

Navigating the Challenges and Benefits of Sustainability Reporting: Lessons from SMEs

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Tanggal Masuk:

22 Mei 2026

Tanggal Revisi:

02 Juli 2026

Tanggal Diterima:

30 Juli 2026

Keywords: Sustainability Reporting; Small and Medium-sized Enterprises; SMEs; Challenges; Benefits; Cross-country Comparison; Structured Literature Review (SLR).

How to cite (APA 6th style)

Tantri, S. N. (2026). Navigating the Challenges and Benefits of Sustainability Reporting: Lessons from SMEs. *Jurnal Eksplorasi Akuntansi (JEA)*, 8 (3), 1154-1177.

DOI:

<https://doi.org/10.24036/jea.v8i3.4821>

Abstract

The awareness of sustainability practices among SMEs has grown in many countries. However, there are issues in their abilities in reporting financial or nonfinancial performance related to sustainability, such as the lack of resources and capabilities to conquer the barriers in reporting, while there are many benefits can come along with sustainability reporting, such as transparency and accountability. This study conducts a structured literature review (SLR) to synthesize and evaluate the growing studies on sustainability reporting (SR) among small and medium enterprises (SMEs), focusing on the challenges and benefits in the implementations across countries. Based on 31 reviewed studies from reputable journals, published between 2009 and 2025, the review showed how SMEs across countries start to integrate sustainability reporting using technologies. Most of studies reveal that SR is beneficial in increasing transparency, accountability, stakeholder trust, operational efficiency, and innovation. The results indicated that SMEs still face the significant challenges such as financial, technical, and administrative barriers. Those burdens can hinder widespread adoption among SMEs. This literature review contributes to theories by integrating perspectives of implementing SR in SMEs. Furthermore, practically, this review highlights the importance of simplified and proportionate sustainability frameworks to enhance the opportunities of adopting SR in small firms.



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INTRODUCTION

Globally, small and medium-sized businesses (SMEs) are widely acknowledged as the foundation of economic stability and growth. SMEs employ almost two-thirds of the workforce and make up over 99% of all business entities in OECD nations. For example, in Indonesia, SMEs account for more than 60% of the country's GDP and roughly 97% of all domestic jobs (OECD, 2018, 2021). Because of their size, SMEs' long-term viability and competitiveness are

essential to maintaining macroeconomic resilience, creating jobs, and assisting in the achievement of the Sustainable Development Goals (SDGs). This is in accordance with BAPPENAS (Maswan et al., 2025), which states that MSMEs are the core enabler of participation in Indonesia's green economy.

Small and medium-sized businesses (SMEs) are especially susceptible to Environmental, Social, and Governance (ESG) risks because they frequently face significant limitations in their financial resources, technological capabilities, and managerial experience. Previous studies show that, in contrast to larger corporations, SMEs typically have limited financial resources and struggle to allocate budgets for sustainability reporting activities (Martins et al., 2022). Furthermore, many SMEs lack the specialised staff knowledge or technology systems needed to gather, examine, and disclose non-financial data (Steidle et al., 2025).

Sustainability reporting (SR) refers to the structured process through which organizations disclose non-financial information related to their environmental, social, and governance (ESG) performance (Hasan et al., 2022; Singhania & Saini, 2023). Sustainability reporting (SR) has emerged as a crucial tool for businesses to share their non-financial performance as regulators, supply chain partners, investors, and communities continue to have higher expectations for openness, environmental responsibility, and sound governance. While a lot of the writing and talking about policy has been about big companies, small and medium-sized businesses (SMEs) have a special question of proportionality: do the benefits of SR outweigh its costs enough (Steinhofel et al., 2019)?

In June 2023, the International Sustainability Standards Board (ISSB) released the General Requirements for Disclosure of Sustainability-related Financial Information (IFRS S1) and Climate-related Disclosures (IFRS S2). Those frameworks have a proportionality mechanism, that means the smaller business can follow the rules in a way that can work for them, in terms of small firms in developing countries (IFRS Foundation, 2023).

The Australian Accounting Standards Board (AASB) also used proportionality to adapt IFRS 2 in Australia (Australian Accounting Standards Board, 2025) to make sure that reporting requirements take into account an entity's size, complexity, and resources (Olde, 2025). Moreover, the changes in standards allow SMEs to report the qualitative performance when the quantitative data has not been prepared. Thus, it is easier for small firms to report during the early years of adoption. The combination of evidence shows inconsistent effect. While SR can increase SMEs' credibility, competitive advantages, and stakeholders trust, it can also be perceived disadvantageous in terms of administrative or technical matters. It is also considered costly in some entities.

The literature in SR implementation among SMEs are growing. However, there are many studies seek to explore big companies, while research focus on challenges and benefits, especially for SMEs are underexamined. Rudžionienė & Brazdžius (2023) found that less complex organization often face higher costs of data collection, reporting, and training, resulting various reporting quality. Moreover, the fragmented literature across countries still need to be explore for comparisons. Stanislavská et al. (2023) showed that the content of SR and its drivers may vary depends on regional basis. Meanwhile, Farisyi et al. (2022) found that there are still inconsistencies and a lack of studies focused on SMEs in developing economies.

Third, the changing landscape for setting standards, especially when it comes to putting global frameworks such as the ISSB's IFRS S1/S2 into action and making them work in different countries (e.g AASB), is still not well understood when it comes to SMEs. Prior studies acknowledge that numerous international indicators are inappropriate for smaller enterprises (Permatasari & Kosasih, 2022); however, empirical evidence regarding how SMEs reconcile global standards with streamlined reporting methods is still scarce. Finally, there is an urgency for a systematic comparative review that can integrate the fragmented studies

results to make contribution to policy makers in formulating guidance. This guidance is also needed for standard setters because it is necessary to develop simplify and proportionate the sustainability reporting frameworks for small firms across countries.

In contrast to prior studies (e.g. Rudžionienė & Brazdžius, 2023), that concerns on larger business in developed countries, this recent study systematically build an integrative empirical evidences related to SMEs sustainability practices, both in developed and developing regions. Furthermore, this study is expected to contribute theoretically about sustainability accounting by looking at SMEs and its analysis on challenges and benefit dynamics in global setting. Practically, the findings are expected to help policy making and standard-setters to find out how to simplify and proportionate sustainability reporting framework. It is necessary for making sure that SR is feasible to be implemented in SMEs.

Based on the background and motivation in this review, the research questions rise to evaluate the studies and organize the synthesis of results.

RQ1: *How do SMEs across the countries implement sustainability reporting (SR)?*

RQ2: *What are the challenges and benefits of sustainability reporting for SMEs, regarding the regional and institutional context?*

THEORETICAL BACKGROUND

Resource-Based View Theory

Resource-Based View Theory (RBV) proposed by Barney (1991), tested by Junejo et al. (2025) explained that firms can achieve competitive advantages when they develop and deploy internal resources, such as knowledge, capabilities, technologies, and processes that cannot be easily imitated by their competitors. RBV also explained why firms have different abilities to adopt/implement sustainability practices, including sustainability reporting.

However, there is a critic on RBV for being static because it focuses on resources possession more than the processes, while firms facing dynamic and rapidly changing environments. This limitation is important because the nature of SR is dynamic due to its changing in standard setting. Hence, companies have to develop the sense of opportunities in going out of the scope of RBV in transforming routines to adopt sustainability reporting implementation. Therefore, RBV theory is relevant to this literature review, but requires more improvement when it comes to real implementation.

Dynamic Capabilities Theory

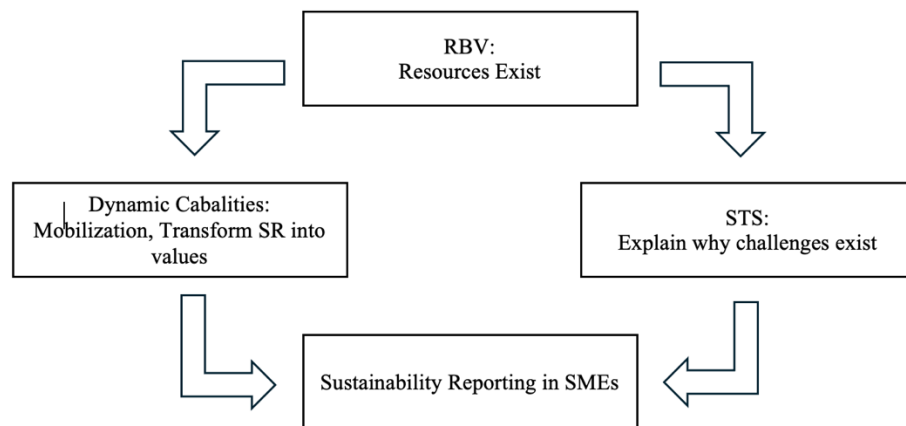
Dynamic Capabilities Theory (DCT), defined as a firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Ojong, 2025; Teece et al., 1997) address the limitations of RBV. While RBV is considered static, DCT claims to be more dynamic in explaining how companies can maintain competitive advantage through changing environments.

