

Connectivity in Integrated Report: A Systematic Literature Review

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ABSTRACT

This study aims to provide a thorough and critical review of the existing studies investigating the connectivity feature of integrated reports (IR). The paper goes beyond adoption and pays special attention to the core concept of connectivity reflected from integrative thinking embedded in the process of producing firm IR. A classification model is developed to provide insights into theories, methods, factors and effects that have been used in previous studies. A systematic literature review was conducted on 28 articles published in top journals rated 3, 4 and 4 as set by Academic Journal Guide (AJG) 2021. A search was performed on Scopus and Web of Science (WOS) databases covering the year 2013 until 2022. In terms of theoretical review, findings indicate there has been an overreliance on certain theories particularly agency, legitimacy and stakeholders which creates a gap that may restrict the scope of IR connectivity research. The methodological review uncovered a substantial amount of evidence from South Africa and international public listed firms under the IIRC database. Additionally, when considering factors and effects, researchers exhibit greater interest in examining firms over country-level governance. Ultimately, there is a rising interest in exploring connectivity reported in firm IR.*

Keywords: Integrated thinking; connectivity; integrated reporting

INTRODUCTION

Significant progress in the understanding of corporate transparency has been made in the voluntary corporate reporting practices (Sharma & Rastogi, 2023; Castilla-Polo & Ruiz-Rodríguez, 2017; Zamil et al., 2021). Despite the presence of multiple voluntary reporting standards, however, the current corporate practices are heavily criticized for being voluminous and disjointed (Grassmann et al., 2019; Zhou et al., 2017). Recent evidence suggests there is an issue of ‘uninformative clutter’ which could reverse the positive effect of disclosure. This situation refers to the presence of excessive, irrelevant and redundant information making it less valuable to users. Additionally, providing an overly complicated report brings negative economic consequences (Athanasakou et al., 2020). According to ICAEW (2016), corporate reports are becoming too lengthy and contain an enormous amount of irrelevant information. Information reported is often very generic and most of the time, disclosures are decoupled from social or non-financial aspects (Bursa Malaysia, 2017). Hence, the introduction of integrated reporting as the latest innovation signifies a paradigm shift in the reporting evolution which is expected to reduce the effect of information clutter and enhance corporate transparency. IR is claimed to be different from other voluntary reporting initiatives as the whole process of producing a report underlies the philosophy

of integrative thinking (IT). The concept of IT was first proposed by Graham Douglas in 1986. Later, the idea has been popularized by Martin (2009). Since making decisions entails a vast array of interrelated elements and consequences, hence, rather than choosing one over the other, integrative thinkers produce solutions or build superior models which contain the elements of each model. They work towards a bigger picture, embrace complexity, tolerate uncertainty and manage the tension between the multi-varied relationship before pursuing any decisions.

Taking into consideration the growing complexity of the corporation, uncertainty of the business environment and natural resources, together with stakeholders conflicting demands, thus, there is strong pressure for firms to practice integrative thinking in today’s world in searching for creative solutions to problems. Following the concept of IT, the IIRC introduces the IR framework with integrative thinking or connectivity as the core feature that not only alters the firm’s manner in preparing reports but also changes their way of conducting business. According to IIRC (2021), ‘connectivity’ in the IR context can be described as a demonstration of a comprehensive value creation story, the integration, association, unification, interrelatedness and dependencies amongst firm material components which ultimately drive firm values in the short, medium and long run. It is the

essence that guides connectivity which results in a firm's sustained value creation ability. Implementing IT pushes firms to actively evaluate the interrelationship between various capitals, operation and functional units which lead to integrated decision-making that creates value over time (IIRC, 2021). Rather than focusing on a single financial capital, instead, IR takes a broader view of 'inclusive capital' through the recognition of financial and non-financial capitals including manufacturing, intellectual, social and relationship, human and natural capitals. Emphasizing these diverse capitals and their interconnectedness with business operations is a form of IT. In particular, the higher the degree to which IT is incorporated into firm activities, the more naturally will the connectivity of information flow into management reporting, analysis and decision-making (IIRC, 2021). This results in higher quality, transparent, connected and multi-capital reporting that will boost the benefits of the firm and external stakeholders.

Considering the rising relevance of IR in today's corporate operations, IR has been identified as an important research topic. Over the past ten years, the rapid implementation of IR is supported by an expanding body of academic literature, which begins with early studies advocating and criticizing the framework, followed by numerous empirical studies looking into the determinants and consequences of IR implementation (Stacchezzini et al., 2016; Landau et al., 2020). Apart from empirical studies, several narratives and SLR have been published on the emergence and implementation of IR (Rinaldi et al., 2018; Vitolla et al., 2019). Rinaldi et al. (2018) conceptualized the development of IR as an idea journey that comprises the idea generation, elaboration, championing, production and impact phases. Vitolla et al. (2019) conduct SLR to classify IR research according to normative and descriptive perspectives. To date, scholars and practitioners have started to focus on IR quality to signify the true benefits of IR (Anifowose et al., 2020; Grassmann et al., 2019; Gul, 2021). While some valuable contributions may be found in empirical studies assessing the IR quality in terms of quantity, materiality and reliability of information reported (Pistoni et al., 2018; Vitolla et al., 2020), however, studies that use systematic reviews on issues surrounding the 'connectivity feature of IR' is still lacking. This issue is of particular interest because even after nearly a decade of IR framework introduction,

literature document low connectivity in the IR reports (Ahmed Haji & Anifowose, 2016; Incollingo & Bianchi, 2017; Pistoni et al., 2018). Even worst, De Villiers et al. (2017) reported that some firms simply just rebranding their annual report as IR to maintain their legitimacy towards stakeholders. Besides, there is no standardized approach for assessing the connectivity of capital among the IR adopters. Additionally, different researchers employ different methods in evaluating firm connectivity level. The fact that the information reported is generally of low connectivity despite the growing diffusion of IR worldwide, hence, it could be worthwhile to explore how studies on the connectivity of IR have evolved in terms of the theories, methodological approaches, influencing factors and consequences throughout the years.

Based on these issues, this SLR paper would like to answer the following research questions:

1. What are the relevant theories used in discussing the connectivity of IR?
2. What are the methods used in measuring the connectivity of IR?
3. What are the primary factors that explain the degree of interconnectedness in IR?
4. What are the consequences of having connected IR?

Achieving success with the integration of various capital issues into a firm business model and operation is often a long-term process that can take many years to develop, demonstrate and pay off (Maniora, 2015). Hence, it is about time to explore the desired effect of implementing the IR framework by focusing on the 'connectivity' feature which may not be visible at the beginning of the IR introduction. This study is expected to enrich the IR debates on the connectivity principle. The paper varies from previous IR reviews since it provides new insights into IR connectivity in terms of synthesizing the theories, methodology, determinants and consequences through the development of a classification framework (Figure 1). Good reporting quality enhances readers' understanding of the firm. Meanwhile, a critical understanding of the connectivity concept aims to improve the firm internal environment and operations which will give them a competitive advantage through integrated thinking embedded in the process of producing IR.

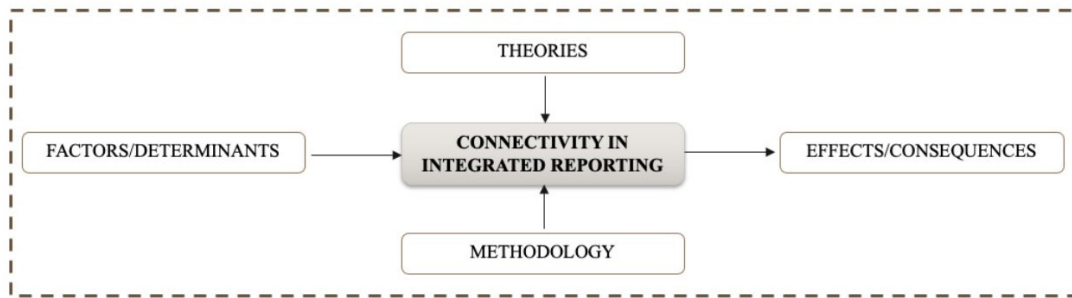


FIGURE 1. Classification framework

METHODOLOGY

This study was based on an SLR of 28 articles published in top international journals covering different disciplines between the year 2013 and 2022. PRISMA was adopted as the review protocol guideline which utilized two main journal databases, namely Scopus and WOS. Via thematic analysis, this paper is expected to provide critical analysis in terms of the relevant theories, method used, factors influencing and effects of having connected IR.

