

# Determinants of the selection of sustainability assurance providers and consequences for firm value: a review of empirical research

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## Abstract

**Purpose** – This study aims to focus on the determinants and consequences of the selection of different sustainability assurance providers.

**Design/methodology/approach** – The analysis is based on the legitimacy theory and the business case argument. The structured literature review includes 52 quantitative peer-reviewed studies on major categories of providers [(Big Four) audit firms, other assurance providers, financial auditors as sustainability assurers and joint audits between audit firms and other assurance providers].

**Findings** – The results of the included studies are either too heterogenous or too scant to stress clear tendencies of significant drivers and consequences for firm value based on the specific choice of a sustainability assurance provider. This aligns with the theoretical framework and the controversial discussion about the benefits of professional accountants versus other external assurance providers.

**Research limitations/implications** – Prior research has mainly concentrated on the selection of (Big Four) audit firms as sustainability assurers, but there are few studies on the combination of financial audits and sustainability assurance, as well as joint audits between audit firms and other assurance providers. Due to recent regulations on sustainability reporting and assurance practices, future studies should address these aspects in more detail.

**Practical implications** – As the reliability of sustainability reports represents a major demand of stakeholders, firms should select high-quality sustainability assurers to increase firm reputation and stakeholder trust.

**Originality/value** – This study adds to previous research by focusing on the selection of sustainability assurers and quantitative studies as the comparability to other related proxies [e.g. the implementation of sustainability assurance, the scope of assurance (reasonable versus limited) or the quality of assurance statements] and other research methods is limited. To the best of the authors' knowledge, this is the first literature review on this topic, which mainly contributes to the current controversial discussion about the usefulness of professional accountants versus other parties as sustainability assurance providers.

**Keywords** Sustainability reporting, Sustainability assurance, Sustainability assurance provider, Legitimacy theory, Corporate governance, Big Four audit firm

**Paper type** Literature review

## 1. Introduction

Public interest entities (PIEs) react to increased stakeholder pressure by preparing standalone sustainability reports in line with the triple bottom line and (inter)national frameworks, such as the



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Global Reporting Initiative standards (Kend, 2015; Alsahali *et al.*, 2024). On a global level, the comparability of sustainability reports is low due to the nonharmonization of reporting standards. Greenwashing and information overload may lead to a reduced decision usefulness of these reports (Zorio *et al.*, 2013). In contrast to financial statements, sustainability reports rely on qualitative information, which is more subjective and future-oriented, including the risks of “boilerplate” information (Velte and Stawinoga, 2017). Management discretion regarding specific environmental and social information is high, as quantitative key performance indicators, e.g. to measure corporate biodiversity risks, are often not present (Kilic *et al.*, 2021). To increase the relevance and reliability of sustainability reports, many standard setters have implemented mandatory reporting duties. Whereas the new International Sustainability Standards Board and the US Securities and Exchange Commission rely on a “climate first strategy,” the European Commission has published a Corporate Sustainability Reporting Directive and European Sustainability Reporting Standards in line with the environmental, social and governance concepts. The mandatory preparation of sustainability reports is also linked with sustainability assurance duties. Although voluntary external independent assurance of sustainability reporting by a third party represents a best practice for PIEs, the comparability of sustainability assurance is low from a global perspective. The International Federation of Accountants plans to publish an International Standard of Sustainability Assurance 5,000 for sustainability reports. Currently, firms choose between different levels (limited versus reasonable assurance) and providers [(Big Four) audit firms and other external providers]. As a political compromise, the EU Corporate Sustainability Reporting Directive includes a member state option to allow both audit firms and other external providers, e.g. environmental assessors. Thus, it is unclear which determinants may lead to a specific assurance provider choice and whether the selection may lead to different consequences for firm value.

In line with the increased practical importance, sustainability assurance is a hot topic in empirical studies. Prior literature reviews on sustainability assurance (e.g. Abernathy *et al.*, 2017; Cohen and Simnett, 2015; Farooq and de Villiers, 2017; Huang and Watson, 2015; Velte and Stawinoga, 2017) have highlighted the reliance on various theories, different research methods and sustainability assurance proxies. Researchers have used multiple empirical methods, e.g. archival studies, interviews or experiments (Velte and Stawinoga, 2017; Velte, 2021), structured archival research on sustainability assurance according to the adoption, quality and choice of a sustainability assessor. As these assurance variables are noncomparable, we stress an urgent need to focus on the choice of a sustainability assurance provider. We justify the originality of our paper as follows: first, we did not identify any literature review with a focus on this topic. A recent meta-analysis by Hay *et al.* (2023) included 20 studies on selected determinants of sustainability assurance providers and found that sustainability assurance from a higher-quality provider is associated with larger firm size, companies in environmentally sensitive industries and companies in stakeholder-oriented countries. However, our approach is different, as we structure the various determinants and consequences of sustainability assurance providers as a literature review, state major limitations of previous studies and formulate precise research recommendations. Other literature reviews on sustainability assurance (Abernathy *et al.*, 2017; Cohen and Simnett, 2015; De Moor and De Beelde, 2005; Farooq *et al.*, 2024; Farooq and de Villiers, 2017; Krasodomska *et al.*, 2021; Oware and Moultry, 2023; Velte, 2021; Velte and Stawinoga, 2017; Venter and van Eck, 2021; Venter and Krasodomska, 2024; Zhou, 2022) have a broader scope without a concentration on the assurance provider. These reviews include different dimensions of sustainability assurance (existence as a dummy variable, quality of sustainability assurance reporting, limited versus reasonable assurance level and sustainability assessor) and multiple research methods (conceptual/normative, qualitative and quantitative). Second, regulators and stakeholders controversially discuss the question of whether (Big Four) audit firms alone should be

responsible for sustainability assurance services (e.g. Gerwanski *et al.*, 2021; Clarkson *et al.*, 2019). Although the synergies between financial audits and sustainability assurance may lead to increased assurance quality, smaller audit firms, in particular, do not have adequate environmental skills (e.g. climate expertise) to realize a proper assurance quality. As (Big Four) audit firms and other assurance providers conduct their assurance differently, research on potential drivers and consequences of the selection of a specific assurance provider is highly relevant. Thus, the originality of our paper is in synthesizing the prior research on the determinants and corporate consequences of the selection of different sustainability assurance providers. The inclusion of other variables, e.g. existence of assurance services or assurance reporting, limits the comparability of the included studies. Our approach mainly contributes to the current controversial discussion on whether professional accountants or other external parties are useful for sustainability assurance services as a voluntary management decision. Our paper is based on a literature review to explain and structure the variables used in more detail, stress major limitations of prior studies and formulate explicit research recommendations. We seek to guide future researchers to conduct studies on this topic. In contrast to literature reviews, a meta-analysis was not possible in this context, as we note an increased heterogeneity in the included determinants and consequences as well as the proxies of the assurance providers. Thus, we only include empirical-quantitative studies (both archival and experimental) as we are interested in statistical relationships. The aim of our study is to evaluate 52 empirical quantitative studies on sustainability assurance providers by addressing the following main research questions:

- RQ1. What are the governance-, financial- and sustainability-related drivers of the selection of a sustainability assurance provider?
- RQ2. What are the financial and sustainability consequences of the selection of sustainability assurance providers?

