

Integrated thinking in the integrated reports of public sector companies. Evidence and contextual factors

Integrated
thinking

Pilar Tirado-Valencia, Magdalena Cordobés-Madueño,
Mercedes Ruiz-Lozano and Marta De Vicente-Lama
*Department of Financial Economics and Accounting,
Universidad Loyola Andalucía, Córdoba, Spain*

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Abstract

Purpose – This paper aims to improve the understanding of integrated thinking, as it is a central concept in the integrated reporting (IR) framework that has implications for sustainability reporting, as the holistic view of integrated thinking clarifies the value creation process of organisations and facilitates the incorporation of sustainability issues into the corporate mindset. The study investigates whether there are contextual factors that may be influencing the way integrated thinking is reflected in the reports. The paper focusses on public companies because integrated thinking in this sector plays an important role in terms of sustainability reporting, as these organisations must address more complex and diverse relationships with their stakeholders.

Design/methodology/approach – The methodology is based on a content analysis of the IR reports issued by 21 public sector companies. For this analysis, this study proposed specific dimensions and variables that demonstrate this way of thinking. These allow us to develop an integrated thinking index (ITI) based on a frequency analysis. The influence of the country's legal system, the sector of activity and the number of years of experience in IR is studied, by conducting *t*-test and ANOVA analyses and a correlation study.

Findings – The results demonstrate the existence of limited integrated thinking characterised by poor connectivity of information, lack of a clear link between materiality analysis and strategy and insufficient forward-looking perspective. The findings reveal that contextual and institutional factors have little influence on the levels of integrated thinking achieved.

Originality/value – The concept of integrated thinking has not been sufficiently explored to date, despite its importance in the IR conceptual framework. The study proposes specific dimensions and variables to be considered in preparing reports that exhibit this holistic way of thinking. The recommendations can help information preparers and improve the accountability and transparency of public sector companies.

Keywords Public sector, Contextual factors, Integrated reporting, Integrated thinking, Preparers

Paper type Research paper

1. Introduction

Amongst the conceptual frameworks for reporting non-financial information, the integrated reporting (IR) initiative stands out due to the interest it has attracted from academia, standard setters, regulatory bodies and preparers (Jensen and Berg, 2012; Abeysekera, 2013; De Villiers *et al.*, 2014; Adams, 2015; Stent and Dowler, 2015). The International Integrated Reporting Council (IIRC) launched the IR framework in 2013, given investor demands for financial and non-financial information to be presented



together in an understandable and concise manner in a single document (Eccles and Krzus, 2010). IR tries to solve the shortcomings of conventional, standalone reports that are unable to relate sustainability to financial performance and to show how available resources contribute to the creation of sustained value over time (Abeysekera, 2013; De Villiers *et al.*, 2014). Although the IR framework does not expressly refer to the concept of sustainability, it is implicit in the initiative, expressing the need to expand the scope of accounting systems, promote meaningful changes to reporting processes and provide a broader perspective on value creation and long-term sustainability (De Villiers *et al.*, 2014; Stubbs and Higgins, 2014; Oliver *et al.*, 2016; Adams, 2017; McNally *et al.*, 2017). Proponents of IR argue that it could further facilitate the integration of sustainability issues into corporate practices, including corporate sustainability reporting (Adams, 2017).

Although the initial users of integrated reports were mainly financial capital providers, the IIRC (2013) highlights that the IR framework attempts to satisfy the demand for information of all stakeholders as it establishes the stakeholder responsiveness as one of its guiding principles. Stakeholder engagement has been one of the concerns of the IIRC from the outset because stakeholders other than shareholders have a significant power to influence how the company conducts its business (Parrot and Tierney, 2012). However, authors like Flower (2015) questioned the IR's ability to respond to the interests of other recipients beyond investors and predicted that IR would have little impact on reporting practices. Other authors have also expressed scepticism and question the extent to which IR can benefit other stakeholders' decisions (Stacchezzini *et al.*, 2016; Chaidali and Jones, 2017). The fact is, however, that despite these doubts, the IR framework is currently being used by organisations as an instrument for communication with their stakeholders (Mio *et al.*, 2016; Del Baldo, 2017; Adhariani and De Villiers, 2019).

In response to this criticism, Adams (2015) or McNally *et al.* (2017) suggest that the IR's ability to meet the legitimate information demands of a greater diversity of stakeholders requires the establishment of relationships between the contents of the report to increase its coherence. To make this type of connection, an integrated report requires integrated thinking that enables the connectivity of all information to be disseminated (Feng *et al.*, 2017), supports the decision-making of readers and managers (De Villiers *et al.*, 2014; Stubbs and Higgins, 2014) and ultimately, improves transparency and corporate communication (Eccles and Krzus, 2010).

Integrated thinking is a basic concept within the IR framework (IIRC, 2013; Adams, 2015; Stent and Dowler, 2015; Mio *et al.*, 2016; Dumay and Dai, 2017). The IIRC defines integrated thinking as the active consideration of the relationship between different factors affecting a company's value creation processes (IIRC, 2013). It involves reflection on the interdependencies between the multiple capitals and resources that an organisation uses or that affect its business model (Al-Htaybat and Alberti-Alhtaybat, 2018). This type of thinking provides a holistic view of an organisation which is necessary to identify sources of value creation and to assess the organisation's future prospects (Abeysekera, 2013; Adams, 2015; Feng *et al.*, 2017; Stacchezzini *et al.*, 2019). This view of integrated thinking comes from the need to give a more holistic picture in sustainability reporting (De Villiers *et al.*, 2014) that would allow for the identification of risks and opportunities affecting the value creation process of organisations and connect social, economic and environmental issues with the value creation process and the long term strategy, promoting the incorporation of sustainability into corporate mindset (Adams, 2017). Adams (2017) suggests that new

understanding arises from this thinking manner as it facilitates greater alignment of value creation outcomes with sustainable development.

Previous authors have studied how to operationalise integrated thinking and how to identify the internal practices that accompany it (Feng *et al.*, 2017; Guthrie *et al.*, 2017; Al-Htaybat and Alberti-Alhtaybat, 2018). Nevertheless, integrated thinking has not yet been analysed from the perspective of information preparers (Stacchezzini *et al.*, 2019), even though they are the primary agents in determining the future of IR (Chaidali and Jones, 2017; Lai *et al.*, 2018). Moreover, Adhariani and De Villiers (2019) demonstrate that fostering integrated thinking is the aspect most valued by preparers. However, despite this interest, integrated thinking has been relegated to a marginal position in the reporting landscape and has not been sufficiently studied (Feng *et al.*, 2017; McNally *et al.*, 2017; Al-Htaybat and Alberti-Alhtaybat, 2018; La Torre *et al.*, 2019). From this point of view, integrated thinking could contribute to understanding the underlying aspects that underpin the concept of sustainability, not in a symbolic way, but showing the connections between the contents disclosed in an integrated report, thus reinforcing the commitment of the corporations and the target audiences of the report with sustainability (De Villiers *et al.*, 2014).

