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A review of integrated reporting practices of JSE-listed companies: evidence of integrated thinking

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Abstract

Purpose – This study reviews the integrated reporting practices of companies listed on the Johannesburg Stock Exchange (JSE) to identify features that point to evidence of an integrated thinking logic taking hold at organisations.

Design/methodology/approach – The study is based on the 60 largest entities listed on the JSE by market capitalisation. Using a content analysis, the integrated reports of the companies were systematically coded according to predefined dimension indicators. Descriptive statistics are used to establish correlations among the disclosure themes, allowing for elements of an integrated thinking logic to be identified.

Findings – Reporting practices of organisations remain varied. Some companies are pioneering new ways to deal with the interconnectivity of information, multi-capital management and sustainable development. Others continue to see integrated reporting as an exercise in aggregating financial statements and environmental and social disclosures. The extent to which organisations have internalised integrated thinking provides a possible explanation for these differences.

Research limitations/implications – The study used only publicly available information to assess integrated thinking indirectly.

Originality/value – A matrix exploring features of integrated thinking can inform management, investors and other stakeholders of areas in the business where an integrated approach is necessary in order to assess the organisation's accounting and governance systems, improving decision-making processes and stakeholder communication.

Keywords Integrated thinking, Integrated reporting, Multi-capital, Value creation, Sustainability

Paper type Research paper

1. Introduction

Integrated thinking has become synonymous with balancing financial and extra-financial matters as part of a comprehensive approach to risk, operational and strategic management (Dimes *et al*., 2023). Organisations are increasingly coming under pressure to illustrate how they are applying integrated thinking in their extra-financial reports (Herath *et al*., 2021). This pressure is a result of increasing social and environmental sustainability challenges (Di Vaio *et al*., 2021), stakeholder and institutional pressures (Farooq and Maroun, 2017) and the impact of external crises (Myeza *et al*., 2023). Added to these are regulatory changes focused on sustainability-related issues such as the European Union's Corporate Sustainability Reporting Directive [1] mandates and the International Sustainability Standards Board's (ISSB) sustainability-related standards [2] (ISSB, 2021; European Commission, 2024).

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The objective of reporting on sustainability-related financial information envisioned by the ISSB is broadly consistent with the position advanced by other frameworks, such as those developed by the International Financial Reporting Standards (IFRS) Foundation [3] (Afolabi *et al*., 2023), the Financial Stability Board (2017) and the Global Reporting Initiative (GRI) (GRI, 2019). The aim is to demonstrate the interconnections among economic imperatives and material social and environmental considerations in the interest of long-term value creation and business continuity (Adams *et al*., 2020). Put simply, extra-financial reporting frameworks promote an interconnected understanding of an organisation, which is largely consistent with the principles of integrated thinking.

Consequently, to better understand the features or characteristics of reporting that may be indicative of evidence of an integrated thinking logic, this study reviews the integrated reporting practices of companies listed on the Johannesburg Stock Exchange (JSE). This is done by developing an "integrated thinking matrix" covering the content, attributes and connectivity of the information found in integrated reports. The three dimensions of the matrix are grounded in academic research, professional publications and codes of best practice to ensure validity and completeness. The instrument provides a more refined approach for evaluating what and how companies report on their financial and extra-financial activities compared to using broad quality indicators relied upon by earlier studies (Malola and Maroun, 2019), doi, doing so allows for elements of integrated thinking to be evidenced and provides a novel approach to linking integrated report disclosures to the underlying integrated thinking logic.

Examining integrated reporting in more detail using the proposed instrument will be useful for practitioners and policymakers interested in identifying best practices and improving the overall quality of integrated reports. The findings will also be relevant for complementing empirical academic research on the development of integrated reporting, something which is timely given the ongoing work of the ISSB to develop a global standard on how to report on sustainability-related information (ISSB, 2021).

The remainder of this paper is organised as follows. Section 2 provides an overview of integrated reporting and thinking, presents the process of preparing an integrated report and defines the relevant dimensions of an integrated report. Section 3 presents the methodology and Section 4 presents results. Section 5 concludes and identifies areas of future research.

2. Literature review – integrated reporting and thinking

The "chicken-and-egg" metaphor has been used to illustrate the circular dependency between integrated thinking and reporting, where it can be difficult to determine which comes first or is the primary driver in the relationship (Malafronte and Pereira, 2025). On the one hand, a prescriptive approach to integrated thinking may result in organisations adopting a compliance-based approach at first and then subsequently realising the inherent benefits and adopting this more broadly into risk assessments, strategies, operations and performance evaluation (Haji and Anifowose, 2016). On the other hand, without appropriate management information systems in place to collect, analyse and report on data, it will be difficult to make integrated decisions (Dimes and De Villiers, 2021). In addition to this, a corporate culture of sustainability and wider resource management is necessary to be a part of the business model before the reporting thereon can take place (Dumay and Dai, 2017).

Nevertheless, the fact that integrated reports do reveal some insights into underlying practices is axiomatic. As a result, using extra-financial reports to develop a matrix of integrated thinking principles can assist in broadening the understanding of an integrated thinking logic and providing a roadmap to organisations on best practice for both the operationalisation of integrated thinking into the business model, operations and evaluations as well as the subsequent reporting thereon (Gutmayer *et al*., 2022).

2.1 Preparing an integrated report

Integrated reporting is an opportunity for organisations to explain how different types of capital are managed to generate value for investors and other stakeholders (IIRC, 2021). There is mounting evidence that this type of reporting yields important benefits. Barth *et al*. (2017, p. 43) find that better-quality integrated reporting is "associated with higher realised future cash flows" and improved investment efficiency, something which the researchers refer to as a "real effects channel". Zhou *et al*. (2017) demonstrate how improved integrated reporting is associated with a reduction in the cost of capital and analyst forecast errors. Churet and Eccles (2014) argue that integrated reporting goes together with integrated thinking and improvements in financial performance and management quality.

To achieve high-quality reporting, integrated reports should be underpinned by a sound materiality analysis (Cerbone and Maroun, 2020), identification of the value creation process (Herath *et al*., 2021; Gray, 2006) and a holistic assessment of the economic, environmental and social impact of an organisation (Busco *et al*., 2020).

Materiality can be gauged by framing social and environmental factors in terms of their financial implications (e.g. ISSB, 2023). A financial materiality logic treats extra-financial matters as an externality that impacts the amount, timing and certainty of cash flows which the entity expects to generate. In other cases, materiality is determined according to the entity's impacts on society and the environment, which aligns with a stakeholder-centric logic to determine the nature and extent of extra-financial disclosures (Elliot *et al*., 2024). A third approach is to use "double materiality" which incorporates both the financial and impact perspectives (Elliot *et al*., 2024), which, although difficult to implement, will yield a complete outlook of issues applicable to a broad group of stakeholders (Mio *et al*., 2020). The materiality determination will often be guided by regulations [4], codes of best practice and stakeholder expectations rather than being solely at the entity's discretion.

Value creation is best understood as a circular process involving a trade-off among the different capitals. It is a function of (1) stakeholders and their claims on the organisation; (2) material risks and opportunities; (3) the organisation's strategic position; (4) the activities undertaken to achieve strategic goals; (5) how performance is understood and measured and (6) the impact of the business model on stakeholders (PwC, 2015; IIRC, 2021).

Without a multi-faceted understanding of how an organisation depends on different resources to create value, high-quality integrated reporting is impossible (King, 2018). This is because integrated thinking is essential for appreciating the interconnections among economic, environmental and social issues and the need for sustainable development (Herath *et al*., 2021). Integrated thinking goes to the heart of an organisation's leadership, ethics and operating ethos and its propensity to transition from short-term profit-taking for shareholders to long-term value generation for the benefit of stakeholders (King and Atkins, 2016).

Management information and accounting systems are required to collect and process the data used for internal decision-making and monitoring performance. The result is an "integrated thinking dashboard" which includes key performance indicators specific to the capitals, stakeholders and risk mitigation. The organisation gauges its creation or protection of value by evaluating performance against targets set for each material key performance indicator to promote continuous improvement and accountability (Oliver *et al*., 2016; Ecim *et al*., 2025; Ferreira *et al*., 2024). Reporting on integrated performance should not be seen as "stand-alone" practice but as part of a consolidated reporting exercise that explains how economic, environmental and social factors are being managed concurrently (see Integrated Reporting Committee of South Africa (IRCSA), 2018).

One perspective is that a high-quality integrated report is only possible if the organisation's managers and governing body have adopted a multi-capital perspective on value creation, which, according to the IIRC (2021), characterises integrated thinking (Herath *et al*., 2021). Consequently, the decision to produce a report may send a genuine signal to the market that the

integrated report is underpinned by proactivity and, by inference, a firm commitment to sustainability and long-term value creation agenda (Alrazi *et al*., 2015). As a result, there is a business case for adopting an integrated thinking logic.