According to our literature review, most prior studies have focused on determinants of Big Four audit firms as sustainability assurance providers with a concentration on governance-related aspects. Moreover, financial consequences for firms of the selection of assurance providers were dominant in comparison with corporate sustainability effects. Most researchers included (Big Four) audit firms, but the combination of financial auditors as sustainability assurers and joint audits between audit firms and other assurance providers have been neglected. The results of empirical research on the determinants and consequences of sustainability assurers have been either inconclusive or too scant to stress clear tendencies. This aligns with legitimacy theory, which is unable to stress clear preferences among sustainability assurance providers regarding assurance quality. Overall, this literature review increases the state of knowledge on empirical sustainability assurance research and presents innovative suggestions for further research.

The next chapter will introduce legitimacy theory, our research framework and the research design.

## 2. Legitimacy theory, research framework and research design

### 2.1 Theoretical framework

Legitimacy theory is a dominant theory in this research field, and we thus applied this lens to our literature review. Legitimacy theory assumes that firms have implicit social contracts with the society in which they operate (Shocker and Sethi, 1973). Social contracts should force managers to comply with the society's specific values, norms and boundaries by including a proper sustainability process (Dowling and Pfeffer, 1975). To satisfy stakeholder

demands, a decision-useful sustainability reporting should be implemented. Sustainability reports are an important complement to financial statements and increase firm legitimacy. The voluntary engagement of high-quality sustainability assurers has a major influence on firm reputation because stakeholders depend on the assurance results. According to legitimacy theory, sustainability assurance can be a symbolic or substantive management tool (Mahoney *et al.*, 2013). As a substantive management tool, sustainability assurance is a masterpiece of corporate sustainability strategies and processes. However, sustainability assurance may also be used symbolically to boost stakeholder attraction as greenwashing policies (Maroun, 2019). Thus, governance determinants should increase boards of directors' awareness of sound sustainability processes (Velte and Stawinoga, 2017). Governance is further separated into board composition, stakeholder influence and country in line with previous research (e.g. Velte *et al.*, 2020). Effective monitoring processes by the board, shareholders and other stakeholders, as well as country-related governance attributes, should be positively related to the selection of a high-quality sustainability assessor. In line with governance, other firm determinants should impact executives' sustainability assurance decisions. We distinguish between financial and sustainability determinants (e.g. performance or reporting factors).

In line with the business case argument for sustainability, sustainability assurance should lead to positive corporate financial and sustainability consequences (Dowling and Pfeffer, 1975). The selection of a high-quality assessor should promote corporate financial benefits (e.g. increased cash flows or liquidity) and thus better performance and reporting. Stakeholders need sustainability assurance to verify the decision usefulness of related sustainability reports. Sustainability assurance can lower the risks of greenwashing and information overload, leading to increased value relevance for capital market providers (Velte and Stawinoga, 2017). Whereas capital providers mainly change firms' financial value (e.g. based on capital costs) firms may benefit from increased stakeholder reputation by higher sustainability performance scores (Kuo *et al.*, 2022). This will increase a firm's reputation and stakeholder satisfaction, which should mean increased firm valuation in the long run (Reverte, 2021).

In view of the choice of a sustainability assurance provider, two distinct groups are mainly addressed: professional accountants (Big Four and other professional audit firms) and consultants (e.g. Casey and Grenier, 2015). Audit firms, especially Big Four firms, are assumed to be more independent, highly reputable experts, guaranteeing a high quality of sustainability assurance. Based on the fundamental model by De Angelo (1981), which was established for financial audits, audit firm size reflects stakeholders' perceptions of auditor independence and audit quality. Concentration processes of the sustainability assurance market by Big Four audit firms may be explained by resource advantages, industry specialization and international reputation (Oware and Appiah, 2022). These features promote the quality of professional auditors' work, which should lead to increased selection as sustainability assurers. In view of the major synergies between financial audits and sustainability assurance, firms may be highly motivated to engage financial auditors also as sustainability assurers (joint provision). This may lead to cost reductions and quality improvements, as audit firms may better judge potential discrepancies between financial statements and sustainability reports (Dal Maso *et al.*, 2020).

Whereas some researchers assume that (Big Four) audit firms as sustainability assurers influence sustainability assurance quality in a positive way, others stress their limited sustainability skills (Velte and Stawinoga, 2017), leaving room for the importance of individual sustainability experts as sustainability assurers (Carey *et al.*, 2021). Assurance providers outside the audit profession possess significant sustainability expertise and are also

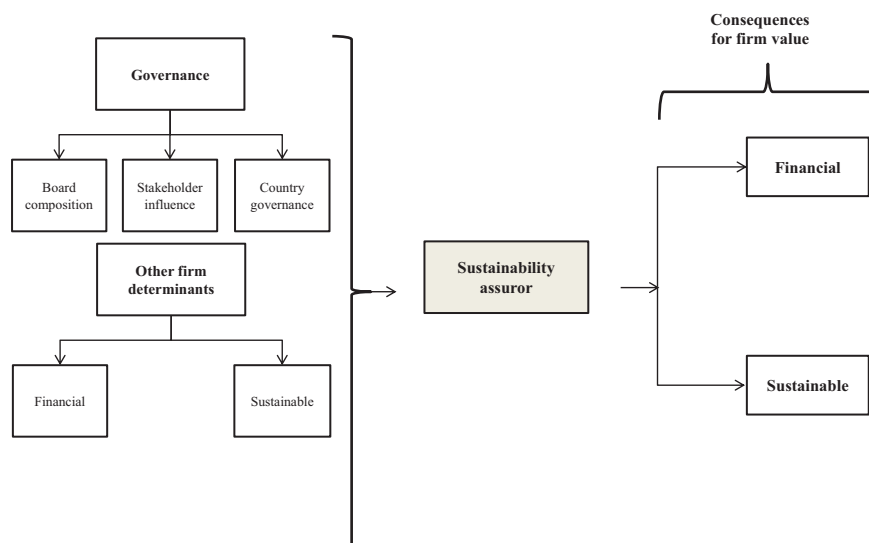
aware of the need to include assurance standards in line with professional accountants in recent years. In view of these aspects, professional accountants and other external sustainability experts may represent complementary monitoring instruments, which should lead to joint assurance contracts to improve overall sustainability assurance quality. Thus, from a theoretical standpoint, it is not clear whether professional accountants versus other assurance providers will lead to increased assurance quality *per se*.

