sustainability-related collaboration becomes particularly important, calling for more comprehensive research. Although prior qualitative research has addressed how internal auditors, external auditors, and audit committees monitor financial ICRMSs (e.g., Soh & Martinov-Bennie, 2011, based on internal auditors), evidence of their roles in sustainability-related ICRMSs remains limited. Existing studies tend to focus on a single monitoring party (e.g., Bouten & Hoozée, 2025, based on external auditors) while largely overlooking their joint and coordinated monitoring practices. Consequently, little is known about the status quo of sustainability-related ICRMS monitoring, which procedures are applied, and how the three monitoring parties coordinate their efforts to support high-quality sustainability reporting.

Drawing on systems theory (Luhmann, 1984; von Bertalanffy, 1968) and resource-based theory (RBT) (Barney, 1991; Grant, 1991) as complementary perspectives to address these research gaps, this study is guided by two research questions (RQs):

*RQ1: What specific procedures, practices, and interactions characterize how internal auditors, external auditors, and audit committees monitor sustainability-related ICRMSs?*⁵⁷

RQ2: To what extent can the three parties enhance the quality of sustainability reporting via monitoring of sustainability-related ICRMS?

⁵⁶ Within this study, the term “external auditor” includes both the financial auditor and the sustainability assessor.

⁵⁷ In this study, procedures refer to formally documented processes that specify how sustainability-related monitoring activities are intended to be carried out, whereas practices denote the actual implementation and day-to-day execution of these procedures in organizational settings.

Using an exploratory qualitative approach, 12 semi-structured expert interviews were conducted with internal auditors, external auditors, audit committee members, and sustainability consultants in Germany working for listed public interest entities (PIEs) or big four audit firms. As the EU's largest economy and an influential driver of corporate sustainability regulations (Gerwing et al., 2022), Germany has seen substantial developments in how companies implement and monitor sustainability-related ICRMSs. Its mandatory two-tier board system for corporations, with clearly defined interdependent roles for internal auditors, external auditors, and audit committees, offers a unique setting for examining coordinated monitoring practices (Bottenberg et al., 2017).

The study found that internal auditors integrate sustainability-related aspects into their actual ICRMS audit procedures through iterative, sustainability risk-based planning and close coordination with sustainability departments (e.g., incorporating proactively reported sustainability-related risks into their audit plan). External auditors apply standardized ICRMS audits but adapt these to sustainability-related topics using proprietary audit tools and incorporating in-house environmental specialists. Audit committees operationalize their strategic role, for example, by commissioning readiness assessments⁵⁸ of sustainability-related ICRMSs performed by internal or external auditors or shaping internal audit plans through discussions with the internal audit head to focus on sustainability-related risks and involving the sustainability department. Furthermore, the study shows that monitoring by all parties enhances sustainability reporting quality through distinct mechanisms: internal auditors improve sustainability-related ICRMSs' design and effectiveness through their catalyst role (e.g. Rahayu et al., 2020), such as by sharing identified weaknesses within sustainability-related ICRMSs and initiating incremental improvements. External auditors introduce sustainability-related benchmarking from other companies and promote audit-ready structures through

⁵⁸ Readiness assessments are evaluations that rate ICRMSs on a scale (e.g., levels 1–5) and provide a practical basis for further system development. Interviewees described such readiness assessments as a valuable and less resource-intensive alternative to full-scope system audits (see Section 5 for further details).

standardized ICRMS audits. Audit committees, acting as moderators by coordinating internal and external auditors' monitoring procedures, ensure follow-ups on sustainability-related weaknesses by instructing additional sustainability-related audit procedures to be performed by internal or external auditors.

This study contributes to the emerging discourse on the monitoring of sustainability-related ICRMSs (e.g., Canning et al., 2018; Rakipi & D'Onza, 2024) as one of the first to empirically investigate the status quo of such monitoring by all three monitoring bodies while underscoring the broader importance of robust sustainability-related ICRMSs for high-quality sustainability reporting.

The paper is structured as follows: Section 2 introduces the theoretical framework; Section 3 reviews prior literature; Section 4 describes the research design; Section 5 reports the findings; Section 6 presents a discussion; and Section 7 is the conclusion.

2. Theoretical Framework

This study integrates systems theory (Luhmann, 1984; von Bertalanffy, 1968) and RBT (Barney, 1991; Grant, 1991) as complementary perspectives. The combination of these two theories provides a significant theoretical value to this study, enabling sustainability-related ICRMS monitoring to be explained both as a systemic process between internal auditors, external auditors, and audit committees and as a resource-based capability. Whereas systems theory emphasizes informal dynamics and feedback between the three parties in monitoring sustainability-related ICRMSs, RBT highlights the importance of audit-related resources and capabilities in enabling effective sustainability-related monitoring.

2.1. Systems theory

Systems theory (Luhmann, 1984; von Bertalanffy, 1968) views organizations as complex, self-regulating systems composed of interdependent subsystems. Based on the fundamentals of general systems theory (von Bertalanffy, 1968) and in the monitoring context (Adams, 1993), ICRMSs are understood as systems designed to minimize sustainability-related business risks and to ensure that sustainability-related reporting is aligned in an efficient, effective, and economical manner (Simnett et al., 2009). Within this systems perspective, both ICRMSs and internal auditors, external auditors, and audit committees can be conceptualized as subsystems that interact with sustainability-related ICRMSs and sustainability reporting structures. This interaction consists of the three parties being required to monitor and assess the adequacy and effectiveness of the existing sustainability-related ICRMSs, which form the fundamental basis for the data disclosed in sustainability reports (Simnett et al., 2015). However, the role of the three parties is not limited to observation and evaluation; rather, through structured feedback loops and formal reporting channels (von Bertalanffy, 1968), they actively influence not only the design, refinement, and performance of sustainability-related ICRMSs but also the monitoring activities of the other parties. For instance, internal auditors may provide early warnings on risks identified in their audit procedures on sustainability-related ICRMSs, prompting adaptive responses by the external auditors and the audit committee (Eulerich et al., 2019). In addition, external auditors may report on weaknesses within processes and controls related to determining a company's carbon emissions, leading to adjustments within the monitoring procedures of the audit committee (Cohen et al., 2004). Furthermore, audit committees may initiate additional audit procedures to be performed by internal or external auditors based on past findings or suddenly occurring risks, such as a natural catastrophe near the company site.

In this context, systems theory supports *RQI* by emphasizing the crucial role of informal dynamics and feedback loops – based on the concrete procedures performed by each monitoring party – in enabling responsive governance (Adams, 1993) by sustainability-related ICRMS

monitoring. Furthermore, systems theory supports *RQ2* by conceptualizing internal auditors', external auditors', and audit committees' contributions to the continuous adaptation of sustainability-related ICRMSs to evolving requirements (Christensen et al., 2021), thereby ultimately enhancing the quality of sustainability reporting.

2.2. Resource-based theory

RBT (Barney, 1991; Grant, 1991) complements systems theory by emphasizing the strategic role of resources in achieving adequate monitoring of sustainability-related ICRMSs and thus higher-quality sustainability reporting. In this perspective, internal auditors may draw on their process- and control-related expertise and resources (e.g., software for transparently displaying process and control structures) when monitoring newly introduced processes (Oussii & Boulila Taktak, 2018). External auditors may build on this by combining the internal audit's findings with industry benchmarks derived from comparable firms, based on their industry expertise and resources to deal with sustainability-related issues (e.g., environmental experts within external audit teams). Audit committees, in turn, may evaluate the identified weaknesses and improvement proposals and, employing their expertise in strategic coordination, initiate optimizations in the company's processes for determining sustainability-related data (Al-Shaer & Zaman, 2018). In this way, appropriate sustainability-related ICRMS monitoring with sufficient resources enhances the quality of both the ICRMS and sustainability reporting. Consequently, internal auditors, external auditors, and audit committees serve not only as ex post monitoring bodies (Cohen et al., 2004) but also as contributors to sufficient sustainability-related ICRMSs and high-quality sustainability reporting.

