

Louvain School of Management

Enhancing Operational Excellence: Exploring the interplay of ESG Reporting, Smart Technology Adoption, and Total Quality Management in the Banking sector

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Declaration

During the preparation of this master's thesis, the author utilised ChatGPT for the following purpose:

1. **Structure:** ChatGPT was used to draw the overall structure of this master's thesis in the early stage.
2. **Semi-structured interviews:** ChatGPT was used to list potential questions aimed at the interviewees. The list was only used as inspiration, many questions were deleted or added afterwards. ChatGPT also helped by summarising some of the findings from the interviews.
3. **Statistical analysis:** ChatGPT was used to write some of the codes for RStudio and helped with some basic analysis of results.
4. **Rewording:** ChatGPT helped rewrite some sentences the author was not fully convinced were readable.

After using ChatGPT, the author diligently reviewed and edited the content produced by the tool. I take full responsibility for the final content presented in this thesis.

By signing this declaration, I affirm that the content of this master's thesis reflects my original work, augmented by the responsible use of AI.

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Abstract

This study focuses on the significant transformation occurring within the banking sector driven by the need for robust ESG practices, the adoption of smart technologies, and more restrictive non-financial reporting requirements. It examines the interplay between ESG reporting, Total Quality Management (TQM), and Smart Technology Adoption (STA) in light of the new Corporate Sustainability Reporting Directive (CSRD). This research also explores the differences between theoretical frameworks and their actual implementation in the banking sector.

Insights into how banks can enhance their operational efficiency, regulatory compliance, customer satisfaction, and overall sustainability practices are provided in this study. It investigates the potential interconnections between STA, TQM, and ESG Reporting to determine whether leveraging them together can lead to operational excellence and mutual improvements.

This was achieved through multiple steps. First, a detailed literature review was performed. Next, semi-structured interviews were conducted with experts in ESG Reporting, Quality Management, and Digital Transformation. Finally, a statistical analysis was carried out using data gathered from questionnaires distributed to banking professionals.

Several implications result from the findings. It suggests that banks should invest in advanced digital tools such as AI and BDA for the building of their reports, as well as for comparing themselves with competitors' reports. However, in the early years of CSRD implementation, focusing on TQM principles might be more practical and cost-effective for banks. Emphasising TQM practices across various departments can indeed enhance the overall quality management strategy, as indicated by the significantly positive impact of TQM on ESG reporting. Finally, banks should also leverage AI-powered CRM systems and data analytics to foster a culture of continuous improvement and employee engagement.

These findings are crucial for ensuring higher standards of ESG reporting and operational efficiency across the banking sector. Advanced technologies can streamline data collection, enhance accuracy, and improve the quality of ESG reports. Moreover, they can assist with benchmarking and report writing, enabling banks to refine their ESG Reporting quality and comparability. Ultimately, these improvements contribute to better customer satisfaction and overall operational excellence.

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Foreword

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1. Introduction

In the competitive banking industry, the pursuit of operational excellence and customer satisfaction is key to achieving firm performance and standing out from competitors. Indeed, operational excellence can increase a firm's profits, help earn customer trust, and improve competitiveness in the market (Issar & Navon, 2016). The need for quality and operational excellence is primarily driven by customer expectations, the threat of new competition, expanding markets, and digitalisation (Oakland et al., 2020). This study will therefore focus on three concepts and their relationships as enablers of operational excellence and firm performance: Total Quality Management (TQM), ESG Reporting, and Smart Technology Adoption (STA).

Kaynak (2003) investigated the impact of TQM practices on firm performance and confirmed a positive relationship between firm performance and the extent to which companies implement TQM. The study also highlighted the importance of training and employee relations in assessing TQM implementation. To achieve operational excellence, banks can align operating models with the overall organisational strategy, use appropriate technologies to automate operational capabilities, and consider cultural as well as employee change aspects (Tornjanski et al., 2017, as cited in EY, 2013). Regarding technology, Oduro et al. (2023) observed that digital technologies positively and significantly impact the overall performance of firms in terms of financial outcomes, innovation, and operational efficiency.

Furthermore, ESG reporting has been shown to deliver several favourable outcomes regarding operational excellence. First, it can mitigate information asymmetries between an organisation and its investors, as well as among investors themselves (Lim et al., 2022, as cited in Christensen et al., 2021). ESG reporting can also increase organisational value, improve liquidity, enhance corporate decision-making, lower the cost of capital, and reduce organisational risks (Lim et al., 2022 as cited in Christensen et al., 2021; Cunha et al., 2021; Gillan et al., 2021; Huang, 2021; Koutoupis et al., 2021; Li et al., 2021; Nwachukwu, 2021).

Overall, in this constantly evolving landscape, aiming for operational excellence is crucial for banks to maintain a competitive advantage. While TQM has been relevant for decades in the pursuit of organisational excellence, new stringent directives from the European Union regarding non-financial reporting and the use of smart technology make this study crucial for understanding current industry trends. These concepts, relevant to the current market dynamics, will be key for banks to enhance their operational excellence.

This research will delve into STA, TQM, ESG Reporting practices and their applicability to the banking sector. The objective is to explore the differences between theoretical frameworks and their actual implementation. Furthermore, the study will investigate the potential interconnections between these concepts to determine whether leveraging them together can lead to mutual improvements. This will be achieved through a detailed literature review, semi-structured interviews with experts in ESG Reporting, Quality Management, and Digital Transformation, and a statistical analysis based on data gathered from questionnaires distributed to banking professionals.

This important work faced challenges due to the recency of the CSRD and the difficulty in gathering primary data. While these three concepts are relatively commonly used, they have never been linked together in the banking sector, adding unique value to this study. The research includes a literature review and the development of various hypotheses, resulting in a conceptual model. A detailed methodology section explains the data collection methods and statistical tests performed. This is followed by the presentation of results and a discussion that covers the findings, limitations, and suggestions for future research.

2. Literature review and hypotheses

2.1. Literature review

2.1.1. Smart Technology Adoption

Smart technologies, which encompass a range of advanced digital tools such as artificial intelligence (AI), the Internet of Things (IoT), blockchain, and cloud computing, are revolutionising various industries. In the banking sector, the adoption of these technologies is transforming traditional practices, enhancing operational efficiency, and providing superior customer experiences.

Smart technology refers to technologies that are able to gather data from their surroundings through sensors and analyse this data remotely (Sharma et al., 2023). Smart technologies enable applications to monitor, control, optimise, and operate autonomously (Sharma et al., 2023, as cited in Porter & Hepplemann, 2014). Furthermore, these capabilities can lead to other digital features such as customer engagement and intelligence, personalisation, customisation, contextual interaction, automation (Sharma et al., 2023), and higher customer-centric digitalisation (Kang & Arikrishnan, 2024).

The banking sector is increasingly adopting smart technologies to enhance various functions. As it is a data-driven industry, banks can unlock new ways to improve security, optimise procedures, and provide clients with cutting-edge services by merging AI with blockchain technology (Addula et al., 2024). In addition to that, authors claim that algorithms powered by AI can assess risk factors, examine market trends, but also carry out transactions quickly and accurately (Addula et al., 2024 as cited in Goodell et al., 2021). In order to elevate user experience, banks can also leverage blockchain technology to accelerate the KYC workflow and reduce customer onboarding times (Addula et al., 2024). Another smart technology implemented in the banking sector would be Cloud Computing. It provides organisations with scalable and flexible computing resources over the internet, which facilitates the storage, processing, and management of large data sets (Bodemer, 2024, as cited in Goldbarsht, 2022). All of these technologies, when put together, form strong synergies that can enable banks to leverage data-driven insights (Bodemer, 2024).

Despite the strong benefits, there are still challenges that hinder the adoption of smart technologies in banking. Indeed, while risk mitigation and large-scale data analysis can be achieved by combining AI, blockchain, and cloud computing, adopting these technologies requires banks to overcome interoperability issues to ensure data integration across different systems (Addula et al., 2024). The implementation of smart technologies brings new concerns about security and privacy (Addula et al., 2024). Other barriers such as regulatory constraints, need for reskilling staff, outdated infrastructure (Indriasari et al., 2019), change management, and techno-centricity (Sharma et al., 2023, as cited in Hughes et al., 2016) may hinder the widespread adoption of AI, blockchain, cloud computing, and big data analytics.

2.1.2. ESG Reporting

Environmental, Social, and Governance (ESG) criteria have become critical benchmarks for assessing the sustainability and ethical impact of a company's operations. These criteria help investors evaluate potential risks and opportunities associated with a company's environmental stewardship, social responsibility, and governance practices. ESG shares the same foundation with Corporate Social Responsibility (CSR) by trying to maximise the positive impact of business on the environment. We can differentiate these two concepts by noting that CSR comprises company activities understood as part of their responsibility towards the environment, while ESG helps to measure, quantify, and evaluate such activities (Broniewicz, Jastrzębska, & Lulewicz-Sas, 2024, as cited in Biały, 2023).

Furthermore, ESG reporting relates to the disclosure of information about business operations in relation to environmental, social, and governance areas (Krantz & Jonker, 2024). While this definition may seem simple, the path to standardised non-financial information disclosure has been lengthy and complex, with numerous policies and directives shaping its evolution. Indeed, from the first CSR disclosures to ESRS-compliant ESG reports, a lot has happened. During the period 2001-2010, there has been a sudden increase in environmental reporting, with the arrival of reporting frameworks reflecting on the need to increased accountability (Diwan & Sreeraman, 2024, as cited in Waddock, 2002, Islam, 2008). Later, between 2011 and 2021, disclosures transitioned from sustainability to ESG-related reporting practices (Diwan & Sreeraman, 2024) with an escalation in the number of frameworks and policies. In order to showcase the evolution of all the main policies and directives related to the disclosure of non-financial information in Europe, a timeline has been made (figure 1).

