



How to measure Integrated Reporting Adoption, compliance, and Quality: A Systematic Review of taxonomies, constructs, and measures toward a research agenda

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Abstract

This systematic literature review examines Integrated Reporting (IR) constructs, identifying four distinct categories to enhance the understanding of IR measurement in research. Analyzing 84 seminal studies published in 28 high-quality journals, we systematize the existing IR literature to clarify how different constructs serve diverse research objectives while varying in their adherence to the IR Framework's guiding principles. Our findings reveal that quantitative IR constructs, often based on readily available databases, face challenges related to data opacity and reliability, whereas qualitative constructs, while addressing these limitations, remain difficult to replicate and scale for large datasets. We provide guidelines for aligning research objectives with suitable constructs and highlight the shortcomings of IR measurement, particularly its predominant focus on report outputs rather than the underlying reporting processes. To address these gaps, we propose a research agenda that integrates input and process-oriented IR constructs and explores the potential of emerging technologies to advance IR research. By bridging the gap between theoretical principles and practical applications, our study contributes to the development of more rigorous and meaningful IR measurement approaches.

Keywords Integrated reporting · Sustainability management · Sustainability reporting · Sustainability accounting · Integrated reporting measurement

JEL Classification M10 · M40 · Q56

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1 Introduction

Over the past decade, Integrated Reporting (IR) has emerged as a key development in corporate reporting, offering a holistic approach to disclosing both financial and non-financial information (Dyczkowska & Fijałkowska 2022; Rinaldi et al. 2018). Unlike traditional reporting methods that focus on isolated financial metrics, IR seeks to integrate an organization's strategic, operational, and sustainability dimensions, presenting a cohesive narrative of how it creates value over time (IIRC 2021). By providing insights into an organization's business model, strategy, and long-term value creation, IR enhances decision-usefulness for a diverse range of stakeholders (Nielsen & Roslender 2015). As stakeholder expectations evolve (Gibassier et al. 2018), organizations increasingly rely on IR to demonstrate accountability and transparency, clarifying their societal and environmental impact while acknowledging stakeholders' contributions to value creation (Vitolla et al. 2019a). In response to this shift, the International Integrated Reporting Framework (IIRF) has established itself as the leading standard-setting body, formalizing the principle-based IR Framework (2013) to institutionalize IR practices, making disclosures more transparent, comparable, and decision-useful for stakeholders (IIRC 2021; Lueg & Lueg 2021).

However, practitioners and researchers have yet to reach a consensus on what constitutes the output of principle-based IR in corporate practice (Feng et al. 2017; Rinaldi et al. 2018; van Bommel 2014). Some studies describe IR as the publication of "one report" (Eccles & Krzus 2010, p. 5) or a "single document" (Beck et al. 2017; Eccles & Krzus 2010; Frias-Aceituno et al. 2014, p. 56). Others suggest that the key feature of such reports is *integrated thinking*—the way that organizations align governance, strategy, and reporting (Feng et al. 2017; Maroun 2018; Tirado-Valencia et al. 2021). Dumay et al. (2016) argue that IR should be understood primarily as a process of *integrated thinking* that shapes organizational decision-making, whereas the *one report* perspective focuses more on efficiency in consolidating disclosures. This conceptual ambiguity has led to reports of varying quality and has even made it difficult to determine what qualifies as an integrated report (Lai et al. 2017; Melloni et al. 2017). This lack of standardization poses challenges for organizations, stakeholders, and researchers alike. First, some organizations exploit the managerial flexibility inherent in IR to label their reports as *integrated* while engaging in impression management and obfuscation (Obeng et al. 2020). This issue is exacerbated by the fact that the IR Framework is not an accounting standard, meaning that, given the absence of assurance standards or regulatory enforcement, organizations can claim compliance without verification (Maroun 2018; Simnett & Huggins 2015). Second, voluntary adoption of IR introduces a risk of adverse selection, as organizations anticipating reputational or financial benefits are more likely to adopt it opportunistically (Obeng et al. 2020). Third, some organizations adhere to IR principles in practice but deliberately avoid using the term *integrated report*, further complicating empirical assessments (Lueg & Lueg 2021; Obeng et al. 2020).

Researchers currently lack valid constructs¹ for measuring the adoption, compliance and quality of IR due to several factors (de Villiers et al. 2014, 2017; Dumay et al. 2016; Gibassier et al. 2018). First, IR is a principle-based framework, not designed for post hoc assessment via standardized checklists (IIRC 2021; Lueg & Lueg 2021). Second, the theoretical configuration of IR constructs varies depending on research objectives and regulatory regimes, leading to differences in focus, measurement methods, and interpretation of principles (Pistoni et al. 2018). These discrepancies make comparisons across studies difficult, as different constructs may produce conflicting empirical results on key IR principles such as materiality, connectivity, or conciseness. The absence of established constructs highlights the need for effective techniques to systematically assess and evaluate IR, leading to the following research question:

What are the context-dependent strengths and limitations of IR constructs?

To thoroughly address this research question, we conducted a systematic literature review (Massaro et al. 2016; Tranfield et al. 2003) to analyze the existing academic discourse on IR measurement. Specifically, we examined the measurement and operationalization of IR constructs, the differentiation of report types and organizations, the variety of research methods employed, and the research objectives, including IR adoption, extent, and quality.

We propose that IR constructs can be classified into four distinct categories, depending on their incorporation of key IR principles. Our study contributes to the academic debate by highlighting that, although the principle-based nature of the IR Framework does not support a post hoc checklist approach, existing IR constructs almost exclusively assess report outputs, rather than the inputs and processes underlying IR adoption. This focus on final disclosures overlooks the organizational efforts, stakeholder interactions, and governance structures that shape IR practices. Given that the development of rigorous IR constructs is essential for advancing the academic understanding of IR's drivers, implementation, and consequences in practice (Maniora 2017), we provide clear recommendations for creating complementary constructs that incorporate both reporting outputs and underlying processes to enhance empirical research and practical assessment.

2 Institutional background and theory

2.1 The principle-based nature of the IR framework

In 2013, the International Integrated Reporting Council (IIRC)—a global coalition of regulators, investors, organizations, standard-setters, the accounting

¹ “A construct is a concept used by social scientists to help explain empirical data on a phenomenon or to conceptualize unobservable or unmeasurable elements of a domain of study to formulate a theory” (Lewis-Beck et al. 2004, p. 182).

profession, academia and NGOs—released the IR Framework in order to disseminate the integrated thinking approach designed to bridge the existing disconnect between financial and non-financial reporting (Zúñiga et al. 2020). With the IFRS Foundation's patronage of the Integrated Reporting Framework and the Integrated Thinking Principles, its International Accounting Standards Board (IASB) and International Sustainability Standards Board (ISSB) became jointly responsible for the IR Framework in 2021. The transition from the IIRC to the ISSB marks a significant juncture in the landscape of corporate reporting. The key differences between these bodies lie in their focus and intended audience: while the IIRC championed a holistic approach to reporting, aiming to communicate an organization's broad value creation story, the ISSB, under the IFRS Foundation, seeks to establish globally accepted sustainability standards primarily focused on investor needs. This shift suggests a narrowing of the reporting focus from the IIRC's broader stakeholder inclusivity to a more investor-centric view under the ISSB (de Villiers and Dimes 2023; Pigatto et al. 2022). The ongoing relevance of research into the development of IR constructs remains critical amidst these changes (Pigatto et al. 2022). As a formal reporting framework, IR faces an uncertain future (de Villiers and Dimes 2023). Yet, the concepts underpinning it, such as integrated thinking, exhibit robust compatibility with trends in non-financial reporting and corporate governance that increasingly demand accountability beyond financial measures, extending to societal and environmental impacts (BRT 2019; Wobst et al. 2025). Whether IR thrives in its current design or not, the foundational ideas it promotes are likely to influence future reporting.

The IR Framework (IIRC 2013) contains three fundamental concepts (value creation, capitals, and value process) that support seven guiding principles (strategic focus and future orientation, connectivity, stakeholder relationships, materiality, conciseness, reliability and completeness, and comparability). Additionally, the eight content elements (organizational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and the basis of preparation and presentation) frame the report's content (IIRC 2021; Lueg and Lueg 2021). The underlying principle-based nature does not prescribe the content and form of the final report, but offers a guideline with flexibility for individual adoption (IIRC 2021). It leaves the interpretation of its concepts, principles, and content elements to the context-specific requirements of the reporting organizations, thereby also responding to industry-specific demands (Eccles and Krzus 2010). Consequently, the IR Framework does not provide a post hoc checklist through which the presence (or absence) of IR can be determined. Given the high heterogeneity in actual and 'claimed' integrated reports, there is a need for a selection criterion that draws a dividing line between what does and does not constitute an integrated report, although, admittedly, it is problematic to develop IR constructs by assessing *reports* for their implementation of integrated *reporting*.

2.2 Theoretical foundation

The *Integrated Reporting Framework* represents a paradigm shift in how organizations communicate their value creation story to stakeholders, advocating, as it does, for a more cohesive account of corporate performance beyond traditional financial measures (IIRC 2021). It states that an “integrated report should provide insight into the nature and quality of the organization’s relationships with its key stakeholders, including how and to what extent the organization understands, takes into account and responds to their legitimate needs and interests” (IIRC 2021, p. 7). The Integrated Reporting Framework, as elucidated by Adams (2017) and further explored in Pigatto et al. (2023a), is not merely a reporting standard but a strategic tool that guides organizations in reflecting on their internal and external environments. It encourages entities to evaluate their strategies, governance, performance, and prospects in the context of their ability to create value over the short, medium, and long term. At its core, the framework is designed to enhance the quality of information available to providers of financial capital, thereby facilitating a more efficient and productive allocation of resources. It introduces the concept of the six capitals as a means to illustrate the wide range of resources and relationships upon which an organization relies for its success. Through this lens, the framework promotes a holistic view of the organization, and encourages integrated thinking and decision-making that consider the interdependencies between an organization’s activities and the capitals. We define the key terms below.

2.2.1 Integrated thinking

For the purpose of this paper, *integrated thinking* is a strategic approach that incorporates corporate governance, management information, financial and non-financial information, external developments, and stakeholder relationships into a cohesive strategy aimed at long-term value creation (IIRC 2021). This definition builds upon Adams (2017), who emphasizes the need for organizations to transition beyond traditional financial reporting towards more holistic approaches that consider the broader impacts of their operations on society and the environment. This perspective aligns with the principles of IR, in its advocacy for a more inclusive understanding of value creation that encompasses economic, environmental, and social pillars. Dumay and Dai (2017) further elaborate on this concept, illustrating integrated thinking as a cultural control mechanism that influences organizational culture, enabling a shared understanding of value creation among stakeholders. They argue that integrated thinking serves as the foundation for IR, acting as a conduit through which the values, objectives, and strategies of an organization are communicated and aligned with stakeholder expectations. Pigatto et al. (2023b) contribute to this discussion by exploring the practical implications of integrated thinking, suggesting that its adoption can lead to serendipitous changes in management practices that are reflective of a holistic approach to value creation. Similarly, Pigatto et al. (2023a) delve into the intricacies of disclosing value creation in integrated reports, emphasizing the importance of a holistic approach that considers the interconnections between various capitals. They highlight the utility of integrated thinking in

facilitating a more nuanced and comprehensive reporting of how organizations create value over time.

2.2.2 The six capitals and value creation

The *six capitals*—financial, manufactured, intellectual, human, social and relationship, and natural—form the foundation of the IR Framework, representing the resources and relationships used and affected by an organization (IIRC 2021). The IR Framework posits that an organization draws upon these varied capitals as inputs. Through its activities, these capitals are transformed into controllable outputs, which lead to less controllable outcomes, which then affect the capitals positively or negatively (IIRC 2021). The IR Framework considers a wide array of impacts stemming from an organization's operations, thereby moving beyond traditional financial-centric approaches to value creation. Pigatto et al. (2023a) elaborate on these capitals, emphasizing their role in ensuring that all relevant impacts of an organization's activities are accounted for. This approach aligns with integrated thinking, aiming for a multi-capital management approach that benefits key stakeholders over time, thereby redefining the process of value creation to include a broader spectrum of considerations.

