Infographics in Corporate Sustainability Reports: Providing useful information or used for impression management?

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A thesis submitted in partial fulfilment of the requirements for
the Master of Research – Accounting

Faculty of Business and Economics
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9th October 2017

DECLARATION

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I hereby certify that this thesis, submitted in partial fulfilment of the requirements for the degree of Master of Research, in the Department of Accounting and Corporate Governance of the Faculty of Business and Economics at Macquarie University, is my own work and the result of my own research. It has not, nor has any part of it, been submitted for a higher degree to any other university or institution other than Macquarie University.

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LIST OF ABBREVIATIONS

CSR   Corporate Sustainability Reporting

EC   European Commission

SRs   Sustainability Reports

G250   Largest 250 Global Companies

GRI   Global Reporting Initiative

IM   Impression Management

US   United States

IMSs   Impression Management Strategies

IIRC   International Integrated Reporting Committee

WCED   World Commission on Environment and Development

TBL   Triple Bottom Line Framework

GRI G4   G4 Sustainability Reporting Guidelines

GHG   Greenhouse Gas Emissions

SEC   US Securities and Exchange Commission

EEOC   US Equal Employment Opportunity Commission

MD&A   Management Discussion and Analysis

ACKNOWLEDGMENT

First and foremost, I think the almighty Allah for giving me the ability to complete my research project. I also would like to express my sincere gratitude to my supervisors, Dr Andreas Hellmann and Dr Colly He, not only for their continuous advice, guidance and valuable insights, but also for their encouragement and patience throughout this research project.

I am also grateful to my sponsors, the Saudi Government (King Salman Scholarship Program) and Taibah University for their financial support, which has provided me with this wonderful opportunity to study my MRes at Macquarie University.

I would especially like to express my deepest gratitude to my dear mother Mrs Salmiya Al-Subiani for her love and support and prayers for my success throughout my life. And this gratitude is extended to all my family members, especially my wonderful wife and lovely daughter. Finally, my appreciation goes to all my friends at Macquarie University for their support and friendship.

ABSTRACT

Infographics combine visual and textual information and thus may be used to attract attention, with the ultimate purpose of influencing the thoughts and feelings of readers of accounting information. However, little is known about the role of infographics in sustainability reports. This study examines the practice and features of infographics in sustainability reports, particularly focusing on whether infographics are used for impression management (IM) purposes by utilising selectivity, visual manipulation and performance comparisons. As infographics become more widely used, it is important to understand their use in corporate sustainability reporting (CSR), particularly because their use is not regulated. Additionally, the association between IM and sustainability disclosure is scrutinised. The findings reveal that infographics are becoming increasingly utilised in CSR and that they are commonly used by environmentally sensitive industries. The key social and environmental aspects depicted by infographics are air emissions, energy usage, water consumption, labour practices and decent work. We find clear evidence of infographics being harnessed for IM purposes and that there is a bias in selecting, comparing and emphasising sustainability performance trends towards favourable disclosures that enhance company reputation. Further, we find evidence of an association between IM and social disclosure in relation to selectivity and visual emphasis strategies but the association with environmental disclosure is only found for selectivity and performance comparison strategies.

1. INTRODUCTION

1.1   Background

The European Commission (EC) of the European Union defines Corporate sustainability reporting (CSR) as a voluntary integration of social and environmental concerns into companies' business strategies and engagement with stakeholders (EC, 2011, p. 3). CSR has attracted increasing attention because of its potential to have an impact on the economy, society and businesses. CSR may contribute to the long-term sustainability of corporations and the global economy by managing sustainability risks, establishing a basis for stakeholder engagement and improving access to capital markets (McGuire et al., 2003; Ducassy, 2013). It also aligns with broader societal concerns by ensuring that companies' economic growth is not achieved at the cost of social justice and the environment (Bebbington et al., 2014, p. 5). From a corporate perspective, the importance of CSR stems from a motivation on the part of management to protect and enhance corporate image and reputation (KPMG, 2011; EY, 2013). Hence, CSR plays an essential role in contemporary corporate reporting.

Over the last two decades, corporate reporting practices have been subject to intensive reform, with stakeholders arguing that corporate disclosures are not limited to shareholders' interests, and demanding to know how companies' non-economic activities impact them, society and the environment (Gray, 2006). Consequently, a range of different forms of CSR disclosure practice have emerged, for example, triple bottom line reporting. Voluntarily frameworks, such as triple bottom line reporting, are a response to stakeholders' demands for social and environment information (Lamberton, 2005; Dumay et al., 2016). They aim, first, to link management of sustainability concerns with a company's operational and strategic management, and, second, to incorporate non-financial information with traditional financial disclosure (Schaltegger & Wagner, 2006). Recently, CSR disclosure has been globally recognised by businesses and

investors and utilised in the investment decision making process (De Villiers & Van Staden, 2010, 2012; GRI, 2013).

Voluntary sustainability reports (SRs) have been increasingly published by companies in recent years. According to the KPMG International Survey of CSR, over 95% of the 250 largest global (G250) companies produce SRs (KPMG, 2015). Also, based on the Global Reporting Initiative's (GRI) sustainability disclosure database, more than 4,900 SRs were published in 2016 by international companies from more than 90 countries (GRI, 2016a). The CSR literature suggests that these reports are aimed at enhancing and demonstrating accountability by informing stakeholders about sustainability performance (Adams, 2004; Cooper & Owen, 2007). Accordingly, the disclosed information is expected to be transparent by reflecting on the company's actual performance and impacts (Boiral, 2013).

However, credibility of SRs has been questioned with critics arguing they are a public relations strategy to manage stakeholders' impressions (Hopwood, 2009; Michelon et al., 2015). Investigation of SRs reveal a limited or absent relationship between disclosure and sustainability performance and a failure to contribute to sustainability development (Gray, 2010; Michelon et al., 2015). This lack of disclosure relevance suggests that companies may manage stakeholders' impressions by selective favourable disclosure to seek legitimacy and enhance their reputations (Hooghiemstra, 2000; Adams, 2008; Bebbington et al., 2008). Consistent with this critical perspective, 67% of the G250 companies that participated in the KPMG (2011) International Survey of CSR responded that building organisational reputation is the main driver of CSR practice. Hence, CSR is perceived by companies as a potential impression management (IM) vehicle and legitimacy tool that aims primarily to enhance company image and provide social legitimisation (Dobbs & Staden, 2016; Diouf & Boiral, 2017).

IM is defined as the construction of a public impression by a company's management for the purpose of appealing to stakeholders and the public in general (Hooghiemstra, 2000). It may entail emphasising favourable aspects of a company's disclosure or obfuscating unfavourable aspects; hence, the perceptions of the company's audience may be manipulated (Gioia et al., 2000). If sustainability reporting is used for IM rather than for providing useful information, the credibility of such disclosures will be undermined (Merkl-Davies & Brennan, 2007).

In this study, IM refers to the use of visual and narrative disclosures of accounting information to create a more favourable view of a firm's performance than is warranted (Beattie et al., 2008). Visual presentation in corporate reporting, particularly traditional graphs,[1] constitutes an established body of research (Beattie & Jones, 2008; Penrose, 2008). The majority of previous studies have examined the role of graphs in financial reporting (Beattie & Michael J Jones, 2000; Mather et al., 2000; Beattie & Jones, 2002a, 2002b; Bannister & Newman, 2006), whereas there have been only a limited number of studies investigating graph use in CSR reporting (Jones 2011; Cho et al., 2012b; Hrasky, 2012), and only one international comparative study (Cho et al., 2012a). These studies conclude that graphs are used widely, sometimes with the purpose to mislead people's perceptions of performance data through graph selection bias (selectivity), measurement distortion and presentational enhancement. The main concern of these studies is whether the use of graphs serves managerial interests rather than user interests and a self-serving behaviour for graph use and design choices has been identified (Beattie & Jones, 2008; Penrose, 2008).

However, the use of infographics (also known as information-graphics), a new kind of graphical representation that combines narrative and visual disclosures, in corporate reporting has not previously received attention in accounting research. Infographics have become an

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[1] Traditional graphs refer to pie charts, line charts, and bar graphs that are used to represent quantitative data.

integral part of contemporary companies' overall disclosure strategy because of their superior communication features compared to traditional graphs (Elliott et al., 2014; Wasser, 2015). Given that the use of graphs is acknowledged to be an important IM tool that affects users' perceptions (Beattie & Jones, 2002b; Jones 2011; Cho et al., 2012a), it is important to understand the practice and role of infographics in accounting. In other disciplines such as journalism, infographics have been identified as visual elements that are used to grab or deflect readers' attention concerning contemporary political and economic issues (Dick, 2015; Lee & Kim, 2016).

In this regard, infographics may be an inventive and powerful IM tool in accounting to control public opinion and perceptions. First, infographics are increasingly used in contemporary corporate reporting (Lankow et al., 2012; Toth, 2013) because they are eye-catching and therefore attract the attention of readers (Holmqvist & Wartenberg, 2005). This advantage can be used strategically to draw attention only to positive disclosures. Second, infographics are useful for summarising information in a way that is comprehensible (Smiciklas, 2012), but because companies' frequently use infographics strategically, these summaries are open to bias (e.g., constructing favourable performance trends). Third, infographics promote a deep connection with viewers' visual memory (Ware, 2012). This allows the creation of a lasting impression.

Hence, given that voluntary SRs are potentially subject to IM behaviour due to the lack of regulations and assurance (Merkl-Davies & Brennan, 2007, 2011), and the potential effect of infographics on information users, this study aims to investigate the practice and role of infographics in CSR.

1.2   Motivations, aim and objectives

The study is motivated by the following issues identified in the relevant literature: (a) scepticism concerning the quality and credibility of CSR; (b) the absence of empirical investigation into the practice of infographics; and (c) the lack of empirical evidence into performance comparison manipulation.

1.2.1   Scepticism about the quality and credibility of CSR

Companies utilise a variety of voluntary disclosure vehicles to communicate with stakeholders. CSR is one such voluntary disclosure, reporting on an organisation's social and environmental performance (Rezaee, 2016). The growing importance of voluntary CSR is due to organisations' desire to address information asymmetries by disclosing information about social and environmental concerns, thus enhancing decision making. However, due to the limitations of voluntary disclosure, for example managerial self-serving motivation raised concerns about the quality and credibility of CSR disclosure (Michelon et al., 2015; Diouf & Boiral, 2017). Hence, CSR has been criticized as being little more than a public relations instrument to maintain an organisation's social contract with society at large (Hopwood, 2009; Cooper & Owen, 2007).

For example, CSR practices in the United States (US) are subject to reporting quality scepticism. Although there is a worldwide increase in the practice of CSR assurance to address voluntary reporting concerns (Simnett et al., 2009), most SRs from the US capital market are not subject to third-party assurance. The KPMG Survey indicated that 63% of G250 companies invest in third-party assurance for CSR and only 41% of US companies' SRs are independently assured (KPMG, 2015; Birkey et al., 2016). Further, based on the Corporate Register Reporting Awards (2015), more than 90% of US published SRs in 2015 are without a third-party assurance statement. Accordingly, SRs produced by US companies lack assurance raising

concerns about their credibility. This motivates the present study, which aims to investigate whether infographics are used as an IM tool in SRs to present a more favourable perception of sustainability performance. The investigation aims to develop insights into whether companies' CSR disclosure is aimed at improving transparency and accountability or rather about reputation building.

1.2.2 *Absence of empirical investigation into the role of infographics*

Increasingly, corporations utilise different forms of visual representation to communicate financial and non-financial information. Corporate reporting may voluntarily include texts (accounting narratives) with a mixture of additional visual material, such as management photographs, financial and non-financial graphs, symbols and cartoons. As corporations are free to decide whether to have such narratives and visual communication, their financial, social and environmental performance may influence their decisions (Penrose, 2008). In this regard, as discussed earlier, much empirical attention has been given to the role of traditional graphs and their scope for IM in corporate reporting; however, less attention has been directed to other visual forms.

Despite the ubiquitous nature and undeniable power of graphs, other visual forms in corporate reporting occupy a large space compared to traditional graphs and often have a more powerful role (Davison & Skerratt, 2007). One of these visuals is the infographic, which combines text with visual elements – this can be more powerful than a single kind of representation. However, infographics are not bias-free and can be used to meet a specific agenda (Dick, 2015; Lee & Kim, 2016). In the CSR context, infographics may be exploited to create a favourable image of sustainability performance regardless of actual performance. For example, managers may disclose more favourable and less unfavourable sustainability performance indicators in order to present management in the best possible light (selectivity). Infographics' visual elements

may also be used for emphasising good rather than bad performance disclosures (highlighting). They may also include benchmark comparisons that depict a firm more favourably (performance comparisons). Hence, infographics provide a significant opportunity for corporations wishing to engage in IM.

Accordingly, if infographics in CSR are used for IM rather than incremental communication purposes, CSR's credibility may be undermined. If unsophisticated readers are unable to detect inherent manipulations in infographics, their perceptions and decision making may be distorted (Merkl-Davies & Brennan, 2007). This can lead to, for example, adverse capital misallocations (Adelberg, 1979; Rutherford, 2003). Therefore, given that the use of infographics as an IM tool has not yet been investigated, this study is motivated to provide an empirical understanding of the features, extent and role of infographics in CSR practices.

1.2.3 *Lack of empirical evidence into performance comparison manipulation*

IM studies have investigated whether and how management opportunistically uses corporate disclosures to influence the perceptions and decisions of users. The aim of such studies has been to identify various impression management strategies (IMSs) and techniques and confirm their use. A majority of the empirical studies have almost exclusively focused on financial reporting and a limited number of established IMSs (Merkl-Davies & Brennan, 2007). For example, financial reporting narrative sections have been investigated for syntactical manipulation (Clatworthy & Jones, 2001; Courtis, 2004b), rhetorical devices (Merkl-Davies et al., 2011) and thematic manipulation (Clatworthy & Jones, 2003; Brennan et al., 2010). However, other IMSs, for example, visual and structural performance and comparisons manipulations have received less attention in the literature.

Cooper and Slack (2015) stated that performance comparison manipulation in financial reporting has received little empirical investigation. This manipulation affords ample

opportunity to lower financial performance benchmarks in order to overstate management performance (Brennan et al., 2009). Only a few research studies (Lewellen et al., 1996; Schrand & Walther, 2000) have investigated how companies actually benchmark their financial performance for evaluation purposes. Similarly, there are few studies examining performance comparison manipulation in reporting contexts such as CSR.

In the CSR context, infographics offer an unregulated communication tool that enables managers to manipulate sustainability performance comparison if that is their aim. Sustainability performance data are less regulated and audited than those in financial reporting, where requirements have been developed for presenting performance measures (Lewellen et al., 1996). This may provide ample opportunities for managerial discretion in harnessing the communication power of infographics to present benchmark comparisons that depict a company more favourably. Thus, this study is motivated to explore how corporations benchmark their sustainability performance by using infographics in order to determine any comparison biases. The investigation of performance comparison manipulation in CSR will enrich the existing empirical findings and explore the role of infographics.

1.2.4 Aim and objectives

The aim of this empirical study is to investigate, for the first time, utilisation of infographics in the emerging CSR practice. It will provide new insights into how organisational accountability and transparency are discharged within the context of social and environmental disclosures. Specifically, it documents evidence of potential IM and its constituent strategies and additionally explains the IM use of infographics in CSR. Hence, this study has three detailed research objectives:

1. to explore the extent and features of infographics use in SRs by identifying their frequencies, types, components and themes in order to understand the practice of this new format;

2. to investigate whether infographics are used for IM purposes through the use of selectivity, visual manipulation and performance comparisons in order to portray sustainability performance in a favourable light;

3. to examine the association between IM in the use of infographics and scores of social and environmental disclosure levels.

To address the first two research objectives, a content analysis approach is used to investigate the practice and role of infographics in CSR. Three hypotheses are developed to investigate the three types of potential IM manipulations. The third research objective is addressed by employing a regression analysis to examine one hypothesis about the association between IM and sustainability disclosure levels. This study focuses on US based companies providing the highest number of SRs available in the GRI's sustainability disclosure database (GRI, 2016a). The study sample constitutes 147 stand-alone SRs issued by listed companies from the US in 2015. Stand-alone SRs, in a PDF file format, were obtained from the GRI database for data collection. An analysis framework developed by Segel and Heer (2010) is used for descriptive analysis of the practice of infographics in SRs. Also, the study relies on the work of Jones (2011) and Cho et al. (2012b) for its IM measurement methodology. Finally, Bloomberg's Environmental, Social and Governance disclosure (Bloomberg's ESG) database is employed to obtain scores of social and environmental disclosure levels (Bloomberg, 2016).