Related to the context of SMEs, the dynamic capabilities are important because the companies' internal process are often informal, limited resources, and depend on the owners. SMEs need technical resources and capabilities to absorb practices into integrated part of operational process. Thus, DCT is relevant to this study because it can provide an important theoretical framework in perceiving the mechanism that SMEs can convert reporting costs into values.

Socio-Technical Systems Theory

Socio-Technical Systems (STS) theory (Trist & Bamforth, 2015), followed by Usman et al. (2025) explained that an optimal performance can only be achieved if the social and technical subsystems are comprehensively be optimized. It means that the technology has to fit the companies' capabilities, routines, and culture of the users. STS theory is relevant to the

context of this study because SMEs reporting is oftenly challenging because of the misalignment of the technical subsystems.



(Source: Researcher (2025), adopted from Barney (1991), Teece (1997), and Trist & Bamforth (2015))

Figure 1. Conceptual Framework of SLR

The diagram (see Figure 1) illustrates the integrated theoretical logic linking Resource-Based View (RBV), Socio-Technical Systems (STS), and Dynamic Capabilities (DC) to explain both the challenges and the value-creation process of sustainability reporting (SR) in SMEs. Resource-Based View (RBV) provides the foundational view that firms begin with different resource endowments, such as digital tools, skills, and managerial capacity, which influence the degree of socio-technical alignment within the organization. Socio-Technical Systems (or STS) explains that misalignment between the social system (such as people, routines, and knowledge) and the technical system (such as standards, tools, and data processes) is the primary source of reporting challenges, especially for resource-constrained SMEs.

Dynamic Capabilities (DC) then function as the mechanism through which firms mobilize and reconfigure their resources to sense sustainability opportunities, seize strategic benefits, and transform reporting routines, thereby converting SR from a compliance burden into business value. In addition, STS explained how digital technologies can reshape social systems, hence provides a theoretical framework to help understanding the factors affecting reporting challenges/costs and how to minimize this condition as well as creating values/benefits. For instance, an effective reporting in SMEs can be achieved through the alignment of social and technical systems, not only through formal standards. In other words, STS justified why challenges exists.

Previous Studies

The empirical research found that participating in sustainability reporting for SMEs has many potential benefits, such as enhanced reputation, improved financing access, operational efficiency, and product differentiations. A study from Indonesia (Permatasari & Kosasih, 2022) developed a guideline for sustainability reporting for SMEs, and found that many universal indicators do not actually reflect the SMEs environment. It is because of lack resources, skills, and knowledge. In addition, in Saudir Arabia, a study found that SMEs perceived ESG disclosure as helpful to improve environmental performance, even when they do not have sufficient resources (Shalhoob & Hussainey, 2023).

However, there are many studies showed that many problems occur in implementing sustainability reporting, such as high costs of compliance, difficulties in data collection, lack of advanced skills, and administrative burdens. Those findings frequently make SMEs think

again before completely adopting sustainability reporting practice. A study from Germany (Steidle et al., 2025) emphasized that mostly cost associated with SR for SMEs come from data obtaining and preparation. Costs may become less when it comes to familiarization phase (Steidle et al., 2025).

In the developing countries, SMEs often face more challenging options whether they have to use limited resources and follow unclear regulations. A systematic review of determinants of SR adoption in SMEs identified that firm size and governance structure are significant factors for SR adoption since the initial costs is considered high (Farisyi et al., 2022).

RESEARCH METHOD

A structured literature review (SLR) approach is conducted in this study. The selection of this approach is that it can give a comprehensive and transparent literature review on the recent existing scientific research. In addition, this approach can help to identify research gaps that can be a basis for further research development. This study follows the SLR process based on Kitchenham & Charters (2007) and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. The four-stages approach in PRISMA is used as follows: planning, conducting a search, screening and selection, and synthesis.

In the planning stage, I formulated the research questions and defining keywords to be executed in searching stage. Determining the database is also an important step in this stage. Next stage is conducting a search. The database used in this stage was Scopus, Google Scholar, Emerald, and IEEE. The databases were selected because of the availability of broad access to reputable scientific publications, including high indexed journals that relevant to the topic. The combination of keywords used in the literature searches is: (“sustainability report” OR “sustainability reporting” OR “sustainability accounting”) AND (“SMEs” OR “MSMEs” OR “small business” OR “small enterprise” OR “small-medium enterprise”) AND (“cost” OR “challenge” OR “consequence” OR “burden” OR “threat” OR “impact” OR “disadvantage”) AND (“benefit” OR “opportunities” OR “advantage” OR “usefulness”)

There is no time range of publication determined in the literature searches. Only English-language, accessible through institutional databases articles are included, to ensure openness of sources and public verification. The inclusion criteria for this review were established to ensure that all selected studies were directly relevant to the objectives of this research. Specifically, the review included articles that discuss the sustainability reporting in SMEs and its benefits and challenges in emerging industries. Only studies published in peer-reviewed scientific or academic journals were considered. The review encompassed conceptual, comparative, and empirical studies that address issues related to the topic. Furthermore, only publications written in English and available as open access were included to ensure accessibility and verifiability of the sources.

Some criteria were applied to take out studies that did not relevant to this research objectives. Furthermore, non-academic materials such as media opinion, news, reports, and web blogs were taken out because they did not use rigorous methodologies. To ensure that the data are not redundant in the analysis, I exclude duplicate publications from multiple databases.

The next step is evaluation of the full text review to gather articles that have open access. Besides, the non-English language papers were excluded. The remaining articles were re-filtered to make sure that the substances are relevant to the topic focused on in this study. The last filtration is to examine the type of articles and determine whether the articles are eligible for SLR, resulting in articles that are considered the most relevant. A total of 31 studies were included in the final review, as summarized in Figure 2.

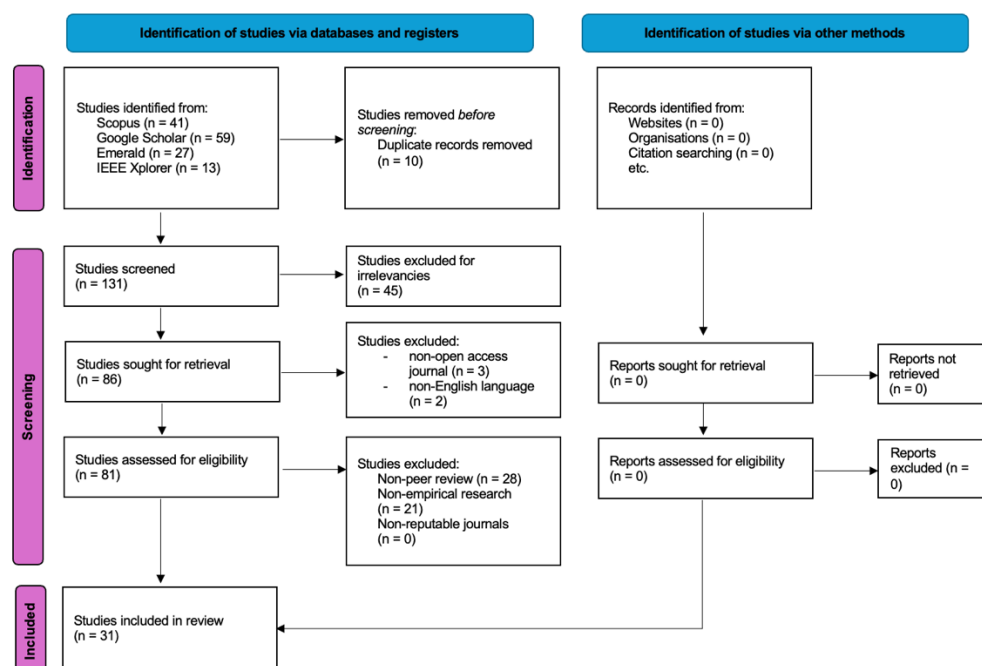


Figure 2. The Flow Diagram for Systematic Review (Source: Researcher (2025), adopted from Kitchenham & Charters (2007))

The 31 articles were analyzed using content analysis to identify the main topics, research patterns, and conceptual-practice gaps in the existing literature. This approach allows us to classify findings into thematic categories. For instance, it is synthesized to become a comprehensive finding of the study.