### 2.2 Research framework

In line with our theoretical framework, [Figure 1](#) illustrates our research framework. The selection of a specific sustainability assessor is mainly connected with governance and other firm determinants. The business case argument for sustainability assurance assumes that the selection of high-quality sustainability assurers will lead to positive financial and sustainable consequences for firms.

### 2.3 Research design

Empirical research on sustainability assurers uses various kinds of data, study designs, theoretical foundations and analytical models, which indicates the need for a literature review. Literature reviews are an important research method for scholars, practitioners and regulators seeking to guide researchers within this field of research. Literature reviews aim to produce new knowledge about specific research topics by summarizing previous studies, which can lead to theory building and recommendations for future research designs. Literature reviews can also improve business practices by stressing organizational developments for future firm strategies and guidance for regulators and implementation. First, we did not identify any literature review with a focus on sustainability assurers. While prior literature reviews on sustainability assurance have a broader strategy (e.g. [Abernathy et al., 2017](#); [Cohen and](#)



**Figure 1.** Research framework on determinants and consequences of selection of sustainability assurers  
Source(s): Figure by author

Simnett, 2015; De Moor and De Beelde, 2005; Farooq *et al.*, 2024), we will focus on our study on sustainability assessor selection in view of the controversial discussion of their determinants and consequences for firms and their high relevance in recent years.

Based on the research framework, our literature review is linked to established processes and guidelines (Denyer and Tranfield, 2009). As stated before, previous literature reviews on sustainability assurance (e.g. Abernathy *et al.*, 2017; Velte and Stawinoga, 2017; Velte, 2021) took a broader perspective as they did not concentrate on empirical studies and on sustainability assurance providers. Due to the high complexity and low comparability of the included sustainability assurance proxies, a focus on provider selection is justified. This also relates to the current controversial discussion of whether (Big Four) audit firms or other providers are related to improved assurance quality and social legitimacy.

In line with prior literature reviews on similar topics (e.g. Abernathy *et al.*, 2017; Cohen and Simnett, 2015; Farooq and de Villiers, 2017; Velte and Stawinoga, 2017; Velte, 2021), we used the following international databases to the end of March 2024 to select our sample of included studies: Web of Science, Google Scholar, SSRN, EBSCO and Science Direct. We also read carefully the included keywords in prior literature reviews (e.g. Velte and Stawinoga, 2017; Velte, 2021) to select the following keywords for our search process: “CSR Assurance,” “Sustainability Assurance,” “CSR Audit,” “Assurance provider” and related terms together with “board composition,” “corporate governance,” “board of directors,” “stakeholder,” “ownership structure,” “financial performance,” “sustainability performance,” “CSR performance,” “CSR Reporting,” “CSR Disclosure” and “Sustainability Reporting.” The combination of sustainability assurance and related determinants and consequences should be more focused in comparison to a broader selection process. We did not impose a temporal limitation on the included research studies. We started with an initial sample of 206 studies on sustainability assurance.

As inclusion criteria, we only addressed quantitative empirical studies (archival studies and experiments) as we sought to analyze the determinants and consequences of sustainability assurance. Thus, 64 studies were left out. Moreover, studies on other sustainability assurance topics [e.g. existence of sustainability assurance, quality of sustainability assurance statements, scope of assurance (limited versus reasonable assurance level)] were left out. This led to a reduction of 67 studies. We only included studies published in English in peer-reviewed journals without any reliance on working papers. This led to a reduction of 23 studies. Finally, 52 studies represent our final sample. We read each paper and coded the studies in accordance with the selected (sub-)constructs and previously developed framework. Using the vote-counting methodology (Light and Smith, 1971), we measured the significant findings and their indicators. Significant positive coefficients are marked with a (+), negative coefficients with a (-) and insignificant results with a ( $\pm$ ). The total amount of significant positive, negative and insignificant results was collected.

The next section will present the main results of the literature review, whereas we start with bibliometric and descriptive content analysis. Then, we summarize the results on the determinants and consequences for firms of sustainability assessor selection.

### 3. Main results of the literature review

#### 3.1 Bibliometric and descriptive content analysis

Table 1 provides an overview of the papers in terms of publication year (Panel A), region (Panel B), journal (Panel C), determinants and consequences (Panel D), sustainability assessor (Panel E) and endogeneity checks (Panel G). Panel A stresses an increase in studies and a rather young research discipline (first study in 2007). Most of our included studies focus on an international sample to ensure a large sample size (29 studies). Panel C illustrates

**Table 1.** Count of cited published papers*Panel A: by publication year*

Total: 52	• 2023: 3
	• 2022: 7
	• 2021: 6
	• 2020: 6
	• 2019: 6
	• 2018: 5
	• 2017: 4
	• 2016: 2
	• 2015: 5
	• 2013: 3
	• 2012: 1
	• 2011: 1
	• 2009: 2
	• 2007: 1

*Panel B: by region*

Total: 52	• Cross-country: 29
	• Australia: 2
	• China: 1
	• France: 1
	• Germany: 2
	• India: 2
	• South Africa: 3
	• Spain: 4
	• Taiwan: 1
	• UK: 2
	• USA: 5

*Panel C: by journal*

Total: 52	(CSR) Management and Corporate Governance journals: (17)
	• <i>Business Ethics, the Environment and Responsibility</i> : 1
	• <i>Business Ethics: A European Review</i> : 1
	• <i>Business Strategy and the Environment</i> : 3
	• <i>Corporate Social Responsibility and Environmental Management</i> : 3
	• <i>European Management Journal</i> : 1
	• <i>International Business Review</i> : 1
	• <i>Journal of Business Ethics</i> : 2
	• <i>Journal of Cleaner Production</i> : 2
	• <i>Journal of Small Business and Enterprise Development</i> : 1
	• <i>Managerial and Decision Economics</i> : 1
	• <i>Sustainable Development</i> : 1
	Accounting and Finance journals: (35)
	• <i>Accounting and Finance</i> : 1
	• <i>Accounting and Business Research</i> : 1
	• <i>Accounting Forum</i> : 1
	• <i>Accounting Research Journal</i> : 1
	• <i>Accounting Review</i> : 1
	• <i>Accounting, Auditing and Accountability Journal</i> : 1
	• <i>Auditing</i> : 3
	• <i>Australian Accounting Review</i> : 6
	• <i>Contemporary Accounting Research</i> : 1

(continued)