SYSTEMATIC LITERATURE REVIEW

IDENTIFICATION

The process begins with the identification of keywords, followed by searching related terms using the thesaurus, dictionaries, encyclopedias and past research. Accordingly, search strings were developed (Figure 2) to locate the relevant articles. A total of 1,308 articles were successfully retrieved from both databases during the identification stage.

Database	Search String	No. of articles
Scopus	TITLE-ABS-KEY (("connect*" OR "integrate*" OR "associate*" OR "interact*" OR "correlate*" OR "unite*" OR "unified*" OR "harmonize*" OR "dependent*") AND ("integrated report*" OR "integrated reporting" OR "integrated reporting quality" OR "IIRC"))	658
WOS	TS= ("connect*" OR "integrate*" OR "associate*" OR "interact*" OR "correlate*" OR "unite*" OR "unified*" OR "harmonize*" OR "dependent*") AND ("integrated report*" OR "integrated reporting" OR "integrated reporting quality" OR "IIRC"))	650

FIGURE 2. The search string

SCREENING

During this stage, all articles are screened based on several inclusion and exclusion criteria determined by authors. First, the search period covers from the year 2013 until 2022 following the introduction of the framework in 2013. Secondly, the study focuses on articles published in the field of i) Business Management & Accounting, ii) Economics, Econometrics & Finance and iii) Social Sciences. Third, to conduct a quality review, this study focuses only on articles from high-quality journals. To determine the articles' impact quality, this paper refers to the quality rating set out by the Chartered Association of Business Schools (CABS), AJG 2021. The rating is based on the originality and execution of the research paper (typically original and well executed), journal submission and acceptance rate (usually have high submission and low acceptance rate), journal metrics with high citation impact factors, also whether the research paper published

is heavily refereed. Articles published in journals rated 1 and 2 are considered modest and acceptable in their field, hence, this study select articles published in journals rated 3, 4 and 4* above. Only articles published in English were selected for the review. A total of 1,075 articles were excluded based on those criteria. Next, 233 articles were screened to remove duplicate articles. Overall, a total of 104 duplicate articles were removed, leaving 129 articles for the next stage. The significant number of excluded articles is expected because connectivity is synonymous with the 'integrated' word which was detected in any IR articles. Thus, most of the excluded articles are related to IR but do not discuss the extent of connection or integration of the information in the report.

ELIGIBILITY

Further, 129 articles were prepared for the eligibility stage. The authors conducted a manual examination of

the title, abstract and main contents to ensure it fits the current study. Consequently, 101 articles were excluded as these articles do not focus on the term 'connectivity' in

IR and are unrelated to the current study. The remaining 28 articles is ready to be critically analyzed. The whole process has been summarized in Figure 3.

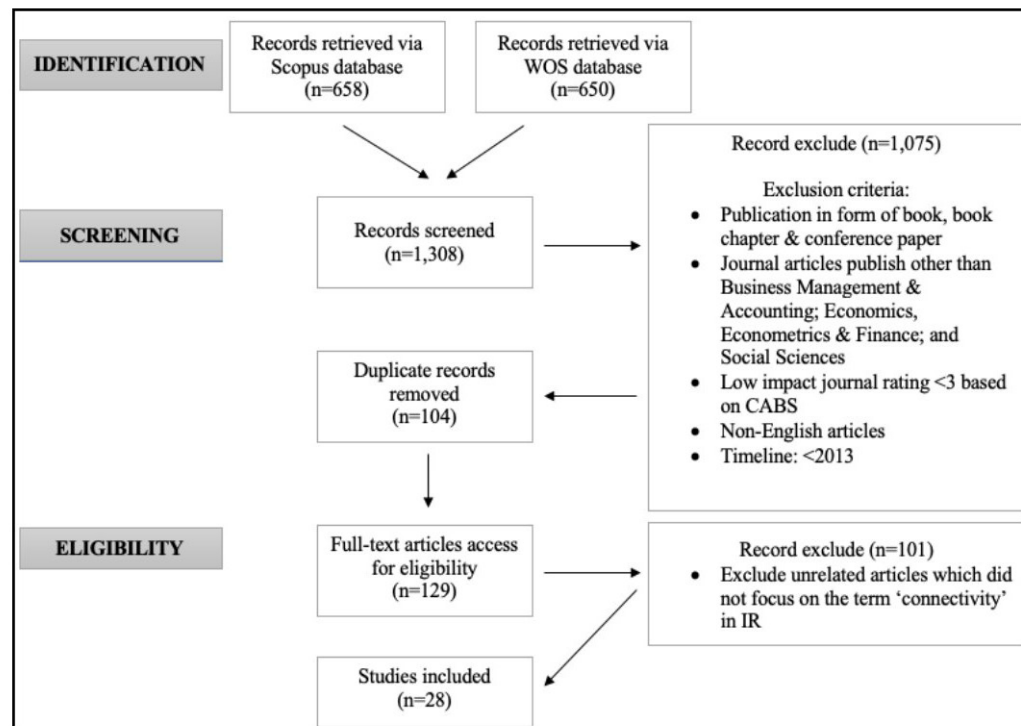


FIGURE 3. Flow diagram of articles selection

FINDINGS AND DISCUSSIONS

DESCRIPTIVE ANALYSIS

Table 1 summarizes the selected articles based on journals, filtered according to the type of the article (conceptual, empirical qualitative and empirical quantitative). This specific table revealed that the majority of the papers examining IR connectivity have been published in the

Accounting, Auditing & Accountability Journal, and Business Strategy & the Environment. 82% (23) of the reviewed articles are empirical studies, with 14 articles employing quantitative while another 9 articles are classified as qualitative research. The balance of 18% (5) articles under observation are conceptual in nature which discuss the concept of connectivity in IR studies.

TABLE 1. List of selected journals

Journal	CABS Rank 2021	Conceptual	Empirical Quantitative	Empirical Qualitative	Total No. of Papers
Accounting, Auditing and Accountability Journal	3	1		6	7
Accounting, Organizations and Society	4*		1		1
British Accounting Review	3		1		1
Business Strategy and the Environment	3		6	1	7
Contemporary Accounting Research	4		1		1
Critical Perspectives on Accounting	3	3			3
Ecological Economics	3	1			1
European Accounting Review	3		1		1
International Journal of Finance and Economics	3		1		1
International Business Review	3		1		1
Journal of Accounting and Public Policy	3		1		1
Journal of Business Ethics	3		1		1
Organization and Environment	3			1	1
Psychology & Marketing	3			1	1
		5	14	9	28

METHODOLOGICAL REVIEW

The review of methodology is conducted by referring to Sekaran (2003) and Creswell (2018) who discuss several factors to be considered in designing research. This paper includes Tables 2 and 3 to provide a thorough picture of the research methodology applied in 23 of the empirical studies. Table 2 exhibits the empirical studies based on the research design (either exploratory, descriptive, case study, or hypothesis testing), type of data used (either primary, secondary, or mixed) and data collection method (questionnaires, interviews, observation, experiment, databases and document analysis). Of all the reviewed articles, 61% (14) of them engaged in hypothesis testing mostly testing relationships between variables and predicting the organizational outcomes from connectivity disclosed. Whereas 30% (7) papers undertake the case study method by examining specific organizations engaging in different industries such as public utility, eco-tourism and services. 1 of the remaining papers aims to evaluate changes resulting from integrated reporting phenomenon within national airport operators through descriptive analysis. Meanwhile, the other paper uses Fuzzy-set qualitative comparative analysis to explore the complex relationship between variables. In terms of the type of data used, 22% (5) of the studies use both primary and secondary data, while 17% (4) relied only on primary data collected via interviews and scenario-based experiments. Nevertheless, researchers prefer to make use of secondary data since the number of articles using this type of data is higher than the primary data. 61% (14) articles focus on analyzing the firms existing sources such as IR and key documents (*minutes of meetings, IIRC draft proposal, IIRC framework, newspapers*) from various websites and databases. This preference might reflect the

predisposition of most researchers in the area and easier to get the data.