Value creation, within the scope of IR, transcends traditional financial returns to encompass broader impacts and benefits for a variety of stakeholders. Adams (2017) provides a comprehensive perspective on value creation, conceptualizing it as a process influenced by risks and opportunities, corporate strategy, non-financial reporting, and board oversight. The emphasis is on the interconnectivity between an organization's activities and its broader impact on society and the environment, highlighting the importance of integrated thinking in enhancing board oversight and managing complexity. This broader view acknowledges the significance of non-financial issues and their integration into corporate strategies to create sustainable value over time.

2.2.3 Criticism and different interpretations of IR

The discourse on IR encompasses a spectrum of critical interpretations, focusing in particular on its evolution from an ambitious framework aimed at revolutionizing corporate reporting to a practice perceived by some as primarily serving the interests of investors. This shift raises substantive concerns regarding IR's capacity to fulfill its transformative potential toward sustainability accounting. Flower (2015) and Thomson (2015) provide critical analyses of the IIRC's trajectory, suggesting a dilution of its sustainability ambitions in favor of investor-centric objectives. Dumay et al. (2016) further illuminate IR's fragmented development, positing that the investor-focused drift raises issues about the efficacy of academic research in critiquing and shaping IR practices. Empirically, Pigatto et al. (2022) explore organizational motivations behind IR adoption, suggesting that internal dynamics and serendipitous factors might overshadow the framework's normative goals of enhancing accountability to stakeholders. These contemporary critiques should be contextualized within the broader critical discourse led by scholars such as Gray and Milne

(2002), and Brown and Fraser (2006), who advocate for a more inclusive consideration of stakeholders beyond the functionalist, investor-focused lens. Baptista (2018) contends that the principle-based nature of IR predominantly caters to investors, thereby sidelining holistic, non-functionalist ethical considerations. Furthermore, Dumay et al. (2016) highlight that IR's flexibility offers the potential for managerial opportunism which may facilitate selective reporting that skews corporate portrayals favorably, often at the expense of transparency regarding environmental and social sustainability (see also: Church et al. 2014; Gerwanski 2020). Adams (2015) seconds this critique, noting that despite IR's purported aim to integrate financial and non-financial (environmental and social) performance measures, the actual practice tends to prioritize financial outcomes, thereby undermining the framework's own stated objectives.

This body of critical scholarship highlights the imperative for ongoing dialogue, refinement, and regulatory oversight in the domain of integrated reporting. Such efforts are crucial to realign IR with its foundational goals of promoting transparency and accountability in corporate behavior, ensuring that it addresses pressing environmental and societal challenges.

3 Methodology

3.1 Derivation of types of IR constructs

In order to assess the context-dependent strengths and limitations of IR research, we suggest constructs of IR-measurement. A *construct* “is a concept used by social scientists to help explain empirical data on a phenomenon or to conceptualize unobservable or unmeasurable elements of a domain of study to formulate a theory”² (Lewis-Beck et al. 2004, p. 182). Constructs often represent complex and latent phenomena in practice, and hence are operationalized by one or more measures (also known as metrics or indicators) that can be unambiguously measured across a population (Hair et al. 2018). While constructs are very popular in survey-based research (Dillman et al. 2014), they are not limited to this methodology. Constructs exist in quantitative research, where archival data or surveys provide their measures (Hair et al. 2018). They also exist in qualitative research (Saldaña 2015) where qualitative interviews or observations measure differences in these constructs—such as corporate culture or political views of top executives. IR could be represented by a highly complex, maximalist construct that might contain further, definable (sub-)constructs on the integration of financial and non-financial reporting, the six capitals of IR, and constructs assessing organizations’

² They continue: “Specifically, it [a construct] can mean (a) an idea or a concept not directly observable or measurable (i.e., a facet of a theory), (b) a concept inferred or constructed from empirical data to explain a phenomenon in an integrated way, or (c) an abstract (instead of operational) definition of a phenomenon or concept that is manifested in other observable or empirical concepts or consequences” (Lewis-Beck et al. 2004, p. 182).

performance and strategy for value creation over time. Each of these would be represented by one or more measures. Alternatively, IR could be represented by a minimalist construct that comprises only one single measure. In order to capture the richness of research on IR, we account for all types of such IR constructs.

As Lueg and Lueg (2021) point out, empirical researchers face the problem that IR (i.e., the *construct*) is principle-based, and thereby—by definition—not intended to suggest specific empirical data (i.e., the *measure*) that could be used to assess IR in practice. Their study is among the few that takes the first step from practice to theory in reducing this obstacle of lacking measurability. They analyze existing corporate narratives and synthesize this empirical data into a taxonomy that carries predictive validity (for a demonstration of its predictive validity, see Lueg 2022) and thereby *does* suggest specific data that can be found among integrated reports (for an application of this methodology, see Saldaña 2015). Unlike principle-based IR, this IR taxonomy now allows the derivation of constructs (Bisbe et al. 2007). Lueg and Lueg (2021) posit that IR should have two constructs: *content* and *form*. The *content* construct focuses on the substantive, quantitative, palpable aspects of the report, including the existence of discussion of forms of capital, strategy, organization, and outlook. Conversely, the *form* construct emphasizes the structural and qualitative aspects of reporting, such as the connectivity of information and application of reporting guidelines, reflecting the process and integrity of reporting. Together, these constructs facilitate a nuanced analysis of IR practices, highlighting the interplay between what information is conveyed (*content*) and how it is presented (*form*) in articulating an organization's value creation narrative.

There is only a limited body of empirical literature that exclusively examines the defining criteria of an IR by developing a construct for *IR extent* (Liu et al. 2019; Lueg and Lueg 2021; Manes-Rossi et al. 2021) or *IR quality* (Malola and Maroun 2019; Pistoni et al. 2018). Most studies solely employ binary classification of *IR adoption* to conduct their empirical analyses. In these studies, IR either serves as a variables in a regression model (e.g., Rivera-Arrubla et al. 2017; Zhou et al. 2017) or as a sample selecting criterion (e.g., Beretta et al. 2019; Camodeca et al. 2019). Since only Lueg and Lueg (2021) have taken the transitory step from principle-based IR over a taxonomy to constructs, we build our categorization of empirical studies on their theory-building contribution (Fig. 1). We use this categorization throughout our study to structure our findings (see the Appendix for a full list of constructs and their exact measures). A consistent use of the constructs *content* and *form* yields the following four categories:

- (1) IR Framework—Full: IR constructs incorporating *all* requirements of the IIRC's IR Framework (fundamental concepts, guiding principles, and content elements).
- (2) IR Framework—Only content AND form: IR constructs referring to *content* and *form* requirements listed by the IIRC. This category incorporates empirical studies that base their constructs on both content-related and formal aspects, but do not necessarily cover everything mentioned in the IR Framework.
- (3) IR Framework—Only content OR form: IR constructs referring to either *content* OR *form* requirements.

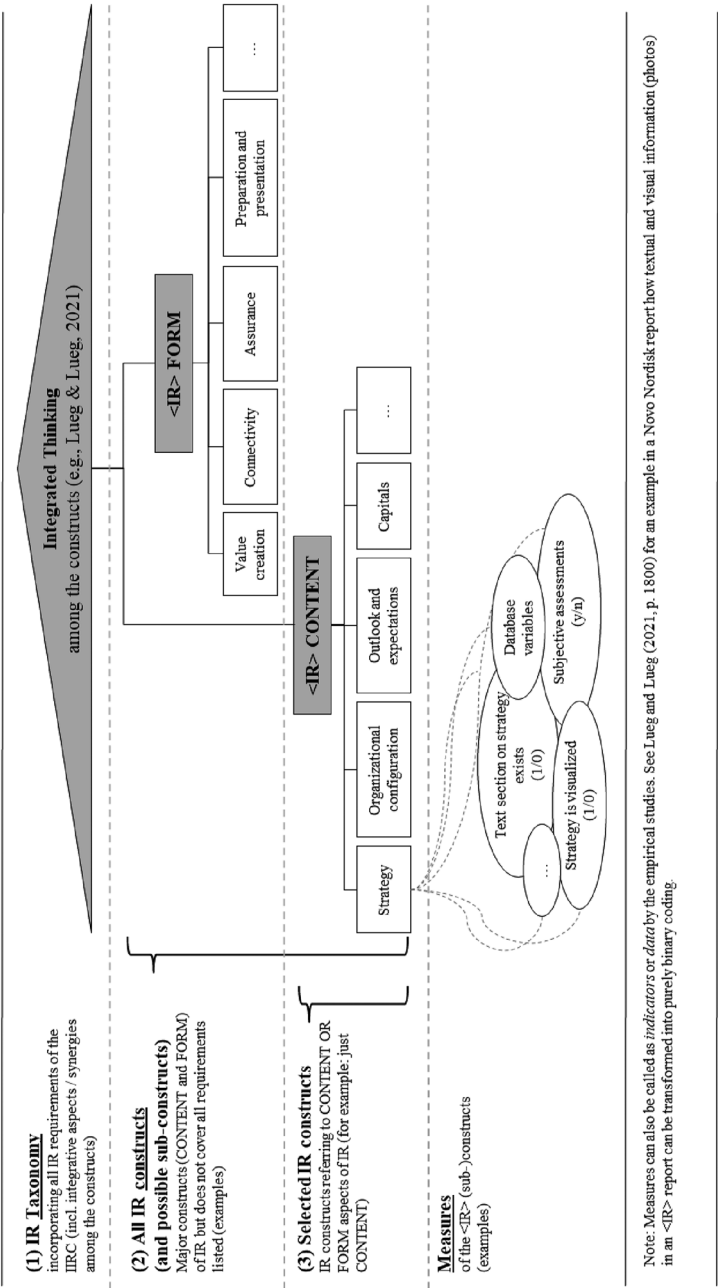


Fig. 1 Description of the four construct categories for measuring IR

- (4) Database: IR constructs relying on databases. Studies in this category often draw their sample from a database by filtering for IR, or including IR as a dummy variable in their empirical model.

3.2 Selection of studies: systematic literature review

According to Tranfield et al. (2003), a systematic literature review uses a documented process in order to ensure replicability. In practice, systematic literature reviews often lack shared guidelines that ensure their replicability and scientific adequacy. (following Page et al. 2021; Tranfield et al. 2003), this paper follows the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines.

We searched the Google Scholar, Scilit, Emerald Publishing, SAGE Publishing, and Wiley Online Library databases. The review focused on the period from 2010 to mid-2022, due to the formation of the IIRC in 2010 (Barth et al. 2017). The search strategy was explicitly limited to studies written in English and published in journals listed in the 2021 Academic Journal Guide (AJG) to ensure high research quality. The AJG divides journals into different categories to determine which journals are relevant for which field. We took the ratings for the AJG pre-specified fields that are relevant for IR, i.e., ‘Accounting’, ‘General Management, Ethics, Gender, and Social Responsibility’, and ‘Regional Studies, Planning and Environment’. We accessed the journals through the respective databases where they are available, i.e., Scopus and Web of Science. We used the search terms ‘Integrated Reporting’, ‘Integrated Report’, ‘IR’ and ‘Integrated Report*’. The use of an asterisk allowed us to select all the relevant documents by inserting only one search string (Cillo et al. 2019).

Our review process had three steps: first, we screened the titles, keywords, and abstracts of the identified papers. Due to our explicit focus on constructs, we included only empirical studies that mentioned IR. Second, we eliminated studies that did not specifically address the focus of our research. We deleted studies for the following reasons: (1) the study did not contain an empirical construct for IR; (2) the construct was mislabeled and actually measured other constructs (e.g., ‘sustainability performance’ through the environmental, social and governance (ESG) ratings); (3) the construct focused only on partial aspects of IR and thereby omitted its key aspect of integrated thinking (e.g., on only one content element, guiding principle, or fundamental concept); (4) the study had a construct, but there was no information on the sample (e.g., the study did not report how it defined and selected its sample of IR reports); and, (5) the study had a construct, but there was no primary data on the sample (e.g., studies that inferred that an organization was a full IR adopter because it had shown interest in the IR pilot program).