1.3   Contributions and practical implications

This study has practical implications for organisations adopting CSR. Several initiatives have been developed by international independent organisations to enhance the usability of CSR.

For example, the GRI and the International Integrated Reporting Committee (IIRC) frameworks have emerged with the aim of increasing the quality of SRs. These reporting frameworks provide guidelines to help companies improving the clarity, consistency and comparability of their SRs (GRI, 2013; IIRC, 2013). Further, these frameworks have emphasised the importance of presentational formats for the clarity of CSR. Both the GRI and IIRC frameworks suggest using presentational tools to enhance disclosure communication in a manner that enables stakeholders to understand companies' sustainability performance and that relies on faithful representation (GRI, 2013; IIRC, 2013). However, it is evident in the literature that communication tools such as graphs, photographs and images are used for IM purpose (Beattie & Jones, 2008; Davison, 2015). If this holds true for infographics as well, this may have implications for regulators.

Additionally, this study provides a number of empirical contributions. With respect to the CSR literature, the study contributes to our understanding of CSR practice in two ways. First, it extends our knowledge of how sustainability performance is visually communicated via infographics. Second, it sheds more light on scepticism surrounding the transparency of CSR disclosure by showing how sustainability performance disclosures within infographics tend to reflect IM, as well as examining the association of IM with sustainability disclosure levels.

With respect to the IM literature, the investigation of infographics extends the existing body of work on graphical manipulation by providing an empirical descriptive baseline of infographics practice. There are no known studies investigating the role of infographics in corporate reporting. The current study also responds to the call by (Brennan et al., 2009) to conduct a more holistic investigation of IM to capture the 'big picture' of reporting practices. The examination of infographics will enable us to investigate (a) different IMSs (i.e., selectivity, visual highlighting and performance comparisons) and (b) both methods of presentation (i.e.,

narratives and visual elements). Finally, the study will extend the scope of performance comparison manipulation, a previously neglected IMS, to the CSR context.

1.4   Structure of the thesis

The remainder of this thesis is arranged into four further sections. Section 2 provides an overview of CSR context and IM behaviour. It also reviews relevant graphics literature and includes the hypotheses development. Section 3 outlines the research methods employed in this study. The research findings and discussion are reported in Section 4. The conclusion, limitations and suggested future research are provided in Section 5.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This chapter reviews the existing literature on emerging CSR and IM behaviour and presents an overview of the communication power of infographics. A review of the CSR literature is discussed in Section 2.1, considering developments, motivations and credibility of CSR practice. The IM literature is discussed in Section 2.2, reviewing conceptual and theoretical elements of IM behaviour in corporate reporting context. The communication power of infographics is considered in Section 2.3. Finally, the developed hypotheses are presented in Section 2.4.

2.1 Sustainability reporting literature

Financial reporting has been criticised for not providing the relevant information stakeholders need to evaluate a firm's social and environmental value (Yongvanich & Guthrie, 2006; Flower, 2015). It has also been criticised for focusing solely on maximising shareholder value, while neglecting value creation for various stakeholder groups (Gray, 2006). Dissatisfaction has led stakeholders to demand more comprehensive information about how firms' everyday operations impact environment and society. Consequently, voluntary SRs have been adopted widely internationally (Dienes et al., 2016; GRI, 2016a).

The widely accepted definition of sustainability development is based on the report of the World Commission on Environment and Development (WCED), in which sustainability development is defined as "development that meets the needs of present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 54). This definition has a long-term focus by emphasising inter-generational justice, which relates to the ability to control the earth's resources (Rankin et al., 2012, p. 315), that is, the consumption of resources for today's generations should not affect the well-being of future generations. Similarly, the

Organisation for Economic Co-operation and Development (OECD) has defined sustainability as a mechanism of "linking the economic, social and environmental objectives of societies in a balanced way" (OECD, 2001, p. 5). These definitions consider sustainability at a country level and emphasise safeguarding the environment and social justice.

Sustainability reporting has been defined by the GRI (2013) as disclosure of economic, social and environment impacts caused by a company's daily operations (GRI, 2013). It aims to incorporate social and environment issues in companies' strategic management to create a sustainable global economy (Schaltegger & Wagner, 2006). While generating a sustainable profit is essential for a company in order to continue its operations, considering how to do so without harming the environment and society is equally important (Rankin et al., 2012, p. 315). In this context, the goal of global sustainability will not be achieved until corporations consider how their activities impact environment and society.

In the early 1990s, the sustainability concept drew increasing attention from academics. Gray (1993) was a pioneer in the field both in accounting research and practice, identifying three approaches for sustainability accounting that focus on environmental impacts. These methods account for natural capital by calculating the cost of environmental impacts (*sustainable cost*) and recording its stocks (*natural capital inventory*) and analyse the physical flow of natural resource inputs and product and waste outputs (*input–output analysis*) (Gray, 1994).

The application of these approaches has been subject to challenges in the literature and from practice (Lehman, 1999; Bebbington & Gray, 2001). However, Gray's work raised awareness of the social and environmental aspects of accounting. Similarly, awareness in relation to measuring and reporting non-financial information from economic, social and environmental perspectives was raised by the 'triple bottom line' (TBL) framework (Lamberton, 2005). Elkington (1997) initially developed the TBL approach, which attempted to capture

organisations' economic, social and environmental dimensions together in financial and non-financial terms so as to overcome the shortcomings of traditional financial reporting (Dumay et al., 2016). The TBL approach can be considered CSR's conceptual foundation for current sustainability disclosure frameworks.

The GRI framework is a widely used guideline for sustainability disclosure. In 2000, the GRI developed the GRI Sustainability Accounting Guidelines (Guidelines) by drawing on the TBL's concept of three-dimensional sustainably reporting and applying several performance indicators to measure corporate sustainability (GRI, 2017). However, the most significant contribution of this framework is in developing four categories of social dimensions that incorporate employees, consumers and human rights (Lamberton, 2005). Based on the KPMG International Survey of CSR (2015), the GRI Guidelines remain the most commonly used by the word' largest companies, with 74% of G250 companies adopting the GRI framework. The GRI has significantly contributed to the content, quality and practice of CSR by generating several versions of its Guidelines over the last 15 years and continues to do so.

In 2013, the GRI provided the latest version of its guidelines, the 'G4 Sustainability Reporting Guidelines', to enable greater organisational accountability and transparency (GRI, 2013). GRI G4 presents principles for reporting content and disclosure quality including appropriate presentation. It includes 91 performance indicators across the three main dimensions and 46 aspects of sustainability performance reporting, which are presented in Figure 2.1. It also provides quality guides for presentation bias, comparability, accuracy, clarity and reliability to ensure the quality of disclosed information. The GRI offers two options for compliance of reporting in accordance with G4 Guidelines: the Core Option, which provides essential economic, environmental and social disclosures; and the Comprehensive Option, which provides additional disclosures about governance, ethics and integrity. Most recently, GRI has

also developed the first international standards for CSR that use the modular structure of the GRI G4 Guidelines and clearer requirements[2] (GRI, 2016b). Hence, the GRI's initiatives have contributed to shifting organisations towards sustainability reporting and to increasing reporting transparency.

Recently, organisations around the world have been increasingly producing SRs that are usually, but not always, voluntary (Thorne et al., 2014). The KPMG International Survey of Corporate Responsibility Reporting (2015) revealed that this global trend has meant a reporting rate amongst the 250 largest global companies over the previous four years of between 90% and 95%. Also, based on the GRI's sustainability disclosure database, more than 4,900 SRs across more than 90 countries were published in 2016 (GRI, 2016a). This growing number of voluntary SRs suggests that corporations are now more willing to clarify long-term business sustainability and increase organisational accountability to respond to stakeholder concerns (Boesso & Kumar, 2007).

Given the increasing trend towards voluntary SR disclosure, it is important to understand why corporations are motivated to disclose their sustainability performance and to assess the quality of CSR practice. The next section outlines the existing literature in relation to why and how organisations voluntarily report CSR practices.

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[2] GRI standards were released in 2016 and will be required for reporting on or after 1st July 2018, so the G4 Guidelines framework is considered for this study as most companies have not yet adopted the new standards.

Figure 2.1 Sustainability's categories and aspects based on GRI classification

Category	Economic	Environmental
Aspects [III]	• Economic Performance • Market Presence • Indirect Economic Impacts • Procurement Practices	• Materials • Energy • Water • Biodiversity • Emissions • Effluents and Waste • Products and Services • Compliance • Transport • Overall • Supplier Environmental Assessment • Environmental Grievance Mechanisms

Category	Social			
Sub-Categories	Labor Practices and Decent Work	Human Rights	Society	Product Responsibility
Aspects [III]	• Employment • Labor/Management Relations • Occupational Health and Safety • Training and Education • Diversity and Equal Opportunity • Equal Remuneration for Women and Men • Supplier Assessment for Labor Practices • Labor Practices Grievance Mechanisms	• Investment • Non-discrimination • Freedom of Association and Collective Bargaining • Child Labor • Forced or Compulsory Labor • Security Practices • Indigenous Rights • Assessment • Supplier Human Rights Assessment • Human Rights	• Local Communities • Anti-corruption • Public Policy • Anti-competitive Behavior • Compliance • Supplier Assessment for Impacts on Society • Grievance Mechanisms for Impacts on Society	• Customer Health and Safety • Product and Service Labeling • Marketing Communications • Customer Privacy • Compliance

Source: GRI (2013, p.44).

2.1.1 Theoretical motivations for voluntary CSR practice

The CSR literature suggests that a prevalent justification amongst companies for voluntarily adopting CSR is that it enhances organisational accountability. Bebbington et al. (2014, p. 4) argued that just like traditional financial accounting, which has been used for accountability of corporate economic aspects, CSR can be a powerful accountability mechanism through adopting broader techniques to manage and control organisational social and environmental impacts. According to this argument CSR offers a potential tool for corporations to discharge their accountability towards their stakeholder groups (Cormier et al., 2005; Cooper & Owen,

2007). Several theoretical perspectives have emerged to explain the motivations for voluntary sustainability disclosure, including stakeholder, signalling and legitimacy theories (Rezaee, 2016).

Stakeholder theory suggests that organisations should consider the needs of all identified stakeholders and concentrate on maximising all stakeholders' welfare (Freeman, 1984). From this perspective, management faces pressure form a wider group of stakeholders to allocate financial resources for sustainability initiatives to maximise companies' long-term value (Matten et al., 2003). It has been argued in the CSR literature that investing in sustainability issues contributes to companies' value creation through adhering to social and environmental obligations (Campbell, 2007; Clarkson et al., 2011). Hence, in order to demonstrate that stakeholders' interests and expectations are considered and met, corporations voluntarily report sustainability issues either in financial or CSR (Cormier et al., 2005; Thorne et al., 2014). In this regard, sustainability disclosures improve the dialogue between an organisation and society by developing management understanding of the needs and expectations of stakeholders[3] (Adams, 2002; Unerman & Bennett, 2004). Therefore, corporations perceive voluntary CSR disclosure as a fundamental practice to meet stakeholders' demands.

Signalling theory has developed to understand corporate motivations for any forms of voluntary disclosures, such as CSR, and to explain investors' reactions to these disclosures (Grinblatt & Hwang, 1989). Supporters of this theory argue that companies are motivated to voluntarily disclose information to signal expectation about their long term value, and these disclosures should account for both good and bad news to avoid adverse selection (Verrecchia, 1983; Rankin et al., 2012, p. 141). Adverse selection tends to result from not voluntarily disclosing information at a similar extent to that provided in the market, which may lead to a

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[3] Lindblom (1994) stated that social expectations can be explicit in the form of pollution, employee health and safety regulations.

company being considered a poor investment thereby affecting its stock prices (Rankin et al., 2012, p. 141). In the CSR context, signalling theory suggests that management has an incentive to signal its sustainability development values by adopting voluntary CSR in order to make stakeholders aware of the company's handling of sustainability issues (Thorne et al., 2014; Rezaee, 2016). In this sense, the evidence from some studies supports the concept that corporations with a superior level of sustainability performance signal their outcomes and impacts via CSR disclosure more than those with low levels (Clarkson et al., 2008; Lys et al., 2015). Thus, corporations are encouraged to engage in voluntary CSR to signal their sustainability practices.

Legitimacy theory has emerged to understand organisational behaviour, especially CSR practice, based on a social contract outlining society's expectations about corporate action and activities (Rezaee, 2016). The substantive approach of legitimacy theory argues that, in order to ensure future survival, corporations should operate in accordance with society's values in the social contract, otherwise the public at large may revoke that contract (Dowling & Pfeffer, 1975; Deegan & Rankin, 1996). In this regard, as social and environmental sustainability are desirable by all stakeholders, legitimacy theory suggests that voluntary CSR can maintain and sustain corporate legitimacy by informing society about actual sustainability actions and activities (Guthrie & Parker, 1989). Thus, organisations are motivated to voluntarily disclose their social and environmental initiatives to show that society's expectations are actually met and thereby gain society's approval (Lindblom, 1994).

Taken together, although the above theoretical justifications suggest that corporations are motivated to voluntarily disclose their CSR for discharging their accountability, the existing empirical literature reveals that this may be not always the case. Because the choice to publish CSR is merely voluntary and inconsistencies in CSR practice have been observed, the

credibility and quality of CSR reports have been questioned (Moneva et al., 2006; Fortanier et al., 2011). Therefore, rather than increasing accountability, CSR practices may act as a legitimacy tool for corporate image enhancements (Hooghiemstra, 2000; Aras & Crowther, 2009; Hopwood, 2009) and interpreted as an IM vehicle (Merkl-Davies & Brennan, 2011; Diouf & Boiral, 2017). These criticisms in the literature are reviewed in the next section.

2.1.2 *Credibility and quality of CSR reports*

Generally, corporate reporting credibility refers to user's perceptions about the reliability of corporate' disclosures (Mercer, 2004). Hence, as mentioned above, if CSR disclosure is perceived as a source of reliable information about actual changes in corporate sustainability actions and activities, then CSR disclosure has credibility, and all stakeholders will base their judgment and decision on such disclosure. Conversely, if CSR disclosure is perceived by users as distorted disclosure in which the claimed social and environmental contributions and actual sustainability performance do not match (Gray et al., 1995), then CSR disclosure is not believed to be reliable and will be dismissed by stakeholders. Thus, CSR disclosure practice can only be deemed credible when disclosure information is congruent with actual sustainability impacts.

CSR practice has been criticised for being used as a strategic legitimacy tool aimed only at shaping the perception of society (Gray, 2010). Companies may take a symbolic approach to legitimacy, using CSR disclosure to maintain or improve corporate legitimacy through symbolic action that influences stakeholder perceptions, rather than substantive actions (Dowling & Pfeffer, 1975; Lindblom, 1994). In doing so, organisations are managing or even manipulating their corporate image because this is much easier than changing their processes and behaviours (Dowling & Pfeffer, 1975). CSR disclosure can be used by companies as a 'green-washing' tool to offset negative news by drawing attention to positive news, for

example disclosing information about environmental performance awards, to draw attention away from negative information about pollution issues (Gray et al., 1995; Clarkson et al., 2011). Therefore, the symbolic approach of CSR practice is linked to IM behaviours.

Adopting an IM perspective, companies may use CSR as an IM tool to present themselves in a favourable light (Deegan, 2002; Hopwood, 2009). As CSR practice is deemed to be driven by managerial behaviours, its quality has been subjected to greater scrutiny. Empirical studies have found that CSR disclosure tends to be general and qualitative rather than quantitative, suggesting an attempt to enhance perceived accountability (Harte & Owen, 1991). Also, the use of CSR as an IM instrument to deflect unfavourable media attention in the case of an organisation's legitimacy threats is demonstrated (Cho & Patten, 2007; Matejek & Gössling, 2014; Patten & Zhao, 2014). Moreover, the role of the GRI quality principles in enhancing the transparency of CSR has been empirically examined, with studies finding that CSR disclosure lacks relevancy, completeness, comparability and accuracy, supporting the idea of CSR as IM (Clarkson et al., 2011; Hummel & Schlick, 2016).