2.2 Gauging integrated thinking

There is no generally accepted position on the components of or prerequisites for implementing, measuring and evaluating integrated thinking (Feng *et al*., 2017). By its very nature, integrated thinking is a subjective and dynamic process which is difficult to observe and measure (Feng *et al*., 2017). Several researchers have, however, explored different "principles" (Maroun *et al*., 2023), "proxies" (Malafronte and Pereira, 2021) or "hallmarks" (Dimes and De Villiers, 2023) of integrated thinking. Integrated thinking is guided by an organisation's integrated understanding, structures, performance management and communication (Maroun *et al*., 2023). This is supported by the policy, monitoring activities, sustainability plans and the codes of best practice implemented by those charged with governance and supported by the different cross-functional units within an organisation (Malafronte and Pereira, 2021; Rinaldi *et al*., 2020). How the board is structured and sets the "tone at the top" are important for establishing a culture of integrated thinking (Vitolla *et al*., 2020).

Extra-financial reporting is built on the broader idea of sustainability and integration to create value. Sustainability reporting standards such as the GRI and EU European Sustainability Reporting Standards emphasise the importance of evaluating environmental and social issues in addition to financial considerations (De Villiers and van Staden, 2011). These standards promote transparency and the interconnectedness between financial and environmental capitals, which enhances stakeholders' ability to make informed decisions based on the organisation's sustainability and biodiversity footprint (Maroun and Ecim, 2024). Despite the concept of integrated thinking proliferating sustainability-related frameworks and guidance, there is limited guidance in the evaluation and measurement of integrated thinking in an entity.

The key elements of integrated thinking, as developed by prior literature, are summarised in Figure 1.

Maroun *et al*. (2023) propose a schematic for refining integrated thinking based on five indicators: (1) A focus on strategic and holistic decision-making with an emphasis on the interconnectedness of financial and extra-financial factors, (2) Governance and accountability that ensures appropriate oversight and post-implementation review mechanisms, (3) Management control and information systems which enable organisations to collect, analyse and respond to relevant integrated information, (4) Performance evaluation systems that incorporate extra-financial metrics to actively enable and incentivise an integrated corporate culture and (5) Communication and transparency that promotes meaningful stakeholder engagement and the genuine application of integrated strategies, risk management and operations. This schematic refines integrated thinking by embedding it into governance, decision-making and reporting processes. The tool offers a practical means for stakeholders to evaluate integrated thinking and is flexible enough to be used with data collected during private engagements with companies or only publicly available information.

Malafronte and Pereira (2021) develop proxies for measuring the unobservable elements of integrated thinking. The focus is on internal policies, mission statements and the organisation's culture being imbued with the principle of sustainable development. This is supported by holistic key performance indicators, multidisciplinary and more multi-functional management teams and codes of best practice informed by corporate governance and sustainability reporting standards. Stakeholders can assess an organisation's integrated thinking by examining, for example, board diversity, cross-committee memberships, report connectivity and explicit references to integrated strategies, risk assessments and performance structures. These proxies reveal the extent of collaboration, holistic decision-making and commitment to balancing financial and sustainability objectives.

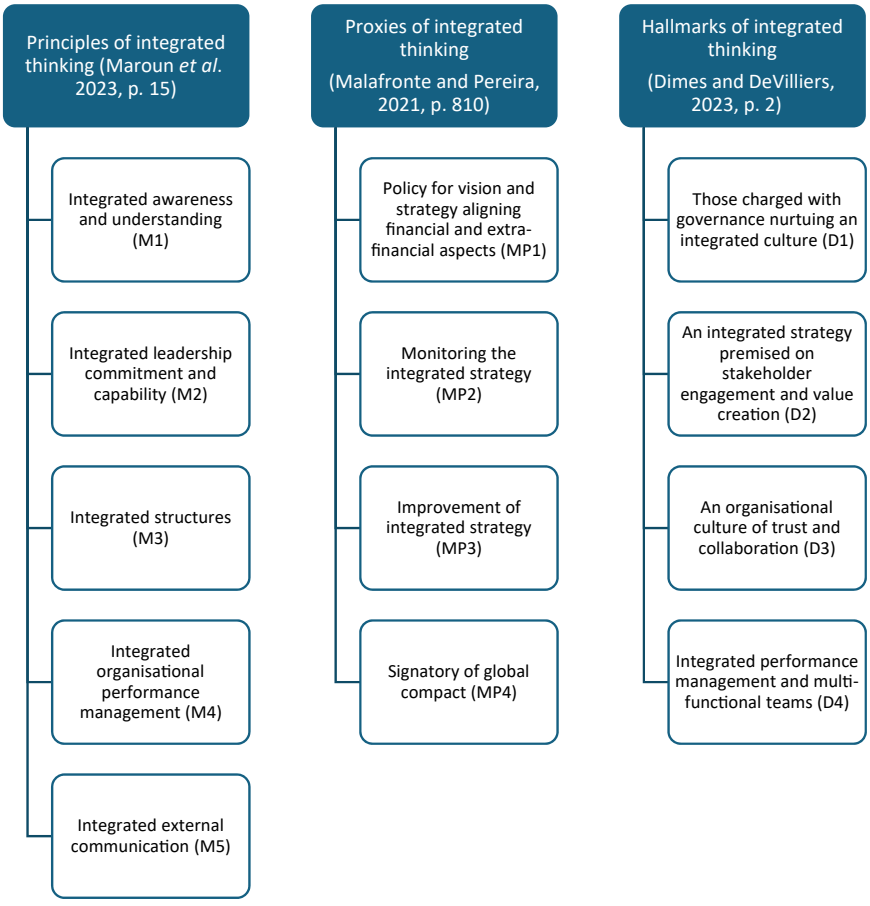

Figure 1. Elements of integrated thinking as defined by prior literature. Source: Figure developed by authors based on prior literature (Dimes and De Villiers, 2023; Malafronte and Pereira, 2021; Maroun *et al*., 2023)

Similar principles are iterated by Dimes and De Villiers (2023). The four hallmarks of integrated thinking focus on connectivity by linking financial and non-financial information for holistic decision-making, which is actioned by those charged with governance. The focus is on future orientation and ensuring that strategic planning considers long-term value creation; stakeholder responsiveness, which reflects the organisation's ability to engage with and address stakeholder needs; and multi-capital trade-offs, which emphasise balancing different capitals to achieve sustainable outcomes. Management may need to balance conflicting priorities and there may be tensions between financial and extra-financial objectives. Nevertheless, a "healthy" tension is essential to transition from a shareholder-centric view to a shared systems logic as organisations use the hallmarks to better understand areas of interconnectivity.

2.3 Developing the research instrument

The elements of integrated thinking discussed above are concerned with an organisation's practical application of the risk assessment, strategies, operations and performance evaluation in an integrated manner. They are combined with content elements and guiding principles of

integrated reporting (IIRC, 2021) to develop a matrix, which includes the key dimensions of an integrated report, which may be indicative of an integrated thinking logic taking hold at organisations. Disclosures, particularly those found in corporate reports, are essential for capturing data on integrated thinking. Strategy and business model disclosures in extra-financial reports help reduce information asymmetry and enhance the overall usefulness of annual reports (Dimes *et al*., 2023). These disclosures also support the view that stakeholders can distinguish between authentic integrated thinking and superficial reporting by evaluating the depth and coherence of disclosures in corporate reports (Dimes *et al*., 2023).

The matrix includes a content, attribute and connectivity dimension, bridging academic literature and practical guidance. Each dimension has associated indicators. The 20 *primary* indicators are listed below and contextualised with additional reporting details. The current matrix builds on and synthesises prior literature by translating the principles of integrated thinking, such as, long-term orientation and accountability, into observable reporting practices. Similarly, it operationalises aspects of previous models of integrated thinking (such as Dimes and De Villiers, 2023; Malafronte and Pereira, 2021) by focussing on disclosures that reflect integrated decision-making, multi-capital performance measurement and governance alignment. Put simply, the matrix signals practical evidence of integrated thinking characteristics while providing empirical insights from a developing economy perspective. In doing so, this matrix provides a more granular and application-focused framework for evaluating whether integrated reporting reflects genuine integrated thinking.