Table 3 presents the observed studies according to the country, organizational focus and year of analysis. Results from the table indicate that most researchers are interested in examining data either from South African companies or international firms across countries and those listed under the IIRC website which comprises of 65% (15) articles. This is then followed by data from other countries such as Australia (2), Italy (2), Netherlands (1), Germany (1), Europe (1) and the United States (1). Despite the existence of international cross-countries studies, however, understanding the influence of peculiar Asian countries' characteristics, such as their cultural traits or political economy arrangements in shaping IR connectivity is still considered limited. Concentration of studies on connectivity in IR in South Africa is expected because it is the pioneering country, and more importantly, the only country that imposed mandatory requirements for all their publicly listed companies to adopt IR on an 'apply or explain basis'. The mandatory requirement brings unique determining factors, monitoring, and consequences to the IR compliance context. Based on the analysis, the paper also finds that almost all research organizations focus on publicly listed firms as compared to private or other types of firms. This highlights a potential gap in the literature and suggests that further research may be necessary to explore the IR connectivity in these types of organizations, including the private sector, NGOs and cooperatives. In addition, data analysis has been taken up from before the IR framework was introduced which is 2002 until the year 2021. Figure 4 summarizes the descriptive information of prior studies.

TABLE 2. Descriptive information of empirical articles (n=23)

Authors (year)	Research design	Type of data	Data Collection Method
Andronoudis, Baboukardos & Tsoligkas (2022)	Hypothesis Testing	Secondary	Document review
Thomas & Scandurra (2022)	Descriptive	Secondary	Document review
Baboukardos, Mangena & Ishola (2021)	Hypothesis Testing	Secondary	Thomson Reuters database
Raimo, Vitolla, Marrone & Rubino (2020)	Hypothesis Testing	Secondary	Document review
Raimo, Vitolla, Marrone & Rubino (2020)	Hypothesis Testing	Secondary	Document review
Wang, Zhou & Wang (2020)	Hypothesis Testing	Secondary	Document review
Busco, Malafronte, Pereira & Starita (2019)	Hypothesis Testing	Secondary	Document review
Bucaro, Jackson & Lill (2019)	Hypothesis Testing	Primary	Scenario-based experiment
Esch, Schnellbacher & Wald (2019)	Hypothesis Testing	Primary	Online Experiment
Higgins, Stubbs, Tweedie & McCallum (2019)	Case Study	Mixed	Interviews & Document review
Maroun (2019)	Hypothesis Testing	Secondary	Document review
Vitolla, Raimo, Rubino & Garzoni (2019)	Hypothesis Testing	Secondary	Document review
Vitolla, Salvi, Raimo, Petruzzella & Rubino (2019)	Hypothesis Testing	Secondary	Document review
Argento, Culasso & Truant (2018)	Case Study	Mixed	Interviews & Document review
Al-Htaybat & Alberti-Alhtaybat (2018)	Case Study	Mixed	Interviews & Video/Document review
McNally & Maroun (2018)	Case Study	Mixed	Interviews & Document review
Adams (2017)	Case Study	Primary	Interviews
Barth, Cahan, Chen & Venter (2017)	Hypothesis Testing	Secondary	Document review
Isabel-Maria & Ligia (2017)	Hypothesis Testing	Secondary	Multiple Databases & Document review
Maniora (2015)	Hypothesis Testing	Secondary	Document review
Rivera-Arrubla & Zorio-Grima (2016)	Exploratory-Comparative analysis	Secondary	Web pages & Document review
Bommel (2014)	Case Study	Mixed	Interviews & Document review
Stubbs & Higgins (2014)	Case Study	Primary	Interviews

*Multiple databases refer to Compustat, Ethical Investment Research Service (EIRIS), Spencer & Stuart Board Index (SSBI)

TABLE 3. Descriptive information of empirical articles (n=23)

Authors (year)	Country	Organisational focus	Year of analysis
Andronoudis, Baboukardos & Tsofigkas (2022)	South Africa (Mandatory)	Public Listed (JSE Index)	2011
Thomas & Scandurra (2022)	Italy	Public Listed (Airport Operators)	2018-2021
Baboukardos, Mangena & Ishola (2021)	International firms	Public Listed	2002-2016
Raimo, Vitolla, Marrone & Rubino (2020)	International firms in IIRC website	Public Listed	2017
Raimo, Vitolla, Marrone & Rubino (2020)	International firms in IIRC website	Public Listed	2017
Wang, Zhou & Wang (2020)	South Africa	Public Listed (JSE Index)	2012-2015
Busco, Malafrente, Pereira & Starita (2019)	European	Public Listed (STOXX index)	2002-2015
Bucaro, Jackson & Lill (2019)	United States of America	NA	2015-2017
Esch, Schnellbacher & Wald (2019)	Germany	NA	2018
Higgins, Stubbs, Tweedie & McCallum (2019)	Australia	Public Listed (ASX index)	2011-2017
Maroun (2019)	South Africa (Mandatory)	Public Listed (JSE Index)	2010-2016
Vitolla, Raimo, Rubino & Garzoni (2019)	International firms in IIRC website	Public Listed	2017
Vitolla, Salvi, Raimo, Petruzzella & Rubino (2019)	International firms in IIRC website	Public Listed	2016
Argento, Culasso & Truant (2018)	Italy	Public Listed (public utility co.)	2011-2016
Al-Htaybat & Alberti-Alhtaybat (2018)	South Africa (Mandatory)	Public Listed (Service co.)	2009-2017
McNally & Maroun (2018)	South Africa (Mandatory)	Public Listed (Eco-Tourism co.)	2011-2015
Adams (2017)	South Africa vs Australia (Cross-country comparison)	Public Listed (ASX & JSE index)	2015
Barth, Cahan, Chen & Venter (2017)	South Africa (Mandatory)	Public Listed (JSE Index)	2011-2014
Isabel-Maria & Ligia (2017)	International firms	Public Listed	2009-2013
Maniora (2015)	International firms (<i>CorporateRegister.com</i>)	Public Listed	2002-2011
Rivera-Arrubla & Zorio-Grima (2016)	International firms in IIRC website	Public Listed	2012
Bommel (2014)	Netherlands	Public Listed	2011-2012
Stubbs & Higgins (2014)	Australia	Public Listed (ASX index)	2014

*International firms in IIRC website refers to countries within the African, Asian, American and European regions.

*CorporateRegister.com is a website that hosts the world's most comprehensive directory of corporate's non-financial reporting.