Furthermore, RBT emphasizes that adequate sustainability-related monitoring is only possible when corresponding resources are configured and coordinated efficiently and effectively

(Barney, 1991). For instance, if the external auditor team includes a climate⁵⁹ expert for application of climate scenario analyses to derive necessary sustainability-related internal controls or risk management adjustments, the other two parties should coordinate their collaboration with the external auditors in a manner that allows them to benefit from this expertise (Wehrhahn, 2025) and, ideally, enhances the overall quality of sustainability-related reporting and corresponding monitoring. Misalignments and resource gaps – such as skill gaps within sustainability domains or fragmented collaboration – may prevent organizations from fully leveraging the potential of these actors (Grant, 1991) for adequate sustainability-related monitoring.

With respect to *RQ1*, RBT elucidates how particular monitoring procedures performed by the parties embody the deployment and further development of organizational resources while also indicating where capability gaps may undermine monitoring quality. Regarding *RQ2*, this perspective highlights that sustainability-related monitoring enhances sustainability reporting quality when it effectively leverages rare and value-creating capabilities.

3. Literature Review

In line with this study's objectives and qualitative research approach, the following section provides an overview of relevant qualitative studies that shed light on internal auditors', external auditors', and audit committees' roles in monitoring ICRMSs. To identify and address existing research gaps, the review is structured in two parts. First, it presents findings from studies that examine the roles of internal auditors, external auditors, and audit committees in monitoring ICRMSs in the context of financial reporting. This initial step is important, as the insights from these studies can be applied to sustainability-related ICRMS monitoring for

⁵⁹ Given the overarching importance of the European Green Deal's objective of achieving climate neutrality by 2050, the examples used in this study focus on climate-related issues (e.g., carbon emissions), whereas other environmental and social topics receive comparatively less emphasis.

several reasons. First, both financial and sustainability-related systems share common corporate governance objectives to ensure the reliability, completeness, and accuracy of reported information (Simnett & Huggins, 2015) through well-designed control structures and risk management processes. Second, the three monitoring parties fulfil analogous monitoring functions in both contexts, even though the subject matter of sustainability data is broader and less standardized compared to financial data, which implies that sustainability-related information is often qualitative in nature and therefore less amenable to objective measurement. On the one hand, this limits the effectiveness of ICRMSs; on the other hand, it also reduces comparability with the financial components of ICRMSs. However, this functional analogy aligns with systems theory, which assumes that monitoring roles remain relatively stable across different types of informational subsystems (Luhmann, 1984). Third, many conceptual frameworks underpinning internal control mechanisms, such as the Committee of Sponsoring Organizations of the Treadway Commission (COSO) model (COSO, 2013), are increasingly being extended to encompass sustainability-related processes and risks, which provides a theoretical bridge between financial and non-financial reporting systems. In RBT terms, this extension reflects the organization's ability to redeploy existing internal control resources and capabilities toward emerging reporting domains (Barney, 1991). Finally, organizations often integrate financial and sustainability control mechanisms within their enterprise risk management so that the underlying monitoring principles and inter-organizational relationships among monitoring parties exhibit strong similarities across both domains, possibly resulting in synergies in monitoring financial and sustainability-related ICRMSs. However, there is a limitation regarding the transferability of empirical research results, particularly for our German setting, as most studies on the monitoring of financial data-related ICRMSs have been conducted within the U.S. regulatory framework, based on the Sarbanes Oxley Act (SOX) (Krishnan, 2005). Consequently, the direct applicability of these insights to contexts outside the

United States is limited because external auditors are not required to perform, for example, a SOX-equivalent assessment of the adequacy and effectiveness of an internal control system.

Moreover, sustainability-related ICRMS monitoring by external auditors is not mandatory in most regimes and may therefore be carried out by other external parties (e.g., external environmental verifiers). In such settings, a company's internal monitoring resources and capabilities become even more critical, underscoring RBT's emphasis on internal strength rather than regulatory requirements as the primary basis for effective oversight. Consequently, in a second step, the literature review outlines the current state of research regarding the roles of the three parties in the context of sustainability-related ICRMS monitoring.

Because the existing qualitative literature predominantly focuses on only one of the three monitoring parties at a time, the studies in Sections 3.1 and 3.2 are organized according to findings for each party (internal auditors, external auditors, and audit committees). This structure is intended, first, to highlight the distinct roles of each party in ICRMS monitoring and, second, to underscore the potential for and the necessity of an integrated study that addresses all three parties jointly.

3.1. Roles of internal auditors, external auditors, and audit committees in financial-related ICRMS monitoring

Several qualitative studies have emphasized the multifaceted and evolving role of *internal auditors* in strengthening ICRMSs. Soh and Martinov-Bennie (2011) identified two key roles: offering an independent assessment of an organization's internal control and risk management processes and taking a proactive role in enhancing those processes. This calls for extended research on concrete sustainability-related procedures performed within these roles (*RQ1*). Christensen (2022), through a single-case study in a large financial institution, found that internal auditors can foster trust-based cooperation and support the stepwise implementation of

internal control improvements. These findings suggest that beyond assurance, internal auditors actively facilitate organizational learning and change. However, internal auditors' capacity to fulfil their role in monitoring ICRMSs effectively can be undermined by contextual factors. Khelil and Khlif (2022), through interviews with chief audit executives, identified significant role conflicts. Internal auditors must balance expectations from multiple parties (e.g., the audit committee and executive management) while maintaining their independence. These tensions are exacerbated by weak legal safeguards, which limit their authority and effectiveness in ICRMS monitoring, potentially affecting the quality of financial and sustainability reporting (*RQ2*).

External auditors' interactions with ICRMSs are often shaped by organizational resistance and the quality of the internal audit function. Cohen et al. (2020), based on interviews with external auditors, highlighted challenges in identifying and reporting internal control weaknesses due to resistance from management. The authors stressed the need for strong audit committee support to protect audit quality, particularly in sensitive areas such as ICRMSs. This indicates the role of mutual support between the parties, potentially leading to increased quality of financial and sustainability reporting (*RQ2*). Furthermore, qualitative studies revealed complex dynamics in the relationship between internal and external auditors. Regoliosi and Martino (2019) found that mutual collaboration increases control reliability and reduces redundancy, though not all external auditors fully trust or rely on internal audit outcomes. Similarly, Argento et al. (2019) stressed that external auditors leverage internal auditors' work – especially related to controls and processes within ICRMSs – for efficiency gains, calling for new insights into concrete sustainability-related monitoring procedures (*RQ1*) in this regard. However, they cautioned that such collaboration may blur professional boundaries, potentially compromising external auditors' objectivity and leading to uncritical use of internal audit reports regarding findings on ICRMSs.

Moreover, *audit committees* are widely recognized as a key corporate governance mechanism for overseeing financial reporting and its underlying ICRMS. Wu et al. (2014) highlighted the difficulty in demarcating financial reporting from its enabling elements – including internal control, risk management, and audits – suggesting that the committee’s remit is both broad and strategically relevant. Audit committees often rely on internal auditors for assurance on the internal control environment. Sarens and De Beelde (2006) and Sarens et al. (2009) underscored the importance of trust, informal communication, and interpersonal skills in enabling effective assurance provision. Internal auditors’ organizational knowledge and proximity to operational processes make them a key source of comfort to audit committees, raising the question of how audit committees can concretely use this in terms of sustainability-related monitoring (*RQ1*). Almasria (2022) stressed an audit committee’s primary role in assessing the effectiveness of ICRMSs. This includes evaluating the quality of implemented control procedures for sufficient financial reporting, aligning with a broader quality assurance role that spans internal and external assurance providers, and emphasizing the need for corresponding research with a sustainability-related focus (*RQ2*).