The matrix also builds on traditional models focused only on report quality (for example, EY, 2022). These models primarily focus on surface-level attributes such as clarity, structure and basic compliance with reporting frameworks such as the IIRC Framework. Although these aspects are also incorporated into the current matrix, further substantive evidence of integrated thinking is incorporated to assess whether disclosures reflect meaningful internal processes, multi-capital decision-making, stakeholder engagement, strategic alignment and governance integration. Rather than a rewarding format, presentation and accessibility, this matrix offers a diagnostic lens and interrogates content, connectivity and underlying accountability mechanisms. Consequently, the matrix provides a theoretically informed and operational approach for assessing whether integrated reports serve as proxies for integrated thinking, rather than simply a compliance exercise or well-set-out report format. Refer to Table 1.

Table 1 integrates and operationalises the conceptual elements of integrated thinking as per the prior academic literature. Each reference corresponds to the principles, hallmarks or proxies of integrated thinking outlined in Figure 1, respectively. For example, Indicator 1.1 (organisational overview and external environment) links to M1 (integrated awareness and understanding) and D3 (an organisational culture of trust and collaboration), reflecting how contextual awareness and internal values are foundational to integrated. These references signal how each reporting disclosure area reflects specific facets of integrated thinking, reinforcing the theoretical foundation of the matrix and demonstrating its capacity to capture both reporting content and the deeper organisational processes that underpin an integrated thinking logic.

To test the functionality of the matrix and to obtain empirical insights into the integrated thinking application and subsequent disclosures, the matrix will be applied to a sample of organisations' extra-financial reports. The methodology used will be discussed in the next section.

3. Methodology

3.1 Sample

South Africa has a well-developed reporting environment supported by codes on corporate governance, which call on organisations to prepare integrated reports (IoDSA, 2016). An additional advantage is that integrated reporting by South African listed companies is *de facto* mandatory (IoDSA, 2016), so self-selection bias associated with voluntary reporting is

Table 1. Reporting matrix

Dimension	Indicator	Details	Link to elements of integrated thinking per prior academic literature (Figure 1)
Content [C]	1.1: Organisational overview and the external environment	• A clear mission and vision statement • A review of the business purpose, ethos and ethics • Explanation of the external environment and operating context	M1 D3
	1.2: Governance	• Structure and functions of the governing body • Key responsibilities • Processes followed to provide strategic direction and guide the governance of risks • Specific actions taken to promote value creation • Performance evaluation of the governing body	M2 MP1 D1 D3
	1.3: Business model, outputs and outcomes	• Explanation of the business model • Distinction between outputs and outcomes • Interconnection between business model, stakeholders, risk, KPIs and the capitals	M3 MP2 D2
	1.4: Risks and opportunities	• Explanation of risks and opportunities affecting strategy and business model • Risk analysis deals with impact, likelihood and time-frame of material risks • Multi-capital risk analysis linked with other relevant sections/report content	M1 M3 MP2
	1.5: Strategy, resource allocation and performance	• Explanation of the value creation process and associated impacts • KPIs defined and evaluated for the relevant capitals • Performance reviews • Corrective actions being taken • Balance between positive and negative accounts of performance	M3 MP1 MP2 MP3 D2
	1.6: Outlook and outcomes	• The organisation's prospects • Explanation of how the business model affects stakeholders and capitals • Sensitivity analyses	M4 MP3 D4
	2: Stakeholder determination	• Methods, systems and processes used to identify and engage with stakeholders • Results of stakeholder engagement • Quality of relationship with stakeholders and associated implications	M3 D2
	3: Materiality determination	• How materiality is defined and measured • Link between materiality, strategy, risks, operations and stakeholders • Multi-capital perspective on materiality (including qualitative and quantitative factors)	M3

(*continued*)

Table 1. Continued

Dimension	Indicator	Details	Link to elements of integrated thinking per prior academic literature (Figure 1)
	4: Reliability and completeness	• Mechanisms, systems and processes used to ensure that the reports are reliable and complete	M3 M5
	5: Consistency and comparability	• Changes in layout, format and structure • Variations in content • Availability of comparative information	M5
	6: Responsibility for preparation of the report	• The responsibilities of those charged with the organisation's governance in connection with the integrated reports	M5
	7: Boundary of reporting	• Reporting entities and periods covered • Risks, opportunities and outcomes covered the report • Interested stakeholders • Practical limitations on the scope of reporting	M1 D2
	8: Accounting infrastructure	• Use of reporting frameworks • Reporting policies and internal controls • Accounting systems (including the scope of data collected and processed) • Operation of combined assurance	M5 MP4 D4
	9: Conciseness	• Tables of content • Clear headings and sub-headings • Extent of repetition	M5
	10: Omissions	• Material omissions and misstatements identified • Correction of errors	M5
Attributes [A]	1: Period covered	• Focus on historical or prospective information	M5
	2: Presentation and measurement	• Quantification of performance measures (monetary and non-monetary) • Use of infographics • Reporting on positive and negative trends • Mix between qualitative and quantification information	M5 MP4
	3: Level of detail	• Reporting at the policy-level and on specific actions, interventions and initiatives • Results/evaluations of performance • Disclosures are generic or context-specific	M4 MP3 D4
Connectivity [N]	1: Complementary reports	• Number of complementary reports • Cross-referencing and hyperlinks to reports • Nature of the information being cross-referenced (as per the content indicators above)	M5
	2: Cross-referencing and links	• Cross-referencing within the integrated report after controlling for repetition	M5

Source(s): Authors' own creation

reduced (Barth *et al*., 2017; Zhou *et al*., 2017). The King IV Code on Corporate Governance (IoDSA, 2016) recommends integrated reporting as part of good governance. Since the JSE incorporates King IV as part of listing requirements, compliance with King IV follows an "apply and explain" approach and is expected by investors and regulators (IoDSA, 2016). As a result, listed companies must produce integrated reports to meet governance and market expectations. As a result, even though it is not strictly enforced by law, integrated reporting is, in practice, mandatory and listed entities would face both stakeholder and institutional pressures to comply with best practice reporting disclosures.

The study examines the integrated reports of the largest 60 South African companies by market capitalisation listed on the JSE at the time of writing. The largest 60 companies represent approximately 96% [5] of the market capitalisation of all listed entities on the JSE and therefore represent the majority of the analyst coverage. Basing the results on the largest listed companies controls for the possibility that a lack of resources or technical expertise, a lack of financial analyst following or a lack of experience in applying the integrated reporting practices will impact the report quality (Malola and Maroun, 2019).

There are also increased institutional and stakeholder pressures to adopt an integrated thinking logic. The largest listed companies are more likely to have the resources and controls to obtain the data necessary to produce high-quality integrated reports and to apply integrated thinking (Stubbs and Higgins, 2014). This allows for enhanced comparability when comparing results among organisations and sectors. These organisations represent the most economically significant portion of the exchange, are key drivers of corporate governance, sustainability practices and capital allocation trends in South Africa, and tend to be influential in setting practices and reporting norms that smaller entities can replicate.

The relatively small sample is consistent with the fact that the objective of this exploratory study is not to extrapolate findings but to review integrated reporting practices to identify features or characteristics that point to evidence of integrated thinking. The sample size is also comparable to similar studies that are exploratory in nature (for example, Ferreira *et al*., 2024; Da Mata *et al*., 2025). The researchers coded reports for the 2019 and 2020 year-ends.

Table 2 summarises the sample companies by industry classifications.

Table 2. Summary of companies

Industry	Number of companies
Banks	5
Insurance	3
Diversified Financials	5
Retail (General and Pharmaceuticals)	8
Real Estate (Real Estate Investment Trusts - REITs)	12
Telecommunications and Media	5
Mining and Resources	9
Industrials and Logistics	3
Pharmaceuticals	1
Healthcare Providers	2
Investment Holdings	4
Renewable Energy	1
Beverages	1
Forestry/Paper	1
Total	*60*

Source(s): Authors' own creation

3.2 Data collection and analysis

The research examines only the designated integrated reports issued to stakeholders. Separate sustainability reports, environmental, social and governance (ESG) checklists, interim results, investor presentations and companies' webpages are not included in the analysis. This is because an integrated report should encapsulate underlying ESG, financial and other metrics (Zhou *et al*., 2017). A common analogy used is that the integrated report is the head of the octopus and tells the value creation story of the organisation holistically. As a result, the integrated report should include an interconnected account of material matters from the sustainability, governance, risk, remuneration and other relevant reports (IRCSA, 2018). In other words, using the integrated report provides a comparable benchmark to compare an organisation's reporting practices.

Following a similar approach to that used by the environmental (Gray, 2006), sustainability (Cho *et al*., 2015) and integrated reporting (Maroun, 2018) literature, content analysis is used to collect data to obtain an understanding of the current state of integrated reporting. Content analysis is used because of its suitability for dealing with material that is not consistently formatted, while highlighting trends and investigating both text and graphic disclosures (Krippendorff, 2013). Content analysis is a popular means for coding and scoring different types of disclosures in accordance with a normative framework (Guthrie *et al*., 2004).

