The inclusion of sustainability in the business model of South African listed companies, measured through ESG integration

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Keywords
business model, ESG, integration, sustainability

Abstract
The International Integrated Reporting Council, now operating under the IFRS Foundation, developed the International Integrated Reporting Framework (IR Framework) to support organisations in reporting their value creation. The framework emphasises the value creation process across six capitals, driven by an organisation's business model, with a primary focus on value for investors. Alongside the IR Framework, the King IV Report on Corporate Governance, and the Global Reporting Initiative (GRI) advocate integrating sustainability into the business model. This study establishes criteria to assess whether sustainability, through environmental, social, and governance (ESG) principles, is embedded in companies' business models. The criteria are based on key elements of the integrated report, including risks and opportunities, outlook, performance, strategy and resource allocation, and governance. It argues that incorporating sustainability into these elements fosters a sustainable business model. The criteria are applied to the Top 40 companies listed on the Johannesburg Stock Exchange for 2015 and 2020. The findings indicate notable progress in ESG integration by 2020 compared to 2015. Larger companies consistently demonstrated a higher level of integration. Based on the data, ESG-focused subcommittees are common and ESG-related remuneration targets for chief executive officers remain limited, particularly among smaller companies. These findings provide guidance for policymakers and organisations seeking to strengthen the integration of sustainability.

Introduction

There remains a limited body of research examining how environmental, social and governance (ESG) principles and sustainability can be practically embedded within the operations of a company (Aldowaish et al., 2022). Alignment between a company's vision, strategy, and performance indicates management's commitment to sustainable business practices (Knauer & Serafeim, 2014). The King IV Report on Corporate Governance (King IV) explicitly recommends that sustainability should be incorporated into the business model and communicated through the integrated report (IoDSA, 2016). At the same time, institutional investors are increasingly recognising the importance of ESG considerations in their investment decisions (Huang, 2022). In response, this study develops a set of criteria to measure the extent to which sustainability, from an ESG perspective, is integrated into a company's business model.

Existing literature suggests that companies must embed sustainability into their business models to unlock innovation and long-term value (Evans et al., 2017). King IV reinforces this by requiring that sustainability be part of the business model (IoDSA, 2016). Similarly, the International Integrated Reporting Framework (IR Framework) recommends that companies report on the relationship between their business model and the outcomes affecting the six capitals (IIRC, 2021). Within this framework, the value creation process is defined as the transformation of inputs into positive and negative outcomes through the business model. Consequently, if sustainability is to be embedded effectively, it must be reflected within the business model itself (Lahti et al., 2018). A business model is the system through which a company converts inputs into outputs and creates value (IIRC, 2021; IoDSA, 2016). Importantly, a sustainable business model integrates profit with social purpose and shared value creation (Hogevold et al., 2015). The integration of strategy, sustainability, and the capitals forms the conceptual basis for the criteria developed in this study.

Although the IR Framework encourages companies to produce tailored integrated reports reflecting their unique business models and strategies (Montecalvo et al., 2018) prior research indicates that many companies have not yet developed clear approaches to reporting on their business models (Tweedie et al., 2018). Despite the growing global emphasis on sustainability, there remains a gap between stated commitments and actual practices, particularly in terms of resource use and environmental impact (Kuzma et al., 2020). Companies often face challenges in establishing systems to measure and report accurately on sustainability performance (Lokuwaduge & Heenetigala, 2017). Addressing sustainability at an organisational level requires consideration of operational practices, strategic priorities and the business model itself (Aldowaish et al., 2022). While ESG compliance is becoming more widespread, there is still a limited understanding of how ESG principles influence and reshape business models, which is essential for achieving long-term sustainability (Aldowaish et al., 2022).

Variations in the adoption and quality of sustainability reporting continue to affect the achievement of broader environmental and societal objectives (Paridhi & Arora, 2023). The development of integrated reporting reflects companies' efforts to combine financial and ESG information in a manner that supports sustainable value creation while managing risk (Albetairi et al., 2018). Sustainability reporting is widely used as a tool for communicating ESG initiatives and performance to stakeholders (Gnanaweera & Kunori, 2018). Accordingly, this study relies on integrated and sustainability reports as its primary data sources.

The study aims to investigate how the Top 40 companies listed on the Johannesburg Stock Exchange (JSE), ranked by market capitalisation as at 31 December 2020, have incorporated sustainability into their business models in the 2020 financial year, compared with 2015. A set of criteria was developed, drawing on existing literature, theoretical foundations and the integrated thinking model, to assess whether ESG principles are embedded in business models. The analysis focuses not merely on whether companies report on sustainability, but on whether ESG considerations are integrated into the core elements of the business model as reflected in their reports.

Using descriptive and inferential statistical methods, the study tests the integration of ESG into the business model. The findings indicate a clear increase in ESG integration within business models between 2015 and 2020. However, smaller companies are less likely to embed ESG principles compared to larger companies. Furthermore, while several ESG-related elements are incorporated, the linkage between ESG performance and CEO remuneration remains the least developed area.