In summary, although the motivations for sustainability disclosures are debated in the literature, empirical studies of reporting quality have emphasised the IM aspect. The deficiency of voluntary disclosures and the limited adherence to GRI requirements and regulations in CSR practice have raised credibility concerns. In particular, it has been claimed that voluntary and less regulated disclosures provide an opportunity for management to engage in IM through discretionary disclosure choices (Merkl-Davies & Brennan, 2007, 2011).

2.2   Impression management literature

IM was originally developed in the field of social psychology to evaluate how individuals attempt to control the perceptions of others by fostering impressions in the eyes of other people (Leary & Kowalski, 1990; Hooghiemstra, 2000). In a social context, Goffman (1959) explained

the role of IM in constructing social reality. Using a dramaturgical metaphor, he related social interaction to a theatre setting where the actors act differently on stage (front stage) from how they act behind the scenes (back stage). However, people are not only motivated to shape others' impressions of them but also to shape others' impressions of businesses, events, and other people (Leary & Kowalski, 1990). Hence, IM is a concept that involves more than just self-presentation at individual level and can be applied to a corporate level. Hence IM has become an important area of study in corporate behaviour.

It has been suggested that CSR is an IM tool used by managers to influence the public's perception of companies' social and environmental activities. For example, Hooghiemstra (2000) argues that IM plays an essential role in CSR as it helps a company to maintain/rebuild reputation and image, especially when faced with with legitimacy threats. In accounting, IM has been regarded as an attempt by management to manage and influence the perception of accounting information users (Clatworthy & Jones, 2001; Schleicher & Walker, 2010) with the aim of controlling and manipulating their decision making (Elsbach, 1994; Clatworthy & Jones, 2001; Yuthas et al., 2002). In manipulating the content and presentation of accounting narrative disclosures managers may influence the content and presentation of corporate disclosures with an intention to distort readers' perceptions of corporate performance (Godfrey et al., 2003; Dilla & Janvrin, 2010; Hellmann et al., 2017).

2.2.1   Theoretical perspectives on impression management motivations

Based on prior studies, Merkl-Davies and Brennan (2011) have conceptualised the motive for IM behaviour into four broad theoretical perspectives: economic, psychological, critical and sociological. These perspectives underlie the various accounting theories that help us to understand the IM phenomena and its manifestation in corporate disclosure documents and explain the managerial motivations and incentives for engaging in IM.

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The economic perspective, either explicitly or implicitly, is the predominant explanation for IM in the literature (Aerts, 2005; Schleicher & Walker, 2010; Osma & Guillamón-Saorín, 2011). Studies falling into this category are underpinned by agency theory, which assumes that management takes opportunistic advantage of information asymmetries as they have the advantage of having more information than their shareholders, so they can choose when and how to report this information (Rankin et al., 2012, p. 141). Accordingly, managers are assumed to have an incentive to maximise their compensation by influencing shareholders' perceptions of financial performance through the obfuscation of negative outcomes and/or the emphasis of positive outcomes (Merkl-Davies & Brennan, 2007). Hence, this perspective conceptualises IM, particularly in the case of financial reporting, as a reporting bias, which can lead to short-term capital misallocations (Merkl-Davies & Brennan, 2011).

The psychological perspective has been adopted by several studies to explain managerial motive for IM behaviour (Clatworthy & Jones, 2003; Merkl-Davies et al., 2011; Schleicher, 2012). These studies are underpinned by attribution theory that focuses on explaining the attributional behaviour adopted by people when they explain actions and events in which individuals like to take credit for success and deny responsibility for failure (Jones & Davis, 1965; Knee & Zuckerman, 1996). Accordingly, managers are assumed to have an attributional incentive through adopting self-interested behaviours, attributing positive (or negative) corporate performance to internal (or external) factors in order to manipulate the assessment undertaken by shareholders (Merkl-Davies & Brennan, 2007). In this manner, IM arises from imagining the presence of the shareholders, which leads to the use of narrative disclosures by managers to address expectation of shareholders' evaluation (Merkl-Davies & Brennan, 2011). Hence, this perspective conceptualises IM as a self-serving bias that concentrates on performance justification in order to win shareholders' approval.

The critical perspective has been increasingly adopted by several studies to understand the motivations for IM under corporate legitimacy threats (Craig & Amernic, 2004, 2008; Matejek & Gössling, 2014). It regards IM as a communication mechanism used to manage the way in which corporate performance is interpreted by scrutinising the hidden ideologies in corporate disclosures (Crowther et al., 2006). In this case, IM results from a desire to conform to social ideologies, with managers seeking to ensure conformity to social norms and rules in order to legitimise their operational outcomes (Hines, 1989). Accordingly, managers are assumed to regard rationality as a social construct and to use narrative disclosures to present the impression of rational decision making (Merkl-Davies & Brennan, 2011). Hence, IM is conceptualised as an ideological bias in which managers have an incentive to gain and maintain power by using rhetorical and grammatical strategies (Merkl-Davies & Brennan, 2011).

The sociological perspective has underpinned a number of studies to explain IM as the result of pressures from a variety of stakeholder groups or society as a whole (Bansal & Clelland, 2004; Aerts & Cormier, 2009; Rodrigue et al., 2015). Adopting legitimacy theory, these studies argue that social and environmental disclosures can be used to legitimate corporate operations and to manipulate the perceptions of stakeholders about controversial social and environmental issues. As managers face enormous pressures from society due to inconsistencies between companies' social and environmental activities and the norms and values of society, they are motivated to engage in IM to gain social acceptance and resources (Merkl-Davies & Brennan, 2011). Therefore, IM is conceptualised as a form of symbolic management whereby managers are motivated to make their corporate image appear to conform to society's norms and expectations (Ashforth & Gibbs, 1990).

The aforementioned theoretical perspectives have revealed different explanations for IM motivation. However, the sociological perspective is viewed as most relevant to the current

investigation for two reasons. First, the sociological perspective has primarily considered the role of social and environmental reporting and interprets such reporting as an IM instrument to enhance corporate image. In this regard, it is relevant to the aim of the current study, which focuses on investigating IM in a CSR context by determining how the presentation and format of infographics contributes to corporate image enhancement. Second, the economic and psychological perspectives appear to be less applicable in the CSR context. The reason for this is that they are primarily aimed at shareholders because they focus on disclosing and justifying financial performance to protect corporate investment image. The critical perspective is also less relevant as it explains IM process only when the company is facing legitimacy threats.

2.2.2   *Impression management strategies*

In the literature, IM behaviours are classified into assertive "proactive" and defensive "reactive" behaviours (Tedeschi & Melburg, 1984; Aerts, 2005). Assertive behaviour is executed reactively as a means of sustaining or restoring a company's reputation, image or legitimacy after a negative organisational outcome, while defensive behaviour is executed proactively to construct and manage people's perceptions regarding a controversial issue (Hooghiemstra, 2000; Merkl-Davies & Brennan, 2011). A majority of the previous studies conceptualise IM in its defensive form, focusing particularly on concealment behaviour (Abrahamson & Park, 1994; Dhanani & Connolly, 2012). Six concealment strategies have been identified by Merkl-Davies and Brennan (2007) based on the review of prior studies that examined narrative and visual disclosures. They are syntactical, rhetorical, thematic, visual and structural, selectivity, and performance comparison manipulations. Of these, the selectivity, performance comparison, and visual and structural manipulations are examined in this study because they are aligned to the study's focus on the role of infographics in CSR; that is,

sustainability indicators observed in CSR infographics are potentially subject to selectivity, comparison bias and visual effects.

The first IM strategy is selectivity manipulation, which involves the way in which corporate performances are selected for disclosure. This strategy is assumed to be used by managers through the selection of positive performance numbers for disclosure at a higher extent than negative ones in order to conceal bad corporate performance (Bowen et al., 2005; Merkl-Davies & Brennan, 2007). This strategy is relevant to this study as graphical presentation is being more widely used for performance presentation in corporate reporting in which managers are free to choose performance numbers in their graphs (Beattie & Jones, 2008). Therefore, managers may selectively choose favourable achievements to be presented in an attractive graphical manner.

The second IM strategy is performance comparison manipulation, which involves the way in which corporate performance is compared with benchmarks for evaluation purposes. This strategy assumes that managers may present positive bias by selecting favourable benchmarks that enable them to place corporate performance in the best possible light (Merkl-Davies & Brennan, 2007). One type of strategy in this category is performance referents manipulation, which can be achieved by selectively comparing current corporate performance with a reference point, such as corporate past performance or industry average, that represents corporate performance in a favourable way (Short & Palmer, 2003). This IMS is investigated in this study as graphical presentation contributes to enhancement of performance comparisons in which managers have the discretion to select favourable reference years and benchmark numbers to be included in graphical formats. Hence, managers may use graphical presentation to present favourable and omit unfavourable performance comparisons.

The third IM strategy is visual and structural manipulation, which involves the manner in which corporate performance is presented and emphasised. This strategy assumes that managers may utilise a range of visual effects to make a certain performance disclosure more apparent to readers in order to overemphasise favourable corporate performance (Merkl-Davies & Brennan, 2007). Visual emphasis can be achieved by highlighting, zooming and colouring text or by utilising pictorial materials to attract readers to certain favourable information (Courtis, 2004a; Brennan et al., 2009; Guillamon-Saorin et al., 2012). Visual emphasis is relevant to the current investigation as managers may utilise visual effects and visual imagery in graphical presentation to depict corporate performance in a manner that draws attention to specific information.

The study of visual emphasis in corporate financial reporting has focused mainly on the use of graphs and their role for IM (Beattie & Jones, 2008; Penrose, 2008). The investigation of the use and abuse of graphs in financial reporting reveals a high level of graph usage. A comparative study of six countries shows that graph use is above 80%, with the US at above 92% (Beattie & Jones, 2001). In addition to the prevalence of graphs, previous studies have examined selectivity manipulation in graphs. This strategy occurs when firms use graphs with desirable trend lines (e.g., increasing profits) and avoid graphs with undesirable trend lines (e.g., decreasing sales) (Beattie & Jones, 2008). Studies show that the use of graphs for sales, income and dividends is high when firms experience an increase in net profits and low when they experience a decrease, which suggests that the selection of graphs for annual reports may depend on financial performance (Beattie & Michael John Jones, 2000; Frownfelter-Lohrke & Fulkerson, 2001; Bannister & Newman, 2006). These studies conclude that graphs in financial reporting can be used to mislead people's perceptions of data.

While the examination of graphical manipulation has been extended to CSR there are only a limited number of studies. Only three studies have investigated graph use in CSRs (Jones 2011; Cho et al., 2012b; Hrasky, 2012), and there has been only one international comparative study (Cho et al., 2012a). The initial investigation of the use and abuse of graphs in CSR was undertaken by Jones (2011). He investigated the usage of graphs in the SRs of UK firms, concluding that graphs are used for IM purposes. The study found that graphs are widely used and that favourable sustainability performance indicators, such as air pollution, waste output, energy usage and employee rights, are predominant. Jones (2011) found that firms within high impact industries are more likely than companies in low impact industries to use graphs to present good news rather than bad news and to distort graphs to make them more favourable.

Also, Hrasky (2012) used legitimacy theory to examine graph usage in Australian firms' SRs. She found that less sustainable companies pursue legitimacy in a symbolic manner, while sustainability-driven firms present more actual impacts of their activities. In addition, Cho et al. (2012b) investigated the usage of graphs in US firms' sustainability reports. The study found that firms with poor social performance demonstrated more IM, while only a weak association was found between environmental performance and IM. Cho et al. (2012a) investigated the usage of graphs in CSR in a comparative study, finding that the level of IM by using graphs within US and UK firms was statistically lower than for firms in either France and Germany and Italy and Spain.

As outlined earlier, much research attention has been focused on the role of traditional graphs and charts in corporate reporting for IM. These communication tools traditionally entail the visual representation of only quantitative data (Beattie & Jones, 2008). Smith and Taffler (1996) argued that traditional graphs and charts become more complicated when they present multivariate accounting information. They suggested that an alternative presentation tool could

provide a clearer and more efficient representation, complementing existing methods. In contemporary corporate reporting, infographics, which combine text with various pictorial forms, have been used widely as an alternative presentation method (Elliott et al., 2014; Wasser, 2015).

Infographics are defined as visual representation of either verbal or numerical information to convey an intended story (Dick, 2015). Their fundamental role to our interpretation and understanding of information is well established in other disciplines such as journalism (Brigham, 2016; Lee & Kim, 2016). Accordingly, infographics seem to have great potential for presenting accounting information, however, they have not yet received scholarly attention. So, what role do they play in corporate sustainability reporting, and to what extent? This gap in the existing literature will be addressed in this study by investigating the practice and role of infographics in CSR reporting.

2.3 Information visualisation and infographic power

Information visualisation is widely recognised in the statistics and computer fields, but there is a lack of interaction between these areas regarding graphical display (Murrell, 2013). Analysts and statisticians create 'statistical graphics', which focus on optimally and precisely representing measured data (Zeileis et al., 2009). These specialists emphasise that numbers on their own are meaningless and that graphics should empower readers to make their own decisions (Gelman & Unwin, 2013). Conversely, computer scientists and designers create infographics, which focus on aesthetically representing data (Murrell, 2013). Infographics are more interested in grabbing readers' attention in order to communicate a story (Hullman & Diakopoulos, 2011). Therefore, it can be argued that underlying data is the focus of statistical graphics whereas drawing attention to particular issues is the role of infographics.

Statistical graphics and infographics are associated with different goals (Murrell, 2013). Statistical graphics, for example, have discovery goals; they underline data patterns and help readers see relationships for themselves (Gelman & Unwin, 2013). Line graphs, scatter plots, bar graphs, and pie charts are commonly used statistical graphs; they are essentially quantitative. In contrast, infographics have communication goals; they aim to tell a story and encourage readers to think in a particular way (Gelman & Unwin, 2013). Infographics are typically used to depict non-quantitative information using maps, images and diagrams, but they can also be merged with quantitative information. After discussing the multiplicity of goals related to graphical displays, this study will focus exclusively on the distinct features of infographics. Figure 2.2 is an example of an infographic utilised in CSR reporting. This infographic depicts a favourable story about the company's environmental performance by employing images and text effects highlighting tactics. Moreover, it combines quantitative information about performance achievement. For example, images of water drops utilized to represent spill compliance and glow-lamp used to reflect a usage reduction in energy. Whereas, performance information highlighted by captions and annotations.

Infographics are generally understood as a means to convey information. An infographic is defined as a graphic visual representation of a data set, information, or knowledge (Meyer, 1997; Lankow et al., 2012). It is also defined as "a visualisation of data or ideas that tries to convey complex information to an audience in a manner that can be quickly consumed and easily understood" (Smiciklas, 2012, p. 3). Typically, newspapers and newscasts implement infographics by using visual elements to make a point concerning contemporary political economic issues or developing events, such as disasters[4] (Lee & Kim, 2016). Their intention is to provide their audience with information about a particular subject in an attention-grabbing

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[4] This can be done by using visual metaphors, symbols, iconography and decorative framing. Examples of such visual elements are charts, pictures, diagrams and maps.

manner (Toth, 2013). Thus, infographics function as more than a purely aesthetic function, but rather provide information via a particular visual interpretation.