**Table 1.** Continued

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	<ul style="list-style-type: none"> <li>• <i>European Accounting Review</i>: 3</li> <li>• <i>International Journal of Accounting and Information Management</i>: 1</li> <li>• <i>International Journal of Auditing</i>: 3</li> <li>• <i>Journal of Accounting and Public Policy</i>: 2</li> <li>• <i>Journal of International Accounting, Auditing and Taxation</i>: 2</li> <li>• <i>Meditari Accountancy Research</i>: 3</li> <li>• <i>Sustainability, Accounting, Management and Policy Journal</i>: 5</li> </ul>
Panel D: by determinants and consequences of sustainability assuor	
Total: 54*	<ul style="list-style-type: none"> <li>Determinants: 38 • Board composition: 8</li> <li>• Stakeholder influence: 5</li> <li>• Country governance: 8</li> <li>• Financial: 6</li> <li>• Sustainable: 11</li> <li>Consequences: 36 • Financial: 18</li> <li>• Sustainable: 18</li> </ul>
Panel F: by sustainability assuor variable	
Total: 52	<ul style="list-style-type: none"> <li>• Audit firm versus other provider: 27</li> <li>• Big Four audit firm versus other provider: 20</li> <li>• Financial auditor as sustainability assuor (joint provision) versus other provider: 4</li> <li>• Audit firm plus third party (joint assurance) versus other provider: 1</li> </ul>
Panel G: by endogeneity checks	
Total: 52	<ul style="list-style-type: none"> <li>• Yes: 19</li> <li>• No: 33</li> </ul>
<b>Notes(s):</b> *Some studies include more than one dependent/independent variable	
<b>Source(s):</b> Table by author	

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that most studies have been published in accounting and finance journals (35 studies), with *Australian Accounting Review* (6 studies) and *Sustainability, Accounting, Management and Policy Journal* (5 studies) dominating. According to Panel D, both determinants (38 studies) and consequences (36 studies) of sustainability assurance providers are quite popular. Due to the ease of calculation, as reported in Panel F, most studies only distinguish between audit firms and other providers as sustainability assurers (27 studies). Finally, as shown in Panel G, most studies did not control for endogeneity concerns by using advanced regression models (33 studies).

[Table 2](#) provides a list of the variables included in the literature review.

### 3.2 Determinants of sustainability assuor selection

3.2.1 Governance. 3.2.1.1 Board composition. Governance is the most important category of determinants, with a particular emphasis on *board composition*. Researchers assume that boards prefer the selection of professional accountants as sustainability assurers because they are also responsible for financial audits. [Alsahali et al. \(2024\)](#) found a positive influence of board monitoring, board size, board gender diversity and board independence on selecting Big Four audit firms as sustainability assurers. Similarly, [Martinez-Ferrero et al. \(2017\)](#) stressed that board size and board independence positively impact the choice of an audit firm. However, there are also indications that board size and board meeting frequency did not influence the selection of assurers ([Kend, 2015](#)). These heterogenous results align with legitimacy theory, indicating either a symbolic or substantive use of board composition.

**Table 2.** List of included variables

Determinants [independent variable(s)]	Sustainability/integrated assuor	Consequences for firm value [dependent variable(s)]
<p>(1) <i>Governance:</i>            a) <i>Board composition:</i></p> <ul style="list-style-type: none"> <li>• Board monitoring</li> <li>• Board size</li> <li>• Board meeting frequency</li> <li>• Board gender diversity</li> <li>• Board independence</li> <li>• Sustainability board committee (existence, size; environmental experts)</li> <li>• Governance committee (existence and size)</li> <li>• Audit committee (financial expertise, independence and size meeting frequency)</li> <li>• Non-CEO duality</li> <li>• CEO age</li> <li>• CEO tenure</li> <li>• CSO (environmental expert)</li> </ul> <p>b) <i>Stakeholder influence:</i></p> <ul style="list-style-type: none"> <li>• Block holding</li> <li>• Big Four audit firm as financial auditor</li> <li>• Media visibility</li> <li>• Country governance:</li> </ul> <p>c) <i>NFRD effect (headquarter in the EU)</i></p> <ul style="list-style-type: none"> <li>• Quality of public institutions; inspection frequency and public authority influence</li> <li>• CSR performance</li> <li>• Code law</li> <li>• Legal enforcement</li> </ul> <p>(2) <i>Sustainability determinants:</i></p> <ul style="list-style-type: none"> <li>• ESG performance</li> <li>• Sustainability sensitive industry</li> <li>• GRI application level</li> <li>• Existence of integrated report</li> <li>• Sustainability assurance level (reasonable); sustainability assurance statement quality; sustainability assurance coverage (all ESG categories); sustainability assurance on qualitative and quantitative assertions; use of symbols; restricted usage; recommendations; disclosure of procedures used; disclosure of framework used)</li> <li>• Years of sustainability reporting</li> </ul> <p>(3) <i>Financial determinants:</i></p> <ul style="list-style-type: none"> <li>• Firm size</li> <li>• Profitability</li> <li>• Leverage</li> <li>• Listing</li> </ul>	<p>(1) Audit firm            (2) Big Four audit firm            (3) Financial auditor as sustainability assuor (joint provision)            (4) Audit firm plus third party (joint assurance)            (5) Other assurance provider (e.g. engineering firm, consulting firm and individual expert)</p>	<p>(1) <i>Sustainability consequences:</i></p> <ul style="list-style-type: none"> <li>• CSR performance; ESG controversies score; environmental reputation</li> <li>• Credibility perceptions/reliability of sustainability reports</li> <li>• Environmental and litigation provisions</li> <li>• Sustainability reporting quality (SDG reporting); COVID-19 information in CSR reporting, score); environmental reporting quality</li> <li>• Integrated reporting quality</li> <li>• Sustainability assurance quality (limited assurance); sustainability assurance statement quality</li> <li>• Dow Jones Sustainability Index (DJSI) inclusion</li> <li>• CSR restatements</li> <li>• CSR investment efficiency</li> </ul> <p>(2) <i>Financial consequences:</i></p> <ul style="list-style-type: none"> <li>• Financial performance: ROA; (industry) Tobin's Q; Tobin's volatility; stock price return, market value of equity</li> <li>• Financial distress probability</li> <li>• Cost of debt; cost of capital</li> <li>• Capital constraints</li> <li>• (nonprofessional) investor financial decision-making; investment decisions</li> <li>• Share price; stock price growth; stock price per share</li> <li>• Analysts' forecast dispersion/accuracy; analyst coverage</li> <li>• Qualified going concern opinion</li> <li>• Earnings restatements</li> <li>• Earnings persistence</li> <li>• Audit fees</li> </ul>

Source(s): Table by author

Boards of directors may demand a high quality of sustainable assurance and engage a sustainability assessor with high expertise, independence and skills. In contrast to this, boards of directors may pay low attention on the selection of sustainability assurance services, leading to lower awareness on the choice of a high-quality assessor.