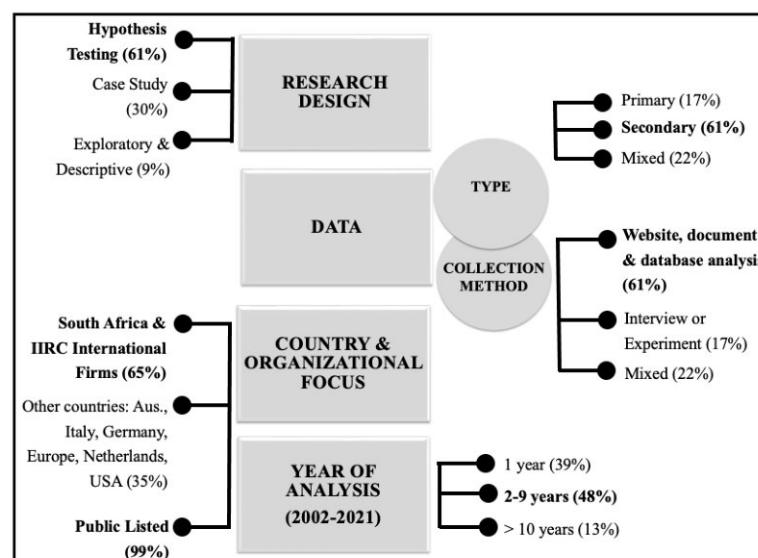


FIGURE 4. Descriptive information of prior studies.

MEASURING 'CONNECTIVITY' IN IR

Based on the analysis, connectivity in IR has been equated to different terms like IR quality (Barth et al., 2017; Maroun, 2019; Vitolla et al., 2019; Wang et al., 2020), level of integrated thinking and reporting (ITR) (Baboukardos et al., 2021; Busco et al., 2019) information connectivity (Andronoudis et al., 2022; Esch et al., 2019; Rivera-Arrubla & Zorio-Grima, 2016) and multi-capitalism reporting (Bommel, 2014). Despite different methods employed in measuring IR quality, this paper focuses specifically on measurement that

considers connectivity as one of the elements of IR. Barth et al. (2017), Maroun (2019) and Wang et al. (2020) measure IR quality by referring to the annual Ernst & Young (EY) Excellence IR Awards. EY ranks firms into the top, excellent, good, average and progress to be made categories. The scores range from 1 (progress to be made) to 5 (top). EY evaluation considers the extent to which IR incorporated the guiding principles (e.g., connectivity of information) and content elements (e.g., business model). EY (2017) emphasizes that quality is not merely a function of the amount of information revealed, but also a balanced account of how various

types of capital are being handled and linked clearly to the firm's strategy, business model and critical risks. Vitolla et al. (2019) on the other hand measures quality by using an IR scoreboard derived from the attributes of quality assessment (Hammon & Miles, 2004; Pistoni et al., 2018), IIRC principles (IIRC, 2013) and visual content analysis. According to Busco et al. (2019), firm's ITR level refers to the company's management commitment and effectiveness toward the creation of an overarching vision and strategy integrating financial and extra-financial aspects. It reflects a company's capability to convincingly show and communicate that firm integrates the economic, social and environmental dimensions into its day-to-day decision-making processes. Using ITR scoring, Busco et al. (2019) grouped the sample firm's ITR level into four distinctive groups; holistic, integrated, conservative and minimalist. Baboukardos et al. (2021) undertake firms' level of integrated thinking by using a dataset drawn from the Thomson Reuters ASSET4 database. In measuring firm connectivity level, Esch et al. (2019) suggested looking at the link between different types of information presented. In another study by Andronoudis et al. (2022) evaluates IR connectivity by quantifying the interconnectedness between revisions of expected future cash flows (prompted by financial information) and discount rates (prompted by non-financial information). Rivera-Arrubla & Zorio-Grima (2016) in their study identifies the level of reports connectivity by looking at seven possibilities; digital reporting platforms, IR customization, feedback loops, cross-referencing, drill-down capability, visual techniques and glossary. Bommel (2014) explores the concept of multi-capitalism reporting by emphasizing the reconciliation of IR multiple views that is consistent with the industrial, market, civic and green order of worth. Overall, the methodological review suggests the absence of standardized approach used in measuring IR connectivity. While some authors develop their index (focusing on different types of information disclosed and various digital platforms used), others rely on expert-based evaluations, existing scoreboards and Thomson Reuters database. The lack of uniformity in measurement poses challenges for the comparability and consistency of findings across different IR research. Albeit each approach offers valuable insights in terms of the IR connectivity aspect, however, to evaluate whether firms are effectively integrating financial and non-financial information, this study suggests focusing not only on the 'quantity and types' of capital reported, but also the 'link' by emphasizing on the 'sequence' of capitals disclosed within the integrated report. This is following the IR fundamental concept of 'inclusive capitalism' which underlies the dynamic integration between different capitals that is expected to create value for all stakeholders.

THEORETICAL INSIGHTS

Based on the theory review, many studies did not utilize any theories making up to 25% (7) of the selected articles. The remaining articles employed various dispersed theories to explain and predict the study's phenomenon. Hence, this paper groups all the relevant theories into two main categories:

1. accounting, economics and management-related theory
2. psychology and sociology theory

ACCOUNTING, ECONOMICS AND MANAGEMENT-RELATED THEORY

Most of the observed studies (17 articles) apply theories stemming from accounting, economics and management which include agency-information asymmetry, stakeholder, legitimacy, resource dependence, capitalist, decision-usefulness, neo-institutional, Morgan metaphor, organizational change and logic resistance theory. Six papers exclusively employed agency theory to explain the role of audit committees (Raimo et al., 2020a), ownership structure (Raimo et al., 2020b) and external assurance (Maroun, 2019) on IR quality. In the context of agency theory, information asymmetry is a crucial factor that can lead to conflicts between principle and agent. Hence, another three papers emphasized the issue of information asymmetry while discussing on the economic consequences of integrated information in terms of firm liquidity, cost of capital and expected cash flows (Barth et al., 2017; María Isabel & Ligia, 2017; Vitolla et al., 2019). In contrast to agency theory, some authors employed stakeholder theory to explain the impact of national culture on IR quality (Vitolla et al., 2019) and the effect of information connectivity on firm decision-making behavior (Baboukardos et al., 2021). Instead of using stakeholder theory, Esch et al. (2019) make use of the decision-usefulness theory (synoptic formalism or political incrementalism approach) as a basis to investigate the influence of integrated information on decision-making.

Several other authors used a multi-theoretical framework that combined different theories to elaborate their studies. Wang et al. (2020) applied agency in combination with stakeholder, legitimacy and resource dependence theory to justify the effect of board, audit and sustainability committee characteristics on IR quality. Similarly, Busco et al. (2019) used legitimacy and stakeholder theory to explain the effects of committee, firm and country characteristics on firm integration levels. Rivera-Arrubla & Zorio-Grima (2016) on the other hand, employed legitimacy, stakeholder along with reputation risk management theory to understand the qualitative factors affecting IR connectivity among firm. By using legitimacy theory, Bommel (2014) explore the possibility

and impediments in reconciling multiple views for IR to become a legitimate practice. This theory is used together with Boltanski and Thevenot's sociology of worth (SOW) which argues that conflict between actors might happen when the different orders of worth clash. This paper is the only paper that reviewed articles that combine accounting and sociology theory. Likewise, Flower (2014) also provides critics of the IR multi-capitalism reporting, but the author adopted a different approach by comparing both capitalist and stakeholder theory.

Other than that, four of the reviewed papers utilized Morgan's role of metaphor, neo-institutional, organizational change and logics resistance theories to explore firms' integration changes throughout the IR journey, which shed light on the concept and determinants of IR interconnectedness. Argento et al. (2018) used neo-institutional theory to understand the role of institutional entrepreneurs with specific competencies in driving firms' integration process. In a different study by McNally & Maroun (2018) and Stubbs & Higgins (2014), the authors used the theory of organizational change and logic resistance to examine individual and firm changes. According to McNally & Maroun (2018), the board's decision to produce a full IR give rise to different forms of resistance, however, over time, the case firms showed changes in terms of integrating the reporting mindset and internal systems that are complex and not mutually exclusive. This is quite similar to Stubbs & Higgins (2014) whereby the author employed Laughlin's (1991) model of organizational change to understand whether the provision of integrated information stimulates a firm's morphogenetic changes. Conversely, Higgins et al. (2019) investigated the IR journey of organizational change specifically on structural, cultural and reporting changes through the lens of Morgan's role of metaphor. Morgan claimed that metaphors are paradoxical or self-contradict in that they simultaneously reveal insights into certain organizational features while omitting others. The analysis indicates that while the IR journey metaphor may assist preparers to comprehend the impact of IR on an organization, however, it will also distract them from another aspect such as the process of change.