This paper aims to improve the understanding of integrated thinking, as it is a central concept in the IR framework that has implications for sustainability reporting, as the holistic view of integrated thinking clarifies the value creation process of organisations and facilitates the incorporation of sustainability issues into the corporate mindset. A true commitment to sustainability must go beyond the amount of corporate disclosure information and make reporting substantive, helping to identify the factors that affect the creation of sustainable value over time (De Villiers *et al.*, 2014; Ahmed-Haji and Anifowose, 2016). The study presents evidence on how integrated thinking is being incorporated into integrated report contents, as it requires internal dynamics that are difficult to exhibit in a document, but that is needed to ensure the creation of sustained value over time (Melloni, 2015; Oliver *et al.*, 2016; Dumay and Dai, 2017). To this end, we propose specific integrated thinking dimensions and variables to be considered in the preparation of the report, based on the review of previous literature. This paper analyses whether companies are incorporating integrated thinking that would allow for a connection between the broader integrated report contents, such as multiple capitals, risks and opportunities, materiality analysis, governance or forward-looking perspective and the value creation process and the long-term strategy.

Thus, our study contributes to the understanding of the concept of integrated thinking and to guiding preparers when presenting the contents of the report, as according to McNally *et al.* (2017), it is necessary to assist preparers and develop an integrated thinking framework that leads to a formalisation of this holistic way of thinking.

Moreover, the holistic integrated thinking approach could be especially important for public sector reporting, as this way of thinking allows entities to represent the complexity of the process of creating public value (Bartocci and Picciaia, 2013; Guthrie *et al.*, 2017). This approach can also induce change mechanisms that are necessary for sustainability reporting in these organisations (Guthrie *et al.*, 2017; Farneti *et al.*, 2019).

In addition, this study investigates whether there are contextual factors that may be influencing the way integrated thinking is reflected in the reports. More specifically, we examine whether the levels of integrated thinking achieved in each of the proposed dimensions are influenced by the legal system, the environmental sensitivity of the industry and the years of experience in preparing integrated reports. Thus, this study adds new evidence to the existing literature on the factors that explain sustainability reporting practices.

Furthermore, this paper contributes to theories that explain non-financial reporting practices in the public sector by interpreting the results on the levels of integrated thinking achieved from the perspective of stakeholder theory (Freeman, 1984) and legitimacy theory (Suchman, 1995; Deegan, 2002).

In pursuit of our aim, we have carried out a content analysis of the integrated reports of 21 public sector companies for the year 2018 (or the year 2017 if the 2018 report had not yet been published). This analysis has enabled us to determine the levels of integrated thinking achieved in the reporting of the sample enterprises by formulating an integrated thinking index (ITI). This index allows evidence to be obtained about the commitment of the sampled enterprises to integrated thinking, which can be interpreted from a stakeholder and legitimacy theory perspective, providing new arguments to support the reasons why public sector companies disclose non-financial information. Our results demonstrate the existence of limited integrated thinking in the information disclosed, characterised by poor connectivity of information in the reports, lack of a clear link between materiality analysis and strategy and insufficient forward-looking perspective. These findings are related to contextual and institutional factors as they show that the legal system is associated with specific integrated thinking dimensions. However, the environmental sensitivity of the industry and years of experience have had little influence on the levels of integrated thinking achieved.

The remainder of this article is organised as follows. Section 2 presents a review of the relevant literature on integrated thinking and highlights the importance and characteristics of this concept for the public sector. Section 3 attempts to systematise the elements that show the presence of integrated thinking and presents a proposal of the dimensions and variables to be considered in reports. Section 4 exhibits the contextual factors included in our analysis. Section 5 describes the methodology and empirical research, as well as the study results. Finally, Section 6 includes conclusions and implications.

2. Literature review

2.1 *The concept of integrated thinking*

The increasing interest in integrated thinking is proof of the need to understand the connections between the value creation process and sustainability and the interdependencies between the factors that affect an organisation's ability to create value over time (Feng *et al.*, 2017; Dumay *et al.*, 2019; La Torre *et al.*, 2019; Beske *et al.*, 2020).

Integrated thinking is defined as the active consideration of the relationships between various operating and functional units and the capitals that an organisation uses or affects. Integrated thinking leads to integrated decision-making and actions that consider the creation of value over the short, medium and long term (IIRC, 2013).

Integrated thinking has become a core concept of IR because the primary purpose of IR is to provide a broader and more connected account of organisational performance than is provided by traditional annual statements or sustainability reporting (De Villiers *et al.*, 2014). IR is not just an information dissemination initiative that aggregates financial and non-financial content into a single document. Information is supported by internal management processes that require integrated thinking to change corporate and managerial behaviour (Dumay *et al.*, 2019). This change in thinking serves two functions: an "informative function" to enable the benchmarking of business competitiveness by investors and other stakeholders, and a "transformative function" that guides internal decision-making processes (Lodhia, 2015; Mio *et al.*, 2016; Perego *et al.*, 2016; Del Baldo, 2017).

If we focus on its informative function, integrated thinking should be able to improve communication with the report recipients. According to Stent and Dowler (2015), this type of

thinking enables a report to move beyond a document with descriptions of isolated events to one based on mental models that interrelate the contents. This represents an important innovation in the preparation of information and stakeholder communication.

The output of this type of thinking is a periodic integrated report about value creation over time by an organisation (IIRC, 2013). Thus, IR is a natural extension of integrated thinking and a tool for communicating this approach to stakeholders. This implies that this mindset must be a prerequisite for an integrated report (Al-Htaybat and Alberti-Alhtaybat, 2018). Lai *et al.* (2018) indicate that IR depends on integrated thinking but also suggest that IR helps to develop integrated thinking because report preparation fosters dialogue between the departments involved and the information preparers. Thus, IR and integrated thinking reinforce one another (Dumay and Dai, 2017), an integrated report being the final output of the process (De Villiers *et al.*, 2014). Similarly, La Torre *et al.* (2019) consider IR and integrated thinking to be two sides of the same coin.

Concerning the transformative function of integrated thinking, in general, there is a significant agreement in the existing literature about the organisational and management aspects that characterise integrated thinking. These aspects are the commitment of managers from different departments, the creation of cross-functional teams and attempts to move away from siloed thinking and structures (Stubbs and Higgins, 2014; SAICA, 2015; Mio *et al.*, 2016; De Villiers *et al.*, 2017; Feng *et al.*, 2017; Stacchezzini *et al.*, 2019). Guthrie *et al.* (2017) analyse the role of integrated thinking as an internal mechanism of change in organisations because of its influence on the way strategy is conceived and its relationship with the value creation process, the improvement of coordination across different areas, the development of non-financial performance measures and the emphasis on materiality analysis.