RESULTS AND DISCUSSION

Results for Overall Studies

The literature review for 31 selected articles showed that the studies related to sustainability reporting in SMEs and its benefits and challenges have developed so fast in recent years, focusing on more variability of the sustainability reporting, challenges, and benefits. Table 2 shows the articles based on the search result. This table displays the 31 key articles analyzed in this SLR study. Each article is summarized based on its title, author(s), year, and journal.

Table 2. Overview of Reviewed Studies

No.	Title	Author(s), Year	Journal
1	Sustainability report in small enterprises: case studies in Italian furniture companies	Borga et al. (2009)	Business Strategy and the Environment
2	How smes disclose their sustainability performance. Which variables influence the choice of reporting guidelines?	Scagnelli et al. (2013)	Studies in Managerial and Financial Accounting
3	Mandatory sustainability reporting in Germany: Does size matter?	Bergmann & Posch (2018)	Sustainability (Switzerland)
4	Sustainability reporting and performance measurement systems: How do small- and medium- sized benefit corporations manage integration?	Nigri & del Baldo (2018)	Sustainability (Switzerland)
5	The Sustainable Development Goals (SDGs): a rising tide lifts all boats? Global reporting implications in a post SDGs world	ElAlfy et al. (2020)	Journal of Applied Accounting Research

No.	Title	Author(s), Year	Journal
6	Impact Measurement in An Emerging Social Sector: Four Nove Approaches	Munoz & Gamble (2020)	Academy of Management
7	Building trust in the fabric of sustainability ratings: An impression management perspective	Boiral et al., (2020)	Journal of Cleaner Production
8	Food tracking and blockchain-induced knowledge: a corporate social responsibility tool for sustainable decision-making	Rainero & Modarelli (2021)	British Food Journal (2021)
9	Opportunities of the Technological Trends Linked to Industry 4.0 for Achieve Sustainable Manufacturing Objectives	Fuertes et al. (2022)	Sustainability (Switzerland)
10	Modeling and Analyzing the Impact of the Internet of Things-Based Industry 4.0 on Circular Economy Practices for Sustainable Development: Evidence From the Food Processing Industry of China	Sun & Wang (2022)	Frontiers in Psychology
11	The impact of dynamic capabilities on circular economy: the mediating effect of the industrial Internet of things	AL-Khatib (2023)	Journal of Manufacturing Technology Management
12	Addressing sustainability challenges as part of director's duty in Malaysia	Mustafa Khan et al. (2023)	International Journal of Law and Management
13	The business case for sustainability reporting in SMEs: consultants' and academics' perceptions	Castilla-Polo & Guerrero-Baena, (2023)	Sustainable Development
14	Implementation of sustainability and circular economy aiming for performance in the context of Industry 4.0 projects	Duarte et al. (2024)	Revista de Gestão e Projetos
15	A proposed hierarchical framework for Prioritizing Industry 4.0 technologies to improve environmental performance of manufacturing companies and environmental SDGs	Badroos (2024)	Cogent Business and Management
16	Environmental, social and governance performance: dynamic capabilities through digital transformation	Wei & Zheng (2024)	Management Decision
17	The penetration effect of digital leadership on digital transformation: the role of digital strategy consensus and diversity types	Yao et al. (2024)	Journal of Enterprise Information Management
18	An Empirical Study on Corporate ESG Behavior and Employee Satisfaction: A Moderating Mediation Model	Zhang et al. (2024)	Behavioral Sciences
19	The digital transformation of SMEs: opportunities and challenges for sustainability reporting in Romania	Fülöp & Topor (2025)	Journal of Global Responsibility
20	The moderating role of adopting SDGs on the effective tax rate: the case of Spanish SMEs	Merello et al.,(2025)	Revista Espanola de Financiacion y Contabilidad
21	Accounting practitioners' perspectives on small- and medium-sized enterprises' environmental sustainability reporting	O'Reilly, Mac an Bhaird, et al. (2024)	Journal of Applied Accounting Research
22	Implementing the European Union Green Taxonomy: implications for small- and medium-sized enterprises	O'Reilly, Gorman, et al., (2024)	Accounting Forum
23	The importance of corporate social responsibility (CSR) for msp companies in Poland: Benefits, barriers and good practice examples	Apanel (2025)	Economic and Regional Studies / Studia Ekonomiczne I Regionalne
24	The Role and Significance of EU Guidelines on Non-financial Reporting for SMEs	Modrzyński & Voss (2025)	Comparative Economic Research. Central and Eastern Europe
25	Data Requests in Value Chains: The Effects of Corporate Sustainability Reporting on SMEs in The Netherlands	Niemann et al. (2025)	Sustainability (Switzerland)
26	The Evaluation of Corporate Sustainability Strategies in Italy: Challenges and Opportunity of Recycled Packaging	D'Ascenzo et al. (2025)	Sustainability (Switzerland)

No.	Title	Author(s), Year	Journal
27	Evaluating sustainability reporting in SMEs: insights from an ethical cooperative bank's approach	Degregori et al. (2025)	Journal of Global Responsibility
28	Unveiling the effects of the Corporate Sustainability Reporting Directive (CSRD) on company sustainability reporting practices: a case of German companies	Sharma (2025)	Sustainability Accounting, Management and Policy Journal
29	Building a resilient economy: green initiatives and green entrepreneurship for women's empowerment	Abdelwahed et al. (2025)	International Journal of Development Issues
30	Go where the winners go – examining the impact of sustainable leadership on firms' sustainable performance through mediation and moderation analysis	Nazir et al. (2025)	Management Research Review
31	Agri 4.0 and innovation performance in sub-saharan Africa: the mediating role of circular economy in agribusiness firms	Tetteh et al. (2025)	Journal of Agribusiness in Developing and Emerging Economies

(Source: Researchers Analysis (2025), resulted from Database Search filtered with PRISMA method)

Main Focus of Studies

To gain a deeper understanding of the characteristics of the selected studies, a descriptive analysis was conducted to examine the publication year, journal source, and thematic orientation of the reviewed articles. To make the understanding easier, I conduct the topic clusterization of main focus of research reviewed as depicted in Figure 3. Most research focused on “Digital Transformation & Industry 4.0 for Sustainability” with the amount of percentage 26% or 8 studies (Badroos, 2024; Degregori et al., 2025; Fuertes et al., 2022; Fülöp & Topor, 2025; Sun & Wang, 2022; Yao et al., 2024; C. Zhang et al., 2023; T. Zhang et al., 2024). The second major topic of research is followed by “ESG measurement, SDG intergration and impact metrics” by 23% or 7 studies (Abdelwahed et al., 2025; Boiral et al., 2020; ElAlfy et al., 2020; Merello et al., 2025; Muñoz & Gamble, 2020; Nazir et al., 2025).

The third focus of studies is “Regulations, CSRD, compliance, and governance pressure” (Apanel, 2025; Bergmann & Posch, 2018; Modrzyński & Voss, 2025; Mustafa Khan et al., 2023; Niemann et al., 2025; O'Reilly, Mac an Bhaird, et al., 2024; Sharma, 2025), followed by “Sustainability reporting practices / implementations and their determinants among SMEs” (Borga et al., 2009; Castilla-Polo & Guerrero-Baena, 2023; Nigri & del Baldo, 2018; O'Reilly, Gorman, et al., 2024; Rainero & Modarelli, 2021; Scagnelli et al., 2013). The least studied topic in the reviewed article is “Circular Economy (CE) adoption and CE-driven sustainability” (10%) or 3 studies (AL-Khatib, 2023; D'Ascenzo et al., 2025; Duarte et al., 2024).

Based on Figure 3, the analysis is useful to provide insights into the focus studies on sustainability reporting in SMEs. The reviewed studies were conducted between 2009 and 2025, with main focuse of studies mostly on digital transformation and industry 4.0 for sustainability. Based on Figure 3, it can be inferred that studies on sustainability reporting in SMEs gain an increasing interest from 2020 to 2025, indicating a notable surge of scholarly attention in recent years. This increasing trend reflects the growing global concern for sustainable business practices and the emerging importance of transparent sustainability reporting among SMEs, especially as they adopt digital tools to enhance accountability and competitiveness (AL-Khatib, 2023; Tetteh et al., 2025). In 2009, 2012, and 2018, the studies of SR is limited because there were lack of formal standards and regulation regarding sustainability practices, as shown by Borga et al. (2009) that such practices still need guidance.

