

Evaluating sustainability reporting in SMEs: insights from an ethical cooperative bank's approach

Journal of Global
Responsibility

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Received 20 October 2024
Revised 3 January 2025
15 February 2025
Accepted 18 February 2025

Abstract

Purpose – This study aims to explore the integration of digital technologies in sustainability reporting practices for small and medium-sized enterprises (SMEs) through the approach adopted by an Italian cooperative bank committed to ethical finance. It employs a dual evaluation framework combining traditional financial assessments with rigorous socio-environmental evaluations (VSA, Value and Sustainability Assessment) to ensure SMEs meet high social and environmental responsibility standards.

Design/methodology/approach – The study employs a mixed method, joining a qualitative case study and a quantitative correlation analysis. Studying data from 3,431 socio-environmental questionnaires and semistructured interviews with key bank figures and their correlation. It highlights the role of Artificial Intelligence (AI)-driven Environmental, Social and Governance (ESG) rating systems and automated social reports in providing real-time socio-environmental performance assessments and aligning SMEs with Sustainable Development Goals (SDGs).

Findings – The results demonstrate a correlation between higher ESG scores and a lower probability of default (PD), showcasing the financial benefits of ESG practices. Trained social assessors and digital tools enhance transparency, accountability and decision-making for SMEs.

Originality/value – This study advances the literature on ESG integration and digital transformation by emphasizing the practical impact of AI tools on SMEs' sustainability reporting. It uniquely examines the link between ESG performance and financial stability.

Keywords Sustainability reporting, SMEs, Digital technologies, Sustainable development, Digital transformation, Artificial intelligence

Paper type Research paper

1. Introduction

The integration of Environmental, Social and Governance (ESG) criteria into business practices has gained significant importance in recent years. ESG factors are essential for



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fostering long-term business sustainability, mitigating risks and enhancing corporate reputation (Nicolò *et al.*, 2024). These criteria enable companies to address environmental challenges like climate change while contributing positively to social issues such as human rights and ethical governance practices (Lim *et al.*, 2022).

The adoption of ESG criteria aligns closely with the Sustainable Development Goals (SDGs) set by the United Nations in 2015. These goals emphasize the crucial role of businesses in global sustainability efforts, advocating for a comprehensive plan of action for people, the planet and prosperity (United Nations, 2016). These goals advocate for balancing profitability with broader societal contributions through environmental protection and social equity (Nicolò *et al.*, 2024).

Although previous research has extensively explored the relationship between ESG integration and financial performance, much of this work focuses on large corporations (Gangi *et al.*, 2019). This study addresses a critical gap by examining ESG practices within small and medium-sized enterprises (SMEs), which often face resource constraints, limited technical expertise and regulatory compliance challenges.

The recently introduced Corporate Sustainability Reporting Directive (CSRD) represents a pivotal regulatory milestone in the European Union. It mandates companies, including SMEs, under specific thresholds to disclose sustainability-related data, ensuring transparent and comparable ESG reporting across member states (Krasodomska *et al.*, 2024). This directive underscores the importance of digital technologies in meeting evolving legal requirements and stakeholder expectations.

While prior studies highlight the potential of digital technologies to enhance transparency and data management in large enterprises (Brenner and Hartl, 2021), limited research explores their application in SMEs. This paper focuses on Artificial Intelligence (AI)-driven ESG tools and automated reporting systems, showcasing their potential to bridge resource constraints and enhance compliance with frameworks like the CSRD and SDGs.

Digital transformation plays a pivotal role in enabling businesses to achieve and report on their sustainability objectives (Lombardi and Secundo, 2020). The intersection of digital innovation and regulatory requirements presents a timely and critical research focus (Wang and Tang, 2024). Our study aims to examine how digital technologies can support SMEs in fulfilling the dual objectives of aligning with the SDGs and adhering to the CSRD's provisions. These objectives are particularly relevant given the increasing scrutiny from investors and stakeholders, who demand both compliance and proactive strategies to address global challenges like climate change (Secinaro *et al.*, 2020). By exploring these dynamics, the research contributes to bridging the gap between regulatory compliance and practical implementation in the context of sustainability reporting.

The study focuses on the analysis of an Italian bank committed to ethical finance, which represents a compelling case study for examining how digital technologies can enhance sustainability reporting among SMEs.

The significance of digital technologies in sustainability reporting is further underscored by the correlation between higher ESG scores and improved financial performance (Lanzalunga *et al.*, 2024). Data from the case study of the ethical cooperative bank show that SMEs with higher ESG scores exhibit lower probability of default (PD). This correlation highlights the financial benefits of robust ESG performance, suggesting that strong socio-environmental practices contribute to better financial stability and lower credit risk.