Previous studies also focused on sustainability, governance and audit committees. It is assumed that sustainability board committees may prefer sustainability experts as sustainability assessors outside the audit profession. Sustainability committees either increase audit firm selection (Kend, 2015), decrease the selection of Big Four assessors (Al-Shaer and Zaman, 2018) or have no impact (Al-Sahali *et al.*, 2024). This might be related to the limited validity of analyses of the existence of sustainability committee as a dummy variable, leading to heterogeneous results. Consequently, more emphasis should be put on the composition of these committees. Sustainability committees with environmental experts and audit firms are positively related (Peters and Romi, 2015). According to Kend (2015), the size of a sustainability committee, as well as the existence and size of a governance committee, does not impact the selection of assurance providers. As a classical monitoring element, audit committees are only responsible for financial reports from a traditional perspective, but not for sustainability reports and related assurance services. Inconclusive results were also found for audit committees, as financial expertise either decreases the selection of audit firms (Dwekat *et al.*, 2022) or has no impact (Al-Shaer and Zaman, 2018). In line with our remarks on sustainability boards, the inclusion of audit committees as a dummy variable may lead to heterogeneous effects. Consequently, the composition of audit committees should be focused. Independence in the audit committee also either increases Big Four choice (Al-Shaer and Zaman, 2018) or has no significant impact (Dwekat *et al.*, 2022; Kend, 2015). This is also related to size (Al-Shaer and Zaman, 2018; Dwekat *et al.*, 2022) and meeting frequency (Dwekat *et al.*, 2022; Al-Shaer and Zaman, 2018; Kend, 2015). As these variables are not directly linked with sustainability, these inconclusive results may be realistic. The cooperation between audit committees, sustainability committees and professional accountants as sustainability assessors seems to be rather loose in contrast to classical financial audit services.

Few studies have addressed chief executive officer (CEO) dimensions. Non-CEO duality and Big Four selection are positively connected (Al-Sahali *et al.*, 2024), whereas CEO age decreases audit firm selection (Oware and Mallikarjunappa, 2021). CEO tenure (Oware and Mallikarjunappa, 2021) and environmental experts as chief sustainability officers (CSOs) (Peters and Romi, 2015) do not have any impact on it. This may be explained by the notion that nonexecutive directors rather than executives are responsible for the engagement of sustainability assessors.

3.2.1.2 Stakeholder influence. Previous studies on *stakeholder influence* on assessor selection are rare. It is assumed that stakeholder pressure may lead to a specific selection of a sustainability assurance provider. Big Four audit firms as financial auditors positively relate to Big Four firms (Fernandez-Feijoo *et al.*, 2018; Sierra *et al.*, 2013) for sustainability assurance or joint provision of financial audits and sustainability assurance (Fernandez-Feijoo *et al.*, 2016). Similarly, audit firms as financial auditors increase Big Four selection for sustainability assurance (Zorio *et al.*, 2013). As financial auditors seek to convince their clients to engage them also for sustainability assurance services, this may be a possible explanation. According to De Beelde and Tuybens (2015), media visibility increases Big Four selection, whereas block holding does not. Other stakeholder influence has not yet been analyzed which reduces the validity of the respective research.

3.2.1.3 Country governance. Few studies have focused on the impact of the EU Non-Financial Reporting Directive on the choice of a sustainability assurance provider and

assume a major regulatory pressure on the selection of professional accountants as sustainability assurers. Relying on firms with headquarters in an EU country, [Garcia-Sanchez et al. \(2022a\)](#) found a positive impact of the Non-Financial Reporting Directive on audit firms but not on the joint provision of financial audits and sustainability assurance (see also [Fernandez-Feijoo et al., 2016](#)). Inconclusive results have also been stated for Big Four audit firms ([Fernandez-Feijoo et al., 2015](#)). This might be related to the EU member state option of the Non-Financial Reporting Directive to include mandatory assurance for nonfinancial declarations. [Kilic et al. \(2021\)](#) found that the quality of public institutions increases integrated reporting assurance by audit firms, as does country-related CSR performance and code law regimes have no significant influence. Other studies did not stress any impact of sustainability performance on Big Four audit firms as sustainability assurers ([De Beelde and Tuybens, 2015](#); [Fernandez-Feijoo et al., 2015](#)). This may be explained by a low comparability of sustainability assurance practices between included countries.

Inconclusive results were also related to code law regimes, audit firms ([Bollas-Araya et al., 2019](#)) and Big Four audit firms ([Fernandez-Feijoo et al., 2015](#); [Fernandez-Feijoo et al., 2016](#)). Legal enforcement was found to be positively related to Big Four audit firms as assurers ([De Beelde and Tuybens, 2015](#)) or not significantly connected to audit firm selection ([Simnett et al., 2009](#)) or Big Four audit firms ([Fernandez-Feijoo et al., 2015](#)). Different levels of sustainability assurance and experiences in the respective countries may be a possible reason for these inconclusive results. Some countries have already introduced mandatory sustainability assurance during the last years, whereas others have a voluntary setting. This leads to a reduced comparability of cross-country settings.

**3.2.2 Financial determinants.** *Financial determinants* should be a main contributor to the choice of a sustainability assurance provider, as assurance fees differ between providers. Studies in this area normally address the business case argument for sustainability, assuming a positive relationship between financial and sustainability outputs and vice versa. Firm size increases the selection of audit firms ([Bollas-Araya et al., 2019](#)) and Big Four audit firms ([De Beelde and Tuybens, 2015](#); [Fernandez-Feijoo et al., 2015](#); [Mock et al., 2013](#)), but insignificant results were also found ([Casey and Grenier, 2015](#); [Zorio et al., 2013](#)). Profitability was not found to be related to the selection of audit firms ([Casey and Grenier, 2015](#)) and Big Four audit firms ([De Beelde and Tuybens, 2015](#)). Leverage either decreases the selection of audit firms ([Casey and Grenier, 2015](#)) or is not connected with Big Four choice ([De Beelde and Tuybens, 2015](#)). A reason for these inconclusive results may be the major impact of earnings management on these performance figures. Finally, listing status increases the choice of a Big Four audit firm as a sustainability assurer ([Fernandez-Feijoo et al., 2015](#)).

**3.2.3 Sustainability determinants.** In line with financial determinants, research on *sustainability determinants* led to rather inconclusive results. Based on legitimacy theory, it is assumed that sustainability outputs, e.g. performance or reporting, will relate to the selection of specific assurance providers. Sustainability performance either increases Big Four choice ([Clarkson et al., 2019](#)) or is not related to audit firm selection ([Braam and Peeters, 2018](#)). A few studies stressed the positive influence of sustainability sensitive industries on the selection of Big Four audit firms ([Fernandez-Feijoo et al., 2015](#); [Fernandez-Feijoo et al., 2016](#)), whereas others found inconclusive results regarding audit firms as sustainability assurers ([Bollas-Araya et al., 2019](#); [Simnett et al., 2009](#)) and selection of Big Four audit firms ([De Beelde and Tuybens, 2015](#); [Zorio et al., 2013](#)). This may be explained by the controversial discussion, whether (Big Four) audit firms or other external assurers have better skills in sustainability assurance services. Moreover, the Global Reporting Initiative application level ([Fernandez-Feijoo et al., 2015](#)), learning effects in sustainability

reporting (Zorio *et al.*, 2013) and integrated reporting (Fernandez-Feijoo *et al.*, 2015) do not increase the choice of a Big Four audit firm as a sustainability assessor. A reasonable assurance level for sustainability assurance is positively (Mock *et al.*, 2007) or negatively related (Mock *et al.*, 2013) to Big Four audit firm selection. These heterogeneous results lead to the question of a potential symbolic use of sustainability assurance. Managers may demand a higher quality of sustainability assurance when corporate sustainability attributes are also high. This strategy of substantive use of sustainability assurance should lead to increased stakeholder awareness and firm value. The next section will summarize the related research results on the consequences of sustainability assessor selection for firms.