3.2. Research questions and roles of internal auditors, external auditors, and audit committees in sustainability-related ICRMS monitoring

Qualitative studies have underscored the evolving and often still-emerging role of *internal auditors* in supporting sustainability reporting and sustainability assurance, including underlying sustainability-related ICRMSs. Through interviews with audit committee members, internal auditors, external auditors, and senior accountants, Trotman and Trotman (2015) identified the growing significance of internal auditors in processes within sustainability-related ICRMSs, highlighting the work procedures internal auditors perform. The study revealed that internal auditors’ sustainability-related work mostly consists of demonstrating best practices for processes of determining sustainability-related key performance indicators. This indicates a

trend toward a more integral role of internal auditors in sustainability assurance, emphasizing the need for research on concrete sustainability-related monitoring procedures (*RQ1*). Furthermore, a survey of chief audit executives and internal audit service providers indicated that the position of internal auditors in relation to sustainability-related ICRMS matters warrants scrutiny to ensure that existing roles and responsibilities continue to be clearly defined and appropriate (Soh & Martinov-Bennie, 2015). This underscores the need for studies examining how internal auditors specifically audit sustainability-related ICRMSs, which activities they perform in this context (*RQ1*), how they collaborate with other parties, and how these interactions may affect the quality of sustainability reporting (*RQ2*). Simpson et al. (2016) stressed that organizations increasingly value the internal auditors as providers of sustainability assurance, such as through assisting in the design and implementation of sufficient reporting structures for climate change risks. However, these contributions depend heavily on the internal auditors' positioning and capacity, as well as the perceived salience of sustainability risks. Rakipi and D'Onza (2024) stated that internal auditors may deliver sustainability assurance by evaluating sustainability-related risk management systems aimed at safeguarding a company's reputation. In addition, internal auditors assist managers in designing sustainability-related internal control systems to mitigate sustainability risks (Rakipi & D'Onza, 2024), presenting the potential for research on how this can be done exactly (*RQ1*). Engelbrecht et al. (2018) further articulated the unexploited potential of internal auditors in the integration of financial and sustainability information (integrated reporting), particularly in reviewing sustainability metrics. They identified multiple roles that internal auditors may play, from ensuring data integrity to evaluating sustainability-related ICRMSs, such as by detecting weaknesses within internal control structures.

As internal auditors are increasingly drawn into sustainability assurance, *external assurance* of sustainability reports is also becoming prevalent. Canning et al. (2018) found that external auditors are developing approaches to monitor sustainability-related processes and controls to

ensure sustainability assurance that echo the diligence of financial audits, offering the opportunity to explore such approaches more thoroughly (*RQ1*). Bouten and Hoozée (2025), based on case studies within big four audit firms, stressed that external auditors engage in “sensemaking” when interpreting sustainability-related data – constructing individualized frameworks (e.g., through investigating which risk management, internal control, or compliance processes are needed) that guide their work. These interpretive approaches are influenced by client interaction, team dynamics, and institutional context, which may, however, result in inconsistencies across audit teams or firms and could further affect the quality of sustainability reporting (*RQ2*).

Moreover, *audit committees* play a pivotal role in the monitoring of sustainability reporting, including sustainability-related ICRMSs, as the interface between internal auditors, external auditors, and the board of directors. Trotman and Trotman (2015) found that audit committees are becoming more attentive to the quality of sustainability-related processes and corresponding reporting, calling for more detailed investigations (*RQ2*). More broadly, Benichou (2024) suggested that strong collaboration between the audit committee and the board of directors enhances long-term sustainability-related corporate governance quality. However, this can only be ensured if the collaboration is grounded in sufficient sustainability-related information flows and effectively functioning sustainability-related ICRMSs, monitored on a regular basis. Furthermore, sustainability-related ICRMS monitoring by internal and external auditors, under the strategic oversight of audit committees, is beneficial in terms of reducing the workload of the three parties (Wehrhahn, 2025); further insight is needed on the concrete monitoring procedures performed by the parties (*RQ1*).

Although prior research has provided valuable insights into how internal auditors, external auditors, and audit committees contribute to financial ICRMS monitoring, corresponding evidence in the context of sustainability-related ICRMSs remains relatively scarce. Existing studies have primarily concentrated on individual roles – most notably that of internal auditors

– while largely neglecting the joint and interactive monitoring practices among the three monitoring actors. Moreover, we know little of how sustainability-related ICRMSs are monitored; which procedures and practices are employed; how internal auditors, external auditors, and audit committees coordinate their sustainability-related monitoring activities; and to what extent such monitoring enhances the quality of sustainability reporting.

To address these gaps and advance the understanding of sustainability-related monitoring, this study examines the following two research questions:

RQ1: What specific procedures, practices, and interactions characterize how internal auditors, external auditors, and audit committees monitor sustainability-related ICRMSs?

RQ2: To what extent can the three parties enhance the quality of sustainability reporting via monitoring of sustainability-related ICRMS?

To address these research questions, this study integrates systems theory (Luhmann, 1984; von Bertalanffy, 1968) and RBT (Barney, 1991; Grant, 1991) as complementary perspectives. As detailed in Section 2, the two theories provide a comprehensive framework to understand both the practical implementation (*RQ1*) and the impact on sustainability reporting (*RQ2*) of sustainability-related ICRMS monitoring.

4. Research Design

This study aimed to identify the specific procedures, practices, and interactions through which sustainability-related ICRMSs are monitored and to examine the extent to which this monitoring enhances the quality of sustainability reporting. An explorative qualitative inquiry was deemed appropriate (Blaikie, 2000), which also reflects the increasing relevance of qualitative methods in sustainability research (Eugénio et al., 2010). Semi-structured interviews were conducted with 12 experts working mainly as internal auditors, external auditors, and audit committee members in Germany. The German setting was deliberately chosen for the following reasons: First, Germany, as the largest economy in the European Union, plays a leading role in

shaping corporate sustainability regulations, such as the Corporate Sustainability Reporting Directive (CSRD), including the European Sustainability Reporting Standards (ESRS⁶⁰), the Corporate Sustainability Due Diligence Directive (CSDDD), and the Taxonomy Regulation. These initiatives have triggered significant developments in how companies establish and monitor sustainability-related ICRMSs. Second, the German corporate governance system is characterized by a mandatory two-tier board for corporations, with a strong stakeholder orientation (code-law regime) and a focus on internal monitoring (Bottenberg et al., 2017). In contrast to one-tier systems and case-law regimes in Anglo-American countries with a focus on market-based monitoring, Germany's corporate governance provides internal auditors, external auditors, and audit committees with clearly interdependent roles that are particularly relevant for examining coordinated sustainability-related monitoring (Wehrhahn, 2025). This makes Germany a theoretically rich and practically relevant context for investigating how sustainability-related monitoring processes evolve in response to increasing regulatory and stakeholder pressure.

The sampling strategy was designed to cover a broad and evenly distributed range of participants with respect to their job profiles to decrease the likelihood of selection bias and to increase the validity of the in-depth exploration (Öberseder et al., 2011). In pursuit of this objective, the participants were selected via a network of a German big four audit firm and a focus on PIEs as their big four⁶¹ clients. Engaging a big four audit network was deemed appropriate, as it provided an efficient means of identifying participants from all three monitoring parties with significant expertise and learning effects, as well as additional

⁶⁰ The ESRS are uniform and mandatory European standards for corporate sustainability reporting, developed within the framework of the CSRD. Their purpose is to enhance the transparency and comparability of sustainability reporting across the EU.

⁶¹ For this study, a focus on big four audit firms was deemed appropriate because they, compared to non-big four firms, possess substantially more extensive sustainability-related resources (e.g., personnel with environmental expertise) and experience in auditing PIEs' sustainability reports. Consequently, participants working for big four audit firms are more likely to provide insights into sustainability-related ICRMS monitoring.

sustainability consultants⁶² from the respective big four audit firm, who were willing to participate in the interviews with genuine interest and commitment. All experts contacted agreed to participate. As depicted in *Table 1*, the sample encompasses an evenly distributed spectrum of experts regarding their job profiles.