Figure 2.2 Environmental performance infographic example
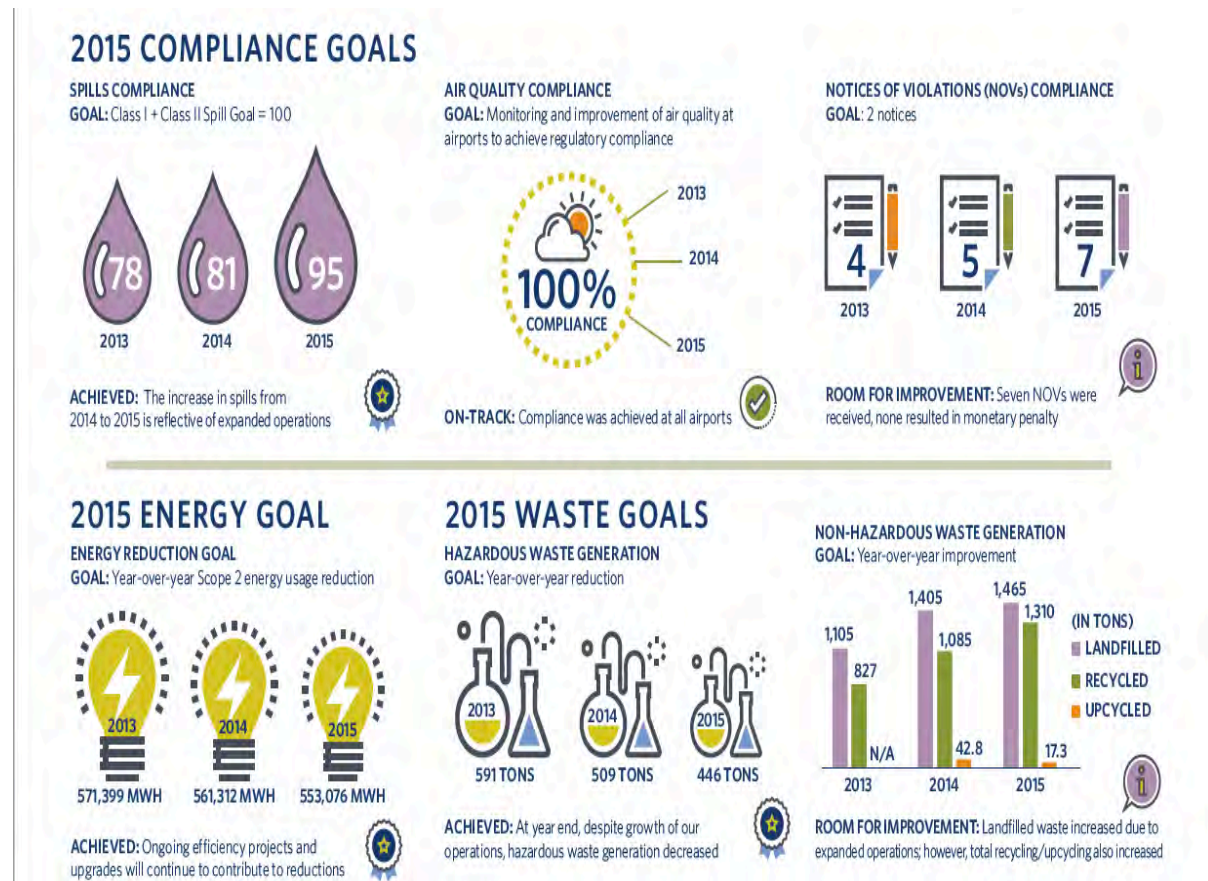
Source: Delta Corporation (2015, p.20).

Infographics are considered an effective tool to attract the attention of readers, which is a key goal in communications. Different visual elements and spatial layouts used in infographics have the potential to invoke a range of emotional responses among readers (Bucher & Schumacher, 2006; Holsanova et al., 2009). Infographics is used in journalism to enhance the user's experience of the publication (Lee & Kim, 2016). Eye-tracking studies have shown that individual readers are more likely to look at drawings and pictures in newspapers than text (Holmqvist & Wartenberg, 2005).

Infographics can be a powerful tool to promote the comprehension of information. The cognitive processes involved in 'reading' an infographic are less complex than those required by texts, according to the literature, because the human brain perceives visual information quickly (Lankow et al., 2012; Smiciklas, 2012). Whereas the comprehension of textual content requires more mental effort, as processing letters, words and sentences each consumes both time and mental energy (Graesser et al., 1997), visual content requires less, as the dominant capacity of the human brain is devoted to processing visual information (Ware, 2012). In addition, learning styles studies suggest that information is more easily understood from visual stimuli compared to kinaesthetic or tactile stimuli (Fleming & Mills, 1992).

Infographics can also be a valuable tool for information retention and recall. Infographics support the ability of individuals to recall information, enhancing the human memory system[5] (Lankow et al., 2012). Drawing upon information from long-term memory to match familiar patterns allows the brain to recall information more rapidly (Ware, 2012). When an individual pays attention to a visual stimulus, cortical activity moves from iconic to long-term memory within 100 milliseconds to comprehend its meaning (Ware, 2012). Also, a study by Bateman et al. (2010) found that the aesthetic appeal of visualisations fixes the image in the viewer's memory; the more aesthetically appealing a visualisation, the more likely a viewer will recall and remember its content.

The advantages of infographics outlined above apply equally to the use of infographics in business communication; clearly, they provide significant opportunities for organisations to communicate effectively with their audiences. Infographics are now increasingly used in external corporate reporting to reach current and prospective stakeholders (Elliott et al., 2014;

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[5] Lankow et al. (2012) explain different types of human memory related to imaginary visualisation: iconic memory and long-term memory, which is further subdivided into episodic, semantic and procedural memory.

Wasser, 2015). Lankow et al. (2012) argue that the challenging information load of annual reports can be moderated by using infographics to break up the narratives and highlight the main facts on which readers should focus. They emphasised that while infographics do not replace the narrative aspects of the report, they emphasise the highlights to the readers, allowing them to engage with essential messages only. In this way, the power of infographics can be employed in a self-serving approach to portray a favourable performance in corporate reporting. Hence, consistent with findings in the literature about the opportunistic use of graphs in CSR, we expect that infographics are used as an IM communication tool to convey a desirable image of social and environmental sustainability.

2.4 Hypotheses developments

The IM literature suggests that managers who are able to exercise discretion in corporate reporting tend to disclose information in a self-serving manner, particularly in voluntary disclosures (Schleicher & Walker, 2010; Merkl-Davies et al., 2011; Osma & Guillamón-Saorín, 2011; Schleicher, 2012). This IM behaviour assumes that managers are rationally motivated to present corporate performance in a favourable rather than unfavourable light, as disclosure may impact their own self-interests in terms of remuneration and employment status (Merkl-Davies & Brennan, 2007). In the CSR context, studies have demonstrated the tendency to convey favourable rather than unfavourable information using graphs (Jones 2011; Cho et al., 2012a, 2012b; Hrasky, 2012), suggesting that graphs represent corporate performance more favourably – a tendency that is positively related to corporate sustainability performance.

The present study investigates IM in CSR, where favourable rather than unfavourable information is presented through infographics. This tendency is investigated through three hypotheses, which examine three types of potential IM manipulations in the CSR context: selectivity, performance comparison and visual emphasis. Moreover, the association between

IM and the level of disclosure in the context of corporate sustainability is also investigated by examining one hypothesis that assess the disclosure levels on the degree of documented IM manipulations.

2.4.1 IM manipulations

With regard to selectivity, financial graphs studies (Frownfelter-Lohrke & Fulkerson, 2001; Beattie et al., 2008) and social and environmental graphs studies (Jones 2011; Cho et al., 2012b) suggest that selective behaviour determines the decision to include graphs and the choice of corporate performance indicators included in the graphs. For example, a company with increased (decreased) net income usually includes (does not include) graphs of either sales, income or dividends in order to present a favourable and unfavourable performance in its financial reports (Steinbart, 1989; Beattie & Jones, 1992).

In the CSR context, Jones (2011) reported in his UK sample that there were twice as many graphs containing positive sustainability performance indicators (e.g., decreased air emissions) as those containing negative indicators (e.g., decreased recycling). This result suggests that corporations tend to use social and environmental graphs to present more favourable sustainability performance indicators as a means to impress CSR users; this finding has also been supported in an US setting (Cho et al., 2012b, 2012a). Adopting the sociological perspective, it seems that this IMS result from the pressures of committing to social and environmental responsibility, which incentivises managers to present sustainability performance in the most possible light (Merkl-Davies & Brennan, 2011). These incentives may lead managers to be selective with sustainability information, presenting only information that enhances the company's social and environmental image, as CSR is not regulated (Merkl-Davies & Brennan, 2007).

Hence, in contrast with earlier studies on graphical presentations of CSR performance, the present study focuses not on the graphs, per se, but on the use of infographics to depict CSR performance. Based on the findings of previous studies focused on graphs, we expect to find evidence of selectivity in regard to sustainability performance indicators within infographics utilised in SRs. The hypothesis relating to this type of manipulation is expressed below:

> *Hypothesis 1: A higher number of social and environmental performance indicators presented in infographics will display favourable, as opposed to unfavourable, indicators.*

With regard to performance comparison, studies suggest that the choice of benchmarks – either an internal referent (e.g., the previous year's sales) or an external referent (e.g., the industry average) – in financial reporting is linked to self-serving behaviour, since favourable comparisons are selected to report indicators favourably (Lewellen et al., 1996; Schrand & Walther, 2000; Bannister & Newman, 2006). For example, Schrand and Walther (2000) found that managers tend to announce only the prior year's gain from selling fixed assets and avoid reporting a loss when evaluating the current year's earnings to avoid a negative evaluation. Similarly, Lewellen et al. (1996) found that benchmarks, industry and peer-company stock returns chosen by managers were biased downward compared to alternative comprehensive indices as a means to overstate reported performance. These studies concluded that management used comparisons as an IM tool through biased selection when reporting corporate performance.

Short and Palmer (2003) suggested that managers prefer internal referents when making comparisons in corporate reporting. They further argued that corporations with good performance are motivated to make comparisons internally rather than externally to allow managers to demonstrate their achievement of corporate targets (Palmer & Short, 2001). This argument is supported in their empirical study in which self-enhancement is found to be related

to management's preference for internal referents (Short & Palmer, 2003). They report that in their sample, 85% of the comparisons identified in corporate shareholder letters involved internal referents, with 33% of references to sales growth as compared to only 7% growth in stated expenses. This is a clear indication of IM, since managers are cast in a favourable light.

We could expect similar behaviour in the CSR context as a means to present favourable sustainability performance comparisons. Given that the sociological perspective suggests that companies have an economic incentive to gain and maintain their legitimacy (Merkl-Davies & Brennan, 2011), managers are expected to avoid making any comparison that portrays their current sustainability performance in an unfavourable light. Further, as CSR is unregulated, managers have greater discretion in employing self-serving tactics to present social and environmental performance benchmarks. This can be operationalised by choosing internal referents, over which managers have more control, to compare at greater extend favourable sustainability performance indicators than that unfavourable. Infographics are employed to this end, ensuring that sustainability performance comparisons are presented in the most positive light. The hypothesis relating to this type of manipulation is stated below:

> *Hypothesis 2: A higher number of favourable social and environmental performance indicators presented in infographics will be compared with internal referents.*

With regard to visual emphasis, studies suggest that visual effects – either image effects (e.g., icons, cartoons and drawings) or text effects (e.g., colouring and zooming) – are used in corporate documents in self-serving ways to emphasise favourable performance outcomes, suggesting that these visual elements are rhetorically constructed for IM purposes (Graves et al., 1996; Courtis, 2004a; Guillamon-Saorin et al., 2012). For example, using a sample of financial reports, Graves et al. (1996) found that cartoon-inspired images carry favourable ideological messages that emphasise the values of truth and authenticity. Similarly, Courtis

(2004a, p. 265) stated that the use of colours in financial reporting tends to emphasise a "more (less) favourable perception formation and with more (less) investment allocations". Moreover, Guillamon-Saorin et al. (2012) found evidence of self-serving behaviour in financial press releases through the use of headlines to stress favourable financial performance and downplay unfavourable performance. These studies suggest that such visual effects play a role beyond aesthetics and create a visual rhetoric to emphasise the favourable aspects of corporate disclosures.

Based on the use of visuals in corporate documents as part of IM, the present study suggests that visual emphasis involving either images or text can be used in infographics to portray a favourable corporate image in the CSR context. The sociological perspective suggests that a managerial symbolic disclosure contributes to the corporate image construction of being socially and environmentally responsible (Merkl-Davies & Brennan, 2011). To this end, the utilisation of images and text effects contributes to management of stakeholder perceptions and disclosure enhancement (Beattie & Jones, 2008). Hence, we expect that managers use images (e.g., depictions of recycling) or text effects (e.g., headings in large boldface font) to highlight and emphasise favourable rather than unfavourable sustainability performance indicators. Accordingly, the hypotheses relating to such manipulations are expressed as follows:

> ***Hypothesis 3(a):*** *A higher number of favourable social and environmental performance indicators presented in infographics will be highlighted using images.*

> ***Hypothesis 3(b):*** *A higher number of favourable social and environmental performance indicators presented in infographics will be highlighted using text effects.*

2.4.2 Association between IM and sustainability disclosure

Besides investigating IMSs in the use of infographics in SRs, the current study also examines whether differences in IM level are related to differences in the level of social and environmental disclosures. Earlier studies suggested that social and environmental disclosures are an IM strategy adopted to alter public perceptions of corporate legitimacy (Patten, 1992; Deegan & Gordon, 1996; Deegan & Rankin, 1996). Particularly, it has been argued that the increased amount of such disclosures represents a strategy to manage public relations (Deegan, 2000, p. 4; Hooghiemstra, 2000). Patten (1992) has argued that managing stakeholder pressure involves increasing the extent of companies' self-laudatory sustainability disclosure. Companies are likely to engage in activities expected by their stakeholders and voluntarily report on these activities to demonstrate their stakeholders management efforts (Clarkson, 1995; Boesso & Kumar, 2007). Accordingly, sustainability disclosure by companies is driven by stakeholder power and influence and is seen more in companies deemed to be under pressure to manage stakeholders' competing interests. Hence, sustainability disclosure itself is considered an IM tool (Lindblom, 1994; Neu et al., 1998).

Empirical research has shown that sustainability disclosure are related to companies' efforts to gain and sustain reputation (Bouten et al., 2011; Patten & Zhao, 2014). Boesso and Kumar (2007) found that the amount of voluntary social and environmental disclosures in the MD&A section of annual reports is associated with stakeholder engagement focused on fostering relationships. Similarly, Patten and Zhao (2014) found that firms focus on discussing sustainability initiatives and programs as opposed to providing performance data, suggesting such disclosure is more about image enhancement than transparent accountability. These findings are also supported by the KPMG (2011) International Survey of CSR, which has

shown that the main driver of CSR practice in the world's largest 250 companies is building organisational reputation.

Consistent with these studies, we argue that CSR disclosures are an IM strategy that may be adopted by companies regardless of their underlying sustainability performance. As the sociological perspective suggests that companies strive to gain legitimacy and resources (Merkl-Davies & Brennan, 2011), both superior and poor performing companies have an incentive to use CSR disclosures. As established earlier, graphs in corporate reporting are found to enhance perceptions about the disclosed information and company reputation (Arunachalam et al., 2002; Beattie & Jones, 2002a). Hence, we expect to find the same result for the use of infographics to communicate sustainability disclosure. Accordingly, we expect a higher level of social and environmental disclosures to be associated with a greater extent of IMSs being employed in infographics. In particular, we expect that corporations with high levels of disclosure in terms of social and environmental performance show a high level of selectivity, performance comparison and visual emphasis manipulations. Thus, the hypotheses reflecting this are:

> ***Hypothesis 4(a):*** *Companies with high levels of social performance disclosure will exhibit greater IM in using infographics to represent social indicators than companies with lower disclosure levels.*
>
> ***Hypothesis 4(b):*** *Companies with high levels of environmental performance disclosure will exhibit greater IM in using infographics to represent environmental indicators than companies with lower disclosure levels.*

3. RESEARCH METHOD

Content analysis is used to achieve the first research objective, namely, to study the use of infographics in CSR reports, and the second research objective to identify IMS implemented through infographics (*Hypothesis 1,2 and 3*). The third research objective, to examine the association between IM and social and environmental disclosure levels (*Hypothesis 4 (a) and 4 (b)*), is addressed through a regression analysis. In the following, the research design is discussed in Sections 3.1 and 3.2. The data collection method is described in Section 3.3, and the sample selection procedure in Section 3.4.

3.1   Content analysis

Many previous studies on IM have employed content analysis to investigate the use of narratives (Clatworthy & Jones, 2001; Merkl-Davies et al., 2011), pictures and photographs (Davison, 2010; Duff, 2011) and graphs (Jones 2011; Cho et al., 2012a; Hrasky, 2012). According to Merkl-Davies and Brennan (2007), IM research has primarily been examined from the preparer's perspective by adopting content analysis to determine whether and how managers utilise corporate reports for IM. As this study aims to gather insights into the use of infographics and their embedded performance indicators in CSR reports (first objective) and to determine whether they are used for IM (second objective), content analysis serves the study objectives, providing a detailed and sophisticated analysis and comparability in relation to favourable and unfavourable sustainability performance indicators.

