Exploring New Perspectives: Incorporating Mixed Methods in Sustainability Accounting Research

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Abstract: Research in sustainability accounting and reporting has expanded significantly, driven by the increasing demand for sustainable business practices. Yet, while quantitative approaches have significantly advanced sustainability accounting research, they may not fully capture the complex and multifaceted nature of sustainability issues. Integrating qualitative perspectives can complement these approaches by providing deeper contextual insights and enriching the overall understanding of sustainability phenomena. This paper argues that combining quantitative and qualitative methods through mixed methods offers a strong alternative to improve research outcomes. Mixed methods allow researchers to blend numerical data with contextual narratives, offering deeper insights into the motivations, challenges, and impacts behind sustainability accounting practices. The paper describes the current dominance of quantitative approaches in sustainability accounting research. It also highlights the underutilization of mixed methods and explains how integrating both approaches can address the weaknesses of single-method designs. The discussion briefly introduces different types of mixed methods designs to help guide future research. It also outlines challenges in applying mixed methods, such as higher resource demands and the difficulty of integrating different types of data. A synthesis of recent sustainability accounting literature reveals that although interest in mixed methods has increased, full methodological integration remains rare. To address this gap, the paper emphasizes the need for methodological flexibility and the strategic use of triangulation to enhance research rigor. By presenting updated examples and offering practical recommendations, this study contributes to advancing the methodological landscape of sustainability research. Incorporating mixed methods not only addresses existing research gaps but also enables a more comprehensive understanding of corporate behaviors, stakeholder relationships, and broader societal impacts. Future research should explore innovative designs that combine experimental and qualitative inquiries to strengthen the field further.

Keywords: Sustainability accounting research, Mixed methods, Quantitative research, Qualitative research, Sustainability reporting

1. Introduction

This paper argues for the use of mixed methods research in sustainability accounting (hereafter referred as SAMM), which has been relatively uncommon in financial (and or sustainability) accounting studies (Grafton, Lillis and Mahama, 2011; Fraser, 2014; Dewasiri, Weerakoon and Azeez, 2018). SAMM are relatively common in accounting research domains such as the management accounting field (Ylä-Kujala et al., 2023) and the public sector accounting (Akbar, Pilcher and Perrin, 2012; 2015). This is due to the nature of research in these domains, which is often complex and requires a deep understanding of different perspectives. For example, management accounting research often requires understanding human behavior and decision-making processes. Qualitative approaches like interviews or focus group discussions can assist this research. Public sector accounting research often involves comprehending government policies and regulations, and it frequently benefits from quantitative approaches, including the utilization of secondary data. (further reading: (Dechow, Sloan and Sweeney, 1995; Grafton, Lillis and Mahama, 2011; Akbar, Pilcher and Perrin, 2012; 2015).

So far, a predominantly quantitative approach has been adopted in the studies within accounting research (Grafton, Lillis and Mahama, 2011; Fraser, 2014; Lamprecht and Guetterman, 2019). It has long been dominated by the rigorous realm of quantitative analysis, dissecting the intricacies of finance through numbers and models. For example, all articles in The Accounting Review, Volume 100, No. 2 (March 2025), apply quantitative

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approaches—either through archival data or analytical modeling with empirical testing, to answer their research questions. Even papers that use formal theoretical models include empirical validation, reflecting a continued preference for quantitatively grounded research in top-tier accounting journals. This indicates that quantitative methods have become highly prevalent in financial accounting research. Yet, beneath the surface of numbers lie complex narratives in reporting, human stories, and societal ripples that quantitative methods often struggle to capture.

Although quantitative methods are still the primary choice in financial accounting research, including sustainability research, qualitative methods are also becoming an option. Some studies use techniques such as qualitative content analysis (Hahn and Lülfs, 2014; Singh et al., 2022), exploratory approach and thematic analysis (Safari and Areeb, 2020), systematic literature review (Dienes, Sassen and Fischer, 2016), and some studies use mixed methods, such as Daub (2007) in an attempt to conduct further investigation on how sustainability reporting is done in Switzerland, and the recent study conducted by Ahmed (2023) using content analysis and systematic literature review to find out how corporate governance mechanisms are in achieving SDGs. Researchers increasingly turn to SAMM in sustainability reporting, but this valuable approach remains underused. This lag might stem from a reluctance to break with tradition, where quantitative approaches seem like the default, even when mixed methods could better answer research questions. In addition, researchers might hesitate to publish their qualitative or mixed-methods studies in top journals because these journals often favor quantitative research. This makes it harder for their work to be seen and accepted.