### 3.3 Consequences of sustainability assessor selection for firm value

**3.3.1 Financial consequences.** According to the business case argument for sustainability, sustainability assurance should lead to positive financial consequences for firms. An increased number of studies analyzed the *financial consequences* of the selection of sustainability assessors for firms. The studies assumed that (Big Four) audit firms as sustainability assurance providers lead to positive financial consequences. The greater linkage between financial audits and sustainability assurance by (Big Four) audit firms may positively contribute to financial consequences for firms. However, audit firms were found to be positively (Radhouane *et al.*, 2020), negatively (Oware and Mallikarjunappa, 2021) or insignificantly (Elbardan *et al.*, 2023) related to Tobin's Q. In contrast to the business case argument, this may be related to the heterogeneous character of sustainability assurance services within audit firms. Furthermore, audit firms and stock price per share are insignificantly related (Peters and Romi, 2015), whereas Clarkson *et al.* (2019) found a positive influence of Big Four audit firms on the market value of equity. Audit firms did not improve share prices (Reverte, 2021), and stock price returns declined (Oware and Mallikarjunappa, 2021). Kuo *et al.* (2022) stressed that joint audits of audit firms and other assurance providers increase return on assets. Moreover, audit firms decrease financial distress probability (Oware and Appiah, 2022) and capital constraints (Carey *et al.*, 2021). There are also indications that the cost of capital is reduced by the selection of audit firms (Casey and Grenier, 2015) and Big Four audit firms (Martinez-Ferrero and Garcia-Sanchez, 2017). However, it does not change the cost of debt (Carey *et al.*, 2021). Cuadrado-Ballesteros *et al.* (2017) found a negative (positive) influence of Big Four audit firms on analyst forecast dispersion (accuracy). Whereas Casey and Grenier (2015) stressed a similar negative influence of audit firms on analyst forecast dispersion, they were insignificantly related to errors and analyst coverage. Dal Maso *et al.* (2020) focused on the joint provision of financial audit and sustainability assurance and stressed a positive (negative) impact on the frequency and Type I (Type II) errors of qualified going concern opinions. They also found a lower number of income-decreasing earnings restatements and increased earnings persistence, but no impact on audit fees. Based on legitimacy theory, the selection of (Big Four) audit firms may either follow a symbolic or substantive management strategy. Shareholders may be skeptical about the quality of sustainability assurance in general, not depending on the specific assurance provider.

Some *experimental* studies also analyzed the financial consequences of the selection of sustainability assurance providers. Quick and Inwinkl (2020) stressed the positive impact of Big Four audit firms on the credibility perceptions of bank directors. Pflugrath *et al.* (2011) However, Gerwanski *et al.* (2021) did not find any impact of integrated assurance by Big Four audit firms on the decision-making processes of nonprofessional investors. Shen *et al.* (2017) and Hodge *et al.* (2009) also documented inconclusive results regarding audit firms

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and sustainability assurance. Thus, the business argument for the selection of specific sustainability assurance providers (e.g. professional accountants) does not seem to be dominant. Shareholders may be uncertain which sustainability assurers (audit firms versus other providers) may be related to increased assurance quality. Thus, archival research and prior experimental studies come to similar inconclusive results on the business case argument for sustainability assurance.

3.3.2 *Sustainability consequences.* In line with previous studies on financial consequences, high-quality sustainability assurers should be related to increased stakeholder trust and firm reputation for legitimacy reasons. There are some indications that (Big Four) audit firms as sustainability providers lead to positive *sustainability consequences* for firms. Audit firms were found to positively impact sustainability investment efficiency (Steinmeier and Stich, 2019). Joint provisions of financial audits and sustainability assurances increase environmental and litigation provisions (Dal Maso et al., 2020). However, joint provision (Garcia-Sanchez et al., 2022b) and audit firm selection (Birkey et al., 2016) did not improve sustainability performance and environmental reputation. This is also related to Big Four audit firms and the inclusion in the Dow Jones Sustainability Index (Clarkson et al., 2019). Moreover, Ballou et al. (2018) stressed the positive influence of audit firms on sustainability restatements, whereby they help to detect and correct errors at once. However, inconclusive results on the impact of audit firms on sustainability restatements exist (Michelon et al., 2019). Moreover, choosing KPMG and PwC as sustainability assurers led to an increased quality of sustainability reporting (Sierra Garcia et al., 2022). Big Four audit firms and COVID-19 information in sustainability reports were also found to be positively related (Albitar et al., 2021). In contrast, other studies did not find any significant impact of audit firms on sustainability or environmental reporting (Oware and Mallikarjunappa, 2021; Moroney et al., 2012). Maroun (2019) stressed that Big Four audit firms as integrated assurers increase the quality of integrated reports. Thus, while there are some tendencies that (Big Four) audit firms as sustainability assurers are linked with positive stakeholder reactions, there are some doubts. Among others, stakeholders may question the inclusion of stakeholder concerns in the assurance process of audit firms.

Moreover, Ruiz-Barbadillo and Martinez-Ferrero (2020) stressed that joint provisions of financial audits and sustainability assurances increase sustainability assurance quality. Zorio et al. (2013) stressed a similar link for audit firms. However, there are also indications that Big Four audit firms favor the limited assurance level (Martinez-Ferrero and Garcia-Sanchez, 2018). Harindahyani and Agustia (2023) stressed that audit firms lead to increased compliance with statement elements but decreased disclosure of addressees and recommendations. According to Bolas-Araya et al. (2019), audit firms reported mostly about the responsibilities of assurers and reports, scope and level of assurance, assurance standards, summary of work, materiality, inclusivity, responsiveness and general opinions as conclusions. Finally, Hummel et al. (2019) found that audit firms decrease the breadth of sustainability assurance statements, whereas no impact on the depth of the statements was found. Mock et al. (2013, 2007) found that Big Four audit firms improve the disclosure of procedures, the framework used and the use of standards in sustainability assurance statements. However, they negatively impact the inclusion of recommendations. Thus, there are tendencies that audit firms and other assurance providers show major differences in their assurance reporting behavior. This may be related to the dominant experiences of audit firms in financial auditing and the respective regulations. This focus may impact sustainability assurance processes. Other external providers have no experience in financial statements and supervision of this information.