Despite the significant advancements in digital technologies and their potential to revolutionize sustainability practices, a fervent debate remains about their practical application and impact within SMEs (Pizzi *et al.*, 2024). Through the case study analysis, this study seeks to provide insights that can inform best practices in sustainability reporting

for SMEs and financial institutions alike. The analysis seeks to address how digital technologies can support SMEs in aligning with the CSRD, thus positioning sustainability reporting as both a compliance tool and a driver for enhanced financial and socio-environmental performance.

The integration of digital technologies into sustainability reporting practices offers significant advantages for SMEs. The approach adopted by the ethical cooperative bank under analysis demonstrates how advanced tools like AI and comprehensive assessment frameworks can enhance the accuracy, transparency, and effectiveness of sustainability reporting. By adopting such technologies, SMEs can improve their socio-environmental impact, align with SDGs, achieving better financial performance.

Our paper is organized as follows. Section 2 reviews the literature and presents the research questions; Section 3 describes the methodology, context, and data collection; Section 4 presents the findings; Section 5 provides a discussion; and Section 6 outlines the conclusions, implications and future research avenues.

2. Literature review

2.1 *The relevance of sustainability reporting in small and medium-sized enterprises*

The importance of ESG criteria has grown significantly as both businesses and investors increasingly recognize the need to adopt sustainable and responsible practices. ESG factors are crucial for fostering long-term business sustainability, mitigating risks and strengthening corporate reputation (Di Tommaso and Thornton, 2020). Companies that integrate ESG aspects into their strategies are more likely to address environmental challenges, such as climate change and resource depletion, while contributing positively to social issues like human rights, community engagement and ethical governance practices (Lim *et al.*, 2022).

In particular, ESG integration does not merely address sustainability challenges but also aligns with global frameworks such as Agenda 2030's SDGs. These goals, established by the United Nations, provide "a plan of action for people, planet, and prosperity" (United Nations, 2016), emphasizing the transformative role of businesses in achieving global sustainability (United Nations, 2015). Furthermore, digital technologies are increasingly recognized as critical enablers for achieving SDG targets, creating synergies between innovation and sustainability.

Incorporating ESG factors into daily business practices has also been shown to attract investors who prioritize responsible investment strategies, reinforcing the financial viability of sustainability-focused approaches (Srivastava *et al.*, 2022). While the alignment with SDGs highlights opportunities for growth and innovation, SMEs face unique challenges, such as resource limitations and regulatory complexities, especially in light of new requirements introduced by the CSRD (Krasodomska *et al.*, 2024; Brescia and Campra, 2023). The CSRD represents a regulatory milestone, mandating enhanced transparency for businesses, including SMEs, and encouraging the adoption of harmonized sustainability reporting standards across the European Union. For SMEs, this creates a dual opportunity: aligning with sustainable finance trends and improving market positioning through transparent reporting practices (Pizzi and Coronella, 2024).

SMEs, as vital contributors to the European economy, must adapt their sustainability practices to align with broader goals such as the SDGs (Sonntag *et al.*, 2022). Despite their importance, SMEs often lack the institutional support and frameworks available to larger enterprises, making their transition to sustainability reporting particularly complex (Micco *et al.*, 2020). Addressing these challenges requires tailored approaches, including support mechanisms and simplified tools aligning with their needs. Empowering SMEs through

targeted policies and digital innovations can bridge these gaps and enable their active participation in global sustainability efforts.

2.2 *The role of new technologies in sustainable reporting*

The digital era and the emergence of new technologies have revolutionized approaches to business, improving transparency and accessibility to information for wider audiences while enhancing the reliability of sustainability reports (Hsu and Schletz, 2024). Sustainability reporting (SR) is now seen as a crucial element for the legitimacy of companies, ensuring the disclosure of reliable information that aligns with the SDGs and helps businesses manage their social and environmental impacts (Leitoniene and Kundeliene, 2021).

The role of digital technologies in achieving SDGs has been widely investigated, highlighting their transformative potential (Unruh, 2018). For instance, (Niu *et al.*, 2024) discuss blockchain's capability to foster trust in ESG reporting, while (Burnaev *et al.*, 2023) demonstrate AI's capacity to automate complex analyses, offering actionable insights. Building on these advancements, this study integrates AI into ESG ratings through an AI-driven evaluation system implemented by the ethical cooperative bank under analysis. The AI algorithm processes data from socio-environmental questionnaires filled out by SMEs, analyzing 27 ESG indicators to generate a structured sustainability score. This system plays a fundamental role in ensuring accuracy, consistency, and comparability in sustainability assessments, reducing subjective biases that often arise in manual evaluations (Adelakun *et al.*, 2024). Furthermore, AI facilitates the automation of sustainability reporting, aligning SMEs with global frameworks such as the Global Reporting Initiative (GRI) and the CSRD. Technologies such as AI, blockchain, and advanced data analytics facilitate compliance and enable organizations to embed sustainability into their core strategies (Secinaro *et al.*, 2023). AI, for example, enables the analysis of vast amounts of ESG data, uncovering insights and trends that can inform strategic decisions and identify potential risks (Macpherson *et al.*, 2021). This capability is crucial for real-time monitoring and improving the accuracy of ESG reporting, particularly for small- and medium-sized enterprises (SMEs), which face unique resource constraints (Burnaev *et al.*, 2023).