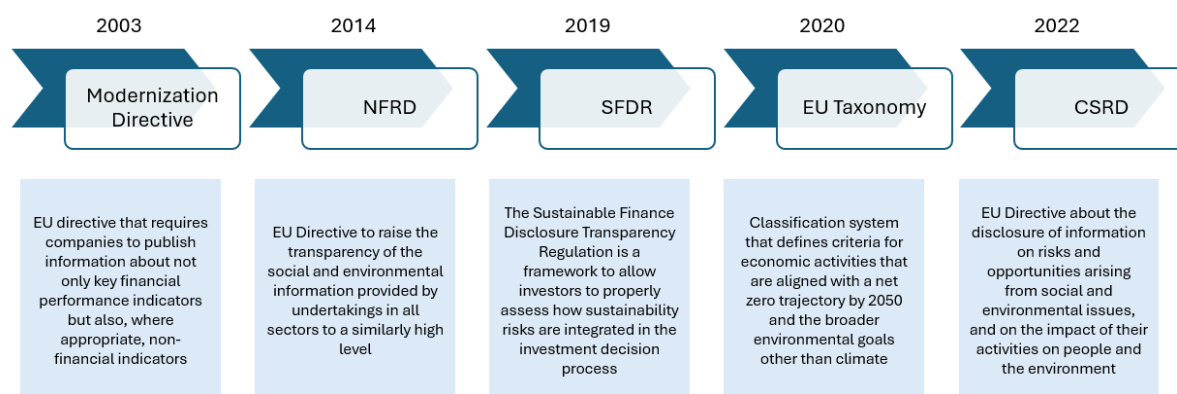


Figure 1, Timeline of main steps towards CSRD

As proposed in 2013, the NFI Directive (Directive, 2014) was developed to increase the transparency of sustainability reporting. However, the proposal received substantial criticism, which led to some changes (Kinderman, 2020). Despite these modifications, experts determined that this tool was inadequate to realise the goals of the EU's transition towards a sustainable economy and society (Odobáša & Marošević, 2023). Indeed, gaps in addressing major topics were identified, with some companies failing to publish any sustainability reports. Furthermore, the lack of standardisation and comparability hindered banks' efforts to enhance the quality of their reports. Some firms were even combining different frameworks and chose which information to highlight or ignore. To tackle this, the Commission published additional guidelines before completely replacing the NFI Directive by a more rigorous Corporate Sustainability Reporting Directive (Directive, 2022).

In early 2023, the EU CSRD came into play to provide more granularity to the previous model. It becomes applicable from the fiscal year 2024 to all large European organisations with over 500 employees, as well as to small and medium companies. This directive also covers non-European companies that generate more than EUR 150 million in net income per year in the Union and possesses at least one daughter company or subsidiary that exceeds this threshold (Directive, 2022). Therefore, the number of companies that will have to publish sustainability reports will rise from approximately 11,700 to 49,000 obligees. Businesses within the scope of application of the CSRD will have to submit detailed non-financial reports with relevant, reliable, comparable and verifiable information about risks and opportunities in all aspects of sustainability (Odobáša & Marošević, 2023).

The reports will have to be prepared according to the European Sustainability Reporting Standards, which was built by the European Financial Reporting Advisory Group (EFRAG). These new standards will provide stakeholders with more comparable reports and will improve the reliability of the information presented in the reports as the level of verification should be similar to the rigorousness of financial reports' verification. Indeed, the EU CSRD promotes the use of data analytics, and poor data quality may result in civil and criminal penalties (Lee & Alberto, 2022). To ensure that, reports will have to be checked by special authorised auditors or audit companies that already audit financial reports. In line with this approach, companies affected by the CSRD will disclose their sustainability information in the European Single Electronic Format (ESEF) (*Electronic Reporting*, n.d.). All of these new requirements will therefore increase the costs for the companies targeted by the EU directive. Costs can be incurred by gathering information, entering it into the reporting and management systems, and finally transmitting it to the target audiences (Baumüller & Sopp, 2021). While some authors state that ESG Reporting may increase company's performance (Buallay, 2019), the benefits of these costs and efforts are still very uncertain. A study by Kang and Arikrishnan (2024) reveals that higher levels of Sustainability Reporting not only directly enhance TQM but also contribute to sustainable ESG practices, creating a positive feedback loop beneficial for organisational performance. Additionally, the findings show that ESG disclosure significantly leads to a more comprehensive adoption of TQM practices. This highlights the importance of scalable solutions that combine continuous improvement with sustainability imperatives (Lim et al., 2022).

The ESRS also mandates a double assessment to be performed. This will expand the scope and complexity of reporting, as, on top of the information on the state and policies, reports should contain goals and an assessment of progress towards these targets (Odobáša & Marošević,

2023). Although some companies already have experience in non-financial reporting, there are still many entities with little or no experience in the area of ESG Reporting (Broniewicz, Jastrzębska, & Lulewicz-Sas, 2024).

The integration of advanced technologies holds significant potential to transform ESG reporting. As discussed previously, ESG criteria are crucial for assessing a company's sustainability and ethical impact, while smart technologies such as artificial intelligence, blockchain, and cloud computing are beginning to reshape various industries, including banking. The convergence of these technologies with ESG reporting processes offers promising opportunities for enhancing the accuracy, efficiency, and transparency of sustainability disclosures.

Authors Yu et al. (2022) suggest the use of Industry 4.0 technologies to increase the quality of ESG Reporting processes. They believe that the complexity and variety of environmental measures hinder the ability to ensure the accuracy, completeness and reliability of information in ESG reports. To enhance the efficiency and quality of environmental disclosure in ESG reports, Yu et al. (2022) propose leveraging advanced technologies such as sensors and IoT as these technologies can accurately capture and transmit gas emissions and other environmental information in real time. For instance, sensors and IoT can be used to monitor real-time gas emissions and other ecological data. Yu et al. (2022) cite Rushikesh and Sivappagari (2015) which developed an automatic gas emission monitoring system using carbon and sulphur dioxide sensors and RFID tags. This system being able to capture real-time emissions from vehicles. Similarly, Yu et al. (2022) cite Brundu et al. (2017) who designed IoT infrastructure for monitoring energy consumption in buildings, using heat-sensing devices to calculate CO₂ emissions in a smart city setting.

Another study about the digitalisation of sustainability reporting processes (Pizzi et al., 2023) highlights that reports prepared using digital devices are more comprehensive and informative than those created using traditional methods. In the case of CSRD, Pizzi et al. (2023) also state that adopting digital features will reduce the problems caused by late adopters' lack of expertise.

Recent advancements in ESG reporting have leveraged innovative AI-driven tools such as DocQA and ESGReveal to enhance the extraction and analysis of ESG data from corporate reports. DocQA, as presented by Mishra et al. (2023), integrates computer vision for document conversion, Natural Language Processing (NLP) for data retrieval, facilitating interactive exploration, and then uses Large Language Models (LLM) to generate a response. ERS-compliant reports are set to adopt the ESEF directly. Given that ESEF already is machine-

readable, the initial step of document conversion, as used in DocQA, becomes redundant. Indeed, with the ESEF in place, the XHTML files containing the reports are both human-readable and machine-readable, when marked up with iXBRL (European Commission, n.d.). However, the subsequent steps of information retrieval and response generation remain crucial. These advancements enable the extraction of a large amount of data, empowering banks to compare themselves with competitors and gain valuable insights into market practices. Similarly, ESGReveal, developed by Zou et al. (2023), uses LLMs combined with Retrieval Augmented Generation to systematically extract both numerical and textual ESG information from corporate reports. This can enable banks, to compare their ESG practices against competitors more effectively. By providing structured and comprehensive insights, these tools support better decision-making, enhance transparency, and promote accountability across the banking sector.

2.1.3. Total Quality Management

Total Quality Management has many different definitions, which reflects the diversity of interpretations and applications across different industries. Furthermore, TQM models are rarely adopted in their entirety, often serving as reference frameworks that are adapted and modified to meet specific contextual needs and environments (Jasti et al., 2021).

In 2008, Deborah Hill states that TQM can be considered as an approach of continuous improvement in all quality aspects within the firm and its goal would be to add value to the delivered products to customers (Rawashdeh, 2014, as cited in Hill, 2008). At that time, TQM was mostly viewed as more relevant to manufacturing rather than the service industry.

More than 10 years later, the concept of total quality management has evolved and is now seen as a broader management approach aiming to achieve excellence in business through quality (Sader et al., 2019). This modern perspective emphasises on increasing customer satisfaction through quality and promoting employee involvement through teamwork guided by a common goal (Bugdol, 2020).

Anil and Satish (2019) bring together the definitions by considering TQM as an integrated management philosophy focused on better customer satisfaction by continuously improving the quality of both products and processes. Furthermore, Lim et al. (2022) define TQM as a holistic management philosophy aiming at continual improvement of operations, people, and environments to create a competitive advantage. Moreover, researchers view TQM as a business excellence model with numerous existing frameworks (Lim et al, 2022, as cited in

Alanazi, 2021, Carvalho et al, 2021, Fonseca, 2021, Lameijer et al, 2021). Others consider TQM a comprehensive management approach that consists of a system of continuous improvement practices, tools, and training to manage business in a constantly changing environment, ensuring customer satisfaction, increased success, and reduced failures through quality and teamwork (Lim et al, 2022, as cited in Ali and Johl, 2021, Bhamra et al, 2021, de Souza et al, 2021).

Overall, TQM is now viewed as a holistic and integrated management philosophy that focuses on continuous improvement in all aspects of a firm's operations, people, and environments. It aims to enhance customer satisfaction, achieve business excellence, and create a competitive advantage through systematic and comprehensive practices, tools, and training. TQM, along with its widely adopted practices such as ISO standards, Kaizen, and Six Sigma, is implemented across various countries, industries, and organisations globally (van Kemenade, 2021).

The implementation of Total Quality Management is driven by employee commitment, readiness for change, leadership, organisational culture, staff engagement, and technology advancement but can be hindered by undefined objectives and target customers, variable quality interpretations, and limited resources for evaluation and improvement (Lim et al, 2022).