Dewasiri et al. (2018) revealed four key research gaps hinder the effective use of mixed methods in financial research: (1) poorly defined research questions, (2) unclear justification for mixed methods, (3) inadequate identification of specific mixed method types and designs, and (4) challenges in manuscript review processes. Addressing these shortcomings is crucial to unlock the full potential of mixed methods in financial accounting research. SAMM can contribute more effectively to our understanding of complex financial and sustainability issues by improving research design, clarity in justifications, and communication with reviewers. Therefore, in this paper, we would like to answer the following research question: How can SAMM be effectively incorporated into sustainability accounting to enrich understanding of complex phenomena? Instead of positioning quantitative and qualitative approaches in opposition, this paper emphasizes their complementary value. In particular, SAMM designs enable researchers to build qualitative insight upon quantitative findings, such as by conducting follow-up interviews after surveys or exploring unexpected patterns emerging from statistical analyses.

This paper delves into a preview of SAMM, specifically its use in sustainability accounting research. After briefly introducing the approach, it will explore it through concrete published article examples. Then, it'll showcase the challenges and avenues of mixing methods before wrapping up with a conclusion.

2. Literature Review

2.1 Mixed-Method Preview in Accounting Research

Basically, qualitative and quantitative research approaches are frequently perceived as distinct and contradictory methods in research (Monageng, 2023). Table 1 showcases the contrasting quantitative and qualitative research perspectives, which often fuel debate. The difference between the two methods stems from the preconceived connection of positivist paradigms with quantitative and interpretive and constructivist paradigms with qualitative methods (Fraser, 2014). Generally, empirical studies in financial accounting often depend on substantial financial data, leading to strong statistical capabilities and examining cross-sectional differences. Even though we know that financial decision-making often involves other factors that cannot be observed solely from secondary data or numbers. Balance sheets and profits are just numbers when we can understand what drives those numbers in the report. Despite contrasting philosophical foundations, integrating qualitative and quantitative methods within a unifying framework allows for comprehensive research. Though based on different assumptions about reality and knowledge, a single study can combine qualitative and quantitative approaches under a shared paradigm (Grafton, Lillis and Mahama, 2011; Dewasiri, Weerakoon and Azeez, 2018).

Upon closer examination, sustainability reporting research in the accounting field fundamentally encompasses both quantitative data (e.g., financial statements, numerical data; environmental, social, and governance (ESG) performance scores) and qualitative aspects (e.g., accounting policies, sustainability reporting disclosures, press release, conference call, etc.). In practice, financial reporting goes beyond merely presenting profit margins and balance sheets; it also reflects the experiences of employees impacted by layoffs, the concerns of communities

dealing with environmental damage, and the ethical challenges confronted by those in charge of corporate decisions. As business dynamics become increasingly complex, the need for a deeper understanding of emerging phenomena continues to grow (Lamprecht and Guetterman, 2019).

The term "mixed methods research" is now widely embraced to characterize research designs that integrate both qualitative and quantitative approaches within a single study (Grafton, Lillis and Mahama, 2011; Dewasiri, Weerakoon and Azeez, 2018). A substantial body of literature explores the characteristics of mixed methods research, how its application within a single study can enhance and reinforce potential findings (Fraser, 2014; Dewasiri, Weerakoon and Azeez, 2018), and the possible weakness of integrating different research methods (Åkerblad, Seppänen-Järvelä and Haapakoski, 2021; Fetters and Tajima, 2022). As an illustration, Table 2 outlines the basic differences in how quantitative, qualitative, and mixed methods are used in financial accounting:

Table 1: Qualitative vs Quantitative Research Paradigm

No	Aspect	Qualitative Research	Quantitative Research
1	Ontological Assumption (Nature of Reality)	Relativism, multiple realities, subjective experiences.	Objectivism, a single reality, objective observations.
2	Epistemological Assumption (How we know what we know)	Inductive, Subjective knowledge through interpretation and context	Deductive, Objective knowledge through measurement and empiricism.
3	Relationship with Researcher and Subject	Subjective, participatory, emphasis on reflexivity and ethical considerations	Objective, detached, emphasis on minimizing researcher influence
4	Strengths	Rich, in-depth, contextual understanding of individual experiences and social processes	Generalizable, reliable, quantifiable results
5	Weaknesses	Subjectivity, difficulty in generalizing, potential for researcher bias	Limited scope, can overlook context and individual experiences, data reduction