The first research objective concerns the practice and features of infographics employed by corporations in their SRs. It also concerns understanding what disclosure areas and performance indicators are most frequently communicated. To achieve this research objective, content analysis of infographics was performed in two stages. In the first stage, which considered the infographics holistically, the data collected included (a) the frequency of

infographic usage, (b) infographics' overall content theme, (c) infographic type and (d) infographic structural components. In the second stage, which considered the performance indicators communicated, the data collected included (a) the frequency of indicator usage, (b) indicator theme, (c) visual effects applied to presentation of indicator and (d) performance benchmark type employed. The data collected in this stage was focused only on social and environmental performance indicators as economic indicators were beyond the scope of this study. The above data categories were identified based on the previous literature, which provides descriptive data using financial graphs in corporate documents (Beattie & Jones, 2008; Penrose, 2008). The coding procedure for collecting the required data is discussed in Section 3.3.

The second research objective concerns the social and environmental performance indicators communicated through infographics in CSR reports to document evidence of IMS. The investigation was focused on three IM manipulations, examining how these indicators are (a) selected for disclosure (selectivity) and (b) visually presented (visual effects) and compared with benchmarks (performance comparison). Content analysis is used to collect data about each performance indicator pertaining to selection bias, image and text effects, and internal and external referents. The coding procedure for collecting these data is discussed in Section 3.3. The three hypotheses related to the second research objective are based on the assumption that companies tend to adopt the above three IM manipulations to express performance indicators in a favourable rather than unfavourable light through infographics. As a general rule, these hypotheses were assessed based on whether the number of favourable performance indicators outweighed the number of unfavourable ones with respect to IM across the three types of IM manipulations. Additionally, the difference between favourable and unfavourable observations was examined for statistical significance.

Following the methodology adopted by Jones (2011) and Cho et al. (2012b), the overall analysis of favourable and unfavourable reported sustainability performance indicators was conducted in three steps as illustrated in Figure 3.1. The first step was to determine whether the reported performance indicators represent positive or negative initiatives by assessing the context of these indicators. For example, waste recycling or environmental expenditures represent positive topics as they reflect a contribution to environmental safeguarding, whereas, for example, water consumption or air gas emissions represent negative topics as they reflect less awareness of environmental responsibility. The second step was to determine whether the reported performance indicators express increasing or decreasing trends. The trend assessment involved the observation of performance time-series, statements or symbols indicating a change in reported performance. The third step was to determine whether the reported performance indicators are favourable or unfavourable.

From a company perspective, performance indicators that support sustainability support are favourable indicators and those that do not support or are detrimental to sustainability are unfavourable indicators. Accordingly, as shown in Figure 3.1, a positive (negative) performance indicator, which indicates an increasing (decreasing) performance trend, is considered favourable. In comparison, a positive (negative) performance indicator, which implies a decreasing (increasing) performance trend, is considered unfavourable.

Figure 3.1 Analysis of favourable and unfavourable performance indicators
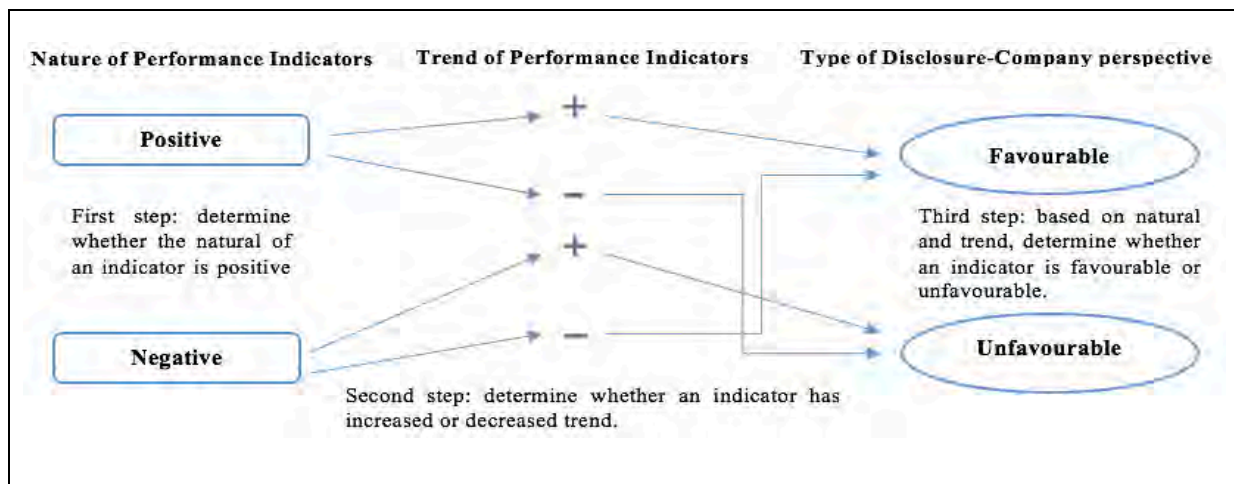
3.2   Regression model

To address the third research objective, a linear multiple regression analysis is used to test the hypothesis of a relation between our measured IM levels across the three types of IMSs and social and environmental disclosure levels. Our regression analysis is controlled for company size and industry sensitivity membership (social versus environmental sensitivity). The application of a multiple regression analysis is consistent with prior IM research (Merkl-Davies et al., 2011; Osma & Guillamón-Saorín, 2011; Guillamon-Saorin et al., 2012; Melloni, 2015).

Two regression models are developed. The first tests individually the association between each IM level of selectivity, performance comparison and visual emphasise (image and narrative highlighting) strategies and social disclosure (hypothesis 4(a)). The second considers individually the association between each IM level of selectivity, performance comparison and visual emphasise (image and narrative highlighting) strategies and environmental disclosure (hypothesis 4(b)). The main regression models are shown below:

$$SOIM = \alpha + \beta_1\ SODISC + \beta_2\ SIZE + \beta_3\ SOSEIN + \varepsilon \qquad \text{(model (1))}$$

Where:

- SOIM is the levels of IMSs in terms of social CSR area. It refers to three dependent variables:
    - *SOSE* is the selectivity;
    - *SOCO* is the performance comparison;
    - *SOVIHI* is the visual highlighting;
    - *SONAHI* is the narrative highlighting for social CSR area.
- *SODISC* is the disclosure scores for social CSR area.
- *SIZE* is the company size measured by total revenues.
- *SOSEIN* is a dummy variable representing the industry sensitivity membership with a value of 1 for socially sensitive, or 0 otherwise.

$$\text{ENIM} = \alpha + \beta_1 \; ENDISC + \beta_2 \; SIZE + \beta_3 \; ENSEIN + \varepsilon \qquad \text{(model (2))}$$

Where:

- ENIM is the levels of IMSs in terms of environmental CSR. It refers to three dependent variables:
    - *ENSE* is the selectivity;
    - *ENCO* is the performance comparison;
    - *ENVIHI* is the visual highlighting;
    - *ENNAHI* is the narrative highlighting for environmental CSR.
- *ENDISC* is the disclosure scores for environmental CSR.
- *SIZE* is the company size measured by total revenues.
- *ENSEIN* is a dummy variable representing the industry sensitivity membership with a value of 1 for environmental sensitive, or 0 otherwise.

As shown in both models 1 and 2, the coefficient (β_1) of independent variable *SODISC* and *ENDISC* is the main focus of our regression analysis. A significant β_1 of *SODISC* (*ENDISC*) indicates a significant relation between social (environmental) disclosure scores and the levels of IM strategy implemented in terms of social (environmental) CSR. We anticipate that β_1 will be positive in both models 1 and 2 as established in our hypotheses 4(a) and 4(b) respectively. Accordingly, the higher social (environmental) disclosure is the higher level of IM, measured by IMSs, in social (environmental) CSR area.

3.2.1 Dependent variables

The IM level, across the three types of IMSs, is the dependent variables of our regression models. Consistent with Cho et al. (2012b), it is measured by quantity of favourable bias

incidents with respect to each type of IMS. Further, we quantify separately the IM level for social and environmental dimensions among the implemented IMSs. The social selectivity strategy level (*SOSE*) is identified by company as the total number of favourable performance indicators within the social dimension. The environmental selectivity strategy level (*ENSE*) is similarly determined but within the environmental dimension.

In a similar manner, the social comparison strategy level (*SOCO*) is identified by company as the total number of favourable performance indicators compared to those within the social dimension. Environmental comparison strategy level (*ENCO*) is similarly determined but within the environmental dimension. Finally, in terms of social visual emphasis, which refers to image highlighting (*SOVIHI*) and narrative highlighting (*SONAIH*), the strategy level is identified by company as the total number of favourable performance indicators highlighted by either image or text effects within the social dimension. The environmental visual emphasis strategy level (*ENVIHI*) and (*ENNAHI*) is similarly determined but within the environmental dimension.

3.2.2 *Independent variable*

The sustainability disclosure level, across social and environmental dimensions, is the independent variable of our regression models. It is measured by sustainability disclosure scores developed by Bloomberg's ESG analysis (Bloomberg, 2016). Bloomberg independently rates the completeness of sustainability reporting disclosure across environmental, social and economic dimensions along a scale ranging from 0 to 100%. As Bloomberg's ESG database provides a quantitative measure of disclosure extent, it has been used recently in the sustainability reporting literature for disclosure quality examination (Eccles et al., 2011; Eccles et al., 2014; Birkey et al., 2016). In our test, we use Bloomberg's ESG database to identify the

social disclosure score *(SODIS)* and environmental disclosure score *(ENDIS)* for each company in our sample. Companies with no scores data are excluded from the regression analysis

3.2.3   Control variables

Consistent with the literature, we control for firm size (*SIZE*) and industry membership sensitivity (SOSEIN or ENSEIN), which are expected to be positively related to social and environmental disclosure (Patten, 2002; Guillamon-Saorin et al., 2012; Birkey et al., 2016). Large companies are subject to higher visibility and exposure to social and environmental pressures, which may lead them to use sustainability disclosure as an IM tool. The company *SIZE* variable is measured as the natural log of revenues in year 2015.

As noted by Cho et al. (2012b), industry membership sensitivity is deemed to be different across social and environmental dimensions, hence it is necessary to control for industry sensitivity. Companies from environmentally sensitive industries are expected to have more impact on the environment, which may lead them to use sustainability disclosure as an IM tool. Hence, industry membership sensitivity is expected to be positively related to IM levels. As highlighted in the sustainability reporting literature (Patten, 2002; Clarkson et al., 2008; Cho et al., 2010), companies operating in the chemicals, metals, mining, paper, petroleum or utilities industries are classified as environmentally sensitive (*ENSEIN*), while those in industries such as food, beverage and services are classified as socially sensitive (*SOSEIN*). Accordingly, *ENSEIN* and *SOSEIN* variables are measured as dummy variables where a value of 1 a represents an industry sensitivity category and 0 represents anything else.

3.3 Data collection

3.3.1 Coding list development

Consistent with previous studies investigating IM, the present study conducted content analysis manually to collect data on the use of infographics in CSR reports (Beattie & Jones, 2008; Jones 2011; Cho et al., 2012a). A coding list was developed to collect the required data presented in Table 3.1. It is partially based on the conceptual framework developed by Segel and Heer (2010). This study has investigated several online infographics produced by journalists and developed a useful framework to understand the structure and design features of infographics. As this framework focused on designing interactive infographics based on webpages, only the applicable conceptual categories were adopted for coding infographics in our sample.

Hence, visual and narrative highlighting mechanisms were only adopted. They applicable to paper based infographics, and they have ability to enhance the salience of a component relative to its surroundings (Segel & Heer, 2010). Whereas, interactivity mechanisms was excluded as it considers webpages features such filtering, selecting and navigating. As presented in Table 3.1, infographic coding dimensions located at part (A), which are related to type, narratives component and visuals component, are borrowed from the work of Segel and Heer (2010). Similarly, indicator coding located at part (b), related to narrative and visual highlighting, are also adopted.

Table 3.1 The study's developed coding list

Coding list part (A): Infographics coding procedure		
Theme	(1) = General (2) = Economic (3) = Social (4) = Environmental	
Type	(1) = Annotated chart/map (2) = Partitioned poster (3) = Flow chart (4) = Comic strip	
Narratives component	(1) = Annotations (2) = Accompanying Article (3) = Both 1 and 2 (4) = Not applicable	
Visuals component	(1) = Photos/Pictures (2) = Illustrations (icons and symbols) (3) = Graphs (4) = Shapes (5) = Not applicable	
Coding list part (B): Performance indicators coding procedure		
Theme	(1) = Social (2) = Environmental	*Narratives highlighting*	(1) = Sizeable or bold font (2) = Colourful font (3) = Both 1 and 2 (4) = Not applicable
CSR- Aspects	(1) = EN1 (materials) (2) = EN2 (energy) (3) = Next aspects in order (4) = PR 42 (compliance)	*Benchmark preferences*	(1) = Internal referent (2) = External referent (3) = No comparison referent
Performance trend	(1) = Increased trend (2) = Decreased trend (3) = No trend	*Internal referent type*	(1) = Single previous year data (2) = Multiple previous years data (3) = Not applicable
Indicator natural	(1) = Favourable trend (2) = Unfavourable trend (3) = Not applicable	*External referent type*	(1) = Industry average data (2) = Peer group data (3) = Not applicable
Visuals highlighting	(1) = Photos/Pictures (2) = Illustrations (icons and symbols) (3) = graphs/charts (4) = Shapes (5) = Not highlighted		

Further, the sustainability disclosure classification of the GRI G4 guidelines was used to develop the coding list (GRI, 2013). As shown in Figure 2.1, the three main sustainability reporting categories developed by the GRI (economic, environment and social) were used for coding the theme dimension, which is located at part (A) of Table 3.1. Further, the list of GRI aspects, excluding the economic aspects, was used to code the theme of the analysed indicators located at part (b). All the remaining coding dimensions, namely performance trend, indicator

natural and benchmark preferences are adopted based on our observation of utilised infographics in CSR. Other related data on the companies, such as total revenues, were collected from the Bloomberg financial database, and social and environmental performance scores were collected from Bloomberg's ESG database (Bloomberg, 2016). Information concerning SR, such as compliance with the GRI guidelines, assurance scope, industries and listing status, were mainly collected from the GRI database (GRI, 2016a). All the collected data were recorded in a Microsoft Excel worksheet to be analysed using SPSS software version 24.

3.3.2 Coding procedure

The coding list (see Table 3.1) captured the required data on the analysed infographics based on a two-part coding procedure. Part (A) mainly concerns data collected on the infographics as a whole in order to address the first research objective of studying how infographics are used in CSR reporting. The infographics' theme was recorded as either general, when it involved general information about the company, or as one of the three sustainability categories. The types of infographics were classified based on the framework of Segel and Heer (2010) (see Figure 3.2). Only four types were found relevant and were applied to the infographics analysis: annotated chart/map, partitioned poster, flow chart and comic strip. Based on our observation, these types are most likely used in corporate reporting   Finally, the narrative and visual components were adopted from Segel and Heer (2010) based on relevance to the scope of this study.

Part (B) of the established coding list (see Table 3.1) mainly concerns data collected about the performance indicators presented within the infographics in order to address the second research objective of IM documentation. This includes information about the theme, trend and nature, highlighting effects and benchmark preferences of the performance indicators. Each

indicator's related aspect is coded based on the 42 aspects under the environmental category and social sub-categories classified by the GRI framework (see Figure 2.1). Each aspect has a code representing the relevant category or sub-categories (e.g., EN = Environmental) and the frequency of that aspect.