Numerous studies have extensively explored the effects of implementing Total Quality Management within organisations. Beyond the evident benefits such as continuous improvement and a better customer satisfaction (Lim et al., 2022, as cited in Jasti et al., 2021; Jevanesan et al., 2021; Permana et al., 2021), other less obvious yet equally significant impacts of TQM implementation have been identified. Kang and Arikrishnan (2024), stated that implementing TQM could strengthen the stakeholder trust in the boards' stewardship by fostering greater transparency. Rawashdeh, A. M. (2014) identified significant relationships between Total Quality Management practices and corporate performance as well as competitive advantage, which contribute to enhanced flexibility, efficiency, and overall effectiveness of the entire firm. Other studies confirmed this point of view a few years later by stating that TQM can enhance organisational performance in terms of cost reduction, engagement, decision making, innovation, profitability, return on asset and investment, sales, resource management, safety, and service quality (Lim et al, 2022, as cited by Dieste et al., 2021; Jevanesan et al., 2021; Kulenovic et al., 2021; Permana et al., 2021; Sader et al., 2021; Tsou et al., 2021). In addition to that, TQM improves employee performance (Lim et al, 2022, as cited in Jasti et al., 2021; Jevanesan et al., 2021; Permana et al., 2021) and allows a certain scalability in

organisational operations and revenue, when coupled with technology (Lim et al, as cited in Sader et al, 2021).

Felicetti et al. (2022) cite Greening and Turban (2000) and Voegtlin and Greenwood (2016), highlighting CSR's pivotal role in fostering a people-centred organisational culture essential for effective TQM implementation. Furthermore, recent studies explore the mediating role of CSR in enhancing the relationship between TQM and organisational performance (Felicetti et al., 2022). These authors emphasise CSR's potential to mediate the positive impact of TQM on social and corporate performance, underlining its strategic importance in achieving sustainable competitive advantage (Felicetti et al., 2022, as cited in Abbas, 2020; Do et al., 2021; Hamdan & Alheet, 2021; Sila, 2020).

Ultimately, the alignment of TQM with ESG practices not only improves organisational performance across various metrics but also strengthens sustainability initiatives and long-term competitive advantage (Tsou et al., 2021, as cited in Manzani et al., 2017). This convergence underscores the transformative potential of integrating quality management with socially responsible practices to achieve business excellence.

As the focus of this study is on the banking sector, examining Total Quality Management within this context becomes imperative. Banks operate in a highly competitive environment where customer satisfaction, operational efficiency, and regulatory compliance are critical. After successful implementations in manufacturing, total quality management is now being applied in service sectors such as banking, in order to improve business performance (Talib & Rahman, 2012). Indeed, studies have proved that the performance of banks is positively influenced by service quality (Talib & Rahman, 2012, as cited in Joseph et al., 1999), for which TQM's role is highly critical (Talib & Rahman, 2012, as cited in Al-Marri et al., 2007).

Although it is relatively difficult to correctly measure service quality and the effect of TQM on it in the service sector, conducting customer satisfaction surveys like Net Promoter Score can help banks to evaluate their current performance against previous years, but also benchmark themselves against competitors. This constant monitoring can help banks to continuously improve their service quality, as well as involve and motivate employees, which are critical principles of Total Quality Management (Talib & Rahman, 2012).

Overall, for this paper, the following principles will be used to describe Total Quality Management: Continuous improvement, customer-focused approach, process thinking,

strategic and systematic approach, total employee involvement, communication, and finally, fact-based decision-making (*What Is Total Quality Management (TQM)*, n.d.).

Furthermore, integrating digital tools into Total Quality Management represents an important evolution in the pursuit of business excellence, customer satisfaction and continuous improvement. The convergence of TQM and smart technology adoption is particularly pertinent in the banking sector, where the need for superior service quality, and operational efficiency is crucial.

Primary capabilities of smart technologies can lead to outstanding customer engagement and intelligence (Sharma et al., 2023) which are a key aspect of Total Quality Management. Furthermore, another principle of TQM, employee involvement, can be positively impacted by a qualitative and satisfactory AI- integrated Customer Relationship Management (CRM) system (Sharma et al., 2023).

Moreover, advancements in banking technology, such as mobile banking services and the integration of Artificial Intelligence and Big Data Analytics (BDA), have revolutionised customer interactions and service delivery within the banking sector. Mobile banking not only simplifies transactions but also reduces operational costs and enhances customer relationships (Gumelar et al., 2020). Likewise, AI and BDA enable banks to personalise services based on extensive customer data, thereby improving service quality and customer satisfaction (Indriasari et al., 2019). These technologies empower banks to better understand customer behaviour, preferences, and expectations, facilitating a customer-centric approach crucial for competitive advantage (Indriasari et al., 2019). Integrating such technologies into Total Quality Management not only enhances operational efficiency and regulatory compliance but also strengthens customer engagement and satisfaction, aligning with the fundamental goals of continuous improvement and business excellence.

Additionally, the concept of TQM 4.0, as formulated by De Souza et al. (2021), illustrates a shift where traditional quality management meets Industry 4.0 technologies. TQM 4.0 leverages advancements in Quality 4.0, integrating technologies within Quality Management Systems to enhance organisational processes and products (De Souza et al., 2021 as cited in Radziwill, 2018, Sony et al., 2020). This evolution is manifested through real-time monitoring of quality indicators via technological data visualisation platforms, which facilitates consistent quality standards across organisational branches (De Souza et al., 2021).

De Souza et al. (2021) developed a TQM 4.0 ecosystem that encompasses three interconnected spheres: Industry 4.0 technologies, traditional Total Quality Management principles, and Quality Control, that each contributes to the improvement of organisational processes. By embracing TQM 4.0, organisations can align technology and human resources to foster innovation and operational excellence, moving towards thorough quality management in the digital era (De Souza et al., 2021).

2.2. Hypotheses

Hypothesis 1: “The level of Smart Technology Adoption in banking organisations positively predicts the extent and quality of ESG reporting practices within the banking sector.”

Smart technology adoption refers to the integration of advanced digital tools like AI, the Internet of Things, blockchain, and cloud computing in various industries, including banking. These technologies can enhance operational efficiency, security, and customer experiences. Specifically, in the context of ESG reporting, the use of smart technologies can significantly improve the efficiency, and quality of sustainability disclosures (Yu et al., 2022). For instance, AI-driven tools such as DocQA and ESGReveal may enable firms to systematically extract and analyse ESG data from corporate reports, providing structured and comprehensive insights that support better decision-making and enhance transparency (Mishra et al., 2023; Zou et al., 2023). By leveraging these technologies, banks can improve their ESG reporting practices, ensuring more reliable, comparable, and verifiable information in line with regulatory requirements such as the CSRD.

Hypothesis 2: “The level of Smart Technology Adoption in banking organisations positively influences the implementation and effectiveness of Total Quality Management within the banking sector.”

Total Quality Management is a holistic management philosophy focusing on continuous improvement, customer satisfaction, and employee involvement. Smart technologies can significantly lead to exceptional customer intelligence (Sharma et al., 2023) and improved service quality (Indriasari et al., 2019). For example, AI-integrated CRM systems can enhance customer engagement and satisfaction, key aspects of TQM (Sharma et al., 2023). Additionally, the concept of TQM 4.0, which integrates Industry 4.0 technologies with traditional TQM principles, highlights how smart technologies can transform quality management practices, leading to operational excellence and competitive advantage (De Souza et al., 2021).

Hypothesis 3: “The effectiveness of Total Quality Management practices in banking organisations positively influences the extent and quality of ESG reporting practices within the banking sector.”

Total Quality Management practices aim to achieve business excellence through continuous improvement, and employee involvement (*What Is Total Quality Management (TQM)*, n.d.). Effective TQM practices enhance corporate performance as well as competitive advantage, which contribute to overall effectiveness (Rawashdeh, 2014). In the context of ESG reporting, TQM principles can help for information gathering within the entire firm or for improving the quality and strategic impact of the reports. Moreover, the principles of TQM, such as fact-based decision-making and a strategic approach, align with the goals of ESG reporting, promoting more accurate and transparent sustainability disclosures.

Hypothesis 4: “The sustainability of ESG practices positively influences the implementation and effectiveness of Total Quality Management in banking organisations.”

Environmental, Social, and Governance practices are critical for assessing the sustainability and ethical impact of a company's operations. The sustainability of ESG practices involves integrating these criteria into business operations to achieve long-term environmental, social, and governance goals. Total Quality Management, with its focus on continuous improvement and customer satisfaction, can be significantly influenced by sustainable ESG practices. By aligning sustainable ESG practices with TQM, banks can enhance their organisational performance, but also strengthen sustainability initiatives (Tsou et al., 2021, as cited in Manzani et al., 2017). This highlights a potential relationship between TQM and ESG practices, indicating that strong strategic goals related to sustainability directly involve employees within the organisation and foster a culture of continuous improvement.

Hypothesis 5: “The level of Smart Technology Adoption and the implementation of Total Quality Management in banking organisations positively predict the extent and quality of ESG reporting practices within the banking sector.”

The integration of smart technologies into Total Quality Management and ESG practices may significantly enhance the extent and quality of ESG reporting in banking organisations. Smart technologies provide advanced data analytics and real-time monitoring capabilities, facilitating more accurate and comprehensive ESG disclosures. Additionally, TQM can maintain high quality standards and strict data checks, leading to more reliable and accurate ESG reports. By

leveraging STA and TQM, banks can achieve higher standards of ESG reporting, meeting regulatory requirements and stakeholder expectations.

Hypothesis 6: “The level of Smart Technology Adoption and the sustainability of ESG practices in banking organisations positively predict the level of Total Quality Management implementation within the banking sector.”

Smart technology adoption can enhance the implementation of sustainable ESG practices by providing advanced tools for data collection, analysis, and reporting (Yu et al., 2022). These technologies can enable banks to monitor and optimise their ESG performance in real-time. This would ensure more accurate and transparent disclosures, as well as enhance some TQM principles such as continuous improvement, fact-based decision making and strategic approach. Furthermore, STA can facilitate the integration of ESG practices into TQM by providing the necessary infrastructure for continuous improvement and stakeholder engagement. The interaction between STA and ESG practices can create a synergistic effect, enhancing the overall effectiveness of TQM in banking organisations.

Out of scope hypotheses

In this study, hypotheses H7 and H8 are presented as "out of scope" due to the lack of available data regarding ESRS-compliant reports and the extensive research already conducted on the relationships between ESG practices and ESG reporting. Numerous studies have thoroughly explored these links, providing substantial insights into how ESG practices influence reporting and vice versa. Therefore, while these hypotheses are relevant to the broader discussion, they are not the primary focus of this work.