INSERT TABLE 1 HERE

The interviews were conducted between August and October 2024, either in person at the participants' offices or virtually via Microsoft Teams. To encourage an open and candid discussion, participants were informed in advance that all data would be anonymized. Additionally, to reduce the risk of social desirability bias (Fisher, 1993; Öberseder et al., 2011), they were told that the purpose of the interview was to explore their personal views and that there were no right or wrong answers. Established procedures for expert interviews (Bogner et al., 2014) were followed when preparing the interview guidelines. After introducing the interview topic, a semi-structured interview format was followed, using questions that were closely aligned with our research objectives in the following areas:

- significance of sustainability-related ICRMSs for the quality of sustainability reporting
- procedure of monitoring sustainability-related ICRMSs
- roles of internal auditors, external auditors, and audit committees in this context.

In line with our theoretical framework and prior research results, the interview questions were intentionally derived from a self-imposed framework. The questions were deliberately designed in an open-ended manner to avoid leading participants or eliciting biased responses. Topics introduced by the interviewees were explored in more detail, depending on the direction of their

⁶² Although the focus of this study is on the three monitoring parties, sustainability consultants from big four audit firms were additionally interviewed to generate further insights. This was primarily because these consultants possess valuable experience in the implementation of sustainability-related ICRMSs in organizations and could therefore provide important information from an alternative perspective. The insights derived from these interviews were meaningfully integrated with the statements of the three monitoring parties and serve to complement the findings.

responses. The interview guidelines served solely to ensure that all relevant topics of interest were addressed consistently across interviews.

A total of 12 interviews were conducted, and all interviews were recorded and subsequently transcribed. Interview durations ranged from 27 to 68 minutes, with an average length of 47 minutes, resulting in a total of 567 minutes of interview material.

After an initial read-through of all interview transcripts to gain a general understanding of the experts' statements and to become familiar with the data (Higgins et al., 2014), a qualitative content analysis was conducted. Qualitative content analysis offers a structured and systematic approach for analysing textual data and follows a defined set of steps, thereby enhancing the rigour and transparency of the analytical process (Mayring & Fenzl, 2022). Additionally, practical guidance from Kuckartz and Rädiker (2024) on conducting and analysing expert interviews was followed. In the first step, a set of generic categories (e.g., concrete monitoring procedures and role of ICRMS monitoring for sustainability reporting quality) derived from the interview guidelines was developed and aligned with the research questions. Based on the interview material, more specific subcategories (e.g., monitoring focus areas, usage of digital supporting tools, and degree of integration of sustainability-related aspects within ICRMSs) were identified, the list to detect redundancies or overlaps was reviewed, and similar subcategories were consolidated into broader thematic clusters. In line with Glaser and Strauss's (1967) recommendation for iterative analysis to improve analytical depth, a final re-reading of the transcripts was conducted, and the category assignments were reassessed, ensuring consistency with the overarching research aim (Öberseder et al., 2011). All interviews were conducted in German. However, because direct quotations are a key quality criterion in qualitative research (Messner et al., 2017), the relevant excerpts were translated into English.

5. Findings

5.1. Internal auditors

5.1.1 Internal auditors' monitoring procedures and practices (*RQ1*)

All interviewees emphasized that their audit approach is firmly rooted in the Global Internal Audit Standards and relevant national frameworks,⁶³ with sustainability-related aspects integrated systematically where applicable (3/3).⁶⁴ Initially, annual audit plans are developed based on identified risks and specific organizational factors, including sustainability risks. These plans are approved by the management board and presented to the audit committee, who discuss them and may also propose additional topics. However, the audit plans are continuously revised and refined in response to audit findings, new insights, or suggestions from the audit committee (3/3).

Based on the audit plan and in alignment with internal audit standards, ICRMS-related procedures are conducted. Although sustainability-related topics have already been integrated into audit workpapers, they have not yet been examined as thoroughly as financial reporting controls, primarily due to resource limitations (3/3). To address this, internal auditors expand thematic categories to incorporate sustainability-related aspects, guided by the ESRS coming from the CSRD. Within these categories, targeted audits are conducted to assess the appropriateness and effectiveness of ICRMSs (2/3). Sustainability-related elements are included selectively based on the materiality of reported key performance indicators. For instance, systems used to determine carbon emissions may be audited in more depth than those used for less critical disclosures, such as company bike usage (2/3). This is primarily attributable to the fact that carbon emissions have high societal relevance in the context of climate change and therefore constitute one of the most significant metrics within a company's sustainability report. Furthermore, the scopes of sustainability-related risk audits are expanded

⁶³ In Germany: internal auditing standards published by "Deutsches Institut für Interne Revision e.V." (DIIR).

⁶⁴ Three of three internal audit experts mentioned these contents.

to cover physical (e.g., extreme weather or sea level rise) and transitional environmental risks (e.g., regulatory shifts or technological disruption) (1/3). During these procedures, internal auditors maintain regular communication with the corporate sustainability department. In some instances, this department proactively reports sustainability-related risks, which are subsequently integrated into the audit plan (2/3).

All respondents reported that to audit as efficiently as possible, they use audit software, which is being continuously expanded to include sustainability-related elements. The aim is to maximize automation and minimize manual interventions, thereby reducing errors and enhancing auditability. Some tools also incorporate AI-supported functionalities (3/3).

Effective sustainability-related ICRMS implementation requires a clear top-down approach, and internal audit teams are actively involved in these processes as part of their responsibilities. The interviewees highlighted the importance of engaging internal auditors early on as strategic advisors to leverage existing expertise, prior lessons learned, and established internal control structures (2/3). As done in the development of audit plans, internal auditors regularly communicate their findings to the audit committee, providing quarterly assessments of the effectiveness of various ICRMSs. These insights are also shared with external auditors through structured formats, such as joint meetings or regular coordination sessions (2/3).

5.1.2 The impact of internal auditors' monitoring on the quality of sustainability reporting (RQ2)

The interviews also revealed a clear consensus on the significance of existing sustainability-related ICRMSs and the related role of internal auditors in enhancing the quality of sustainability reporting through monitoring. Internal auditors ensure that such systems are not only in place but also regularly reviewed and audited by internal auditors (3/3).

“Internal audit can play a preparatory role in enabling an effective external audit. For instance, through ongoing discussions, we [internal auditors] are helping to refine the internal

control system for ESG purposes – particularly its documentation, which is currently insufficient. By laying this groundwork, we [internal auditors] support more efficient audits and help reduce associated costs.” (I-5)

Beyond their core assurance responsibilities, internal auditors view themselves as advisors and change agents. Two of the three interviewees emphasized internal auditors’ proactive engagement in identifying improvement areas within sustainability-related ICRMSs and in providing concrete recommendations to strengthen controls and processes, for example by creating detailed process descriptions of how carbon emissions figures are determined and deriving control weaknesses on this basis (2/3). This forward-looking approach was seen as essential for professionalizing internal audit structures and aligning them with evolving sustainability reporting standards. A particularly impactful mechanism highlighted by interviewees is internal auditors’ function as a multiplier⁶⁵ within corporate groups. This cross-entity learning process is regarded as a key driver of reporting quality on a group level (2/3).

The integration of sustainability-related processes and controls into already existing ICRMSs was identified as a crucial factor for improving sustainability reporting quality. Interviewees emphasized that this should be pursued through multi-year, iterative, and risk-oriented support by internal auditors, beginning with sustainability reporting and gradually maturing over time (2/3). Embedding sustainability-related controls within financial or centralized ICRMSs was considered particularly beneficial, as many sustainability reporting business units currently lack experience with the demands of external reporting, such as completeness, consistency, and auditability. In contrast, internal auditors possess extensive expertise in these areas, as well as the necessary tools and methods for implementing effective controls. As such, internal auditors are viewed as key partners in the sustainability reporting process (2/3).