Figure 3.2 Examples of infographics type classifications
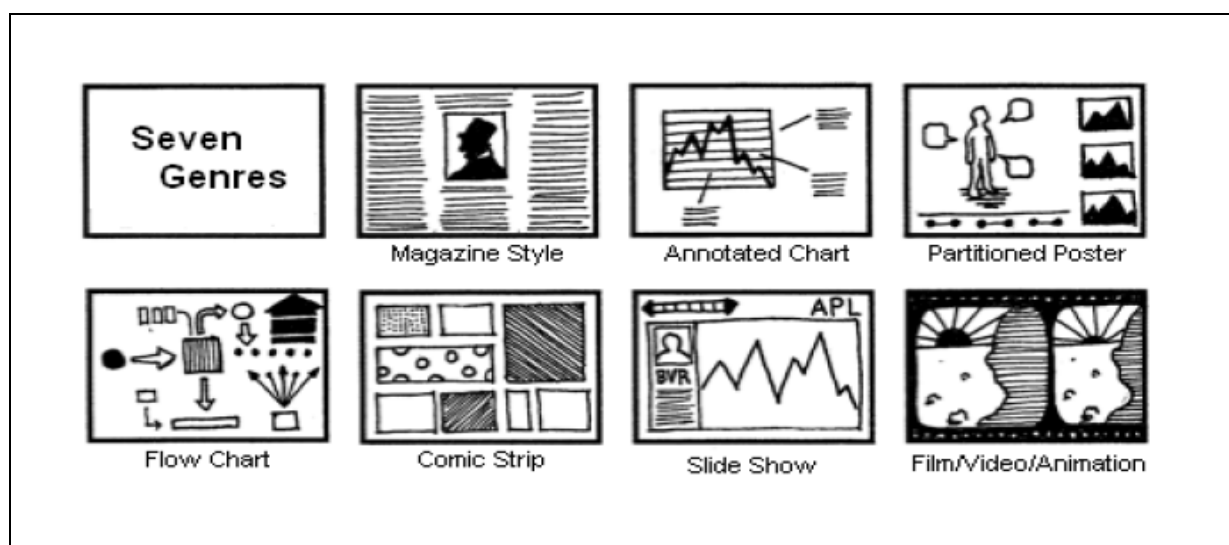
Source: Segel and Heer (2010, p. 1145).

Trend data were collected for the analysis of favourable and unfavourable reported performance indicators. Where there is no observed trend, the nature of the performance indicator is coded as not applicable. Narrative and visual highlighting categories were also adopted from Segel and Heer (2010) based on relevance to the scope of this study. These coding categories contain data on how graphic design strategies were applied to the reported performance indicator. The final dimension of the part (B) coding list concerns benchmark preferences, which aim to code the benchmark type as either internal (previous years' company data) or external (industry data). The types of internal and external referents were also coded.

To illustrates the coding procedure, the following example is provided. Infographics presented in Figure 3.3 are used to illustrate the data collection. Applying part (A) of the coding list, it can be observed that this infographic has an environmental theme as it presents several

environmental performance indicators with respect to operational spills, waste and energy usage. It is classified as a partitioned poster infographic as the design structure involves multi-view visualisation. Further, its structure involves a narrative component in the form of annotations surrounding the reported performance indicators and visual components in the form of symbols depicting the performance achieved. As this infographic contains multiple performance indicators, each indicator is coded separately by applying part (B) of the coding list. To illustrate the coding procedure of part (B), one of the performance indicators presented within the infographic is extracted and presented in Figure 3.3.

Figure 3.3 shows that the performance indicator expressed here is related to the environmental theme, particularly the energy aspect (coded as EN2). As energy consumption is considered unfavourable, the decreased performance trend observed over time is considered favourable from the company's perspective. Further, this indicator is highlighted using bold captioning and the depiction of light bulbs. Finally, the indicator is internally compared with multiple data points from previous years. A summary of the coding procedure for the above example is illustrated in Table 3.2.

Figure 3.3 The example of a visual depiction of company's energy performance
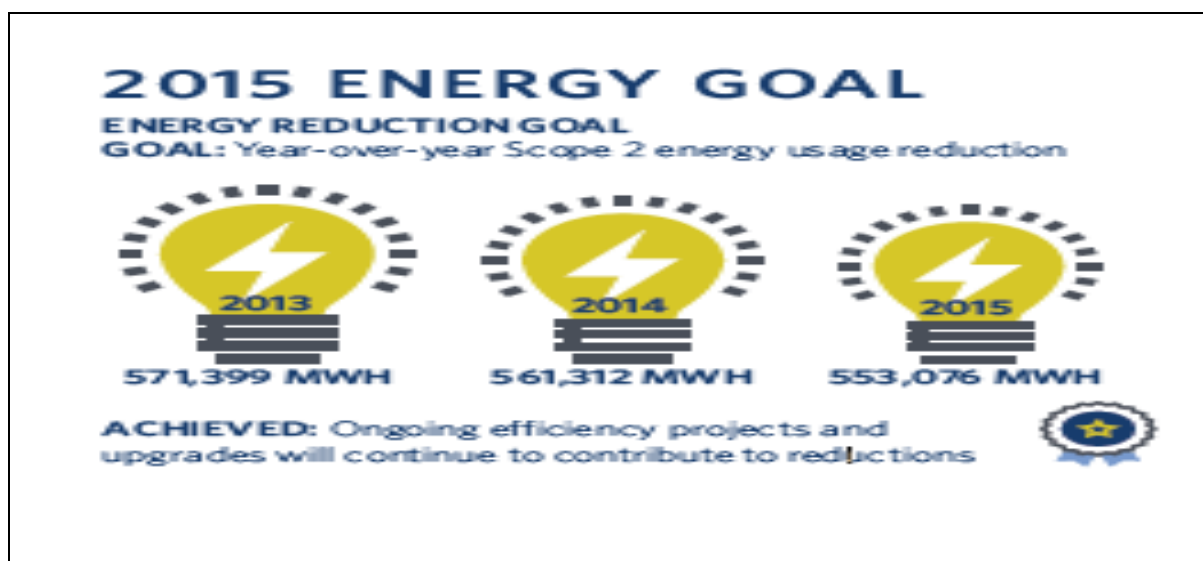
Source: Delta Corporation (2015, p. 20).

Table 3.2 Summary of the data collection procedure- illustrative example

Coding list part (A): Infographics coding			
Theme	(4) = Environmental		
Type	(2) = Partitioned poster		
Narratives component	(1) = Annotations		
Visuals component	(2) = Illustrations		
Coding list part (B): Performance indicators coding			
Theme	(3) = Environmental	*Narratives highlighting*	(1) = Sizeable or bold font
CSR- Aspects	(2) = EN2 (energy)	*Benchmark preferences*	(1) = Internal referent
Performance trend	(2) = Decreased trend	*Internal referent type*	(2) = Multiple previous years data
Indicator natural	(1) = Favourable	*External referent type*	(3) = Not applicable
Visuals highlighting	(2) = Illustrations		

3.4   Sampling procedure

The present study limits the analysis to the SRs of US corporations for 2015, which are available from the GRI database. The GRI database was utilised to select the most relevant country for our investigation and to access GRI-based SRs. This database is publicly available and includes all types of SRs across countries, GRI-based or otherwise(GRI, 2016a). The CSR context in the US was selected for this study for three reasons. First, the US is recognised as one of the most developed equity markets in the world (Leuz et al., 2003). Second, the majority of the published SRs in the US in 2015 do not contain a third-party assurance statement (Cho et al., 2014; CorporateRegister, 2015). Third, at 434 SRs, the US has the highest number of registered SRs in the GRI database as compared to other western countries; this number was considered suitable for sampling purposes.[6] Further, 2015 was chosen as the study period because it was the most recent year in which all registered reports were available in the GRI database at the time of data collection.

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[6] GRI (2016a) provides an Excel export of all the registered SRs and companies' meta data in two versions, limited and comprehensive. The comprehensive version was requested from the GRI, which includes SRs published from 1999 till present and all available data points for each registered SR. This version contains 4,975 SRs across 96 countries. The US has the highest number of SRs among countries in Europe, North America and Oceania.

This study employed the purposive (also known as judgmental) sampling technique as the selection of SRs was subject to several criteria. Purposive sampling is a non-probability technique that involves selecting participants based on the pre-existing characteristics of a population (Saunders et al., 2015). This study's population is defined as all US SRs registered in the GRI database during 2015, which amount to 434 reports. By adopting the purposive sampling technique, the current study aims to employ a reasonable simple size that can be collected cost efficiently. Table 3.3 summarises the selection of the final study sample.

Table 3.3 Summary of the study sample selection procedures

	Number	Total	Percentage
Total number of US SRs (Population)		434	
Exclusion criteria:			
SRs issued by non-listed companies	91		
SRs developed based on non-GRI	142		
SRs published in webpage-based	48		
Intergraded SRs	6		
Total number of SRs		(287)	
Total number of US SRs (Sample)		147	33.87%

As shown in Table 3.3, the study population was narrowed down based on the following selection criteria. First, the SRs should be issued by publicly listed corporations on the US stock markets as at 31 December 2015. This criterion was established because listed companies are assumed to be large and more visible, and accordingly, extensive social and environmental disclosures are expected. Second, SRs should be developed based on the GRI guidelines framework, particularly the recent G4 version. As several reporting guidelines exist, the second criterion ensures the comparability of the social and environmental performance indicators among the selected reports. Third, the SRs should not be classified as integrated reports because such reports include performance indicators that fall beyond the requirements of the GRI guidelines. Finally, the SRs should be published in PDF file format as webpage-based formats

were beyond the scope of this investigation. After applying these selection criteria, 285 SRs were excluded from the defended population, and the final study sample comprised 149 SRs[7].

The sample companies cover a wide range of industries. As shown in Table 3.4, the companies in our study sample represent a wide range of industries. Based on the GRI database industry classification, 147 companies are from 18 consolidated industries. These companies belong to four mean sectors: 65 services companies (44.22%), 51 manufacturing companies (34.69%), 17 energy companies (11.56%), 10 consumer staples companies (6.80%) and four mining companies (2.72%). The largest number of companies is in the computers/technology hardware manufacturing industry (19 companies, 12.93%), whereas the smallest number of companies is in the mining industry. A review of the GRI database suggests that US mining companies do not engage in CSR, based on the number of published SRs in prior years. Overall, the wide coverage of industries and sectors indicates a diversity in our sample.

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[7] The GRI database enables the data search to be refined using various filtering and sorting options, based on items such as company listing status, SR type, GRI compliance and SR availability format.

Table 3.4 Summary of the study sample companies by industries

Industry membership	Number by Industry	Percentage
Computers/Technology Hardware Manufacturing	19	12.93
Energy/ Energy Utilities	17	11.56
Financial Services	15	10.2
Construction/Real Estate	14	9.52
Commercial Services	13	8.84
Food/Beverage/Tobacco	10	6.8
Healthcare Products Manufacturing	9	6.12
Chemicals Manufacturing	7	4.76
Aviation/Railroad Services	6	4.08
Automotive/ Equipment Manufacturing	5	3.4
Healthcare Services	5	3.4
Retailers	5	3.4
Household and Personal Products Manufacturing	4	2.72
Mining	4	2.72
Other -Manufacturing	4	2.72
Telecommunications/Media	4	2.72
Metals Products Manufacturing	3	2.04
Other-Services	3	2.04
Total	147	100

3.5   Descriptive statistics and correlation matrix

The descriptive statistics of social and environmental disclosure scores, IMSs levels, company size and industry membership are presented in Table 3.5. The mean values of social and environmental disclosure scores are relatively close, suggesting that companies in our sample, on average, have a similar level of sustainability disclosure. Further, running a frequency analysis of both social and environmental scores shows that 53% of these scores are located above the mean values. This is an indication that about half of the companies in our sample provide a higher level of disclosure. The mean values of social and environmental IM levels across the IMSs suggest that IM is greater in relation to environmental disclosure. For example, the mean value of selectivity level at environmental area (*ENSE*) is 5.07, which is higher than

the value at social area (*SOSE*) 3.27. The companies in our sample are ranged, based on 2015 total revenues, from $546 million to $485.70 billion, with a mean value of $29.80 billion and a median of $11.09 billion. Hence, the sample companies are considered, in terms of size, as large companies.

Table 3.5 Descriptive statistics of all variables used for regression analysis

Variable	N	Mean	Std. Deviation	Minimum	Median	Maximum
SODISC	119	39.90	15.42	2.48	40.18	79.85
ENDISC	119	40.80	14.47	8.77	42.11	82.46
SOSE	59	3.27	3.51	1.00	2.00	18.00
ENSE	89	5.07	4.57	1.00	4.00	20.00
SOVIHI	53	3.38	3.68	1.00	2.00	18.00
ENVIHI	79	5.27	4.80	1.00	4.00	20.00
SONAHI	31	3.45	4.26	1.00	2.00	18.00
ENNAHI	48	5.58	5.19	1.00	4.00	17.00
SOCO	50	2.94	2.71	1.00	2.00	10.00
ENCO	77	4.00	3.24	1.00	3.00	19.00
SIZE (in $billion)	119	$29.80	$57.06	$0.546	$11.09	$485.70
SOSEIN	119	0.50	0.50	0.00	1.00	1.00
ENSEIN	119	0.50	0.50	0.00	0.00	1.00

SODISC = social disclosure; ENDISC= environmental disclosure; SOSE= social selectivity; ENSE= environmental selectivity; SOVIHI= social visual highlighting; ENVIHI = environmental visual highlighting; SONAHI = social narrative highlighting; ENNAHI= environmental narrative highlighting; SOCO = social performance comparison; ENCO= environmental performance comparison; SIZE= companies size by 2015 revenues; SOSEIN= social sensitive industry; ENSEIN= environment sensitive industry.

As shown in Table 3.6, a set of Pearson correlations were computed to assess the significance of relationships between all variables. The *SODISC* variable is positively correlated (.301, at $p < 0.05$) with the *SOVIHI* variable, which indicates that an increase in the level of social disclosure is accompanied by an increase of IM as measured by the visual emphasis strategy. The *ENDISC* variable is also positively correlated with the *ENSE* variable (.242, at $p < 0.05$), the *ENVIHI* variable (.295, at $p < 0.05$) and the *ENCO* variable (.298, at $p < 0.05$). This positive correlation indicates that an increases in the level of environmental disclosure is accompanied by an increase of IM measured by selectivity, visual emphasises and performance comparison

strategies. These indications are consistent with our assumption that a high level of sustainability disclosure is systematically connected with a high level of IM.

Further, as shown in Table 3.6, the *SOSE* variable is positively high correlated with the *SONAHI* variable (.995, at $p < 0.01$) and *SOCO* variable (.790, at $p < 0.01$). In terms of social CSR, the positive correlation here indicates companies that use selectivity IM strategy are more likely to utilize the highlighting and performance comparison IM strategies. The *ENSE* variable is also positively highly correlated with the *ENVIHI* variable (.998, at $p < 0.01$), the *ENNAHI* variable (.949, at $p < 0.01$) and the *ENCO* variable (.780, at $p < 0.01$). This implies that, in terms of environmental CSR, the increase in selectivity level is related to an increase in levels of visual and narrative emphasis and performance comparison strategies. All these indications are consistent with our assumption that favourable sustainability indicators are most likely emphasised by image materials or text effect and compared with internal referent.

Furthermore, as shown in Table 3.6, the *SIZE* variable is negatively and slightly correlated with the *SODISC* and *ENDISC* variables. It is surprising to see a non-significant negative association between these variables. In the CSR literature, company size has been widely predicted to be significantly and positively associated with sustainability disclosure, suggesting that the larger the company the greater the disclosure amount (Patten, 1992; Hackston & Milne, 1996). In our case, the negative association between company size and social and environmental disclosure indicates that the bigger the company the lower the disclosure in social and environmental areas. The slight correlation implies that correlation is so small as to be random between *SIZE*, *SODISC* and *ENDISC* variables.