Hypothesis 7: “The introduction of the Corporate Sustainability Reporting Directive positively influences the extent and quality of ESG reporting practices in banking organisations.”

The introduction of regulatory frameworks such as the Corporate Sustainability Reporting Directive aims to standardise and enhance ESG reporting practices across the EU. This directive requests stricter requirements for transparency and disclosure of non-financial information, including environmental, social, and governance aspects. The new ESRS are expected to induce banking organisations to improve the extent and quality of their ESG reporting practices to comply with standardised regulatory standards. Therefore, the implementation of the CSRD is hypothesised to positively influence the sustainability of ESG practices within the banking sector by leading to more qualitative ESG reporting.

Hypothesis 8: “The sustainability of ESG practices positively influences the extent and quality of ESG reporting practices in banking organisations.”

While research presented significant positive correlation between the integration level of ESG disclosures and enhanced ESG performance (Sun, 2024), another relevant hypothesis formulated in this study would delve into the impact of sustainable ESG practices on the quality of ESG reporting. It has been discovered that there exists a direct relationship between sustainability reporting quality and ESG performance (Imperiale et al., 2023). This implies that robust ESG practices not only improve sustainability but also can lead to more detailed and reliable ESG reporting.

2.3. Conceptual model

The conceptual model below (figure 2) visually integrates the hypotheses formulated in this study. The model aims to illustrate the relationships between the core constructs of ESG Reporting, Total Quality Management, Smart Technology Adoption, and the regulatory impact of the CSRD, alongside the influence of sustainable ESG practices. By mapping out these hypotheses, the model provides a comprehensive overview of how these elements interact within the context of the banking sector. It serves as a foundational framework for understanding the potential pathways through which ESG practices, total quality management principles, and advanced technologies can collectively enhance ESG reporting practices and overall operational excellence.

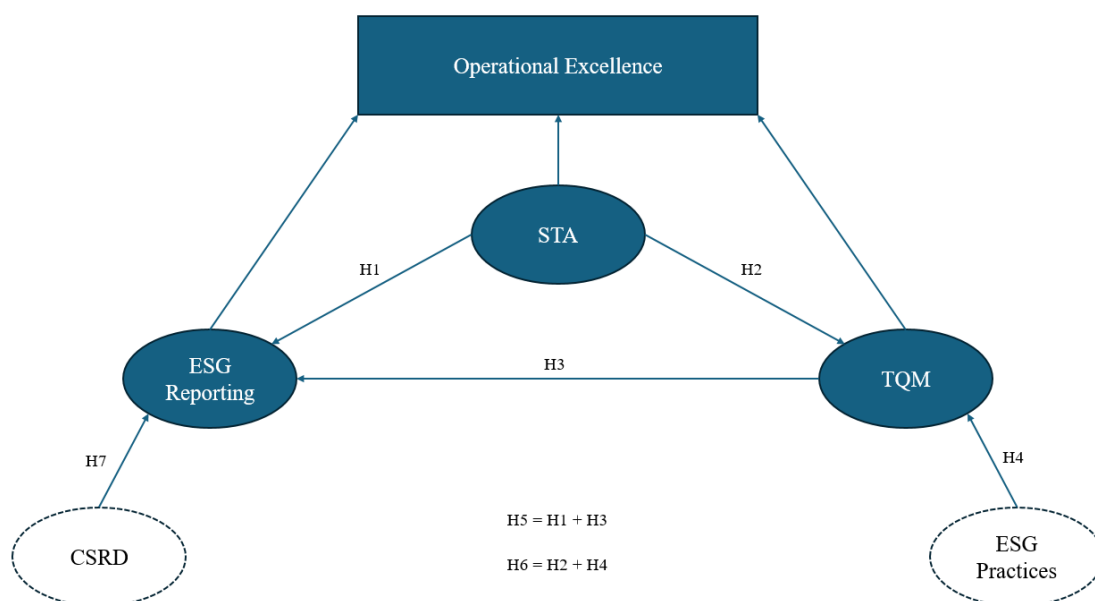


Figure 2, Conceptual model integrating all hypotheses

3. Methodology

3.1. Data Collection Methods

To gather insights on how banks approach ESG Reporting, TQM practices, and the adoption of smart technology, a combination of semi-structured interviews and a structured questionnaire has been employed.

Between April and May 2024, semi-structured interviews lasting 20 to 30 minutes were conducted. This format was chosen for its versatility and flexibility (Magaldi & Berler, 2020), allowing to delve deeper into the current practices of banks. The goal of these interviews was to understand existing practices and establish links with the literature review. Additionally, they helped identify gaps between theoretical best practices and actual implementation in 2024.

In parallel, a questionnaire aimed at performing statistical analyses to test the hypotheses of this paper has been developed. This questionnaire targeted specific individuals within the banking sector to gather quantifiable data. The insights from these surveys supported the exploration of potential interplays between ESG Reporting, Smart Technology Adoption, and Total Quality Management.

This combination of methods ensures a comprehensive analysis, that leverages the strengths of both qualitative and quantitative research.

3.2. Semi-structured interviews

While the flow of the interview varied in order and in content depending on each participant's responses (Magaldi & Berler, 2020), it was crucial to develop an interview guide to take the most out of the interviews. Another critical step in this approach was selecting the profiles of the professionals to be interviewed. Given that this paper covers three main themes that are yet to be widely integrated in the corporate world, it was essential to include diverse profiles to ensure information was collected from experts in their respective fields.

Firstly, as this study focuses on the banking sector, it was mandatory to interview professionals working either with or for a bank. It was also crucial to engage individuals actively working in the industry, as the concepts of STA, and ESG Reporting are relatively recent, especially with the forthcoming implementation of the CSRD.

Securing these interviews required significant effort, as even a 30-minute interview involves extensive setup. Ultimately, seven semi-structured interviews were conducted, with six people working in banks and one from a big consultancy firm, dealing exclusively with banking

organisations as clients. The table below (table 1) shows the different profiles of the interviewees, ranging from sustainable finance professionals to managing director.

No	Job Title	Business Sector
1	Managing Director	Banking
2	Director Sustainability	Consulting
3	Managing Director	Banking
4	Digital Transformation and Quality Manager	Banking
5	CSR Manager	Banking
6	Relationship Manager	Banking
7	Sustainable Finance Professional	Banking

Table 1, Description of interviewees

Interviews with managing directors provided insights into the overall governance of banks regarding ESG Reporting, smart technology adoption, and quality management practices. Additionally, they offered perspectives on the future vision of banks, particularly concerning regulation (CSRD) and emerging practices.

Although one interviewee was not directly employed by a bank, this individual, a sustainability director, provided valuable insights into the practices of multiple banks. Indeed, the sustainability director, has worked and still is working for many different banking organisations. This brought an overview of the sector's different practices, which would allow comparison between the cited banks.

To delve into specifics, selected professionals working in the ESG field or those in client-facing roles were selected, therefore offering a key view of their organisation's practices regarding customer satisfaction. Each interviewee worked at different firms, providing this research a broader perspective. Throughout the discussions, specific questions were asked about Key Performance Indicators, and other critical aspects of their department's missions. Additionally, inquiries were made about current and potential future technologies, highlighting innovations they are monitoring for future adoption.

3.3. Quantitative analysis and questionnaire design

3.3.1. Data and Sampling

To build a robust database, standardised data related to the different hypotheses of this study were required. While ESG ratings are relatively common, publicly available standardised data on ESG Reporting, STA, and TQM implementation remain scarce. To tackle this issue, a survey was developed, and data were collected between April and June 2024.

The questionnaire comprised 20 questions, 18 of which related to the core concepts of this paper. The survey was divided into four sections. The first section ensured that respondents worked in the banking sector and collected information on their years of experience. The second section focused on the sustainability of the respondents' organisation ESG practices. The last two sections covered TQM practices and the adoption of smart technology. Respondents were asked to rate their organisation's level of performance in ESG reporting, total quality management principles, and smart technology adoption on a scale from 0 to 100.

To facilitate participation while addressing potential GDPR concerns, questionnaires were distributed either via a Google Forms link, or as a Microsoft Word document attached to an email. The data collected were compiled manually into a Microsoft Excel spreadsheet.

As briefly mentioned earlier, the targeted population for this survey comprised professionals working in the banking sector. A total of 26 respondents from four different banks completed the survey, which is above the minimum required sample size $N > 25$ for high variance (Jenkins & Quintana-Ascencio, 2020). Given the specific targeted population, it proved difficult to gather more answers. A pie chart illustrating the distribution of respondents' years of experience, that showcases a high proportion of professionals with over 10 years of experience in the banking sector can be found in Appendix 1.

3.3.2. Operating variables and measurements

This section demonstrates the various analyses performed, their equations as well as an explanation of the different variables, coefficients, and intercepts used in this study. Hypotheses 1 to 4 were tested using a simple linear regression, while a moderation analysis was performed for hypotheses 5 and 6.

- **H1:** $ESGR = \beta_0 + \beta_1 \times STA + \epsilon$
- **H2:** $TQM = \beta_0 + \beta_1 \times STA + \epsilon$
- **H3:** $ESGR = \beta_0 + \beta_1 \times TQM + \epsilon$

- **H4:** $TQM = \beta_0 + \beta_1 \times ESG + \epsilon$
- **H5:** $ESGR = \beta_0 + \beta_1 \times STA + \beta_2 \times TQM + \beta_3 \times (STA \times TQM) + \epsilon$
- **H6:** $TQM = \beta_0 + \beta_1 \times STA + \beta_2 \times ESG + \beta_3 \times (STA \times ESG) + \epsilon$

The term on the left side of the equation represents the dependent variable, either ESGR or TQM, depending on the hypothesis. ESGR, describing Environmental, Social, and Governance Reporting in banking organisations, was computed by averaging the answers from three questions of the survey, representing three steps of ESG Reporting: assessing materiality, setting KPIs and targets for each material matter, and collecting ESG data. TQM characterises the level of Total Quality Management implementation in banks, computed by averaging respondents' ratings of the seven TQM principles: continuous improvement, customer-focused approach, process thinking, strategic and systematic approach, total employee involvement and communication, and fact-based decision-making.