For a better understanding about the distribution of main focus based on year of publication, Figure 4 visualized the bibliographic data using VOS Viewer. The visualization depicts the thematic orientation based on title and keywords, related to the year of publication.

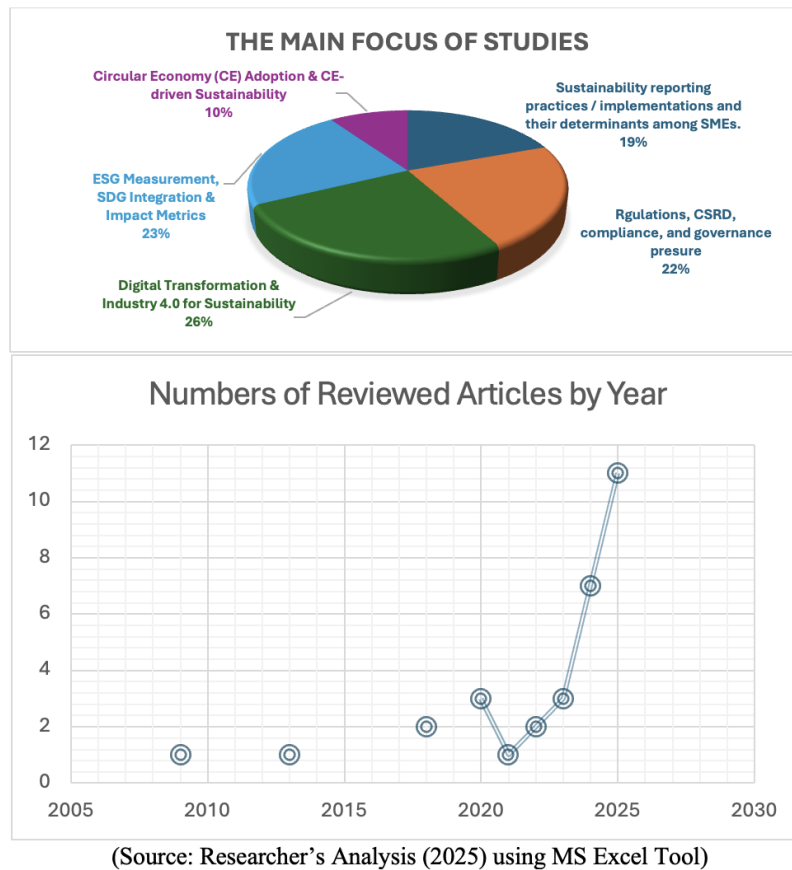


Figure 3. The Main Focus of Studies and Year of Publications

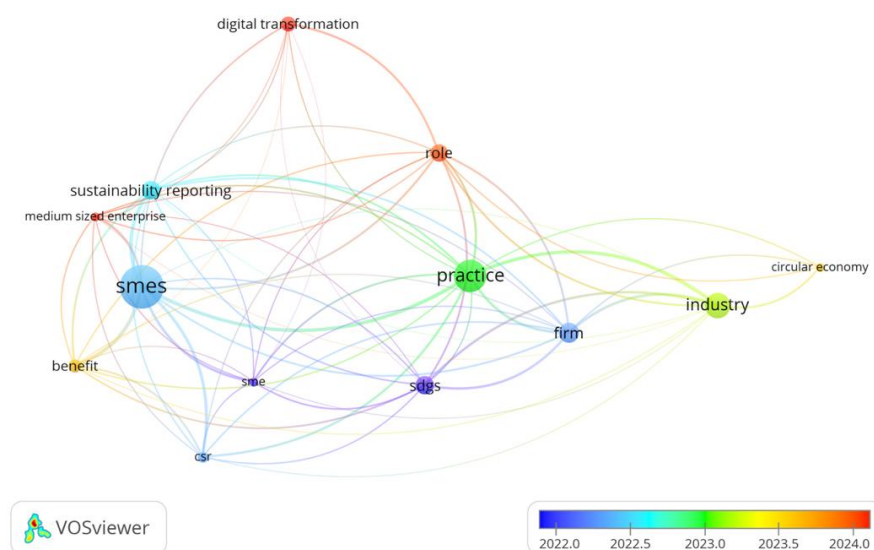


Figure 4. Data Visualization of Bibliographic Data

Figure 4 shows the overlay visualization of bibliographic data of reviewed studies. Despite the large range of publication year (from 2009 to 2025), VOS Viewer read the most

co-occurrence data, which resulted only from 2022 to 2024. Based on Figure 4, keyword “SMEs” and “sustainability” context dominates the early publication (2022-2023), implies that the foundation of studies are in sustainability reporting context. In the period of 2023, the main focus of studies shifts from “practice” and “industry”, which reflects the increasing interests in sustainability practices implementation in corporate level. Meanwhile, keyword such “digital transformation”, “role”, and “circular economy” rise in 2024, shows the trend in new studies directing to the integration of technology and circular economy approach in the context of SMEs sustainability.

The analysis of thematic orientations (see Figure 3 and 4) shows that research on SMEs and sustainability reporting has concentrated around dominant themes, with varying levels of emphasis. The largest share of studies focuses on Digital Transformation (Figure 3), indicating a strong scholarly interest in how digital technologies, such as IoT, blockchain, and big data analytics, support the integration of sustainability practices and reporting within SMEs. Those studies underlined the potential role of technologies in enhancing transparency, data accuracy, and stakeholders networking.

Some studies showed that tools, e.g. Internet of Things (IoT), Industrial IoT (IIoT), big data analytics, automation, and blockchain, significantly affect SMEs capability to obtain, process, and report data and information related to sustainability issues. A study in China SMEs showed an evidence on the significant role of IoT use in enabling monitoring system in circular economy activities and green performance (Sun & Wang, 2022). Meanwhile, another study showed that IIoT is the intermediary variable for the association between dynamic capabilities and circular economy in Jordanian firms (AL-Khatib, 2023). These studies were supported by Rainero & Modarelli (2021); Badroos (2024); Fuertes et al., (2022) which emphasized the important role of blockchain and big data as an essential tool for organizational alignment to ensure information transparency. Furthermore, in the organizational context, a study showed that leadership commitment and digital strategy consensus can improve effectiveness in digital and sustainable transformation.

Studies in ESG measurement, SDGs integration and impact metrics found consistencies in the association between integration and sustainability mechanism. For example, a study of Brazilian SMEs (Duarte et al., 2024) confirms that the integration of circularity into project improved performance under industry 4.0 context. Meanwhile, Fuertes et al. (2022) emphasized that digital equipment can support sustainable manufacturing objectives. Collectively, these studies reveal that measurement and integration is not merely an environmental aspiration but a structural component linking sustainability reporting, technological adoption, and firm competitiveness for achieving the sustainable impacts.

A substantial share of the reviewed studies focuses on Regulations, CSRD, compliance, and governance pressure. Mustafa Khan et al. (2023) argue that sustainability-related responsibilities increasingly form part of directors’ fiduciary duties in Malaysia, suggesting that SR is gradually shifting from voluntary disclosure to a governance expectation. Studies by Yao et al. (2024) and Zhang et al. (2024) further highlight that digital strategy consensus, cultural alignment, and managerial support influence the quality of sustainability-related practices.

These findings collectively suggest that the growing emphasis on digitalization and regulatory pressure, such as CSRD, is not an isolated regional phenomenon but part of a broader movement toward global convergence in sustainability reporting standards. This trajectory aligns closely with the direction set by IFRS S1 and S2, which aim to standardize sustainability-related and climate-related disclosures across jurisdictions. As SMEs increasingly adopt digital tools to meet compliance demands, their reporting practices are likely to become more compatible with these emerging global frameworks, reinforcing the

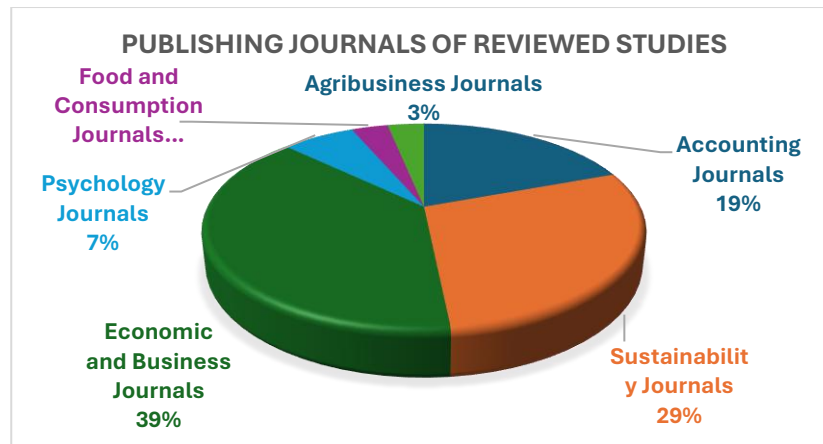
interconnection between digital transformation, regulatory compliance, and international disclosure standardization.