Firstly, each report was read several times to gain a sense of its content and structure (Solomon and Maroun, 2012). The reports were re-examined to identify the disclosures dealing with the indicators identified in Table 1. Both qualitative and quantitative disclosures were evaluated with paragraphs serving as the unit of analysis. Paragraphs, rather than sentences, were selected as integrated reports often convey meaning across multiple sentences, particularly when describing strategic intent, business models, risks or value creation over time. More specifically, dealing with complex themes such as integrated thinking, materiality and connectivity of information requires a more contextualised coding process that considers information more holistically (Malola and Maroun, 2019). A single sentence may not provide sufficient context or capture the full nuance of disclosure intended by the report preparers. Paragraph-level analysis is also commonly used in integrated and sustainability reporting research as it enables researchers to maintain the integrity of meaning and allows for more robust thematic classification (for example, Beck *et al*., 2015; Haji and Anifowose, 2016). Nevertheless, as items were coded, previous disclosures were reassessed to ensure that the paragraphs did not have to be broken down further as part of an iterative process. Pictures, graphs and tables were also examined.

The analysis involved coding each unit to the relevant dimension and indicators. Each dimension in Table 1 includes sub-indicators that explicitly exhibit an element of an integrated report. In total, there are 235 sub-indicators (un-tabulated) that are assigned to the indicators in Table 1. The indicators are included on a thematic table and then aggregated to arrive at a total score per dimension. To reduce bias, the researchers only recorded the presence or absence of each of the 235 sub-indicators (dichotomous scoring system).

Each paragraph in the integrated report was reviewed to determine whether it provided evidence of a specific disclosure item aligned with the sub-indicator. If a paragraph contained information that met the criteria for a particular disclosure indicator, a score of 1 (present) was assigned; otherwise, a 0 (absent) was recorded. This enabled an objective and consistent assessment of the disclosures and facilitated comparability across organisations (see Dumay and Dai, 2017) [6]. While paragraphs served as the unit of analysis, the entity-level score for each disclosure item was not based on the number of times an item appeared, but rather whether it appeared at least once in the report. Put differently, if one or more paragraphs provided valid evidence for a disclosure indicator, it received a score of 1. This prevented entities from scoring higher when similar information was repeated multiple times. Frequency scores were aggregated per indicator and content element and were treated as at least ordinal. The total content, attribute and connectivity (see Table 1) score per company was calculated by

adding the sub-indicator scores and dividing this by the total possible score for each dimension.

Each report was independently coded three times with controls for inter-coder reliability. The two lead authors coded the reports independently by recording each disclosure on a thematic table and then providing the relevant scoring for each underlying indicator of the respective dimensions. Once the recording units had been categorised, each company's report was re-examined by a research assistant (third coding) to ensure that all disclosures had been considered and that the classification of recording units according to the dimension indicators was accurate and consistent. Any differences were raised with the lead researcher and resolved [7]. Data on the content, attributes and connectivity of the integrated reports were aggregated and then analysed.

Descriptive statistics are used to establish correlations among the disclosure themes. Correlations among content elements [8] are presented using Spearman's rho (and supported by Kendall's tau-b). The correlations are not used to infer causation but to explore the internal consistency and thematic coherence. This approach aligns with the use of exploratory quantitative techniques in qualitative framework development and conceptual evaluation (Dumay and Dai, 2017). Results are presented in Table 4. The connectivity (*x*-axis) and attribute (*y*-axis) scores of each company are plotted on a graph, with the report content representing the size of the plot. This is illustrated in Figure 1 to identify different reporting practices. This is complemented with a discriminant analysis to classify the integrated reporting matrix observations into non-overlapping groups and indirectly assess whether integrated thinking may be taking hold within the organisation.

The validity and reliability of the data collection and analysis is maintained as the dimensions have been developed from sustainability-related frameworks (such as the IIRC Framework) and have been supported by the prior academic literature. There were specific criteria to limit judgement. The criterion-related validity was also supported by comparing results to proxies of integrated report quality. The coded results were tabulated at workshops hosted by the researchers' research group. The workshops included seasoned academics and postgraduate students and were useful for confirming the accuracy and completeness of Table 1 and the appropriateness of the approach followed when applying the dimensions to the sampled companies' integrated reports. A practitioner report was also presented to a professional accountancy body based on a pilot study sample before the entire sample was analysed.

4. Results

Descriptive statistics are reported in Table 3.

The results suggest that there are generally weak levels of disclosure related to content, attributes and connectivity across the sample. The average connectivity score was notably low, indicating that although most organisations provide some information relating to content and attribute dimensions, this often lacks the connectivity that is a feature of an integrated thinking logic. Organisations in the top 60 are also at opposite ends of the spectrum regarding integrated

Table 3. Descriptive statistics

	Content	Attributes	Connectivity
Minimum	9	0	0
Maximum	162	235	62
Average	58.49	84.26	15.13
Kurtosis	2.69	−0.53	1.42

Source(s): Authors' own creation

thinking application, with some displaying no or limited levels of content, attribute and connectivity dimensions, while others are able to exhibit more features of an integrated thinking logic.

The kurtosis values support this assertion, with the content (2.69) and connectivity (1.42) dimensions being leptokurtic, indicating a peaked distribution with a few reports performing significantly better or worse than the norm. This is likely due to the structured guidance provided by integrated reporting frameworks by the IIRC. Put differently, a level of mimetic isomorphism would take place where the largest companies would essentially be consistent in reporting practices. However, the attributes' score distribution is flatter and platykurtic (−0.53), suggesting a more uniform, albeit generally low, performance. There were some outliers across all dimensions that exhibited evidence of an integrated thinking logic. Nevertheless, these results point to an overall lack of maturity in integrated thinking practices, with few organisations exhibiting strong, well-rounded reporting across all three dimensions.

The links between the underlying reports and accountability mechanisms inherent in integrated thinking is explored next.

4.1 The link between integrated reporting and thinking

Most disclosures provide an overview of the organisations and discuss the external environment (C1.1; 20%), strategy and resource allocation (C1.5; 19%) and governance mechanisms (C1.2; 13%). Organisations are therefore indicating an increasing trend to obtaining an integrated awareness and understanding of risk assessments, strategy, operations and performance evaluation. This is primarily driven using corporate governance tools such as designated social and environmental committees, promoting an integrated corporate culture and establishing cross-functional teams.

Table 4 presents the correlations among disclosures using the results of Spearman's rho and is supported by Kendall's tau-b results. Given the skewed and non-normally distributed nature of the data, particularly evident in the leptokurtic distribution of the content dimension and the variability in attributes and connectivity, non-parametric correlation techniques were deemed appropriate to explore the associations between dimensions of integrated thinking. The use of these two complementary measures ensures that the correlation analysis provides a more reliable and nuanced understanding of the coherence between content, attributes and connectivity in the integrated reports reviewed. This highlights how the integrated use of different aspects of the organisation establishes an integrated logic. For ease of reference, only the results above the diagonal are reported.

Reporting on business models, outputs and outcomes (C1.3) are associated with reporting on risks and opportunities (C1.4) ($r_s = 0.264$, $p < 0.01$), strategy, resource allocations and multi-capital assessments of performance (C1.5) ($r_s = 0.355$, $p < 0.01$) and a concerted effort to explain the business outlook (C1.6) ($r_s = 0.270$, $p < 0.01$). This type of reporting goes hand-in-hand with formal stakeholder engagement (C2) ($r_s = 0.281$, $p < 0.01$). This provides evidence of integrated thinking. Organisations that understand their stakeholders are well placed to identify the material components of their value creation process (Herath *et al*., 2021, Rinaldi *et al*., 2020). In turn, they can understand and report on the interconnections between economic, environmental and social issues and their relevance for strategy, risk management and business operations. Financial considerations are not being marginalised, but the integrated reports provide a more rounded account of performance and the factors that drive the returns for investors and non-investor stakeholders. This includes an explanation of how the business models depend on and impact different capitals, the organisation's primary outputs and the implications of these outputs for stakeholders.