Although all these previous studies have attempted to clarify the integrated thinking concept, their analyses focussed on the perspectives of internal managers (transformative function) and not on those who prepare the information (informative function) (Stacchezzini *et al.*, 2019). Lai *et al.* (2018) suggest that as the preparers select and combine the narrative elements of the integrated report, it is, therefore, their responsibility to make the content understandable, concise and credible. However, thus far, no proposal identifies the aspects that should be considered by preparers to reflect integrated thinking in a non-financial report (McNally *et al.*, 2017). Indeed, from a preparer's perspective, integrated reports should serve to communicate integrated thinking to all stakeholders (Adhariani and De Villiers, 2019) and to produce greater trust and credibility (Chaidali and Jones, 2017; La Torre *et al.*, 2019). Therefore, integrated thinking could be interpreted from different theories that explain sustainability reporting.

Through the lenses of stakeholder theory (Freeman, 1984), the information disclosed must respond to the legitimate interests of a multiplicity of stakeholders who maintain expectations about the organisation. From a normative point of view of stakeholder theory, integrated thinking should serve to improve the understanding of information by all stakeholders. However, according to Flower (2015), IR makes instrumental use of this theory, prioritising investors over other users.

Moreover, entities could be producing their integrated reports to earn or maintain their reputation, without paying attention to the coherence, conciseness and holistic vision that integrated thinking provides, intentionally creating a rhetorical image instead (Beck *et al.*, 2017; Casonato *et al.*, 2019). This results in what is known as a legitimacy gap or symbolic legitimacy (Unerman and Zappettini, 2014).

Our study seeks to provide evidence that helps determine whether the use of information is instrumental, and a legitimacy gap exists in the reporting of public sector companies that have adapted their reports to the IR conceptual framework.

2.2 *Integrated reporting and integrated thinking in the public sector*

Since the late past century, public sector reforms under the new public management and the new public governance have brought about significant changes in relations between citizens and the management of public value (Bartocci and Picciaia, 2013; Bryson *et al.*, 2014). The accountability of public sector organisations becomes particularly important in this context, promoting new forms of public reporting (Biondi and Bracci, 2018; Manes-Rossi, 2019). Several authors have highlighted the link between “public accountability” and the dissemination of information on the value creation process and sustainability (Moore, 2014; Manes-Rossi, 2019). Public entities must demonstrate to citizens the value they generate in the provisions of their services in the absence of a clear measure of value that connects performance and the results desired by stakeholders (Moore, 2014). In this context, non-financial information takes centre stage (Farneti and Guthrie, 2009; Guthrie *et al.*, 2017; Nistor *et al.*, 2019). Nonetheless, public organisations have difficulties connecting non-financial reporting and the process of creating public value (Tommasetti *et al.*, 2020).

As authors have already recognised, IR could represent an important development in the reports produced by public organisations (Farneti *et al.*, 2019; Manes-Rossi, 2019; Nistor *et al.*, 2019) and can contribute to the management of public sector activities in several ways. Firstly, the process of creating public value and the use of available resources can be better understood (CIMA, 2016; Montecalvo *et al.*, 2018). Secondly, it can improve dialogue with stakeholders (Montecalvo *et al.*, 2018; Farneti *et al.*, 2019) and overall transparency (Nistor *et al.*, 2019). Likewise, it can be a mechanism to promote internal change in public sector organisations (Guthrie *et al.*, 2017) or to expand knowledge about the intellectual, social and relational capitals (Melloni, 2015; Casonato *et al.*, 2019; Farneti *et al.*, 2019). These aspects justify that public sector organisations may be interested in the IR conceptual framework. However, beyond the interest of public sector entities in the conceptual framework, some of its peculiarities make the need for integrated thinking, especially relevant (Bartocci and Picciaia, 2013; Cavicchi *et al.*, 2019; Nicolo *et al.*, 2020a).

First, in the view of stakeholder theory, these entities must connect the process of value creation and the use of capitals with the expectations of a greater diversity of stakeholders, who exert increased pressure (Manes-Rossi, 2019; Tommasetti *et al.*, 2020; Nicolò *et al.*, 2020b). Particularly, in the public sector, citizens and the government are the primary recipients of the report so the informative function should also be extended to these groups. Integrated thinking can contribute to respond to the greater complexity and diversity in the relationships of public entities with these stakeholders (CIPFA, 2016; Guthrie *et al.*, 2017; Tommasetti *et al.*, 2020). Citizens should be able to see this mindset reflected in the disclosure of information, justifying the use of taxpayer-funded resources (Nistor *et al.*, 2019) and enabling an assessment of the sustainability of public service provision (CIPFA, 2016; Nistor *et al.*, 2019).

On the other hand, legitimacy theory takes on particularly strong connotations in the public sector (Nicolò *et al.*, 2020b). The audience may not have the technical knowledge necessary to correctly interpret the information and companies should, therefore, improve the consistency of the report to fulfil its informative function (Biondi and Bracci, 2018). The contents must be interrelated and presented coherently and concisely to maintain or gain legitimacy and respond to stakeholder information demands, thusly guaranteeing their understanding (Lai *et al.*, 2016).

Secondly, in view of the transformative reporting function, public sector entities should holistically link their strategies and performance measurement with sustainability (Tommasetti *et al.*, 2020). Guthrie *et al.* (2017) argue that public sector organisations adopting integrated thinking tend to act more in line with their own internal strategy and

with the process of value creation, as this way of thinking requires specific internal mechanisms of change which demand greater participation and commitment of employees from different areas and departments.

All these reasons justify in some way the interest of integrated thinking to public sector entities. However, while some of the effects of integrated thinking on internal management processes have already been analysed, more studies are needed to show how this type of thinking can be reflected in public sector reporting (Dumay *et al.*, 2015). Our study proposes a set of dimensions and variables that demonstrate the presence of integrated thinking in the report in response to this need, systematising the most relevant aspects to be reported.

3. Conceptual framework

Following relevant literature and documents on integrated thinking (IIRC, 2013; IFAC, 2015; IIRC, 2016; Dumay and Dai, 2017; Feng *et al.*, 2017; Guthrie *et al.*, 2017; Al-Htaybat and Alberti-Alhtaybat, 2018), the aspects which synthesise integrated thinking can be grouped into five information categories or dimensions. These dimensions are the connectivity of information; an external focus towards value creation in the short, medium and long term; integrated planning and links to strategy; effective governance; and integrated communication. The analysis of these reporting dimensions is useful for identifying the aspects of integrated thinking to be considered in report preparation and for helping the preparers select and design the report content.

To determine the presence of integrated thinking in each of these dimensions, we have proceeded to define the variables that could help preparers in report generation, ensuring greater coherence. The innovative aspect of our study is that our identification of these variables is focussed on the interdependencies and trade-offs between the factors that affect organisational value creation, rather than viewing them as sequential or isolated issues. In other words, the emphasis is placed on identifying the connections between the various elements involved in report creation. To do so, we measure how different issues interact during the value creation process and its connections with the sustainability strategy. These interrelationships reveal integrated thinking (Ahmed-Haji and Anifowose, 2016).

