

RESEARCH ARTICLE

Enhancing the materiality principle in integrated reporting by adopting the General Systems Theory

Roberto Aprile¹ | David Alexander² | Federica Doni³ 

¹Department of Management, University of Bergamo, Bergamo, Italy

²Business School, University of Birmingham, Birmingham, UK

³Department of Business & Law, University of Milano-Bicocca, Milano, Italy

Correspondence

Federica Doni, Department of Business & Law, University of Milano-Bicocca, Milano, Italy.
Email: federica.doni@unimib.it

Abstract

This article aims to explore the effectiveness of the materiality principle (MP) within Integrated Reporting (IR) by applying the General Systems Theory (GST) of Ludwig von Bertalanffy. GST, within its holistic approach, can be used to identify the main sub-systems in which the regulation of IR can be articulated and the relationships between themselves, to make the MP effective, thereby improving the quality of the IR regulation. While much research has analyzed the materiality assessment and its impact on disclosure, little is known about how regulation affects the effectiveness of this principle. This research addresses this gap by explaining that materiality is not a stand-alone principle but needs to be supported by other principles to be effectively enacted. Our findings can improve the materiality assessment by providing a better understanding of the materiality meaning that can be helpful for managers, standard setters and professional bodies. In terms of research implications, this provides a framework for an alternative thought process for simplification without sacrificing the proper breadth of stakeholder focus.

KEYWORDS

General Systems Theory, Integrated Reporting, materiality, stakeholder engagement, standard setters

1 | INTRODUCTION

Materiality is an evolving concept that “has historical dimensions, shaped by different, at times conflicting, expertises” (Edgley, 2014, p. 256). The introduction of IR (IIRC, 2013c), has generated a sort of combination of financial and non-financial report (Adams, 2015; Arul et al., 2021; de Villiers et al., 2014; Stolowy and Paugam, 2018; Stubbs and Higgins, 2014) by embedding integrated thinking into corporate reporting. Such a situation implies a new and different approach to materiality, and a major complexity since the Integrated Reporting (IR) framework explicitly considers six types of capital (financial capital, manufactured capital, intellectual capital, human capital, social and relationship capital, and natural capital) (IIRC, 2013a, IIRC, 2013b, IIRC, 2021a). Due to this aspect, IR may represent the

optimal reporting model for investigating and checking the materiality assessment (IIRC, 2013a, 2021a). In more detail, we decided to select the General Systems Theory (GST) by Ludwig von Bertalanffy (LvB), for its holistic approach, to enhance the materiality principle (MP), identifying interplays and relations between the forces able to enact the MP and to achieve its objectives.

This article, to our knowledge, is the first adopting this theoretical perspective to address financial and non-financial reporting regulation, since in general IR has been analyzed under the lens of the stakeholder theory, the legitimacy theory and the institutional theory (Cerbone and Maroun, 2020; Corrado et al., 2019; Fiandrino et al., 2022). All these theories are useful to analyze the impact on preparers (Lai et al., 2017) and users, whereas the GST can be in particular useful for the standard setters and professional bodies'

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *Corporate Social Responsibility and Environmental Management* published by ERP Environment and John Wiley & Sons Ltd.



perspectives, by scrutinizing the system represented by the stated rules. In particular, by using GST, we introduce the concept of open systems by focusing on relationships among elements and parts of the system. On the basis of the GST structure, we assess how the MP can be embedded into the IR framework. Our contribution is threefold. First, this study can contribute to greater understanding of the functioning of the MP by adopting the GST. This analysis explains that the MP can concretely exist only through interactions with other principles and concepts. Second, this study considers how materiality has been tackled by the IR approach, finding out some incongruities and useful insights for the IIRC—and possible emerging successor bodies—and for the other regulators in realizing their guidance, for entities that have already started publishing their IR, and for users in better understanding it. Third, since this analysis is realized with a normative and critical approach (Horkheimer, 1993), our results can generate both theoretical implications going in depth in the analysis and understanding of the principle, and improved relationships with other principles affecting its concrete applicability. This approach meets the three criteria of critical theory, since it is explanatory, practical and normative at the same time (Horkheimer, 1972, 1993). In managerial terms, these findings can be helpful for defining a better regulation of the MP within the IR framework, and within other financial and non-financial reporting standards and regulations.

The remainder of the article is structured as follows: Section 2 contains an introduction to the MP and an analysis of the theoretical framework based on the GST. The methodology is described in Section 3. Section 4 highlights the interpretation of the MP in the light of all previous contributions and specifically with reference to the IIRC's approach. Finally, Section 5 suggests conclusions.

2 | LITERATURE REVIEW AND THEORETICAL BACKGROUND

Corporate reporting costs money and seeks to provide information which is useful to readers (Veltri and Silvestri, 2020). Such readers need to receive information which has the potential to influence their actions or perceptions, in a manner such that the likely benefit exceeds the likely effort. In recent years, there has been a big increase in the production of external reports of different natures, addressing in particular financial, social, environmental, and intangible aspects (e.g., Alvino et al., 2021; Camilleri, 2015; Di Vaio et al., 2020; Di Vaio et al., 2022; Eccles and Krzus, 2010; Kolk, 2008; KPMG, 2019; Sierra-Garcia et al., 2015). Such documents tend to present much information, in some cases overlapping among themselves (Plumlee, 2003). Reports are becoming more and more time-consuming for preparers and for users (IIRC, 2017; Melloni et al., 2017). A necessary condition for a positive net outcome from the trade-offs inherent in the above considerations is that the information is material. Prefiguring the more rigorous analysis below, this study can roughly explain this concept as requiring that the user concerned is in a better position with the information than without it.

This very broad statement needs to be applied in a context-specific and user-specific scenario. In more detail, the “MP” should

have two main objectives: on the one hand to select information when there is too much available to be reported and, on the other hand, to define a parameter useful to allow auditors (or assurance providers) to certify the report. The first category is based on the indefinite possible amount of information that could be supplied to the users in cases where they are not specifically determined (by the law for instance). The second category is functional to define a sort of significance margin useful to allow auditors and assurers to do their job in estimating or evaluating the validity of figures and information. Brennan and Gray (2005, p. 4) note that “definitions of materiality are important to three groups of stakeholders: preparers..., auditors [assurance providers] and users...” Even if “decisions are made by only two of these three groups, preparers and auditors, ... judgments of users of financial statements are central to the definition, not judgements of preparers (even though it is preparers who make the judgments).” The same authors also add that “the concept of materiality (in effect) builds flexibility into financial reporting. This can lead to abuse” (2005, p. 3).

International literature has begun to analyze materiality to find useful definitions of the concept and suitable operating processes, considering the MP and its application in different contexts, in particular financial reporting, auditing behavior and assurance providers' behavior, and non-financial reporting.

With reference to *financial reporting*, in 1933 a *material fact* was defined as “a fact the untrue statement or omission of which would be likely to impact the conduct of a reasonable man with reference to the acquisition, holding or disposal of the security in question” (Gordon, 1933). This definition is more or less still adopted also nowadays within the scope of financial reporting.

Edgley et al. (2015) draw attention to the different approaches followed by auditors and assurance providers. The importance of considering materiality within the audit of non-financial information has been underlined by Messier et al. (2005). Many other contributions address the requirements necessary to make the assurance process work (e.g., Mazzotta et al., 2022; O'Dwyer and Owen, 2005; Wallage, 2000). With reference to *non-financial reports*, some useful contributions arise from Eccles et al. (2012) who underline the need for a sector-specific materiality definition for sustainability reporting standards. In the context of non-financial reporting Mio and Fasan (2014) note that the definition of materiality implies some practical difficulties, mainly due to the lack of quantitative thresholds as compared with financial materiality, and the presence of a wider and more heterogeneous array of nonfinancial reporting users. Some recent contributions more focused on IR consider the problem of materiality (De Cristofaro and Gulluscio, 2019). Stubbs and Higgins (2014, p. 1083) investigate internal mechanisms and find that all the organizations in the study have a process to identify material issues, and that the integrated reporters are changing their materiality process, by attempting to align it with the business strategy.

Further support for the thinking behind this comment is rigorously presented in Alexander and Blum (2016), who maintain that IIRC has sacrificed its original (if idealistic) broadly-based accountability desires on the altar of measurement in general, and financially quantifiable measurement in particular.

In addition to the previous contributions, practitioners have started several discussions on what is effectively important and material in sustainability disclosure and academics have focused on the materiality analysis process (Farroq and de Villiers, 2019), stimulating empirical studies (Gerwanski et al., 2019; Machado et al., 2021; Saenz, 2019) and reflections about the nature of the materiality assessment. For example, Puroila and Mäkelä (2019; p. 1050) argue that “Materiality assessment itself is valuable as an inclusive practice.” In this perspective, by introducing interaction among accounting and reporting models, Dialogic Accounting (DA) identifies the need for accounting systems to be responsive to the diversity of stakeholders’ values and interests (Manetti et al., 2021). This field can serve as a conceptual framework to emphasize the agonistic-democratic approach and the engagement processes (Bebbington et al., 2007; Manetti, 2011; Passetti et al., 2019) in defining materiality issues of corporate reporting. In this way, it is possible to highlight the conflicting opinions of stakeholder representatives that influence the materiality assessment leading to a more dialogic, inclusive and democratic accounting (Bellucci et al., 2019; Cerbone and Maroun, 2020; Puroila and Mäkelä, 2019).