⁶⁵ Multiplier means that internal auditors communicate sustainability-related audit findings across all subsidiaries of the company to prevent similar weaknesses within other subsidiaries.

However, sustainability reporting processes tend to exhibit lower levels of process maturity, digitalization, and automation compared to financial reporting. This is mainly because, unlike its financial counterpart, sustainability reporting lacks long-standing practices. As such, participants underscored the need for a phased, iterative development of sustainability-related ICRMSs that considers these structural differences by gradually integrating sustainability-related aspects into existing ICRMSs (2/3).

5.2. External auditors

5.2.1 External auditors' monitoring procedures and practices (*RQ1*)

When commissioned to perform system audits⁶⁶ in line with external audit standards,⁶⁷ external auditors typically follow a three-phase process: (1) readiness check, (2) assessment of design adequacy, and (3) assessment of operational effectiveness. This standardized progression enables a scalable and methodical audit process. Although individual steps of a system audit can, in principle, be commissioned separately (e.g., limited to adequacy assessments or effectiveness evaluations), system audits are usually conducted comprehensively, encompassing all steps. Interviewees noted that sustainability considerations are becoming increasingly important across all phases, reflecting their rising integration within ICRMSs (3/3). Within the audit procedures, in line with the clearly defined external audit frameworks, the auditors often apply practice notes published by the external auditors' institute.⁶⁸ The procedures – including sustainability aspects – follow six core components: control environment, control objectives (with a strong emphasis on double materiality in sustainability

⁶⁶ System audits involve the examination of a company's existing management systems (e.g., ICRMSs) to evaluate their reliability and compliance. The objective is to determine how, and to what extent, external auditors can rely on the company's internal processes and controls. The results of such an assessment influence the scope of subsequent audit procedures, such as substantive testing.

⁶⁷ German standards are issued by the Institute of Public Auditors in Germany (IDW).

⁶⁸ Practice notes are publications also issued by the IDW that provide practical guidance and recommendations for external auditors on specific technical and professional matters. Their purpose is to clarify and facilitate the application of statutory requirements, accounting standards, and auditing standards in practice.

topics), risk assessment process, information and communication systems, control activities, and monitoring and improvement mechanisms (2/3). System audits may be full-scope or limited to specific topics (e.g., environmental aspects) or organizational segments (e.g., subsidiaries or regions). In either case, external auditors apply all six core components of the audit framework to the selected focus area. The scope is typically determined by the maturity level of the respective system segments (2/3).

Within these steps, the external auditors use proprietary audit software developed specifically for sustainability topics and reporting. These in-house tools are designed to address the unique complexities of sustainability reporting (3/3). Some interviewees also noted the use of AI-supported tools in sustainability assurance procedures (2/3).

All external auditors reported close collaboration with audit committees in defining audit priorities. Whereas external auditors propose specific focal points, the final selection often includes input or proposals from the audit committees (3/3). Furthermore, external auditors increasingly incorporate results from internal audits. These findings suggest a promising direction in hybrid models in which external audits are complemented by continuous internal assurance. Furthermore, external auditors use in-house subject matter experts (e.g., climate specialists) during their system audits (2/3). These experts, currently employed within audit firms (e.g., separate departments), are particularly relevant for environmental topics. Their importance is expected to grow, along with the demand for personnel with natural science backgrounds.

A key challenge in adequate monitoring of sustainability-related ICRMSs compared to financial reporting lies in sustainability data, as it is often qualitative, future-oriented, and multidimensional (e.g., for multifunctionality: kWh, CO₂ emissions, or cubic meters) (2/3). Moreover, the underlying IT infrastructure is typically less mature than that of financial systems. Sustainability reporting also requires broader data coverage that goes beyond the financial consolidation scope (2/3). Currently, sustainability reporting engagements are

generally performed under a limited assurance⁶⁹ mandate. As such, the reliance on sustainability-related ICRMSs in audit procedures remains minimal. External auditors predominantly use analytical procedures and plausibility checks, with limited need to assess system effectiveness.

5.2.2 The impact of external auditors' monitoring on the quality of sustainability reporting (*RQ2*)

The interviews with external auditors also revealed a shared recognition of the strategic and operational relevance of sustainability-related ICRMSs for high-quality sustainability reporting (3/3). These systems are viewed as foundational infrastructures that support consistent, reliable, and audit-ready sustainability reporting. A prevailing expectation, in line with internal auditors' responses, was that sustainability reporting should achieve parity with financial reporting in terms of reliability, structure, and relevance in the long run. Thus, all interviewees emphasized the importance of establishing robust sustainability-related ICRMSs as a quality driver for sustainability reporting, such as by ensuring the accuracy of reported sustainability-related data through sufficient and well-structured processes (3/3). This expectation reflects an evolving mindset among external auditors, driven by regulatory pressure (e.g., based on the EU CSRD) and stakeholder pressure regarding sustainability reporting. Two of the three participants advocated for mandatory ICRMS audits, including for sustainability-related ICRMSs. They noted that such integration could generate valuable synergies, such as streamlined audit processes (e.g., the combination of audit procedures such as process intake interviews for both financial and sustainability-related data), enhanced system documentation (e.g., consolidated documentation on audit procedures and reduced administrative efforts), and improved audit

⁶⁹ The main difference between limited assurance and reasonable assurance lies in the depth of the audit procedures performed and the resulting level of assurance. Reasonable assurance provides a high level of confidence and is comparable to a comprehensive audit that essentially confirms the accuracy of the reporting. Limited assurance, by contrast, involves a less extensive review in which the auditor states that no material misstatements have come to their attention that would require correction.

trail robustness (e.g., integrated and coordinated audit approaches), all contributing to higher reporting quality (2/3). Furthermore, external assurance of sustainability reports can be carried out more effectively and efficiently if external auditors are familiar with sustainability-related ICRMSs and have audited them appropriately in advance.

“It is not primarily about how sophisticated or elaborate a management system [ICRMS] is. What matters is that such a system exists and can be further developed in the future – or scaled back in certain areas if necessary.” (I-10)

Given that double materiality analyses⁷⁰ must be conducted annually, sustainability-related ICRMSs need to be flexible to respond to evolving regulatory trends, such as the ongoing debates on the EU Green Deal. Overengineering these systems at an early stage may undermine their long-term usability and increase resource strain unnecessarily. In addition, stronger mandatory reporting obligations regarding the presence of control weaknesses and the company’s handling of such deficiencies were also viewed as potential levers for improving both the financial data-related and sustainability-related ICRMSs (2/3). Moreover, transparency about control gaps could generate corrective activities (e.g., revisions of weak controls on determining environmental metrics and targets) that lead to system maturity and a higher quality of sustainability reports.

5.3. Audit committees

5.3.1 Audit committees’ monitoring procedures and practices (RQ1)

All audit committee interviewees emphasized the importance of reading internal and external audit reports as an essential part of their monitoring duties, alongside maintaining a continuous exchange with both audit instances. These discussions occur not only during audit committee

⁷⁰ A materiality assessment is an annually recurring process in which key sustainability issues relevant to the company and its stakeholders are identified. Under the EU CSRD, the “double materiality” principle includes the impact of the company’s business activities on the environment and society (impact materiality) and the effects of sustainability factors on the company’s financial condition (financial materiality). This assessment forms the foundation of the sustainability report and helps to focus both reporting and the company’s sustainability strategy.

meetings but also outside them – sometimes deliberately excluding the management board to ensure candid dialogue. The audit committee members confirmed that they actively exercise their right to information via updates and insights provided by internal and external audit representatives (3/3). All interviewees reported direct questioning of the executive board regarding the holistic monitoring of ICRMSs, explicitly including sustainability issues (3/3). In parallel, they engage in continuous discussions with the head of the internal audit department and maintain topic-specific dialogues with external auditors.