This study makes several important contributions. Firstly, it offers practical guidance by proposing a method to assess whether sustainability has been integrated into a company's business model. Secondly, it identifies specific ESG indicators that are less commonly embedded, highlighting areas for improvement. Overall, the findings contribute to ongoing discussions on sustainability reporting and regulatory development, highlighting areas where policymakers should focus their efforts. Importantly, the study demonstrates that companies are increasingly recognising the importance of ESG and are improving the integration of sustainability into their business models over time.

Literature Review

Background

This section introduces the key frameworks and guidelines that inform integrated and sustainability reporting. It focuses on the King IV Report on Corporate Governance (King IV), the Global Reporting Initiative (GRI), the International Integrated Reporting (IR) Framework, and broader sustainability reporting practices. The IR Framework is particularly important, as it provides guidance on how integrated reporting should be conducted, including how sustainability is linked to a company's business model.

King IV, issued by the Institute of Directors in Southern Africa in 2016, provides comprehensive corporate governance guidance for companies (IoDSA, 2016). It builds on earlier King Reports, beginning with King I in 1994, which focused largely on financial governance, and King II in 2002, which introduced the concept of triple-bottom-line reporting—encompassing economic, environmental, and social performance. King III, issued in 2009, expanded this approach by emphasising the interconnectedness of these elements, leading to the adoption of integrated reporting (Esser & Delport, 2018). King IV retained these principles while improving accessibility and applicability across different types of companies. It defined sustainability as the long-term goal of development that meets present needs without compromising the ability of future generations to meet their own needs. It promoted an integrated approach in which economic viability, environmental stewardship and social responsibility are considered together. Central to this approach is the concept of the six capitals—financial, manufactured, intellectual, human, social and relationship, and natural—which serve as inputs into the business model. Companies are expected to operate within the interconnected context of the economy, society and the environment, and to disclose how these factors influence and are influenced by their activities through integrated reporting (Esser & Delport, 2018; IoDSA, 2016).

The GRI is an international non-profit organisation that provides widely used standards for sustainability reporting. Its primary objective is to help companies understand and communicate their economic, environmental and social impacts. The GRI standards are comprehensive and include key performance indicators (KPIs) to guide reporting (Global Reporting Initiative, 2026). However, the application of GRI standards is voluntary, allowing companies flexibility in how they report. This flexibility allows tailored disclosures but reduces comparability (Lokuwaduge & Heenetigala, 2017). Furthermore, the GRI focuses primarily on reporting impacts rather than assessing whether sustainability is embedded within a company's business model (Isaksson & Steimle, 2009). Research has also identified challenges associated with the complexity and flexibility of the framework, which can result in inconsistent reporting practices (Ferreira Quilice et al., 2018).

The IR Framework, developed by the International Integrated Reporting Council (now part of the IFRS Foundation), promotes integrated thinking and reporting. It encourages companies to present a holistic view of how they create value over time by combining financial and non-financial information. Integrated reporting is primarily aimed at investors, although it also provides insights for other stakeholders. The framework identifies eight interrelated content elements: organisational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and basis of preparation. These elements collectively explain how a company transforms inputs into outputs and outcomes through its business model. The framework emphasises that value creation involves both positive and negative impacts on the six capitals (IIRC, 2021). A key strength of the IR Framework is its focus on the link between strategy, business model and sustainability. It encourages companies to report transparently on both favourable and unfavourable factors affecting value creation (Camilleri, 2018). However, criticisms include its strong investor focus and the risk that companies may adopt integrated reporting superficially without meaningful changes in practice (Tweedie et al., 2018).

The elements of the integrated report represent the core components of a company's value creation process. These include governance, which ensures accountability and supports sustainable value creation; risks and opportunities, which address uncertainties and potential growth areas; and strategy and resource allocation, which outline future direction and priorities. Performance measures the achievement of objectives, while outlook considers future challenges and prospects. The basis of preparation explains how material issues are identified and reported. Together, these elements form the building blocks of the business model (IIRC, 2021). They provide a structured way for companies to demonstrate how sustainability and ESG considerations are embedded in operations and decision-making.

Sustainability and ESG Reporting

Sustainability and ESG are closely related but distinct concepts, although in practice, companies often use the terms interchangeably (Masemola & Herbert, 2025). ESG refers to specific, measurable criteria used primarily by investors to assess non-financial risks and opportunities. In contrast, sustainability is broader, encompassing a company's long-term impact on the environment, society and future generations (Masemola & Herbert, 2025). While ESG provides useful indicators, it does not fully capture the complexity of sustainability, such as long-term impacts and interdependencies (Aldowaish et al., 2022). Nevertheless, ESG remains an important tool for driving sustainability integration, particularly in response to investor demands (Knauer & Serafeim, 2014). This study focuses on integrating sustainability into the business model through ESG principles.

ESG reporting is widely regarded as a subset of sustainability reporting, with ESG disclosures forming part of broader sustainability reports and acting as key indicators of sustainable performance (Aldowaish et al., 2022). Although external assurance of sustainability reports is not mandatory, many companies pursue it to enhance credibility and build trust with stakeholders (Ching & Gerab, 2017).