Other useful insights arise from an analysis of the documents issued by various standard setters and professional bodies that can be summarized as follows.

This overview shows a lack of comparability and standardization. It emerges, confirming the views of Brennan and Gray (2005), that one of the main problems is that decisions about the information to supply in the reports are made by preparers and auditors, whereas the judgment of users of financial statements is central to the definition (not the judgments of preparers who in practice have to make the decisions). Such judgments may be particularly difficult in the context of non-financial information (Green and Cheng, 2019). It also emerges that literature has not analyzed the interactions of the MP with the whole system of principles and rules, to be effective. This study can make an important contribution by addressing this gap.

Particularly, it is worth analyzing the MP in the context of sustainability reporting and IR, (Eccles and Krzus, 2010). IR shifted to a completely different reporting model (Alexander et al., 2015; Alexander and Blum, 2016; Flower, 2015) becoming an additional report addressing the value creation process and analyzing, in a concise way, material aspects influencing it.

It is worthwhile to emphasize that IR is addressed to providers of financial capital as main users. Even if it is assumed that investors can represent all stakeholders (being stakeholders themselves), their perspective is likely to be very different from the other stakeholders. Due to the increased complexity (embracing all six “capitals”), “materiality” has become one of the more important issues related to the IR project (Green and Cheng, 2019).

The implications of the above, taken together, are that EITHER the complexity is enormously increased because it requires a six-dimensions optimization and reporting problem, OR that IR risks to become effectively meaningless as it reduces to financial considerations focused on the entity (and its suppliers of capital), and not on the whole stakeholders, and in particular not on the ones interested in the environment, notwithstanding their importance (Brown and

Dillard, 2014). Much more available information, relevant to many more types of users, and increasingly diverse in characteristic and philosophy, comes to the fore. Only the really important, significant, and therefore material, information for the target stakeholders should be provided (Silvestri et al., 2017). But this statement is easy, and as it stands meaningless unless we define and agree on the target stakeholders and their needs.

The IR framework points out in paragraph 3.20: “To be most effective, the materiality determination process is integrated into the organization’s management processes and includes regular engagement with providers of financial capital and others to ensure the integrated report meets its primary purpose.” Judgment is needed (para 3.29), to “ensure the integrated report meets its primary purpose as noted in paragraph 1.7 (i.e., to meet the needs of suppliers of capital).” Crucial to this process is the “reporting boundary.” Further factors to consider are “conciseness,” “reliability,” “balance,” “completeness,” “consistency” and “comparability”. In summary, the declared focus of “IR,” despite various diversionary proposals (not presented in detail here) relating to a wider concept of stakeholders, returns largely to a focus on information of relevance to providers of finance, and the objective of adding value, gradually abandoning the earlier wider and multidimensional stakeholder approach (IIRC, 2013a). As argued by both Flower (2015) and Alexander and Blum (2016), the original focus on sustainability of the earliest (2010) documents has been sacrificed on the “altar of measurable, quantifiable and financial metrics.” The implications of materiality which arise have tended to focus correspondingly. Therefore, it is important to understand the MP in its multidimensional and cross-functional approach, also with reference to the interrelations with other principles.

We rely on the theories of LvB who is considered one of the first masterminds of the GST (1968). As the author specifies in “The History and Status of General System Theory,” the origin of his vision can find its roots in Aristotle’s statement: “The whole is more than the sum of its parts” (LvB, 1972, p. 407). For LvB, the theory of systems represents “a new paradigm,” in the sense of Thomas Kuhn, contrasting to the predominant, elementaristic approach and conceptions” (LvB, 1972, p. 415), since science previously adopted the second maxim of Descartes’ *Discours de la Méthode* consisting in breaking down every problem into as many separate simple elements as might be possible. This, similarly formulated by Galileo as the “resolutive method,” was the conceptual “paradigm of science from its foundation to modern laboratory work: that is, to resolve and reduce complex phenomena into elementary parts and processes” (LvB, 1972, pp. 408–409). Another source of ideas for LvB was represented by the Gestalt theory, within the psychology field of studies, that “posed the question that psychological wholes (e.g., perceived Gestalten) are not resolvable into elementary units as punctual sensations and excitations in the retina” (LvB, 1972, p. 410). All these aspects lead to shift the analysis from the singular elements, to the processes and coordination of such elementary parts. LvB (1972, p. 415) developed a “dynamical” system theory by using mathematical descriptions of systems properties (such as wholeness, sum, growth, competition, allometry, mechanization, centralization, finality, and equifinality), and focusing on the interplay and interactions of different elements.



In this way, the GST has become applicable to social matters. At a theoretical level, some sort of “separated units,” smaller and with a reduced complexity, can be identified. These are the social systems, whose degree of complexity changes based on the development and the capacity of selecting and to structurally organize the systems themselves. Since social systems are realized based on common sense, the analysis of communicative processes is essential within social research. Social reality, if it is not based on natural reality, is anyway one of the many faces of a unique reality that, as such (or in itself), can be observed and understood with a unique corpus of conceptual tools, at least with a certain level of abstraction. All these social systems being products of the human mind, it is rational to think that the same conceptual tools can be used in all such fields of study (Ruzzeddu, 2012).

In general, GST has created a new way of considering the object of study, introducing open systems and focusing on relationships among elements and parts of the system. Many of the relationships valid within natural sciences, can be applied also by social sciences and be useful for exploring the object of study. Since the main characteristic of living beings is their organization, the study of the singular parts or processes cannot supply an exhaustive explanation of natural phenomena (LvB, 1934) and it is important to define the rules that regulate these systems. This way of investigating has been called “theory of organisms” (LvB, 1934, pp. 64 and following). A system is a complex reality whose elements mutually interplay based on a circular model in which each element affects the others and itself is affected. As a consequence, the meaning of each element cannot be considered by a focus on the elements themselves, but rather in the system of relations in which it is collocated. GST considers that the system derives from a selecting process made by the observer, who, based on his own scientific interests, chooses to consider some elements and to exclude others. The system, in this way, should not be considered as something objectively existing within reality but rather as a subjective theoretical elaboration aimed at analyzing specific phenomena. This aspect could be viewed as a limitation of this research, since the study of the system can be done adopting a variety of perspectives of analysis as chosen by the authors of the research. On the other hand, it could be viewed as a simple open and honest recognition of the situation, which avoids a false simplification of a “reality” which is pseudo by definition.

Boulding (1956) has contributed to developing the application of the GST by creating a corollary, opening to the analysis of subsystems in which the system is articulated, considering this approach helpful to understand analyzed phenomena (Hatch, 1997; Fraticelli, 2011). Pundy and Mitroff (1979), analyzing open systems, propose the following classification based on nine levels, each of them characterized by an increasing level of complexity: Level 1, Frameworks; Level 2, Clockworks; Level 3, Control Systems; Level 4, Open systems; Level 5, Blueprinted growth systems; Level 6, Internal Image systems; Level 7, Symbol processing systems; Level 8, Multi-cephalous systems; Level 9, Systems of unspecified complexity. In particular, Level 3, Control systems, is defined as follows: “Control system models describe regulation of system behaviour according to an externally prescribed

target or criterion, as in heat-seeking missiles, thermostats, economic cycles in centrally formations and differentiated structures, and also the occurrence of mitosis-duplication through cell division” (Pundy and Mitroff, 1979, pp. 6–7). As stated by Scott (1992), theoretical models generally stop their analysis at the fourth level. In the case of this analysis, the level most fitting with this classification is the third one listed above. In this way LvB has enlarged the scientific field of application of his theory, open to systems thinking.

In this perspective, LvB's theory has found an application even in more recent periods, in the accountability fields (Gray 1992; Gray et al., 2014; Alexander and Blum, 2016). The relationship between the ideas of systemic openness and closure, for instance, has been a central concern in different studies by Francisco Varela, Gregory Bateson, or Niklas Luhmann” (Van Assche, et al., 2019, p. 251). “As several authors in this issue argue, von Bertalanffy did provide foundations for a development of social theory, which could adequately link individual, group, and environment in a way called for by the early systems theory (Cadenas, 2019; Hofkirchner, 2019; Vanderstraeten, 2019).” Moving to sustainability-oriented fields GST has been used to validate an eco-systemic framework by considering how a sustainable business can operate itself “as a complex system similar to a living organism” (Sun et al., 2018, p. 2). Moreover, market-focused sustainability adopts GST to integrate customers (and other stakeholders) into marketing strategies (Hult, 2011). In the accounting /accountability context despite the analysis by Alexander and Blum (2016) that adopts the Luhmann theory for understanding the complex set of systems issued by IIRC, the GST conceptualization has not been applied in the recent development of sustainability accounting. To address this gap LvB's theory can facilitate an in-depth assessment of the interrelationships between the MP and other principles, particularly in the IR complex system reporting, allowing a holistic judgment of the adopted regulatory system.

As GST introduced open systems by focusing on relationships among elements and parts of the system it can be applied in IR which is based on a system of rules within financial and non-financial information. These aspects shift the analysis from the singular elements, to the processes and coordination of such elementary parts (LvB, 1972, p. 411), to understand the best way to define the system of rules that can regulate the reporting activity. This activity is obviously not free from biases since, as evidenced in the previous analysis of the GST, the “selecting process made by the observer, who, based on his own scientific interests, chooses to consider some elements and to exclude others. The system, in this way, should not be considered as something objectively existing within reality but rather as a subjective theoretical elaboration aimed at analysing specific phenomena.”