Source: Adapted and developed from Fraser (2014); Creswell (2018); Åkerblad, Seppänen-Järvelä and Haapakoski (2021); Fetters and Tajima (2022)

Table 2 shows how this mixed method becomes a very powerful method for obtaining evidence to investigate phenomena more deeply. Combining quantitative rigor with qualitative depth, mixed methods provide a formidable toolkit for research in financial accounting. This powerful combination enables researchers to:

- Explore the complexities of intricate phenomena.

Financial performance goes beyond mere numerical figures; it involves decision-making, motivations, and the narratives that underlie the data. Mixed methods enable the researchers to investigate further, revealing the concealed stories influencing financial results.

- Construct a more comprehensive explanation.

Quantitative data forms the framework, while qualitative perspectives contribute substance and depth. Through the triangulation of both, research can acquire a more elaborate, finely detailed comprehension of how financial practices manifest in the actual business environment.

- Validate and refine research findings

Quantitative data might tell us "what" happened, but qualitative insights help us understand "why." This interplay strengthens the validity and reliability of our research, ensuring a more robust foundation for conclusions.

Table 2: Differences of Three Methods in Accounting Research

Aspect	Quantitative Research	Qualitative Research	Mixed Methods Research
Data Type	Numerical data (e.g., financial statements, ratios)	Textual or narrative data (e.g., interviews, documents)	Combination of numerical and textual data
Research Focus	Numerical analysis, statistical relationships, patterns	In-depth understanding of motivations, context, and perspectives	Comprehensive understanding with both numerical and qualitative insights

Aspect	Quantitative Research	Qualitative Research	Mixed Methods Research
Example	Analyzing the impact of accounting standards on financial statement numbers	Conducting interviews with financial managers to understand their accounting choices	Analyzing financial statements (quantitative) and conducting interviews to understand reasons behind the choices (qualitative)
Research Question	"What is the correlation between earnings and stock prices?"	"How do financial managers make accounting choices in complex financial situations?"	"How do accounting standards impact financial reporting and decision-making in real-world companies?"
Data Collection Methods	Surveys, data analysis, statistical tests	Interviews, content analysis, observations	Surveys or data analysis (quantitative) and interviews (qualitative)
Integration of Findings	Statistical analysis	Thematic analysis, narratives	Comparing quantitative and qualitative findings to provide a comprehensive perspective

Mixed methods research offers several advantages, but it is also important to acknowledge its weaknesses and limitations. First, mixed-methods research often requires more resources, including time, funding, and expertise, than single-method approaches (Dawadi, Shrestha and Giri, 2021). Researchers need to be proficient in both quantitative and qualitative research methodologies, which can demand extensive training and skills development. Additionally, conducting surveys or experiments alongside in-depth interviews or observations can be time-consuming and costly. Second, combining quantitative and qualitative data collection and analysis methods can introduce complexity into the research process (Dewasiri, Weerakoon and Azeez, 2018; Fetters and Tajima, 2022). Researchers must carefully plan the integration of these methods to ensure they complement each other and provide meaningful insights. Last, mixed methods research can be vulnerable to bias if not conducted rigorously. Researchers may unintentionally favor one method or misinterpret findings (Fraser, 2014; Dawadi, Shrestha and Giri, 2021).

Mixed methods aren't a replacement for quantitative analysis; they're a powerful complement. By embracing this broader approach, researchers can move beyond mere numbers and unlock a deeper understanding of the financial world, shaping research that is rigorous, impactful, and relevant to the challenges and opportunities of today. For example, in an explanatory sequential design, researchers may begin with a quantitative phase to identify trends or anomalies, then follow up with qualitative interviews or document analysis to explain these findings. This iterative integration helps uncover deeper insights and supports theory-building. With the growing availability of information technology tools, such as AI-assisted text mining (De Villiers, Dimes and Molinari, 2023; Jiang, Gu and Dai, 2023), online survey platforms with open-ended responses, and software for qualitative coding, the process of deriving qualitative data from quantitative stages has become increasingly feasible and efficient. Such integration reinforces the value of mixed methods by leveraging the strengths of both paradigms and responding to the increasing complexity of sustainability issues.