Regarding the first dimension, connectivity, it represents a basic principle of integrated thinking (WICI, 2013; IFAC, 2015; IIRC, 2016; Feng *et al.*, 2017; Del Baldo, 2017; La Torre *et al.*, 2019). Despite its importance in integrated thinking, Adhariani and De Villiers (2019) state that the current lack of connected information and process integration are two of the most significant problems in reporting by companies that have adopted IR.

Dumay and Dai (2017) believe that integrated thinking comprises the establishment of connections between the business model, strategy, governance, performance and future prospects while also considering all the factors that have a material impact on the ability to create value over time for stakeholders. Furthermore, qualitative information should be connected with quantitative information (Stent and Dowler, 2015; McNally *et al.*, 2017). The links and cause-effects or systemic relationships between different pieces of content should be identified and illustrated (Schaltegger *et al.*, 2017).

However, connectivity is not achieved by simply connecting pieces of report content (Stubbs and Higgins, 2014). It requires breaking down silos, facilitating a more productive dialogue between cross-functional areas, making information flows smoother or more efficient and improving communication (Feng *et al.*, 2017). The introduction of methods to measure and manage sustainability information has been promoted and applied by a broad range of departments (Schaltegger *et al.*, 2017). These departments should strive to maintain a collective mindset and a high degree of compromise (Robertson and Samy, 2015). Thus, the preparation of an integrated report requires the participation of different organisational

units, which encourages the necessary coordination and collaboration to develop integrated thinking (Stubbs and Higgins, 2014; Feng *et al.*, 2017; Stacchezzini *et al.*, 2019).

In short, connectivity must be understood in two ways, namely, connection and collaboration. Both aspects must be made visible in the report. Connection implies interrelating pieces of content. Collaboration is demonstrated by the involvement of different managers in report creation and by the explicitly stated commitment of the management (Stubbs and Higgins, 2014; CIMA, 2017; Feng *et al.*, 2017). Feng *et al.* (2017) have stressed that the board must be involved.

The above considerations have led us to identify two variables that are representative of connectivity: the participation of multifunctional work teams in report creation; and evidence of content integration and visualisation of relationships (for example, in the form of figures, flowcharts, graphs, etc.).

Secondly, integrated thinking also involves an external focus. This dimension could be related to what Burritt and Schaltegger (2010) call the “outside-in” approach of sustainability reporting that aims to secure legitimacy and transparency (Maas *et al.*, 2016). The “outside-in” approach includes dialogue with stakeholders, and communication channels to meet the information expectations of external users (Stubbs and Higgins, 2014; Guthrie *et al.*, 2017). In this sense, researchers have also noted the importance of an organisation’s ability to respond to legitimate stakeholder interests as a component of integrated thinking (Al-Htaybat and Alberti-Alhtaybat, 2018).

This external focus allows an understanding of the environment in which an entity operates (Al-Htaybat and Alberti-Alhtaybat, 2018), its key products (Maas *et al.*, 2016), and the connections between multiple capitals and value creation, according to the proposed business model (Feng *et al.*, 2017). The business model facilitates and reflects the organisation’s integrated thinking approach (Al-Htaybat and Alberti-Alhtaybat, 2018) and should describe how a company’s resources (capitals) are combined, used and affected to create value.

Our study has synthesised all these aspects into five new variables: the description of the environment’s main trends and changes; the impacts of products and services on society, the market and reputation; the ability to respond to the legitimate interests of stakeholders; the description of the business model and its link to the value creation process; and the relationship between capitals and their links to the value creation process.

The third dimension of integrated thinking is integrated planning, which is related to the “inside-out” approach of sustainability reporting that is connected with managing performance against business strategy (Burritt and Schaltegger, 2010). This approach is applied when managers require information to support better management decisions (SAICA, 2015; Maas *et al.*, 2016; Guthrie *et al.*, 2017). The “inside-out” approach is based on corporate strategy, strategically aligned accounting systems, and corporate performance achievements (Stubbs and Higgins, 2014).

In this dimension, integrated thinking also encompasses various aspects related to the prioritisation of material issues and their links to business strategy, as well as the management of risks and opportunities (Stubbs and Higgins, 2014; Maas *et al.*, 2016; Feng *et al.*, 2017; Guthrie *et al.*, 2017; McNally *et al.*, 2017).

Another characteristic of the implementation of integrated planning is the effort to transcend the mere dissemination of historical information and to provide forward-looking information to prospective stakeholders (Adams, 2015; Melloni, 2015; Menicucci, 2018).

In addition, integration requires the combination of financial (quantitative) and non-financial (qualitative) performance measurements to capture the value creation process (Stubbs and Higgins, 2014; Mio *et al.*, 2016; Guthrie *et al.*, 2017; McNally *et al.*, 2017).

In summary, these aspects have been systematised under four variables: the existence of links between materiality analysis and strategy; risk analysis and its link with strategy; the connections between financial and non-financial performance; and the connections between the short, medium and long terms.

The fourth dimension of integrated thinking refers to the need to disseminate information about the role of the governing body in the organisation's value creation process. Users of integrated reports need to make assessments about the quality of an organisation's governance. They need to understand governance structures and processes and the level of informed oversight exercised by the governing body (IIRC, 2017). According to the IIRC (2017), three aspects could demonstrate how the governing body supports its ability to create value. One aspect is the leadership structure and specific processes used to make strategic decisions. Another is how an organisation's culture, ethics and values are reflected in its use of and effect on capital. The last aspect is the existence of governance practices that exceed legal requirements.

To demonstrate integrated thinking in this dimension, the following variables have been considered: evidence of mechanisms for governance coordination; multidisciplinary audit/assurance systems and the link between their competencies and value creation; and the existence of commitment to ethics.

Finally, integrated thinking must be translated into communications that are effective, agile and innovative (Al-Htaybat and Alberti-Alhtaybat, 2018). This requires more narrative and visual information than numerical data (Abeysekera, 2013; Lai *et al.*, 2018). Furthermore, because there is no pre-established model (only a guide to the IIRC's suggested content and principles), preparers enjoy great flexibility when making decisions about report presentation and appearance (Chaidali and Jones, 2017).

For La Torre *et al.* (2019), integrated communication is a prerogative of the users, so they must be able to adapt the information to their needs. It should be possible to create individual content queries that can be customised according to the reader's preferences. It would also be useful to include links between various reports (Robertson and Samy, 2015; Chaidali and Jones, 2017) and cross-referencing and navigation devices such as icons, color-coding or other tools (WICI, 2013).

These issues can be categorised into another two variables: the existence of references to other information created by the entity or to the environment beyond the report, with links or QR codes; and the presence of links and cross-references within the report content to respond to the information needs of different types of users.

Furthermore, integrated thinking should lead to a more useful disclosure rather than a greater quantity of disclosure. There is general agreement that more extended reports do not necessarily lead to an improvement in the quality of information (Chaidali and Jones, 2017; Melloni *et al.*, 2017). A document that is too long is difficult to understand and can be an obstacle to integrated thinking, hence the importance of the conciseness principle (IIRC, 2013). For some authors, a document's length may be related either to the complexity of the IR initiative or to the manipulation of the content for impression management (Ahmed-Haji and Anifowose, 2016; Stacchezzini *et al.*, 2016; Chaidali and Jones, 2017; Adhariani and De Villiers, 2019). To measure any potential relationships between integrated thinking and report length, a final variable has been added: conciseness.