The initial search yielded 259 studies. After screening the titles, keywords, and abstracts, the filtered sample consisted of 196 studies. Applying the exclusion criteria listed above, we determined the final sample of 84 qualified studies (see Fig. 2).

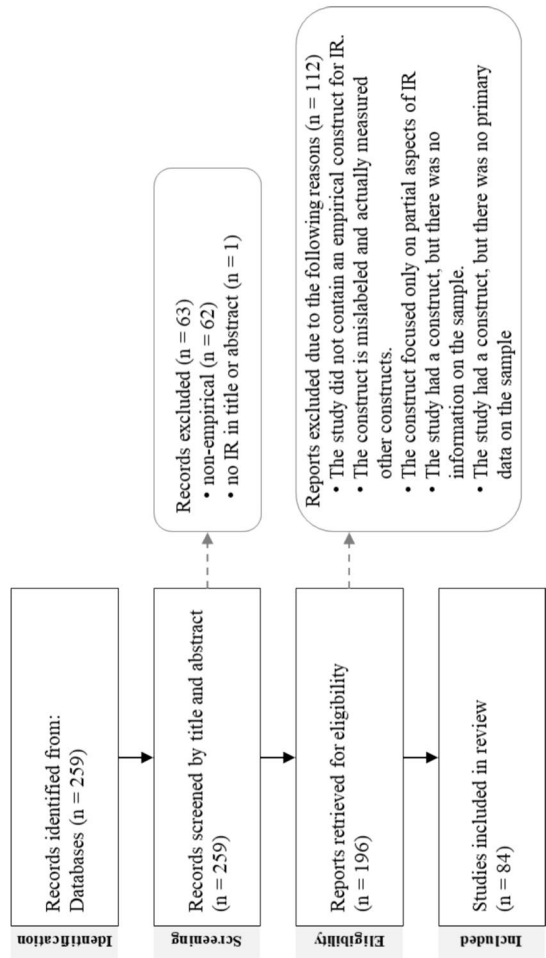


Fig. 2 Article selection process according to the PRISMA guidelines

3.3 Bibliometric analysis

The bibliometric analysis indicated that IR is a very recent topic. Figure 3 shows the number of studies published per year from 2010 until 2021: 62% of the sample were published within the last three years, reflecting the growing interest in merging sustainable and traditional reporting and, therefore, the need for advanced research.

Figure 4 shows that most of the studies were published in the field of accounting (according to the AJG categorization). The analysis of the journals that published the sample studies demonstrates that the empirical analysis of IR is particularly significant for journals that combine accounting research with sustainability, ethics, and society-related topics. Of the journals listed, the most representative are the following: *Corporate Social Responsibility and Environmental Management*, *Business Strategy and the Environment*, and *Meditari Accountancy Research*.

Figure 5 demonstrates that top-ranked journals (AJG ratings of 4 and 4*) rarely publish studies that use IR constructs.

Adopting IR is voluntary other than in South Africa that mandates IR on a comply-or-explain basis (Barth et al. 2017; Dumay et al. 2016, p. 167). The majority of studies use a mix of samples from both mandatory and voluntary regimes, followed by samples from voluntary regimes (see Fig. 6).

4 Findings

4.1 IR constructs in the empirical literature

Figure 7 shows our results. The category ‘self-developed construct’ signals that the respective study developed its own IR constructs, rather than building on extant literature. For a detailed analysis of each study, see the Appendix.

4.1.1 The measurement of IR

The IIRC’s principle-based approach allows organizations to communicate organizational information without having to report in standardized ways (Barth et al. 2017; Melloni et al. 2017). However, lacking measures, the comparison of IR reports across organizations has remained an open issue (Dumay et al. 2016; Lueg & Lueg 2021), leading researchers to attempt to identify appropriate IR constructs by developing measurements for IR. Several scholars have chosen binary measurements to indicate (non-)coverage of an IR requirement (Stent & Dowler 2015), while others have used non-binary measures to show nuances of the IR requirements. For instance, Lueg and Lueg (2021) produce two constructs (IR content and IR form) that they measure on scales from 0 to 10. A few constructs combine both binary and non-binary measures. Both measures and sub-constructs can be weighted or simply be averaged. Averaging has the advantages of simplicity and resilience against manipulation. The advantages of weighting are greater granularity, better reflection of managerial prioritization of key IR elements, and stronger alignment with theoretical expectations of reporting quality. Lueg and Lueg (2021)’s robustness checks

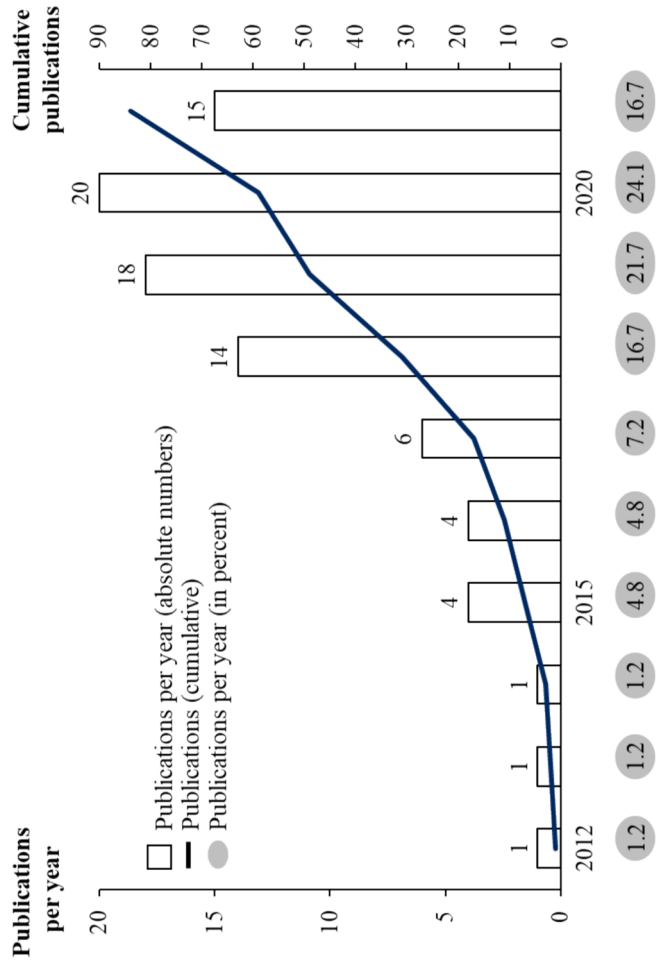


Fig. 3 Number of selected studies published per year (n = 84)