2.2 Implementation and Comparison Between Three Methods in Sustainability Research

Research in the field of sustainability is inherently complex and often requires a range of approaches to develop a deeper understanding of how sustainability operates at the individual, corporate, and national levels. Sustainability is widely recognized as aligning with the objectives of the Sustainable Development Goals (SDGs) and is closely tied to government policies as well as standards issued by international bodies such as the International Sustainability Standards Board (ISSB) and the International Accounting Standards Board (IASB), for example, through the International Financial Reporting Standards S1 and S2. These standards, in turn, influence how companies implement sustainability practices in accordance with regulatory requirements. Given this complexity, selecting appropriate research methods is critical for understanding and addressing the multifaceted environmental and social challenges inherent in sustainability research. While quantitative methods have traditionally dominated the field, qualitative and mixed methods have increasingly been adopted to address these challenges. Table 3 provides a comparison of the three primary research approaches: quantitative, qualitative, and mixed methods, highlighting their key differences and applications in sustainability research.

Mixed methods, or what we refer to here as SAMM, bridge these approaches by integrating quantitative and qualitative data to build a more comprehensive picture of sustainability practices. In this context, SAMM is less about combining methods for the sake of methodological “best practice” and more about responding to the realities of sustainability accounting research. For example, a study might pair quantitative performance metrics with interviews that unpack how those metrics are interpreted and acted upon within firms. This integration

allows researchers to connect system-level patterns with organizational narratives, making it possible to explore not just what is happening, but also why and how.

Table 3: Examples of Research Design of Sustainability Research (Authors own creation)

Feature	Quantitative Method	Qualitative Method	Mixed Method
Focus in Sustainability Reporting	Assessing environmental and social impacts, measuring performance against targets, identifying trends	Understanding stakeholder perspectives, exploring motivations and challenges, uncovering unintended consequences	Combining quantitative and qualitative data to provide a holistic picture of sustainability efforts and their effectiveness
Data Type	Sustainability reports, financial data, environmental sensors, surveys with closed-ended questions	Interviews with stakeholders, focus groups, observations, document analysis of policies and practices	Both quantitative and qualitative data, including surveys with open-ended questions, interviews alongside data analysis
Strengths	Rigorous analysis, allows for comparisons and generalizations, provides objective evidence of performance	Rich insights into motivations and experiences, captures nuance and complexity, identifies hidden issues	Combines strengths of both methods, provides comprehensive understanding of context and impact, allows for triangulation of findings
Weaknesses	Limited in capturing subjective dimensions of sustainability, may overlook unexpected outcomes, can be data-intensive	Subjective interpretations, smaller sample size, time-consuming data collection and analysis	Requires careful integration of both methods, potential for redundancy, complex data analysis and interpretation
Examples	Analyzing trends in carbon emissions across companies in a specific industry, using statistical tests to compare environmental performance of different sustainability initiatives	Conducting interviews with employees to understand their perceptions of the company's sustainability efforts, analyzing content of sustainability reports to identify key themes and priorities	Combining surveys with interviews to assess stakeholder perceptions of the company's sustainability performance alongside quantitative data analysis of environmental and social impacts

2.3 Mixed Methods Research Published on Sustainability Accounting Research

This section presents a search for articles published in Scopus up to the year 2025, using the keywords “mixed method*” and “triangulation,” while narrowing the search to the fields of Business, Management, and Accounting. We also specifically examined journals related to accounting and sustainability. After reviewing the abstracts and assessing their relevance to the sustainability theme, we compiled a selection of published articles, which are summarized in Table 4. Overall, several journal outlets have provided space for researchers in the field of sustainability accounting to publish mixed-method studies, including Accounting, Organizations and Society, Business and Society Review, Meditari Accountancy Research, Social Responsibility Journal, and Accounting, Auditing and Accountability Journal.