3 | METHODOLOGY

Materiality has been deeply studied, with different angles of analysis (Dumay et al., 2016; Edgley 2014) mainly focused on the audit perspective (e.g., Chewing, Pany, Wheeler, 1989; Carpenter, Dirsmith, 1992; Carpenter et al., 1994; Big Five Audit Materiality Task Force, 1998). Other contributions focus on the meaning/definition of materiality, or

on the characteristics of materiality (e.g., Bernstein, 1967; FASB, 1975; Estes and Reames, 1988; Bean and Thomas, 1990; Blakemore and Pain, 1998; Fang and Jacobs, 1999; Chewing and Higgs, 2002; Brennan and Gray, 2005; Dale, 2005; Davidoff, 2011; ESMA, 2011, 2013), or on the judgments required to apply materiality (e.g., Firth, 1979; Torelli et al., 2020; Sepulveda-Alzate et al., 2022). Little is known about the standard setter perspective, which should adopt a holistic approach since it pursues the best equilibrium in the regulation of each kind of reporting system. IR is able to combine financial and non-financial information, and can be considered as one of the most complex and holistic reporting systems (Eccles and Krzus, 2010; IRC of South Africa, 2011; IIRC 2011; IIRC, 2012a, 2012b).

Since the GST, to our knowledge, has never been applied to accounting standards or standards issued by other professional bodies, there is no previous interpretation of how the systems vision can be applied to them. This research tries to find a possible way to apply the theory of the system to a complex body of coordinated “rules” such as the ones that should govern corporate reporting. This unique schema of analysis can be applied to the IIRC framework in its latest issued version (IIRC, 2021), this being the potentially most wide-ranging and complex regulatory framework to consider. To achieve this result, we consider the interconnections between the different elements and the roles played by each one, comparing them with the human body. In particular, GST is here used to identify which are the main sub-systems composing the whole system of underlying the IR and the functional relationships among themselves as it happens with reference to the human body. Applying von Bertalanffy’s theorization of organizing relations in IR, this analysis highlights that the MP cannot be considered as an autonomous element, but it represents a sub-system of the corporate reporting system; only by analyzing interplays with other subsystems can its effectiveness be assessed. This analysis is conducted adopting a deductive approach and can help in defining the elements currently missing within the IR framework from a holistic perspective. Additionally, the methodological approach can be linked with the notion of “theory as narrative” by DiMaggio (1995). This analysis uses this kind of theory that ranges from investigating exploratory hypotheses by identifying “regularities in relations among variables together with plausible accounts of how action could produce the associations observed, to formally modelled principles predicting distributions of outcomes” (Ahrens and Dent, 1998, p. 12).

The methodological approach adopted is structured as follows. The first step is to verify if reporting standards can be considered as an open system. They represent the rules and guidelines for entities to report about specific aspects of their social and economic life. By doing this, they involve many different subjects such as the adopters of the standards, their consultants, the users of the information supplied, represented by investors and other stakeholders, the audit and assurance companies granting the reliability of information, states for tax and compliance reasons, the financial market, in particular for listed companies. Hence, many open and dynamic relationships can induce to fully consider the different sets of reporting standards as open systems. This represents an important aspect, because till now, GST has been applied to organizations and not explicitly to reporting standards.

But such application can lead to a deeper and more structured analysis of the relations among the different rules and requirements included in these corpora of standards. Based on Boulding (1956) we can divide the corpus of rules into subsystems to allow a deeper comprehension of the functioning of each subpart. Such division into subsystems is an intellectual activity that means a construction of the intellect (and obviously influenced by the authors’ perspective), aimed at clarifying the ways in which the whole system can survive and try to achieve its goal. In this context materiality is generally seen as an element of the principles’ system of the corporate reporting. By adopting LvB’s theory this article considers materiality as an element of the reporting activity that needs to interact with other elements and principles to be effective. Standard setters, in fact, generally devote a specific standard to materiality, so that materiality becomes an autonomous element (sub-system) of their reporting and accountability system. However, this analysis puts in evidence that materiality does not represent a stand-alone principle, but requires integration with other principles to achieve its objectives. To do this, we refer to the original approach of LvB that sees in the natural sciences the prototype of analysis that can be applied and extended to other sciences, including social science. Creating a conceptual bridge with the human organism, this study considers, as an explanatory example, the circulatory system; in effect as a parable. Its *general purpose* is to maintain the health and the survival of the human organism. The *specific purpose* is to allow blood to circulate and transport nutrients, oxygen and other elements to organs and cells, fight diseases, etc., and to convey toxins and other negative substances to be eliminated towards the organs responsible for this function. To achieve all these different objects, the subsystem of the “circulatory system” creates interrelations with other subsystems, for example the respiratory system, the digestive system, and the urinary system. With these systems, there is a sort of bidirectional relationship, whereas with other subsystems, as for example the visual system, or the auditory system, the relationship is less stringent, since the circulatory system does not need them to be effective. *Assumptions and functioning instruments* are represented by a functioning heart, lungs able to bring oxygen and able to exchange other elements; depurative organs able to clean the body from toxins and specific wastes and convey them to the blood, when required. *Elements that preserve and maintain the integrity* of the arteries and veins, are for example a low level of cholesterol, the right number of red blood cells, and so on.

By using this classification as a methodological framework, it is possible to verify how the different reporting rules of the IR framework can fit with this classification and if there are some omissions that can prevent the system, and in particular the subsystem of materiality, from working in the correct way, and achieving its aims. Finally, after finding the main critical aspects and omissions in the IR regulation, in order to find possible useful solutions, we consider if the regulation proposed by other standard setters, in particular addressing non-financial information (NFI), such as (GRI standards and Accountability within AA1000) contains possible useful solutions. To ensure the quality of these findings and the rigor of the research design this study fits the main gold-criteria of qualitative analysis, that is, credibility, transferability, dependability, confirmability and reflexivity



(Korstjens and Moser, 2018; Lincoln and Guba, 1985). Firstly, the credibility of this analysis can be ensured by identifying the most relevant characteristics and elements for the MP on which this study focuses. In terms of transferability, we can argue that these findings take into account not just literature and theories but their context as well, as we introduce an innovative approach by linking GST and the IR complex system of financial and non-financial reporting. Dependability and confirmability are not applicable in this study as it did not collect data from interviewees or surveys. Finally, reflexivity emerges from this analysis as preconceptions, assumptions and a certain degree of subjectivity represent a limitation of this research. This aspect does not allow the generalizability of these evidences, this often being considered an unnecessary goal in qualitative research (Carminati, 2018). In this perspective, it is possible to refer to the interpretive approach that can be useful to justify the transformation of social phenomena into discourses that can be central into organizational practices and accounts (Putnam and Banghart, 2017).

4 | RESULTS, ANALYSIS, AND DISCUSSION

This analysis highlights a need to contextualize the MP within the logics of the system it belongs to (Cerbone and Maroun, 2020), but previous literature mainly uses institutional logics by focusing on conflicting relations among stakeholders to improve the assessment process of the MP (Bellucci et al., 2019; Cerbone and Maroun, 2020; Puroila and Mäkelä, 2019). This theoretical framework is not able to provide an effective explanation of how the MP can effectively operate within the complex system of IR, following the supreme principle of the organization of any system, i.e., “unity through diversity” (Hofkirchner, 2019). To address this gap, this research selects the rationale of GST to analyze the main elements of the “IR system” by considering IR as a coordinated system functional to supply information to stakeholders, and trying to define the main relationships and interplays among such different elements. This methodological approach can be applied to the analysis of the MP as it represents an innovation since standard setters and professional bodies generally adopt a hierarchical classification of the stated principles, without underlining the relationships among them. The theory of systems forces us to include other analyses, not only based on a vertical approach, defining the interrelationships among the different elements of the system (“integration”). Following on from GST and its theoretical evolution, this study defines the interrelationships among the different elements, trying to group them in homogeneous categories that can represent subsystems (or levels) of the reporting system useful to understand how the MP works in its context of rules included within the IR framework. With reference to the *general purpose* of the reporting system, we can say that it is represented by the ability to survive over years as a form of reporting. This is consistent with human bodies. With reference to this aspect, this research can find categories of principles mainly addressing the whole system of the IR information that can be named *Principles underlying the IR structure*. With reference to the *specific purpose* of the MP, it aims to safeguard the interests of users and preparers. For users it is a matter of

time. The report should supply useful information without requiring the reader to spend too much time. With reference to the preparer, it is a matter of savings, since producing information is costly. Combining the two elements, it is possible to identify a matter of costs/benefits.

It is possible now to consider how the elements composing the “IR system” can affect the MP. In this way, it is possible to connect aim, theoretical framework (GST) and methodological approach, by using the main content of the IIRC Framework. Grouping the elements by homogeneous characteristics/aims, we can have:

(A) *Basic assumptions* (main users, material to whom, focus of the framework),

(B) *Way of operating*, (general or entity-specific, timeliness of the assessment, limitations, other aspects).

(C) *Related principles*.

(D) *Other aspects enforcing materiality* (disclosure of the process).