A key challenge in this area is the lack of a consistent definition and understanding of ESG reporting, which complicates policy development and implementation within companies (Paridhi & Arora, 2023). To achieve sustainability, companies must focus on the quality and interdependence of economic, social and environmental outcomes (Kuzma et al., 2020). Sustainable development is closely linked to innovation within the business model, which connects a company's operations to broader production and consumption systems (Boons et al., 2013). For a company to be sustainable, it must remain economically viable, minimise environmental harm, and meet societal expectations (Dumay & Hossain, 2019). However, many companies struggle to clearly define and communicate their sustainable practices (Hogevold et al., 2015).

Empirical studies highlight various drivers of sustainability adoption—for example, Bakos et al. (2020) found that management commitment and stakeholder pressure are key influences for South African small businesses, along with the pursuit of competitive advantage through environmentally responsible practices. Similarly, Askham and Van der Poll (2017) observed that JSE-listed mining companies demonstrated strong water stewardship and transparency in resource management.

Despite growing interest in ESG, challenges remain. Paridhi and Arora (2023) identified inconsistencies in definitions, measurement and reporting practices as major issues. Furthermore, criticism has been directed at ESG reporting for its lack of comparability and credibility. ESG ratings often vary significantly across agencies (Berg, Kolbel and Rigobon, 2022) and strong ESG performance does not always translate into improved financial outcomes (Dyck et al., 2019). In addition, sustainability reporting is sometimes criticised as being symbolic rather than substantive, with companies prioritising compliance over meaningful change (Michelon et al., 2015). These limitations reduce the effectiveness of ESG information for decision-making.

Theoretical Framework

Four theories were considered to explain the motivations behind the actions of companies and their management teams regarding sustainability: signalling, agency, stakeholder, and upper echelons theories. These theoretical perspectives provide a foundation for understanding why sustainability is adopted, or not, within a company, and inform the development of the study's hypotheses.

Signalling theory explains how companies communicate their quality and intentions to external stakeholders through disclosures (Kuzey & Uyar, 2017). By reporting ESG performance, companies signal their commitment to sustainability and value creation. For example, aligning sustainability with executive remuneration demonstrates its strategic importance (Nigam et al., 2018). Seeking assurance on sustainability reports further enhances credibility (Ching & Gerab, 2017). High ESG ratings may also signal that a company balances stakeholder interests without compromising financial performance (Matos et al., 2020). This theory highlights how ESG disclosures can strengthen reputation and stakeholder perception (Aldowaish et al., 2022). Agency theory examines the relationship between shareholders (principals) and management (agents), particularly where information asymmetry exists (Eisenhardt, 1989). Managers may not always act in shareholders' best interests, creating agency conflicts. Mechanisms such as governance structures, incentives and transparency can mitigate these issues (Naciti, 2019). Integrated reporting helps reduce information gaps by explaining how value is created (Hamad et al., 2020). Linking executive remuneration to ESG performance can further align management actions with stakeholder expectations. Stakeholder theory emphasises that companies must consider the interests of all stakeholders, not only shareholders (Matos et al., 2020). Responding to diverse stakeholder expectations can enhance reputation and long-term performance (Hamad et al., 2020). In contrast, upper echelons theory focuses on the influence of senior executives, particularly CEOs, whose values and experiences shape strategic decisions and reporting practices (Velte & Stawinoga, 2020). Together, these theories highlight both external pressures and internal leadership as drivers of ESG integration.

Hypothesis Development

This section draws on prior studies, theoretical frameworks and the IR Framework to identify key areas that constitute a company's business model. These areas must be aligned with sustainability to conclude that ESG principles are fully integrated.

A central aspect of sustainability integration is the presence of governance structures, such as a dedicated sustainability or CSR committee. These committees support oversight and enhance accountability, improving social and environmental performance (Velte & Stawinoga, 2020). From an agency theory perspective, such structures reduce agency costs and strengthen alignment between management and shareholders (Panda & Leepsa, 2017).

Innovation and product development are also critical. Sustainable development requires innovation embedded within the business model, linking economic, environmental and social outcomes (Kuzma et al., 2020). Companies are therefore expected to demonstrate how innovation contributes to sustainability within their integrated reports (IIRC, 2021).

The integration of sustainability into strategic objectives further signals a commitment to stakeholders (Kuzey & Uyar, 2017). The IR Framework emphasises that performance should be measured against these objectives and their impact on the capitals (IIRC, 2021). However, prior studies suggest that companies often fail to articulate their strategy in their reports clearly (van Wyk & Wesson, 2021).

Leadership also plays a key role. Linking executive remuneration to ESG performance demonstrates accountability and commitment to long-term value creation (Knauer & Serafeim, 2014). In addition, CEOs significantly influence sustainability outcomes through their strategic decisions (Plockinger et al., 2016).

Finally, managing sustainability-related risks is essential. Companies are expected to disclose how such risks affect value creation, in line with both the IR Framework and King IV (IIRC, 2021; IoDSA, 2016).

Based on the literature, five key areas define the integration of sustainability: governance structures, innovation, strategic alignment, executive remuneration, and risk management. These areas underpin the study's hypothesis, which assesses changes in ESG integration.