Researchers like Guan et al. (2023); Piedepalumbo et al. (2024); ElBelehy and Crispim (2025) combine content analysis, surveys, and interviews to explore sustainability practices. They do not treat interviews as a simple add-on but use them to explain the reasons behind quantitative results. Studies by Rimmel and Jonäll (2013) and Ahmed (2023) also use interviews to understand company intentions and stakeholder views. Some researchers, such as Al-Esmael et al. (2020) and Mombeuil and Zhang (2020), apply creative approaches like soft mathematical modeling and CSR campaign analysis. In addition, journals like *Meditari Accountancy Research* and *Social Responsibility Journal* consistently publish the usage of SAMM in their publication. The mixed methods approaches in these studies show how quantitative and qualitative techniques work together in SAMM. Researchers use quantitative tools like surveys, regression analysis, and content analysis to identify patterns, test relationships, and measure sustainability outcomes. For example, Piedepalumbo et al. (2024) and Ahmed (2023) apply regression models to examine sustainability practices across companies. At the same time, they use qualitative methods such as interviews and document analysis to explain the meanings and motivations behind these patterns. Studies like Rimmel and Jonäll (2013) and Safari (2022) use interviews to explain what the company intentions and stakeholder experiences, adding depth to numerical findings.

Table 4: Examples of Sustainability Research Using Mixed Method

Author (s)	Journal	Quantitative Method	Qualitative Method
ElBelehy and Crispim (2025)	Business and Society Review	Literature-based questionnaire to 187 practitioners	Interviews with hotel managers for interpreting statistical result
Castillo and Roberts (2024)	Journal of Accounting Literature	Questionnaire or structured survey	Interview
Piedepalumbo et al. (2024)	Accounting, Organization, and Sociaty	Content analysis of Annual Reports	Semi-structured interviews
Guan et al. (2023)	Social Responsibility Journal	Quantitative data through a regression analysis	involved qualitative content analyses of press releases, social media content, company reports, and websites of the casinos explored CSR's activities
Ahmed (2023)	Meditari Accountancy Research	Secondary data from integrated reporting then analyzed by multiple regression analysis	Systematic review from *Meditari Accountancy Research* journal
Safari (2022)	Meditari Accountancy Research	A large data set consisting of 2,527 observations of all Australian firms	Semi-structured interviews with female directors
Fialho, Morais and Costa (2021)	Meditari Accountancy Research	Quantitative analysis to test the mean differences of water references between years, industry and region	Qualitative content analysis of 15 companies' reports
Islam, Kokubu and Nishitani (2021)	Social Responsibility Journal	Banks data from Dhaka Stock Exchange (DSE) and CS reporting index	Legitimacy theory variables explored by 28 interviews with manager
Tingey-Holyoak, Pisaniello and Buss (2021)	Meditari Accountancy Research	Producer survey to test demand for the "bundled" conceptual model	(1) desk-based review of water accounting and water technology and (2) a participant-based case study
Al-Esmael et al (2020)	Social Responsibility Journal	Survey method	Soft mathematical modelling
Mombeuil and Zhang (2020)	Social Responsibility Journal	Survey to stakeholder	Examined the latest advertising campaigns and CSR communication advertisements, along with conducting focus group discussions involving both internal and external stakeholders.
Silva Junior et al. (2020)	Social Responsibility Journal	Survey students in the management program about CSR's opinion	Documentary research
Costa et al. (2019)	Accounting, Auditing and Accountability Journal	Manual content analysis using coding process	Semi-structured interviews
Ackers (2019)	Social Responsibility Journal	Disclosures in SANParks' annual reports	Narrative disclosures elucidate how SANParks reports to its stakeholders
Naynar, Ram and Maroun (2018)	Meditari Accountancy Research	Questionnare	Integrated reports are analysed to construct interpretively a list of disclosure themes
Passetti, Cinquini and Tenucci (2018)	Accounting, Auditing and Accountability Journal	Internal environmental management were collected through a survey	Interviews

Author (s)	Journal	Quantitative Method	Qualitative Method
Cadez and Guilding (2017)	Accounting, auditing and accountability journal	Data from slovenian firms that operate in the european union emissions trading schem	Interview
Perera and Hewege (2016)	Social Responsibility Journal	Survey	Focus Group Discussion
Hasan (2016)	Social Responsibility Journal	Printed questionnaires	Seven in-depth semi-structured interviews
Tello, Hazelton and Cummings (2016)	Accounting, Auditing and Accountability Journal	Questionnaire	Analysis of public submissions to the Water Accounting Standards Board on the Exposure Draft of Australian Water Accounting Standard 1
Rimmel and Jonäll (2013)	Accounting, Auditing and Accountability Journal	examination of corporate websites and corporate reports spanning a period of five years.	Interviews of company representatives about company intentions behind biodiversity disclosure
Joseph and Taplin (2012)	Social responsibility journal	Content analysis of website disclosures by 139 local authorities, then coded	Interview