Based on the evolving topic reflected in Figure 4, sustainability practices studies increased by the year of 2023, and growing into focusing on the benefits of sustainability reporting and circular economy with digitalization as its enabler, by 2024. These works often examine how SMEs can implement circular strategies and environmental management systems to align with sustainable development goals, while simultaneously improving the quality and credibility of their sustainability disclosures. This reflects a growing awareness that circular practices not only reduce waste but also strengthen non-financial performance reporting (AL-Khatib, 2023; Duarte et al., 2024; Fuertes et al., 2022).

The thematic mapping results also identify a broader alignment between SMEs' sustainability reporting practices and the trajectory of international regulatory developments. The prominence of digital transformation and CSRD-related themes in the reviewed literature mirrors the global shifts initiated by ISSB through IFRS S1 and S2, which introduced standardized and proportionate disclosure requirements for sustainability and climate-related information (IFRS Foundation, 2023), while EU's CSRD reinforces this convergence by embedding sustainability responsibilities into corporate governance, as reflected in findings by Mustafa Khan et al. (2023) on directors' fiduciary duties in Malaysia. This suggests that SMEs are gradually being drawn from a voluntary disclosure environment into a global regulatory ecosystem, one that such as those adapted by the Australian Accounting Standards Board (Olde, 2025), which allow qualitative data remains underdeveloped. However, the reviewed studies indicate that SMEs' capacity to respond to these regulatory shifts remains uneven and highly dependent on digital readiness and dynamic capabilities. This rising emphasis on circular economy and ESG integration themes by 2024 (Figure 4) can further be read as an early, adaptive response to anticipated regulatory tightening, positioning sustainability reporting as anticipated regulatory tightening, positioning sustainability reporting as an evolving compliance and strategic instrument shaped jointly by technological capability and the global standardization agenda led by the ISSB, the EU, and regional adopters such as the AASB.

Publishing Journals

In terms of journal distribution, the majority of studies were published in reputable international publishers, including economic and business journals, e.g. *Business Strategy and the Environment*, *Academy of Management Discoveries*, *Cogent Business and Management*, *Management Research Review*, etc. This domination of publishing journals implies that the topic has become an unseparated part of the mainstream topic of sustainability and economic-business agenda, emphasizing that both practical and implementation are relevant (e.g. Muñoz & Gamble, 2020; Rainero & Modarelli, 2021).



(Source: Researcher's Analysis (2025) using MS Excel Tool)

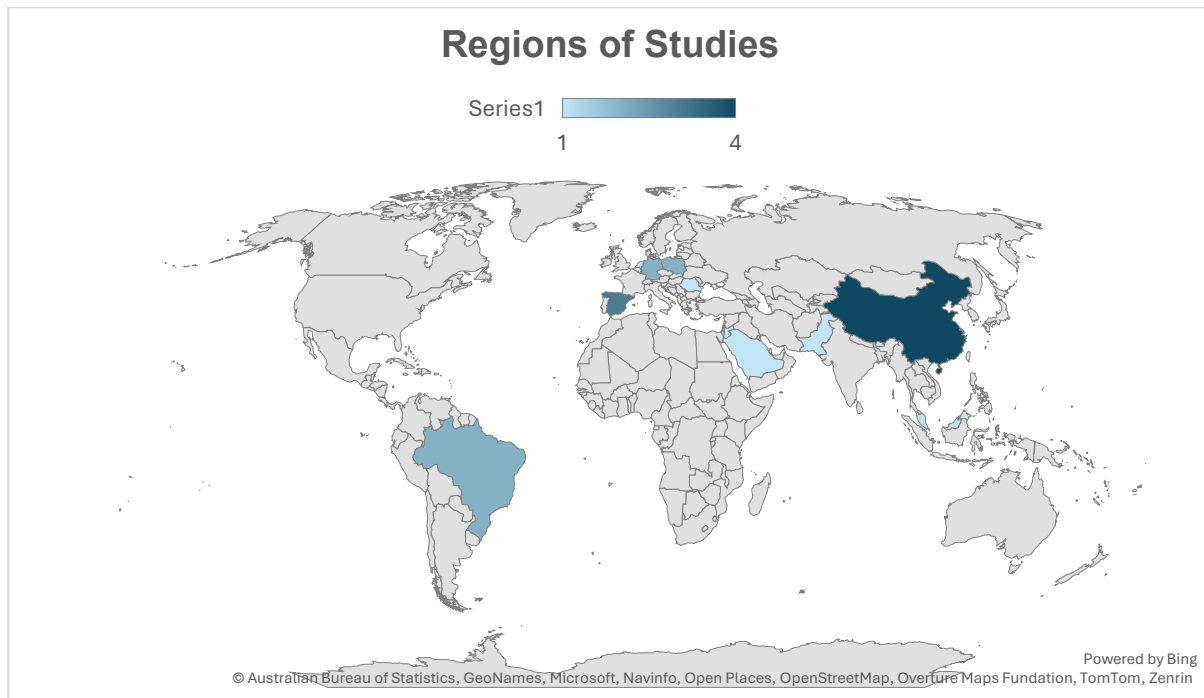
Figure 5. Publishing Journals of Reviewed Studies

The second largest journal publishing the reviewed studies are journals related to Sustainability (Bergmann & Posch, 2018; Niemann et al., 2025; Nigri & del Baldo, 2018) e.g. Sustainability (Switzerland), Sustainable Development, etc. Journals related to accounting place the third position, such as Journal of Applied Accounting Research, Accounting Forum, Studies in Managerial and Financial Accounting, etc. (ElAlfy et al., 2020; O'Reilly, Gorman, et al., 2024; O'Reilly, Mac an Bhaird, et al., 2024; Scagnelli et al., 2013). Other journals publishing sustainability are related to psychology/behavioral science, food and consumption, and agribusiness (Rainero & Modarelli, 2021; Sun & Wang, 2022; Tetteh et al., 2025). These results implies that researchers in the field of accounting still need to develop studies focus on sustainability accounting topics to give more contribution to the literature in accounting field.

Regions of Studies

Figure 6 shows the regional distribution of reviewed studies. The analysis showed that the research related to sustainability reporting in SMEs mainly focused in the Europe area, with Italy as the most dominant country (6 studies) (e.g. Borga et al., 2009; Nigri & del Baldo, 2018; Scagnelli et al., 2013). This emphasized that Italy show a big concern on sustainability issues, SMEs, and nonfinancial reporting. Besides, several countries such as Spain (3 studies), Germany (2 studies), Poland (2 studies), Romania (1 study), Netherland (1 study), and studies that specifically involves European Union (2 studies) has significantly contributed. This findings showed that Europe is the center of research that actively developed sustainability practices in SMEs level (e.g. Apanel, 2025; Fülöp & Topor, 2025; Niemann et al., 2025).

Beyond European countries, Asia is also become representative regions. China places the first position with 4 studies, indicated that the increasing concern on sustainability transformation and SMEs digitalization (e.g. Sun & Wang, 2022; Yao et al., 2024; T. Zhang et al., 2024). This result reflects China's leading role in digital transformation and its policy emphasis on Industry 4.0, green manufacturing, and corporate sustainability disclosure (Sun & Wang, 2022; Wei & Zheng, 2024; T. Zhang et al., 2024). Researchers have empirically examined how digital technologies, such as IoT and big data analytics, enhance circular economy practices and ESG performance.