### 3.4 Major results

The main goal of our literature review was to analyze the governance-, financial- and sustainability-related drivers of the choice of a sustainability assurance provider, as well as the financial and sustainability consequences. Table 3 summarizes the (in)significant results of our literature review, which refer to our research questions. Most studies addressed the determinants of the selection of Big Four audit firms as sustainability assurers with a focus on governance factors. This is also related to a smaller extent to audit firms, whereas studies on the selection of financial auditors as sustainability assurers and on joint audits between audit firms and other assurance providers are rare. It is assumed that the selection of (Big Four) audit firms is linked with a higher quality of sustainability assurance in comparison with other sustainability assurers. Regarding the consequences for firm value, most studies included in the review focused on financial rather than sustainability consequences. The choice of an audit firm as a sustainability assurer is dominant, whereas research on the consequences of the selection of Big Four audit firms, financial auditors as sustainability assurers and joint audits is of low relevance. The results of prior research on the determinants and consequences of sustainability assurers have been either inconclusive or are too scant to stress clear tendencies. This aligns with legitimacy theory, which is unable to stress clear preferences among sustainability assurance providers regarding assurance quality. The selection of sustainability assurance providers can be classified as a symbolic tool of impression management, leading to a lack of activity in sustainability transformation processes. Moreover, high-quality assurance providers may promote successful sustainability and stakeholder management. As stakeholders cannot easily analyze the quality of sustainability assurance services, the risks of symbolic use of sustainability assurance are increased.

The next section refers to major limitations and selective research recommendation. We differentiate between proxies of sustainability assurance providers as well as between determinants and consequences of sustainability assurer choice.

## 4. Limitations and research recommendations

### 4.1 Proxies of sustainability assurance providers

Although empirical research on sustainability assurance is a rather young discipline, a massive increase in studies can be found in recent years. Previous studies are linked with low homogeneity and comparability. Major research gaps refer to the proxies of assurance providers, as little variation in the provider proxies can be found. Most studies only differentiated between (Big Four) audit firms and other providers, neglecting heterogeneity within these groups. As sustainability reporting and related assurance services are dependent on the specific industry, the industry expertise of professional accountants should be considered in future studies on sustainability assurance. The well-known measures of industry specialists in studies on financial audits can be transferred to sustainability assurance to increase the heterogeneity within assurance providers. We assume that sustainability assurers with industry expertise, e.g. based on environmentally sensitive industries, positively contribute to assurance quality.

As already stated, most studies distinguished between professional accountants and other assurance providers. We know very little about the determinants and consequences of joint provisions of financial audits and sustainability assurance, as well as joint audits between audit firms and other external assurance providers. First, we observe a high probability that financial auditors will also be selected as sustainability assurers due to synergy effects and cost arguments. This corporate strategy may lead to a focus on financial materiality in sustainability assurance, whereas stakeholder materiality may be neglected by professional

**Table 3.** Results of the literature review

Determinants [independent variable(s)]	Sustainability assessor Determinants				Consequences for firm value [dependent variable(s)]
	Audit firm	Big Four audit firm	Financial auditor as sustainability assuror*/joint audit	±	
<i>Governance determinants:</i>					
(1) Board composition:	5	6	1	5	0
(2) Stakeholder influence:	0	0	0	1	0
(3) Country governance:	3	1	0	7	1*
Financial determinants	1	2	4	0	0
Sustainability determinants	0	4	6	1	0
Total	9	4	20	22	2
<i>Consequences on firm value</i>					
Audit firm	±	±	±	±	±
Big Four audit firm	+	-	+	-	+
Financial auditor as sustainability assuror*/joint audit**	+	+	+	+	+
Financial consequences	5	4	8	5	3**
Sustainability consequences	4	0	6	3	2**
Total	9	4	14	8	5**

**Source(s):** Table by author

accountants. As professional accountants and other external providers (e.g. environmental experts) have different experiences and skills in financial audits and sustainability services, we recommend conducting research on strategic cooperations between these parties to realize an increased quality of sustainability assurance. Joint sustainability assurance practices may lead to increased stakeholder trust and firm reputation, as sustainability assurors other than professional accountants may promote a broader inclusion of stakeholder demands. Combined assurance engagements are especially useful for small- and medium-sized audit firms, which do not have sufficient resources to massively increase the sustainability knowledge of their public accountants. They should force close cooperation with sustainability experts, e.g. environmental certificates.

#### 4.2 *Determinants of sustainability assesor selection*

Regarding *determinants*, prior researchers mainly referred to board composition as a *governance* factor. Stakeholder influence, however, was rather neglected. Future researchers should address the influence of different types of ownership on the choice of sustainability assurance providers. Among others, family ownership, state ownership, managerial ownership and institutional ownership should impact this decision. In recent years, many researchers have analyzed the link between sustainable institutional investors and corporate sustainability outputs, such as sustainability performance and reporting (e.g. [Kordsachia et al., 2022](#)). Researchers assume that long-term investors and investors who are signatories of the United Nations Principles for Responsible Investment pressure managers to be more active in sustainability strategies ([Kordsachia et al., 2022](#)). Sustainability assurance is also required by institutional investors, as it increases the quality of sustainability reports. In view of the traditional relationship between financial auditors and shareholders, we assume that institutional investors will promote the selection of professional accountants as sustainability assurance providers. As institutional investors focus on financial materiality in sustainability reporting, the link between financial statements and sustainability reports may be better reflected if audit firms are selected as sustainability assurors. In view of the synergies between a financial audit and sustainability assurance processes, there should be more emphasis on the impact of financial audit quality, based on audit fees, nonaudit fees and other proxies, on the selection of sustainability assurance providers. This also relates to the effectiveness of audit committees, which are responsible for the oversight of both financial auditors and sustainability assurors ([Velte, 2024a](#); [Velte, 2024b](#)). The studies included in our literature review did not recognize other stakeholder pressure, except for media visibility, as a driver of the choice of a sustainability assurance provider. As a broad range of stakeholders demand the reliability of sustainability reports, future studies should include customers, suppliers and other nonshareholding stakeholders. Although a few studies have recognized country governance effects, cultural effects have been neglected so far. Based on Hofstede's cultural dimensions (collectivism, indulgence, long-term orientation, feminism, power distance and uncertainty avoidance), we recommend addressing how human values are related to human behaviors, attitudes and personalities across cultures. Cultural aspects are rather prominent in prior corporate governance and sustainability research. Thus, countries with a higher degree of collectivism, long-term orientation and feminism promote stakeholders' sustainability demands and should lead to the selection of a high-quality sustainability assesor.

Empirical research on the *financial determinants* of sustainability assurance providers is rather limited. Financial reporting quality (e.g. earnings management) as a major driver should be included in future research designs. In terms of the concentration of the sustainability assurance market, (Big Four) audit firms are often chosen for financial audits

and sustainability assurance services. There are several interactions between financial and sustainability reports, which should be recognized in an integrated approach. We assume that an increased level of earnings management may also influence sustainability assurance decisions. Managers may mask their opportunistic behavior on financial documents by engaging a high-quality sustainability assessor. In contrast, poor financial reporting quality may lead to a decreased quality of sustainability reports and a low-quality assessor.