Source: Scopus database, with elaborated by authors (2025)

3. Discussion

3.1 SAMM: Design Choices, Challenges, and Researcher Skills

There are three SAMM designs frequently used in research: exploratory sequential, explanatory sequential, and convergent mixed methods (Creswell, 2018). The important question then becomes: When can these three methods be used together in a single research project? Exploratory sequential in SAMM are particularly useful when investigating emerging or underexplored topics lacking theoretical foundations and clear variables (Fetters, Curry and Creswell, 2013; Creswell, 2018). This approach begins with qualitative exploration, such as interviews, to identify underexplored topics/themes and develop instruments for subsequent quantitative testing, as illustrated in the study by (Castillo and Roberts, 2024), which examined how higher education institutions communicate non-financial disclosures. In contrast, explanatory sequential mixed methods start with quantitative analysis, often using regression or surveys grounded in existing theory. Then, it is followed by qualitative inquiry to explain unexpected results or deepen interpretation, as demonstrated in the study (ElBelehy and Crispim, 2025) show how interviews can add depth to questionnaire findings by revealing the "why" behind the numbers. Additionally, convergent mixed methods collect and analyze qualitative and quantitative data simultaneously (Creswell, 2018). approach integrates findings to provide a comprehensive understanding of the research problem, especially useful for cross-validating or explaining contradictory results. Together, these approaches serve distinct purposes: exploratory designs generate hypotheses, explanatory designs clarify quantitative results, and convergent designs integrate data to enhance overall analysis.

Among SAMM designs, explanatory sequential designs are the most used in this field. This design typically starts with quantitative analysis, such as examining ESG performance across firms, and follows with qualitative methods like interviews or case studies to explain the results (Naynar, Ram and Maroun, 2018; Costa et al., 2019). However, not every design is suitable for every research context. Exploratory sequential designs, which begin with qualitative data to inform subsequent quantitative analysis, might be less effective in sustainability accounting, where established frameworks like GRI standards and ESG ratings already exist. In data-intensive or highly regulated fields, beginning with qualitative work may also encounter practical constraints. As Fetters and Molina-Azorin (2017) reminded, choosing the appropriate design depends on the research question, context, and available resources, not merely on methodological preference.

The key strengths of SAMM lie in complementarity, triangulation, and expansion (Åkerblad, Seppänen-Järvelä and Haapakoski, 2021; Monageng, 2023). Complementarity means using one method to enrich or clarify findings from another. Triangulation strengthens credibility by comparing evidence across data types or sources.

Expansion broadens inquiry by exploring multiple dimensions of a phenomenon. Despite these strengths, SAMM comes with challenges. One major issue is the potential for bias during integration. Researchers may unintentionally prioritize statistical results over qualitative insights or *vice versa*. Addressing this requires clear integration strategies, such as joint displays or side-by-side tables that align quantitative and qualitative findings (Fetters and Tajima, 2022).

In SAMM, rigor is not just about following proper procedures, it's about producing credible and meaningful insights. Triangulation plays a central role here. In sustainability accounting, triangulation invites researchers to challenge their own results by examining them from multiple angles, for example, by comparing ESG data patterns with the lived experiences of sustainability managers or public sustainability reports. As Fetters and Tajima (2022) noted, triangulation's strength lies in revealing hidden dimensions, making findings not only more reliable but also richer in meaning. Yet as Creswell (2018) and Sridharan (2021) caution, triangulation is not simply about mixing methods for the sake of it. Without thoughtful integration and critical reflection, it risks becoming a superficial exercise. Triangulation also brings technical challenges. Researchers must cross-check findings across sources, methods, or theories, which often requires building coding frameworks that connect qualitative themes to quantitative variables. Tools like MAXQDA, NVivo, or Dedoose can support this process, but they demand specific training and experience.