Put simply, organisations need to address how the business model generates returns for investors and creditors (financial capital), including the tangible (manufactured capital) and incorporeal (intellectual capital) resources deployed in order to do so. However, value cannot be framed in only financial terms. The impact on the organisation's staff and management

Table 4. Correlations among disclosure themes

	C-1.1	C-1.2	C-1.3	C-1.4	C-1.5	C-1.6	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10
C-1.1	1.000	−0.029	0.057	0.094	0.045	0.302[a]	0.210[b]	0.184[b]	−0.128	−0.299[a]	−0.136	0.095	0.085	0.016	−0.005
C-1.2		1.000	0.008	0.066	0.167	0.150	0.130	0.075	0.241[a]	0.276[a]	0.298[a]	0.111	0.152	0.035	0.107
C-1.3			1.000	0.264[a]	0.355[a]	0.270[a]	0.281[a]	0.161	0.068	0.156	0.004	0.141	0.222[b]	−0.036	0.029
C-1.4				1.000	0.438[a]	0.437[a]	0.413[a]	0.319[a]	−0.153	0.021	0.094	0.368[a]	0.470[a]	0.051	0.345[a]
C-1.5					1.000	0.398[a]	0.446[a]	0.323[a]	−0.034	0.085	0.197[b]	0.334[a]	0.469[a]	0.127	0.368[a]
C-1.6						1.000	0.315[a]	0.387[a]	0.033	0.068	0.255[b]	0.341[a]	0.516[a]	0.238[b]	0.245[b]
C-2							1.000	0.289[a]	−0.065	0.033	0.217[b]	0.464[a]	0.285[a]	0.037	0.120
C-3								1.000	−0.073	0.057	0.205[b]	0.399[a]	0.346[a]	−0.008	0.158
C-4									1.000	0.354[a]	0.177	−0.117	0.019	0.140	−0.165
C-5										1.000	0.327[a]	0.074	0.197[b]	0.238[b]	−0.113
C-6											1.000	0.406[a]	0.322[a]	0.290[a]	0.031
C-7												1.000	0.384[a]	0.110	0.271[b]
C-8													1.000	0.199[b]	0.440[a]
C-9														1.000	−0.094
C-10															1.000

Note(s): Spearman's rho above the diagonal; Kendall's tau-b below the diagonal (un-tabulated), [a]Significant at 1% level., [b]Significant at 5% level (2-tailed test)., Results hold for the un-tabulated Kendall's tau-b

Source(s): Author's own creation

(human capital), broader stakeholders (social and relationship capital) and the environment and biodiversity (natural capital) must be considered. At the same time, the entity must be mindful of the relevance of the range of social and environmental resources for its ability to generate reliable economic returns (Ferreira *et al*., 2024). This is commonly referred to as a double-materiality logic in terms of which the entity has an impact on society and the environment but is also dependent on society and the environment for essential inputs into the business model (Herath *et al*., 2021). This forms the initial step in establishing an integrated thinking logic as organisations must first understand how they impact, and are impacted by, different capitals (Ecim, 2024).

Once, an organisation acknowledges the need and ability to assess different capital impacts, a management control system must be developed to collect, analyse and report on extra-financial data (Bui and De Villiers, 2018). What is referred to collectively as the "accounting and governance infrastructure" (C8) promotes more detailed reporting on risks and opportunities (C1.4) ($r_s = 0.470$, $p < 0.01$), multi-capital strategic and performance evaluation (C1.5) ($r_s = 0.469$, $p < 0.01$) and extended analyses of anticipated changes to business models and contexts (C1.6) ($r_s = 0.516$, $p < 0.01$). A strong accounting and governance infrastructure is associated with better materiality determination (C3) ($r_s = 0.346$, $p < 0.01$) and a more sophisticated approach to stakeholder identification and engagement (C2) ($r_s = 0.285$, $p < 0.01$). This suggests that companies that invest in reporting systems and internal controls are in a better position than are other entities to collect and analyse data on different parts of their businesses. This allows them to manage and report on the capitals and the implications of their business models for stakeholders and affirms the view that integrated thinking is taking hold.

Regulatory requirements that address a multi-capital approach often assist organisations in understanding the relevance of an integrated thinking logic. For example, corporate governance frameworks play an important role in establishing relevant committees and structures in the organisation to manage financial and extra-financial matters concurrently (Myeza *et al*., 2023). Similarly, the United Nations Sustainable Development Goals form a good starting point to align the goals of the organisation with supranational objectives (Adams *et al*., 2020). Other, more detailed sustainability-related frameworks [9] assist in highlighting areas that the organisation needs to address either voluntarily or due to regulation. Eventually, these practices become habits and integration becomes part of the corporate culture (Dumay and Dai, 2017) and the positive aspects begin to proliferate in everyday actions. All the companies under review rely on different guidelines, frameworks and codes of best practice to prepare their integrated reports. The most common are the GRI, IIRC and King-IV. Some organisations are complementing these with specific reporting policies to inform the content and structure of their integrated reports. They are designing internal controls to ensure valid, accurate and complete reporting complemented by monitoring by internal auditors, external experts and governing bodies.

An integrated thinking logic enhances accountability. The accounting and governance infrastructure (C8) allows governing bodies to accept responsibility for their organisations' integrated reports (C6) ($r_s = 0.322$, $p < 0.01$) and is associated with more clearly defined report boundaries (C7) ($r_s = 0.384$, $p < 0.01$). As the accounting infrastructure develops, reports become more concise (C9) ($r_s = 0.199$, $p < 0.05$) as materiality determination processes become more sophisticated as the integrated awareness and understanding is enhanced. Organisations are also more likely to deal with misstatements or omissions and the steps taken to ensure the accuracy and completeness of disclosures (C10) ($r_s = 0.440$, $p < 0.01$).

The associations in Table 4 iterate that reporting cannot be an isolated exercise. Organisations need to understand the content from an integrated perspective and report on both historic and prospective information that is balanced and appropriately detailed. Information also needs to be connected which can only be done by breaking down organisational silos and creating cross-functional working groups (Rinaldi *et al*., 2020). The extent and quality of integrated and sustainability-related reporting can provide novel insights into the integrated

logic that supported the reporting process (Ecim and Maroun, 2024). By ensuring that the content, attribute and connectivity elements of reporting (Table 1) are considered, organisations can develop a type of "roadmap" to establish an integrated logic and then illustrate this to stakeholders as part of report disclosures.

However, the results should not be misunderstood as suggesting that South African listed companies have overcome the challenges of preparing an integrated report (see McNally *et al.*, 2017). There are weaknesses in reporting practices evidenced by the results. Many organisations have not integrated their content, attribute and connectivity indicators. The content analysis reveals that disclosures seldom include quantified measures of performance or information on specific policies, plans and initiatives being implemented to ensure long-term sustainability (un-tabulated $r_s = -0.125$, $p > 0.1$). Despite King-IV's effort to drive a principles-based approach to corporate governance, the results suggest that governance-related disclosures are generic and do not enhance stakeholders' understanding of the value creation process (un-tabulated $r_s = -0.070$, $p > 0.1$).

Un-tabulated results assessing the content, attributed and connectivity show that a stronger accounting infrastructure (C8), better materiality determination (C3) and more extensive stakeholder engagement (C2) are associated with reporting on historic and prospective information (A1), which is also more detailed (A3). This is evidenced by the use of quantified performance measures (monetary and non-monetary), the inclusion of policies and objectives in the integrated reports and disclosures on specific activities and their results. Infographics support narrative disclosures and are balanced in the sense that positive and negative information is being included (A2).

Reports that are consistent and include comparative information (C5) tend to include positive and negative trends (A2) and quantified measures of performance for the different capitals (A3). Details are complemented by hyperlinked information found in separate sustainability, governance and environmental reports or on the respective companies' webpages (N). Governing bodies acknowledge their responsibilities for the reports (C6).

Similar results are found when evaluating disclosures on strategy, resource allocation and performance (C1.5) and outlook (C1.6). An increase in these content indicators is associated with more result-oriented reporting, quantified performance assessments and the use of infographics. Disclosures dealing with C1.5 and C1.6 are also more likely to include a mix of historic and prospective information (A1).

4.2 Developing an integrated thinking logic

Figure 2 is used to highlight the interconnections among the content elements, attributes and connectivity measures in more detail.

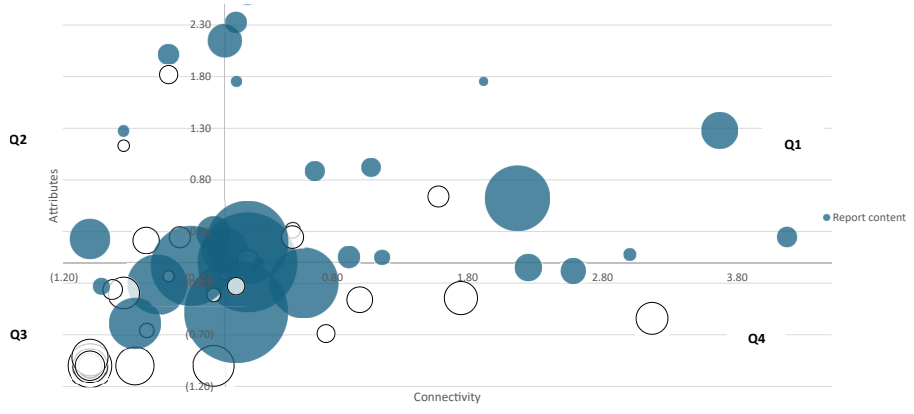

Figure 2. Interconnections between reporting dimensions. Source: Authors' own creation

Each plot represents an integrated report. The size of the plot is an indication of the content relative to the median (mid-point) content score. Attributes and connectivity for each report are also presented relative to the respective median scores.