Digital transformation fosters innovation, significantly changes sustainability practices, and enhances global competitiveness (Raihan, 2024). While these advancements are transformative, they present unique challenges for SMEs. SMEs are defined as enterprises with fewer than 250 employees (2003/361/CE) and are essential contributors to Europe's economy (Floyd and McManus, 2005; Galli *et al.*, 2023). They play a vital role in economic and social cohesion, contributing to job creation and regional development (Borbás, 2015). However, SMEs often lack the robust support mechanisms and technological frameworks available to larger corporations, making it critical to develop tailored digital solutions for SR practices (Klewitz and Hansen, 2014).

The European Union has made significant strides in promoting both digitalization and sustainability among businesses (Beier *et al.*, 2022). These efforts are aligned with the SDGs, emphasizing digital tools as enablers of sustainable development (IIASA, 2018). However, as highlighted in the 2022/2023 European SMEs Annual Report, about one-third of EU countries lack adequate tools to support SMEs in meeting sustainability requirements (Brodny and Tutak, 2022). This underscores the urgent need for targeted research and policy initiatives to accelerate the integration of digital tools into SMEs SR practices (Herczeg *et al.*, 2023).

A growing body of research has examined how digitalization influences business practices (Bouwman *et al.*, 2020), alongside studies exploring the intersection of sustainability and digital transformation (Bocken *et al.*, 2019). This convergence enables

SMEs to adopt resource-efficient practices, reduce their ecological footprint and enhance their competitiveness (European Commission, 2020). Nonetheless, the practical application of these technologies remains underexplored, particularly in the context of real-world SR practices for SMEs, necessitating further empirical research (Omrani *et al.*, 2024).

2.3 Research gaps and objectives

Despite the growing body of research on sustainability reporting, key gaps remain in understanding how SMEs can effectively integrate digital technologies into their SR practices. Previous studies have primarily focused on large corporations or theoretical frameworks, leaving a lack of empirical research on the practical application of these tools in SMEs. Additionally, while the CSRD has increased attention on SR, its implications for SMEs and the strategies they can adopt to align with the directive are underexplored (Omrani *et al.*, 2024). More specifically, research is needed to understand how sector-specific dynamics influence the adoption and effectiveness of digital SR tools among SMEs.

Given these considerations and following the call for deeper case studies from the real-world scenario, our study aims to answer the two following research questions (RQs):

- RQ1. In what ways can digital technologies be tailored to meet the specific needs and constraints of SMEs in different industries for effective sustainability reporting?
- RQ2. What might be the possible effect of improved sustainability reporting practices of SMEs in their overall business performance?

3. Methodology

3.1 Research methodology

We adopt a mixed research methodology. Using a qualitative lens on a single case study approach, alongside the correlation analysis, we provide a detailed examination of how digital technologies integrate into sustainability reporting (SR) practices among SMEs, particularly within the context of evolving regulatory frameworks like the CSRD (Gummesson, 2006). The study aligns with the work of Massaro *et al.* (2019), which emphasize the value of case studies in uncovering the interplay between technological and organizational dynamics in sustainability-focused initiatives. To enhance the robustness of the analysis, the study employs a triangulation of data sources. This includes primary data collected through semistructured interviews with key stakeholders of the selected case study and secondary data from publicly available reports, internal documentation and processed outputs of socio-environmental questionnaires (Patton, 2002). These multiple data sources allow for a comprehensive understanding of the subject and strengthen the validity of the findings.

3.2 Research context

The research is situated within the European and Italian contexts, both of which play pivotal roles in advancing SR practices among SMEs. In the European Union, the CSRD represents a key regulatory milestone, mandating enhanced transparency and accountability in nonfinancial reporting across member states. This directive requires organizations, including SMEs under specific thresholds, to disclose their socio-environmental impact, aligning their operations with the SDGs (European Commission, 2024).

SMEs in the European Union have demonstrated resilience and adaptability, as evidenced by their contributions to employment and innovation despite economic challenges (Sonntag *et al.*, 2022). For example, SMEs accounted for a 1.8% increase in employment in 2023,

underscoring their pivotal role in the region's strategic industrial ecosystems. However, inflationary pressures and resource constraints are expected to affect their value-added contributions, highlighting the need for targeted support in areas like sustainability and digitalization (European Commission, 2024).