(Source: Researcher's Analysis (2025) using MS Excel Tool)

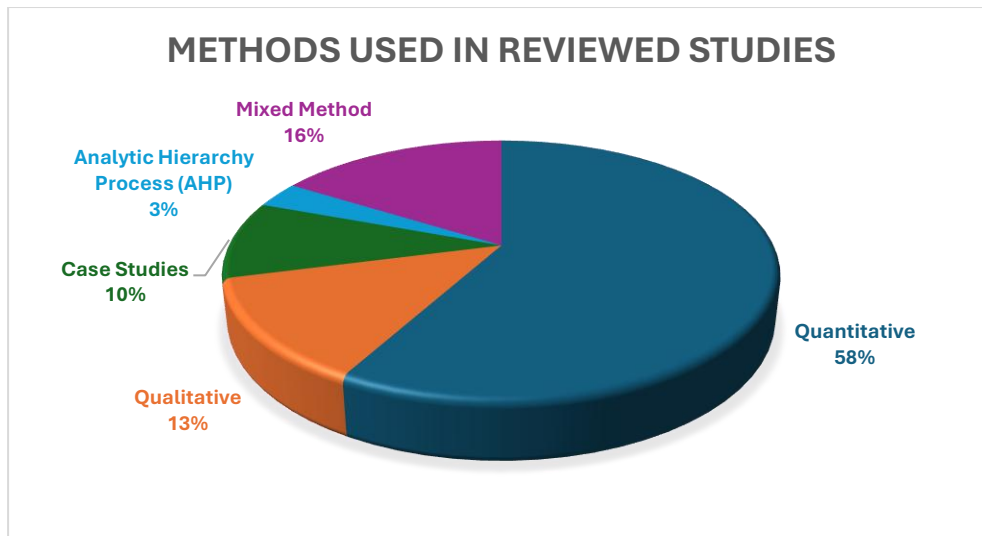
Figure 6. Reviewed Studies Based on Regionals

Other Asian countries (e.g. Malaysia, Indonesia, Jordan, Saudi Arabia, and Pakistan – each 1 study), showed limited contribution, while reflecting the variabilities of economy and regulation context in Asia (Badroos, 2024; Mustafa Khan et al., 2023). The similarity of these regions in institutional characteristics, evolving environmental regulations, dynamic industrialization, and rapidly changing reporting frameworks, make them context-relevant for studies on SMEs and its challenge in reporting. Studies conducted in these regions often explore the role of leadership, regulation, and digital capabilities in fostering sustainable business models among smaller enterprises.

Meanwhile, in South America region, Brazil contributes 2 studies, underlining the concern on sustainability issues in the context of developing country (Duarte et al., 2024; Muñoz & Gamble, 2020), while in Sub-Sahara African, only Ghana (1 study) reveals the low number of studies concern in this area and this can be a potential opportunities for further explorations (Tetteh et al., 2025). There are also 2 studies that globally shows that sustainability issues in SMEs are not only explored under domestic context, but also larger global mapping. Those research used comparative analysis across countries (Boiral et al., 2020; ElAlfy et al., 2020). The results suggesting a geographical research gap in understanding sustainability reporting adoption among SMEs in underrepresented regions.

Methodological Approaches

Based on the result depicted in Figure 7, the research method distribution used by reviewed studies demonstrates a dominance of quantitative approaches, particularly those employing Structural Equation Modeling (SEM) and Partial Least Squares-SEM (PLS-SEM), which together account for 58%. The interests of this approach implies a strong determination on validation of theories of sustainability reporting among SMEs (AL-Khatib, 2023; Sun & Wang, 2022; Tetteh et al., 2025).



(Source: Researcher's Analysis (2025) using MS Excel Tool)

Figure 7. Research Methods Used in the Studies

Most of quantitative studies in this review incorporated SEM, which allows researchers to examine a complex model (mediating/ moderating effects). For example, research on IoT and circular economy in China, Jordan, Pakistan, and Ghana showed a causal relationships among multidimensional constructs (Sun & Wang, 2022; AL-Khatib, 2023; Nazir et al., 2025; Tetteh et al., 2025). In addition, (Sun & Wang, 2022; Al-Khatib, 2023) test the mediating effect of IIoT in the association between dynamic capabilities and sustainability performance. Another study also used SEM in examining the importance of behavioral factors, such as sustainable leadership and learning orientation (Nazir et al., 2025) in shaping sustainability adoption.

The second largest used methodology is mixed method, which commonly used to investigate the determinant factors affecting sustainability and digital practices in SMEs, behavioral aspects, and financial/nonfinancial reporting issues (Niemann et al., 2025; Scagnelli et al., 2013; Yao et al., 2024). Mixed methods are seen in many studies to evaluate the transformation and sustainability alignment. For example, Yao et al. (2024) combined a quantitative survey with qualitative validation for exploring the effect of organizational aspects (e.g. leadership, strategy, and team composition) on transformation outcomes. In other words, mix method approach encourages power of explanation by providing confirmation values from the quantitative process into qualitative context. While number of mixed method studies are still limited, these studies can represent important contribution for balancing statistical rigor with contextual richness, particularly valuable in SME sustainability research where organizational behaviors, culture, and technological adoption interact dynamically.

Qualitative and case studies approach provide a valuable contextual understanding to picture the implementation of sustainability innovations in SMEs across nations. For exmple, a study in Malaysia conducted by Mustafa Khan et al. (2023) used a qualitative method to evaluate directors' duty, showed that the view of sustainability consideration is increasing as a part of responsibilities. Meanwhile, Boiral et al. (2020) assess the management perspectives and credibility challenge in the contrxt of sustainability ratings, resulting that sustainability practices can be viewed as symbolic disclosure and need a stronger mechanism to guarantee the stakeholders trust. Decision-support and exploratory methods such as Analytic Hierarchy Process (AHP) is less common (3%) but play a vital role in prioritizing technologies, identifying essential success factors, and achieving expert consensus in emerging sustainability domains (Badroos, 2024).

Discussion

Overall, the results of this review shows that sustainability in SMEs is affected by two mainstreams: digital technology integration in Industry 4.0 framework and sustainability measurement emphasis through ESG, SDGs, and various indicators. Digital transformation rises as the most dominant theme, with IoT, IIoT, bog data, automatization, and blockchain that is proved to strengthen accuracy, efficiency, and transparency of sustainability reporting. Meanwhile, ESG measurement and SDG integration functioned as an evaluation tool and a strategic mechanism that connects technology adoption, performance improvement, and SMEs competitive advantages.

Methodologically, studies are still dominated by quantitative approach with SEM basis, which emphasized the causality relationship, although mixed method and qualitative method start to seek deeply in behavioral aspects, governance, and institutional context which cannot be captured by only statistical model. Geographically, the concentration of studies in Europe and Asia, especially China, showed that recent findings mostly formed by relatively strong government policy/regulation and digital readiness, thus generalization in underdeveloped areas such as Sub-Sahara Africa or Southeast Asia is still limited. Therefore, the SMEs research landscape showed a shift toward more strategic sustainability, while still remaining a big gap in social aspects, governance, and the context of developing countries that need a further exploration.

Answering RQ 1: How do SMEs across the countries implement sustainability reporting (SR)?

The implementation of sustainability reporting (SR) among small and medium-sized enterprises (SMEs) has evolved unevenly across different national contexts, reflecting varying levels of institutional maturity, digital readiness, and policy support. The reviewed research showed that SMEs would tend to apply the reporting mechanism aligned with local regulatory and stakeholder expectations when it is simple, adaptive, and sector specific.

The sustainability reporting examples from China (Sun & Wang, 2022; Wei & Zheng, 2024; T. Zhang et al., 2024) reports that SR is increasing and integrated into SMEs through technology transformation and government programs that encourage industry 4.0 and green manufacture process. Those emphasis represents China's policy-driven approach toward environmental modernization and company's accountability. Those results are similar to Jordan and Saudi Arabia studies, which showed that the implementation of sustainability reporting is strongly connected to digital competency development and adoption of circular economy (Abdelwahed et al., 2025; AL-Khatib, 2023). Those studies concluded that technology integration facilitates more systematic sustainability measurement, while highlighted the role of gender inclusion in green practices for broader social and environmental accountability.

Institutional and leadership factors play an important role in Pakistan and Malaysia. For example, Nazir et al. (2025), who found that sustainable leadership influence the capabilities of firms in learning and promoting sustainability performance. Hence, it leads to better sustainability reporting outcomes. Mustafa Khan et al. (2023), who studied the regulation in Malaysian context, showed that sustainability reporting is developing as a part of directors' responsibility, despite the lack of legal enforcement and resources which can be a barrier for implementation consistency across SMEs.