Table 1 summarises all the integrated thinking dimensions and variables proposed. The analysis of the level of achievement of these dimensions and variables in public sector companies can provide new evidence for benchmarking and serve to make recommendations for the improvement of their accountability and transparency.

Dimensions	Variables
I. Connectivity	1. Existence of multidisciplinary work teams
II. External focus	2. Integration of content and visibility of interrelationships
	3. Main trends and changes in the environment that may affect value creation
III. Integrated planning	4. Impacts of products and services on society, markets and reputation
	5. Ability to respond to the legitimate needs and interests of stakeholders
	6. Description of the business model and links to the value creation process
	7. Description of capitals and links to the value creation process
	8. Materiality assessment and links to strategy
	9. Risks and links to strategy
	10. Financial and non-financial performance measures and links to strategy
IV. Effective governance	11. Future perspective and short-, medium- and long-term orientation
	12. Mechanisms for governance coordination
	13. Internal audit/assurance systems
V. Integrated communication	14. Existence of an ethical commitment
	15. References to other information
	16. Links and cross-references within report contents
	17. Conciseness

Table 1.
Dimensions and variables of integrated thinking

4. Contextual factors influencing sustainability reporting

Prior literature already focussed on assessing the influence of contextual factors on the levels of dissemination of non-financial information (Frias-Aceituno *et al.*, 2013; Gallego-Álvarez and Quina-Custodio, 2016; García-Sánchez *et al.*, 2016; Lai *et al.*, 2016; Nicolo *et al.*, 2020a). However, they have not yet been related explicitly to integrated thinking.

The study of these factors is relevant because they can inform the determinants that justify the sustainability reporting practices of companies and can serve to guide other entities wanting to carry out a benchmarking better adapted to their specificities.

One of the factors most frequently analysed in this type of study is the legal context. From a stakeholder theory perspective, countries with code law systems are more stakeholder protectionist than countries with common law systems (Frias-Aceituno *et al.*, 2013). Therefore, they tend to disseminate increased, better quality information on sustainability (Frias-Aceituno *et al.*, 2013; Gallego-Álvarez and Quina-Custodio, 2016; García-Sánchez *et al.*, 2016). However, Jensen and Berg (2012) conclude that common law countries are more market-oriented and tend to prioritise shareholder interests. Shareholders make their investment decisions based on their own analyses, so they not only need to disclose more financial information but also find more innovative ways of reporting on sustainability.

Regarding the industrial sector, in general, it was found that non-financial disclosures are more frequent and comprehensive in some industries than in others (Gallego-Álvarez and Quina-Custodio, 2016). Industries that undertake environmentally sensitive activities may be more concerned with integrated thinking because they are more pressured by stakeholder demands and they need to demonstrate their social commitment further to retain their legitimacy, as they are additionally exposed to risk (Lai *et al.*, 2016; Nicolo *et al.*, 2020a).

Finally, we studied whether this integrated thinking has matured over time to see if IR promotes this holistic way of thinking as companies gain experience in report preparation. Lai *et al.* (2018) demonstrated that companies improve their IR narratives over time, which could lead to a better consistency of information. On the other hand, Stubbs and Higgins (2014) concluded that significant changes in the reporting process occur over time that could

lead to greater integrated thinking. If entities continue to issue these reports, it is reasonable to assume that the learning effect will result in a higher degree of disclosure of integrated thinking information and may explain the differences between the entities studied.

5. Empirical analysis

5.1 Sample selection

Our sample consists of all IR reports published by public sector companies that were available in the IIRC database at the time of the study. All reports were taken from the “search by organisations” section of the IIRC database website filtered with the organisation type “public sector”. In total, we identified 21 public sector enterprises (Appendix). Lai *et al.* (2016) demonstrated that the organisations included in the IIRC database behave differently from those that are not and are characterised by the quality of the information disseminated. Previous studies have used this database because it is congruent with the IR framework (Melloni, 2015; Nicolo *et al.*, 2020a) and because the information is easily accessible to stakeholders (Al-Htaybat and Alberti-Alhtaybat, 2018).

The number of public sector companies included in this database is limited, mainly because private companies are the leading IR target group and IR is still in an early phase within public sector entities (Biondi and Bracci, 2018; Farneti *et al.*, 2019). Despite the small sample size, it was decided not to select new enterprises from sources other than the IIRC database, as their reports may not be fully adapted to the IR framework, which would make it difficult to achieve the homogeneity and comparability of the analysed information. Furthermore, the understanding of the IR conceptual framework is guaranteed in the reports included in the IR database, as IR has selected them as “leading practice examples”.

Consequently, the sample size studied is small, and thus, our study is exploratory in nature. For this reason, it seeks to describe how public sector companies are disseminating integrated thinking. The results of our study can serve as an initial or pilot experience for other public sector organisations.

5.2 Method

We analysed the report contents for the 21 companies in the sample to assess the level of integrated thinking in the five dimensions and 17 representative variables of integrated thinking as previously defined (Table 1). The analysed contents correspond to the latest integrated report available on the website of the public sector companies in the sample, either from the year 2018 or from 2017 if the 2018 report was not yet published. To facilitate and homogenise the content analysis, each variable was divided into several items. We defined the items after an initial review of the contents of the integrated reports of a subsample of companies, in which two researchers independently identified the aspects that would demonstrate the existence of integrated thinking in each of the variables. These items were then collectively discussed and agreed between both researchers (Krippendorff, 2013). The items were defined in such a way that they captured the interdependencies between the contents of the variables, not their mere presence in isolation.

The presence of each item was verified using a dichotomous variable that had a value of zero if the item was not present in the report, and a value of one if the item was present, except for variable conciseness, the value of which corresponds to the total number of pages in the report. Data collection and the coding of the items were done by hand. Previously, both researchers agreed on the assignment of the scores to the items to avoid discrepancies and to ensure the consistency and reliability of the results (Krippendorff, 2013).

Once the scores were assigned to the items (0–1, except for variable conciseness), we calculated the value of each variable as the sum of the scores obtained for the items included

in the variable. Not all the variables contained the same number of items and were, therefore, weighted by dividing each variable by the total number of items. To obtain the value of the integrated thinking dimensions, we calculated the arithmetic mean of the values of the variables included in each dimension. The conciseness variable was excluded from the calculation of the effective communication dimension, as a different scale was used to measure this variable (the length of the report). Thus, the conciseness variable was calculated separately as the average number of pages of the reports.

This approach enabled us to perform firstly a descriptive analysis of the information to identify the frequencies of each variable and dimension. The purpose of this analysis was, on the one hand, to determine whether preparers are reporting on the dimensions and variables that comprise integrated thinking and, on the other, to assess the level of the information reported for each one.