In hypotheses 1,2,5, and 6, STA represents the independent variable, quantifying the level of Smart Technology Adoption in banks. This was retrieved directly from the answer of one questionnaire statement, reflecting the score at which respondents indicated the level of Smart Technology Adoption in their banking organisation. ESG acts as an independent variable in hypotheses 4 and 6, retrieved from one answer to a question, reflecting the score for the level of sustainable ESG practices in their organisation.

The error term “ ϵ ” in each equation captures all other factors affecting the dependent variable not included in the model. The terms “ β_0 ” and “ β_1 ” respectively describe the intercept of the regression line, which represents the expected value of the dependent variable when the independent variable is zero, and the regression coefficient for the independent variable, representing the change in the dependent variable for a one-unit change in the independent variable.

For hypotheses 5 and 6, more than one independent variable and therefore regression coefficient are present. Indeed, a second independent variable representing either TQM or ESG and an interaction term multiplying each independent variable with STA were added. The regression coefficient “ β_2 ” characterises the impact of the independent variable on the dependent variable, independent on the other independent variable, similar to what “ β_1 ” represents. Furthermore, “ β_3 ” is the coefficient for the interaction term, which measures how the relationship between one independent variable and the dependent variable changes at different levels of the other independent variable.

3.3.3. Statistical tests

For this study, which includes six main hypotheses, linear regression analysis and moderation analysis were chosen to define and quantify the relationships between the considered variables. Linear regression analysis is suitable for this study as it mathematically describes the relationship between two variables and allows for predicting the value of a dependent variable based on the value of at least one independent variable (Kumari & Yadav, 2018). This analytical approach aligns well with the study's hypotheses. Furthermore, moderation analysis tests when or under what conditions the effect of the independent variable on the dependent variable changes (Wormuth, 2024), which is relevant for the last two hypotheses H5 and H6. The computer program RStudio was used to perform the statistical analysis and tests.

Additionally, the coefficient of determination R^2 , which represents the proportion of the total variation in the dependent variable that can be explained by variations in the independent variables (Kumari & Yadav, 2018), was computed. For Hypotheses 5 and 6, where a new independent variable and interaction term were added to the models of Hypotheses 1 and 2, an Analysis of Variance (ANOVA) was also performed to compare the different regression models. ANOVA tested whether the more complex model is significantly better at capturing the data than the simpler model (Phillipps, 2018). To interpret the results, if the p-value is greater than 0.05, the simpler model should be favoured.

In order to test the lack of fit in regression, a Rainbow test was performed for each hypothesis. This test can be used for both linear and multiple regression (Utts, 1982), which is applicable in this study. The linearity of a model would be rejected if the p-value of this Rainbow test is below 0.05 (Yapi, 2022). For the six hypotheses, where linear regression was conducted, the Rainbow tests had p-values well above 0.05, verifying the linearity hypotheses of the models.

Hypotheses 5 and 6 were tested using a moderation analysis, still categorised as a multiple regression with an interaction term. To avoid multicollinearity, which can make it difficult to interpret coefficients and reduce the power of the model to identify statistically significant independent variables (Frost, 2023), the data were centred. Furthermore, multicollinearity was assessed using Variance Inflation Factors (VIF). This method identifies the correlation between independent variables and its strength (Frost, 2023). The VIF values ranged from 1.077134 to 1.539988, well below the threshold of 5. This threshold represents the minimal value at which critical levels of multicollinearity occur, leading to poorly estimated coefficients and questionable p-values (Frost, 2023).

Before performing the regression analysis, Cronbach's alpha was calculated to estimate the reliability and internal consistency of the dataset (Johnson, 2021). Ensuring internal consistency is crucial as it makes the test results interpretable (Johnson, 2021, as cited in Cronbach, 1951). Cronbach's alpha was then computed for both ESG Reporting and TQM data, comprising respectively three and seven different values. Regarding ESG Reporting, the Cronbach's alpha was 0.82, while for TQM, the value was 0.78. Both fall within the acceptable values of alpha, ranging from 0.70 to 0.95 (Tavakol & Dennick, 2011). While this further proves the reliability and internal consistency of the dataset, Cronbach's alpha must be interpreted with some degree of caution (Streiner, 2003).

4. Results

4.1. Qualitative method results

This section presents the findings from the semi-structured interviews conducted with banking professionals. As explained in the methodology, these interviews aimed to explore in-depth insights into the current ESG reporting practices, the adoption of smart technologies, and Total Quality Management strategies within the banking sector.

4.1.1. Sustainable ESG Practices in the banking sector

The semi-structured interviews revealed significant insights into the sustainable ESG practices of various banks. To showcase its progress in this matter, one organisation has achieved B Corp certification, proving its commitment to rigorous standards in diversity, governance, societal impact, and environmental responsibility. This certification requires extensive documentation and on-site audits to verify compliance with high standards.

At the group level, some organisations make substantial advancements in sustainability efforts. This progress at the group level influences the subsidiaries, such as Belgian branches, to enhance their practices as well. However, there is an important variability in progress among different banks. Some fall behind because they don't plan, but others are ahead of the curve and have fully incorporated sustainability into their main business processes. For these leading banks, sustainability reporting came naturally, as they have long embedded these practices into their operations. Moreover, ESG Reporting is a key aspect of these organisations' ESG practices. Indeed, regular publication of impact reports and sustainability statements provides transparency and detailed information on taken initiatives, which reinforce accountability and continuous improvement in the sustainability journey of these banks.

The interviews also highlighted that banking organisations try to use energy-efficient buildings, contributing to their overall sustainability goals by reducing the environmental footprint of their few physical operations. Lately, some progress has been made, and sustainability has become one of the main priorities for many organisations, with structured plans extending over multi-year periods. These plans cover all aspects of ESG, with the goal of mitigating the negative impacts of banking activities while enhancing positive impacts by financing environmentally and socially beneficial projects such as renewable energy initiatives and commit to the well-being of their employees and local communities. This can be achieved through collaborations with NGOs and support for local initiatives.

Furthermore, many organisations have dedicated sustainability teams, tasked with integrating sustainability into the broader corporate strategy. This integration is driven both top-down by the board and CEO, and bottom-up within the organisation. That way, sustainability is not only a priority but is embedded into the organisational strategy.

Overall, the findings suggest that while there is variability in the progress of sustainable ESG practices among banks, those that prioritise sustainability are making significant progress, with robust plans, dedicated teams, and detailed reporting mechanisms in place.

4.1.2. ESG Reporting in the banking sector

At one of the represented banks, in addition to a specific sustainability team, a dedicated non-financial reporting department focuses on handling the annual report and specifically managing the sustainability statements. This team tracks and reports on metrics such as physical risk, greenhouse gas emissions, and diversity, coordinating closely with the sustainability team. This approach includes both voluntary and mandatory levels of reporting and emphasise on reducing their ecological footprint through operations and business activities.

In many of the organisations, the work previously done by the finance department is now integrated into the overall reporting process, with contributions from departments like human resources, communications, and risk. This integrated approach, has transitioned from a "one-man job" to a collaborative effort. It involves direct engagement from the dedicated reporting team and indirectly impacts the entire organisation.

The initial implementation of the NFRD for the 2017 financial year led to a shift in how sustainability was managed within some organisations. It allowed them to provide more information on their societal impact, leveraging additional data from clients to enrich their reports. However, the flexibility of the NFRD resulted in varied interpretations and

implementations across different companies. This flexibility meant that the directive did not significantly change existing practices for many organisations. Without strict requirements, many companies did not develop new strategies, policies, or metrics specifically in response to the European directive. Thus, while the NFRD aimed to enhance transparency and integrate non-financial reporting into mainstream corporate reporting, its impact was reduced because it allowed too much flexibility. This resulted in a situation where the depth and rigour of ESG reporting varied greatly among organisations.

In contrast, the CSRD is expected to have a more significant impact on ESG reporting practices. Many respondents highlighted that these new frameworks make their organisations more aware of existing information gaps. Although they have been publishing sustainability statements, the CSRD will push them to report their sustainability efforts more precisely. This move has led to a more strategic approach to ESG, with companies now incorporating their sustainability efforts into their overall strategy. However, the current standards are not banking-specific, which complicates the application of these new standards due to the sector's unique impacts related to the number of clients.

This transition is expected to enhance the quality of reporting, despite concerns that some banks might compare themselves to those doing the bare minimum, potentially driving the overall quality of ESG reporting down. Ultimately, the consensus among the respondents is that the CSRD will positively impact the quality of ESG reports, encouraging continuous improvements.

The effectiveness of ESG reporting is measured through several dimensions. First, compliance, marked by certifications and adherence to regulatory directives such as the CSRD, signifies initial success. A significant aspect emphasised by respondents is the transition from a reporting-centric approach to a strategic focus, where reporting informs strategy and vice versa. This strategic integration aligns ESG principles with organisational objectives, marking a huge step towards sustainability.

Additionally, the efficiency and effectiveness of the reporting process itself are critical benchmarks of success. Factors such as anticipation, the utilisation of manual versus automated reporting systems, and the robustness of data verification mechanisms contribute to the overall efficacy of ESG reporting initiatives. Improving these processes enhances data accuracy and credibility, ultimately increasing the effectiveness of sustainability disclosures.

In summary, while the initial NFRD provided a starting point for integrating sustainability into corporate reporting, the more binding CSRD is expected to drive improvements in ESG reporting practices. The transition towards a more strategic and integrated approach leads to a deeper alignment of ESG principles with organisational objectives in the banking sector.

4.1.3. Smart Technology Adoption in the banking sector

The integration of smart technologies within organisations for ESG reporting is still in its initial stages. While many organisations use common smart technologies like cloud computing, or big data analytics, more advanced technologies such as AI and blockchain remain largely in the exploratory phase. For instance, there are ongoing projects aimed at using AI to analyse reports from other companies, but these initiatives are still in their preliminary stages. Internally, the adoption of such technologies for ESG reporting is limited. Several respondents mentioned a growing interest in using smart technologies to reduce manual work, such as automating data collection to assess environmental impact. Technology-based consulting companies started to inquire banks about AI solutions to better approach the CSRD. This would allow banking organisations to outsource some challenges related to computer power. However, the majority of this work remains manual, and organisations are still exploring tools that could make the process more efficient.