The first one relates to the *Main Users (material to whom)*. It is stated that the main users of the IR are the providers of capitals. This category represents a new concept compared to the civil law “continental” reporting tradition, but very close to the ethos of the IASB framework. In particular one type of “capital,” namely the financial capital, is given very explicit priority over any other “capitals” by the IIRC framework (par. 1.7). The kind of user can also influence the way of working of the MP within non-financial reporting. With reference to the *Main perspective of analysis (material to what)*, the IR framework is more focused on preparers' judgment and not on stakeholders' needs (GRI) or users' needs (AA1000). This approach is in some ways closer to the IASB framework that is more focused on the management of the entity and involves a great freedom for the preparers of the report and reduces the importance of, and the judgment concerning the needs of, the users. Referring to the *Focus* of the framework, materiality is influenced by the value creation process which involves identifying relevant matters based on their ability to affect value creation. This represents a major limitation in the application of the principle. The MP is not, according to the IIRC's own framework, related to each issue within the report (e.g., environmental, financial, etc.), but only to these aspects affecting the value creation process (Veltri and Silvestri, 2020). Indeed, the new framework contains a definition in its glossary, as follows: “A matter is material if it could substantively affect the organization's ability to create value in the short, medium or long term.” (IIRC, 2021, p.53) Arguably this represents the negation of “non-financial” reporting. It is as far away from anything to do with sustainability as could possibly be imagined. It strongly distinguishes the IR approach from the other more broadly-based kinds of reports.

The framework states some basic principles, above analyzed, consisting in the usefulness approach, the conciseness, the cost/benefit approach, completeness, connectivity, reliability and balance between information. IR adopts the *usefulness approach*. Even if usefulness is not considered as a principle, it is anyway recalled in the framework. Conciseness represents a guiding principle. In the voluntary reports, conciseness is not always considered a basic principle. The framework adopts a *cost/benefit approach* and this aspect is in common with the approach of other standard-setters. The IR framework devotes section “3F” to “reliability and completeness.” *Completeness* means

that “an integrated report should include all material matters, both positive and negative in a balanced way and without material error” (Guiding principles p. 5 recalled in par. 3.47). The document also addresses the delicate issue of protecting the competitive advantage of the organization that could be damaged by supplying too much information. *Reliability* has been defined as a faithful representation that can be enhanced by mechanisms such as robust internal control and reporting systems, stakeholder engagement, internal audit or similar functions, and independent, external assurance. Even if all aspects are considered, none of them is compulsory for the IR. The Framework also requires a *balance between information*. It is in fact specified in para 3.38 that “The organization seeks a balance in its integrated report between conciseness and the other Guiding Principles, in particular completeness and comparability.” It also supplies some operative suggestions on how to achieve this equilibrium. This aspect does not represent a Guiding principle, but rather an expected consequence of the correct application of the other principles.

With reference to the *perspective to be adopted*, the IR framework adopts an “entity-specific” approach, or better requires that the approach should be rectified based on the sector specificities. This is typical also of the GRI sustainability report, whereas the IASB adopts a more general approach. Referring to the *timeliness of the assessment*, it emerges that in the final version of the framework this matter, specifically included in earlier drafts, is no longer recalled. Another important element is represented by the definition of specific *limitations*. Section 1F, paras 1.17 and 1.18 explicitly state that information is not to be reported in cases where “the unavailability of reliable information or specific legal prohibitions results in an inability to disclose material information” and if the “disclosure of material information would cause significant competitive harm.” As seen before, this is a very strong limitation since it excludes many matters that could be relevant for stakeholders, but which do not affect the value creation process. With reference to the *Scope of the materiality principle*, it addresses two kinds of information within the IR, namely financial information and non-financial information (NFI). The principle of materiality does not supply any specific different guideline based on this classification (Green and Cheng, 2019; Mio et al., 2019). Materiality usually has two main dimensions: a qualitative dimension (not always recalled by standard setters—e.g., IASB) and a quantitative dimension that can generate specific thresholds. With reference to the IR framework, materiality has principally a qualitative dimension that requires an assessment of likelihood of occurrence and magnitude of effects, and no quantitative thresholds have been specified, even if many indicators and data contain quantitative information. The framework adopts an entity-specific approach, but strictly connected with the peculiarities of the sector in which the organization operates to allow the comparison of information. This is a specificity of this Framework and generates a sort of “rectified entity-specific approach.” *Conciseness* affects materiality. Notwithstanding this circular relationship, within the IR framework the MP is positioned before the one of conciseness (respectively letter D and E of the Guiding principles). By this way conciseness could seem more affected by materiality than vice versa.

With a specific focus on the sub-system of materiality, it is possible to understand and classify the relationships and *interplays with other subsystems*. In particular, the question “material to what” is a sort of basic assumption, and *usefulness, reliability, conciseness, and cost/benefit approach* represent overarching principles superordinate to the MP, since, without these requirements, materiality should not be required or necessary. Continuing this analysis, evidence shows that materiality is strongly related with other principles, in particular, *timeliness, completeness, balance between information, reliability, stakeholder engagements and assurability*. Even if the relationships are generally circular, *reliability, stakeholder engagement and inclusiveness* affect how materiality operates, and they can be considered as overarching principles, or enforcing principles. On the other side *timeliness, completeness, and balance between information*, are consequences of the dimension given to the MP. *Stakeholder engagement and assurability*, in particular, can be considered as enforcing principles, respectively collocated as the first and the last step of each cycle, since they should guarantee the good functioning (application) of the subsystem and of all the system. Finally, elements that can *preserve and maintain the integrity of the subsystem* can be represented by the disclosure of the process of defining materiality.

In doing this, this research can define three categories:

- Overarching principles (or in some ways inspiring) superordinate to materiality are the *usefulness approach, reliability, conciseness, and the cost/benefit approach*.
- principles interplaying with materiality are, *completeness, timeliness, balance between information*.
- Principles and requirements that are functional to enforce materiality guaranteeing its right application with reference to the process and to the information supplied are, for example, represented by the *stakeholder engagement or inclusiveness* and by *assurability*. Another element enforcing materiality is the *disclosure of the materiality process* (Fasan and Mio, 2017).

To summarize, the relationships among the different principles and rules, we propose the Figure 1 below.

In this perspective, these three categories can be seen as a result of the adoption of the GST to the multidimensional context of the MP as it can be considered as “organizing relations” that merge “substances into systems” (LvB, 1932, p. 81).

The lack, or weakness, of any one of these elements can affect the ability of the system to achieve its objectives. In this way, the lack of enforcing principles, such as the stakeholder engagement and the assurability, influence the way of adopting the concept of materiality, affecting the reliability of the information reported. This is consistent with the findings of Cerbone and Maroun (2020, p. 1), who find that “Organizations with market, professional, and stakeholder logics aligned, have the most sophisticated materiality determination processes.” Stakeholder engagement is in fact a way to enforce materiality.

Based on previous analysis, here are identified some missing principles and rules generally recalled by other standard setters or professional bodies, and not considered at all in the final version of the IR

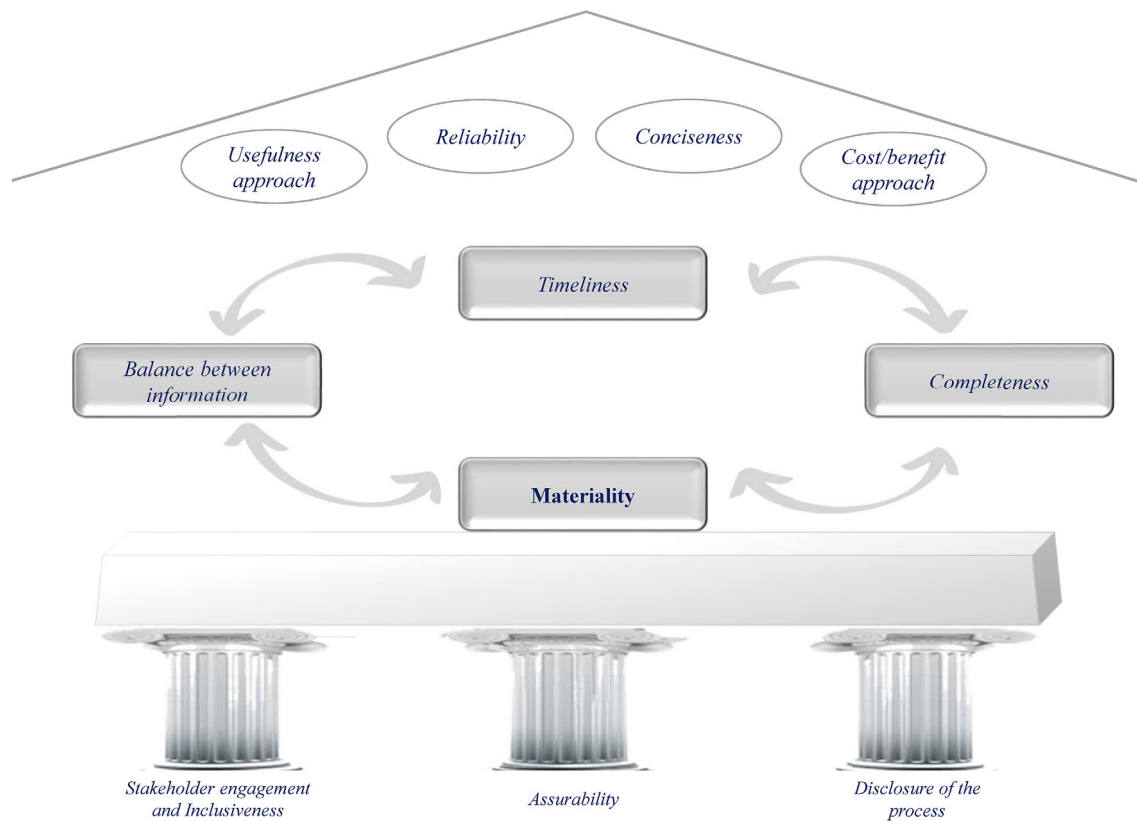


FIGURE 1 Interrelations among different principles and elements. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1002/csr.2479)]