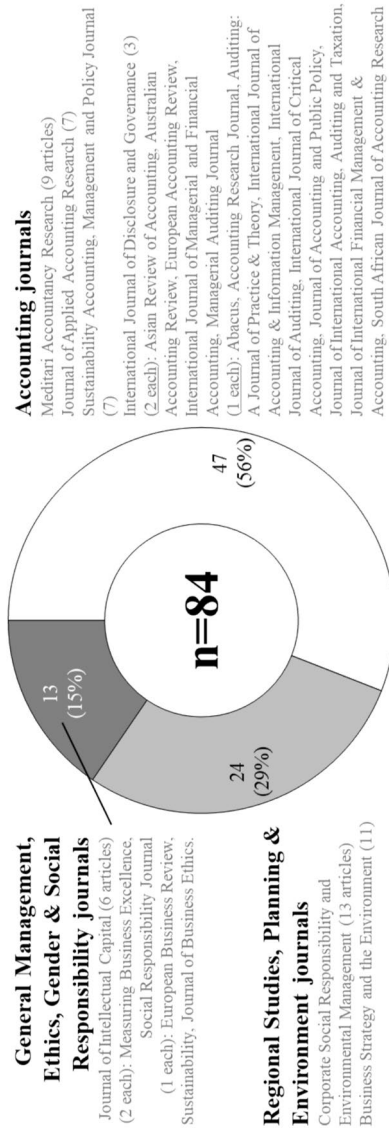


Fig. 4 Number of selected studies published by AJG journal categorization

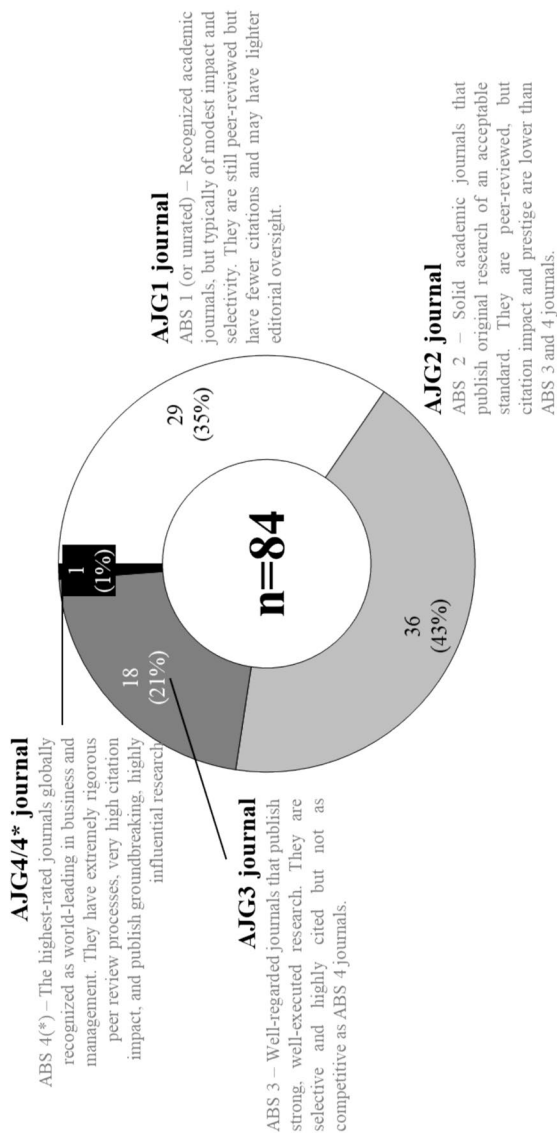


Fig. 5 Number of selected studies published by AJG journal ranking

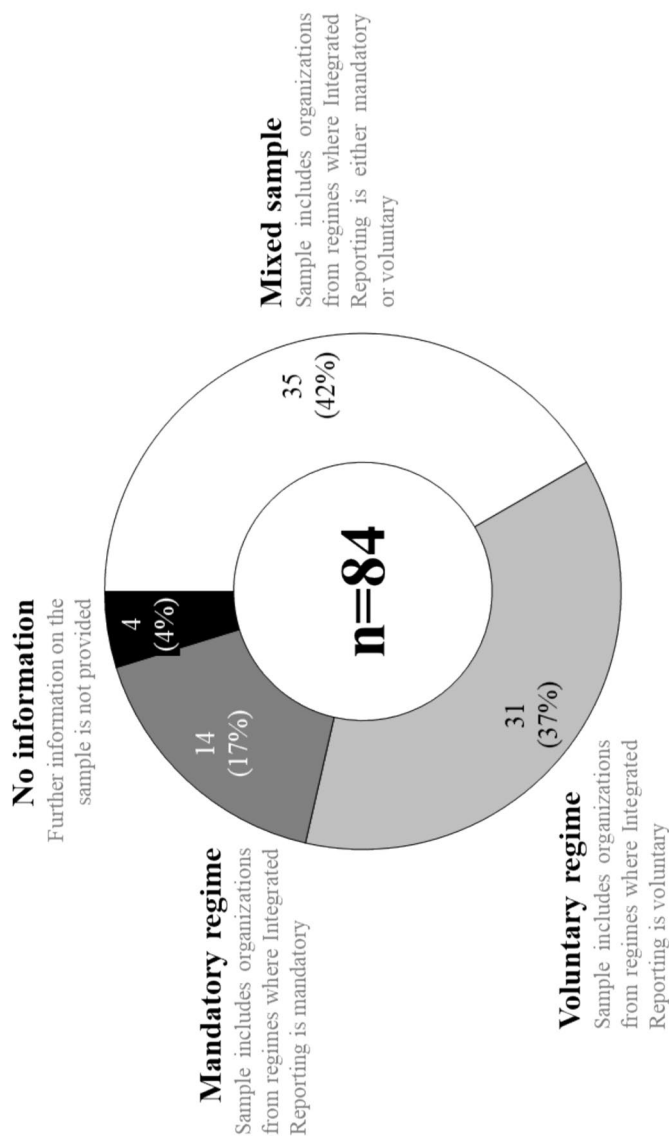
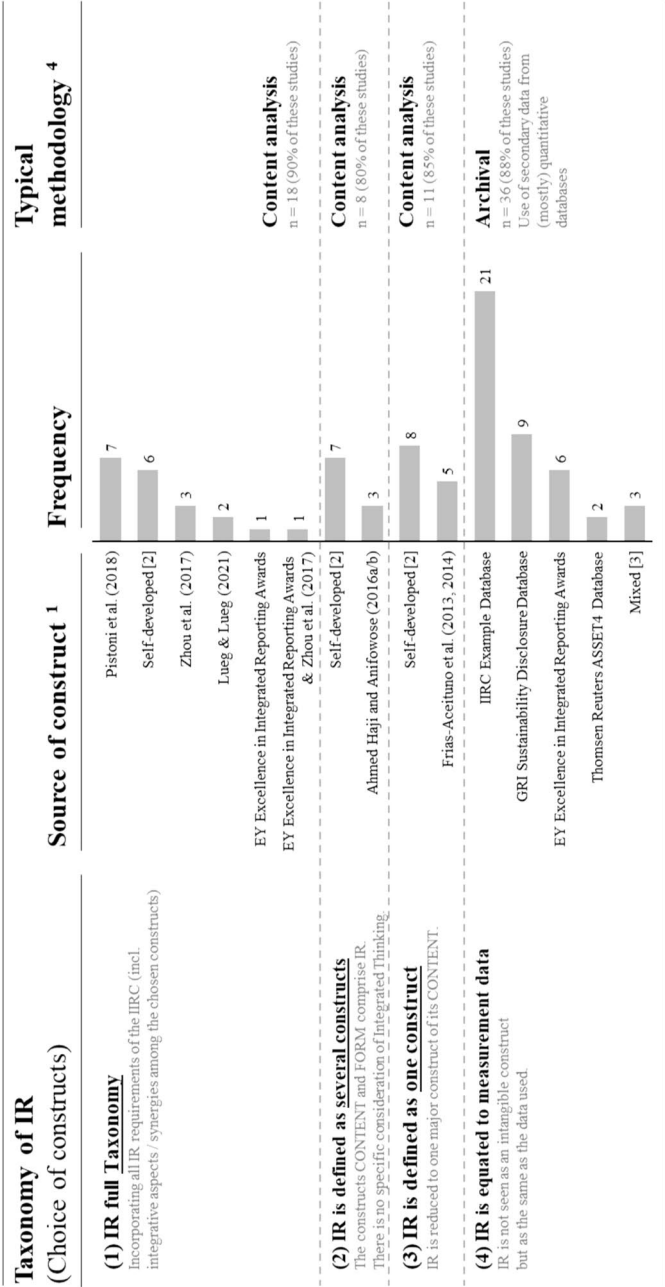


Fig. 6 Regulatory setting of the sample studies



Note: [1] The measures for all constructs are listed in full detail in the Appendix. [2] The category "self-developed" indicates that the respective study did not build on extant research but developed its own IR construct. [3] Mixed: IIRC Example Database; & GRI Sustainability Disclosure Database; GRI Reports List; Eccles and Krzus (2010); CRR Reporting Awards 2010; Accounting for Sustainability (A4S, 2010b); IRAS (2015). [4] Content analysis signals the use of primary data. It may involve qualitative evaluation or quantitative scoring through original analyses of the reports.

Fig. 7 Taxonomies, constructs and research methodologies in the empirical literature

compare the results of weighting and not weighting the constructs, and find similar results in both cases. Hence, while weighting of the measures appears to be a configurable practice, the practical implications appear to be low and should best be explored within each study's robustness checks. Our literature review revealed several measures throughout the four construct categories.

Category (1), *IR Framework – Full*, comprises 20 studies. Most rely on the IR quality construct developed by Pistoni et al. (2018); their construct has a higher order with four sub-constructs (background, content, assurance and reliability, and form), each of which has several measures. The construct measures the content and form of the report from 0 to 5, resulting in a greater impact on the total measure. Lueg and Lueg (2021) offer more recent constructs on *content* and *form* based on a theory-driven taxonomy. Zhou et al. (2017) IR alignment construct measures the alignment of a report with the IR Framework using eight measures that reflect its guiding principles, fundamental concepts, and content elements, while Barth et al. (2017) created a construct for IR quality and applied the EY Excellence in Integrated Reporting Awards Score Sheet. The remaining studies implement mainly non-binary measures.

Category (2), *IR Framework – content AND form*, has 10 related studies. Constructs for IR adoption or IR quality are often self-developed. Ahmed Haji and Anifowose's (2016a, 2016b) studies established two separate measures for IR quality and IR extent. They use non-binary measures (0–3) for IR quality, and binary measures to reflect the extent of IR (low vs. high). Alternative measurements are also explored in two studies that chose a subjective measurement of IR (Beck et al. 2017; Fakhro et al. 2020). The distribution between binary and non-binary measures is relatively balanced.

Category (3), *IR Framework—only content*, contains 13 studies, most of which used self-developed constructs. Five studies use Frias-Aceituno et al. (2013, 2014) construct to differentiate between financial statements, CSR reports and IR reports. Yet, Frias-Aceituno et al. (2013, 2014) do not use measures, which might impair the applicability of their construct for future users. There are currently no studies measuring IR based on only the form construct.

Category (4), *Database*, comprises 41 studies. Databases are popular as a tool for measuring IR because they provide swift access to a wide range of information. Since most of the relevant studies sourced their data on IR from databases, investigating their measures is essential. The IIRC's *IR Examples Database* appears as the most used and contains examples of emerging practices in IR. The IIRC divides the included reports into two types, 'Leading Practices' and 'Recognized Reports', and provides a list of IR reporters (IFRS_Foundation 2022). However, this database does not disclose its measurement process. The IIRC only presents a database with a filter function for the IR requirements that should be contained in the report, withholding the decisive criteria for admission to the IR Examples Database, and the assignment of different IR extents, such as *Leading Practices*. The *GRI Sustainability Disclosure Database* shows only organizations' self-declaration of IR. Thereby, the database solely differentiates between IR adopters and non-adopters on a self-reported basis (GRI 2020). For our analysis, we do not consider this bare measure as a construct. The *EY Excellence in Integrated Reporting Awards Database* relates

exclusively to organizations in the mandatory reporting regime of South Africa. Three referees determine the degree of compliance with the “spirit of IR” (EY 2020, p. 4). This is the only database in the sample that discloses its non-binary measures of their five IR measures. EY has measures scaling from 0 to 10. Thus, the form of a report, and thereby of integrated thinking, is not considered. Users of the database can choose which reporting quality they want to use or investigate in their analyses by categorizing the reports. Constructs from databases such as Bloomberg and Thomson Reuters contain environmental, social and governance (ESG) measures that are not necessarily congruent with reported IR measures. Thus, the use of ESG measures as a substitute for IR quality or IR extent is problematic (de Villiers et al. 2017). Also, these two databases publish little information about their constructs, thereby impeding deeper investigation of the underlying interpretation of the IR requirements: studies might adopt the ESG measures without knowledge of the underlying measures.

4.1.2 IR taxonomies of reporters and reports

Some studies go beyond developing constructs and offer comprehensive taxonomies of reports, or the reporting organizations. A taxonomy is a “specific classification scheme that expresses the overall similarity between organisms in a hierarchical fashion” (Rich 1992, p. 761). It requires the identification of characteristics that can be measured objectively under real circumstances and have sufficient variance to show significant differences (Lamb et al. 2011). Developing a taxonomy allows the discovery of different IR types that include different contexts, motivations, configurations and outputs in their reports. The Appendix contains information on taxonomies in the literature.

As a seminal example, Lueg and Lueg (2021) developed a three-layer taxonomy for the IR extent of annual and CSR reports. They present the characteristics of IR with measures related to the two IR constructs, *content* and *form*. Both constructs have four sub-constructs (*content*: capitals, organizational configuration, strategy and outlook, and expectations; *form*: value creation, connectivity, assurance and preparation, and presentation). Using the IR Framework as the basis, the three fundamental concepts, seven guiding principles, and eight content elements are translated into measures and assigned to the construct. The allocation of the content elements, guiding principles, and fundamental concepts to the *content* or *form* sub-constructs reveals the interaction between the content and formal construction of the reports. Based on these constructs, the authors present a three-layered taxonomy that classifies reports as traditional, enhanced content, or integrated thinking. *Traditional reports* are low in both the content and form constructs. The preparers of *enhanced content reports* publish voluntary information without implementing the concept of integrated thinking. Preparers of *integrated thinking reports* exhibit integrated thinking (Lueg and Lueg 2021).

Two other taxonomies were applied across the studies reviewed. Barth et al. (2017) applied the EY Excellence in Integrated Reporting Awards taxonomy to create five categories, *Top 10*, *Excellent*, *Good*, *Average* and *Progress to be made*. Each represents a developmental stage of IR. Omran et al. (2021a, b) modified

these stages by adding a sixth category, ‘EY benchmark’, to denote the ideal reporting. The remaining studies do not provide a taxonomy to classify developmental or preliminary stages of the IR concept. However, some studies dichotomously differentiate between adopters and non-adopters of the IR Framework (e.g., Frias-Aceituno et al. 2013; García-Sánchez and Noguera-Gámez 2017; Gerwanski 2020).

4.2 Research methods and objectives of IR constructs

4.2.1 Research methods of IR constructs

The methods used for data collection reflect the researchers’ understanding of IR. Following Broadbent and Guthrie (1992), we classify research methods as case studies, content analysis or survey/questionnaire/other empirical as well as adding the explicit use of databases, and the combination of databases with content analysis.

Figure 8 shows that content analysis (A2) and databases (A4) are the research methods most commonly employed. Case/field study/interviews (A1), and the combination of content analysis and databases (A5) for the elaboration of IR are not widespread. The selected studies do not apply surveys, questionnaires, or other empirical methods (A3) to develop or apply IR constructs. In construct category (1), most scholars tend to use content analysis to investigate the reports. Due to the holistic focus of the IR Frameworks, this result is not surprising. We also observe this tendency in construct categories (2) and (3), whereas in category (4), a substantial majority refer to databases (see Fig. 7). It is important to note that databases such as the IR Examples Database and the EY Excellence for Integrated Reporting Awards Database use content analysis to identify and categorize IR adopters. This analysis reveals an understanding of IR that focuses solely on the integrated *reports* rather than the inputs and processes of integrated *reporting*.