“The internal audit function presents its proposed audit scope and, in effect, the audit plan for the coming year. As the audit committee, we deliberate on this together and are required to formally approve the plan, often after adjustments have been made to address specific risks or particular requests.” (I-3)

Two participants also indicated that they regularly meet with the head of sustainability to obtain a broader view of sustainability risks and control issues (2/3). This proactive engagement reflects a growing awareness of the strategic relevance of sustainability risks. In this context, two interviewees stressed that before effective monitoring and reporting can take place, audit committees must develop a comprehensive understanding of all sustainability-related risks that could affect core business operations (2/3). Although formal sustainability-related ICRMS audits in accordance with external audit standards are rarely commissioned voluntarily, audit committee members reported increasing interest in alternative forms of assessment. Specifically, they view readiness checks (e.g., by non-audit departments or external audit firms) as more informative and cost-effective. These evaluations, which rate ICRMSs on a scale, are more frequently employed and provide a practical basis for further system development. Such readiness checks were described as a valuable and less resource-intensive alternative to full-scope audits, provided they are still aligned with relevant professional standards to ensure reliability (2/3). One interviewee even expressed strong reservations about applying external audit standard-based audits to sustainability-related ICRMSs (1/3).

5.3.2 The impact of audit committees' monitoring on the quality of sustainability reporting (RQ2)

Audit committee members emphasized the pivotal role of a comprehensive and company-specific understanding of sustainability risks in enabling effective ICRMS monitoring to increase sustainability reporting quality. One participant specifically highlighted that without a clear and granular risk landscape⁷¹ including sustainability-related aspects, oversight becomes reactive rather than preventive, reducing its strategic value (1/3). Another audit committee member reflected critically on the limitations of external system audits conducted by external auditors for the quality of sustainability reporting. Although such audits were acknowledged to have contributed to system maturity and quality improvements in recent years, they were also described as offering primarily legal protection for the management and supervisory board, rather than generating actionable insights (“fig-leaf effect”⁷²). Such symbolic fig-leaf certifications and low transparency in management’s assessment basis were identified as areas in which further reforms are needed to improve the quality of sustainability reporting. In contrast, internal auditors were seen as better positioned to conduct annual system assessments tailored to the evolving sustainability landscape. By applying a principle-based approach loosely aligned with external audit standards and rotating thematic focuses, internal auditors could deliver more efficient and substantive monitoring. The use of externally commissioned system readiness checks instead of audits was also mentioned as a valuable, lower-cost

⁷¹ A risk landscape is a comprehensive – often visual – representation of all potential risks to which a company is exposed. It is developed by identifying relevant risks and assessing them according to their likelihood of occurrence and potential impact. This process provides a clear overview of the company’s risk profile and supports the prioritization of risk management activities.

⁷² The fig-leaf effect is a term used primarily in psychology, as well as in organizational and management contexts. It describes a situation in which something (e.g., a system audit certificate received from an external auditor) is seemingly concealed or covered up to avoid a negative impression or to divert attention from an underlying problem.

alternative for improving sustainability reporting quality, although such assessments do not relieve the board or audit committee of their formal oversight responsibilities (1/3).

6 Discussion of Empirical Results

6.1 Procedures, practices, and interactions between internal auditors, external auditors, and audit committees (*RQ1*)

Internal auditors integrate sustainability topics into existing audit frameworks by developing iterative, risk-based audit plans and selectively deepening audit procedures based on sustainability-related materiality assessments.⁷³ Their collaboration with a company's sustainability department (e.g., incorporating proactively reported sustainability-related risks into their audit plan) and their “multiplier” role in communicating sustainability-related findings within ICRMSs across the company illustrate an expanding advisory and coordination function consistent with emerging internal audit literature (Christensen, 2022). This function as both a sustainability-related quality assurer and a quality-enhancing change agent expands the traditional view of internal auditors' role in monitoring financial data (Soh & Martinov-Bennie, 2011). *External auditors* apply standardized system audit methodologies but adapt these to sustainability-related topics based on their own professional judgement – aligning with the interpretive and sensemaking approach in dealing with sustainability-related issues identified by Canning et al. (2018) and Bouten and Hoozée (2025) – supported by using proprietary sustainability-related audit tools and in-house environmental experts. The findings also support prior research highlighting the *audit committee's* strategic and integrative oversight function (Benichou, 2024; Trotman & Trotman, 2015). However, this study goes further by empirically demonstrating how audit committees can operationalize this role in sustainability-related monitoring – for example, by commissioning readiness assessments of sustainability-related

⁷³ For example, due to high societal relevance in the context of climate change, data on carbon emissions are audited in depth, whereas less material metrics, such as company bike usage, are audited more lightly.

ICRMSs; shaping internal audit plans through sustainability-related discussions with the head of internal audit, involving the sustainability department; and coordinating sustainability-related information flows between assurance providers. These observations align with Wu et al.'s (2014) assertion that the boundaries of audit committee oversight naturally expand with the increasing complexity of reporting systems, and they confirm Wehrhahn's (2025) finding that audit committees act as the strategic anchors of sustainability-related oversight. Their role in interpreting sustainability-related risk information, mandating sustainability assurance procedures, and demanding transparent reporting on sustainability-related ICRMS effectiveness positions them as vital for corporate governance alignment and assurance legitimacy (Trotman & Trotman, 2015).

6.2 The impact of sustainability-related ICRMS monitoring on the quality of sustainability reporting (RQ2)

The empirical results indicate that adequate sustainability-related ICRMS monitoring by all three parties enhances sustainability reporting quality through distinct mechanisms.

Among other functions, *internal auditors* may continuously identify control weaknesses in sustainability-related key performance indicators, initiate sustainability-related ICRMS improvements (e.g., Van et al., 2025), and prepare a firm for external sustainability assurance. *External auditors* may enhance sustainability reporting quality by providing benchmarks on designs for sustainability-related ICRMSs from other companies or by promoting integration of sustainability-related aspects into core ICRMS elements – for instance, encouraging companies to focus on scalable, audit-ready structures for determining sustainability-related data. Moreover, *audit committees* may improve sustainability reporting quality by proactively demanding transparency about sustainability-related weaknesses within ICRMSs, challenging management's sustainability risk assessments, and ensuring sustainability-related follow-up

actions from internal and external auditors (Almasria, 2022) for financial-related risk assessments.

6.3. Monitoring cycle

As a major result of this study, *Figure 1* illustrates a mutual, cyclical process through which internal auditors, external auditors, and the audit committees jointly monitor sustainability-related ICRMSs, resulting in increased quality of sustainability reporting.

INSERT FIGURE 1 HERE

The mutual cycle begins with internal auditors, who conduct continuous, risk-based audits of sustainability-related ICRMSs and report their findings to both external auditors and audit committees. Based on these insights, the audit committee evaluates sustainability-related system maturity, identifies strategic priorities with key audit areas, and requests targeted follow-up audits from internal or external auditors. In response, the external auditors perform periodic system-level assessments (e.g., readiness assessments) or system audits and relay the results to the audit committee. These outcomes are also shared with internal auditors, who integrate the external feedback into future audit plans, thereby closing the loop. For example, if internal auditors detect control weaknesses within processes for determining companies' carbon emission data, the audit committee may mandate external assurance on the corresponding internal control system. The external auditors' findings (e.g., weaknesses in IT interfaces or lacking segregation of duties) are then used by internal auditors to refine affected procedures and advise management on corrective actions. This iterative feedback loop exemplifies how the three monitoring parties interact as interdependent subsystems, continuously enhancing the quality, reliability, and efficiency of sustainability reporting.