Italy provides a particularly relevant context for this study due to the predominance of SMEs, which account for most of the nation's enterprises and significantly contribute to economic activity and employment (Hall *et al.*, 2009). Despite their economic importance, Italian SMEs face distinct challenges in adopting SR practices, such as limited resources, insufficient technical expertise, and a lack of affordable digital tools tailored to their needs (Micco *et al.*, 2020). These challenges are compounded by the CSRD's introduction, which creates additional pressures and offers SMEs opportunities to align with global sustainability trends.

The Italian banking sector, especially cooperative banks, also plays a critical intermediary role. These institutions are uniquely positioned to support SMEs through tailored financing, capacity-building initiatives, and the integration of SR practices into their operations. This makes the Italian context particularly suitable for studying how digital technologies can address SMEs' sustainability challenges and align them with regulatory frameworks.

3.3 Case study selection

The selected case study is an Italian cooperative bank committed to ethical finance. This bank was chosen for its innovative dual evaluation framework, which combines traditional financial assessments with rigorous socio-environmental evaluations supported by advanced digital tools. The bank serves as an exemplary case for exploring how ethical finance institutions can leverage technology to enhance SR practices, particularly among SMEs. The rationale for selecting this case was informed by three primary criteria:

- (1) The bank operates in the ethical finance sector, characterized by a focus on transparency, socio-environmental responsibility, and long-term value creation. This distinguishes it from traditional financial institutions and provides a unique perspective on sustainability reporting (*Sector relevance*);
- (2) The bank employs an AI-driven ESG rating system and automated social reporting tools, enabling real-time assessment of socio-environmental performance. These technologies facilitate the alignment of SMEs with the SDGs and the CSRD's requirements, making the case highly relevant to the study's objectives (*Technological Innovation*); and
- (3) The bank's customer primarily consists of SMEs, offering a focused lens through which to explore the challenges and opportunities faced by these enterprises in adopting SR practices (*Relevance to SMEs*).

The bank's approach includes a tailored socio-environmental assessment (VSA, Value and Sustainability Assessment) system, which evaluates the CSR profile of SMEs using a detailed questionnaire. The VSA system incorporates 27 ESG indicators, processed by an AI algorithm, to generate comprehensive sustainability scores.

This process enhances transparency and provides SMEs with actionable insights to improve their socio-environmental impact. Furthermore, the VSA system ensures alignment with global frameworks such as the GRI standards, offering a structured and reliable assessment model.

Another unique aspect of the bank's model is the inclusion of trained social assessors – volunteer members of the institution – who conduct on-site visits and interviews. This

multi-stakeholder approach adds depth and reliability to the evaluation process, creating a robust feedback mechanism for SMEs.

In addition to generating ESG scores, the bank provides its clients with tools to calculate CO₂ emissions and plan decarbonization strategies (Lanzalonga *et al.*, 2024). By integrating ethical finance principles with cutting-edge technology, the bank exemplifies how financial institutions can drive sustainability transformation among SMEs. The insights gained from this case study are not only relevant to Italy but also offer transferable lessons for financial institutions and SMEs in other contexts.

3.4 Data collection and analysis

To develop a comprehensive case study analysis and ensure reliability and replicability, the study iteratively and strategically sought out diverse information sources, offering insights necessary for developing theoretical contributions (Glaser and Strauss, 2017). The research phases followed a logical process, as outlined by Howard and Peters (1990), which underscores the appropriateness of the data sources used in this study.

The analysis integrates multiple data sources, focusing on both the cooperative bank's strategies and their interactions with SME clients. This dual focus enables a nuanced understanding of the bank's framework and its impact on SMEs' SR practices. Interviews were conducted with four stakeholders within the bank: the Head of Impact Assessment, the Socio-Environmental Impact Analyst, the AI Department Officer, and the Ethical Finance Specialist. Each interview lasted between 30 min and 1.5 h, following a structured protocol designed to elicit detailed insights into the development and application of the dual evaluation framework (financial and socio-environmental assessments), the functionality of the ESG rating system, challenges faced in aligning SME practices with the CSRD, and strategies for supporting SMEs in their sustainability efforts. While self-reported data collected through interviews and questionnaires may introduce potential bias, the study employs data triangulation to mitigate this issue by integrating multiple data sources, including semistructured interviews, socio-environmental questionnaires and documentary evidence (Patton, 2002).

The interviews were recorded, transcribed and systematically coded for thematic analysis, ensuring consistency and flexibility in exploring emerging themes. This semistructured approach ensured consistency while allowing flexibility to explore emerging themes.