PSYCHOLOGY AND SOCIOLOGY THEORIES

The second group of articles consists of four articles that make use of Bourdieu's theory of practice, Boltanski and Thevenot's SOW, Luhmann's Complex Systems and Cognitive Psychology perspectives. Al-Htaybat & Alberti-Alhtaybat (2018) employs Bourdieu's theory to explain the concept of IT reflected in IR of a global services company that is facing operational disruption due to significant changes in technological advancement. This paper includes the observation of case firm business models, whether the firm incorporates different elements of organizational activities to create value across the entire organization and beyond. As mentioned earlier, Bommel (2014) applied Boltanski and Thevenot's SOW

in combination with legitimacy theory to analyze IR's multiple views. This idea serves as the foundation for how IR integrates the different domains of industrial, market, civic and green order of worth. Alexander & Blum (2016) provide a critical analysis of the IR framework based on Luhmann's complex system theory which emphasizes the world as a set of complex system comprises of living, psychic, social and many other sub systems. Accordingly, the interconnectedness between the six capitals addressed by IR Framework illustrates system complexity which is subject to controversy. Finally, Bucaro et al. (2020) employ cognitive psychology to explain the effect of integrated information on investors' judgment. The cognitive psychology perspective suggests individuals are prone to use a unidimensional perspective to process information and switch to a multidimensional perspective when inconsistency in information happens.

With regard to the analysis on theories, it can be considered that agency, legitimacy and stakeholder theories are popularly used in previous studies. This is not surprising as the majority of the reviewed papers dealt with corporate governance issues. The gist of agency theory focuses on the symptomatic agency problem arising from different contracting parties. From the stance of agency theory, the presence of strong CG characteristics which serve as monitoring body is considered crucial to reducing conflicts of interest among contracting parties such as moral hazard and adverse selection. While agency theory solely focuses on maximizing shareholders' interest, stakeholder theory considers the balance of interest among diverse stakeholders. Likewise, the stakeholder theory views a firm as a collection of interdependent relationships between individuals or groups who affect or are affected by its operation and activities (Freeman et al., 2010). According to this theory, committees play a significant role in defining a firm's practices to balance demands from various stakeholders who are concerned about firms' behavior. Diverse committee characteristics represent broader stakeholders which may positively influence firms' level of integration. The theory of legitimacy, on the other hand, refers to how firms maintain ethical behavior to function in a certain economy. Larger firms are often under the spotlight of public scrutiny and regulatory bodies' attention. Hence, these firms will take necessary action to demonstrate their social responsibility to uphold their legitimacy towards stakeholders. While IR aims to provide a connected view of firms' financial and non-financial performance, however, analysis of whether the information presented in IR format matched the mental cognitive model or processes of decision-makers is still lacking. Therefore, there is a need for further research to examine whether the presentation of integrated information aligns with the mental cognitive processes of decision-makers, and to explore potential ways of enhancing the effectiveness of IR in aiding decision-making. The relevant theories used are presented in Table 4 and Figure 5 (infographic chart) below.

TABLE 4. Summary of the relevant theories (n=28)

Authors (year)	Theory
Andronoudis, Baboukardos & Tsofigkas (2022)	NA
Tweedie (2022)	NA
Thomas & Scandurra (2022)	NA
Baboukardos, Mangena & Ishola (2021)	Stakeholder
Raimo, Vitolla, Marrone & Rubino (2020)	Agency - Information Asymmetry
Raimo, Vitolla, Marrone & Rubino (2020)	Agency - Information Asymmetry
Wang, Zhou & Wang (2020)	Agency, Stakeholder, Legitimacy & Resource Dependence
Busco, Malafrente, Pereira & Starita (2019)	Legitimacy & Stakeholder
Bucaro, Jackson & Lill (2019)	Cognitive Psychology
Esch, Schnellbacher & Wald (2019)	Decision-usefulness
Higgins, Stubbs, Tweedie & McCallum (2019)	Morgan Metaphor
Maroun (2019)	Agency - Information Asymmetry
Vitolla, Raimo, Rubino & Garzoni (2019)	Stakeholder
Vitolla, Salvi, Raimo, Petruzzella & Rubino (2019)	Agency - Information Asymmetry
Argento, Culasso & Truant (2018)	Neo-institutional theory
Al-Htaybat & Alberti-Alhtaybat (2018)	Bourdieu's theory of practice
McNally & Maroun (2018)	Organisational changes & logic resistance
Adams (2017)	NA
Barth, Cahan, Chen & Venter (2017)	Agency - Information Asymmetry
Isabel-Maria & Ligia (2017)	Agency - Information Asymmetry
Alexander et.al (2016)	Luhmann's Complex Systems
Rivera-Arrubla & Zorio-Grima (2016)	Legitimacy, Reputation Risk Management & Stakeholder
Maniora (2015)	NA
Adam (2014)	NA
Bommel (2014)	Legitimacy & Sociology order of worth (SOW)
Flower (2014)	Capitalist & Stakeholder
Haller et.al (2014)	NA
Stubbs & Higgins (2014)	Laughlin's (1991) model of organisational change