Studies in Europe and Latin America confirm that sustainability reporting leads to innovation and process sustainability. For example, Rainero & Modarelli (2021) who studied Italian SMEs found that technology-enabled system can reduce information asymmetry. Study of Brazil and Chile (Duarte et al., 2024; Fuertes et al., 2022) found that sustainability and

circular economy are driven by global pressures and incentives of regulation compliance. Hence, cross-regional studies implies that the SR implementation among SMEs depends on the contextual matters. It is influenced by institutional framework, technological resources, and organizational orientations.

Answering RQ 2: What are the challenges and benefits of sustainability reporting for SMEs, regarding the regional and institutional context?

Challenges of Sustainability Reporting (SR) for SMEs

Despite its recognition that SR is an important instrument for transparency, legitimacy, and stakeholder engagements, SR still perceive significant burdens that can hinder SR implementation. Those challenges can be divided into four categories, such as resource constraints, regulatory and institutional gaps, technological burdens, and cultural-behavioral aspects.

The most powerful barrier of SR implementation among SMEs is the resource and capability constraints. SR needs dedication of advancement in data collection, green metrics, stakeholders networking, and digital equipments. However, SMEs are lack of specific competence. Mustafa Khan et al. (2023) emphasized that small companies often have limited managerial resources and perceived high costs in producing nonfinancial information disclosure. In accordance with this study, Muñoz & Gamble (2020) show that social impact framework for measurement cost a lot of time and resources, thus makes detailed report is difficult for companies with small number of personnel and budgets. Therefore, many SMEs either adopt minimalist reporting practices or avoid SR because they lack the capacity to perform it sufficiently.

The second dominant concerns of the barriers is the inconsistencies and ambiguity of regulation for sustainability reporting for SMEs. For many countries, SR is still voluntary or partially regulated, thus creates a various content and reporting quality. This result is supported by study of Mustafa Khan et al. (2023) who emphasized that SMEs in Malaysia face uncertainty related to directors' sustainability-related responsibilities, resulting in inconsistent compliance across firms. Although SR is increasingly integrated into governance expectations, SMEs lack clear guidelines tailored to their size and operational context. Beyond the studies, the literature notes that fragmented frameworks can weaken the comparability of SR and reduce the usefulness of SMEs SR data for national sustainability assessments. This regulatory ambiguity leads to hesitation, fear of non-compliance, and inconsistent adoption.

Technological barriers constitute a third critical challenge, especially in low and middle income settings. SR today is increasingly linked to digital transformation: IoT-enabled monitoring, data analytics, digital traceability systems, and Industry 4.0 tools. Yet SMEs often lack the digital infrastructure required to implement such systems. Badroos (2024) stresses that SMEs struggle to prioritize which Industry 4.0 technologies are relevant for environmental management, owing to low technical literacy and limited advisory support. Haverila et al. (2025) further argue that digital tools and data analytics constitute *necessary conditions* for sustainable global operations, meaning that firms without these capabilities are structurally disadvantaged. Even in contexts where digital tools are available, SMEs may perceive them as too complex, too costly, or too risky to adopt, creating a persistent digital divide between larger and smaller firms.

Beyond structural and technological constraints, SMEs frequently encounter behavioral and cultural barriers that discourage SR adoption. Nazir et al. (2025) find that leadership orientation strongly shapes sustainability engagement, and in firms where owners prioritize short-term financial performance, SR is perceived as an unnecessary administrative burden. This perception reduces the willingness to invest in sustainability-related capabilities, despite long-term strategic benefits. Boiral et al. (2020) add that SMEs may also fear scrutiny or

reputational risks associated with sustainability disclosure, leading to symbolic or superficial reporting rather than substantive transparency. The belief that SR offers little direct economic return generates a cycle of underinvestment, where low awareness and weak sustainability culture hinder meaningful adoption.

The Connection of Challenges with Underlying Theories

Based on RBV theory, it can be viewed that SMEs lack resources, such as financial resources, digital infrastructure, and human capabilities, which are important to transform SR from compliance capability into a valuable instrument. Mustafa Khan et al. (2023) and Muñoz & Gamble (2020) highlighted that the nonexistence of particular skills and IT infrastructure burden SMEs from gaining competitive advantages through SR.

Meanwhile, the linkage of challenges and DC theory explains that SMEs can often fall short in higher-order skills development that need to be integrated, refined, and better operationalized in the context of SR across the companies. Studies such as AL-Khatib (2023); Nazir et al. (2025); Yao et al., (2024), showed that without dynamic capabilities: digital leadership, learning orientation, or strategic alignment, even firms with basic resources remain unable to leverage SR for innovation or improved ESG performance.

The STS framework underlined that SR challenges arise from a misalignment or a disconnectedness between social subsystems and technical subsystems. Studies by Badroos (2024) and Nazir et al. (2025) inferred that SR adoption becomes difficult when SMEs cannot synchronize both subsystems, reinforcing STS theory's argument that socio-organizational and technical components must evolve jointly for systemic sustainability change. Together, these theories illuminate how SMEs' SR barriers are not isolated constraints but interconnected resource, capability, and socio-technical deficiencies.

The Benefits of Sustainability Report in SMEs

Based on the reviewed studies, SR found to be valuable for SMEs in generating advantages to extend across operational, organizational, social, and institutional dimensions. Those benefits are improved transparency, strengthened stakeholder relations, enhanced digital and environmental performance, capability building, and contributions to broader socio-economic resilience.

A central benefit identified across multiple studies is the improvement of transparency and credibility through formalized sustainability disclosure. Boiral et al. (2020) emphasize that SR, when conducted substantively, helps SMEs build stakeholder trust and counteract concerns about opacity or greenwashing. Digital reporting mechanisms, particularly blockchain-based traceability, further amplify this effect by reducing information asymmetry, as demonstrated by Rainero & Modarelli (2021) in the Italian agri-food sector. These forms of enhanced visibility help SMEs strengthen legitimacy with customers, investors, and global supply chain partners who increasingly require verifiable ESG information.

SR also supports operational efficiency and technological innovation. Studies show that digital tools such as IoT, smart sensors, big data analytics, and automation allow SMEs to monitor environmental indicators (e.g., resource use, waste, emissions) more accurately and frequently. Fuertes et al. (2022) highlight that Industry 4.0 technologies enable continuous improvement in sustainable manufacturing processes, while Sun and Wang (2022) find that IoT-enabled data systems directly enhance circular economy outcomes through innovation capability. By integrating reporting with real-time monitoring, SMEs can identify inefficiencies, reduce costs, and improve eco-efficiency: transforming SR into a performance-enhancing mechanism rather than merely a disclosure obligation.

Several studies show that SR strengthens SMEs' alignment with external sustainability frameworks and performance standards. AL-Khatib (2023) demonstrates that IIoT-enabled

reporting enhances circular economy performance by facilitating resource loops and sustainability-focused decision-making. Similarly, Wei & Zheng (2024) show that digital transformation improves ESG scores, illustrating how SR is linked to stronger institutional performance and competitive positioning. These findings indicate that SR allows SMEs to align with global sustainability expectations, increasing their attractiveness to multinational supply chains and ESG-oriented investors.

Beyond technical and environmental benefits, SR also triggers deeper organizational change. Nazir et al. (2025) show that sustainable leadership fosters organizational learning processes that enhance long-term reporting quality, innovation capacity, and strategic resilience. Zhang et al., (2024) similarly find that ESG-focused culture strengthens internal governance, ethical behavior, and sustainability-driven decision-making. SR, therefore, acts as a catalyst for building dynamic capabilities, enabling SMEs to integrate, interpret, and reconfigure sustainability information into strategic action.

At a broader societal level, SR-related practices contribute to inclusive development outcomes. Abdelwahed et al. (2025) demonstrate that green entrepreneurship among women-led SMEs fosters economic diversification, environmental stewardship, and community empowerment. Social impact reporting, as highlighted by Muñoz and Gamble (2020), helps SMEs articulate and measure their contributions to social well-being, strengthening legitimacy among funders, customers, and beneficiaries. These findings suggest that SR is not only an internal management tool but also a mechanism that supports equitable and resilient development.

The Connection of Benefits with Underlying Theories

The benefits or values of SR are close with the assumptions of RBV, DC, and STS. In the point of view of RBV, SR can enhance firms' strategy, digital transparency, stakeholder trust, and knowledge capital, enabling SMEs to transform reporting process into specific assets for generating values (Rainero & Modarelli, 2021; Wei & Zheng, 2024).