The research objectives can be expressed in the following hypothesis:

H1 = There was an increase in the integration of ESG by the JSE Top 40 between 2015 and 2020

Method

This study employs a quantitative content analysis approach. The study investigates how the Top 40 companies listed on the Johannesburg Stock Exchange (JSE), ranked by market capitalisation as at 31 December 2020, incorporated ESG into their business models in the 2020 financial year, compared with 2015. The Top 40 listed companies capture approximately 80% of the market capitalisation of the JSE (van Zijl & Hewlett, 2022). 2015 was the last year that companies used King III, and 2020 was the most recent year at the time of data capture; companies had five years to adopt King IV fully (IoDSA, 2016).

The use of scoring systems is supported by prior research. For example, Skouloudis and Evangelinos (2009) and Breedveld et al. (2007) developed similar grading frameworks to evaluate disclosure quality. Building on these approaches, this study constructed a simplified scoring model tailored to ESG integration within business models. The five criteria developed based on the literature presented above and applied in this study are: (1) Existence of a board committee responsible for ESG, (2) Inclusion of ESG in strategic objectives and KPIs, (3) Integration of ESG into research and product development, (4) Linkage of ESG to CEO remuneration, and (5) Consideration of ESG risks. Each criterion was scored on a scale of 0 to 2 for every company. A score of 0 indicates no evidence of ESG integration, 1 indicates partial integration, and 2 indicates full integration. All categories were weighted equally to remove potential bias on the part of the researcher. The importance of each criterion is likely to differ between companies. Data were collected from the companies' integrated and sustainability reports.

The scores for each criterion were recorded and analysed statistically. Descriptive statistics were used to analyse the relationships among the data. The data did not pass a normality test. Therefore, a non-parametric test was used, being the Wilcoxon test. This tested whether there were significant differences in the scores between the two years.

The scoring model is subject to several limitations. The assignment of scores (0, 1, 2) involves a degree of subjectivity, which may introduce researcher bias in interpreting disclosures. This is inherent in qualitative research, but was addressed by using consistent scoring techniques, carried out by a single researcher. In addition, all criteria are equally weighted, despite the likelihood that some aspects of ESG integration are more significant than others. The model also relies on publicly disclosed information, which carries an inherent reporting bias because reports presented publicly by a company may not accurately reflect actual ESG performance in practice. In reality, activity may be either more or less than reported, due to poor reporting or greenwashing.

Results and Discussion

Descriptive Statistics

Table 1 below presents the descriptive statistics for the 2020 and 2015 scores. There were five categories tested for each company, with a maximum score of 2, resulting in a maximum possible score per company of 10.

Table 1: Descriptive statistics of the 2015 and 2020 scores.

2015 score		2020 score	
Mean	5,98	Mean	8,02
Standard Error	0,43	Standard Error	0,34
Median	6,00	Median	9,00
Mode	6,00	Mode	10,00
Standard Deviation	2,75	Standard Deviation	2,18
Minimum	-	Minimum	1,00
Maximum	10,00	Maximum	10,00

The 2020 scores (M=8.025, S.D. = 2.19) and the 2015 scores (M=5.925, S.D. = 2.75) are depicted above. The lowest score in 2020 was 1, and in 2015 it was 0. The variation in 2015 was higher than in 2020.

Change in ESG Integration in 2015 vs 2020

The hypothesis tested whether ESG scores differed in 2015 and 2020 and whether there was an increase in ESG integration between 2015 and 2020. The main aim of the hypotheses was to test whether ESG is integrated differently across the five categories in the two periods. When companies integrate sustainability into their business model, they signal that sustainability is valuable by the company (Nigam et al., 2018). Improvements in ESG integration would signal a greater focus on sustainability and stakeholders. Figure 1 below shows the score for each category in each year as a percentage of the maximum. The figure also highlights the percentage change between the two periods for each category.

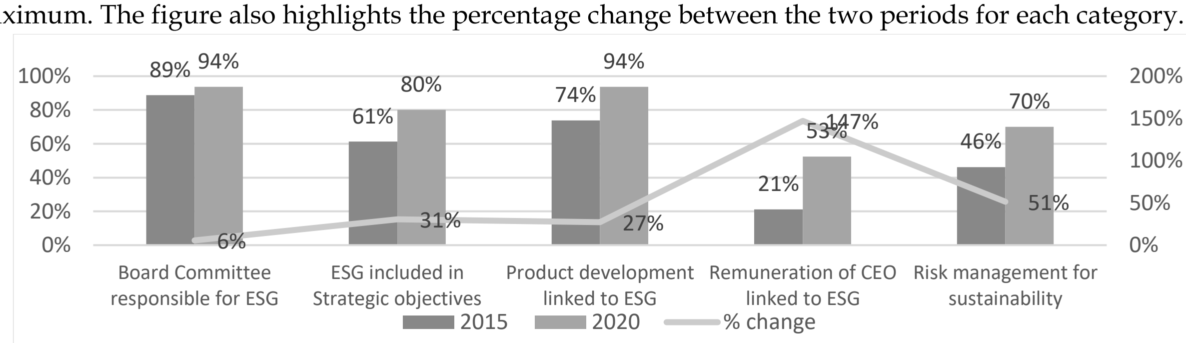

Figure 1: Total score per category in 2015 and 2020

The score percentage for each category increased from 2015 to 2020. The highest increases were in the integration of the CEO remuneration with the ESG category. This category had the lowest score percentage in both periods, followed by the management of sustainability risk category. The presence of a board committee responsible for ESG and the product development categories both had the highest 2020 scores, at 96%. There were no zero-score ratings in 2020, although two companies received a zero rating in 2015. Two companies received a rating of 10 in 2015, compared with 15 companies in 2020. Only two companies in 2015 and 15 in 2020 achieved a perfect score of 10, representing a 650% improvement between the periods. Only 15 companies received a score of at least 8 in 2015 and 24 companies in 2020, demonstrating a high level of integration. A Wilcoxon Test was conducted to compare the total scores between 2015 and 2020, with a result of 53.5 (p <.001). The Wilcoxon test results confirm a significant difference in total scores between 2020 and 2015.