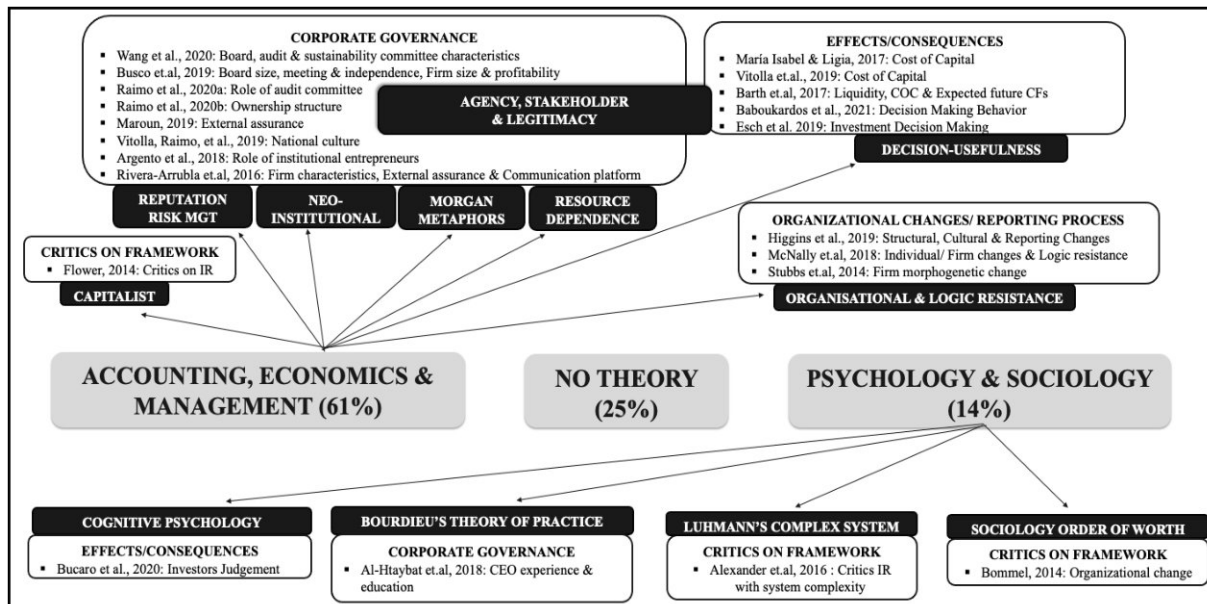


FIGURE 5. Infographic chart illustrating theoretical review

THE INFLUENCING FACTORS

A strand of literature has explored the determining factors of IR connectivity features at the firm and country levels. The firm-level factors include various CEO, board, audit and sustainability committee characteristics (Adams, 2017; Al-Htaybat & Alberti-Alhtaybat, 2018; Busco et al., 2019; Raimo et al., 2020a; Wang et al., 2020) organizational size, profitability, type of industry, external assurance, social media, institutional entrepreneurs, ownership structure and reporting process (Busco et al., 2019; Higgins et al., 2019; Maroun, 2019; Raimo et al., 2020b; Thomas & Scandurra, 2022; Argento et al., 2018; Bommel, 2014; Maniora, 2015; McNally & Maroun, 2018; Rivera-Arrubla & Zorio-Grima, 2016; Stubbs & Higgins, 2014). Meanwhile, country-level factors include national culture, government regulation, economic growth, citizen's freedom, market and environmental performance (Adams, 2017; Busco et al., 2019; Vitolla et al., 2019). Findings indicate that both firm and country governance factors are of utmost importance not just in the adoption of IR, but also significantly contributed to the extent of IR connectivity.

Knowing the importance of having good CG practices, many of the reviewed studies analyzed the committee characteristics as one of the major IR connectivity determinants (Table 5). Findings suggest that experience, education, gender, non-financial performance measures (NFPM) and meeting frequency have a significant impact on firms' level of integration. However, the influence of committee independence, size and expertise is debatable as previous studies have produced conflicting results. A particularly relevant contribution is Busco et al. (2019) who found a significant positive impact of board size and meeting frequency on firms' ITR level. The study found that a larger board size with a higher number of board meetings exhibits a significantly higher level of integration. A higher number of directors on board increases the involvement of directors with appropriate expertise which positively affect the integration of firm operation and reporting. However, with regard to board independence, the author discovered no significant effect on the firm ITR level. This is supported by Wang et al. (2020) who further confirmed that there is no significant effect of board independence on the level of IR quality. Specifically, the inclusion of a greater number of independent members does not encourage the dissemination of higher-quality IR. Wang et al. (2020) on the other hand, observed a nonsignificant effect of committee size on the degree of firm integration. Within the same study, Wang et al. (2020) exhibits that the expertise and diligence (measured by meeting frequency) of the committee contributed significant positive effects on firm integration. The presence of experienced board members and audit committee that qualify as financial accounting experts is more effective in ensuring IR quality. Wang et al. (2020) also revealed an incremental positive effect of NFPM in CEOs' bonus contracts as one of the drivers for IR integration. A different study by

Raimo et al. (2020a) converses the significant positive effect of the size, meeting frequency and independence of audit committee members on IR quality. The presence of a bigger committee size with the inclusion of more independent members and frequent meetings strengthened their supervisory and monitoring role which could favor the process of gathering and representing integrated information. In contrast to Wang et al. (2020), Raimo et al. (2020a) however found non-significant effect of audit members with financial expertise on IR quality. The difference in results might be due to the different nature of disclosure requirements. Wang et al. (2020) conducted studies by using samples from South Africa, a country that imposed mandatory requirements for all their PLCs to produce IR. Meanwhile, Raimo et al. (2020a) utilized a broader sample of international publicly listed firms with voluntary disclosure requirements. Besides relying on secondary data, case studies or interview-based approaches also provide strong insights into the determinants of connectivity in reporting. For example, by conducting interviews with 16 chairmen and directors from Australian and South African firms, Adams (2017) highlighted that board experience, and the existence of female directors demonstrated a greater awareness of the interconnectedness of social, environmental and economic issues. This is supported by Al-Htaybat & Alberti-Alhtaybat (2018) who documented that the concept of IT reflected in firm IR was significantly influenced by the CEO's experience and educational background. The authors conducted interviews with the sustainability team of a global services firm that focused on the Asian and African markets.

Besides CG characteristics, sampled articles also pointed out the effects of organizational characteristics on IR connectivity (Table 6). The analysis reveals that IR connectivity is highly influenced by factors such as organizational size, industry type, ownership structure, the role of external assurance, institutional entrepreneurs and social media. Surprisingly, firm profitability does not emerge as a major determinant of IR connectivity. However, results concerning the impact of reporting processes on IR connectivity are inconclusive, as previous studies have reported conflicting findings. Concerning organizational size, Busco et al. (2019) revealed a significant positive impact of firm size on firms' ITR level. According to Busco et al. (2019), larger firms specifically those operating in sensitive industries are more inclined to operate and communicate in an integrated manner since they typically face greater pressure from the public and regulators. In addition, the specific literature discussed the impact of organizational profitability on the firm ITR level. This study presented no significant association between the two variables. Hence, the company's profit does not drive management to engage in greater levels of integration in daily decision-making. Maroun (2019) investigates the role of external assurance at the firm integration level. By using a sample from the top 50 South African companies listed on

JSE, the author concluded that the existence of external assurance is strongly associated with firm IR quality. These assurance engagements are not only useful in ensuring the credibility and reliability of firm reporting, but also beneficial for both stakeholders and preparers to understand how the company report on the key issues, and focus on reporting principles rather than specific disclosures. Based on the analysis conducted by Raimo et al. (2020b), the author found that ownership structures significantly drive IR quality. In particular, Raimo et al. (2020b) exhibit a positive effect of institutional ownership and a negative effect of ownership concentration and managerial ownership on IR quality. Accordingly, firms with more dispersed ownership provide higher quality information as they are subject to greater public pressure from many stakeholders. Additionally, the presence of institutional ownership pushes firms to provide integrated information which reduces information asymmetry. In a different study, Argento et al. (2018) undertakes a case study of an Italian electric company and found that institutional entrepreneurs with strong competencies and intrinsic engagement significantly drive substantial changes in firm structure, process and thinking. Through intense networking, significant improvement in the collaboration, coordination and communication between different organizational areas, and greater integration of different business processes was achieved. By using fuzzy-set qualitative comparative analysis, Rivera-Arrubla & Zorio-Grima (2016) highlighted the use of digital platforms to increase IR connectivity. Social media plays an important role in bridging the gap between past performance and prospects, connecting quantitative and qualitative information, also, connecting firms with stakeholders (IIRC, 2013).

In terms of reporting process, several landmarks studies explore significant changes in the firm journey of adopting IR. For example, Higgins et al. (2019) address the changes in firms IR of six Australian companies over the year 2011-2017 by observing the integration of material non-financial concerns into firm vision, strategies, management process and performance tracking. Results from analyses exhibit a diverse trend of changes with a significant shift towards reporting more holistic discussions on performance over purely financial performance, the provision of meaningful information towards stakeholders instead of investors focus and the development of integrated key performance indicators linked to material issues. Additionally, there is evidence of firm structural changes with the presence of cross-organizational collaboration. The authors concluded that the IR reporting process strongly led to firms taking action to ensure real integration happened. Overall, the

results reflected that the connectivity of firms' report has extensively improved over time. Similar work has been pursued by McNally & Maroun (2018) who explores case firm IR journey in terms of individual and firm changes. This paper suggests that the IR reporting process led to changes in firm reporting mindset and systems over time. Managers perceived the process of producing connected reports requires a clear understanding and proactive action on what, how and the interconnection of data collected. Instead of just ticking the box, case firm managers started to develop comprehensive ESG metrics databases by having strong engagement with external stakeholders and employees, besides making strategic discussions on different types of capitals. In a different study by Bommel (2014) exploring the IR journey of firms in the Netherlands, the author emphasizes the need for common interest, clarification and maintenance of ambiguity to reconcile or connect the multiplicity views of IR. Results from the case study revealed that it is complicated to reconcile the disparate domains of industrial, market, civic and green order of worth due to a lack of common interest between actors involved in preparing IR, including high ambiguity and uncertainty of the framework. In contrast to Higgins et al. (2019) and McNally & Maroun (2018), Thomas & Scandurra (2022) and Stubbs & Higgins (2014) did not find any significant changes in the firm's connectivity level post-IR adoption. In analyzing the IR journey among the Italian airport operators, Thomas & Scandurra (2022) found a lack of connectivity orientation among the presented information. The information was observed to be unrelated to each other, which prevents a truly integrated understanding of company's activity. Furthermore, there was no demonstration of the connection between mission, strategy and the creation of sustainable value, which is what the IIRC defines as integrated thinking. Similar to Thomas & Scandurra (2022), Stubbs & Higgins (2014) through interviews conducted with 15 Australian PLCs suggested that there is no radical and transformative change toward information reporting.