Reporting practices vary considerably because companies place a different emphasis on content, attributes and connectivity. Despite the release of King-IV and additional guidance provided by the IRCSA's technical papers, a standardised approach to integrated reporting has not emerged. There are, however, some important trends.

Companies with the greatest content do not automatically report the highest connectivity and attribute scores. These organisations are mostly concentrated at Figure 2's centroid. They have longer than average reports characterised by a mix of generic disclosures and quantified measures of performance across the capitals.

Quadrant 1 includes the companies that have best understood and applied the principles of integrated thinking. Their reports are concise as a result of well-developed materiality determination processes, which allow the organisation to focus on matters most relevant to stakeholders. The emphasis is not on the volume of disclosure but (1) prospective reporting, (2) quantification of performance measures, (3) providing details on the results of their policies and (4) the interconnection among the content indicators. These companies deal with multiple capitals as part of their risk assessment, strategy, business models, operations and performance evaluation. The accounting and governance structures are sophisticated and used to inform the information that is included in extra-financial reports. An integrated logic is established as part of the organisational culture.

Companies in Quadrant 2 have above-average attribute scores. Their reports have become more concise, but they are less integrated. The report content lacks the disclosures to illustrate how the organisation deals with different economic, environmental and social issues in their integrated reports as part of a multi-capital strategy. This may manifest itself in disclosures that are generic or boilerplate. Performance is gauged mainly in financial terms as integrated key performance indicators are not used to encourage broader adoption of social and environmental considerations. Governance systems are primarily focused on economic dimensions while extra-financial concerns, particularly environmental disclosures, are lacking.

Those organisations in Quadrant 4 contrast with Quadrant 2, which, because of their emphasis on historical information, generic presentation and limited information on actual performance, result in negative attribute scores. There is some attempt to enhance the connectivity of information and to disclose elements of integrated content, however, relevant management information systems and stakeholder engagement processes are still being developed.

Finally, some companies have scored poorly across all three dimensions. These companies are positioned in Quadrant 3. They omit important content from the integrated reports with little detail on their performance and how this has been measured. Their integrated reports are, in substance, annual financial statements complemented by separate sustainability, environment and governance sub-sections. These sections, however, include boilerplate information that is predominantly qualitative in nature. Disclosures lack the necessary quantification to add substance to the environmental, social and governance issues. Organisations may only be adopting superficial elements of an integrated thinking logic [10].

Discriminant analysis is used to further evaluate the differences in the four reporting practices outlined in Figure 2. Instead of plotting a single attribute and connectivity score on the x- and *y*-axis, respectively, the correlations among the content categories and each of the attribute and connectivity indicators are examined. This process revealed two factors which account for 90% of the differences in the content of the sampled companies' integrated reports. Refer to Table 5.

Table 5. Discriminant analysis eigenvalues

Function	Eigenvalue	% Of variance	Cumulative %	Canonical correlation
1	0.996[a]	66.9	66.9	0.706
2	0.348[a]	23.4	90.3	0.508
3	0.144[a]	9.7	100.0	0.355

Note(s): [a]First 3 canonical discriminant functions were used in the analysis
Source(s): Author's own creation

Most of the variance is explained by the first factor (67%), which is comprised of the period covered by disclosures (A1), how information is being presented and measured (A2) and interconnections among disclosures (N). Because these indicators were associated with the use of formal reporting policies, internal controls and combined assurance (see Table 4), they capture the organisation's investment in the accounting and governance infrastructure, which supports more accurate and detailed measures of current performance and related forecasts.

In conjunction with Figure 2, the discriminant analysis confirms that the accounting and governance infrastructure is contributing to more detailed, accurate and reliable integrated reports that are characterised by more extensive materiality determination processes, rigorous stakeholder engagement and comprehensive reporting on how the capitals are being used to generate value.

While the investment in the accounting and governance infrastructure explains most of the difference in the content of the reports, it is being tempered by a legalistic approach to reporting. This is evidenced by the second factor in the discriminant analysis, which accounts for 23% of the variance in integrated report content. The factor is characterised by reporting on historical information, restricting interconnections among disclosures and emphasising policy statements and broad objectives instead of specific actions and quantified performance measures. The factor captures underlying pressures that drive superficial reporting. Examples include a compliance mentality which leads to a tick-box approach when using the GRI, IIRC and King-IV to inform report content (Atkins and Maroun, 2015); replicating competitors' disclosures under the assumption that this is what stakeholders expect (Atkins *et al*., 2020) and avoiding detailed reporting because of the concern that this will result in unwanted scrutiny from investors, regulators or other stakeholders (De Villiers and van Staden, 2011).

Where a legalistic approach to reporting holds sway, entities omit important content from their reports. The documents are not supported by a robust materiality determination process and extensive engagement with stakeholders. Multi-capital reporting is curtailed and exactly how the business model is designed to generate value for investors and non-investor stakeholders is difficult to discern. Nevertheless, a legalistic approach may be the first step in establishing policies and procedures that can support an integrated thinking logic in the future.

Figure 3 illustrates the separation of observations between discriminating variables and standardised canonical discriminant functions.

The axes (Function 1 and Function 2) represent the canonical discriminant functions that maximise the separation between the quartiles. These functions are linear combinations of the accounting and governance infrastructure (Function 1) and the legalistic approach (Function 2).

The accounting and governance infrastructure contributes more to the distinction of the groups as a result of the greater variance in the distribution. There is noticeable clustering around the group centroids (blue squares). Quartiles 1 and 2 overlap slightly, while Quartiles 3 and 4 are more distinct, particularly along Function 1. Companies at Quartile 4 have a more robust infrastructure and a defined legalistic approach, while companies at Quartile 1 have a

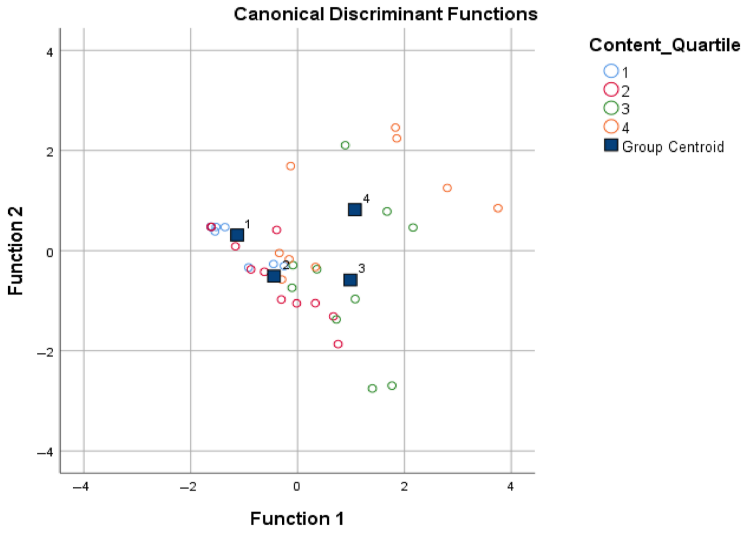

Figure 3. Comparisons between reports. Note(s): Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions Variables ordered by absolute size of correlation within function. *. Largest absolute correlation between each variable and any discriminant function. Source: Authors' own creation

weaker development in these areas. Function 2 has a more subtle separation between reports, particularly for companies between Quartile 2 and 3.

As a result, it is clear that organisations aiming to improve their integrated thinking application need to invest in more sophisticated management information systems and accounting and governance infrastructure. This will enable the collection of more detailed extra-financial information related to, for example, natural, social and relationship and human capital, doi, doing so will allow the organisation to make informed decisions on resource allocation, adapting business models and incorporating holistic metrics into performance evaluation structures. Ultimately, this will also improve the ability of the organisation to cover broader integrated content considerations, provide quantified insights on capital outputs and outcomes, analyse forward-looking information and enhance connectivity of information. As a result, reporting disclosures will be enhanced and of a higher quality. In addition, improved infrastructure will also enable the organisation to better apply sustainability-related frameworks and guidelines, which will have the ancillary benefit of further entrenching integrated thinking principles in everyday actions, policies and procedures.