Table 3.6 Correlation matrix of all variables used for regression analysis

	Variable	SODISC	ENDISC	SOSE	ENSE	SOVIHI	ENVIHI	SONAHI	ENNAHI	SOCO	ENCO	SIZE	SOSEIN	ENSEIN
1	SODISC	1	.514**	0.269	.251*	.301*	.290*	0.234	.379*	0.219	.273*	0.078	-.285**	.285**
			0	0.054	0.025	0.042	0.015	0.25	0.012	0.154	0.024	0.399	0.002	0.002
2	ENDISC		1	0.103	.242*	0.124	.295*	0.081	0.164	0.112	.298*	-0.013	-.334**	.334**
				0.467	0.03	0.412	0.013	0.693	0.293	0.471	0.014	0.888	0	0
3	SOSE			1	.343*	1.000**	.336*	.995**	0.203	.790**	0.283	0.095	-0.018	0.018
					0.012	0	0.018	0	0.264	0	0.051	0.491	0.895	0.895
4	ENSE				1	.341*	.998**	0.181	.949**	.421**	.780**	-0.059	-0.073	0.073
						0.016	0	0.357	0	0.004	0	0.593	0.498	0.498
5	SOVIHI					1	.337*	.995**	0.204	.786**	0.281	0.115	-0.021	0.021
							0.019	0	0.27	0	0.065	0.432	0.879	0.879
6	ENVIHI						1	0.181	.951**	.415**	.774**	-0.035	-0.091	0.091
								0.357	0	0.008	0	0.767	0.423	0.423
7	SONAHI							1	0.18	.701**	-0.065	0.15	0.103	-0.103
									0.379	0	0.763	0.454	0.58	0.58
8	ENNAHI								1	0.179	.534**	-0.027	-0.042	0.042
										0.402	0	0.863	0.776	0.776
9	SOCO									1	.486**	0.136	-0.026	0.026
											0.001	0.361	0.856	0.856
10	ENCO										1	0.046	-0.124	0.124
												0.703	0.283	0.283
11	SIZE											1	0.092	-0.092
													0.313	0.313
12	SOSEIN												1	-1.000**
														0
13	ENSEIN													1

** Correlation is significant at the 0.01 level ; * Correlation is significant at the 0.05 level.

SODISC = social disclosure; ENDISC= environmental disclosure; SOSE= social selectivity; ENSE= environmental selectivity; SOVIHI= social visual highlighting; ENVIHI = environmental visual highlighting; SONAHI = social narrative highlighting; ENNAHI= environmental narrative highlighting; SOCO = social performance comparison; ENCO= environmental performance comparison; SIZE= companies size by 2015 revenues; SOSEIN= social sensitive industry; ENSEIN= environment sensitive industry.

4. RESULTS AND DISCUSSION

Section 4.1 presents the results regarding the first research objective, namely understanding infographics practice in CSR reporting. In Section 4.2, the results relating to the second research objective, i.e documenting IMS evidence, are presented. The results relating to the third research objective, i.e. examining the association between social and environmental disclosure levels and IM level across the three types of IMSs, are presented in Section 4.3.

4.1   Infographics descriptive practice

4.1.1   Infographics utilisation

The use of infographics has become widespread in contemporary CSR. Table 4.1 presents data on infographics utilisation in SRs for our sample companies. As shown in Panel A, 131 (89.1%) companies utilised infographics in their SRs. This is consistent with results from studies examining graphs, in which it was found that over 85% of CSR reports include graphs (Jones 2011; Cho et al., 2012b). Further, we find that the average utilisation is 17 infographics per SR, which is higher than that of traditional graphs per SR (11 graphs) as demonstrated by Cho et al. (2012a) in a study of US companies. This average suggests a remarkable change in the practice of visualising sustainability disclosures from graphs to infographics presentation. Panel B of Table 4.1 also identifies the number of documented infographics across sustainability reporting areas in our sample. Of the total 2,234 infographics that are documented, 565 infographics are used for presenting social aspects while 711 are used for environmental aspects.

The popularity of infographics in CSR suggests a powerful role for this communication tool when compared with traditional graphs. As the role of graphs in corporate reporting is argued

to be rhetorical (Beattie & Jones, 2008), infographics also may play a similar but more powerful role in CSR reporting. Rhetoric is an art of persuasive discourse or writing by means of facts exploitation (Davison & Skerratt, 2007). Whereas, visual rhetorical tools such as imaginary materials are considered "not only as persuasive practices but also as classificatory and ordering instruments" (Quattrone, 2009, p. 89). Hence, as infographics combine imagery and text, they have the rhetorical power of words and pictures in communication.

In comparison with graphs, which are limited to quantitative information, infographics have a communicative advantage because of their ability to combine imagery and text conveying both quantitative and qualitative disclosures. The nature of disclosure (quantitative versus qualitative) offers an insight into the communicative power of graphs versus infographics. Quantitative disclosures are widely considered in the CSR literature as providing high quality information because they are viewed as objective and informative (Al-Tuwaijri et al., 2004; Cho & Patten, 2007). Accordingly, graphs are less likely to play a rhetorical role in CSR because quantitative disclosures have a lessor capacity to create an impression of responsible sustainability behaviour when compared to qualitative disclosures.

Table 4.1 Use of infographics in sustainability reports

Panel A: Infographics utilisation by companies	Number	Percentage	Number of infographics
Company that used infographics	*131*	*89.1*	*2234*
Company that did not use infographics	16	10.9	
Total	147	100.0	
Average per SR (*n*= 147)	15.20		
Average per SR for those used infographics (*n*= 131)	*17.05*		
Panel B: Distribution of total infographics by CSR area			
General	773	34.6	
Economic	185	8.3	
Social	*565*	25.3	
Environmental	*711*	31.8	
Total	2234	100	

Infographics employ materials and texts that use imagery to facilitate the presentation of qualitative disclosures, more consistent with the rhetorical role in CSR reporting because they are subjective. The qualitative disclosures of infographics (facilitated by imagery and text) can be used to create subjective messages relating to an organisation's social and environmental responsibility. Thus, infographics have a more powerful rhetorical role to play in CSR reporting than graphs, suggesting that recognition of this power by CSR preparers accounts for the popularity of infographics.

As indicated in Panel B of Table 4.1, the high number of environmental infographics suggests an opportunistic use of the power of infographics for green-washing reporting practices. Increasing global awareness of environmental concerns is an incentive for companies to present a positive environmental image. Previous studies have found that companies report positive disclosure even though their environmental impact is negative (Deegan & Gordon, 1996; Deegan & Rankin, 1996). To this end, the rhetorical power of infographics can be used successfully for green-washing purposes. Zillmann et al. (1999) noted that a mixture of image and text biases an audience toward messages suggested by accompanying visual information. Infographics, hence, may be used by organisations to influence their target audience in disclosing CSR information via abstract images that suggest greater environmental responsibility than actually occurs. That is, because of their rhetorical power, infographics supplement green-washing practice in CSR reporting, offering a potential explanation for high infographics utilisation in environmental aspects.

The distribution of infographics across industrial sectors, as presented in Table 4.2, reveals marked utilisation disparity. Environmentally sensitive industries were most likely to utilise infographics in their SRs. These industries are defined as those with greater environmental exposures such as oil exploration, chemical, petroleum, mining. Overall, environmentally

sensitive industries produced 803 (63%) infographics, whereas socially sensitive industries produced 473 (37%) infographics. In terms of industry, environmentally sensitive industries, such as computers and technology led the way with 174 (13.6%) infographics, followed by energy with 157 (12.3%) infographics, and construction and real estate with 119 (9.3%), whereas, in terms of socially sensitive industries, financial services and consumer staples led with 115 (9%) and 109 (8.5%) respectively.

The dominant use of infographics for environmentally sensitive industries can be explained by the sociological perspective, particularly, legitimacy theory, which suggests that industries face enormous pressures from society to demonstrate their social and environmental responsibility and hence are likely to make symbolic disclosures. Symbolic practices occur when a company makes disclosure, which lacks substance, that result in a favourable assessment by stakeholders (Hrasky, 2012). As environmentally sensitive industries have been criticised by stakeholders for their environmental impacts and being heavy polluters (Jänicke et al., 1997), companies from these industries are deeply concerned with their environmental image. If a symbolic approach is adopted, then the rhetorical power of infographics is often drawn upon to persuade stakeholders that society's norms and expectations are met.

For example, the prevalence of infographics within the financial services and consumer staples industries may also be attributed to the incentive to persuade as well as to inform society about social responsibility. Since the recent financial crisis, the banking industry has been concerned with restoring society's financial confidence and emphasising its contributions to society (Lentner et al., 2015). The food and beverage industry is mainly concerned with maintaining a sustainable food supply as food demand increases and with improving operational impacts such as inefficient packaging and water use (Hartmann, 2011). The tobacco industry is concerned with its poor image due to the damaging health effects of its products (Palazzo & Richter,

2005). Clearly, these industries strive to demonstrate corporate citizenship, hence infographics are harnessed as a persuasive tool.

Table 4.2 Infographics in social and environmental areas by industries

Industries	Number by Industry	Percentage
High-environmental sensitive:		
Computers/Technology Hardware Manufacturing	*174*	*13.6*
Energy/ Energy Utilities	*157*	*12.3*
Construction/Real Estate	*119*	*9.3*
Chemicals Manufacturing	84	6.6
Mining	64	5
Automotive/ Equipment Manufacturing	63	4.9
Other -Manufacturing	42	3.3
Healthcare Products Manufacturing	41	3.2
Metals Products Manufacturing	35	2.7
Household and Personal Products Manufacturing	24	1.9
Total	*803*	*63*
High-social sensitive:		
Financial Services	*115*	*9*
Food/Beverage/Tobacco	*109*	8.5
Commercial Services	59	4.6
Other-Services	58	4.5
Retailers	44	3.4
Aviation/Railroad Services	43	3.4
Telecommunications/Media	27	2.1
Healthcare Services	18	1.4
Total	*473*	*37*
Overall total	1276	100

4.1.2   Infographics features

The features of infographics are analysed and presented in Table 4.3. Panel A shows that the annotated chart comprised the largest category of infographics. There were 935 (73.3%) annotated chart infographics, followed by 308 (24.1%) partitioned poster infographics. The higher usage of these types suggests that there is a tendency to move away from traditional graphs or charts to infographics in CSR reporting.

Table 4.3 Features of infographics in social and environmental areas

Panel A: Infographics types	Number	Percentage
Annotated chart/map	*935*	*73.3*
Partitioned poster	*308*	*24.1*
Flow chart	29	2.3
Comic strip	4	0.3
Total	1276	100
Panel B: Infographics visual component types		
Photos/Pictures	40	3.1
Illustrations	*240*	*18.8*
Graphs	*601*	*47.1*
Shapes	*300*	*23.5*
Not applicable	95	7.4
Total	1276	100
Panel C: Infographics narrative component types		
Annotations	*1266*	*99.2*
Accompanying Article	2	0.2
Not applicable	8	0.6
Total	1276	100

The widespread use of the annotated chart suggests it is considered very suitable for CSR. As quantified disclosure is needed to demonstrate the effects of sustainability efforts, the annotated chart infographic incorporates the perceived quantitative reliability of graphs to facilitate the communication of numerical data and to present time trends. However, in comparison with graphs, the annotated chart infographic also incorporates non-numerical information in the form of explanations. Hence, this type of infographic is a widely adopted alternative to traditional graphs in CSR.

Partitioned poster infographics are also well-suited for the CSR context. In comparison with graphs, this type of infographic provides a multi-view visualisation that can be used to communicate qualitative disclosure. Relevant photographs can be incorporated. Further, the

partitioned poster infographic is useful for complex disclosure (e.g., environmental impacts) by visually presenting such complexity in an easy to understand context. One potential reason for the relatively lower use of this type of infographic compared to the annotated chart is that the latter is more consistent with business conventions, particularly the graph component. In financial reporting, graphs have a long history for presenting performance indicators such as sales and earnings per share, over time (Beattie & Jones, 2008).

However, the use of the above types of infographics has potential IM implications in CSR reports. Annotated chart infographics can be an effective IM tool by emphasising favourable performance outcomes while concealing others. Partitioned poster infographics are powerful in providing an impression of greater than actual social and environmental responsibility.

Panel B of Table 4.3 reports the visual components of infographics in our sample. The most popular component among the analysed infographics is graphs with 601 (47.1%) cases, followed by shapes with 300 (23.5%) and illustrations with 240 (18.8%) cases. The popularity of standard graphs is anticipated, as such formats were built within the infographics to report statistical data about sustainability performance. The next most popular infographics component is shapes, which can be used to draw attention to the most important numbers or key sustainability performance trends. Infographics design uses squares or circles to frame selected achievement numbers, to emphasise this information. The illustrations are also popular elements of infographics that visually depict sustainability performance. Illustrations, such as icons and symbols, are powerful materials to envision specific sustainability activities undertaken by a company and are aimed at enhancing engagement with CSR users.

Panel C Table 4.3 presents the narrative components of infographics in our sample. The vast majority of analysed infographics is incorporated with annotations elements (1266, 99.2%, cases are documented). This is consistent with the view that infographics provide a unique

opportunity for companies to combine texts and visuals in their reporting. In this regard, the annotations elements can be used to draw attention to key sustainability accomplishments and initiatives, as well as managers' quotes.

4.1.3   Sustainability performance indicators

In addition to the holistic documentation of infographics, performance indicators presented within the infographics were analysed. Table 4.4 shows the distribution of documented performance indicators across only social and environmental sustainability areas. There are 1,717 performance indicators in total with an average of 13 indicators per SR. The average amount of social and environmental disclosures found in this study is higher than the average number of social and environmental indicators graphed in the SRs examined in Cho et al. (2012b). Further, Table 4.4 shows a greater focus in disclosing environmental indicators with 968 (56%) cases.

Table 4.4 Sustainability performance indicators by CSR areas

CSR area	Number	Percentage
Social	749	44
Environmental	*968*	*56*
Total	*1717*	100
Average per SR (*n*= 147)	11.68	
Average per SR for those companies that used infographics (*n*= 131)	*13.11*	

The growing number of performance indicators in our sample can be explained by the recent role of GRI in standardising CSR practice. The GRI guidelines have helped companies to understand and communicate their impact in relation to sustainability and, therefore, encouraged companies to disclose more indicators in relation to their sustainability activities. Further, the greater focus on environmental performance indicators is likely the result of stakeholder influence. The growing recognition of climate change and global warming impacts

increases stakeholders' awareness of the corporate risks associated with these environmental issues. Consequently, stakeholders are demanding more corporate disclosure on how societal concerns about environmental issues can be addressed. Global regulators are also imposing more requirements and rules to manage the climate change issue. This is reflected in what is termed as social contract which suggested by legitimacy theory. It emphases the importance of expectations the society has about how company should operate to ensure its future survive (Rankin et al., 2012, p. 142). These expectations can be in form of environmental regulations or media attention devoted to corporate misconduct. Hence, companies are most likely to consider these environmental concerns to maintain their social contract and manage their reputational risk.

The distribution of sustainability performance indicators across industries is presented in Table 4.5. Environmentally sensitive industries were most likely to disclose more performance indicators compare to other industries by utilised infographics. Overall, environmentally sensitive industries disclosed 1,084 (63%) performance inductors, whereas socially sensitive industries disclosed 633 (37%) performance indicators. The computers and technology industry ranked the highest, with 243 (14.2%) performance indicators, followed by energy with 197 (11.5%). These industries are facing greater pressures from regulators and stakeholders to manage their environmental impacts (Jänicke et al., 1997; Cho & Patten, 2007; Agarwal et al., 2013), and hence they are expected to voluntary inform society about their sustainability activities. In this regard, voluntary CSR disclosure is considered as legitimacy tool to maintain social expectations (Hopwood, 2009).

As shown in Table 4.6, social and environmental performance indicators reported within the infographics are listed using GRI classifications. Although the infographics in our sample covered a wide range of performance indicators, it appears that companies tend to emphasise

their environmental contribution. Our documentation revealed that the key reported performance indicators within the environmental area are air emissions with 245 (14.3%) cases, following by energy usage with 175 (10.2%) cases, water consumption with 150 (8.7%) and waste outputs with 149 (8.7%).

These results can be explained by legitimacy theory, which argues that companies subject to high environmental scrutiny are expected to use CSR. Given that 63% of our sample is environmentally sensitive, environmental concerns such as emissions, energy, water and waste are priority disclosures for these companies. Furthermore, the extensive environmental disclosure can be attributed to mandatory environmental rules and regulations enforced by US authorities. A GHG emissions regulation, developed by the US Environment Protection Agency, requires large emitting facilities and suppliers of fossil fuels and industrial gases to provide information about GHG emissions (EPA, 2009). Further, the US Securities and Exchange Commission (SEC) has imposed disclosure requirements in SEC filings on climate change and environmental obligations (Fornaro, 2011). Hence, environmental disclosure, at least in the US, seems to be driven by regulation and enforcement.

In relation to social disclosures, companies are clearly focused on disclosing labour practices and decent work information within their infographics. This is reflected by 180 (10.5%) indicators considering gender remuneration equality and 133 (7.7%) considering workplace diversity and equal opportunity. These have recently become topical in organisations and are frequently now regulated by law. In the US context, the US Equal Employment Opportunity Commission (EEOC) enforces a regulation against employment discrimination including diversity, equal compensation, ethnicity, age, religion and gender identity (EEOC, 2017). Employers are required by law to provide relevant information and a self-assessment report.

Hence, companies are expected to demonstrate their compliance with laws and disclose information about workplace equality.