The study incorporated various documentary sources to complement the primary data, including impact reports, sustainability reports, and internal guidelines. These documents offered insights into the bank's alignment with recognized frameworks such as the GRI standards and its socio-environmental metrics. Additionally, data from 3,431 socio-environmental questionnaires completed by SME clients were analyzed. These questionnaires captured detailed metrics related to governance, labor practices, environmental impact and community engagement. The AI-driven ESG rating system processed the responses to generate comprehensive sustainability scores, enriching the data set with quantitative insights.

The data analysis employed thematic analysis, a method particularly suited for identifying, organizing, and interpreting patterns in qualitative data (Braun and Clarke, 2006). Interview transcripts were manually coded to identify key themes such as regulatory alignment, technology integration, and SME support. Qualitative data analysis software (e.g. NVivo) was used to refine and categorize the codes, enabling the identification of recurrent patterns and connections (Dalkin *et al.*, 2021; Secinaro *et al.*, 2021). Additionally, socio-environmental questionnaire data were reviewed statistically to explore the distribution of ESG scores and their implications for SMEs' default risks. By integrating qualitative and

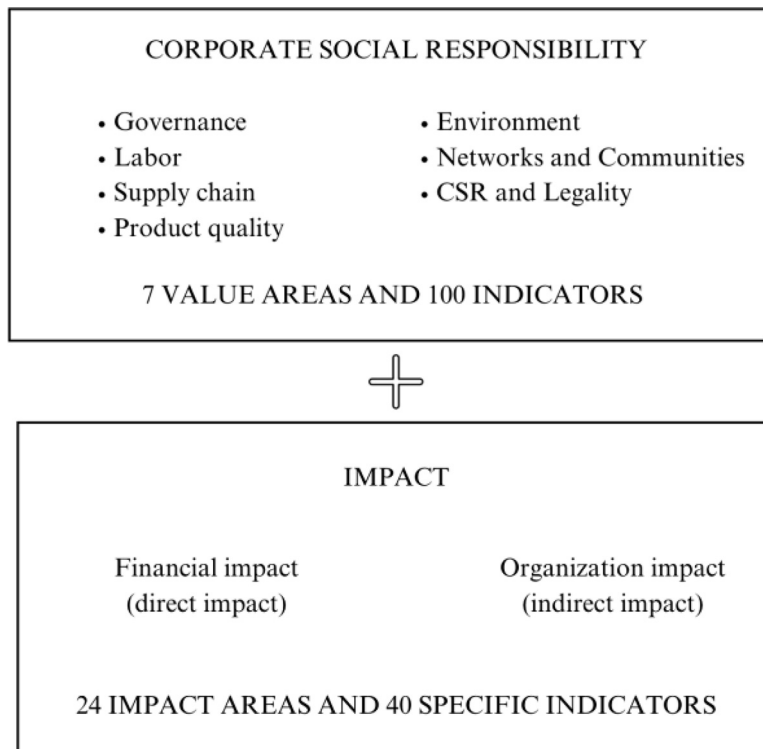
quantitative insights, the analysis provided a holistic perspective on the interplay between the bank's strategies and SMEs' sustainability practices, ensuring the robustness of the findings.

4. Results

The results of our study demonstrate how the ethical cooperative bank's dual evaluation framework effectively integrates traditional financial assessments with socio-environmental evaluations to advance SR practices among SMEs. The findings are structured around two thematic areas: Corporate Social Responsibility (CSR) and Impact Measurement.

4.1 Corporate social responsibility

The ethical cooperative bank employs a rigorous dual evaluation system to assess SMEs' CSR performance. This system is based on a detailed socio-environmental questionnaire (VSA), which examines seven key areas: governance, labor, supply chain, product quality, environment, networks and communities, and CSR and legality (Figure 1). These areas offer a comprehensive view of SMEs' socio-environmental impact, enabling a detailed assessment of their sustainability practices. Each area is evaluated through specific questions designed to capture the organization's commitment to ethical and sustainable practices, contributing to



Source(s): ESG Rating elaborated by the ethical cooperative bank

Figure 1. Questionnaire structure for impact assessment

an overall ESG score that influences financial and strategic decisions. As highlighted by the Ethical Finance Specialist:

In our bank, we've developed a socio-environmental questionnaire that our clients need to fill out for each loan, which includes around 100 questions tailored to their legal form and size. This questionnaire helps us generate an ESG ranking by analyzing the aggregated data from our clients' responses, covering seven key areas. We update the questionnaire annually to keep up with regulatory changes. By collecting this data, we can classify organizations and their financing as either impactful or not, based on specific quantitative indicators.