Table 6 makes the link between an integrated thinking logic and reporting outcomes as evidenced from the sample of organisations' reporting practices. It outlines thirteen key disclosure items derived from leading integrated reporting and sustainability frameworks such as, for example, the IIRC Framework, GRI Standards, TCFD and ISSB standards. These are then linked to observable elements that evidence of integrated thinking. The matrix served as a type of coding guide to systematically evaluate the presence and depth of integrated thinking across the selected integrated reports.

Table 6 highlights how reporting disclosures can be interpreted to evidence integrated thinking. Just over a decade has passed since King-III introduced integrated reporting to South African corporate governance (also refer to Appendix, Table 7). Nevertheless, reporting practices remain varied. Some companies are pioneering new ways to deal with the interconnectivity of information, multi-capital management and sustainable development.

Table 6. Evidence of integrated thinking in report disclosures

	Disclosure item	Application to an integrated report	Evidence of integrated thinking
1	Multi-capital assessments with trade-off disclosures	Organisations must disclose the inputs, processes, outputs and outcomes of the six capitals. This must also include an analysis of the interdependencies and interconnections between these capitals. It is a key indicator of integrated thinking	The business model, risk management process, operational considerations and performance evaluation structures should address how the organisation generates returns for investors and creditors (financial capital), including the tangible (manufactured capital) and incorporeal (intellectual capital) resources deployed in order to do so. Value cannot be framed in only financial terms. The impact on the organisation's employees (human capital), stakeholders (social and relationship capital) and the environment (natural capital) must be considered. Put simply, an organisation must be mindful of the relevance of the range of social and environmental resources for its ability to generate reliable economic returns. This must be implemented as part of the integrated structures for accountability, engagement and processes
2	Strategy explanation and link to value creation	Organisations must disclose how the strategy is linked to the business model. The strategy needs to cater for short-, medium- and long-term objectives	Strategies developed must be cognisant of a range of stakeholders' legitimate needs. The strategy must incorporate economic, social and environmental objectives that are linked to the business model. Integrated thinking does not require a complete overhaul of the business model or strategy, but can be achieved in incremental stages, which increasingly begin to acknowledge the importance of both financial and extra-financial imperatives
3	Connecting additional reports, i.e. sustainability/ ESG reports and annual financial statements	Integrated reports need to be interactive and connected by linking different reports and sections within reports. This can be done by way of innovative hyperlinks and report links. This reduces repetition and enhances the ideology of interconnectedness and interdependencies	Integrated thinking is not only about producing a final report for stakeholders. It goes beyond the report by ensuring that the underlying data is continuously being used by management in integrated decision-making, risk assessments, operations and evaluation throughout the period. In addition, it is important to move away from siloed thinking and create cross-functional working groups that speak to one another and share information to ensure connectivity of the information and integrate business processes

(*continued*)

Table 6. Continued

	Disclosure item	Application to an integrated report	Evidence of integrated thinking
4	Clear links between financial data and non-financial data/ capitals	Disclosures on the trade-offs between financial and extra-financial capitals must be transparent, balanced and measurable	By disclosing the trade-offs between capitals and the multi-timeframe impacts, stakeholders will be able to understand the performance of the business holistically in terms of the impact on "profits, people and the planet". Non-financial data needs to be considered in the decision-making process and used in evaluating performance. Assurance of extra-financial data is also an important aspect to consider to enhance the legitimacy of information. This will reduce agency costs and confirm the validity, accuracy and completeness of the extra-financial information
5	Inclusion of company-specific case studies	This high-quality disclosure informs stakeholders of practical events which took place and indicates the operationalisation of integrated thinking. There needs to be clear activities and outcomes of projects that demonstrate visible output of an entity, taking cognisance of the different capitals and creating value for multiple stakeholders	By reporting on business activities/ initiatives, the organisation is accountable for those activities and the subsequent impact. This also allows for measurable criteria, which can be incorporated as part of an integrated performance management system
6	Likelihood, magnitude and time-frames for risks disclosed	A matrix should illustrate the different facets of magnitude, likelihood and timeframes of material risks. These risks should then be ranked, with mitigating strategies developed and opportunities identified	Risk identification is critical for being able to respond to future events and implement the appropriate mitigation systems. Stakeholders can then increase their confidence in the entity's internal risk management processes
7	Detailed materiality determination process	Material themes for the operating environment, stakeholder determination, strategic risks and board discussions should be highlighted. Stakeholders can then understand how the entity determines material themes, which are the focus of the integrated report	A defined materiality determination process allows for constructive engagement on key themes to ensure the reports are not repetitive and long. Internally, this also allows management to prioritise the key items impacting the business from both financial and extra-financial dimensions. The entity must be mindful of the relevance of the range of social and environmental resources/ capitals for its ability to generate reliable economic returns. This is sometimes referred to as a double-materiality logic in terms of which the entity has an impact on society and the environment, but is also dependent on society and the environment for essential inputs into the business model

(*continued*)

Table 6. Continued

	Disclosure item	Application to an integrated report	Evidence of integrated thinking
8	Detailed KPIs based on financial and non-financial metrics	Organisations should disclose their performance metrics that incorporate both financial and extra-financial objectives. This allows stakeholders to have increased assurance that executives are rewarded based on the long-term sustainability of the company	KPIs can be employed to measure progress toward the achievement of strategic objectives and to compensate management accordingly. The focus on a holistic approach to managing financial and extra-financial metrics is also aligned with sustainability-related frameworks such as the Global Reporting Initiative (GRI), the Task Force on Climate-Related Financial Disclosures (TCFD), the International Integrated Reporting Framework and the sustainability standards issued by the International Sustainability Standards Board (ISSB). Most recently, the European Union's Corporate Sustainability Reporting Directive (CSRD) iterates the need to understand how performance evaluation structures can be used to support extra-financial matters that arise due to regulation, guidelines, institutional pressure, stakeholder expectations and best-practice initiatives
9	Focus on technology innovation, integration and ESG impact	Organisations should disclose the tools used to enhance data collection as well as the relevant management information systems. Assurance over these systems should also be disclosed. An entity needs to consider how it will adapt to technological advancements and integrate this into the business model while remaining aware of the sustainability imperative. Relevant codes/practices such as the GRI, SDGs and AccountAbility can be used to manage the ESG impact	In the context of integrated thinking, integrated intelligence is increasingly being used as a tool for enhancing decision-making by providing real-time, data-driven insights. Technology can also be used to communicate information across departments, ensuring a comprehensive understanding of the interconnectedness between various capitals. However, to balance the increased risks related to the use of technology, organisations must include regular audits of systems, ensuring accountability and mitigating potential biases or errors in decision-making. Governance committees also need to ensure that the technology initiatives are aligned with strategic goals and risk management frameworks
10	Detail of stakeholder engagement channels, key concerns/ expectations	Stakeholder engagement matrices should be disclosed, which detail the importance of stakeholders, the relevant engagement and the respective needs and risks linked to each group	By engaging with stakeholders, an entity is able to operationalise their integrated thinking and put systems in place to ensure the long-term value creation for a broad group of stakeholders that go beyond only providers of financial capital

(*continued*)

Table 6. Continued

	Disclosure item	Application to an integrated report	Evidence of integrated thinking
11	Accountable for targets and balanced reporting	Disclosures must illustrate a holistic process with an outcome-driven approach, focussing on both positive and negative factors. Management needs to track their progress and identify how corrective action may be taken or how a crisis is being managed	Integrated thinking allows a company to understand the financial needs during a crisis or downturn in profitability and how this will link and impact the other capitals. For example, understanding how executive remuneration policies may be impacted by financial losses is important both for those who are managing the company and those who are at a lower level. Disclosing executive pay-cuts, turnaround strategies, sensitivity analyses and restructures illustrates governance processes that are actively being managed to ensure business continuity. This links to the board's responsibility to manage an organisation in the interest of sustainable development
12	Transparent disclosures	The company must take responsibility for prior governance issues, how these matters will be resolved and what controls have been put in place, aiming to repair legitimacy	The board needs to facilitate the establishment of well-functioning committees, recommitting to, and enhancing, good governance processes and transparent communication to manage the business objectives and outcomes during a crisis. There needs to be continuous communication with all affected stakeholders to move away from only historic cost reporting to forward-looking integrated reporting
13	Detailed disclosure on board activities, outcomes and direction	Board compositions, skills, meetings, outcomes and performance metrics should be detailed and disclosed. These need to be linked to multi-capital objectives	Boards should have the appropriate composition, diversity and skills to facilitate a well-functioning organisation. This is important for stakeholders to understand who is accountable for decisions and who is running the business operations and overseeing those charged with governance. The links to remuneration/performance rewards are then also important to highlight as this gives context to the board structures and what value they generate for a firm

Note(s): (For further details, see also, Oliver *et al*., 2016; Herath *et al*., 2021; McNally *et al*., 2017; Dumay and Dai, 2017; Myeza *et al*., 2023; Dimes and De Villiers, 2023)
Source(s): Authors' own creation

Others continue to see integrated reporting as an exercise in aggregating financial statements and environmental and social disclosures.