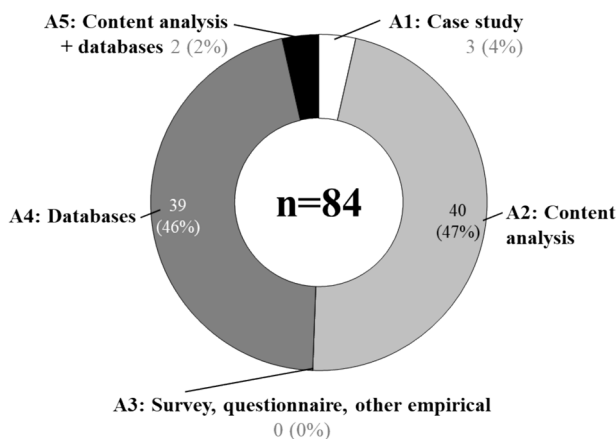


Fig. 8 Sample studies by research method (following Broadbent and Guthrie 1992)

4.2.2 Measurement objectives of IR constructs

Studies on IR pursue different objectives, with some researchers focusing solely on binary IR adoption, where a simple self-declared measure suffices, while others seek a more granular understanding of its extent and quality, requiring multi-layered constructs with multiple indicators (Lueg & Lueg 2021; Pistoni et al. 2018). Our analysis of empirical studies identifies three primary research objectives, which Fig. 9 visualizes as a heat map, illustrating how studies align their objectives with available IR constructs.

The first research objective concerns *IR quality*, which assesses how well IR presents the strategic elements that describe firm performance and value creation, rather than simply quantifying disclosed information (Pistoni et al. 2018). Studies in this category typically rely on comprehensive constructs from category (1) (see x-axis of the heat map), employing content analysis and in-depth human evaluation of reports. Seminal examples include Pistoni et al. (2018), who assess IR quality based on 11 attributes across four reporting areas, and Lueg and Lueg (2021), who evaluate the extent to which organizations report on IIRC requirements.

The second research objective focuses on *IR disclosure*, measuring compliance with IR requirements without evaluating report quality in detail. Most frequently, studies in this category use *content* constructs from category (3), which focus on selected aspects of the report rather than a holistic assessment. Researchers distinguish *IR disclosure* from *IR quality*, emphasizing that compliance does not necessarily indicate substantive reporting improvements (e.g., Ahmed Haji and Anifowose 2016a, 2016b). Others explicitly measure disclosure depth by assessing the extent of alignment with IR requirements (e.g., Liu et al. 2019). Additionally, some studies examine *content* and *form* constructs through case studies, offering qualitative insights into how organizations present IR (e.g. Fakhro et al. 2020).

The third category includes studies investigating *IR adoption*, which primarily identify whether an organization publishes an IR report, often as a secondary objective in broader research. These studies rely on large database classifications, using readily available measures to determine IR adoption (e.g. Lopes and Coelho 2018). Researchers using the EY, Thomson Reuters, or IRAS databases either adopt the listed *IR quality* measure or filter for high-performing organizations to refine their analyses (e.g. Du Toit 2017; Engelbrecht et al. 2018). In contrast, those working with the Thomson Reuters ASSET4 database primarily focus on *IR disclosure* rather than overall *IR quality* (e.g. Zouari and Dhifi 2021). This structured differentiation of three research objectives highlights how researchers tailor construct selection to fit their specific research aims, emphasizing the need for careful alignment between research objectives and IR measurement approaches.

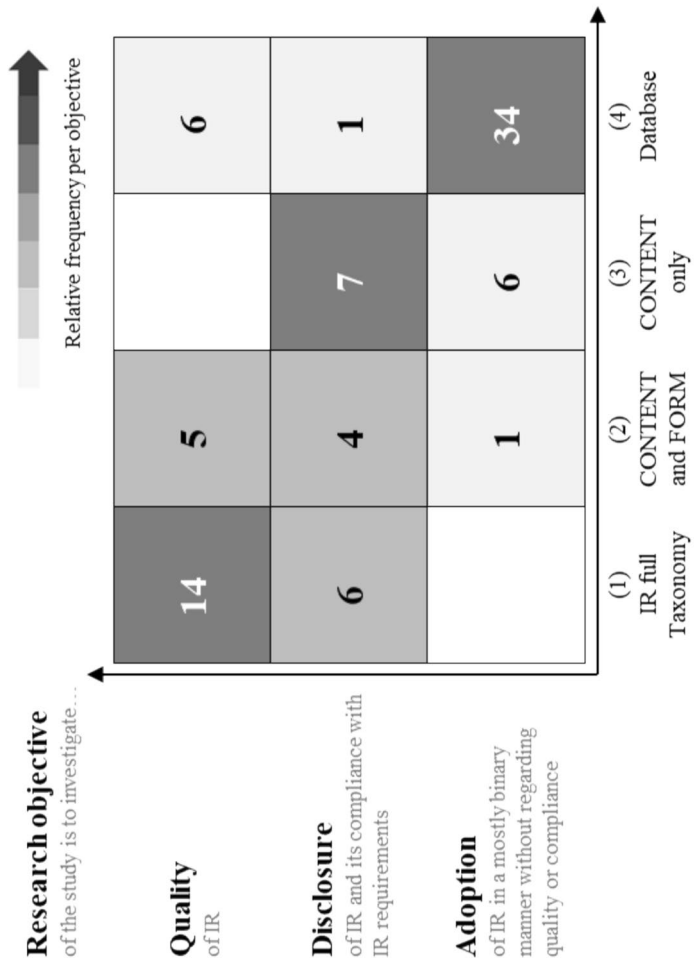


Fig. 9 Heat map of most common matches between study objectives and construct categories (1)–(4)

5 Discussion

5.1 Synthesis

The purpose of this investigation was to explore the context-dependent strengths and limitations of different IR constructs. Our findings show that the literature contains several accepted constructs and that the detail of their measurements tends to increase with the sophistication of the research objective. For instance, constructs built on a single, binary measure generally do not assess IR quality well. Most studies, as well as large database providers, rely on content analysis of reports to measure IR constructs. This methodological approach implies a focus on the report as an output of IR. Thereby, the content analysis of the reports is limited by only examining the inputs and processes that supported the creation of the report. Several constructs also use content analysis to determine *IR quality*. While there is an established theoretical understanding in conceptual and empirical IR studies that *IR disclosure* differs from *IR quality*, empirical studies often employ easy-to-obtain but overly simplistic constructs that muddle the two. This often leaves readers wondering if insights have been gained on *IR disclosure*, *IR quality*, or both.

For this reason, our literature review tries to point to seminal constructs by recommending the relevant paper or database based on study complexity and design. Complex study designs require rigorous IR constructs, as IR serves as the primary research focus or a key variable (dependent or independent) that demands in-depth analysis. Simpler study designs, where IR functions merely as a control variable, benefit from less resource-intensive use of databases. Additionally, we assess the optimal applicability of constructs depending on whether they are used in a voluntary or mandatory IR regime, ensuring alignment with regulatory contexts.

For a simple analysis (IR as a control variable, for instance) across categories (1) to (4), we suggest the readily available databases. The EY Excellence in Integrated Reporting Awards is best suited for samples with only mandatory IR adoption because it applies structured, transparent, and non-binary measures (Barth et al. 2017; Du Toit 2017; Engelbrecht et al. 2018), making it the leading database for assessing compliance in regulated settings, currently only South Africa, where IR is mandated on a *comply or explain* basis. The IR Example Database is best suited for samples with voluntary IR adoption because it captures self-selected reports aligned with the IIRC's IR Framework but lacks disclosed selection criteria, making it ideal for analyzing best practices rather than compliance (Beretta et al. 2019; Camodeca et al. 2019; Mio et al. 2020).

For complex investigations that want to cover the (1) full IR taxonomy including *integrated thinking*, the best suited constructs stem from Lueg and Lueg (2021). Their taxonomy systematically deconstructs IR into the two constructs *form* and *content*, enabling researchers to differentiate between symbolic adoption and genuine *integrated thinking*. By measuring based on their compliance with the IR Framework, and alignment with external assurance and stakeholder perspectives, this construct allows for a rigorous assessment of how firms integrate IR principles into their strategic decision-making rather than merely mimicking best practices.

For investigations focused on the output of the (2) constructs *content* AND *form* in IR, Liu et al. (2019) and Pistoni et al. (2018) offer the best-suited constructs. Liu et al. (2019) develop a normative benchmark that systematically evaluates compliance with the IR Framework by linking disclosures to value creation, ensuring a comprehensive assessment of report substance rather than superficial adherence to IR principles. Meanwhile, Pistoni et al. (2018) introduce the *IR Scoreboard* that distinguishes between the constructs *form* and *content*, revealing that many organizations prioritize aesthetic aspects of IR over substantive disclosures—an essential distinction for assessing true reporting quality. Hoang et al. (2020) is a strong alternative to these two studies, because it empirically links compliance with IR content elements and guiding principles to reduced corporate misreporting, demonstrating that disclosure depth can be assessed not only for quality but also for its impact on financial integrity. Lueg and Lueg (2021) also provide a valuable alternative, but their comprehensive taxonomy may introduce more complexity than necessary for studies primarily focused on distinguishing reporting sophistication rather than conducting an in-depth assessment of IR practices.

Investigations that seek a deep analysis of the (3) construct *content* but do not want to argue why they do not need to investigate *form* may find the study by Adhikariparajuli et al. (2021) helpful. It systematically assesses IR content disclosures while adopting a signaling theory perspective (instead of the often-used legitimacy theory), ensuring that findings are grounded in institutional communication rather than superficial report structure. Hassan et al. (2019) offer a comparable alternative because it similarly examines *IR disclosure* but extends the analysis into sector-wide reporting trends and voluntary disclosure drivers. While Frías-Aceituno et al. (2014) is often used for this category (see Fig. 7), its lack of tangible measures makes it more difficult to apply for measure-oriented researchers than the previous two.

Investigations that aim at only distinguishing between (4) IR adopters and non-adopters in voluntary regimes should choose a construct that is precise, but easier to apply than those named above. For example, Rivera-Arrubla et al. (2017) propose a straightforward IR disclosure index based on key content elements and guiding principles from the IIRC framework, making it efficient for distinguishing IR adopters without requiring an extensive qualitative assessment.

Figure 10 summarizes our recommendations for identifying suitable constructs. In order to achieve the desired objectives, researchers need to carefully consider their *research objective* (i.e., the intent to assess *IR quality*, *IR disclosure*, or merely *IR adoption*). Furthermore, the context of the research must be considered. The available literature indicates that IR can be used as a criterion for sample selection in mandatory regimes (e.g. Grassmann et al. 2019; Mio et al. 2020; Salvi et al. 2020) or as a variable for statistical analysis in voluntary regimes (e.g. Donkor et al. 2021; Raimo et al. 2021a, b, c; Sierra-García et al. 2015).

5.2 Limitations

This study is subject to three limitations. First, we sample only high-quality academic journals. This limitation may have overlooked valuable constructs proposed

Study design	Adoption regime	(1) IR full Taxonomy	(2) CONTENT and FORM	(3) CONTENT only	(4) Adoption
Complex*		Lueg and Lueg (2021)	Pistoni et al. (2018) Alternatives: Hoang (2020); Liu (2019); Lueg and Lueg (2021)	Adhikariparajuli et al. (2021) Alternative: Hassan et al. (2019) Often used: Frias-Aceituno et al. (2013)	Voluntary regime: Rivera-Arrubla (2017) Mandatory regime: n/a
	Simple*	Voluntary regime	IR Example Database 'Leading Practices'		
	Mandatory regime	EY Database			

Note: * Complex study designs require rigorous IR constructs, as IR serves as the primary research focus or a key variable (dependent or independent) that demands in-depth analysis. Simpler study designs, where IR functions merely as a control variable, benefit from less resource-intensive use of databases.

Fig. 10 Recommendation of most suitable constructs/databases according to research objective and complexity of study

in corporate reports, consulting-oriented handbooks, or conferences. Second, most studies in the sample refer to the IR Framework version of 2013, while our analysis relies on the updated IR Framework version of 2021. The differences between the two versions may have led to slight variations in the researchers' understanding of the IR Framework. Third, the study compares studies with different research goals. For some, the mere existence of an IR report, and a binary variable in a regression analysis, may constitute sufficient information (e.g. Garcia-Sanchez et al. 2020; Malola & Maroun 2019; Sierra-García et al. 2015) and, due to their research focus, these studies have no reason to analyze IR in depth.