The bank employs trained social assessors – volunteer members who undergo rigorous training – to enrich the evaluation process. These assessors conduct on-site and online visits, verifying the data provided by SMEs and offering qualitative insights. Their findings are discussed during territorial initiative group meetings (i.e. in Italian language, “*Gruppi di Iniziativa Territoriale, GIT*”), where local perspectives are integrated into the evaluations:

An innovative aspect of our ESG assessment process is the multi-stakeholder approach, where the assessors are active members of the bank who have gone through our training courses. These assessors can freely choose which evaluations to conduct, either onsite or online, and then meet with other active members in their territory to discuss and exchange information, ensuring a more complete view of the organization's sustainability practices.

(Socio-Environmental Impact Analyst, the ethical cooperative bank)

4.2 Impact measurement

The impact measurement framework developed by the bank goes beyond CSR assessments by integrating socio-environmental and financial indicators into its decision-making processes. This framework evaluates both SMEs' direct and indirect impacts, as summarized in Figure 2. Direct impacts include financial outcomes, while indirect impacts measure organizational contributions to broader sustainability objectives.

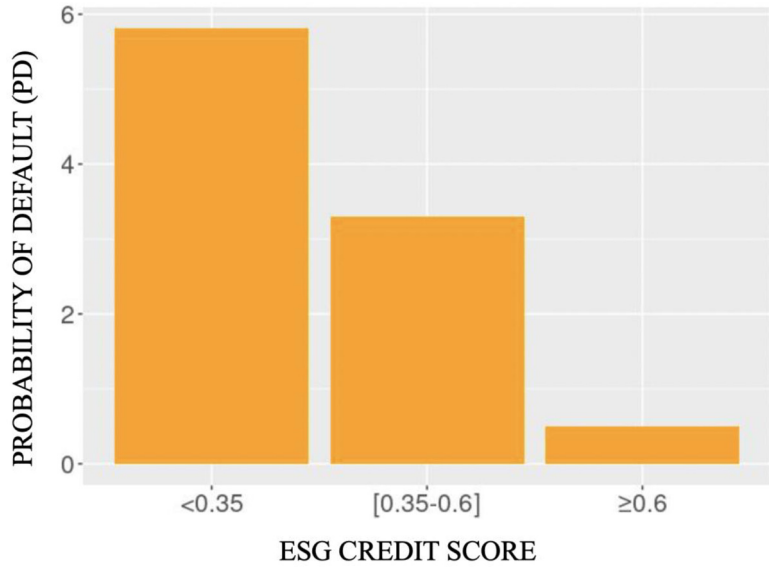
The ESG rating system plays a central role in measuring these impacts. By processing socio-environmental questionnaire data, the bank generates comprehensive ESG scores that identify trends, improve sustainability practices and support SMEs in aligning with global frameworks such as the GRI standards and the CSRD. This alignment ensures that SMEs meet evolving regulatory and stakeholder expectations.

As detailed by the AI Department Officer:

We selected 27 indicators from the questionnaire responses and developed a straightforward algorithm to generate an ESG rating. This ESG rating is managed entirely internally by the bank. The questionnaire data is sent to our cloud, where the AI department processes it, creates an output, and sends it back to the platform. The platform then displays the aggregated rating information.

The system, built around 27 key indicators, leverages an AI algorithm that processes these indicators to generate a precise ESG score. This AI algorithm ensures accuracy, consistency, and the ability to adapt to new data, continuously improving assessments. The ESG ranking currently uses a simple average of the indicators derived from the questionnaire. The bank, however, is working on a weighted methodology to better reflect the significance of different factors across various companies.

To enhance transparency, the bank creates automated social reports for each client at the end of the year. These reports consolidate ESG data collected throughout the year into a comprehensive social balance sheet aligned with frameworks like the GRI standards and the



Source(s): ESG Rating elaborated by the bank

Figure 2. ESG credit score and probability of default (PD)

CSRD. These reports provide clients with valuable feedback, encouraging continuous improvement in their sustainability practices.

The study analyzed 3,431 questionnaires, examining the correlation between ESG scores and financial performance, specifically focusing on the PD. In the ESG rating system, clients are categorized as “BONIS” (*good financial standing*) or “NPL” (*Non-Performing Loans*), reflecting their financial health and ESG performance. The risk of default is determined by integrating financial indicators, socio-environmental metrics, and historical data trends, ensuring compliance with ethical finance principles.

As shown in [Table 1](#) and [Figure 2](#):

- organizations with ESG scores below 0.35 have a 5.8% PD;
- scores between 0.35 and 0.6 show a reduced PD of 3.3%; and
- scores above or equal to 0.6 exhibits a minimal PD of 0.5%.