One of the objectives of this study was to ascertain the degree of integrated thinking present in reports, to assess the commitment of the companies analysed to this concept and provide new evidence on the quality of the information they disclose. Therefore, an integrated thinking index (ITI) was formulated. The use of indexes is very common for measuring the dissemination and quality of the information provided, especially in the field of non-financial and sustainability information (Manes-Rossi *et al.*, 2018; Nistor *et al.*, 2019). The ITI was calculated by determining the average frequency of the five dimensions. In our analysis, all dimensions were weighted equally because of a lack of experience and the subjectivity involved (Dragu and Tiron-Tudor, 2013).

Last, we tried to analyse the contextual factors that could be influencing the levels of integrated thinking in reporting. An analysis of the influence of these factors on the different integrated thinking dimensions could be useful when identifying their drivers. The activity sector and legal context stand out amongst the determining factors analysed in previous studies to explain the dissemination of information.

To analyse the influence of the legal system on integrated thinking, we used the classification established by the research group on the legal systems of the University of Ottawa (www.juriglobe.ca/eng/sys-juri/index-alpha.php). We defined a dichotomous variable that has a value of zero for common law countries (12 companies) and a value of one for code law countries (nine companies) (Appendix). Some countries have mixed legal systems, so we classified these cases according to the predominant type of legal system.

We used the North American Industry Classification System (NAICS) of environmentally sensitive industries published in 2017 to identify a dichotomous variable that had a value of zero if the entity's economic activity was not considered to be environmentally sensitive (11 companies) and a value of one if it was considered to be environmentally sensitive (10 companies) (Appendix).

To determine whether the two previous factors might be conditioning the integrated thinking reflected in the reports, we performed Student's *t*-test to analyse whether any significant relationships existed between the frequency of the dimensions, according to the legal system or according to the environmental impact of a company.

Finally, we studied whether this integrated thinking has matured over time to see if IR promotes this holistic way of thinking as companies gain experience in report preparation. We identified the number of years that the companies have been publishing their reports under the IR framework between 2013 (the first year that the IR conceptual framework was applied) and 2018 or 2017 (the latest report available) (Appendix). To test the effect of integrated thinking experience, we conducted an ANOVA analysis and a correlation study.

5.3 Results

From the analyses of frequencies (Table 2), we have found the degree of ITI in evidence in the reports of the sampled companies (59.0%). This result shows that despite the importance of the concept of integrated thinking in the conceptual framework of IR, this holistic way of thinking is not yet sufficiently reflected in the contents of the report, which could be symptomatic of the search for symbolic legitimacy, in line with the findings of Ahmed-Haji and Anifowose (2016), who concluded that the generic use of integrated thinking is symbolic rather than substantive. The absence of this thinking could also be a sign of an instrumental strategy, as the information is presented in a fragmented manner without the necessary coherence, thus limiting its usefulness for recipients. The results reveal that external focus (69.4%) is the dimension with the highest degree of oversight, followed by connectivity (62.7%). The lowest levels were presented by integrated planning (57.1%), effective governance (53.3%) and integrated communication (52.4%). Regarding conciseness, the average number of report pages was 160.

The connectivity shown in the reports, given its importance in integrated thinking and despite having one of the highest frequencies (62.7%), could still be improved. This lack of connectivity has implications, as it makes it difficult for the understanding and coherence of information when stakeholders do not have the necessary knowledge. Thus, it is observed that although the participation of multidisciplinary work teams in report preparation and the statement on the involvement of those responsible for report preparation was high (77.8%), the integration of content and visibility of its relationships was low (47.6%). The coordinated effort that integrated thinking requires stands out as a strong point in reports,

<i>Dimensions/variables</i>	(%)
<i>Connectivity</i>	62.7
1. Existence of multidisciplinary work teams	77.8
2. Integration of content and visibility of interrelationships	47.6
<i>External focus</i>	69.4
3. Main trends and changes in the environment that may affect value creation	100
4. Impacts of products and services on society, markets and reputation	95.2
5. Ability to respond to the legitimate needs and interests of stakeholders	69.8
6. Description of the business model and links to the value creation process	70.2
7. Description of capitals and links to the value creation process	49.2
<i>Integrated planning</i>	57.1
8. Materiality assessment and links to strategy	31.0
9. Risks and links to strategy	71.4
10. Financial and non-financial performance measures and links to strategy	68.3
11. Future perspective and short-, medium- and long-term orientation	57.1
<i>Effective governance</i>	53.3
12. Mechanisms for governance coordination	61.9
13. Internal audit/assurance systems	41.7
14. Existence of an ethical commitment	60.3
<i>Integrated communication</i>	52.4
15. References to other information created by the entity or to the environment beyond the report	52.4
16. Links and cross-references within report content to respond to the information needs of different types of user	52.4
17. Conciseness	160
<i>Total ITI</i>	59.0

Table 2.
Frequencies of
integrated thinking
components

which shows that public companies are recognising the transformative function that integrated thinking can provide as an internal mechanism of change, as suggested by Guthrie *et al.* (2017), which is demonstrated by the participation of cross-functional teams in report preparation. Stubbs and Higgins (2014), Guthrie *et al.* (2017) and Stacchezzini *et al.* (2019) have already identified this aspect as an essential element of integrated thinking.

Regarding the external focus needed to disseminate the integrated thinking (69.4%), the reported trends and changes in the environment (100%) stood out, as did the impact of the activities regarding markets and reputation (95.2%). These outcomes demonstrate that content related to an entity's operational context has a prominent place in its reports, which could also facilitate an improvement in legitimacy, as companies are able to demonstrate to citizens and the government the impact of their actions. Other elements that stand out, although less prominently, are the descriptions of business models and links to value creation processed (70.2%). Despite that, the descriptions of capitals and links to the value creation process are an opportunity for improvement (49.2%). These relationships are essential for citizens to understand the sources of public value creation. This result shows an instrumental use of the stakeholder theory, as it does have not recognised the informative function of reporting of public entities for one of their priority stakeholders.

Moreover, our findings show that information on the ability to respond to the legitimate needs and interests of stakeholders is moderate (69.8%) because the communication channels and mechanisms for responding to demands are rarely disclosed. This fact seems to contradict the normative variant of stakeholder theory and could again be a sign of a more instrumental approach if the interests of all stakeholders are not recognised.

The integrated planning dimension exhibits a modest average value (57.1%). This result is consistent with the need for a change in communication of a strategy, as suggested by Higgins *et al.* (2014). The aspects reported on most frequently are company risks and their links to strategy (71.4%), followed by financial and non-financial performance measures and their links to strategy (68.3%). However, the reports have little information on materiality assessment and links to strategy (31.0%). The absence of a materiality analysis of the reported issues could be another sign of these symbolic legitimacy practices. This issue has already been noted in previous studies (Maas *et al.*, 2016; Beck *et al.*, 2017; Feng *et al.*, 2017; Guthrie *et al.*, 2017; McNally *et al.*, 2017; Beske *et al.*, 2020). Similarly, our results reveal the need for a forward-looking perspective in report preparation (57.1%), a finding also noted by Menicucci (2018), Stacchezzini *et al.* (2016) and Nicolo *et al.* (2020a). This may be symptomatic of a lack of commitment to long-term sustainability, possibly detracting from their legitimacy.