Previous studies on *sustainability determinants* have only addressed total sustainability proxies. In view of the complexity of sustainability attributes, future researchers should recognize major environmental and social subpillars, e.g. climate, biodiversity or circular economy. Climate performance and reporting should be a future research focus as many standard setters (e.g. the Securities and Exchange Commission, the International Sustainability Standards Board or the EU Commission) have published climate reporting frameworks. We assume that higher corporate sustainability outputs will motivate executives to choose a high-quality sustainability assessor. We know very little about the influence of sustainability reporting on sustainability assurance providers. During recent years, researchers have increasingly measured sustainability reporting quality by using automated text analyses (e.g. based on Python and artificial intelligence). The selection of sustainability assessors may be highly correlated with the quality of sustainability documents.

#### 4.3 Consequences for firms of sustainability assessor choice

The selection of high-quality sustainability assessors should lead to increased stakeholder trust and firm reputation. However, prior studies have only focused on sustainability performance and reporting. Future studies should analyze explicit stakeholder reactions (e.g. customer, employee or supplier satisfaction) as a consequence of the selection of specific sustainability assessors.

The mentioned financial and sustainability variables as determinants may also be relevant as *consequences* for firm value. Thus, empirical research on sustainability assurance providers is significantly connected with endogeneity concerns, especially related to reversed causality problems. Granger causality tests may be used for measuring a potential bidirectional relationship. We have already stressed that most studies included in our literature review did not properly check for endogeneity concerns. Researchers recommend including proper causality tests by quasi-natural experiments based on the difference-in-difference approach, two-stage least squares models and instrumental variables (Wintoki *et al.*, 2012). Moreover, dynamic panel regressions are useful to address reverse causality issues. The difference-in-difference approach may be extremely useful to address exogenous shocks, e.g. regulatory changes.

Table 4 summarizes the major research recommendations.

## 5. Summary

Stakeholders of PIEs request decision-useful sustainability reporting as a major complement to financial statements. Sustainability reporting is linked with greenwashing and information overload as attributes leading to decreased stakeholder trust (Mahoney *et al.*, 2013). Sustainability assurance, especially the selection of a high-quality assessor, should lead to increased stakeholder attraction and firm reputation (Mock *et al.*, 2007, 2013). Recently, many (inter)national standard setters have implemented increased regulations on mandatory sustainability reporting, which also lead to mandatory assurance processes. We stress the current controversial discussion of whether (Big Four) audit firms or other external assurance providers lead to better assurance quality (Kuo *et al.*, 2022). Previous literature reviews on sustainability assurance (e.g. Huang and Watson, 2015; Maroun, 2019; Velte and Stawinoga, 2017;

**Table 4.** Research recommendations

Proxies of sustainability assurance providers	Determinants of the selection of sustainability assurance providers	Consequences of the selection of sustainability assurance providers
<ul style="list-style-type: none"> <li>• Industry expertise of sustainability assurors</li> </ul>	<ul style="list-style-type: none"> <li>• Ownership heterogeneity (e.g. family, state, managerial and institutional ownership); sustainable institutional investors</li> </ul>	<ul style="list-style-type: none"> <li>• Stakeholder trust and firm reputation</li> </ul>
<ul style="list-style-type: none"> <li>• Joint provisions of financial audit and sustainability assurance</li> </ul>	<ul style="list-style-type: none"> <li>• Financial audit quality and audit committees; other stakeholder pressure (e.g. customer and supplier)</li> </ul>	<ul style="list-style-type: none"> <li>• Endogeneity concerns, e.g. reversed causality</li> </ul>
<ul style="list-style-type: none"> <li>• Joint audits between audit firms and other external assurance providers</li> </ul>	<ul style="list-style-type: none"> <li>• Country effects (e.g. culture)</li> <li>• Financial reporting quality</li> <li>• Environmental and social subpillars of CSR outputs</li> </ul>	

**Source(s):** Table by author

[Velte, 2021](#)) did not concentrate on sustainability assurance providers. Instead, they included different assurance dimensions (e.g. existence, scope or quality of sustainability assurance statements). Thus, this literature review focuses on the major *determinants* of the choice of a sustainability assurance provider *and consequences for firms as the two major research areas*. We differentiate between governance and other firm determinants as well as financial and sustainable consequences for firms. Sustainability assurance providers are categorized as (Big Four) audit firms, joint provision of financial audits and sustainability assurances, other assurance providers and joint assurance between audit firms and other assurance providers.

Referring to our major research questions, we found that most studies included in the literature review focused on the determinants of Big Four audit firms as sustainability assurance providers, mainly on governance-related aspects. Moreover, compared with sustainability outputs, the financial consequences for firms of the selection of assurance providers were a popular topic. Most researchers included (Big Four) audit firms, whereas financial auditors as sustainability assurors and joint audits between audit firms and other assurance providers have been neglected. In line with the controversial discussion, there are no clear indications of which determinants may promote the choice of (Big Four) audit firms and whether choosing professional accountants will lead to positive consequences for firms. This aligns with the legitimacy theory.

Our analysis yields major practical and research implications. From a practical perspective, boards of directors should carefully analyze the selection of high-quality assurance providers to realize substantive sustainability management. Stakeholders depend on the credibility of sustainability reports to limit greenwashing and information overload. There should be more emphasis on joint audits between professional accountants and other external parties as sustainability assurors. We assume that close cooperation between accountants and other environmental experts may lead to increased assurance quality and stakeholder trust. Moreover, firms should consider an integrated thinking approach, promoting the cooperation between financial auditors and sustainability assurors. The global sustainability assurance market will be subject to an increased concentration of Big Four audit firms. Small- and medium-sized audit firms may lose significant clients if they do not invest massively in digitalization tools and sustainability skills. Boards of directors should

explicitly link financial statements and sustainability reporting, e.g. based on financial materiality. The financial auditor should have a deeper understanding of the sustainability strategy of the firm and vice versa. We assume that not selecting a financial auditor as a sustainability assessor will lead to increased risks of greenwashing and decoupling practices. Furthermore, audit firms should view other sustainability assurance providers as future cooperation partners, highlighting the need for joint assurance of sustainability reports. Professional accountants tend to have lower environmental skills than other assurance providers. Moreover, other assurance providers have little knowledge of financial statements, leading to major restrictions in both areas. Joint assurance between the two parties may represent a “best practice” in the future if the client is willing to grant extended audit fees.

From a research perspective, future studies should analyze in more detail the individual expertise of sustainability assessors, e.g. based on industry knowledge and experience. It remains an open question whether the selection of a specific sustainability assurance provider leads to successful corporate sustainability transformation and stakeholder trust. Future research should elaborate on stakeholder reactions, e.g. customer or supplier satisfaction as a consequence of sustainability assurance services.

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