As with other types of research, SAMM also carries potential biases that may arise. However, researchers can minimize bias in mixed methods research by carefully designing, executing, and integrating qualitative and quantitative components. They can use triangulation by combining multiple data sources, methods, or perspectives to cross-validate findings and reduce single-method biases (Fetters, Curry and Creswell, 2013; Creswell, 2018). Researchers should document procedures transparently by clearly describing data collection and analysis steps, which allows others to assess the study's rigor and trustworthiness. They can pilot test instruments such as surveys or interview guides to identify and correct misunderstandings or ambiguities before conducting the full study. Researchers should also engage in reflexivity by critically reflecting on their own potential biases, assumptions, and influence on the research process to reduce subjective distortions. During qualitative phases, they can conduct member checking by asking participants to review the accuracy of interpretations, which improves the credibility of findings. Finally, mixed methods are resource-intensive. Collecting and analyzing two types of data takes more time, larger research teams, and often greater funding. For example, a project combining surveys, interviews, and document analysis may need one team member focusing on statistical analysis (using tools like Stata or SPSS) and another on qualitative coding (using NVivo or Atlas.ti), with extra time set aside for data integration workshops.

3.2 Future Research Using SAMM

Many of these studies (see Table 4) employ SAMM for data collection, with interviews and surveys/ secondary data like ESG scores being a commonly favored combination. Typically, the quantitative method takes precedence, often without thorough justification of the method choice, detailed data analysis explanation, or comprehensive presentation of qualitative findings. This dominance of the quantitative approach may be attributed to the historical prevalence of quantitative methods in sustainability research. Researchers might be hesitant to depart from this established practice, partly due to some academic journals' reluctance to publish sustainability studies that do not include quantitative results.

One aspect that researchers have not widely explored is the use of experimental method in their studies, despite its effectiveness in establishing causality. Levy Paluck (2010) suggests that experiments can be enhanced by incorporating qualitative data, paving the way for mixed methods (further reading: (Monageng, 2023) in tax compliance behavior field). Interestingly, recent research has combined experiments with interview techniques to enrich their findings. summarized this methodological approach or offered guidance on how combining research methods can provide a deeper understanding of tax compliance behavior. For instance, Dechow, Sloan and Sweeney (1995) studied how a manager makes earnings management decisions, complementing quantitative experiments with qualitative interview data. This opens up opportunities for research in the field of sustainability to employ experiments alongside other qualitative methods to gain deeper insights into the subject matter. For example, to understand why managers engage in greenwashing, a field experiment is conducted alongside deep interviews with managers.

Furthermore, one technique is confusing: can content analysis be categorized as quantitative or qualitative? This can be seen in Table 4, which indicates inconsistency in categorizing content analysis techniques. This leads to debates because in sustainability disclosure-related research, a key document used is the reports published by companies. These reports are then analyzed through content analysis and subsequently coded to generate

quantitative values (usually in scores, indices, or even performance). To clarify this point, it is important to explain why content analysis can be classified as either quantitative or qualitative. Content analysis is a versatile tool that can be applied in both qualitative and quantitative research, depending on how researchers use it. On the qualitative side, content analysis helps uncover themes, meanings, or patterns in textual data—for example, exploring how companies frame their sustainability commitments in reports or how they narrate their social and environmental impact. This approach focuses on interpretation and understanding context. On the quantitative side, content analysis often involves systematically coding and counting the frequency of specific words, phrases, or categories, such as tallying the number of times climate-related terms appear in corporate reports or assigning scores to measure ESG disclosure levels. As highlighted by Creswell (2018) the distinction lies not in the method itself but in the purpose and approach of the analysis. Similarly, Fetters, Curry and Creswell (2013) emphasize that techniques like content analysis fit well within mixed-methods designs precisely because they can generate both narrative insights and numerical data. Understanding this flexibility helps explain why content analysis is often debated in the literature and why it can play an important role in sustainability accounting research.

3.3 Challenges of SAMM

Table 2 illustrates the strengths of mixed methods, which can be used to take a closer look at the occurring phenomena. However, this doesn't mean that mixed methods are without shortcomings. One of the challenges researchers focus on is integrating findings from quantitative and qualitative research (Fetters, Curry and Creswell, 2013; Åkerblad, Seppänen-Järvelä and Haapakoski, 2021; Fetters and Tajima, 2022). It involves carefully combining both methods, can lead to repetitive information, requires complex data analysis and understanding, and needs a balance between numbers and descriptions. Researchers should ensure their study makes sense and flows well, instead of just putting different findings aside.