Meanwhile, DC perspective explained the SR functions in capability mechanism. Studies from China and Malaysia (Nazir et al., 2025; Sun & Wang, 2022; Yao et al., 2024) provides evidence that SR encourage the stimulus for organizational learning, leadership evolution, and digital competence development. Lastly, STS views the emphasis on how SR can be valuable for SMEs through the alignment of social and technical subsystems. For example, when IoT, blockchain, data analytics can be integrated with cultural context, SMEs can improve transparency, efficiency, and strategic sustainability (AL-Khatib, 2023; Fuertes et al., 2022). Thus, it can be concluded that SR can benefit SMEs when there is comprehensive and synergic foundation of RBV, DC, and STS.

The conceptual synthesis above carries several important implications for theory development in the SME sustainability reporting literature. Among the three theoretical lenses, RBV emerges as the most dominant and frequently applied theory, particularly in explaining resource-related barriers (financial, technological, human capital) and SR-generated assets (transparency, stakeholder trust, knowledge capital). Its dominance likely stems from its straightforward applicability to SMEs' well-documented resource constraints, making it the default starting point for most reviewed studies. Dynamic Capability Theory, by contrast, represents a growing but still emerging perspective, increasingly used to explain how SMEs move beyond static resource endowments toward adaptive, capability-driven responses to digitalization and regulatory change (Al-Khatib, 2023; Nazir et al., 2025; Yao et al., 2024).

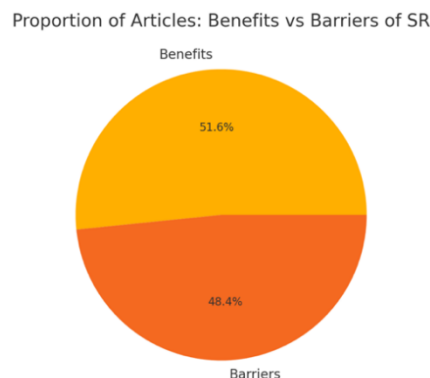
Its rising application signals a shift in the literature from a purely resource-focused view toward a more process-oriented understanding of how SR capabilities are built and reconfigured over time. Socio-Technical Systems theory remains the least utilized of the three, despite offering unique explanatory value in addressing the alignment, or limited application

suggest that much of the literature still treats digital transformation and social/organizational factors as separate streams rather than an integrated system.

These patterns point to a clear opportunity for theoretical integration in future research. Rather than applying RBV, DC, and STS in isolation, future studies could develop a unified framework in which RBV explains the *initial resource conditions*, DC explains the *capability-building process* that converts resources into action, and STS explains the *contextual alignment conditions* under which that process succeeds or fails. Such integration would move the field beyond fragmented, single-theory explanations toward a more comprehensive model of SR implementation—one that captures not only *what resources and capabilities SMEs need*, but also *how* and *under what socio-technical conditions* those resources and capabilities translate into substantive, rather than symbolic, sustainability reporting outcomes. Future research is therefore encouraged to empirically test this integrated RBV–DC–STS framework across diverse institutional and regional contexts, particularly as global regulatory convergence (e.g., IFRS S1/S2, CSRD) continues to reshape the conditions under which SME sustainability reporting occurs.

Integrated Results of Challenges and Benefits of SR for SMEs

The result of synthesis from 31 reviewed studies showed the clear pattern of SR position related to SMEs context. As shown at Figure 8, the majority of studies emphasized that the SR can give strategic benefits for SMEs, while the rest underlined that SR is still considered costly, complex, and difficult for SMEs. The domination of positive findings reflect the global shifting towards sustainability, where SR is not seen as formal administrative, but managerial instruments which improves legitimacy, operational efficiencies, and competitive advantages.



(Source: Researcher's Analysis (2025))

Figure 8. Integrated Results

Studies that value SR as useful highlighted many positive aspects, from the improvement of transparency and stakeholders trust (Boiral et al., 2020; Rainero & Modarelli, 2021), efficiency and innovation through digitalization and IoT (Fuertes et al., 2022; Sun & Wang, 2022), performance improvement of ESG (AL-Khatib, 2023; Wei & Zheng, 2024), to the organizational capacity strengthen through sustainability-oriented leadership (Nazir et al., 2025). Even in the macro level, SR encourages social empowerment and inclusive economic development, as shown by green entrepreneurship studies (Abdelwahed et al., 2025).

Nevertheless, several studies highlighted the real barriers that makes SR is still difficult to adopt by SMEs. Those barriers include the lack of resources (financial, technical, and human resource) (Mustafa Khan et al., 2023), complexity of social impact measurement (Muñoz &

Gamble, 2020), low digital literacy to determine the right technology (Badroos, 2024), and reporting risk as the impact of credibility pressure (Boiral et al., 2020).

CONCLUSION, LIMITATION, AND SUGGESTIONS

Conclusion

A thematic review of SMEs and sustainability reporting studies shows that digital transformation is the most dominant theme, which technologies such as IoT, IIoT, big data, and blockchain proving to be crucial in improving data accuracy, transparency, and the effectiveness of sustainability reporting. In addition to technological aspects, leadership and digital strategy alignment also contribute to the success of this transformation.

Another prominent theme is the integration of ESG and SDGs, where the implementation of circular economy principles has been shown to strengthen company performance while supporting the achievement of sustainability goals structurally, not merely as a matter of environmental aspirations. Moreover, regulatory pressure such as CSRD have driven a shift in sustainability reporting from a voluntary practice to a corporate governance responsibility, the success of which is also influenced by organisational culture and managerial support.

Overall, research trends from 2023 to 2024 show a shift in focus toward strengthening the relationship between the circular economy, digitalization, and the quality of non-financial reporting, confirming that digitalization plays a key enabler in achieving more credible sustainability practices in SMEs.

The review study confirm the underlying theory (RBV, DC, and STS) in explaining SMEs sustainability reporting effectiveness for strongly dependent on the existing important resources, the competency to understand and implement process and technologies, as well as the alignment between social and technical systems. The collective integration of those three dimensions can provide substantial values for SMEs in adopting SR implementation.

This structured literature review provides several contribution. First, this SLR synthesized a comprehensive literature of SR practices among SMEs across regions and institutional context. This can address the gap in SR literature focusing on SMEs, rather than large companies. Second, this study comprehend the perspective on technological transformation and industry 4.0 with SR literature, thus find how IoT, big data, and blockchain enhanced the reporting process to be more transparent and efficient in small businesses. Third, this study build a connectedness between empirical results such as IFRS S1/S2 and AASB S2 and the policy transformation of global standards for SR. By understanding this result, policy makers can improve the proportionality of reporting regulations for SMEs. The theoretical contribution of this study lies in extending and the Resource-Based View by positioning digital competency as a strategic resource and dynamic capability that enables SMEs to sense regulatory shifts, reconfigure their reporting practices, and achieve sustainability legitimacy. Furthermore, by integrating Socio-Technical Systems Theory, this study highlights that such capability does not operate in isolation but depends on the alignment between technological tools and organizational elements in shaping the quality and credibility of sustainability reporting.

Limitations

This study results should be interpreted with caution due to several limitations inherent in the reviewed literature. First, the majority of the 31 reviewed papers employed quantitative methods, which may underrepresent the contextual and process-oriented insights that qualitative or mixed method approaches could offer regarding SME's sustainability reporting practices. Second, the geographical distribution of the reviewed studies is skewed toward Asian countries, particularly China, limiting the generalizability of the findings to SMEs operating in

other regions with different regulatory environments, such as Europe or North America. Furthermore, as this study adopts a systematic literature review approach, it does not empirically examine the cost and benefits of sustainability reporting for SMEs, which remains an important avenue for future research.

Suggestions

Based on the theoretical contribution of this study lies in demonstrating how RBV, DCT, and STS operate as an integrated framework in explaining SMEs' sustainability reporting practices. While RBV highlights digital competency and infrastructure as a strategic resources that determine SME's capacity to disclose credible sustainability must be continuously sensed, developed, and reconfigured through leadership, learning, and strategic alignment, to translate into meaningful reporting outcome. Socio-Technical Systems Theory further contributes by showing that these capabilities only generate value when technical tools are aligned with social and organizational elements. Collectively, this tradic theoretical lens extends prior literature by positioning sustainability reporting not as an isolated compliance outcome, but as the product of resource endowment, dynamic capabiiti development, and socio-technical alignment operating jointly within SMEs.

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