Further, our research elucidates how investors and practitioners, including analysts and consultants, can leverage IR to align with varied information needs. Sophisticated investors (and practitioners)—characterized by Pigatto et al. (2022) as having the resources to obtain timely, sometimes private, information and to conduct complex analyses of big data—may find IR constructs beneficial for long-term strategic analysis. These constructs allow for a nuanced interpretation of corporate governance, transcending traditional financial measures to include broader value creation narratives. Conversely, unsophisticated investors (and practitioners) tend to rely on general-purpose financial reports (Pigatto et al. 2022). For them, IR constructs can simplify the complex interrelations of non-financial data. Our research not only highlights the theoretical underpinnings of IR constructs but also points towards practical applications in real-world scenarios where the timing, relevance, and depth of information may influence investment decisions.

5.3 Research contributions and future research

This study contributes to IR research by discussing the uncertainties involved in transforming IR requirements into a concrete IR construct (Gibassier et al. 2018; Rinaldi et al. 2018). Currently, only a few constructs include a substantial selection of IR requirements. This would not necessarily contradict the IIRC's intention, which encourages accountants to disclose relevant information only (IIRC 2021). According to Hoang et al. (2020), this flexibility can substantially increase the reports' readability, and support organizations in preventing information overload. At the same time, such discretion might lead to misreporting practices (Bowen et al. 2008) and/or overstating performance (Maas and van Rinsum 2013). Discretion as to which information is included might also weaken the data quality in IR reports: much of the eventually included data is not systematically collected, and is often manually prepared on an ad hoc basis (McNally et al. 2017). These insights lead to several theoretical implications and avenues for future research.

5.3.1 Creation of IR databases and tools using technological advances

There is a need to improve existing databases offering information on IR. The results demonstrate the extensive use of databases by researchers looking to specify IR as a regression variable or to define the sample. Researchers could focus on developing a taxonomy that allows accurate classification of reports and thereby

create incentives to achieve a higher degree of IR practice reflecting stakeholder interests. Such a complex database development could be leveraged through the emergence of machine learning tools in accounting and auditing research. Sifa et al. (2019), for example, used a machine learning algorithm for automated processing of reporting measures. The algorithm can be trained to learn which text passage corresponds to which requirement of the developed measures and thereby reduce the manual effort for the auditor. Future studies could investigate whether such an algorithm could be introduced for the measurement and evaluation of disclosed IR requirements instead of manually checking every report. This could reduce the subjectivity in determining *IR quality* and *IR disclosure*, and additionally identify the prevailing understanding and implementation practices of the IR Framework. In addition, research has analyzed the use of text mining to detect misstatements (Bertomeu 2020) and to assess organizations' risk by examining corporate annual reports (Yang et al. 2018). The detection of misstatements, in particular, could be instrumental in IR research since many organizations refer to the IR Framework without fully implementing its core principles.

5.3.2 Focus on IR as a process rather than just as a output

IR research could focus more on the *processes* that lead to the eventual IR report, instead of only investigating completed reports. A process is a transformation of inputs into outputs (Armistead et al. 1995). Accounting for processes would reflect the IR Framework's requirements to report on the transformation of capitals. The quality of processes is a predictor of improvements in performance (Elzinga et al. 1995; Lueg and Pesheva 2021). Exemplary IR report processes might address the relationship between operations and value creation, incompleteness of information, false labeling, or exaggeration (Simoni et al. 2021). Dissonances in processes can flag possibly inconsistent reported results and initiate necessary change (Adams 2015). Future constructs could use measures based on observations of process quality, and external certification (Sampaio et al. 2009). Seminal examples exist that indicate how this stream of research might grow in the future (e.g., Dyczkowska and Fijałkowska 2022; Gerwanski 2020; Gibassier et al. 2018): Pigatto et al. (2023b) enhance our understanding of IR as a context-dependent process as they explore the serendipitous 'discovery' of IR within an Italian SME, offering a unique perspective on how unexpected changes in management practices—such as IR—can occur. Dumay and Dai (2017) are commendable for examining IR as a dynamic process within organizations, focusing on how integrated thinking evolves through cultural influences and managerial practices. Doni et al. (2019) emphasize the operationalization of IR within banks, focusing on the intricate process of managing multiple capitals, especially intellectual and other non-financial capitals. Last, Massingham et al. (2018) critically explore learning and growth perspectives on IR, detailing the transformative process that integrates these aspects into a Balanced Scorecard approach.

5.3.3 Using both output measure and input/process measures

A key limitation in current IR research is the overwhelming reliance on *output* measures, where IR quality is inferred exclusively from the final report rather than from the processes that produced it. Output measures assume that if an organization's IR report aligns with the IR Framework, then its internal practices, governance, and strategic integration of IR principles must also be in place. However, this assumption is problematic. IR reports are not direct observations of an organization's actual operations (Baker and Schaltegger 2015; Lueg and Lueg 2021; Maniora 2017), but rather carefully curated disclosures that may reflect strategic presentation rather than substantive commitment. This raises a fundamental concern: can a principle-based IR Framework be measured adequately using only an output-based construct? Given that organizations are aware of assessment criteria, they may tailor their reports to meet expectations without truly embedding IR into their decision-making processes. This disconnect suggests that relying solely on reflective constructs risks capturing compliance rather than substance, potentially leading to misleading conclusions about IR adoption and effectiveness.

To improve IR measurement, we propose that research should develop *input/process* measures, which assess the inputs and processes that shape IR, in addition to evaluating the final report (*output* measure). Such an approach aligns more closely with the principle-based nature of the IR Framework (IIRC 2021) by examining how organizations actually integrate IR principles into their decision-making and reporting practices. For instance, consider the IR construct *Social and Relationship Capital*. An output-based measure would assess whether the final report mentions stakeholder engagement efforts, perhaps awarding points if an organization claims to have engaged with local communities. However, this approach is easily biased if the accountants have just estimated the impact on the community themselves. An additional formative measure of *Social and Relationship Capital* would assess the inputs and processes behind the disclosure (Stacchezzini et al. 2016). This would include examining resources spent (e.g., number of hours for the preparation); who was involved in drafting the stakeholder engagement section; if the accountants actually used assessment from, for example, members of the city council on the changes that happened in the local community; whether external verification or third-party consultation took place (e.g., local NGOs, citizens, regulatory bodies); actual socio-materiality (e.g., the use of an organization's own photos for the report); how stakeholder input was integrated into reporting and decision-making (e.g., whether feedback influenced strategic adjustments), or what concrete actions came from the engagement (e.g., partnerships, funding initiatives, or policy changes). Such measures could be captured through direct observations, internal documentation, employee and stakeholder surveys, board meeting minutes, or analysis of decision-making structures. By incorporating formative measures, IR research could reduce the risk of window-dressing and ensure that disclosures are backed by substantive corporate behavior rather than polished narratives (Gerwanski 2020).

Finally, researchers could compare input/process measures and output measures within an organizations to increase the validity of IR quality measures, for example, to assess the alignment between an organization's practices and its publicly disclosed IR reports. Additionally, it would be valuable to examine whether organizations with strong input-oriented IR practices (e.g., stakeholder engagement, data verification, and governance integration) demonstrate superior performance outcomes compared to those primarily focused on crafting compliant reports. Existing research has linked IR to organizational value (Dey 2020; Wahl et al. 2020), liquidity (e.g. Dey 2020), information asymmetry reduction (e.g. García-Sánchez and Noguera-Gámez 2017), corporate environmental performance (e.g. Omran et al. 2021a, b) and the value relevance of ESG performance (e.g. Mervelskemper and Streit 2017). Future studies could better determine whether such performance outcomes stem from genuine IR integration (input/process measures) or merely well-crafted disclosures (output measures).

5.3.4 Leveraging artificial intelligence for IR research

In addition, artificial intelligence (AI) and machine learning will substantially transform research on IR (Sifa et al. 2019). First, future studies should explore how AI and machine learning could integrate additional data sources beyond IR reports that might contain the aforementioned input/process measures. Since organizations have strong incentives to tailor their disclosures to meet expected criteria, researchers must develop credibility assessments that cross-check reported outputs with external inputs. AI-driven methods could scan alternative data sources—such as social media, corporate websites, meeting notes, corporate governance disclosures, media reports, and even image analysis—to assess whether the claims made in IR reports align with observable organizational behavior. Second, AI could enhance IR measurement beyond manual content analysis. Traditional content analysis is resource-intensive and often subject to researcher bias, as it relies on manual coding of disclosures. AI-powered text mining and natural language processing (NLP) could provide systematic, scalable, and unbiased analyses of IR disclosures, identifying hidden patterns in reporting practices that are difficult to detect manually. By automating disclosure quality assessments, AI could improve comparability across firms and reveal subtle shifts in IR practices that manual coding might overlook. Third, AI could identify thematic evolution patterns of IR reports. Longitudinal analyses could use thematic tracking to examine shifts in reporting quality, strategic focus, and stakeholder engagement over time. AI can reveal regulatory impacts, industry-wide changes, and variations in disclosure consistency, providing deeper insights into how IR adoption progresses across sectors. Fourth, AI could contribute to classification and taxonomy development. Databases often lack standardized taxonomies, making cross-study comparisons difficult. AI-powered clustering algorithms could systematically group organizations based on disclosure styles, compliance levels, and strategic emphasis. This would make IR research more comparable and analytically robust.

5.4 Practical contributions on artificial intelligence and data

5.4.1 Leveraging artificial intelligence for accountability and stakeholder relations

First, practitioners need to increase the credibility of their IR reports even more in the future. With the advent of professional reporting agencies and Large Language Models, any organization can now produce polished IR reports that formally meet the requirements of even the most advanced constructs discussed in this study. Truly IR-committed organizations must now expand beyond output-based reporting toward input/process measures, such as documenting who contributed and how, to stakeholder engagement disclosures instead of merely stating that they did address this. Such organizations can enhance their credibility, prove actions over window dressing, and gain stakeholder trust. They can then use AI-driven assessments to detect hard-to-copy input/process-based disclosures. Second, practitioners may leverage AI for continuous, real-time reporting. Instead of relying solely on periodic disclosures, AI-driven systems can integrate the most recent internal documents that would not typically be included in formal disclosures, such as a notable strategic initiatives. Since such raw data is often hard to process, AI-powered chatbots could allow stakeholders to query relevant information. These chatbot interactions would also generate valuable insights for organizations by identifying recurring concerns, detecting emerging issues, and improving stakeholder engagement through real-time responsiveness.

5.4.2 Matching required knowledge with suitable sample(s) and data

Practitioners—including analysts and consultants—should select the IR construct and related data source that matches the specific questions that they would like to address (see Fig. 10). Comprehensive research objectives on IR are unlikely to be covered by a single database. Also, data might have to be hand-collected to match the sample of interest. For instance, the EY database only covers organizations listed on the Johannesburg Stock Exchange. Large databases have an obvious appeal since they conveniently offer data on large samples. Manual data-gathering methods necessarily involve some degree of compromise (de Villiers et al. 2017).

5.4.3 Questioning the reliability of archival, secondary data

Practitioners should be aware that data from large databases is often opaque, raising concerns about the reliability of IR measurement. Unlike some databases, the IR Framework is not used as a selection criterion for determining which organizations qualify as IR reporters (e.g., GRI Sustainability Disclosure

Database). This lack of transparency complicates comparisons across studies and raises the risk of misclassifications in empirical research. To assess the credibility of secondary IR data, researchers can cross-check database classifications with independent assessments, such as those from the EY Excellence for Integrated Reporting Awards or the IIRC's Examples Database. By conducting random sampling of reports and validating their compliance with IR principles, researchers can critically evaluate whether these databases reliably reflect IR adoption and quality.