The different levels of integration amongst the categories suggest that certain categories may be prioritised differently by businesses. As integrated and sustainability reports are not standard across companies, this can also contribute to different levels of disclosure for each category across companies. According to the upper echelons theory, the dominant and most powerful individuals in an organisation, specifically the top management team, dictate and influence the key strategic choices made within the company (Velte & Stawinoga, 2020). This theory emphasises that responsibility for results and performance lies with the most powerful individuals in the organisation, as found by Homroy et al. (2023), who emphasised in their research that without clear targets for CEOs, ESG will not be achieved, since its goals are at odds with the creation of wealth for shareholders. Their research also demonstrated that well-governed companies have more ESG targets and that the board should be responsible for setting them.

The CEO remuneration category had the lowest scores. Companies with a market capitalisation of less than R100 billion by the end of December 2020 had the lowest score for CEO remuneration linked to ESG compared with companies with higher market capitalisation. This applied in both 2015 and 2020. None of the companies worth less than R100 billion in 2015 had linked the CEO's remuneration to ESG. The companies with the highest average scores were those above R200 billion in 2020, with a score of 1.2, and those between R100 and R200 billion in 2015, with a score of 0.9. If the remuneration of the CEO is not linked to ESG, there is a risk that the CEO may only further the agendas of the investors and not take into account other stakeholders, as proposed by the stakeholder and agency theories (Huang, 2022).

The changes in the overall scores can be attributed to many factors, including the introduction of the King IV code in 2016 (IoDSA, 2016). Prior research also highlights improvements in the integration of ESG across different elements of the business over the years (Clément et al., 2022), and that incorporating sustainability within an organisation is achieved through the business model (Lahti et al., 2018). The results of this research highlight that ESG integration is becoming an important topic for companies. This signals that the organisation prioritises the needs of the different stakeholders (Matos et al., 2020). Stakeholder theory plays a crucial role in ensuring that all parties involved derive value from the business and in sustainable business models, as the focus shifts from mere profit maximisation to long-term value creation for all stakeholders (Freudenreich et al., 2020). These businesses have communicated to their stakeholders through these reports that they are creating sustainable value. These improvements led to an overall improvement in the ESG score in 2020 compared to 2015. The hypothesis is therefore accepted.

ESG in Different Industries

Figure 2 shows the total percentage score for each industry between 2015 and 2020. The scores for all industries improved between the two periods, with the largest improvements in telecommunications and the smallest in the consumer goods industry, measured as percentage change.