The extent to which organisations have internalised integrated thinking provides a possible explanation for these differences. If governing bodies understand their companies' value creation processes, dependency on and trade-offs among the capitals and the outcomes of their business models for stakeholders, integrated reporting is relatively

simple. The converse is also true. Without an appreciation of the relevance of the guiding principles in the context of the organisation's operating environment, it is almost impossible to provide an informed and honest account of performance across the capitals and long-term value creation.

5. Conclusion and future areas for research

This study contributes to the evolving field of integrated reporting and thinking by providing empirical insights into disclosure practices among companies in an emerging market context. By highlighting gaps and best practices across key dimensions, the findings support efforts to enhance transparency, accountability and sustainable value creation in emerging economies, where pressing social and environmental issues often have large impacts. Emerging economies often face unique challenges such as limited regulatory enforcement, resource constraints and heightened socio-economic inequalities (Ecim and Maroun, 2023). By providing a structured matrix to assess how organisations connect strategy, governance, performance and sustainability, the matrix can help promote a more integrated, transparent and long-term approach to decision-making to increase investor confidence, enhance accountability and promote inclusive growth in these environments.

This study considers the content of the integrated reports of some of South Africa's most prominent organisations, reporting attributes and the connectivity of information. The study does not observe or gauge integrated thinking directly but several features or characteristics which point to integrated thinking taking hold at some organisations are identified. This includes the formalisation of materiality determination and stakeholder engagement, which goes hand-in-hand with the extent to which companies report on strategy, risks, changes to their business models and multi-capital assessments of performance. Reporting guidelines are applied in conjunction with firm-specific policies and supported by a system of internal management, control and review. At some organisations, sophisticated combined assurance models are being developed to ensure the integrity of information used for internal purposes and for reporting to stakeholders. Like materiality determination and stakeholder engagement, the maturation of the accounting and governance infrastructure is associated with integrated reports clarifying the interconnection between strategy, risks and opportunities, business processes and the impact of the organisation's activities on the capitals. Similarly, as report content and the accounting systems improve, those charged with governance acknowledge responsibility for preparing high-quality reports which are more clearly delineated. In some cases, companies are even acknowledging prior weaknesses in their business and reporting processes and explaining how these are being addressed. Finally, a positive correlation among several content elements and the inclusion of more prospective information, quantified measures of performance, balanced reporting on positive and negative outcomes and efforts to highlight the interconnections among different parts of the integrated reports is noted.

A matrix exploring features of integrated thinking can inform management, investors and other stakeholders of areas in the business where an integrated approach is necessary and to assess the organisation's accounting and governance systems, identify possible weaknesses and improve their decision-making processes and stakeholder communication. Investors can use the matrix to identify aspects of an organisation's business that need to be examined more closely as part of appraisal and investment decisions. The matrix can also be used to compare alternative investment options when extra-financial matters are prioritsed and can be used to complement alternative measures of integrated thinking.

Regulators and policymakers can use the matrix for compliance monitoring with sustainability-related frameworks, to evaluate whether corporate behaviour is aligned with best-practice guidelines and to promote alignment with national interests in achieving sustainable development goals. Assurance providers may find the matrix useful when conducting risk assessments of an organisation's extra-financial reporting suite. In particular, whether the

management control systems facilitate the collection, analysis and use of integrated performance-related data and how this can be used in the assurance engagement will be relevant.

Table 7. Disclosure summary of best and worst practices

Dimension	Best practice	Worst practice
Content	• Multi-capital assessment with trade-offs • Strategy is linked holistically to value creation • The impact on the business model is explicit and detailed • Link financial data to non-financial data/capitals • Company-specific case studies • Likelihood, magnitude and time-frames for risks disclosed • Detailed materiality determination process tailored to stakeholders • Detailed KPIs based on financial/non-financial metrics • Link the stakeholders to capital and value creation • Detailed stakeholder matrix analysis • Detailed disclosure on board activities, outcomes and direction	• High-level/superficial risk assessments • Generic, boilerplate disclosures with a poor link to the business model • The activities listed do not make sense in the context of the business model • Limited capital disclosures and a lack of connectivity of information across the report • Long disclosures • Lack of application of the IIRC Framework • Poor format of the report, lacking insight and analysis • Omission of key risks, minimal forward-looking information • Reporting limited to financials with minimal ESG integration
Attributes	• Detail of engagement channels, key concerns/expectations • Accountable for targets and reporting on positive and negative outcomes • A multi-timeframe analysis is provided • Results are supported by quantitative figures • Consistency in reporting metrics, KPIs and frameworks over time • Concise narrative with clear structure and navigation • Appropriate level of detail — not too technical, not too superficial • Visual clarity using charts, icons, and section summaries	• Generic, boilerplate disclosures • Greenwashing by including detailed ESG metrics without explicitly assessing the impact of these metrics, setting targets and explaining outcomes and impact on stakeholders • Limited stakeholder engagement with a focus on providers of financial capital • Overly promotional tone with little acknowledgement of weaknesses • Changing indicators/frameworks/methodology with no explanation • Repetitive
Connectivity	• Hyperlinks used for connectivity and reference to additional reports • Summary of ESG impacts from other detailed reports • Technology integration • Transparent disclosures • Clear explanation of how resources (capital) are used and transformed • Mapping of KPIs and risks to business model components • Demonstrates how trade-offs between capitals affect decisions and strategy	• Generic, boilerplate disclosures • Lack of integration between capitals • Limited application of other codes • Silos between strategy, risks, governance and outcomes • Capitals referenced but not meaningfully connected to activities • Inputs and outcomes presented independently with no logical linkage • No discussion of trade-offs or resource allocation implications

Source(s): Authors' own creation

Future research could examine integrated thinking in different settings, perform an econometric analysis with multivariate analyses and structured equation modelling and include a longitudinal study across different organisation sizes and industries. Developing proxy measures for integrated thinking that do not rely entirely on what companies include in their external reports to stakeholders would make an important contribution to theory and practice. An independent measure of integrated thinking can also be used to identify those integrated reports that, despite being aligned with codes of best practice, lack substance or are guided primarily by impression management. Integrated thinking proxies could also be used to identify those parts of an organisation's strategy, risk management practices, control systems and accounting infrastructure that are most essential for promoting the types of positive change required to achieve long-term sustainability.

Appendix

Best and worst practice disclosures

Examples of best and worst practice across each dimension are presented in Table 7.

Notes

1. On 5 January 2023, the CSRD was effective with the goal to strengthen the regulation concerning the reporting of social and environmental information by organisations.
2. The ISSB Standards build upon and consolidate the work of other sustainability-related standards such as the Task Force on Climate-related Financial Disclosures (TCFD), Climate Disclosure Standards Board (CDSB), Sustainability Accounting Standards Board (SASB) and integrated reporting with the goal of creating a global baseline for sustainability reporting.
3. The Value Reporting Foundation (VRF) was formed in June 2021 with the merger of the International Integrated Reporting Council (IIRC) and the Sustainability Accounting Standards Board (SASB). The consolidation with the IFRS Foundation will inform the work of the IFRS Foundation through the industry-based approach of the SASB Standards and the Integrated Reporting Framework.
4. For example, the European Sustainability Reporting Standards (ESRS) mandate the use of double-materiality. In contrast, when sustainability reports must be prepared according to the ISSB's standards, financial materiality is used.
5. The next 40 companies making up the Top 100 represent only an additional 4% of the market capitalisation. As the study is exploratory and not concerned with a purely quantitative or econometric analysis, the additional entities were not considered and are deferred for future research.
6. Disclosure examples are presented in Table 6 and also in Appendix, Table 7.
7. Statistical measures for inter-coder reliability were not generated as all differences were examined and resolved by the lead researcher through consultation.
8. Additional insights into correlations between content, attribute and connectivity dimensions are provided in Section 4 but are un-tabulated.
9. For example, the Integrated Reporting Framework, the Capitals Coalition, Global Reporting Initiative, Task Force for Climate- and Nature-Related Financial Disclosures, the EU's ESRS and the IFRS Sustainability Disclosures Standards.
10. As a type of calibration test for criterion-related validity, the scores generated from the matrix were compared to the EY reporting awards scores (EY, 2022) for each company (un-tabulated). The results reveal that there is a 6% correlation between the matrix scores and those awarded for the report quality specifically. This iterates that traditional evaluations of report quality in the context of content elements alone are not sufficient and that it is necessary to evaluate attributes and connectivity to a greater extent as these provide richer insights into the application of integrated thinking.

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