5.4.4 Shaping the development of IR databases

Databases will develop significantly, clustering reports under their own taxonomies. This would provide greater comparability of the organizations in the database by means of pertinent categories and publicly accessible measures, thereby enabling practitioners to focus more prominently on the utilization of databases. This could lead to the convergence of emerging constructs among the various database providers. Practitioners should actively engage in discussions with database providers regarding how this should be done to optimally match the requirements in practice.

6 Conclusion

In conclusion, IR constructs differ significantly among studies. Some variation is due to different research objectives, such as *IR quality*, *IR disclosure*, or *IR adoption*. Other variations stem from convenience, where the presence of rich data preceded the theory-based definition of the IR construct. The reliability of IR constructs remains difficult to assess, particularly as popular databases currently lack transparency regarding their measures and weighting, thus limiting their theoretical contribution. Other studies create their IR constructs from scratch without building on extant research. Many of these constructs are used as post hoc checklists that are at odds with the principle-based nature of IR, and that do not develop into an elaborate taxonomy. To advance research in this field, we make context-specific suggestions for the use of detailed IR taxonomies. An open issue for research remains the lack of constructs that also measure inputs and processes of IR, since this measurement would complement our understanding of its principle-based nature. Emerging AI-driven methods present new opportunities for future research: they could augment IR assessments by integrating alternative data sources and improving construct validity.

Appendix

References (Figs. 2, 3, 4, 5, 6)		Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Adhariani and Sciulli (2020)	Content + Form	Self-developed construct	Binary + unweighted		Three types of information mediums: annual report, CSR/sustainability report, organization website; two independent assessors; measures of 0 or 1 for every measure; division into quantitative or qualitative disclosure	A2: Content analysis	IR disclosure
					No disclosure = 0; descriptive disclosure without any link to strategy, governance, performance and prospect = 1; descriptive disclosure and link with all strategy, governance, performance and prospects compared with historic position = 2; descriptive disclosure linked with all strategy, governance, performance and prospects compared with historic, present and future position = 3		
Adhikariparajuli et al. (2021)	Content	Self-developed construct	Non-binary + weighted			A2: Content analysis	IR disclosure

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Ahmed Haji and Anifowose (2016a)	Content + Form	Ahmed Haji and Anifowose 2016a, 2016b	Binary & non-binary + weighted	- Extent of IR = number of measures disclosed divided by the maximum possible amount - > (1) was awarded if the measures appeared in the integrated reports and a measure of zero (0) otherwise - Quality of IR = number of measures (based on 0–3) disclosed divided by the maximum possible measure - > weighted approach - > a measure of 0–3 =, where 0 was assigned for compliance, one (1) if the organizations provided general qualitative disclosures. A measure of two (2) was assigned for specific information and the highest measure of three (3) for detailed discussion incorporating quantitative figures. Under this approach, the quality of IR measure was computed as the ratio of ASs to the total possible amount (p. 927)	A2: Content analysis	IR quality

References (Figs. 2, 3, 4, 5, 6)		Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Ahmed Haji and Anifowose (2016b)	Content + Form	Ahmed Haji and Anifowose 2016a, 2016b	Non-binary + weighted		- Extent of IR = number of measures disclosed divided by the maximum possible amount - > unweighted approach -> objective - > (1) was awarded if the measures appeared in the integrated reports and a measure of zero (0) otherwise - Quality of IR = number of measures (based on 0–3) disclosed divided by the maximum possible amount - > weighted approach - > a measure of '0–3' = , where "0" was assigned for compliance, one (1) if the organizations provided general qualitative disclosures. A measure of two (2) was assigned for specific information and the highest measure of three (3) for detailed discussion incorporating quantitative figures. Under this approach, the quality of IR measure was computed as the ratio of ASs to the total possible measure (p. 927)	A2: Content analysis	IR quality
Akiskik and Gal (2019)	Database	GRI Sustainability Disclosure Database	No construct		Adopters vs. Non-adopters: Takes on a value of 1 if the organization issues an integrated report	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Barth et al. (2017)	IR-framework	EY Excellence in Integrated Reporting Awards	Non-binary + unweighted	EY underlying measures instead of the quality categories; –> construct a proxy of 12 components: connectivity of information; stakeholder relationships; materiality; conciseness; organizational overview and external environment; governance; business model; risks and opportunities; performance; basis of preparation and presentation; and other –> Measure: is calculated for each of the 12 components as the sum of the organization's raw measure for each question allocated to that component	A2: Content analysis	IR quality
Beck et al. (2017)	Content + Form	Self-developed construct	No construct	No measure on examination of case organizations' IR	A1: Case study	IR disclosure

References (Figs. 2, 3, 4, 5, 6)			Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Beretta et al. (2019)	Database	IIIRC Example Database	Not disclosed		IIIRC example database: includes reports suggested by the Value Reporting Foundation, BlackSun and other supporters of IR—Leading Practices: examples included have been reviewed by the Value Reporting Foundations Secretariat—Recognized Reports: assessed by an expert as leading practice or received an award → also assessed by the Value Reporting Foundation- IR Reporters: produced a report issuing IR Framework or through participation in IR networks → no quality assessment	A4: Database	IR adoption
Camodeca et al. (2019)	Database	IIIRC Example Database	Not disclosed		IIIRC Example Database: includes reports suggested by the Value Reporting Foundation, BlackSun and other supporters of IR—Leading Practices: examples included have been reviewed by the Value Reporting Foundations Secretariat—Recognized Reports: assessed by an expert as leading practice or received an award → also assessed by the Value Reporting Foundation- IR Reporters: produced a report issuing IR Framework or through participation in IR networks → no quality assessment	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Dey (2020)	Content	Self-developed construct	Binary + unweighted	Equal weight to each measures in the construct → 1 for disclosure and 0 otherwise	A2: Content analysis	IR disclosure
Donkor et al. (2021)	IR-framework	Zhou, Simnett & Green, 2016	Non-binary + unweighted	measure from 0–3 for each measure; IR quality = Actual organization measure / Maximum measure; Used two trained researchers for the human analysis to confirm the results' reliability	A2: Content analysis	IR quality
Du Toit (2017)	Database	EY Excellence in Integrated Reporting Awards	Non-binary + unweighted	Evaluation: EY Top 10= 1, Excellent = 2, Good = 3, Average = 4, Progress to be made = 5	A4: Database	IR quality
Engelbrecht et al. (2018)	Database	EY Excellence in Integrated Reporting Awards	Non-binary + unweighted	Selection of reports based on their inclusion in the databases: 'Top Ten', 'Excellent'	A4: Database	IR quality
Fakhro et al. (2020)	Content+Form	Self-developed construct	No construct	Evaluation of guiding principles in a case organization	A1: Case study	IR disclosure
Flores et al. (2019)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the leading practices section	A4: Database	IR adoption
Frias-Aceituno et al. (2013)	Content	Frias-Aceituno, Rodríguez-Ariza & García-Sánchez, 2013, 2014	No construct	Taking the value 0 if the organization only issues a financial statement, the value 1 if it also elaborates a corporate social responsibility report and the value 2 if it prepares an integrated report	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Frias-Aceituno et al. (2014)	Content	Frias-Aceituno, Rodríguez-Ariza & García-Sánchez, 2013/2014	No construct	Dependent variable Report (R) is numerical, taking the value 0 if the organization only issues a financial statement, the value 1 if it also elaborates a corporate social responsibility report and the value 2 if it prepares an integrated report	A2: Content analysis	IR adoption
Fuhrmann (2019)	Database	GRI Sustainability Disclosure Database	No construct	Adopters vs. Non-adopters: Selection of reports based on their label in the databases	A4: Database	IR adoption
Gal and Akisik (2020)	Database	GRI Sustainability Disclosure Database	No construct	Adopters vs. Non-adopters: Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
García-Sánchez and Noguera-Gámez (2018)	Content	Frias-Aceituno, Rodríguez-Ariza & García-Sánchez, 2013/2014	No construct	Adopters vs. Non-adopters: Assessment of reports based on the inclusion of the minimum measures	A2: Content analysis	IR adoption
García-Sánchez and Noguera-Gámez (2017)	Content	Self-developed construct	No construct	Adopters vs. Non-adopters: 'IR' as a dummy variable with value 0 or 1	A2: Content analysis	IR adoption
García-Sánchez et al. (2020)	Content	Frias-Aceituno, Rodríguez-Ariza & García-Sánchez, 2013/2014	No construct	Adopters vs. Non-adopters: Dummy variable, IR, take the value of 1 if the organization discloses an IR according to the IIRC recommendations, and 0 otherwise	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
García-Sánchez et al. (2018)	Content	Frias-Aceituno, Rodríguez-Ariza & García-Sánchez, 2013/2014	No construct	Adopters vs. Non-adopters: Assessment of reports based on the inclusion of the minimum measures	A2: Content analysis	IR adoption
Gerwanski (2020)	Database	IIRC Example Database	Not disclosed	Adopters vs. Non-adopters: Value 1 if the organization has disclosed an integrated report with explicit reference to the IIRC's IR Framework (2013) in the corresponding year, and 0 otherwise	A4: Database	IR adoption
Ghani et al. (2018)	Content	Self-developed construct	Non-binary + unweighted	Equal-weighted measure based on the eight content elements → —Each element consists of 5 questions with a measure ranging from 0 as 'non-compliance' with IR Framework to 5 as 'strong compliance' with IR Framework	A2: Content analysis	IR disclosure
Girella et al. (2019)	Database	IIRC Example Database	Not disclosed	Adopters vs. Non-adopters: Equal to 1 if organization adopted IR, otherwise, it is 0	A4: Database	IR adoption
Grassmann et al. (2019)	Database	GRI Sustainability Disclosure Database	No construct	Selection of reports based on their label in the databases	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Hassan et al. (2019)	Content	Self-developed construct	Non-binary + weighted	Weighted measure for disclosure indices: no disclosure = 0, descriptive disclosure without any link to strategy, governance, performance and prospect = 1, descriptive disclosure and link with all strategy, governance, performance and prospect compare with historic position = 2, descriptive disclosure linked with all strategy, governance, performance and prospect compare with historic, present and future position = 3	A2: Content analysis	IR disclosure
Hoang et al. (2020)	IR-framework	Zhou, Simnett & Green, 2016	Non-binary + weighted	Measure from 0–30; measurement of guiding principles, fundamental concepts, content elements	A2: Content analysis	IR disclosure
Jensen and Berg (2012)	Database	GRI Reports List, Eccles and Krzus (2010), CRRA Reporting Awards	No construct	Selection of reports based on their inclusion in the ranking entrants of the CRRA Reporting Awards 2010, databases, listed by Accounting for Sustainability	A4: Database	IR adoption
Karwowski et al. (2021)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the databases	A2: Content analysis	IR adoption
Kılıç and Kuzey (2018a)	Content	Self-developed construct	Binary + unweighted	Non-weighted disclosure approach: assigning a measure of 1 if the organization disclosed a certain measures at least once, and 0 otherwise	A2: Content analysis	IR disclosure
Kılıç and Kuzey (2018b)	Database	IIRC Example Database	Not disclosed	Examination of the reports based on their classification on the IIRC website	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Kılıç et al. (2021a, b)	Database	IIIRC Example Database	Not disclosed	Adopters vs. Non-adopters: IR were evaluated to check whether they include the fundamental content elements, six capitals	A5: Content analysis +databases	IR adoption
Kılıç et al. (2021a, b)	Database	IIIRC Example Database	Not disclosed	Selection of reports based on their label in the databases	A4: Database	IR adoption
Kılıc et al. (2020)	Database	IIIRC Example Database	Not disclosed	Selection of reports based on their label in the databases	A4: Database	IR adoption
Landau et al. (2021)	Database	GRI Sustainability Disclosure Database	No construct	Adopters vs. Non-adopters: Differentiation between Integrated, no report and separated	A4: Database	IR adoption
Lemma et al. (2019)	Database	GRI Sustainability Disclosure Database	No construct	Adopters vs. Non-adopters: Variable IREPORT is a measure that takes a value of 1 if an organization provides integrated reports, and 0 otherwise	A4: Database	IR adoption
Liu et al. (2019)	Content + Form	Self-developed construct	Binary & non-binary + weighted	Disclosure measures: 1 or 0; temporal disclosure measures (value creation): 0–3; disclosure measures related to environmental performance: 0–6; subcategory conciseness: readability measures	A2: Content analysis	IR disclosure
Lopes and Coelho (2018)	Database	IIIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
Loprevite et al. (2019)	Database	IIIRC Example Database	Not disclosed	Selection of reports based on their label in the databases	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Lueg and Lueg (2021)	IR-framework	Lueg & Lueg 2021	Non-binary + weighted	Classification into integrated thinking reports, enhanced content reports, traditional reports: Catalogue contains: two main sections of <i>content</i> and <i>form</i> that offer a total measure from 0 to 10 per organization; 80% of the weight for the construct <i>FORM</i> ; 20% to content; elements appear in several subsections	A2: Content analysis	IR disclosure
Lueg (2022)	IR-framework	Lueg & Lueg 2021	Non-binary + weighted	Classification into integrated thinking reports, enhanced content reports, traditional reports: Catalogue contains: two main sections of <i>content</i> and <i>form</i> that offer a total measure from 0 to 10 per organization; 80% of the weight for the construct <i>form</i> ; 20% to content; elements appear in several subsections	A2: Content analysis	IR disclosure
Maama and Mari-muthu (2021)	Content + Form	Self-developed construct	Non-binary + unweighted	Differences between the levels of the Likert scale were based on quality and perceived usefulness	A2: Content analysis	IR disclosure
Maama and Mkhize (2020)	Content	Self-developed construct	Non-binary + unweighted	Assessment of the environmental sustainability and social sustainability –> differences measured based on the guiding principles	A2: Content analysis	IR disclosure
Malola and Maroun (2019)	Content + Form	Self-developed construct	Non-binary + unweighted	Quality measures range from – 1 to 0; calculated as the total of quantity measure, density measure, measurement measure, relevance measure, ease of interpretation measure	A2: Content analysis	IR quality