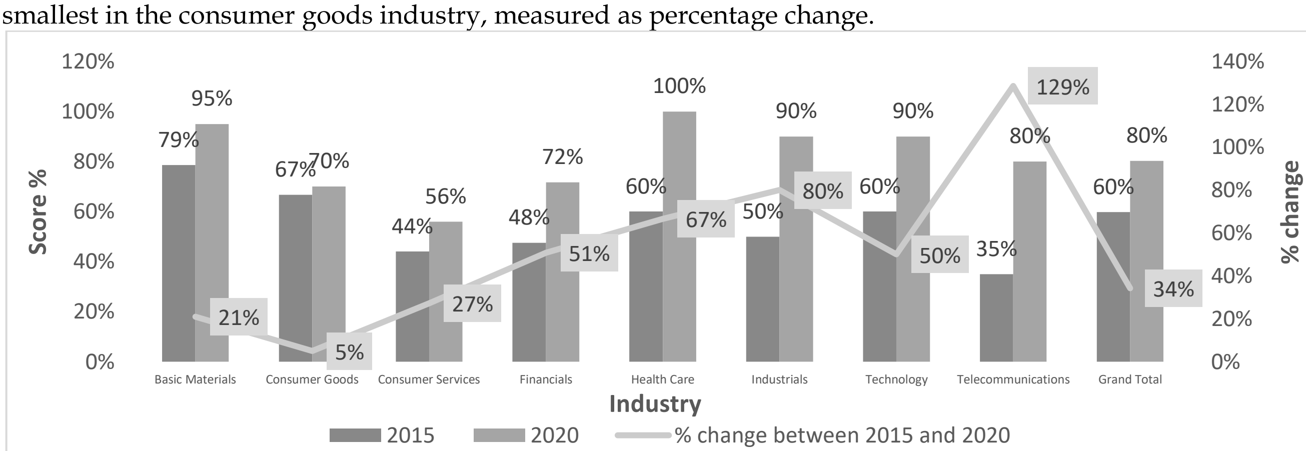

Figure 7: Total % score per industry between 2015 and 2020

When examining the five categories, the Board committee category is the only one with scores of 75% or more across all industries. It is also the only category with 100% scores across six industries. All other categories had only three industries or fewer that scored 100%. Basic materials had the highest scores in all the categories. All scores for the basic materials industry across all categories were above 70%, except for the category of the CEO's remuneration linked to ESG, which scored 46%. The basic materials industry had the highest score, 79%, in 2015 and the second-highest, 95%, in 2020. It was the only industry with an average score of more than 40% in 2015 for the remuneration of CEOs linked to ESG, and the only industry with a score of more than 50% in 2015 for ESG risk management. Telecommunications had the lowest score percentage in 2015. The category linking CEO remuneration to ESG is the only category with scores below 50% across all industries. All industries scored 50% or less in the ESG risk management category, except the basic materials industry, which scored 79%. The lowest score across all categories in 2020 was 0%, corresponding to the CEO's remuneration linked to ESG in the basic consumer goods industry. As Garcia et al. (2017) concluded, businesses in sensitive industries have better environmental disclosures regardless of their size or country. Their definition of sensitive industries included those likely to damage the environment and those subject to moral and political debates, among others. The findings of the current study confirm those of the previous study, with high levels of ESG integration observed in basic materials, healthcare, and industrials, all of which have a significant impact on society and the environment in South Africa. Furthermore, these industries are highly regulated in South Africa due to their impact on society.

Conclusion

ESG considerations are becoming increasingly significant for companies as institutional investors place growing pressure on organisations to enhance transparency and disclose their ESG initiatives and impacts (Homroy et al., 2023). This study examined the integration of ESG into the business models of JSE Top 40 listed companies. It developed a systematic method to assess whether ESG is embedded in the business model and applied this framework to analyse integrated and sustainability reports for the years 2015 and 2020. The study identified five key categories essential for ESG integration: the existence of a board committee responsible for ESG, the incorporation of ESG into strategy, the linkage between ESG and product development, the alignment of ESG with CEO remuneration, and the identification and management of ESG-related risks.

The empirical findings indicate a clear improvement in ESG integration over time. The average ESG score increased significantly from 5.98 in 2015 to 8.02 in 2020, and the Wilcoxon test indicated that the average scores differed significantly between the two periods. This supports the acceptance of the hypothesis, demonstrating that ESG integration has strengthened considerably over the period. Furthermore, more companies achieved higher integration scores in 2020, suggesting greater commitment to embedding ESG into both business models and strategic decision-making. Notably, the linkage of ESG to CEO remuneration scored the lowest amongst the five categories. Although some progress has been made, many companies continued to provide only general disclosures on executive remuneration, without clearly linking performance to ESG targets. This finding highlights a critical gap in the alignment of leadership incentives with sustainability objectives.

Overall, the study contributes to the ESG literature by demonstrating that ESG integration has improved in South Africa, but remains uneven across key areas. Governance structures, particularly board committees responsible for ESG, are well established. However, this study recommends that greater attention be paid to linking ESG performance to CEO remuneration. Drawing on the upper echelons theory, this study argues that effective ESG integration depends on leadership commitment. Without the active involvement of senior executives, sustainability initiatives are unlikely to drive meaningful organisational change. Consequently, it is recommended that boards of directors incorporate ESG metrics into executive remuneration policies across all companies, regardless of size or industry, which further emphasises the importance of considering a broad range of stakeholders, in line with stakeholder theory. In addition to the contribution to the literature noted above, the study provides a novel, practical framework for assessing ESG integration within business models, focusing on governance, strategy, innovation, remuneration, and risk management. This framework can be applied in other jurisdictions without adjustments required.

Limitations and directions for future research

Despite the contributions described above, several limitations should be acknowledged. The study assumes that the value creation framework adequately represents the business model and does not assess the quality of ESG disclosures. Variations in reporting practices across companies also pose challenges, as there is no standardised format for integrated reports. The scoring model is limited by subjective scoring and reliance on disclosures rather than actual performance. Additionally, the focus on the JSE Top 40 limits the generalisability of the findings to smaller companies.

Future research should explore the influence of CEO characteristics on sustainability performance and reporting, as suggested by the upper echelons theory. Further investigation is also needed to understand why companies are reluctant to link executive remuneration to ESG targets. Additional studies could examine differences between ESG reporting and its integration into business models, as well as the impact of industry-specific regulations on sustainability disclosures. Finally, research should consider developing industry-tailored weighted scoring systems and exploring the challenges smaller companies face in adopting ESG practices.