However, some researchers have proposed solutions for effectively integrating mixed method research to minimize bias. The following three researchers highlight ways to reduce bias when integrating findings in mixed methods research:

- Fetters et al. (2013) proposed "Levels of Integration in Mixed Methods Research "

Methods Level Integration encompasses various techniques for connecting and amalgamating quantitative and qualitative data collection and analysis, including generating qualitative data from quantitative findings, using qualitative insights to refine quantitative instruments, merging datasets for comprehensive analysis, and embedding one data collection method within another. Interpretation and Reporting Level Integration involves methods like weaving quantitative and qualitative results into a cohesive narrative, transforming data between qualitative and quantitative formats for comparison, and presenting findings in a unified manner through joint displays. These strategies enhance the depth and breadth of research insights by combining the strengths of both quantitative and qualitative approaches.

- (Åkerblad, Seppänen-Järvelä and Haapakoski, 2021) proposed an "integrative strategy"

Integrative strategy in mixed methods research means that researchers make deliberate choices about connecting the methods they use with their research goals and the subject they are studying. This strategy isn't fixed from the start; it evolves as the research progresses, considering both theory and practice, and it involves building relationships at every stage of the research process.

- (Fetters and Tajima, 2022) proposed a "joint display"

Joint displays are crucial in mixed methods research as planning tools, implementation guides, and post-data collection representations. They help researchers visualize how qualitative and quantitative data collection methods will be linked from the outset, ensuring study design supports integration. During implementation, joint displays act as templates for integrating mixed data, guiding the process, such as using survey responses to inform qualitative interviews. Additionally, they serve as visual aids in dissertations, publications' methods sections, or oral presentations, showcasing the rigor of integrated mixed methods data collection to reviewers and consumers of such studies.

4. Conclusion

The field of sustainability reporting has seen remarkable advancements, driven by the increasing demand for research in this area. Despite this progress, the predominant reliance on quantitative methods has limited the depth of understanding regarding the multifaceted nature of sustainability practices. Quantitative approaches

excel in providing measurable and generalizable data, essential for identifying trends and correlations. However, they often fail to capture the rich, contextual narratives underlying these numbers. This limitation underscores the need for integrating qualitative methods to gain a more holistic perspective.

In this paper, we argue that integrating quantitative and qualitative approaches through mixed methods research (SAMM) offers a powerful way to address this gap. By combining numerical rigor with contextual depth, SAMM enables researchers to develop more nuanced and comprehensive understandings of complex sustainability phenomena. By leveraging the strengths of both methodologies, mixed methods allow researchers to explore complex research questions with greater nuance and depth. Quantitative data can offer broad patterns and relationships, while qualitative insights can provide detailed understanding and context. For instance, while numerical analysis might reveal trends in sustainability performance, interviews and content analysis can uncover the motivations, challenges, and perceptions driving these trends.

Our review of the literature and analysis of published studies show that many sustainability researchers already apply mixed methods, particularly by combining surveys, secondary data, and interviews. However, researchers often prioritize quantitative findings and underuse the potential of qualitative insights. We also find that few studies adopt advanced or experimental designs, which opens up promising opportunities for future research. Notably, we observe that researchers use content analysis as a versatile method across quantitative and qualitative paradigms, which underscores the need to clarify its application and reporting.

Looking ahead, we encourage future researchers to deepen the integration of qualitative and quantitative components, not merely in parallel but in ways that deliberately connect methods to research questions and theoretical frameworks. We also recommend that scholars combine experimental approaches with qualitative inquiry to uncover causal mechanisms and richer interpretations. To maximize the benefits of SAMM, researchers should actively minimize bias, apply rigorous integration strategies, and transparently document their methodological choices. By fully embracing mixed methods, sustainability accounting researchers can deliver more meaningful insights for academia, practice, and policy, ultimately advancing sustainable business and society.

In conclusion, incorporating SAMM holds significant potential to advance the field. This approach can offer deeper insights, drive innovation, and ultimately contribute to more effective and meaningful sustainability practices by bridging the gap between quantitative precision and qualitative richness. Future research should continue to explore and refine mixed methods to fully harness their capabilities in addressing the complex and evolving challenges of sustainability reporting.

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