Based on systems theory (Luhmann, 1984; von Bertalanffy, 1968), the monitoring cycle depicted in *Figure 1* represents a self-regulating system in which internal auditors, external

auditors, and audit committees function as interdependent subsystems. Through continuous communication and feedback, the system maintains equilibrium and adapts to new sustainability-related risks. Internal auditors act as the adaptive element (Adams, 1993), detecting weaknesses within sustainability-related ICRMSs and initiating corrective learning processes. External auditors provide sustainability assurance that stabilizes the system by confirming its reliability *inter alia* via certifying the appropriateness and effectiveness of sustainability-related internal control systems, including evaluating segregation of duties. The audit committee integrates and translates these inputs into strategic decisions (Wu et al., 2014), ensuring that the organization's sustainability-related ICRMSs remain aligned with regulatory and stakeholder expectations. The cyclical flow of information, evaluation, and adjustment exemplifies the systems-theoretical principles of feedback, interdependence, and dynamic adaptation (von Bertalanffy, 1968).

In line with RBT (Barney, 1991; Grant, 1991), the monitoring cycle in *Figure 1* demonstrates how each monitoring party contributes and mobilizes distinct but complementary organizational resources. Internal auditors supply detailed process- and control-related knowledge and diagnostic capabilities for identifying weaknesses within sustainability-related ICRMSs; external auditors add independent sustainability-related expertise, external benchmark opportunities, and reputational credibility; and the audit committee contributes strategic oversight expertise and authority. The interaction among these actors transforms individual competencies into a collective capability that is valuable, rare, inimitable, and non-substitutable (Barney, 1991), thereby strengthening the organization's capacity for credible and efficient sustainability reporting. *Figure 1* thus visualizes not only an information flow but also a capability-building mechanism that continuously enhances the quality of sustainability-related monitoring and, consequently, the quality of sustainability reporting.

6.4. Research gaps and recommendations

Several recommendations for future research can be derived from this work. As this study included internal auditors, external auditors, and audit committee members of different PIEs, future in-depth case studies involving these monitoring parties within the same organization would offer a more holistic view of sustainability-related monitoring. In this context, researchers may address how exactly the three parties collaborate within the selected firm, such as the extent to which (encompassing frequency and level of detail) the monitoring bodies discuss sustainability-related issues and how they deal with possible conflicts of interest (e.g., due to opportunistic behaviour and excessive focus on self-interests by each party; Wehrhahn, 2025). An important consideration in this regard is the issue of independence. Although collaboration among the parties can enhance monitoring, it may also create risks of reduced objectivity, as each party could be influenced by management pressures, actions by the other two parties, or reputational concerns. Addressing these independence constraints in future research is therefore critical to ensure the reliability and credibility of sustainability reporting. Moreover, comparative studies are needed to explore how sustainability-related monitoring practices differ across governance regimes and institutional environments (Brammer et al., 2012) and between one- and two-tier systems. This is particularly important because structural differences between one- and two-tier systems shape the distribution of power (e.g., stronger separation between management and supervisory boards in two-tier systems) and thereby can affect the independence, intensity of monitoring, and information flows among monitoring actors, all of which are central determinants of effective sustainability-related monitoring. In this context, future research could also explore how sustainability-related monitoring practices differ between legal systems, particularly between code-law and case-law regimes. Code-law regimes, with their more formalized and prescriptive frameworks, may strengthen the independence and clarity of responsibilities among monitoring parties, whereas case-law

regimes, characterized by flexible rules and precedent-based regulation, may allow greater autonomy but also introduce higher risks of opportunistic behaviour.

Furthermore, a study within countries with less strict corporate sustainability regulations (e.g., non-EU countries or developing countries in Asia) could identify how these legal frameworks influence sustainability-related monitoring practices and if the quality of sustainability reporting would suffer due to less strict regulations. Similarly, examining monitoring authorities and corporations with prior experience under the U.S. SOX may provide valuable insights, as it can be expected that more mature control environments established under SOX are better equipped to address sustainability risks, thereby enabling more efficient and effective sustainability-related monitoring.

Regarding internal auditors, future studies could investigate how they adapt to their expanding responsibilities in response to the growing demands imposed by sustainability-related regulations. Based on a questionnaire to be completed by both internal auditors and members of executive management, future research could, *inter alia*, examine the extent to which internal auditors concretely expand and adapt their activities, provide training and further education (e.g., Christ et al., 2021) for existing staff in sustainability-related areas, recruit new personnel with sustainability expertise, and receive increased budgetary resources (e.g., to finance useful AI-supported audit tools), as well as how executive management actively supports sustainability-related internal audit activities. This may not only generate further valuable insights into the enhanced monitoring of sustainability-related ICRMSs but also foster more effective collaboration with both other parties, as improved sustainability expertise among internal auditors could potentially alleviate the monitoring burden borne by these parties.

Regarding external auditors, further research could analyse how they balance independence with advisory involvement when auditing sustainability-related ICRMSs. In-depth interviews with external auditors or the use of survey questionnaires could examine the extent to which external auditors (e.g., via assurance engagements of sustainability reports) provide concrete

recommendations for improving sustainability-related processes and controls and thus also fulfil an advisory role that may affect the other two parties in their sustainability-related monitoring. Furthermore, future research could examine whether such practices differ between big four and non-big four audit firms. Identifying differences in sustainability-related monitoring in this regard could be highly informative for future research, as big four audit firms, compared to non-big four firms, possess substantially more extensive sustainability-related resources (e.g., personnel with environmental expertise) and, consequently, are more likely to audit PIEs' sustainability reports.

Future investigations on audit committees might focus on how audit committee composition, such as sustainability expertise, influences not only the effectiveness of sustainability-related ICRMS monitoring but also the other two monitoring parties. Comparative or longitudinal case studies could reveal how audit committees' engagement evolves as sustainability topics become fully embedded in enterprise risk management and corporate governance structures. Moreover, examining the interactions between audit committees, boards, and dedicated sustainability committees, such as through case studies within firms, could deepen the understanding of strategic sustainability oversight at the board level.

7. Conclusion

As sustainability reporting expands the scope and complexity of financial reporting, ICRMSs must evolve into solid frameworks capable of managing sustainability risks and ensuring high-quality sustainability reporting (Simnett & Huggins, 2015). Internal auditors, external auditors, and audit committees are confronted with increased regulatory and stakeholder pressure to promote a coordinated, triadic sustainability-related monitoring of ICRMSs. Whereas prior research has focused on monitoring processes regarding financial-related ICRMSs (Regoliosi & Martino, 2019), we stress a significant research gap in how the three parties monitor

sustainability-related ICRMSs, which procedures are applied, and how the three parties coordinate their efforts to enhance the quality of sustainability reporting.

To address this research gap, 12 semi-structured expert interviews with internal auditors, external auditors, audit committee members, and sustainability consultants from listed PIEs and big four audit firms in Germany were conducted. They provided in-depth, practice-based insights into the current status quo of sustainability-related ICRMS monitoring. Germany is a unique setting for this study due to its major corporate sustainability regulations (e.g., CSRD, CSDDD, and Taxonomy Regulation), its mandatory two-tier board system for corporations, the code law-based stakeholder tradition, and the high institutional maturity of its audit profession. Based on systems theory (Luhmann, 1984; von Bertalanffy, 1968) and RBT (Barney, 1991; Grant, 1991) and answering both *RQ1* and *RQ2*, the interviews indicated that effective sustainability-related ICRMS monitoring emerges from the complementary support of internal auditors, external auditors, and audit committees. Internal auditors increasingly embed sustainability considerations into their audit practices (e.g., through close interactions with sustainability departments and continuous identification of sustainability-related control weaknesses) and act as important drivers of sustainability-related ICRMS improvements by triggering corrective learning based on their findings. In this context, they provide – through their long-standing experience in monitoring financial data-related ICRMSs – diagnostic and process expertise to enhance the quality of sustainability-related ICRMSs and sustainability reporting. External auditors extend their established ICRMS-related audit approaches by incorporating sustainability aspects using specialized audit tools and environmental expertise, providing companies with relevant benchmarks and encouraging more robust, audit-ready structures through regular system audits. Finally, audit committees fulfil a strategic role by commissioning readiness assessments of sustainability-related ICRMSs, shaping the sustainability focus of internal audit plans, and ensuring that identified weaknesses trigger follow-up actions, such as additional sustainability-related audit procedures performed by

internal or external auditors. Overall, this study stresses that monitoring by all three parties enhances the quality of sustainability reporting.