The SLR analysis suggested that extra attention has been given to firm-level determinants with a lesser number of sampled articles exploring IR connectivity in the context of country level. Nevertheless, country level-based evidence (Table 7) has started to emerge confirming the effects of different country characteristics on the IR integration level. A study conducted by Busco et al. (2019) provides evidence related to the economic growth, citizens' freedom, market and environmental performance of a country which substantially drives the level of integration among the top 600 European listed companies. According to the author, firms operating in countries

with higher levels of economic growth (*gross domestic product*), citizen freedom, market (*market index return*) and environmental performance exhibit higher levels of integration. For example, in a country where citizens are able to participate in selecting their government, have the freedom of expression and association, media independence exhibit a higher degree of commitment towards the integration of financial and non-financial aspects (holistic and integrated). In addition, Adam (2017) discovered that countries reporting policies influence the integration of ESG issues into firm corporate strategies. As compared to Australians, South African interviewees clearly articulated a link between economics and social issues which ultimately lead to value creation. The author explores the different countries effect through interviews conducted with firms' directors from two countries with different reporting regulations and policies. Another study by Vitolla et al. (2019) identifies that national culture is among the major IR connectivity determinants. Firms operating in countries with cultural systems characterized by lower power distance, higher uncertainty avoidance, collectivism and femininity produced a higher quality of IR. This is due to such cultural values placing greater emphasis on the interconnectedness between financial and non-financial issues.

CONNECTIVITY OF IR AND ITS EFFECTS

In addition to the factor analysis, this study explores the effects of IR connectivity (Table 8). The previewed articles suggest that IR connectivity has both positive and negative effects on different outcomes. Among all, three of them demonstrated that connectivity significantly affects individual judgment and firm decision-making behavior (Baboukardos et al., 2021; Bucaro et al., 2020; Esch et al., 2019). Using a scenario-based online experiment, Esch et al. (2019) investigate how different type of information (financial, unlinked financial and non-financial information and integrated information) alters participant's investment decision behavior. It is obvious that the distinction between the type of information provided, significantly influences investment behavior. Results of the study confirmed that decision-makers with unlinked financial and non-financial information tend to make more investments in sustainable projects as compared to those who only have financial information. Nevertheless, it is suggested that information prepared for external can also affect internal stakeholders such as managers in establishing sustainable decision behavior.

Similar to Esch et al. (2019), Bucaro et al. (2020) evaluate potential investors judgment given different types of firm information. According to the study, investors respond differently when they observe separate and integrated information. The result from the experiment with 213 participants identified that respondents are much more judgmental and skeptical on CSR issues when information is not connected as compared to connected information. Baboukardos et al. (2021) discovered different levels of integrated thinking strongly reflected firms reporting decisions and strategies. A higher level of integrated thinking demonstrates a firm's capacity to uphold an overarching vision and strategy that incorporates business financial and non-financial aspects as well as the firm ability to publicly commit to an integrated strategy. Based on 19,076 firm-year observations across 47 countries, the author highlighted that level of integrated thinking (reflecting the connectivity) is positively associated with a firm decision to publish a report.

A growing number of empirical studies have been undertaken to explore the economic consequences of IR connectivity. One of the most pertinent literature is Barth et al. (2017) who evaluate the different levels level of IR quality concerning the market and real effects. The authors discovered a significant positive association between IR quality and firm liquidity and expected cash flows. Using samples from the top 100 South African firms, this study found that IR guiding principles especially connectivity, materiality and stakeholder relationship are among the strong drivers for positive capital market reactions. Specifically, higher integrated information enables market participants to make more accurate cash flows prediction. Further in the study, Barth et al. (2017) did not find any compelling evidence related to IR quality and cost of capital. The result is however different from María Isabel & Ligia (2017) and Vitolla et al. (2019) who observed a significant negative effect of IR quality and cost of equity capital among international firms. The result demonstrates that the release of high-quality IR reports attracts new long-term investors and leads to a reduction in the cost of capital. Another study conducted by Andronoudis et al. (2022) quantified that strong connectivity between financial and non-financial information affects the changes in the stock pricing process of South African firms. Accordingly, the rich information dynamics and interconnectedness between financial and non-financial reporting prompted positive market reactions.

TABLE 5. Determinants (Firm-level: Committee Characteristics)

Authors (year)	CEO/Board/ Audit/ Sustainability Committee - Characteristics							
	Experience	Education	Independence	Gender	Size	Meeting Frequency	Expertise	NFPM
Wang, Zhou & Wang (2020)			NS		NS	/(+)	/(+)	/(+)
Raimo, Vitolla, Marrone & Rubino (2020)			/(+)		/(+)	/(+)	NS	
Busco, Malafronte, Pereira & Starita (2019)			NS		/(+)	/(+)		
Al-Htaybat & Alberti-Alhtaybat (2018)	/	/						
Adams (2017)	/			/				

TABLE 6. Determinants (Firm-level: Characteristics)

Authors (year)	Firm - Characteristics							
	Size	Profitability	External Assurance	Reporting process	Type of industries	Social Media	Institutional entrepreneurs	Ownership Structure
Thomas & Scandurra (2022)				NS				
Raimo, Vitolla, Marrone & Rubino (2020)								/(-),/(+)
Busco, Malafronte, Pereira & Starita (2019)	/(+)	NS			/(+)			
Higgins, Stubbs, Tweedie & McCallum (2019)				/(+)				
Maroun (2019)			/(+)					
Argento, Culasso & Truant (2018)							/(+)	
McNally & Maroun (2018)				/(+)				
Rivera-Arrubla & Zorio-Grima (2016)						/		
Maniora (2015)				/(+)				
Bommel (2014)				/(+)				
Stubbs & Higgins (2014)				NS				

TABLE 7. Determinants (Country-level)

Authors (year)	Culture	Economic Growth	Citizens Freedom	Market Performance	Environmental performance	Government Regulation/ Policies
Busco, Malafronte, Pereira & Starita (2019)		/(+)	/(+)	/(+)	/(+)	
Vitolla, Raimo, Rubino & Garzoni (2019)	/(-),/(+)					
Adams (2017)						/

TABLE 8. Effects

Authors (year)	Decision Making	Investors Judgement	Liquidity	Expected Cash Flows	Cost of Capital	Stock Prices
Andronoudis, Baboukardos & Tsofigkas (2022)						/(+)
Baboukardos, Mangena & Ishola (2021)	/(+)					
Bucaro, Jackson & Lill (2019)		/(-)				
Vitolla, Salvi, Raimo, Petruzzella & Rubino (2019)					/(-)	
Esch, Schnellbacher & Wald (2019)	/(+)					
Barth, Cahan, Chen & Venter (2017)			/(+)	/(+)	NS	
Isabel-Maria & Ligia (2017)					/(-)	