References

Albetairi, H. T. A., Kukreja, G., & Hamdan, A. (2018). Integrated Reporting and Financial Performance: Empirical Evidences from Bahraini Listed Insurance Companies. *Accounting and Finance Research*, *7*(3), 102. https://doi.org/10.5430/afr.v7n3p102

Aldowaish, A., Kokuryo, J., Almazyad, O., & Goi, H. C. (2022). Environmental, Social, and Governance Integration into the Business Model: Literature Review and Research Agenda. *Sustainability*, *14*(5), 2959. https://doi.org/10.3390/SU14052959

Askham, T. M., & Van der Poll, H. M. (2017). Water sustainability of selected mining companies in South Africa. *Sustainability (Switzerland)*, *9*(6), 1–16. https://doi.org/10.3390/su9060957

Bakos, J., Siu, M., Orengo, A., & Kasiri, N. (2020). An analysis of environmental sustainability in small & medium-sized enterprises: Patterns and trends. *Business Strategy and the Environment*, *29*(3), 1285–1296. https://doi.org/10.1002/bse.2433

Berg, F., Kölbel, J. F., & Rigobon, R. (2022). Aggregate Confusion: The Divergence of ESG Ratings. *Review of Finance*, *26*(6), 1315–1344. https://doi.org/10.1093/rof/rfac033

Boons, F., Montalvo, C., Quist, J., & Wagner, M. (2013). Sustainable innovation, business models and economic performance: An overview. *Journal of Cleaner Production*, *45*, 1–8. https://doi.org/10.1016/j.jclepro.2012.08.013

Breedveld, L., Timellini, G., Casoni, G., Fregni, A., & Busani, G. (2007). Eco-efficiency of fabric filters in the Italian ceramic tile industry. *Journal of Cleaner Production*, *15*(1), 86–93. https://doi.org/10.1016/j.jclepro.2005.08.015

Camilleri, M. A. (2018). Theoretical insights on integrated reporting The inclusion of non-financial capitals in corporate disclosures. *Corporate Communications: An International Journal*, *23*(4), 567–581. https://doi.org/10.1108/CCIJ-01-2018-0016

Ching, H. Y., & Gerab, F. (2017). Sustainability reports in Brazil through the lens of signaling, legitimacy and stakeholder theories. *Social Responsibility Journal*, *13*(1), 95–110. https://doi.org/10.1108/SRJ-10-2015-0147

Clément, A., Robinot, É., & Trespeuch, L. (2022). Improving ESG Scores with Sustainability Concepts. *Sustainability (Switzerland)*, *14*(20). https://doi.org/10.3390/su142013154

Dumay, J., & Hossain, M. A. (2019). Sustainability Risk Disclosure Practices of Listed Companies in Australia. *Australian Accounting Review*, *29*(2), 343–359. https://doi.org/10.1111/auar.12240

Dyck, A., Lins, K. V., Roth, L., & Wagner, H. F. (2019). Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics*, *131*(3), 693–714. https://doi.org/10.1016/j.jfineco.2018.08.013

Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. *Academy of Management Review*, *14*(1), 57–74. https://doi.org/https://doi.org/10.2307/258191

Esser, I., & Delport, P. (2018). The South African King IV Report on corporate governance: is the crown shiny enough? *Company Lawyer*, *39*(11), 378–384. http://eprints.gla.ac.uk/163223/http://eprints.gla.ac.uk

Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E. A., & Barlow, C. Y. (2017). Business Model Innovation for Sustainability: Towards a Unified Perspective for Creation of Sustainable Business Models. *Business Strategy and the Environment*, *26*(5), 597–608. https://doi.org/10.1002/bse.1939

Ferreira Quilice, T., Oranges Cezarino, L., Fernandes Rodrigues Alves, M., Bartocci Liboni, L., & Ferreira Caldana, A.