Table 1. ESG credit score and probability of default (PD)

Cluster	ESG credit score	PD (%)	Counterparts
Insufficient	< 0.35	5.8	1,605 bonis 99 npl
Neutral	(0.35–0.6)	3.3	1,233 bonis 42 npl
Excellent	≥ 0.6	0.5	593 bonis 3 npl

Source(s): ESG rating elaborated by the bank

These findings underscore the financial benefits of robust ESG practices. For SMEs, higher ESG scores improve sustainability performance and reduce credit risk, making them more attractive to lenders and investors. This financial advantage enables SMEs to invest in sustainable innovations and drive long-term growth. For SMEs, higher ESG scores directly translate to lower risk of defaults, which implies that adopting strong socio-environmental practices improves their sustainability practices and contributes to their financial stability and lower credit risk. Furthermore, the relationship between strong ESG practices and decreased risk of default probabilities underlines the potential for SMEs to attract more favorable financing terms. Investors and lenders are increasingly prioritizing sustainability, and SMEs with higher ESG scores are better positioned to secure funding and lower costs (Drobotz *et al.*, 2024). This financial advantage can be pivotal for SMEs, enabling them to invest in further sustainable innovations and drive long-term growth. Thus, integrating digital technologies in sustainability reporting, as evidenced by the AI algorithm in the bank's ESG rating system, offers SMEs a clear pathway to enhanced socio-environmental impact and improved financial performance.

Overall, SMEs can adjust their vision, mission, and business strategy in general to comply with Non-Financial Reporting (NFR) requirements, aligning with new arrangements introduced by GRI standards and CSRD. At the same time, the banking system benefits from the ability to effectively map ESG aspects, thereby enhancing transparency and accountability in both financial and nonfinancial reporting.

Additionally, the integration of digital technologies in sustainability reporting, evidenced by the bank's AI algorithm, offers SMEs a pathway to enhanced socio-environmental impact and improved financial performance:

Our automated social reports translate the ESG evaluation into a year-end summary aligned with the GRI standards and CSRD. This ensures that SMEs not only meet compliance requirements but also enhance their operational efficiency and transparency.

(Ethical finance specialist)

In conclusion, the integration of digital technologies into SR, evidenced by the bank's AI algorithm, offers SMEs a clear pathway to improved socio-environmental impact and financial performance. At the same time, it allows the bank to effectively map ESG aspects, thereby enhancing transparency and accountability in both financial and nonfinancial reporting.

5. Discussion

Integrating ESG criteria into business activities has gained significant traction, particularly with the growing emphasis on sustainable development and responsible practices among businesses and investors (Gangi *et al.*, 2019). ESG criteria are fundamental for fostering long-term sustainability, mitigating risks, and enhancing reputation (Lim *et al.*, 2022). Aligning ESG factors with SDGs underscores their dual role as ethical imperatives and practical tools for addressing global challenges (United Nations, 2016). Digital transformation, particularly through the use of advanced technologies such as AI, plays a pivotal role within this context, enabling businesses to address and report on their sustainability objectives more effectively (Lombardi and Secundo, 2020).

The dual evaluation process employed by the bank integrates financial assessments with VSA, ensuring SMEs meet both financial and sustainability criteria. This approach addresses the complexities of sustainability reporting while adhering to high social and environmental responsibility standards.

AI technology has demonstrated transformative potential in enhancing decision-making processes by analyzing large amounts of ESG data and information to uncover trends and identify potential risks. The AI algorithm utilized by the bank's ESG rating system, internally developed to suit the bank's operational context, processes data from detailed socio-environmental questionnaires completed by the organizations, generating precise ESG scores that reflect SMEs' commitment to ethical and sustainable practices. This capability is particularly relevant for real-time monitoring and improving the accuracy of ESG reporting (Macpherson *et al.*, 2021).

The bank's approach illustrates the scalability of AI in sustainability reporting. By adapting to new regulatory requirements like GRI standards and CSRD, the AI-driven system offers SMEs industry-specific insights to align operations with sustainability goals. Additionally, automating complex evaluations reduces administrative burdens on SMEs, enabling them to focus on actionable improvements.

The bank also provides automated social reports, compiling year-long ESG data into comprehensive summaries aligned with global standards. These reports enable SMEs to track progress, evaluate the impact of sustainability initiatives, and make data-driven decisions (Hsu and Schletz, 2024; Leitonienė and Kundeliene, 2021). The adaptability of the socio-environmental questionnaires further ensures their relevance across diverse SME sectors, enhancing the overall evaluation process (Gull *et al.*, 2022).

The correlation between improved sustainability reporting practices and overall business performance among SMEs is becoming increasingly evident. The case study of the Italian cooperative bank committed to ethical finance demonstrates that robust ESG performance is closely linked to better financial health and stability for SMEs.

The analysis reveals that SMEs with ESG scores ≥ 0.6 exhibit a PD of 0.5%, compared to 5.8% for scores < 0.35 . This disparity underscores the financial benefits of ESG practices, suggesting that robust socio-environmental strategies enhance creditworthiness and financial stability (Drobeta *et al.*, 2024). These findings align with existing research linking strong ESG performance to reduced financial risks and enhanced corporate reputation (Gangi *et al.*, 2019).