framework. This is the case of *Stakeholder engagement and inclusiveness*, substituted by the completely different concept of “*stakeholder relationships*” addressed in Section 3C, paras 3.10–3.16. The Framework recalls the engagement with the main users (providers of financial capital), but does not supply any specific way to realize this activity, which still remains an exception compared with other standard setters or professional bodies' documents. No more specific engagement is, as a consequence, required to create the IR. This omission of one of the main aspects enforcing the principle of materiality represents a significant difference from the GRI and AccountAbility's documents. The difference with GRI, for instance, lies not only in the subject with which to make the engagement (e.g., the providers of capital for IIRC and a broader concept of stakeholders for GRI), but also in the fact that no information on how to apply the concept is supplied by IIRC, and this represents a great difference with GRI standards. Par. 3.40, anyway, addressing the reliability principle, specifies that it is enhanced by different mechanisms including stakeholder engagement. Compared with the other documents issued by standard setters and professional bodies, the *assurability/auditability* matter is not included within the IR framework. In July 2014 the IIRC launched a public consultation indicated above (*Assurance on < IR > An Introduction to the discussion* and *Assurance on < IR > An Exploration of Issues*) and it released a document entitled “*Assurance on < IR >: an introduction to the discussion*” (IIRC, 2015, 2018). But the eventual omission could affect the concrete and valid application of the principle of materiality (Mazzotta et al., 2022). We can find a similar approach within the IASB Framework, with the

difference that the rules about auditability are generally compulsory for entities and for some aspects out of the scope of the IASB framework, which just wants to establish accounting rules useful for preparers and also for auditors. This is not the same situation as the IIRC addresses a voluntary disclosure. Even if IR contains also (much) financial information, the project refers to *assurability* and not to *auditability* (Moroney and Trotman, 2016; Romi, 2017; Riva and Bavagnoli, 2022; Tarquinio, 2022). Now no information about assurance is supplied within the IR framework. This is more similar to the financial approach (IASB approach), than to the non-financial approach, where assurance generally represents a pillar of sustainability reports.

Another rule requires the Disclosure of the process of defining materiality. In particular, it requires that the organization should supply (4.42) “a summary of the organization's materiality determination process and key judgements.” Par. 3.29 opens up to a sort of free interpretation of the disclosure boundaries, since it states that “Judgement is applied in determining the information to disclose about material matters.” The presence of proper disclosures represents an essential element for users to interpret and appraise the materiality process.

GST, and the articulation in subsystems, helps to understand that, in line with a more stakeholders-oriented view (see Table 1: *Overview on “materiality” by some regulators*), financial information addresses main stakeholders differently compared with non-financial information (the source is represented by the different regulatory bodies).

**TABLE 1** Overview on “materiality” by some regulators

Standard setter	Reference	Definition	Main stakeholders addressed	Notes
International Accounting Standard Board (IASB)	Conceptual framework IAS 1	“Information is material if omitting misstating or obscuring it could reasonably be expected to influence the decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity” (IASB, Definition of Material - Amendments to IAS 1 and IAS 8, October 2018, Conceptual Framework for Financial Reporting, Pr. 2.11.).	Providers of capitals	Disclosure requirements of International Standards need not be met if the resulting information is not material. It is worth emphasizing that the whole approach here is both subjective and entity/context specific. Judgment is inevitably required. The “users” considered by IASB are significantly narrower and more specific than is often the case. Such narrowing inevitably makes the application of the materiality principle, in a sense in only one dimension rather than several at once, a less complicated process.
International Standard on Auditing (ISA)	ISA 320	“Although financial reporting frameworks may discuss materiality in different terms, they generally explain that: <ul style="list-style-type: none"> • misstatements, including omissions, are considered to be material if they, individually or in the aggregate, could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements; • judgments about materiality are made in light of surrounding circumstances, and are affected by the size or nature of a misstatement, or a combination of both; and • judgments about matters that are material to users of the financial statements are based on a consideration of the common financial information needs of users as a group 2. The possible effect of misstatements on specific individual users, whose needs may vary widely, is not considered” (ISA 320, Pr. 2) 	Users of financial statements	ISA includes a sort of definition of the “rational user”; the requirement of defining the level of probability guaranteeing that the aggregate of uncorrected and undetected misstatements exceeds the materiality threshold; the necessity of updating and documenting the process of definition of the materiality thresholds.
Global reporting initiative (GRI)	GRI 4 GRI Universal Standards	“1.3 The report shall cover topics that: 1.3.1 reflect the reporting organization's significant economic, environmental, and social impacts; or 1.3.2 substantively influence the assessments and decisions of stakeholders.” (GRI 101 Foundation 2016 Pr. 13.1)	Organization – main groups of stakeholders	Material aspects are those that reflect the organization's significant economic, environmental and social impacts; or substantively influence the assessments and decisions of stakeholders. Organizations must select only the topic-specific standards that are applicable, based on material topics. GRI 101 Foundation includes the Reporting

(Continues)

TABLE 1 (Continued)

Standard setter	Reference	Definition	Main stakeholders addressed	Notes
				Principles for defining report content and quality. Materiality is one of the four Reporting Principles about report content (i.e., Stakeholder Inclusiveness, Sustainability Context, Completeness).
AccountAbility	AA1000 Accountability Principles Standard 2008	Key definitions “Materiality relates to identifying and prioritizing the most relevant sustainability topics, taking into account the effect each topic has on an organization and its stakeholders.” A material topic is a topic that will substantively influence and impact the assessments, decisions, actions and performance of an organization and/or its stakeholders in the short, medium and/or long term. (p. 20)	Organization	Three AA1000 AccountAbility Principles: <ul style="list-style-type: none"> • the Foundation Principle of Inclusivity; • the Principle of Materiality; • The Principle of Responsiveness
IFAC	Materiality in <IR> guidance for the preparation of integrated reports, 2015	“In the context of Integrated Reporting, a matter is material if it could substantively affect the organization's ability to create value in the short, medium or long term.” (p. 8)	Organization	This guidance explains the definition and the materiality determination process within the <IR> framework. It outlines the expectations about the materiality-related disclosures
European Commission	Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting, 2021 EU Directive EU 2022/2464 Directive CRSD (EU, 2021)	The NFRD introduced a requirement for companies to report both on how sustainability issues affect their performance, position and development (the “outside-in” perspective), and on their impact on people and the environment (the “inside-out” perspective). This is often known as “double materiality.” The new directive CRSD requires both impact materiality and financial materiality.	Broad range of stakeholders	Multistakeholders groups; separate consultation meetings.
IIRC (now part of IFRS Foundation)	IIRC framework, 2021	“An integrated report should disclose information about matters that substantively affect the organization's ability to create value over the short, medium, and long term.” (IIRC, 2021, p. 29)	Financial users	Integration of the materiality process into the firm's organization processes by regularly engaging providers of financial capital and other stakeholders

Source: Own elaboration.

This allows to understand that each subsystem (in this case financial and non-financial information) requires a specific process to define materiality, in a way to be consistent with the subsystem needs. This concept is close to the double-materiality considered by the EU 2022/2464 Directive CRSD (EU, 2021) which includes *financial materiality and impact materiality*, by merging both perspectives. In particular, shareholder engagement is not at all consistent with stakeholders' needs, since in many cases their needs can be opposite. To define only one process to assess what is material for subjects with different and possibly inconsistent needs, can negatively affect the reliability of the information supplied by the entity issuing the report.

5 | CONCLUSIONS AND FUTURE RESEARCH PERSPECTIVES FOR THE CSR AND ENVIRONMENTAL MANAGEMENT FIELD

This article shows that to develop MP, standard setters should introduce and focus also on the “enforcing principles and elements.” The reference is both to the stakeholder engagement and to the assurability, but also to the disclosure of the materiality determination process. To develop materiality within IR, the IIRC should also consider that financial and non-financial information would benefit from defining two specific processes to report about the different forms of capitals, in line with the CRSD directive (EU, 2021). Basing on the GST, we can conclude that the current IR framework, excluding *stakeholder engagement* (Cerbone and Maroun, 2020), and *assurability* from its considerations, can be compared with a body without lungs that give oxygen to the body/report (stakeholder engagement), and without kidneys that remove wastes and other bad things (the assurance providers).

In this way, the lack of other subsystems can dramatically impair the functionality of the circulatory system and affect the sustainability of the whole system, due to the importance of each subsystem to overall survival. From this analysis it emerges that MP is not a stand-alone one, and that its real effectiveness can be achieved by the implementation of other principles that represent interrelated subsystems of the reporting regulation. This is in line with GST because of the need to know both the parts and the relations between them to better understand the “organized whole” (LvB, 1972, p. 411).

We focus the attention of the IIRC and of its members on the aspects that have not been considered in depth in the IR framework (2021), but which are useful to achieve a more precise definition that could be helpful for preparers of the report, for its users and for the assurance providers. The practical effectiveness of the non-financial reporting process suffers from these sub-system omissions. The inherent broadening and growth in complexity, complete with incommensurate concepts requiring mutual comparative evaluation, is inevitably raising complexity, increasing also the scope both for potential usefulness and for potential time-consuming irrelevance.