C. (2018). Positive and negative aspects of GRI reporting as perceived by Brazilian organizations. *Environmental Quality Management*, *27*(3), 19–30. https://doi.org/10.1002/tqem.21543
Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. (2020). A Stakeholder Theory Perspective on Business Models: Value Creation for Sustainability. *Journal of Business Ethics*, *166*(1), 3–18. https://doi.org/10.1007/s10551-019-04112-z
Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of Cleaner Production*, *150*, 135–147. https://doi.org/10.1016/j.jclepro.2017.02.180
Global Reporting Initiative. (2026). *Global Reporting Initiative*. https://www.globalreporting.org
Gnanaweera, K. A. K., & Kunori, N. (2018). Corporate sustainability reporting: Linkage of corporate disclosure information and performance indicators. *Cogent Business and Management*, *5*(1). https://doi.org/10.1080/23311975.2018.1423872
Hamad, S., Draz, M. U., & Lai, F. W. (2020). The Impact of Corporate Governance and Sustainability Reporting on Integrated Reporting: A Conceptual Framework. *SAGE Open*, *10*(2). https://doi.org/10.1177/2158244020927431
Høgevold, N. M., Svensson, G., Klopper, H. B., Wagner, B., Valera, J. C. S., Padin, C., Ferro, C., & Petzer, D. (2015). A triple bottom line construct and reasons for implementing sustainable business practices in companies and their business networks. *Corporate Governance*, *15*(4), 427–443. https://doi.org/10.1108/CG-11-2014-0134
Homroy, S., Mavruk, T., & Nguyen, V. D. (2023). ESG-Linked Compensation, CEO Skills, and Shareholder Welfare. *Review of Corporate Finance Studies*, *12*(4), 939–985. https://doi.org/10.1093/rcfs/cfad012
Huang, D. Z. X. (2022). Environmental, social and governance factors and assessing firm value: valuation, signalling and stakeholder perspectives. *Accounting and Finance*, *62*(S1), 1983–2010. https://doi.org/10.1111/acfi.12849
IIRC. (2021). *International <IR> Framework* (Issue January). https://integratedreporting.org/wp-content/uploads/2021/01/InternationalIntegratedReportingFramework.pdf
IoDSA. (2016). *The King IV Report: The Institute of Directors in Southern Africa*.
Isaksson, R., & Steimle, U. (2009). What does GRI-reporting tell us about corporate sustainability? *The TQM Journal*, *21*(2), 168–181. https://doi.org/10.1108/17542730910938155
Knauer, A., & Serafeim, G. (2014). Attracting Long-Term Investors Through Integrated Thinking and Reporting: A Clinical Study of a Biopharmaceutical Company. *Journal of Applied Corporate Finance*, *26*(2), 57–64. https://doi.org/10.1111/JACF.12067
Kuzey, C., & Uyar, A. (2017). Determinants of sustainability reporting and its impact on firm value : Evidence from the emerging market of Turkey. *Journal of Cleaner Production*, *143*, 27–39. https://doi.org/10.1016/j.jclepro.2016.12.153
Kuzma, E., Padilha, L. S., Sehnem, S., Julkovski, D. J., & Roman, D. J. (2020). The relationship between innovation and sustainability: A meta-analytic study. *Journal of Cleaner Production*, *259*. https://doi.org/10.1016/j.jclepro.2020.120745
Lahti, T., Wincent, J., & Parida, V. (2018). A definition and theoretical review of the circular economy, value creation, and sustainable business models: Where are we now and where should research move in the future? *Sustainability (Switzerland)*, *10*(8). https://doi.org/10.3390/su10082799
Lokuwaduge, C. S. D. S., & Heenetigala, K. (2017). Integrating Environmental, Social and Governance (ESG) Disclosure for a Sustainable Development: An Australian Study. *Business Strategy and the Environment*, *26*(4), 438–450. https://doi.org/10.1002/bse.1927
Masemola, M. M., & Herbert, S. (2025). Implications of the distinct or interchangeable use of the terms 'ESG' and 'sustainability' on reporting by global banks. *The Business and Management Review*, *15*(03), 6–7. https://doi.org/10.24052/bmr/v15nu03/art-21
Matos, P. V., Barros, V., & Sarmento, J. M. (2020). Does esg affect the stability of dividend policies in Europe? *Sustainability (Switzerland)*, *12*(21), 1–15. https://doi.org/10.3390/su12218804
Michelon, G., Pilonato, S., & Ricceri, F. (2015). CSR reporting practices and the quality of disclosure: An empirical analysis. *Critical Perspectives on Accounting*, *33*, 59–78. https://doi.org/10.1016/j.cpa.2014.10.003
Montecalvo, M., Farneti, F., & de Villiers, C. (2018). The potential of integrated reporting to enhance sustainability reporting in the public sector. *Public Money & Management*, *38*(5), 365–374. https://doi.org/DOI: 10.1080/09540962.2018.1477675
Naciti, V. (2019). Corporate governance and board of directors: The effect of a board composition on firm sustainability performance. *Journal of Cleaner Production*, *237*, 117727. https://doi.org/10.1016/j.jclepro.2019.117727
Nigam, N., Benetti, C., & Mbarek, S. (2018). Can linking executive compensation to sustainability performance lead to a sustainable business model? Evidence of implementation from enterprises around the world. *Strategic Change*, *27*(6), 571–585. https://doi.org/10.1002/jsc.2240
Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives.

Indian Journal of Corporate Governance, *10*(1), 74–95. https://doi.org/10.1177/0974686217701467
Paridhi, & Arora, A. (2023). Sustainability reporting: Current state and challenges. *Business Strategy and Development*, *6*(3), 362–381. https://doi.org/10.1002/bsd2.244
Plöckinger, M., Aschauer, E., Hiebl, M. R. W., & Rohatschek, R. (2016). The influence of individual executives on corporate financial reporting: A review and outlook from the perspective of upper echelons theory. *Journal of Accounting Literature*, *37*(1), 55–75. https://doi.org/10.1016/J.ACCLIT.2016.09.002
Skouloudis, A., & Evangelinos, K. (2009). Sustainability Reporting in Greece: Are We There Yet? *Environmental Quality Management*, *19*(1), 43–60. https://doi.org/10.1002/tqem
Tweedie, D., Nielsen, C., & Martinov-Bennie, N. (2018). The Business Model in Integrated Reporting: Evaluating Concept and Application. *Australian Accounting Review*, *28*(3), 405–420. https://doi.org/10.1111/auar.12196
van Wyk, L. M., & Wesson, N. (2021). Alignment of executive long-term remuneration and company key performance indicators: An exploratory study. *Journal of Economic and Financial Sciences*, *14*(1), 1–17. https://doi.org/10.4102/jef.v14i1.564
van Zijl, W., & Hewlett, V. (2022). An analysis of the extent and use of fair value by JSE Top 40 companies. *South African Journal of Accounting Research*, *36*(2), 81–104. https://doi.org/10.1080/10291954.2020.1860484
Velte, P., & Stawinoga, M. (2020). Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical-quantitative research findings. In *Journal of Management Control* (Vol. 31, Issue 4). Springer Berlin Heidelberg. https://doi.org/10.1007/s00187-020-00308-x