Some banks have identified innovative approaches where AI and blockchain could play a role, particularly in identifying potential impacts and risks as well as calculating carbon footprints. However, blockchain technology's current application is more focused on enhancing the security and efficiency of transaction processes rather than directly impacting ESG reporting. Moreover, the main focus for most organisations remains on compliance, leaving little time and budget to implement advanced smart technologies. In a short future, the CSRD is expected to introduce a new series of data with the requirement for digital tagging. This would result in an increase of available data. As companies publish their reports from financial year 2024, organisations will begin analysing them, potentially increasing the use of smart technologies.

Some organisations are beginning to use AI for managing Net Promoter Score (NPS) survey data, aiming to enhance customer satisfaction and continuous improvement, given the large volume of responses collected annually. Furthermore, AI is explored to analyse customer behaviour or to examine how client complaints are handled by customer care agents.

Nevertheless, some challenges hinder the wide adoption of smart technology in the banking sector. One of the primary difficulties is the significant cost associated with implementing these

technologies. Many respondents emphasised that the expenses involved in adopting and maintaining advanced technologies are considerable. This is due to the fact that non-financial reporting does not generate direct revenue, making it less attractive for resource allocation. While these technologies can enhance reputation and ensure regulatory compliance, the lack of immediate financial returns discourages substantial investment.

Another major obstacle is related to data protection regulations, specifically the General Data Protection Regulation (GDPR). Moreover, GDPR imposes strict requirements on data handling, limiting the ability to use external systems or cloud-based solutions. Ensuring that AI and other technologies are used ethically and in compliance with these regulations adds even more complexity. Another related important barrier would be confidentiality. As regulations require data to be handled within the organisation's systems, the use of smart technologies becomes more restricted.

Another limitation would relate to computer power. Indeed, what is needed to leverage AI and other smart technologies may not be available for all banks. Finally, there is the challenge of ensuring that new technologies integrate well with existing systems and add real value without unnecessarily complicating current processes.

Reflecting on the insights gathered from the interviews, overcoming the obstacles to adopting smart technologies could leverage numerous benefits for banks. These technologies promise to provide more detailed insights into sustainability impacts. By exploiting smart technologies, organisations can gain a better understanding of their environmental and social footprints.

One promising application highlighted during the interviews is Retrieval Augmented Generation (RAG). Using RAG could improve the process of structuring reports by analysing and synthesising information from various sources. This capability would also enable banks to efficiently compare their practices with industry standards and identify areas for improvement. Ultimately, leveraging smart technologies in this manner could significantly enhance the quality and comparability of ESG reports. Finally, smart technologies offer the potential to revolutionise how organisations manage and utilise data. By using artificial intelligence, banks can better extract and exploit the vast amount of information at their disposal, which can lead to more informed decision-making.

4.1.4. Total Quality Management in the banking sector

Throughout the various interviews, it becomes clear that Total Quality Management encompasses diverse operational approaches. While a few interviewees were familiar with the

term, none of the inquired organisations had a specific TQM implementation team. Most of the banks leverage TQM principles, but it is done without explicitly using the term Total Quality Management. Indeed, interviewees emphasised the decentralised nature of TQM implementation, with practices dispersed across different departments rather than centralised within a dedicated unit.

Respondents highlighted their organisations' commitment to rigorous quality management practices. Customer complaints are thoroughly evaluated, similar to strict manufacturing inspections. Trained quality coaches may conduct these evaluations, which ensures consistency and maintaining quality standards across customer interactions. Moreover, a culture of continuous improvement thrives, as demonstrated by both top-down and bottom-up initiatives. For this matter, employees are encouraged to contribute improvement ideas. This would foster an innovative environment with the objective to enhance operational efficiency and customer experience.

To monitor some of the TQM principles implementation, banks employ a variety of metrics to evaluate their TQM initiatives. Several interviewees mentioned specific KPIs such as the number of improvement ideas generated by employees and the savings realised from these initiatives. This indicates a focus on employee engagement, continuous improvement and the tangible financial benefits that result from implementing these ideas. To document and assess the impact of TQM-related activities, detailed logbooks can be built, highlighting a systematic approach. It is used to track all measures taken and their corresponding savings.

Additionally, permanent feedback surveys play a crucial role in these organisations' pursuit of quality and customer satisfaction. The use of Net Promoter Score and Employee Net Promoter Score surveys was specifically mentioned. This emphasises the importance of estimate both customer satisfaction and employee engagement. These surveys are conducted regularly and shared with clients to foster a culture of openness and continuous improvement. Finally, technologies like automated quality measurements and conversation scoring can be used to help with these KPIs.

4.2. Quantitative method results

In order go further with the analysis, and support or not the formulated hypotheses, surveys were completed by banking professionals and investigated through linear regression and moderation analyses. Full results from the surveys can be found in Appendix 2. Dependent and independent variables were selected to test hypotheses 1 to 6. For the first four hypotheses, a

simple linear regression analysis was performed and table 2 below summarises the output computed in RStudio.

	<i>Coefficient estimate</i>	<i>p-value</i>	<i>R²</i>	<i>Adjusted R²</i>	<i>Rainbow test p-value</i>
<i>Hypothesis 1</i>	0.5941	0.0000372	0.5146	0.4944	0.6225
<i>Hypothesis 2</i>	0.1945	0.0358	0.1708	0.1363	0.3653
<i>Hypothesis 3</i>	0.8917	0.00826	0.2567	0.2257	0.9948
<i>Hypothesis 4</i>	0.2544	0.123083	0.09619	0.05853	0.4017

Table 2, summary of results obtained for H1 to H4

As observed, all p-values obtained from the Rainbow test are above the 0.05 threshold, indicating that the linearity hypothesis is verified (Yapi, 2022). This means that the linear regression model is appropriate for the data. Therefore, we can analyse the results obtained, and the coefficient estimates indicate a positive relationship for each hypothesis, whether strong (H1, H3) or less strong (H2, H4). However, the 0.1231 p-value obtained when testing Hypothesis 4 is above 0.05, indicating that this hypothesis is not supported at the 5% significance level. On the other hand, H1 to H3 all have p-values below 0.05, supporting their respective hypotheses. H1 is not only highly significant but also has the higher R^2 value. Indeed, the simple linear regression resulted in a R^2 value of 51.46% for this hypothesis. This indicates that more than half of the total variation in the dependent variable ESG Reporting can be explained by variations in the independent variable STA. Regarding H2 and H3, which both had p-values under 5%, R^2 values of 17.08% and 25.67% respectively were computed. Therefore, we can say that a quarter of the variation in ESG Reporting can be explained by variations in TQM.

For hypotheses 5 and 6, where more than one independent variable came into play, a moderation analysis was performed after centring the data as it also provides a detailed understanding of how these variables individually and jointly influence the dependent variable. The two tables below highlight the key results for each model.

Hypothesis 5	Coefficient Estimate	p-value	R^2	Adjusted R^2	F-statistic p-value	Rainbow test p-value
<i>STA centred</i>	0.49839	0.000915	0.5699	0.5112	0.0002805	0.6431
<i>TQM centred</i>	0.47998	0.112323				
<i>STA centred: TQM centred</i>	-0.00532	0.7513478				

Table 3, summary of results obtained for H5

Hypothesis 6	Coefficient Estimate	p-value	R^2	Adjusted R^2	F-statistic p-value	Rainbow test p-value
<i>STA centred</i>	0.179733	0.0307	0.2699	0.1917	0.02984	0.4812
<i>ESG centred</i>	0.212312	0.204				
<i>STA centred: ESG centred</i>	0.008699	0.5379				

Table 4, summary of results obtained for H6

The results from the Rainbow tests for Hypotheses 5 and 6 reveal that the p-values are above the 0.05 threshold, confirming the linearity hypothesis (Yapi, 2022). This validation ensures that the linear regression models are suitable for the data. Analysing the results, we can observe the coefficient estimates and their respective relationships for each hypothesis.

For Hypothesis 5, the p-value for the coefficient estimate of STA centred is 0.000915, which is well below the 0.05 threshold, supporting this hypothesis at the 5% significance level. The R^2 value for this hypothesis is 56.99%, indicating that over half of the total variation in the dependent variable can be explained by the independent variables in the model. Additionally, the F-statistic p-value of 0.0002805 (< 5%) further confirms the model's significance. The Rainbow test p-value of 0.6431 supports the linearity assumption. However, the p-values for TQM centred and the interaction between STA and TQM are above 0.05 (0.112323 and 0.7513478, respectively), indicating these terms are not significant at the 5% level.

Regarding hypothesis 6, the p-value for the coefficient estimate of STA centred is 0.0307, which is below the 0.05 threshold, supporting this hypothesis at the 5% significance level. The

R^2 value of 26.99% suggests that around a quarter of the variation in the dependent variable can be explained by the model. The F-statistic p-value being 0.02984, indicates the model's relevance. The Rainbow test p-value of 0.4812 confirms the linearity assumption for this hypothesis. Nevertheless, the p-values for ESG centred and the interaction term are above 0.05 (0.204 and 0.5379, respectively), indicating these terms are not significant at the 5% level.

To further analyse whether adding TQM to model 5 and ESG to model 6 leads to significant improvement, an Analysis of Variance was performed as both these models have a F-statistic p-value below the 5% threshold. When conducting the ANOVA for the fifth model, a p-value of 0.2645 was computed. This value being above 0.05 suggests that the addition of TQM and the interaction between STA and TQM does not provide a statistically significant improvement in explaining the variance in ESG Reporting over the simpler model that includes only STA (Phillips, 2018). With a p-value of 0.1261 for model 6 when performing the ANOVA, this also suggests that adding the variable ESG and the interaction between ESG and STA to the simpler model does not provide a statistically significant improvement.

5. Discussion

The banking sector is undergoing a significant transformation driven by the need for robust ESG practices, the adoption of smart technologies, and more stringent non-financial reporting requirements. This discussion explores how these elements interact, using knowledge from quantitative data analysis as well as qualitative conversations with banking experts. By examining how banks integrate these practices, we can better understand the sector's current landscape and the pathways towards enhanced sustainability, operational efficiency, and quality management.