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Manes-Rossi et al. (2021)	IR-framework	Zhou et al. (2017)	Binary + unweighted	Unweighted approach; measure of (1) was assigned if, in the IR, the SOE disclosed a specific measure that was included in disclosure; otherwise, a measure of (0) was assigned	A2: Content analysis	IR disclosure
Maroun (2019)	Database	EY Excellence in Integrated Reporting Awards	Non-binary + unweighted	Range from 1 (progress to be made) to 5 (for the top 10 reports)	A4: Database	IR quality
Melloni (2017)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
Mervelskemper and Streit (2017)	Database	GRI Sustainability Disclosure Database	No construct	Adopters vs. Non-adopters: IR status is a dummy variable set to unity if organization <i>i</i> publishes an integrated report at time <i>t</i> and zero otherwise	A4: Database	IR adoption
Mio et al. (2020)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
Muttakin et al. (2020)	Database	GRI Sustainability Disclosure Database	No construct	Sample selected based on GRI Database	A4: Database	IR adoption
Nguyen et al. (2021)	IR-framework	Self-developed construct	Binary + unweighted	1 for required disclosure, 0 if not –> total measure 0–50	A2: Content analysis	IR disclosure
Obeng et al. (2020)	Database	Thomson Reuters ASSET4 database	Not disclosed	Measurement of level of IR practice and change in IR practice	A4: Database	IR quality
Oktorina et al. (2021)	Content + Form	Self-developed construct	Non-binary + unweighted	Each measure has the same weight (either 0, 1, or 2)	A2: Content analysis	IR disclosure

References (Figs. 2, 3, 4, 5, 6)		Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Omran et al. (2021a, b)	IR-framework	Self-developed construct	Non-binary + unweighted	Non-binary + unweighted	Measure from Stent and Dowler (2015) and Sofian and Dumitru (2017) based on principles and content elements; every measure is between three (0, 1, or 2) – > 34 disclosure measures	A2: Content analysis	IR quality
					Six measures: EY benchmark (ideal disclosure); measure 5: Top 10; measure 4: excellent; measure 3: good; measure 2: average; measure 1: progress to be made	A2: Content analysis	IR quality
					7 elements with a measure from 0 to 1; contents: consistency 8 elements and 2 fundamental concepts with a measure of 0–5; assurance and reliability: 3 elements with a measure from 0 to 1; form: 3 elements with a measure from 0 to 5	A2: Content analysis	IR quality
Pistoni et al. (2018)	IR-framework	Self-developed construct	Binary & non-binary + weighted				

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Raimo et al. (2020a, b)	IR-framework	Pistoni et al. (2018)	Binary & non-binary + weighted	Content: measure varies from 0 (in case of absence) to 5 (in case of high quality); <i>assurance and reliability area</i> : use of internal audit and/or third-party verification by the organization as well as the presence of any prizes or awards for the integrated report. –> measure of 0 or 1 –> maximum measure of 3; <i>background area</i> : reasons behind the publication of the document, goals, beneficiaries of the report, manager in charge of the process, CEO's commitment and compliance with generally applied disclosure standards and title. –> measure between 1 and 0 –> maximum of 7; <i>form area</i> : accessibility of the IR, conciseness (number of pages), readability and clarity –> measure from 0 to 5 –> maximum of 15	A2: Content analysis	IR quality
Raimo et al. (2020a, b)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
Raimo et al. (2021a, b, c)	IR-framework	Pistoni et al. (2018)	Binary & non-binary + weighted	7 elements with a measure from 0 to 1; contents: consistency 8 elements and 2 fundamental concepts with a measure of 0–5; assurance and reliability: 3 elements with a measure from 0–1; form: 3 elements with a measure from 0 to 5	A2: Content analysis	IR quality
Raimo et al. (2021a, b, c)	IR-framework	Pistoni et al. (2018)	Binary & non-binary + weighted	See Pistoni et al. (2018)	A2: Content analysis	IR quality
Raimo et al. (2021a, b, c)	Database	IIRC Example Database	Not disclosed	IIRC website specifically IR reporters and Leading practices	A4: Database	IR adoption

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Rivera-Arrubla et al. (2017)	Content + Form	Self-developed construct	Binary + unweighted	Measure for each component 0 or 1	A2: Content analysis	IR adoption
Robertson and Samy (2015)	Content	Self-developed construct	No construct	Content analysis	A2: Content analysis	IR disclosure
Rodríguez-Gutiérrez et al. (2019)	Database	IIRC Example Database, GRI sustainability Disclosure Database	Not disclosed	Selection of reports based on their label in the databases	A1: Case study	IR adoption
Rossignoli et al. (2022)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
Salvi et al. (2020)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
Sierra-García et al. (2015)	Database	GRI Sustainability Disclosure Database	No construct	Adopters vs. Non-adopters: Variable Integrated Reporting (IR) is a dummy that takes the value one if the organization discloses this report and the value zero in other cases	A4: Database	IR adoption
Steenkamp (2018)	Database	EY Excellence in Integrated Reporting Awards	Non-binary + unweighted	Selection of reports based on their inclusion in the databases	A4: Database	IR adoption
Stent and Dowler (2015)	IR-framework	Self-developed construct	Binary & non-binary + weighted	Binary measure but with occasional modifications which are clearly indicated: Binary measures simply indicate coverage (or lack thereof) of an IR requirement, whereas modifications represent initial steps towards also evaluating quality of coverage —> 0 or 1 measures; 0, 1, 2; 1, 2; 0, 1, 2, 3	A2: Content analysis	IR disclosure

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Sukhari and de Villiers (2019)	Database	EY Excellence in Integrated Reporting Awards	Non-binary + unweighted	Selection of reports based on their inclusion in the ranking	A4: Database	IR adoption
Tirado-Valencia et al. (2021)	Database	IIRC Example Database	Not disclosed	Selection of reports based on their label in the databases	A4: Database	IR adoption
Vena et al. (2020)	Database	IIRC Example Database	Not disclosed	Adopters vs. Non-adopters: Value 1 if adopter and 0 if non-adopter	A4: Database	IR adoption
Vitolla et al. (2019a)	IR-framework	Pistoni et al. (2018)	Binary & non-binary + weighted	Background: 7 elements with a measure from 0 to 1; contents: consistency 8 elements and 2 fundamental concepts with a measure of 0–5; assurance and reliability: 3 elements with a measure from 0–1; form: 3 elements with a measure from 0 to 6	A2: Content analysis	IR quality
Vitolla et al. (2019b)	IR-framework	Pistoni et al. (2018)	Binary & non-binary + weighted	7 elements with a measure from 0 to 1; contents: consistency 8 elements and 2 fundamental concepts with a measure of 0–5; assurance and reliability: 3 elements with a measure from 0–1; form: 3 elements with a measure from 0 to 8	A2: Content analysis	IR quality
Vitolla et al. (2019a, b, c, d)	IR-framework	Pistoni et al. (2018)	Binary & non-binary + weighted	7 elements with a measure from 0 to 1; contents: consistency 8 elements and 2 fundamental concepts with a measure of 0–5; assurance and reliability: 3 elements with a measure from 0–1; form: 3 elements with a measure from 0 to 7	A2: Content analysis	IR quality

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Vitolla et al. (2019a, b, c, d)	IR-framework	Pistoni et al. (2018)	Binary & non-binary + weighted	7 elements with a measure from 0 to 1; contents: consistency 8 elements and 2 fundamental concepts with a measure of 0–5; assurance and reliability: 3 elements with a measure from 0–1; form: 3 elements with a measure from 0 to 9	A2: Content analysis	IR quality
Wahl et al. (2020)	Database	IIRC Example Database	Not disclosed	Adopters vs. Non-adopters: Equals 1 if the organization has published an integrated report in that year and 0 otherwise	A4: Database	IR adoption
Wang et al. (2020)	Database	EY Excellence in Integrated Reporting Awards	Non-binary + unweighted	IR quality is coded between 1 and 5, with 1 being ‘Progress to be made’, 2 being ‘Average’, 3 being ‘Good’, 4 being ‘Excellent’, and 5 being ‘Top 10’	A2: Content analysis	IR quality
Zhou et al. (2018)	IR-framework	EY Excellence in Integrated Reporting Awards & Zhou et al. 2017	Non-binary + unweighted	IR quality extracted from the EY ranking: IR is a dummy variable code 1 if the disclosure quality of IR is greater than the sample median and 0 otherwise → two sources: Zhou et al. 2017 disclosure measures and EY ranking	A4: Database	IR quality
Zhou et al. (2017)	IR-framework	Self-developed construct	Binary + unweighted	Use of an investor survey with quadrix (p. 107) and 31 measures across eight sub-constructs (p. 108) from zero to one → maximum possible total measure = 31; no prescribed specific key performance measures, measurement methods or disclosure of individual matter → subjective → double human analysis → two coders	A2: Content analysis	IR quality

References (Figs. 2, 3, 4, 5, 6)	Category (Fig. 1)	Construct (Fig. 7)	Binary and weighting	Measures for the constructs	Method for classification (Fig. 8)	Research objective (Fig. 9)
Zouari and Dhifi (2021)	Database	Thomson Reuters ASSET4 database	Not disclosed	Measure takes values between 0 and 100 and is composed of 12 sub-measures of which four driver and eight outcome measures	A5: Content analysis + databases	IR disclosure
Zuniga et al. (2021)	Database	IRAS (2015)	Not disclosed	Measures the level of sustainability information disclosed within IR; reflects the first commitment to incorporate ESG information → between 0 and 1	A4: Database	IR quality

List of reviewed studies (n = 84)

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Data availability Data available on request from the authors. **Statement:** The data supporting the findings of this study are available from the corresponding author, [R.L.], upon reasonable request. Access will be granted in accordance with standard academic sharing policies. **Policy:** Basic, Share upon Request.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose. All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Finja Rauschenberger, Rainer Lueg and Jannik Gerwanski. The first draft of the manuscript was written by Finja Rauschenberger and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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