To summarize the arguments, materiality, in very general terms, relates to the concept that information which is worth transmitting via the corporate reporting process should be expected to have

some influence or effect on the behavior of the recipient. IR, as established by the IIRC, again in very general terms, recognizes, or at least pretends to recognize, a sharp increase in the different types of recipients, and in the information such recipients need. It follows that the importance, and the difficulties of effective application, of the MP become greater, the more IR becomes a genuine extension of information transparency, and not just a rhetorical rehash of traditional “financial” reporting.

A critical aspect is represented by the enormous autonomy granted to the management in the application of the principle (and of the whole report). In fact, the choice about what is material or not is strongly, but surely logically unavoidably, delegated to the management of the entity (with the stakeholder engagement). This aspect perhaps increases the concerns arising from the lack of any “assurance” considerations in the Framework as published. The problem of the lack of guidance to ensure the correctness of the auditor's materiality judgments on non-financial misstatements has been underlined (Green and Cheng, 2019; Moroney and Trotman, 2016).

From this analysis emerges that even if the *definition* of materiality is substantially the same since for a long time—almost a century—on the contrary, the *process* of *applying* materiality is extremely variable. With reference to the choice of the information to be reported, financial information generally requires only one dimension, based on thresholds, whereas the non-financial information is based on a multi-dimensional approach (that could be represented by “likelihood of occurrence” and “magnitude of effects,” for IIRC, and by “influence on stakeholder assessments and decisions” and “significance of economic, environmental, and social impacts,” for GRI 4). The process is also different with reference to financial and non-financial information since the first one is only based on the professional judgment of the preparer of the report (and afterwards of the auditors), whereas non-financial information should be based on the stakeholder engagement (also defined as “inclusivity” by AccountAbility), also with the aim to achieve Sustainable Development Goals (SDGs) (Di Vaio et al., 2022). The IR framework adopts a hybrid way that seems theoretically close to non-financial information, but the “supposed engagement” is required to be done with an explicit and emphasized focus on providers of financial capital, generating a completely new concept never previously seen in the literature, nor in operational terms, with the exception of Corporate Governance Codes. Materiality should be seen as a mechanism for making complex informational requirements both efficient and effective. But it must certainly not be seen as a mechanism or an excuse for abandoning the objective of satisfying these complex and multitudinous requirements altogether (multiple capitals and multiple stakeholders). Alexander and Blum (2016), and Flower (2015), both accuse the IIRC of precisely such an abandonment.

It is argued that the multi-capital and multi-stakeholder structure of IR (Adams, 2015; Coulson et al., 2015; Doni et al., 2019; Herath et al., 2021), if applied properly without undue emphasis on suppliers of financial capital, significantly increases complexity, and therefore the potential for confusion and “information overload.” The MP therefore assumes great importance in trying to effectively operationalize IR. The whole area is too complex to expect, or to deliver,

formulaic operational conclusions. But we suggest that this analysis of materiality, in principle and in the context of the IIRC project, provides a thought mechanism which will help move toward an effective resolution of the tensions inherent in a more open and broadly-based corporate reporting. Implications for materiality as a principle in its own right also arise. In particular, the ultimately pragmatic nature of the concept in practical application has to be acknowledged, and accepted with all its implications of subjectivity and judgment.

5.1 | Practical implications

The findings of this research could have an impact on the IR development. In particular, the multi-capital and multi-stakeholder structure of IR could require greater coordination with other NFI reporting standard setters in a way to avoid lacunae in the regulation. As a starting suggestion towards improvement, for further refinement, we propose the following: "Information is material when its omission or misstatement could reasonably be expected to influence decisions that users make, or its presence is necessary for an understanding of the effects of those decisions *on any and all stakeholders*," in line with the expected evolution of business models that should participate to the value creation process by including environmental and sustainable issues. The four words "decisions," "users," "effects," and "stakeholders" must be interpreted as having no scope limitations, and as representing elements of an open system.

This research has also enlarged the scope of application of the GST, to the work of standard setters and professional bodies' regulations. In this study, IR, has been taken as the exemplar of a complex multidimensional reporting and communication system, that has to work as a practical communication mechanism, across a complex set of circumstances. As GST can support the understanding of the resilience of socio-ecological systems, in a similar way it can be used to confirm features of a properly effective and wide-ranging IR corporate reporting model, ecological rather than financial, incorporating the MP, such as complexity, evolution, self-organization, relevance and adaptability (Van Assche, et al., 2019).

5.2 | Limitations of the study

This study shows some limitations. First, it uses the authors' own methodology by adopting a theoretical framework for supporting a specific interpretation of the MP although this method cannot be validated by data or statistical methods. Second, these findings cannot be generalized in different reporting contexts and the positive effects generated on the IR regulation should be tested by further empirical researches.

5.3 | Further development of the research

The application of the GST to accounting and accountability frameworks can open avenues for future researchers analyzing the interplays of the different rules and principles, on one side and the

effectiveness of the whole set of rules (framework and other standards) issued by standard setters and professional bodies. There are, as we write, a number of ongoing regulatory or attempted-regulatory developments, involving a variety of groupings and subgroupings, such as IASB, European Commission, IIRC and its American equivalent, Professional Accounting bodies and national-government regulatory bodies. There seems to be much rivalry, and not a little intellectual dishonesty. This situation cries out for major academic research and appraisal over the next several years. Our proposed theoretical framework provides a basis for the appraisal of all such ongoing developments. There is scope for further development and application of the ideas in this article, in broadening and deepening both theoretical thinking and practical application. Much ongoing critical work remains to be done.

ACKNOWLEDGMENT

An earlier version of this paper has been presented at the EIASM 8th International Workshop on Accounting and Regulation, 27th June 2019, University of Siena, Italy. The authors sincerely appreciate the time and useful comments given by the anonymous reviewers. A special thank to the Associate Editor and the Editor for their invaluable support during the review process. This paper is included in the Jean Monnet Module Application No 611698-EPP-1-2019-1-IT-EPPJMO-MODULE "Sustainability Disclosure in Corporate Reporting. Improvement and harmonization of best practices in European Union" (SDCR) that has been selected for EU support (2019-2022). Open Access Funding provided by Università degli Studi di Milano-Bicocca within the CRUI-CARE Agreement.

ORCID

Federica Doni  <https://orcid.org/0000-0002-6581-9530>

REFERENCES

- Adams, C. (2015). The international integrated reporting council: A call to action. *Critical Perspectives on Accounting*, 27, 23–28.
- Ahrens, T., & Dent, J. F. (1998). Accounting and organizations: Realizing the richness of field research. *Journal of Management Accounting Research*, 10, 1–39.
- Alexander, D., Aprile, R., & Magnaghi, E. (2015). Integrated reporting: A first analysis of the current situation of its framework in the light of the comment letters received (paper presented at the Congrès AFC 2015, Toulouse, France).
- Alexander, D., & Blum, V. (2016). Ecological economics: A Luhmannian analysis of integrated reporting. *Ecological Economics*, 129, 241–251.
- Alvino, F., Di Vaio, A., Hassan, R., & Palladino, R. (2021). Intellectual capital and sustainable development: A systematic literature review. *Journal of Intellectual Capital*, 22(1), 76–94. <https://doi.org/10.1108/JIC-11-2019-0259>
- Arul, R., de Villiers, C., & Dimes, R. (2021). Insights from narrative disclosures regarding integrated thinking in integrated reports in South Africa and Japan. *Meditari Accountancy Research*, 29(4), 720–739. <https://doi.org/10.1108/MEDAR-06-2020-0934>
- Bean, L., & Thomas, D. W. (1990). The development of the judicial definition of materiality. *Accounting Historians Journal*, 17(2), 113–123.
- Bebbington, J., Brown, J., Frame, B., & Thomson, I. (2007). Theorizing engagement: The potential of a critical dialogic approach. *Accounting Auditing and Accountability Journal*, 20(3), 356–381.
- Bellucci, A., Simoni, L., Acuti, D., & Manetti, G. (2019). Stakeholder engagement and dialogic accounting: Empirical evidence in