5.1. Thematic analysis

5.1.1. ESG Reporting in banking

Interviews with banking professionals revealed significant variability in progress among banks. Some organisations have achieved milestones like B Corp certification, demonstrating a commitment to high standards in diversity, governance, societal impact, and environmental responsibility. These banks are on their way to fully integrating sustainability into their core business processes, which will facilitate natural and robust ESG reporting practices.

ESG reporting has evolved significantly, influenced by directives like the NFRD and CSRD. The interviews highlighted that banks now often have dedicated non-financial reporting teams focusing on sustainability statements and tracking metrics such as physical risk, greenhouse gas

emissions, and diversity. The transition from the flexible NFRD to the more stringent CSRD is expected to enhance the precision and quality of ESG reporting, fostering a strategic approach to integrating sustainability efforts into the overall business strategy.

Currently, the adoption of smart technologies for ESG reporting in the banking sector is relatively limited. While authors are exploring solutions to enhance the quality and efficiency of ESG reporting through the integration of smart technologies (Yu et al., 2022; Mishra et al., 2023; Zou et al., 2023), the significant cost associated with implementation and the lack of immediate financial benefits hinder their widespread adoption. However, exceeding the minimal requirements of the ESRS and producing superior ESG reports could be beneficial in terms of firm value. By overcoming these obstacles, banking organisations can significantly increase the quality and comparability of ESG reports, leading to a better understanding of their environmental and social footprints.

Quantitative results support the significant impact of STA (H1) on ESG reporting practices. The significantly positive relationship between STA and ESG reporting ($R^2 = 51.46\%$) indicates that the integration of smart technologies enhances reporting practices. This finding corroborates the literature, suggesting that ESG reports prepared using technology are more comprehensive and informative than those created using traditional methods (Pizzi et al., 2023). Furthermore, TQM may provide constant quality standards and stringent data verification procedures, leading to more thorough and trustworthy disclosures in the context of ESG reporting. While Kang & Arikrishnan (2024) stated that ESG disclosure significantly leads to a more comprehensive adoption of TQM practices, another approach suggests that some TQM principles, such as continuous improvement and total employee involvement, can positively influence ESG reporting. Indeed, while banks have dedicated teams to improve the quality of ESG reports, all departments within the organisation are involved in the process, with communication being key to that involvement. Finally, the objectives of ESG reporting align with TQM concepts, which include fact-based decision-making and a strategic approach.

Although TQM is not fully implemented in banks, many of its principles are widely applied and can help in the development of ESG reports, whether for information gathering within the entire firm or for improving the quality and strategic impact of the reports. Results from the quantitative analysis support the impact of TQM on ESG reporting, with a high positive coefficient estimate of 0.8917 and a low p-value, showcasing the positive influence of TQM principles on the quality of ESG reports.

Since both TQM and STA have the potential to improve the quality of ESG reports, combining the two and using TQM as a moderator to enhance the effectiveness of STA might yield more substantial benefits. While the second part of the thematic analysis will cover the impact of STA on TQM, Hypothesis 5 explored whether TQM, through continuous improvement or other key principles, might play a significant role in enhancing the quality of ESG reports through the use of smart technology. The overall moderation analysis suggested that STA and TQM significantly impact ESG reporting practices. However, it was noted that this significance was primarily driven by STA and not by the interaction between STA and TQM. Furthermore, while the combined model showed a higher R^2 value, the ANOVA performed indicated that adding TQM and the STA-TQM interaction does not provide a statistically significant improvement in explaining the variance in ESG reporting over the model that only includes STA.

In conclusion, in this evolving landscape, more solutions are available to increase the quality and efficiency of ESG reports in the banking sector. With new, more stringent requirements emerging, reports will be standardised and machine-readable, further enhancing the impact of smart technology on ESG reporting. On the other hand, a management approach focused on long-term success like TQM can also improve reporting processes. Communication between all departments of the bank is crucial, especially with the new reporting standards. Employees throughout the organisation will be impacted and involved, and improving these processes will improve the efficiency of report construction. While this study has shown that adopting smart technology may have a more significant impact on ESG reporting practices than implementing TQM principles, there are still important barriers to using smart technology in report creation. The CSRD is new, and the initial priority for banks regarding this directive is compliance. Adding the complexity of smart technology might be too difficult and unnecessary in the early years. Therefore, implementing strong TQM practices in the meantime might be the solution, as it presents fewer challenges and costs. Although TQM is not fully implemented in many banks, several of its principles are already in use, reducing efforts and mitigating change aversion. After a few years of compliance and depending on the directive's evolution, it will be interesting to leverage smart technology when the organisation is more accustomed to stringent standards. More data will be available, and the use of Big Data Analytics, AI, and other technologies will be more impactful than at the beginning of the new CSRD application.

5.1.2. Total Quality Management in banking

These days, TQM is seen as an integrated, holistic management approach that emphasises ongoing improvement in all facets of a company's operations, employees, and surroundings. It

seeks to establish a competitive edge, improve customer satisfaction, and achieve corporate excellence. As banks operate in a highly competitive environment where customer satisfaction, operational efficiency, and regulatory compliance are critical, many authors have examined TQM within this context. Indeed, literature suggests that the performance of banks can be significantly improved by enhancing service quality (Talib & Rahman, 2012, as cited in Joseph et al., 1999), with TQM playing a crucial role (Talib & Rahman, 2012, as cited in Al-Marri et al., 2007). Although measuring service quality and TQM's impact in the service sector can be challenging, tools like customer satisfaction surveys and Net Promoter Scores are useful for evaluation. These assessments allow banks to compare their performance over time and against competitors, fostering continuous improvement in service quality. Additionally, involving and motivating employees are essential TQM principles that contribute to these improvements. This study showcased that TQM could also impact ESG reporting practices, with effective TQM significantly influencing the quality and extent of ESG reporting (H3).

The interviews, however, emphasised the lack of specific TQM implementation within banking organisations. Most interviewees stated that their firms leverage some or all TQM principles but do not have a centralised dedicated unit for it. These principles, applied throughout the organisations, maintain quality standards and corroborate literature regarding customer relationship enhancement. This is achieved through a culture of continuous improvement driven by both employees and management, as well as through careful monitoring of KPIs to evaluate the impact of their TQM-related initiatives. Although technology might be used to improve these processes, the strict regulatory environment banks face makes it challenging.

While most of the literature focuses on the benefits of TQM when companies implement it, this study also explores how to implement TQM practices more efficiently. The adoption of smart technology to monitor certain KPIs related to customer satisfaction and quality directly influences how some TQM principles are managed within banks. Indeed, De Souza et al. (2021) introduced the concept of TQM 4.0, which enables real-time monitoring of quality indicators via technological data visualisation platforms. Moreover, AI is being explored to examine how client complaints are handled by customer care agents, in order to learn and improve processes. This would enable banks to personalise services based on customer data, improving both service quality and customer satisfaction (Indriasari et al., 2019). Naturally, major obstacles such as privacy and confidentiality exist, especially in the banking sector. Ensuring that smart technologies are used ethically and in compliance with regulations adds even more complexity to technology-enhanced TQM. Despite these limitations, quantitative results support the

significant impact of STA (H2) on TQM practices. A significant positive relationship was verified, with 17.08% of the total TQM variation explained by STA.

In addition to using smart technology to improve TQM practices, recent studies have explored the mediating role of Corporate Social Responsibility in enhancing the relationship between TQM and organisational performance (Felicetti et al., 2022). Improving employees' working conditions throughout the entire supply chain might positively impact TQM principles such as total employee involvement, communication, and continuous improvement. This potential relationship was statistically tested (H4), revealing no significant influence of ESG practices on the level of TQM implementation within the banking sector.

While sustainable ESG practices still have the potential to influence TQM due to their positive coefficient estimate, this study explored if ESG could further enhance the positive impact of STA on TQM practices. The moderation analysis suggested that the overall model was significant in terms of positively influencing TQM. However, neither ESG nor its combination with STA were significant, making STA the most important independent variable for improving TQM practices. The Analysis of Variance confirmed this by indicating that adding the ESG variable and the interaction between ESG and STA to the simpler model did not provide a statistically significant improvement.

Therefore, it can be observed that Total Quality Management practices are enhanced by leveraging smart technologies. Despite the significant challenges related to data protection and confidentiality, STA was the only independent variable significantly impacting TQM practices within the conceptual model suggested in this study. While literature suggested that CSR or sustainable ESG practices could positively influence TQM implementation, this study could not verify this in the banking sector. Nevertheless, while it is relevant to improve TQM processes to achieve operational excellence and improve customer satisfaction, the level of TQM implementation used in this study is not an end in itself. Cost-benefit analyses might need to be performed for banks to determine whether leveraging smart technologies to improve the efficiency of some TQM principles is relevant. Although it is currently difficult to measure precisely what TQM brings to a bank, as many organisations do not have dedicated costs nor a specific department for it, the potential benefits should still be considered.

5.2. Implications

The findings of this study have significant implications for both the banking sector and the broader theoretical framework surrounding ESG reporting, Total Quality Management, and smart technology adoption.

5.2.1. Practical implications

The practical implications of this study are particularly relevant for banking professionals and policymakers aiming to improve the quality of non-financial reporting and TQM through the adoption of smart technologies. With the entry into force of the CSRD, improving the quality of ESG reporting is critical. The significant positive relationship between STA and ESG reporting quality suggests that banks should invest in advanced digital tools for the building of their reports. These technologies can make data collection more efficient, enhance data accuracy, provide more qualitative ESG disclosures, and might even help with benchmarking, as well as writing the reports. Leveraging AI can also help in finding the right information from relevant internal sources. Regulatory bodies should consider promoting the use of these technologies to ensure higher standards of ESG reporting across all sectors.