Corporate governance was one of the lowest (53.3%) dimensions in the reports studied, with scant information on insurance systems (41.7%), the relative weights of coordination mechanisms (61.9%) and commitment to ethics by governing bodies (60.3%). Our results concur with Menicucci (2018), who demonstrated that governance is one of the least reported components of the IR framework.

Another area that should be improved by preparers is integrated communication, which had the lowest result (52.4%) due to a lack of mechanisms to customise content and include links to other reports (52.4%). The reports still contain extended narratives resulting in unnecessary length (160 pages on average), contrary to the suggestions by Abeysekera (2013) regarding conciseness. This makes it difficult for stakeholders to find the information of interest to them quickly and easily. The length of the integrated report is evidence that could be interpreted in terms of legitimacy because the absence of integrated thinking could be leading entities to unnecessarily lengthen the report to gain reputation, making it difficult to understand.

To determine whether report length affects information quality, a correlation analysis was carried out that exhibited no significant correlation between conciseness and the other dimensions. This result shows that the ITI values are not related to the number of report pages, which implies that longer reports are not necessarily higher-quality reports, (Chaidali and Jones, 2017; Melloni *et al.*, 2017; Nicolo *et al.*, 2020a). This could be evidence that some entities seek symbolic legitimacy in their reports by extending the narrative unnecessarily, but without a holistic view.

With these results in hand, we then explored whether a country’s legal system might be influencing preparers in disseminating information according to the different dimensions. To this end, we determined the average frequencies for each type of legal system (Table 3).

As indicated in Table 3, report preparers from companies in countries with common law legal systems exhibit a lower degree of ITI (57.4%) than those in countries with a code law legal system (61.2%). Our results support the conclusions of Frias-Aceituno *et al.* (2013), Gallego-Álvarez and Quina-Custodio (2016) and Garcia-Sanchez *et al.* (2016) in that companies operating under a code law legal system report higher quality information. This result is consistent with the fact that they have a long tradition of disclosing non-financial information on sustainability and corporate social responsibility and are more oriented towards stakeholder protection, in line with the normative theory of stakeholders. Effective governance is the only dimension with frequencies that are lower in companies located in countries with a code law legal system. In addition, Student’s *t*-test reveals that effective governance is the only dimension for which there are significant differences between the two systems ($t = 2.265$, p -value = $0.035 < 0.05$). This result may be explained by the fact that code law countries operate in more regulated environments. Their inclination to protect stakeholders has led code law countries to establish legal requirements on the publication of information about corporate governance in an independent report, which could be limiting the ability of preparers to reflect the integrated thinking about governance in their reports because such information is highly standardised and regulated.

Regarding the possibility that the activity sector may be influencing the level of integrated thinking disclosure by preparers, we defined the environmentally sensitive variable and determined the average frequencies for each dimension in each of the two groups (Table 4).

With respect to environmental sensitivity, the sample entities do not differ greatly in the degree of integrated thinking. Furthermore, contrary to our expectations, non-sensitive enterprises had higher frequencies in three of the five dimensions, namely, connectivity (65.2%), external focus (73.5%) and effective governance (54.6%). This result may be a sign of a gap in legitimacy, as the companies for whom the informative function creates more pressure, are those that present lower levels of integrated thinking.

Dimensions/legal systems	Common law	Code law
Connectivity	62.5%	62.9%
External focus	64.6%	75.9%
Integrated planning	55.6%	59.3%
Effective governance	62.5%	41.1%
Integrated communication	41.7%	66.7%
Conciseness	167.3	151.1
ITI	57.4%	61.2%

Table 3.
Frequency of dimensions in common/code law legal systems

To analyse whether the differences found are significant, we conducted Student's *t*-test to compare the dimension frequencies with the environmental sensitivity of the activity. However, we did not find significant differences and concluded that, contrary to expectations, this does not explain the differences found in the dissemination of integrated thinking in the sample companies.

Finally, we explored whether the level of experience issuing IR could explain the frequency differences found in the integrated thinking demonstrated and in corresponding dimensions. Table 5 presents the average frequencies for each dimension, by years of experience in IR.

As indicated in Table 5, the average frequencies of both ITI and all dimensions do not follow behaviour patterns that can be explained by years of experience. Thus, the highest ITI values are exhibited by a company preparing its report for the first time (75.7%) and by a company with the most years of experience (75.3%). This result shows that integrated thinking has not matured in companies with experience, which could limit its transformative function.

We conducted ANOVA to explore whether there are significant differences between the dimension frequencies, according to the number of years that a company has been publishing its non-financial information following the IR standard. The results show that two dimensions-integrated planning ($F = 3.255$; p -value = $0.035 < 0.05$) and effective governance ($F = 3.935$; p -value = $0.018 < 0.05$) – are affected by years of experience. Integrated planning may be affected because experience enables companies to discover management control systems tools that already incorporate this type of thinking, such as the balanced scorecard (Mio *et al.*, 2016). Regarding governance, good governance practices have matured over time in most countries that mandate such practices. In addition, we conducted a correlation study that revealed a significant correlation of 0.665 (p -value < 0.01) between governance and experience.

Table 4.
Frequency of
dimensions in
environmentally
sensitive/non-
sensitive industries

Dimensions/environmentally sensitive	Environmentally non-sensitive	Environmentally sensitive
Connectivity	65.2%	59.9%
External focus	73.5%	65.0%
Integrated planning	56.4%	57.9%
Effective governance	54.6%	52.0%
Integrated communication	43.2%	62.5%
Conciseness	156.4	164.8
ITI	58.6%	59.5%

Table 5.
Frequency of
dimension per years
of experience in IR

Dimensions/years of experience	1 (1 company)	2 (2 companies)	3 (1 company)	4 (8 companies)	5 (8 companies)	6 (1 company)
Connectivity	83.3%	33.3%	83.3%	68.8%	56.2%	83.3%
External focus	91.7%	62.5%	83.3%	73.9%	61.5%	75.0%
Integrated planning	73.3%	20.0%	46.7%	58.4%	62.5%	73.3%
Effective governance	30.0%	20.0%	10.0%	55.0%	66.3%	70.0%
Integrated communication	100%	0.0%	100%	56.3%	46.9%	75.0%
Conciseness	122.0	66.0	209.0	200.6	147.9	117.0
ITI	75.7%	27.2%	64.7%	62.5%	58.7%	75.3%

6. Conclusions

Integrated Thinking is a concept that is becoming increasingly important in reporting as a key element of understanding and reflecting the value creation of companies over time (Feng *et al.*, 2017; Dumay *et al.*, 2019; La Torre *et al.*, 2019). Notwithstanding its importance to integrated reporting, ITI results (59.0%) reveal that public sector companies' reports do not reflect this way of thinking. This result is contrary to the informative function of the integrated report, as its coherence, understanding and conciseness could improve if it were based on a holistic vision. The report contents are poorly interrelated (47.6%) and communication lacks integration (52.4%). Our results show that the "outside-in" approach of sustainability reporting which aims to gain legitimacy, information on changes in the environment (100%) and the impact of the activities regarding markets and reputation (95.2%) are the most highly developed aspects. Conversely, the variables that ensure greater transparency of public companies where relations with stakeholders are more diverse and complex such as the ability to meet their legitimate information demands (69.8%), the relationship between capitals and their links to the value creation process (49.2%) or materiality analysis (31%) have intermediate values.