- sustainability reporting. *Accounting Auditing and Accountability Journal*, 5, 1467–1499.
- Blakemore, J., & Pain, B. (1998). Materiality in accounting. ACCA students new letter published by the certified accountant education trust UK.
- Boulding, K. E. (1956). General systems theory: The skeleton of science. *Management Science*, 2(3), 197–208.
- Brennan, N., & Gray, S. (2005). The impact of materiality: accounting's best kept secret. *Asian Academy of Management Journal of Accounting and Finance*, AAMJAF, 1, 1–31.
- Brown, J., & Dillard, J. (2014). Integrated reporting: On the need for broadening out and opening up. *Accounting, Auditing & Accountability Journal*, 27(7), 1120–1156.
- Cadenas, H. (2019). The unity of (social systems) science: The legacy of Bertalanffy. *Systems Research and Behavioral Science*, 36(3), 274–280.
- Camilleri, M. A. (2015). Environmental, social and governance disclosures in Europe. *Sustainability Accounting, Management and Policy Journal*, 6(2), 224–242.
- Carminati, L. (2018). Generalizability in qualitative research: A tale of two traditions. *Qualitative Health Research*, 28(13), 2094–2101.
- Carpenter, B. W., & Dirsmith, M. W. (1992). Early debt extinguishment transactions and auditor materiality judgments: A bounded rationality perspective. *Accounting, Organizations and Society*, 17(8), 709–739.
- Carpenter, B. W., Dirsmith, M. W., & Gupta, P. P. (1994). Materiality judgments and audit firm culture: Social-behavioral and political perspectives. *Accounting, Organizations and Society*, 19(4–5), 355–380.
- Cerbone, D., & Maroun, W. (2020). Materiality in an integrated reporting setting: Insights using an institutional logics framework. *The British Accounting Review*, 52, 100876. <https://doi.org/10.1016/j.bar.2019.100876>
- Chewning, G., Pany, K., & Wheeler, S. (1989). Auditor reporting decisions involving accounting principle changes: Some evidence on materiality thresholds. *Journal of Accounting Research*, 27(1), 78–96.
- Chewning, E. G., Jr., & Higgs, J. L. (2002). What does “materiality” really mean? *Journal of Corporate Accounting & Finance*, 13(4), 61–71.
- Corrado, M., Demartini, P., & Dumay, J. (2019). Assurance on integrated reporting: A critical perspective. In S. O. Idowu & M. Del Baldo (Eds.), *Integrated reporting, CSR, sustainability, ethics & governance* (pp. 199–217). Springer Nature. https://doi.org/10.1007/978-3-030-01719-4_11
- Coulson, A. B., Adams, C. A., Nugent, M. N., & Haynes, K. (2015). Exploring metaphors of capitals and the framing of multiple capitals: Challenges and opportunities for < IR >. *Sustainability Accounting, Management and Policy Journal*, 6(3), 290–314.
- Dale, K. (2005). Building a social materiality: Spatial and embodied politics in organizational control. *Organization*, 12(5), 649–678.
- Davidoff, S. (2011). Corporate disclosure, a murky definition of materiality. *New York Times*.
- De Cristofaro, T., & Gulluscio, C. (2019). Integrated reporting and materiality process disclosure in European sustainability oriented companies. In S. O. Idowu & M. Del Baldo (Eds.), *Integrated reporting, CSR, sustainability, ethics & governance* (pp. 267–290). Springer Nature.
- de Villiers, C., Rinaldi, L., & Unerman, J. (2014). Integrated reporting: Insights, gaps and an agenda for future research. *Accounting, Auditing & Accountability Journal*, 27(7), 1042–1067.
- DiMaggio, P. J. (1995). Comments on “what theory is not.”. *Administrative Science Quarterly*, 40(3), 391–397. <https://doi.org/10.2307/2393790>
- Di Vaio, A., Palladino, R., Hassan, R., & Alvino, F. (2020). Human resources disclosure in the EU directive 2014/95/EU perspective: A systematic literature review. *Journal of Cleaner Production*, 257, 120509. <https://doi.org/10.1016/j.jclepro.2020.120509>
- Di Vaio, A., Varriale, L., Di Gregorio, A., & Adomako, S. (2022). Corporate social performance and non-financial reporting in the cruise industry: Paving the way towards UN agenda 2030. *Corporate Social Responsibility and Environmental Management*, 29(6) Special Issue: The Managerial Implications of Assessing Corporate Social Performance, 1931–1953. <https://doi.org/10.1002/csr.2292>
- Doni, F., Larsen, M., Bianchi Martini, S., & Corvino, A. (2019). Exploring integrated reporting in the banking industry: The multiple capitals approach. *Journal of Intellectual Capital*, 20(1), 165–188.
- Dumay, J., Bernardi, C., Guthrie, J., & Demartini, P. (2016). Integrated reporting: A structured literature review. *Accounting Forum*, 40(3), 166–185.
- Eccles, R. G., & Krzus, M. P. (2010). *One report. Integrated reporting for sustainable strategy*. John Wiley & Sons.
- Eccles, R. G., Krzus, M. P., Rogers, J., & Serafeim, G. (2012). The need for sector-specific materiality and sustainability reporting standards. *Journal of Applied Corporate Finance*, 24(2), 8–14.
- Edgley, C. (2014). A genealogy of materiality. *Critical Perspectives on Accounting*, 25(3), 255–271.
- Edgley, C., Jones, M. J., & Atkins, J. (2015). The adoption of the materiality concept in social and environmental reporting assurance: A field of study approach. *The British Accounting Review*, 47(1), 1–18.
- ESMA. (2011). Consultation paper. Considerations of materiality in financial reporting, November 2011.
- ESMA, European Securities and Markets Authority. (2013). Feedback statement. Considerations of materiality in financial reporting. <https://www.esma.europa.eu/document/considerations-materiality-in-financial-reporting>
- Estes, R., & Reames, D. D. (1988). Effects of personal characteristics on materiality decisions: A multivariate analysis. *Accounting and Business Research*, 18(72), 291–296.
- European Commission. (2021). Proposal for a directive of the European parliament and of the council amending directives 2006/43/EC, 2009/65/EC, 2009/138/EU, 2011/61/EU, EU/2013/36, 2014/65/EU, (EU) 2015/2366 and EU/2016/2341. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0596&from=EN>
- Fang, K. C., & Jacobs, B. (1999). Clarifying and protecting materiality standards in financial statements: A review of SEC Staff Accounting Bulletin 99. *The Business Lawyer*, 55, 1039.
- Farroq, M. B., & de Villiers, C. (2019). Understanding how managers institutionalise sustainability reporting. *Evidence from Australia and New Zealand, Accounting Auditing & Accountability Journal*, 32(5), 1240–1269.
- Fasan, M., & Mio, C. (2017). Fostering stakeholder engagement: The role of materiality disclosure in integrated reporting. *Business Strategy and the Environment*, 26(3), 288–305. <https://doi.org/10.1002/bse.1917>
- FASB. (1975). *The FASB discussion memorandum, criteria for determining materiality FASB discussion memorandum: An analysis of issues related to criteria for determining materiality*, Ed (p. 1975). Financial Accounting Standards Board.
- Fiandrino, S., Tonelli, A., & Devalle, A. (2022). Sustainability materiality research: A systematic literature review of methods, theories and academic themes. *Qualitative Research in Accounting & Management*, 19(5), 665–695. <https://doi.org/10.1108/QRAM-07-2021-0141>
- Firth, M. (1979). Consensus views and judgment models in materiality decisions. *Accounting, Organizations and Society*, 4(4), 283–295.
- Flower, J. (2015). The international integrated reporting council: A story of failure. *Critical Perspectives on Accounting*, 27, 1–17.
- Force, B. F. A. M. T. (1998). *Report of the big five audit materiality task force*. AICPA.
- Fraticeili, F. (2011). *Dinamiche dei confini aziendali. Concezioni dell'ambiente e scelte organizzative, XXIV Cycle*, PhD thesis. <https://core.ac.uk/download/pdf/14703632.pdf>
- Gerwanski, J., Kordsachia, O., & Velte, P. (2019). Determinants of materiality disclosure quality in integrated reporting: Empirical evidence from an international setting. *Business Strategy and the Environment*, 28, 750–770.
- Gordon, S. (1933). Accountants and the securities act. *Journal of Accountancy*, 56(6), 3.