Strengthening TQM practices through the integration of smart technologies can lead to important improvements in operational efficiency and customer satisfaction. Banks should leverage AI-powered CRM systems and data analytics to foster a culture of continuous improvement and employee engagement. Furthermore, emphasising on TQM practices across various departments can improve the overall quality management strategy, as indicated by the positive impact of TQM on ESG reporting. This supports the development of a sustainable business model that prioritises both quality and environmental, social, and governance goals. By addressing these practical implications, banks can better navigate the complexities of modern regulatory environments and market expectations. This will lead to enhancing performance and sustainability. Furthermore, the combined model (H5) showed that while both TQM and STA significantly impact ESG reporting practices, the interaction between them does not provide a statistically significant improvement. It suggests that smart technology adoption impacts more significantly the quality of ESG Reports than TQM.

In conclusion, implementing strong TQM practices can improve reporting processes by enhancing communication and involvement across all departments. With the new European Sustainability Reporting Standards, employees throughout the organisation will be impacted. Moreover, improving these processes will enhance the efficiency of report construction. While

smart technology adoption may have a bigger impact on ESG reporting practices, there are still important barriers to its widespread use. Therefore, in the early years of CSRD implementation, focusing on TQM principles might be more practical and cost-effective for banks.

5.2.2. Theoretical implications

This study contributes to the existing body of knowledge by providing an understanding of the relationships between ESG reporting, TQM, and STA in the banking sector. The positive relationship between TQM and ESG reporting practices suggests that integrating quality management principles with sustainability initiatives can enhance the overall effectiveness of both. This supports the theoretical definition that views TQM as a holistic management philosophy that can align well with ESG principles. The findings that smart technology adoption significantly improves both ESG reporting, and TQM practices reinforce the theoretical perspective that advanced digital tools are critical enablers of modern management practices.

The report also examines the variations in TQM application in the banking industry. The qualitative analysis revealed that many banks leverage TQM principles without having a centralised, dedicated team for it. This decentralised approach supports the idea that TQM principles can be integrated into various departments. This aligns with the literature on the importance of a holistic approach to quality management. Moreover, the concept of integrating advanced technologies for real-time monitoring and data visualisation was highlighted in the interviews. This finding clearly indicates the potential for modernising TQM practices through smart technology.

Despite the theoretical assumption that sustainable ESG practices could enhance TQM implementation, the quantitative analysis did not find a significant impact of ESG practices on TQM within the banking sector. This finding challenges the expectation that CSR or sustainable practices directly improve TQM principles and suggests that further research is needed to explore this relationship in different contexts or with larger sample sizes. Additionally, the moderation analysis indicated that while smart technology adoption significantly impacts TQM, the interaction between smart technology and ESG practices does not provide additional explanatory power. This suggests that smart technology alone is a more critical factor for improving TQM practices than the combined influence of ESG and smart technology.

5.3. Limitations

Although this study offers insightful findings, it is crucial to highlight some of its limitations. First, the sample size for the quantitative analysis is relatively small (26 respondents). While this meets the minimum required sample size for high variance (Jenkins & Quintana-Ascencio, 2020), a larger sample would provide more robust and generalisable results. Additionally, the reliance on data from questionnaires answered by banking professionals may introduce bias. Indeed, respondents were asked to indicate the level to which they perceive their organisation to perform, which could lead to a lack of objectivity in the data gathering. Building a dataset that includes factual information related to ESG reporting, TQM, and STA from various banks, such as KPIs or ESG ratings, could further strengthen the statistical analysis. Furthermore, this study captures practices and perceptions at a single point in time, which limits the ability to assess changes and trends over time. While banks are preparing for the CSRD, there is a lack of data on its impact on the quality of ESG reports. Most respondents (23 out of 26) agreed that the CSRD will increase the quality of ESG reporting practices within their organisations, but there is no data to support this. Lastly, focusing on the banking sector provides specific insights but also limits the generalisability of the findings to other industries. This study primarily focuses on banks within a specific geographic region (Europe), which may not fully account for variations in regulatory environments and market conditions across other continents.

5.4. Future research

Building on the findings and limitations of this study, future research could explore several areas. Conducting long-term studies would help track changes and trends in ESG reporting, TQM, and smart technology adoption over time. This may provide deeper insights into their dynamic interactions and long-term impacts. Furthermore, expanding the research to organisations from various geographic regions and different sectors would enhance the general applicability of the findings and provide a more comprehensive understanding of how these practices are implemented in diverse contexts.

Given that the CSRD is relatively new, future research should focus on its impact on the quality of ESG reporting over time. Collecting data on how banks adapt to these new requirements, analyse their competitors' reports and the subsequent changes in their reporting practices will provide valuable insights into the effectiveness of the CSRD. Detailed analysis of TQM implementation across different departments within banks can offer more targeted recommendations by understanding the specific mechanisms through which TQM principles

contribute to overall quality management and their impact on ESG reporting and customer satisfaction.

As new technologies continue to emerge, future research should explore their potential impact on ESG reporting and TQM. This includes examining the role of technologies like IoT, digital twins, and other cutting-edge technologies in driving sustainability and quality management practices.

Comparative studies across different industries could validate whether the findings from the banking sector are applicable in other contexts. This would help in understanding industry-specific challenges and opportunities in integrating ESG reporting, TQM, and STA. By addressing these areas, future research can build on the insights provided by this study and contribute to a more comprehensive understanding of the interplay between ESG reporting, TQM, and STA. This would enhance both academic knowledge and practical guidance for organisations aiming to improve their sustainability and quality management practices.

6. Conclusion

In conclusion, this study focuses on the changes occurring within the banking sector driven by the need for robust ESG practices, the adoption of smart technologies, and more restrictive non-financial reporting requirements. It examines the interplay between ESG reporting, Total Quality Management, and Smart Technology Adoption in banking organisations. This research also provides insights into how banks can enhance their operational efficiency, regulatory compliance, customer satisfaction and overall sustainability practices.

The findings highlight the critical role of smart technology adoption in enhancing both the quality of ESG reporting and the implementation of TQM practices. Banks should then prioritise investments in advanced digital tools. These technologies can make data collection more efficient, enhance data accuracy, monitor KPIs, analyse customer behaviour, and provide more qualitative ESG reports. Furthermore, banks should leverage AI-powered CRM systems and data analytics to foster a culture of continuous improvement and employee engagement.

From a practical standpoint, the study reveals that implementing strong TQM practices can improve reporting processes. It can also enhance communication and involvement across all departments. With the ESRS, employees throughout the organisation will be impacted, and improving these processes will enhance the efficiency of report construction.

The study underscores that while TQM practices significantly influence the quality of ESG reporting, the combined effect of TQM and STA does not provide a statistically significant improvement over STA alone. Therefore, banks should invest both time and money in smart technologies to maximise the quality of ESG Reports. However, barriers to the extensive adoption of smart technology remain. The most concerning are costs, confidentiality, computer power and the complexity of integrating these technologies with existing systems. Therefore, in the early years of CSRD implementation, focusing on TQM principles while still exploring smart technologies related solutions will be crucial for banks.

Despite its insightful findings, the study has limitations that must be acknowledged. Tracking changes and trends over time, may provide deeper insights into the long-term impacts of these practices. Looking forward, future research should focus on the impact of the CSRD on the quality of ESG reporting over time and explore the potential of emerging technologies.

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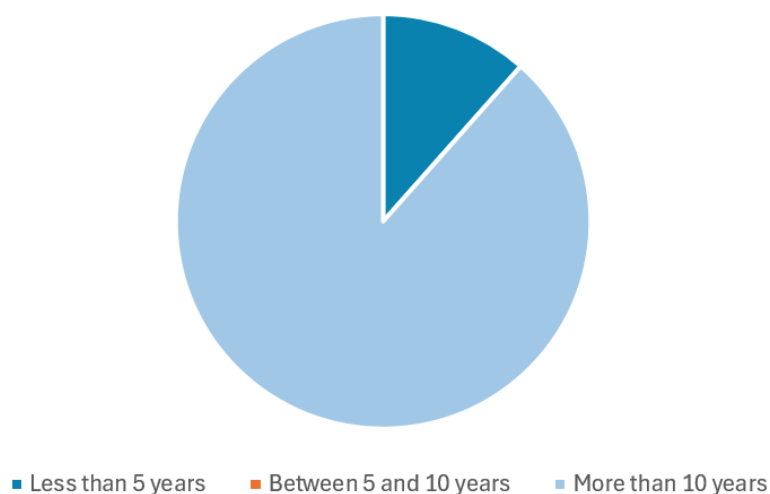
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8. Appendix

8.1. Appendix 1



Appendix 1, Distribution of respondents' years of experience.

8.2. Appendix 2

ESG	TQM1	TQM2	TQM3	TQM4	TQM5	TQM6	TQM7	STA	ESGR1	ESGR2	ESGR3
95	85	80	85	90	75	90	75	80	75	77	70
70	85	90	85	80	70	90	90	60	70	70	65
80	90	90	90	95	95	95	90	85	80	90	90
80	75	75	75	75	75	75	75	50	75	75	75
80	80	90	80	80	90	90	90	95	80	90	90
70	80	80	80	70	70	90	90	70	60	60	60
90	90	90	90	85	80	80	90	80	80	80	80
50	80	80	80	80	80	70	60	80	80	80	80
70	85	90	85	90	75	90	80	85	95	95	85
80	80	80	70	80	80	70	70	70	80	80	80
80	60	60	75	80	80	90	50	70	75	80	100
70	80	90	70	70	70	80	80	50	50	50	50
80	60	70	60	70	65	65	80	80	70	60	65
65	55	80	75	70	60	70	65	70	65	40	60
75	75	85	45	60	60	65	65	35	45	35	55
80	80	90	50	65	65	70	70	40	50	40	60
85	85	95	55	70	70	75	75	45	45	35	55
80	90	90	70	80	80	90	70	90	80	80	90
60	55	60	70	70	55	65	55	75	75	75	65
70	80	100	80	80	50	80	50	90	70	70	75
80	90	70	65	80	90	75	80	65	85	56	80
80	70	90	70	60	80	80	95	50	90	90	60
70	60	85	80	55	70	70	75	60	90	70	50
80	80	80	60	80	80	60	70	70	100	80	50
80	75	85	65	70	70	75	85	70	70	75	65
80	70	80	60	50	90	60	80	70	80	70	80

Appendix 2, Answers from the questionnaire distributed to banking professionals.