CONCLUSIONS AND FUTURE RECOMMENDATIONS

This study aims to extensively review and summarize information on the theories, methods, determinants and effects of IR connectivity through an in-depth study of the previous academic literature. To this end, a framework (Figure 6) is used to classify the contribution of twenty-eight (28) articles over the year 2013 until 2022. In terms of theories, this paper recognized that prior articles used not just theories rooted in accounting, economics and management, but also utilized theories about psychology and sociology. Obviously, a higher number of articles applied the former theories, particularly agency, stakeholder and legitimacy theory. Overreliance on a few select theories creates a gap in the literature that may restrict the extent to which IR connectivity research can be conducted. Thus, incorporating a wider range of theoretical perspectives can help to enrich and expand the role of IR connectivity towards more sustainable

outcomes. The SLR review on methodology revealed a growing number of empirical quantitative and qualitative studies employing both primary and secondary data have been undertaken to explore IR connectivity. However, the paper realized that a significant number of studies engaged in quantitative analysis, by using secondary data to explore IR in publicly listed companies. Additionally, substantial studies are concentrated on using data from South African and international firms from the IIRC website. While there have been several international cross-country studies on IR, there is a notable gap in understanding how specific characteristics of countries in different regions, such as their cultural traits or political economy arrangements, may affect IR connectivity. The methodology analysis also reveals that nearly all research organizations concentrate on publicly listed firms, while giving comparatively less attention to private or other types of firms.

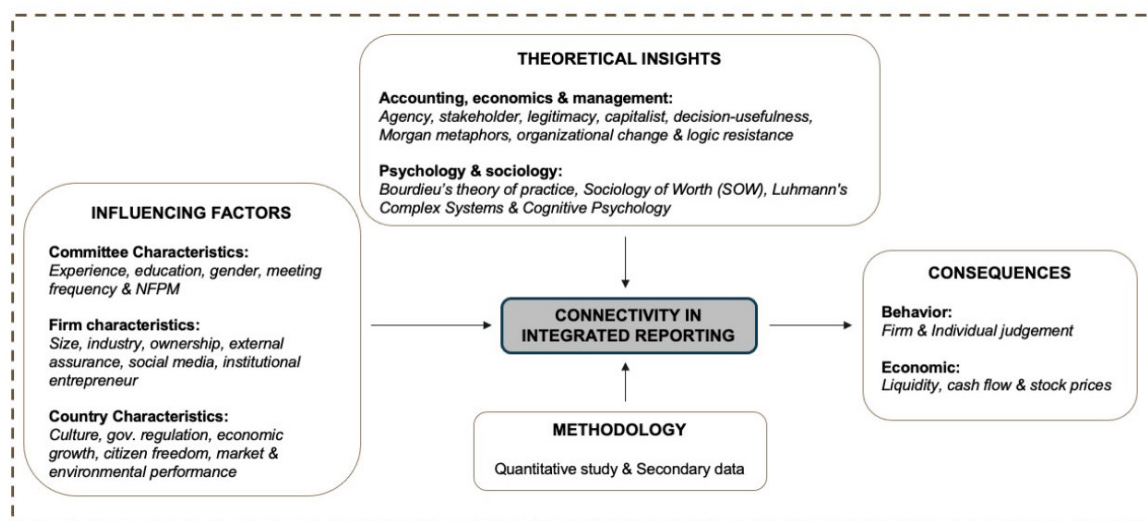


FIGURE 6. New classification framework

In relation to the determinants, the study identified that committee characteristics (*experience, education, gender, meeting frequency and NFPM*), organizational characteristics (*size, industry type, ownership structure, external assurance, social media and institutional entrepreneurs*) and country characteristics (*culture, government regulation, economic growth, citizens freedom, market and environmental performance*) significantly drives firms integration level. Despite the importance of governance influencing IR connectivity, this paper discovered that achieving a full-scale integration

more importantly requires a clear understanding of IR concept of connectivity emphasizes on the possibility of harmonization between financial and non-financial elements; the need for establishing common interest among stakeholders through maintaining a degree of ambiguity; and taking proactive action instead of just ticking the IR boxes. With regards to the effects of having connected IR, this paper revealed that firm integration significantly influences individual decision-making and judgment, apart from bringing positive economic consequences.

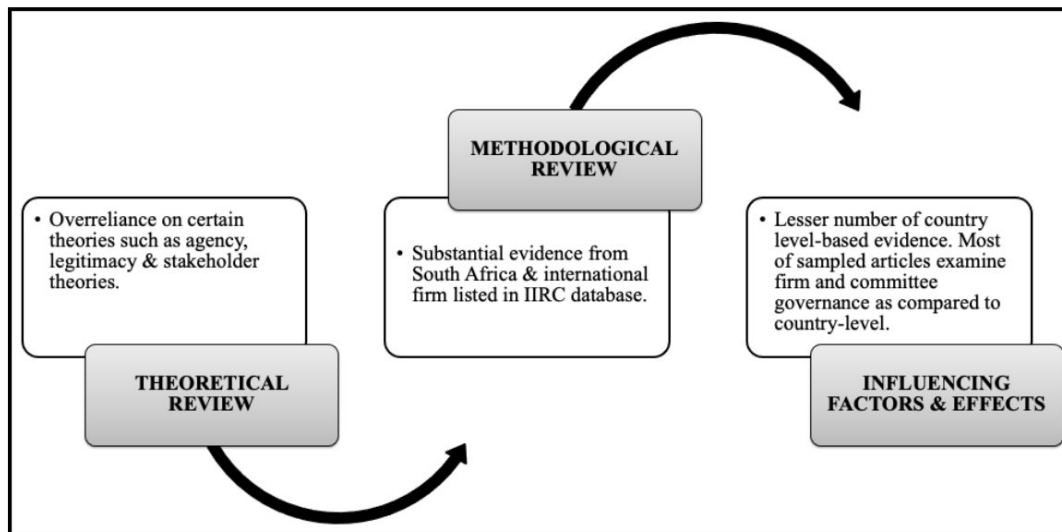


FIGURE 7. Gaps identified from SLR

In light of the SLR results, this paper identifies several gaps and includes suggestions that may be useful for future research. Firstly, it is acknowledged that previous literatures have provide substantial evidence from South Africa and international firm listed in the IIRC database which comprises 80% IR reporters from developed market economies. Hence, this demonstrates the need for more research to be conducted across emerging market economies such as Malaysia, India, the Philippines and Sri Lanka. According to Thomas et al. (2022), investors are showing keen interest in emerging markets as it provides good prospects that offer high GDP growth rate, attractive earnings yield and undertaking reform measures to strengthen their financial markets. However, this type of market suffers high information asymmetry as compared to developed market countries. This is noteworthy as researchers could provide insight on the role of IR connectivity for firms in the emerging market, besides confirming and justifying the different results from the context of developed market countries. Additionally, the differences in institutional environment between countries is expected to affect IR connectivity. Future scholars should engage extra attention in country level factors such as market sophistication and level of innovation to fully understand their impact on IR connectivity. This will enrich the IR connectivity debates since there was lesser number of sampled articles found on the country level as compared to firm-level determinants. This paper calls on scholar to provide more empirical investigation to confirm the effects of IR connectivity. On another note, since the results of determinants and consequences of IR connectivity is not consistent, hence, introducing moderating and mediating variables may assist to clarify the inconsistency. With regards to the review on measuring IR connectivity, this paper suggested to brings in arrangement from capital connectivity perspectives to promote better reporting practices. This study offers a strong basis for practitioners

to take necessary action through embedding connectivity in their reporting. Authors did the best to incorporate all of the published articles using a rigorous methodology. Nonetheless, it is still possible that few articles may have been mistakenly left out. This may provide constraints on the conclusion drawn by this review.

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