- Gray, R. (1992). Accounting and environmentalism: An exploration of the challenge of gently accounting for accountability, transparency and sustainability. *Accounting, Organizations and Society*, 17(5), 399–425.
- Gray, R., Adams, C., & Owen, D. (2014). *Accountability, social responsibility and sustainability*. Pearson Education Limited.
- Green, W. J., & Cheng, M. M. (2019). Materiality judgments in an integrated reporting setting: The effect of strategic relevance and strategy map. *Accounting Organization and Society*, 73, 1–14.
- Hatch, M. J. (1997). *Organization theory: Modern, symbolic and postmodern perspectives*. Oxford University Press.
- Herath, R., Senaratne, S., & Gunarathne, N. (2021). Integrated thinking, orchestration of the six capitals and value creation. *Meditari Accountancy Research*, 29, 873–907. <https://doi.org/10.1108/MEDAR-01-2020-0676>
- Hofkirchner, W. (2019). Social relations: Building on Ludwig von Bertalanffy. *Systems Research and Behavioral Science*, 36(3), 263–273.
- Horkheimer, M. (1972). *Critical theory: Selected essays*. The Continuum Publishing Company.
- Horkheimer, M. (1993). *Between philosophy and social science. Selected early writings*. MIT Press.
- Hult, G. T. M. (2011). Toward a theory of the boundary-spanning marketing organization and insights from 31 organization theories. *Journal of the Academy of Marketing Science*, 39, 509–536.
- IIRC International Integrated Reporting Council. (2011). Towards integrated reporting. Communicating value in the 21st century. https://integratedreporting.org/wp-content/uploads/2011/09/IR-Discussion-Paper-2011_spreads.pdf
- IIRC International Integrated Reporting Council. (2012a). Draft framework outline. <https://integratedreporting.org/wp-content/uploads/2012/07/Draft-Framework-Outline.pdf>
- IIRC International Integrated Reporting Council. (2012b). Prototype framework of the international <IR> framework. <https://integratedreporting.org/wp-content/uploads/2012/11/23.11.12-Prototype-Final.pdf>
- IIRC International Integrated Reporting Council. (2013a). Materiality background paper for <IR>. <https://integratedreporting.org/wp-content/uploads/2013/03/IR-Background-Paper-Materiality.pdf>
- IIRC International Integrated Reporting Council. (2013b). Consultation draft framework. <https://integratedreporting.org/wp-content/uploads/2013/03/Consultation-Draft-of-the-InternationalIRFramework.pdf>
- IIRC International Integrated Reporting Council. (2013c). IR framework. <https://integratedreporting.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf>
- IIRC International Integrated Reporting Council. (2015). Materiality in IR. Guidance for the preparation of integrated reports. <https://www.integratedreporting.org/resource/materiality-in-integrated-reporting/>
- IIRC International Integrated Reporting Council (2017). <https://integratedreporting.org/news/clarify-simplify-amplify-global-consultation-results-on-the-progress-towards-integrated-reporting/>.
- IIRC International Integrated Reporting Council. (2018). Materiality: Driving integrated thinking. <https://integratedreporting.org/news/materiality-driving-integrated-thinking/>
- IIRC International Integrated Reporting Council. (2021). International <IR> framework. <https://integratedreporting.org/wp-content/uploads/2021/01/InternationalIntegratedReportingFramework.pdf>
- International Federation of Accountants IFAC. (2015). Materiality in <IR>. Guidance for the preparation of integrated reports. <https://www.ifac.org/system/files/publications/files/Materiality-in-Integrated-Reporting.pdf>
- IRC of South Africa. (2011). Integrated reporting and integrated report, discussion paper, 25 January 2011; integrated reporting. communicating value in the 21st century, discussion paper, September 2011.
- Kolk, A. (2008). Sustainability, accountability and corporate governance: Exploring multinationals' reporting practices. *Business Strategy and Environment*, 17, 1–15.
- Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*, 24(1), 120–124.
- KPMG. (2019). Impact of ESG disclosures. Embracing the future. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/09/impact-of-esg-disclosures.pdf>
- Lai, A., Melloni, G., & Stacchezzini, R. (2017). What does materiality mean to integrated reporting preparers? An empirical exploration. *Meditari Accountancy Research*, 25(4), 533–552.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.
- Machado, B. A. A., Dias, L. C. P., & F. (2021). Transparency of materiality analysis in GRI-based sustainability reports. *Corporate Social Responsibility and Environmental Management*, 28, 570–580. <https://doi.org/10.1002/csr.2066>
- Manetti, G. (2011). The quality of stakeholder engagement in sustainability reporting: Empirical evidence and critical points. *Corporate Social Responsibility and Environmental Management*, 18, 110–122. <https://doi.org/10.1002/csr.255>
- Manetti, G., Bellucci, M., & Oliva, S. (2021). Unpacking dialogic accounting: A systematic literature review and research agenda. *Accounting, Auditing & Accountability Journal*, 34(9), 250–283. <https://doi.org/10.1108/AAAJ-08-2020-4736>
- Mazzotta, R., Mazzitelli, D., & Veltri, S. (2022). Critical considerations on the association between external assurance of non-financial information and materiality disclosure quality in an integrated report context. In C. De Luca (Ed.), *Non-financial disclosure and integrated reporting* (pp. 403–415). Springer Nature.
- Melloni, G., Caglio, A., & Perego, P. (2017). Saying more with less? Disclosure conciseness, completeness and balance in integrated reports. *Journal of Accounting, Public and Policy*, 36(3), 220–238.
- Messier, W. F., Martinov-Bennie, N., & Eilifsen, A. (2005). A review and integration on empirical research on materiality: Two decades later. *Auditing a Journal of Practice and Theory*, 24(2), 153–204.
- Mio, C., & Fasan, M. (2014). The determinants of materiality disclosure in integrated corporate disclosure (December 1, 2013). Department of Management, Università Ca' Foscari Venezia Working Paper No. 2014/9. <https://doi.org/10.2139/ssrn.2443929>
- Mio, C., Fasan, M., & Costantini, A. (2019). Materiality in integrated and sustainability reporting: A paradigm shift? *Business Strategy and the Environment*, 29, 306–320.
- Moroney, R., & Trotman, K. T. (2016). Differences in auditors' materiality assessments when auditing financial and sustainability reports. *Contemporary Accounting Research*, 33(2), 551–575.
- O'Dwyer, B., & Owen, D. L. (2005). Assurance statement practice in environmental, social and sustainability reporting: A critical evaluation. *The British Accounting Review*, 37(2), 205–229.
- Passetti, E., Bianchi, L., Battaglia, M., & Frey, M. (2019). When democratic principles are not enough: Tensions and temporalities of dialogic stakeholder engagement. *Journal of Business Ethics*, 155(1), 173–190.
- Plumlee, M. A. (2003). The effect of information complexity on analysts' use of that information. *The Accounting Review*, 78(1), 275–296.
- Pondy, L. R., & Mitroff, I. I. (1979). Beyond open system. *Models of Organization, Research in Organizational Behaviour*, 1, 3–39.
- Puroila, J., & Mäkelä, H. (2019). Matter of opinion. *Exploring the Socio-Political Nature of Materiality Disclosures in Sustainability Reporting, Accounting, Auditing and Accountability Journal*, 32(4), 1043–1072.
- Putnam, L. L., & Banghart, S. (2017). Interpretive approaches. In C. R. Scott, J. R. Barker, T. Kuhn, J. Keyton, P. K. Turner, & L. K. Lewis (Eds.), *The international encyclopedia of organizational communication*. Wiley-Blackwell. <https://doi.org/10.1002/9781118955567.wbieoc118>
- Riva, P., & Bavagnoli, F. (2022). Limited or reasonable assurance for NFI? Effectiveness and criticalities. In L. Cinquini & F. De Luca (Eds.), *Non-financial disclosure and integrated reporting. SIDREA series in accounting and business administration*. Springer.

- Romi, A. M. (2017). Differences in auditor's materiality assessments when auditing financial statements and sustainability reports. *Social and Environmental Accountability Journal*, 37(2), 149–150.
- Ruzzeddu, M. (2012). *Tra ordine e incertezza. La complessità nel terzo millennio*. Aracne.
- Saenz, C. (2019). Creating shared value using materiality analysis: Strategies from the mining industry. *Corporate Social Responsibility and Environmental Management*, 26, 1351–1360. <https://doi.org/10.1002/csr.1751>
- Sepulveda-Alzate, Y. M., García-Benau, M. A., & Gómez-Villegas, M. (2022). Materiality assessment: The case of Latin American listed companies. *Sustainability Accounting, Management and Policy Journal*, 13(1), 88–113. <https://doi.org/10.1108/SAMPJ-10-2020-0358>
- Scott, R. (1992). Organizations: Rational natural and open systems.
- Sierra-Garcia, L., Zorio-Grima, A., & Garcia-Benau, M. A. (2015). Stakeholder engagement, corporate social responsibility and integrated reporting: An exploratory study. *Corporate Social Responsibility and Environmental Management*, 22(5), 286–304.
- Silvestri, A., Veltri, S., Venturelli, A., & Petruzzelli, S. (2017). A research template to evaluate the degree of accountability of integrated reporting: A case study. *Meditari Accountancy Research*, 25(4), 675–704. <https://doi.org/10.1108/MEDAR-11-2016-0098>
- Stolowy, H., & Paugam, R. (2018). The expansion of non-financial reporting: An exploratory study. *Accounting and Business Research*, 48(5), 525–548.
- Stubbs, W., & Higgins, C. (2014). Integrated reporting and internal mechanisms of change. *Accounting, Auditing & Accountability Journal*, 27(7), 1068–1089.
- Sun, J., Wu, S., & Yang, K. (2018). An ecosystemic framework for business sustainability. *Business Horizons*, 61(1), 59–72.
- Tarquino, L. (2022). Assurance of nonfinancial information: A comprehensive literature review. In L. Cinquini & F. De Luca (Eds.), *Non-financial disclosure and integrated reporting, SIDREA series in accounting and business administration*. Springer.
- Torelli, R., Balluchi, F., & Furlotti, K. (2020). The materiality assessment and stakeholder engagement: A content analysis of sustainability reports. *Corporate Social Responsibility and Environmental Management*, 27(2), 470–484.
- Van Assche, K., Valentinov, V., & Verschraegen, G. (2019). Ludwig von Bertalanffy and his enduring relevance: Celebrating 50 years general system theory. *Guest Editorial, Systems Research and Behavioral Science*, 36(3), 251–254.
- Van Assche, K., Verschraegen, G., Valentinov, V., & Gruezmacher, M. (2019). The social, the ecological, and the adaptive. *Von Bertalanffy's General Systems Theory and the Adaptive Governance of Social-Ecological Systems, Systems Research and Behavioral Science*, 36(3), 308–321.
- Vanderstraeten, R. (2019). Systems everywhere? *Systems Research and Behavioral Science*, 36(3), 255–262.
- Veltri, S., & Silvestri, A. (2020). The value relevance of corporate financial and nonfinancial information provided by the integrated report: A systematic review. *Business Strategy and the Environment*, 29(8), 3038–3054. <https://doi.org/10.1002/bse.2556>
- Von Bertalanffy, L. (1972). The history and status of general systems theory. *Academy of Management Journal*, 15(4), 407–426.
- Wallage, P. (2000). Assurance on sustainability reporting: An auditor's view. *Auditing: A Journal of Practice & Theory*, 19(s-1), 53–65.

How to cite this article: Aprile, R., Alexander, D., & Doni, F. (2023). Enhancing the materiality principle in integrated reporting by adopting the General Systems Theory. *Corporate Social Responsibility and Environmental Management*, 1–15. <https://doi.org/10.1002/csr.2479>