Although prior studies have shown the influence of contextual factors on sustainability reporting practices, our study shows little evidence of their impact on integrated thinking. The effective governance dimension of integrated thinking is influenced by the legal system and years of experience in IR. The latter also influences the integrated planning dimension. These findings reveal that reports are being prepared according to the preferences of preparers, with no significant influence exerted by their environments, as suggested by Cavicchi *et al.* (2019). As Lai *et al.* (2018) state, the preparers can decide what aspects of integrated thinking are exhibited in IR, but they do not have a suggested body of content to guide that decision. Our study aims to provide guidance that can help narrow this gap in the literature.

Our analysis of integrated thinking in public sector companies could have both theoretical and practical implications.

First, from a theoretical point of view, our study contributes to a better understanding of this concept by proposing a set of dimensions and variables that reflect this holistic way of thinking in reports. These proposed dimensions and variables have been empirically contrasted in public sector companies, for which it is especially necessary to link value creation processes with stakeholder expectations and sustainability. This study shows that public companies should review their sustainability reporting practices. Integrated thinking plays an important role in the public sector, as these companies must respond to greater complexity and diversity in the relationships with their stakeholders. Public companies must also demonstrate to citizens the value they generate through the provision of their services in an understandable, coherent and concise way because citizens may not be familiar with sustainability issues. Furthermore, these companies must show their sustainability through the connections between the contents of the integrated report, guaranteeing continuity in the provision of public services to the government and citizens.

On the other hand, the interpretation of our results in the view of stakeholder and legitimacy theory contributes to providing new evidence for the reasons that explain sustainability reporting in public sector companies.

Our findings demonstrate that the reports examined do not adequately reflect all of the content linkages and interdependencies needed to exhibit integrated thinking, this could be a sign of the existence of a symbolic legitimisation strategy, as not enough attention is being paid to the connectivity and coherence of the information promoted by integrated thinking.

Therefore, we recommend making progress in establishing links and relationships between the report contents to enhance both understanding of the report and its conciseness.

Moreover, our results can be interpreted through the lenses of stakeholder theory. Most variables that require greater stakeholder involvement have low values. These include the lack of relationship between stakeholder expectations and the value creation process or the lack of analysis of material issues and their links with the strategy. This finding could be a sign of instrumental use of the stakeholders in IR practices, as suggested by Flower (2015). In line with the approaches of Parrot and Tierney (2012) and McNally *et al.* (2017), to improve the reporting of public sector enterprises, we recommend not only to identify the different audiences relevant to the organisation but also to involve them and generate mechanisms for engagement that facilitate the incorporation of their point of view in reporting, to understand their information needs.

Secondly, the results of our analysis of the dimensions and variables of integrated thinking may have practical implications that will help preparers improve the coherence and understanding of the contents of their reports. In particular, more effort is still needed to improve connectivity, including visual features such as graphs, tables, maps and images that enhance the understanding of the information by the stakeholders. We suggest improving customised responses and including both internal and external links in the reports that facilitate conciseness. We also recommend the use of innovative visual tools. These tools reduce the report length and improve clarity.

Our analysis has implications for report preparers and for other stakeholders to compare the sustainability of companies, in accordance with the informative reporting function indicated by Perego *et al.* (2016). They can use the proposed variables to assess for themselves the degree of integrated thinking shown in the reports and the sustainability of public sector entities. Our proposal may also be of interest to regulatory bodies and standard setters because they analyse several variables that could be considered in the regulation of non-financial information in the future or in an initiative to formalise integrated thinking, as suggested by McNally *et al.* (2017). Thus, the proposed theoretical framework can help establish the content of non-financial reports and improve transparency and accountability in the public sector.

The main limitation of our study is its small sample size. This means that the study conclusions cannot be generalised, although report preparers can extract some suggestions and recommendations from the analysis. In addition, all the integrated thinking dimensions and variables were weighted equally in developing the ITI, due to the lack of experience with the issues included in integrated thinking and because any weighting would be subjective. Despite these limitations, our study provides supporting evidence for areas of improvement and recommendations, based on a sample of companies that can be used as a benchmark “reference point”.

Finally, this study assumes that the quantity of information about integrated thinking variables in reports is an indicator of the degree of adoption of holistic thinking. However, integrated thinking also requires internal management processes and management behaviours that are not always reflected in reports. This could challenge the internal coherence of the quantity of information in reports as a measure.

Future research studies will aim to enlarge the sample size. Likewise, the comparison of the public sector and private sector results would allow us to determine if the special characteristics of the public sector organisations are truly communicated differently and to understand the influence that the analysed variables and other similar variables may have on the degree of integrated thinking exhibited by preparers in their reports.

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Enterprise	Country	Sector	Legal context	Environmental sensitive	Years of experience in IR
ACSA	South Africa	Consumer services	Common law	Yes	5
AGSA	South Africa	Audit services	Common law	No	4
ARMZ	Russia	Basic materials	Code law	Yes	4
Bank of Ceilan	India	Financial services	Common law	No	4
CBUS	Australia	Financial services	Common law	No	4
Competition Tribunal	South Africa	Services	Common law	No	4
Broadband Infracore	South Africa	Technology and electronic communication	Common law	No	4
KiwiRail	Australia	Industrial	Common law	Yes	2
NZPOST	New Zealand	Consumer services	Common law	Yes	5
PLC	Sri Lanka	Financial services	Common law	No	4
RAF	UK	Financial services	Common law	Yes	5
ROSATOM	Russia	Utilities	Code law	No	5
ROSNEFT	Asia	Oil and gas	Code law	Yes	5
SEK	Sweden	Financial services	Code law	No	5
Swedfund	Sweden	Financial services	Code law	No	5
The Crown state	UK	Real state	Common law	Yes	6
HMR	UK	Tax services	Common law	No	5
JSC NIAEP	Russia	Industrial	Code law	Yes	3
JSC AFRICANTOV	Russia	Utilities	Code law	No	2
JSC	Russia	Basic materials	Code law	Yes	1
TOMREDMEZOLOTO					
TVEL	Russia	Basic materials	Code law	Yes	4

Table A1.
Main features of the public companies of the sample

Corresponding author

Pilar Tirado-Valencia can be contacted at: ptirado@uloyola.es

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