There are some *limitations* to our research. First, the study used a qualitative research design and relied on semi-structured expert interviews. Although this approach is well suited for exploring emerging and complex governance phenomena (e.g., Myers, 2025), it inherently limits generalizability. Despite efforts to minimize social desirability bias (Öberseder et al., 2011) through anonymity and open-ended questioning, participants' professional roles may have influenced how they presented their organizations' practices. Second, the focus on Germany may constrain transferability to other countries, as Germany differs from one-tier, shareholder-centric systems found in Anglo-American contexts or developing countries (e.g., Asian regimes). Furthermore, as all study participants work for listed PIE or big four audit firms, the transferability to small and medium-sized companies in particular is low. Different results might be expected for such companies, as small and medium-sized entities typically have little or no experience with sustainability-related ICRMSs and sustainability reporting, which in turn would have made it difficult to conduct interviews within such entities.

In the following, we highlight some *practical implications* of this study. Based on the research results, internal auditors should reinforce their role as developmental partners by embedding sustainability-related controls into existing ICRMSs (Christensen, 2022). Conducting structured readiness assessments of sustainability-related ICRMSs will allow internal auditors to identify system weaknesses and prepare organizations for future reasonable-assurance engagements. Regulators could require companies to disclose how internal audit findings on sustainability-related controls are reported to audit committees and external auditors, thereby institutionalizing feedback loops between assurance actors. External auditors should build multidisciplinary audit teams that combine financial, technical, and environmental expertise while collaborating proactively with internal auditors and audit committees at the planning stage of the sustainability-related audit process to ensure efficient allocation of assurance

resources and avoid redundant testing (Bouten & Hoozée, 2025; Cohen et al., 2020). Regulators and standard setters (e.g., International Auditing and Assurance Standards Board or the Institute of Public Auditors in Germany) should promote the gradual convergence of sustainability and financial assurance frameworks. A phased regulatory transition from limited to reasonable assurance of sustainability reporting would balance credibility with proportionality and allow audit firms to progressively develop the required expertise (Canning et al., 2018). Audit committees should institutionalize regular reporting on sustainability-related ICRMSs, require explicit disclosure of sustainability-related system maturity from internal and external auditors, and oversee the timely remediation of identified deficiencies (Benichou, 2024). Regulators could support this by mandating annual disclosures on the maturity of sustainability-related ICRMSs, including the audit committee's evaluation of control deficiencies. Furthermore, audit committees should use the results of system readiness assessments (performed by internal or external auditors) as input for strategic planning while utilizing digital dashboards for real-time monitoring of sustainability-related risks and figures.

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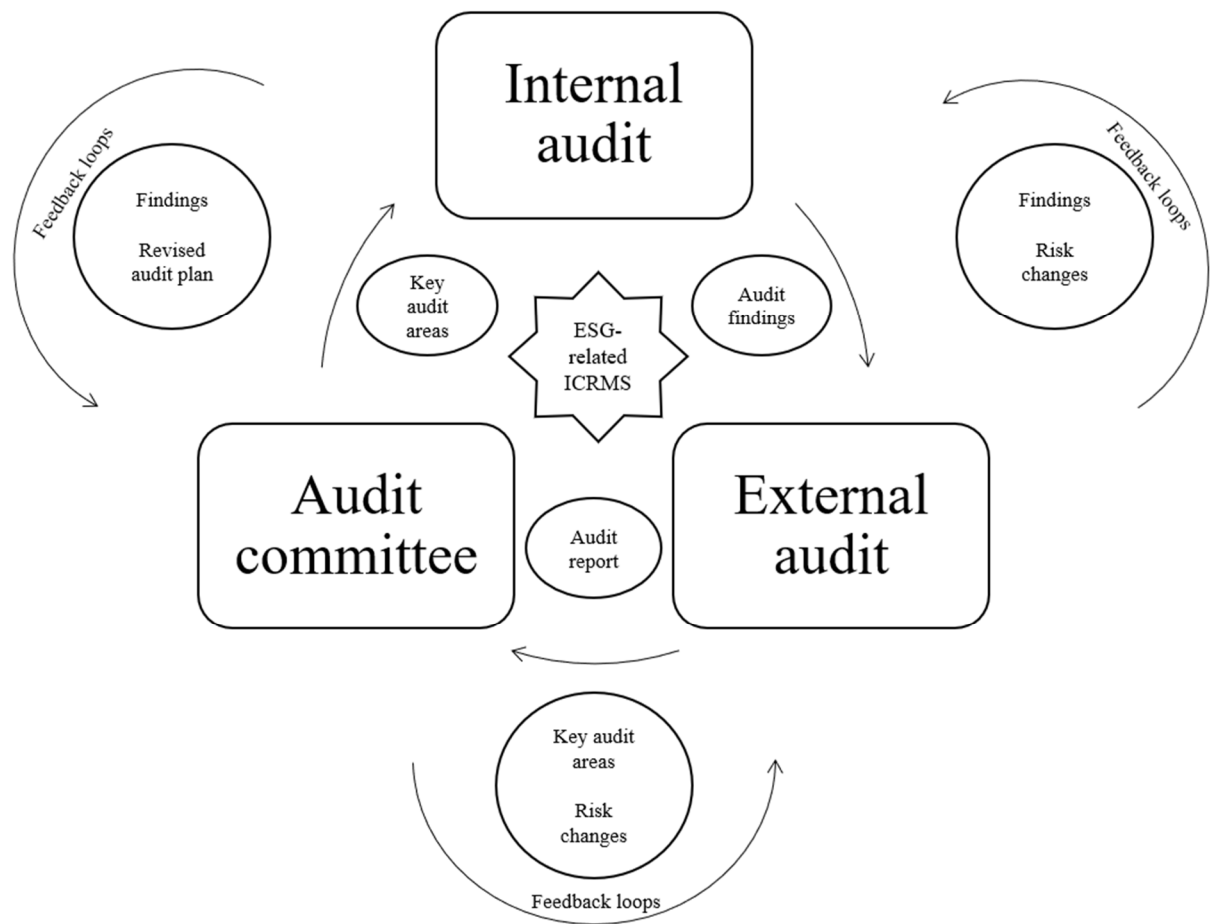


Figure 1: Monitoring cycle

Interviewee code	Interviewee description	Gender	Interview length
I-1	Audit committee member 1	male	27:34 minutes
I-2	Audit committee member 2	male	37:15 minutes
I-3	Audit committee member 3	male	43:29 minutes
I-4	Internal Auditor 1	male	52:23 minutes
I-5	Internal Auditor 2	male	68:16 minutes
I-6	Internal Auditor 3	male	48:07 minutes
I-7	External Auditor 1	female	47:33 minutes
I-8	External Auditor 2	male	42:18 minutes
I-9	External Auditor 3	female	53:20 minutes
I-10	Sustainability consultant 1	male	52:18 minutes
I-11	Sustainability consultant 2	male	52:57 minutes
I-12	Sustainability consultant 3	female	43:21 minutes

Table 1: Details of interviewees

Annex 4: Distribution of workload for Article 1

The following overviews show how and to what extent the authors contributed to the work on the academic articles.

Article 1: “The relationship between audit committees, external auditors, and internal control systems: A literature review and a research agenda.”:

	Weighting (in %)	Patrick Velte (proportion in %)	Christoph Wehrhahn (proportion in %)
Concept of the research approach (research idea, hypothesis development, etc.)	10	50	50
Research, collection and preparation of literature	20	40	60
Analysis and interpretation of the literature	30	20	80
Preparation and formulation of the results	20	20	80
Embedding in the context, conclusion and research outlook	20	50	50
Sum	100	33	67