Transparency in socio-environmental reporting fosters stakeholder trust, including customers, investors, and regulatory bodies (Hoang *et al.*, 2023). This trust enhances SMEs' market positioning and competitive advantage (Heuer, 2017). Responsible investors increasingly prioritize ESG criteria, providing SMEs with better access to capital and favorable financing terms.

Enhanced sustainability reporting also fosters innovation within SMEs. SMEs are encouraged to develop innovative solutions to sustainability challenges by continuously evaluating and reporting socio-environmental impact. This innovation can open new market opportunities, especially in sectors where sustainability is a key differentiator.

6. Conclusion

To conclude, the study highlights the importance of integrating digital technologies in sustainability reporting to support SMEs in achieving the SDGs set by the United Nations. The use of AI-driven ESG rating systems and automated social reports provides SMEs with a clear pathway to both enhanced socio-environmental impact and improved financial performance. This integration aligns with broader trends in digital transformation, which are essential for maintaining competitiveness and sustainability in the modern business environment.

6.1 Theoretical implications

While the in-depth analysis of the case study replied to a call for more practical case studies to be shared in the academic and practice community, new research avenues can be identified.

The major topics are connected to the growing body of literature on the integration of ESG criteria in business operations and its impact on financial performance. The clear correlation between higher ESG scores and lower probabilities of default reinforces the argument that strong socio-environmental practices are not only ethically desirable but also financially beneficial. This insight supports current literature that links sustainability with financial stability and risk management, as noted by [Di Tommaso and Thornton \(2020\)](#) and [Gangi et al. \(2019\)](#).

The study advances the understanding of how digital technologies can be leveraged to enhance sustainability reporting practices. The use of AI-driven ESG rating systems and automated social reports illustrates the potential of digital tools to provide accurate, real-time assessments of socio-environmental performance. This finding contributes to the literature on digital transformation in sustainability, highlighting the role of advanced technologies in improving transparency, accountability, and strategic decision-making in sustainability reporting ([Hsu and Schletz, 2024](#); [Lombardi and Secundo, 2020](#)).

Moreover, the study highlights the significance of financial education of SMEs' employee and manager in general, and capacity-building initiatives in promoting sustainable business practices. This insight contributes to the theoretical understanding of capacity-building as a critical component of sustainable development ([Galli et al., 2023](#)).

6.2 Practical implications

This study provides several practical implications for SMEs and financial institutions. For SMEs, integrating advanced digital tools such as AI-driven ESG rating systems can significantly enhance sustainability reporting processes by offering real-time assessments of socio-environmental performance. These tools help SMEs identify improvement areas, implement effective strategies, and enhance operational efficiency, ultimately contributing to SDGs. The automated social reports generated by the bank provide SMEs with detailed feedback, enabling them to track progress, make data-driven decisions, and continuously improve practices. Digital tools ensure these reports align with regulatory standards such as the GRI and CSRD, simplifying compliance processes.

A mutual relationship exists between banking institutions and SMEs in fostering sustainability through frameworks like the Corporate Social Responsibility Directive and SDGs. As demonstrated, higher ESG scores correlate with lower default probabilities, highlighting robust ESG performance's financial benefits. The involvement of trained social assessors further enriches sustainability evaluations, offering a model for other financial institutions to engage local experts and community members in their assessment processes.

6.3 Limitations and future research avenues

As every research, this paper has some limitations. First, the reliance on a single case study limits the generalizability of the findings ([Flyvbjerg, 2006](#)). While the detailed exploration of a single cooperative bank offers valuable insights, broader applicability requires examining a more diverse sample of financial institutions across regions. Second, the cross-sectional nature of the data captures sustainability practices at a specific moment, necessitating longitudinal studies to assess long-term impacts ([Rindfleisch et al., 2008](#)). Additionally, the reliance on self-reported data, such as socio-environmental

questionnaires, introduces potential response biases stemming from varying transparency, awareness, or subjective interpretations by respondents. Incorporating objective data sources or validation mechanisms could address this issue.

The use of volunteer social assessors may also introduce variability due to differences in expertise, which could be mitigated through standardized processes (Patton, 2002). Future research should compare sustainability reporting approaches across financial institutions and explore tailoring ESG metrics to specific sectors for better applicability. Further investigation into the long-term impact of digital technologies on SMEs and the role of emerging technologies like blockchain and IoT in sustainability reporting is essential (Biancone *et al.*, 2024). While the study highlights a strong correlation between higher ESG scores and lower default probabilities, causality remains to be established. Factors such as SME size, industry sector, and regional conditions may influence this relationship and should be examined to clarify the causal pathways between ESG practices and financial stability.

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