Table 4.5 Distribution of performance indicators by industries

Industries	Number by Industry	Percentage
High-environmental sensitive:		
Computers/Technology Hardware Manufacturing	*243*	*14.2*
Energy/ Energy Utilities	*197*	*11.5*
Construction/Real Estate	*155*	*9*
Chemicals Manufacturing	128	7.5
Automotive/ Equipment Manufacturing	87	5.1
Mining	83	4.8
Other – Manufacturing	61	3.6
Healthcare Products Manufacturing	55	3.2
Metals Products Manufacturing	44	2.6
Household and Personal Products Manufacturing	31	1.8
Total	*1084*	*63*
High-social sensitive:		
Food/Beverage/Tobacco	167	9.7
Financial Services	158	9.2
Other-Services	70	4.1
Retailers	70	4.1
Commercial Services	61	3.6
Aviation/Railroad Services	43	2.5
Telecommunications/Media	36	2.1
Healthcare Services	28	1.6
Total	*633*	*37*
Overall total	1717	100

Table 4.6 Distribution of CSR aspects in social and environmental areas

CSR aspects	Number by Industry	Percentage
Environmental area:		
Emissions	*245*	*14.3*
Energy	*175*	*10.2*
Water	*150*	*8.7*
Effluents and Waste	*149*	*8.7*
Overall	97	5.6
Materials	82	4.8
Biodiversity	18	1
Products and Services	17	1
Transport	14	0.8
Compliance	14	0.3
Supplier Environmental Assessment	4	0.2
Environmental Grievance Mechanisms	3	0.2
Total	*968*	*56*
Social area:		
Equal Remuneration for Women and Men	*180*	*10.5*
Diversity and Equal Opportunity	*133*	*7.7*
Supplier Assessment for Labour Practices	129	7.5
Local Communities	107	6.2
Training and Education	79	4.6
Human Rights Grievance Mechanisms	24	1.4
Supplier Assessment for Impacts on Society	20	1.2
Customer Health and Safety	16	0.9
Assessment	15	0.9
Labour Practices Grievance Mechanisms	11	0.6
Grievance Mechanisms for Impacts on Society	11	0.6
Product and Service Labelling	9	0.5
Investment	4	0.2
Security Practices	4	0.2
Anti-corruption	4	0.2
Other aspects	3	0.3
Total	*749*	*44*
Overall total	1717	100

Highlighting techniques for presenting performance indicators within the infographics are documented in Table 4.7. Visual highlighting techniques are used more than narrative highlighting techniques in our sample. A total of 1,411 (82%) cases are mainly highlighted by

the inclusion of illustrations, graphs/charts and shapes, whereas 872 (50.79%) cases are highlighted by increasing the font size and appearance of texts. Further, we find that companies are visually highlighting environmental performance indicators at a greater extent than social ones. A total of 841 (48.98%) cases in relation to the environment were highlighted by visual materials compared to 633 (36.86%) relating to social disclosure.

Table 4.7 Classification of highlighting techniques by CSR area

		CSR area					
		Social	%	Environmental	%	Total	%
Visual highlighting	Photos/Pictures	*34*	4.54	*29*	3.00	63	3.67
	Illustrations	*132*	17.62	*228*	23.55	*360*	*20.97*
	graphs/charts	*250*	33.38	*319*	32.95	*569*	*33.14*
	Shapes	*217*	28.97	*265*	27.38	*482*	*28.07*
	Not highlighted	116	15.49	127	13.12	243	14.15
Total		749	100	968	100	1717	100
Narrative highlighting	Sizeable or bold font	366	48.87	506	52.27	*872*	*50.79*
	Colourful font	30	4.01	11	1.14	41	2.39
	Both 1 and 2	55	7.34	83	8.57	138	8.04
	Not highlighted	298	39.79	368	38.02	666	38.79
Total		749	100	968	100	1717	100

As mentioned earlier, the high implementation of visual highlighting is consistent with the view that the rhetorical power of infographics is supported by visual materials. These visuals can be an effective tool to distinguish items and to suggest a reading path for viewers, that is, viewers focus on these targets first. Hence, the power of visuals can be one of the major reasons visual materials are used widely in infographics for highlighting purposes. As our findings show that companies are most likely to disclose environmental indicators, they are expected to utilise the power of visual materials within infographics to emphasise aspects of their environmental performance. This is reflected in our finding that visual highlighting is applied more in environmental rather than social disclosure.

Benchmark preference across CSR areas is documented in Table 4.8. Surprisingly, companies in our sample do not tend to make performance comparisons. As shown in Table 4.8, a total of 1,129 (65.8%) performance indicators were presented without any comparison. Reporting only current-year achievements seems to be the usual practice in CSR reporting. One plausible explanation for this was suggested by Jones (2011): the newness of CSR disclosure has resulted in a lack of comparative data and settled reporting practice, hence, a lack of benchmarking is expected. However, given that the SRs analysed by Jones (2011) are related to 2005 sustainability activities, it is expected that there is now sufficient data over ten years to enrich the available information with comparative data. Further, our general observation of the reporting history of companies in our sample suggests that these companies frequently reported their sustainability activities for the past three years. Therefore, reporting a single year performance may suggest opportunistic reporting behaviour aimed at hiding unfavourable performance trends. Companies may consider providing multiple year performance comparisons when these portray them in a favourable light and not doing so otherwise. Hence, this potential reporting behaviour can be further investigated.

Table 4.8 Classification of benchmark preference type by CSR area

		CSR area					
		Social	%	Environmental	%	Total	%
Benchmark type	Internal referent	198	26.4	370	38.2	*568*	*33.1*
	External referent	7	0.9	13	1.3	*20*	*1.2*
	No comparison referent	544	72.6	585	60.4	*1129*	*65.8*
Total		749	100	968	100	1717	100
Internal referent	Single previous year	43	21.4	67	18.3	110	19.4
	Multiple previous years	158	78.6	300	81.7	*458*	*80.6*
Total		201	100	367	100	568	100
External referent	Industry average	7	100	13	100	20	100

Further, companies preferred to apply an internal benchmark. A total of 568 (33.1%) cases are classified as an internal benchmark of internally generated data, whereas only 20 (1.2%) cases are classified as an external benchmark. These results suggest companies do not benchmark their performance against a peer group, although industry benchmarking data and services in the US are recognised, for example, the Dow Jones Sustainability Indices (DJSI). This may be because external benchmarking is an emerging practice in CSR reporting. External benchmarking may be an unwanted comparison type, as it may potentially portray companies in a negative light. However, external benchmarking has advantages as it provides an opportunity to assess whether a company is preforming well against its industry peers (Short & Palmer, 2003).

Finally, documented internal referent cases revealed a tendency to provide a comparison with multiple previous years (458 cases, 80.6%). Adopting multiple years as a referent can be an indication that companies tend to cover longer data trends with internal benchmarking as this comparison type is most likely to present performance information in a favourable view. On the other hand, external referents in the CSR context are limited to industry averages, suggesting no external benchmark norm as in financial reporting in which peer group data is used for comparison.

Overall, companies widely utilise infographics in their SRs. In particular, infographics are utilised more in relation to environmental aspects and to a greater extent in environmentally sensitive industries. Further, infographics utilisation is dominated by the annotated chart and partitioned poster infographics types, and the most popular infographics components are graphs and annotations elements. However, performance indicators analysis shows a greater focus of environmental indicators in documented infographics, especially air emissions, energy usage and water consumption, whereas social indicators are mostly related to labour practices and

decent work. These findings suggest that the communicative power of infographics is recognised and employed to serve companies' interests. However, we anticipate that the inappropriate use of infographics in the CSR context may offer an IM opportunity.

4.2   Impression management evidence

The second objective of our investigation was to determine whether companies use infographics as IM tools. We hypothesised three types of IM manipulations. First, we examined selectivity manipulation considering management behaviour based on the choice of performance indicators included in the infographics. As shown in Table 4.9, there is clear evidence of selectivity manipulation reflected in the selection of sustainability performance indicators within generated infographics. Overall, the number of performance indicators with a favourable trend (644 cases) is more than the number of those with an unfavourable trend (53 cases). Approximately, 38% of total performance indicators (1,717 cases) are favourably selected compared to only 3% of unfavourable indicators, and 59% are presented with no observable trend.

An independent-sample t-test was conducted to evaluate the hypotheses that the number of favourable social and environmental performance indicators are higher than unfavourable indicators. The mean of favourable indicators ($N = 95$, $M = 6.77$, $SD = 6.4$) was significantly different at the 0.01 level ($t = 3.74$, $df = 119$, $p = .000$) from unfavourable indicators ($N = 26$, $M = 2.03$, $SD = 1.37$). Our prediction with Hypothesis 1, hence, is supported. This result confirms the view that companies may present more favourable sustainability performance indicators using infographics to impress CSR users. A plausible explanation is that these companies have an incentive to present their performance in the best possible light due to stakeholder pressures.

As suggested by the sociological perspective, companies in our sample seem to be under pressure of commitment to social and environmental concerns, which motivates a bias toward

favourable performance indicators. It is likely that these companies consider the power of infographics in telling a favourable story about their social and environmental responsibility in order to enhance their reputation. Consistent with this view, 70% of total favourable performance indicators in our sample represent environmental indicators, suggesting that companies care more about their environmental than social image.

Table 4.9 Analysis of favourable and unfavourable of performance indicators

CSR area	Indicators natural based on performance trend							
	Favourable	%	Unfavourable	%	No trend	%	Total	%
Social	193	**30.0**	11	20.8	545	53.4	749	43.6
Environmental	451	**70.0**	42	79.2	475	46.6	968	56.4
Total	644	100	53	100	1020	100	1717	100

Second, we examined performance comparison manipulation considering management bias regarding the choice of benchmarks – either an internal or an external referent. Management is expected to use an internal referent (e.g., the previous year's sales) to demonstrate a favourable performance trend, although an external referent (e.g., the industry average) can be an effective benchmark to evaluate corporate performance. As presented in Table 4.10, all 568 instances of internal benchmarks were analysed based on the trend performance indicators' favourable and unfavourable trends. A total of 455 cases used internal referents with favourable performance indicators compared to only 46 cases with unfavourable ones. This is further evidence of IM behaviour regarding management preference benchmark types.

An independent-sample t-test was conducted to evaluate the hypotheses that the number of favourable social and environmental performance indicators compared using internal referents are higher than unfavourable indicators. The mean of favourable-internal referents ($N = 85$, $M = 5.35$, $SD = 4.8$) was significantly different at the 0.01 level ($t = 3.45$, $df = 107$, $p = .001$) from unfavourable indicators ($N = 24$, $M = 1.91$, $SD = 1.44$). Thus, our prediction with Hypothesis 2 is supported. This is consistent with our expectation that companies utilise infographics to

present sustainability performance comparisons in the most positive light using internal referents, enhancing the comparison of favourable performance indicators.

Table 4.10 Analysis of performance indicators by benchmark types

CSR area	Benchmarks types	Indicators natural based on performance trend							
		Favourable	%	Unfavourable	%	No trend	%	Total	%
Social	Internal referent	147	97.4	10	100	41	93.2	198	96.6
	External referent	4	2.6	0	-	3	6.8	7	3.4
	Total	151	100	10	100	44	100	205	100.0
Environmental	Internal referent	308	96.6	36	100	26	92.9	370	96.6
	External referent	11	3.4	0	-	2	7.1	13	3.4
	Total	319	100	36	100	28	100	383	100.0
Overall	Internal referent	*455*	96.8	*46*	100	67	93.1	*568*	96.6
	External referent	15	3.2	0	-	5	6.9	20	3.4
	Total	470	100	46	100	72	100	*588*	100.0

Further, favourable-internal benchmarks represent 544 cases (77%) of both benchmark types (588 cases), indicating a self-serving bias in benchmarking choices. Adopting the sociological perspective, this result suggests that management seems to avoid making any comparison using an external referent to enhance performance disclosure and thereby its reputation. This external benchmark type may offer more insights into companies' competitive positioning by evaluating their performance in relation to the marketplace (Short & Palmer, 2003), however, it can be a risky choice when a company's performance is weak. Therefore, internal benchmarking is a favourable choice that protects companies from being negatively evaluated against their peers and thereby creating the impression of improving their sustainability performance.

Finally, we examined visual emphasis manipulation considering management bias in emphasising its performance achievements by employing visual effects – either image effects (e.g., icons, cartoons and drawings) or text effects (e.g., colouring and zooming). It is

anticipated that management emphasises its favourable performance outcomes by highlighting performance indicators in infographics using image and text effects. Table 4.11 reports our overall analysis of favourable and unfavourable performance indicators highlighted by visual materials. Clearly, the total number of favourable performance indicators (595 cases) is higher than unfavourable performance indicators (46 cases). This suggests that companies emphasised their favourable outcomes, particularly using graphs to emphasise environmental performance in 224 cases compared to only 29 social cases. This is further evidence of IM behaviour regarding visual emphasis strategy.

Table 4.11 Analysis of performance indictors highlighted by visuals

CSR area	Visual highlighting	Indicators natural based on performance trend							
		Favourable	%	Unfavourable	%	No trend	%	Total	%
Social	Photos/Pictures	10	5.2	0	-	24	4.4	34	4.5
	Illustrations	18	9.3	1	9.1	113	20.7	132	17.6
	graphs/charts	122	63.2	9	81.8	119	21.8	250	33.4
	Shapes	29	15.0	0	-	188	34.5	217	29.0
	No highlighting	14	7.3	1	9.1	101	18.5	116	15.5
	Total	193	100	11	100	545	100	749	100
Environmental	Photos/Pictures	18	4.0	1	2.4	10	2.1	29	3.0
	Illustrations	75	16.6	3	7.1	150	31.6	228	23.6
	graphs/charts	*224*	49.7	*29*	69.0	66	13.9	319	33.0
	Shapes	99	22.0	3	7.1	163	34.3	265	27.4
	No highlighting	35	7.8	6	14.3	86	18.1	127	13.1
	Total	451	100	42	100	475	100	968	100
Overall	Photos/Pictures	*28*	4.3	*1*	1.9	34	3.3	63	3.7
	Illustrations	*93*	14.4	*4*	7.5	263	25.8	360	21.0
	graphs/charts	*346*	53.7	*38*	71.7	185	18.1	569	33.1
	Shapes	*128*	19.9	*3*	5.7	351	34.4	482	28.1
	No highlighting	49	7.6	7	13.2	187	18.3	243	14.2
	Total	644	100	53	100	1020	100	1717	100

An independent-sample t-test indicates that the mean of favourable-visual highlighted indicators ($N = 84$, $M = 7.08$, $SD = 6.7$) was significantly different at the 0.01 level ($t = 3.46$, *df*

=104, p =.001) from unfavourable indicators (N = 22, M = 2.09, SD = 1.37). Thus, our prediction with Hypothesis 3(a) is supported. However, this result was clearly driven by the different significance of favourable and unfavourable performance indicators highlighted by the inclusion of graphs or charts (t =2.49, df =85, p =.000). This can be explained by the fact that the presentational convention in corporate reporting favours graphs, which are suitable for presenting performance trends over time.

Adopting a sociological perspective, companies in our sample seemed to engage in symbolic disclosure that contributes to the corporate image construction of being socially and environmentally responsible. It can be assumed that companies in our sample are under pressure from society to demonstrate their environmental responsibility as infographics are utilised more by environmentally sensitive industries and for environmental disclosure. Hence, green-washing is expected by these companies through their visual emphasis strategy. The rhetorical role of infographics supports the sharing of subjective concepts of care and commitment to society. Thus, the rhetorical power of infographics may support biased reporting.

Table 4.12 reports our overall analysis of favourable and unfavourable performance indicators highlighted by text effects. Companies highlighted their favourable outcomes to a greater extent than unfavourable outcomes. A total of 375 favourable performance indicators were highlighted by applying text effects compared to only 31 cases with unfavourable indicators. We found that companies apply size and bold font effects to emphasise favourable environmental performance indicators (249) more than unfavourable indicators (21), suggesting that such highlighting tactics are effective for emphasis purposes. Alternatively, we found that colourful font is rarely used for emphasis. The majority of infographics in our

sample employ a unified colour, making it hard to distinguish specific disclosures. This is further evidence of IM behaviour in relation to narrative emphasis strategy.

An independent-sample *t*-test indicates that the mean of favourable-narrative highlighted indicators (*M* = 7.07, *SD* = 6.96) was significantly different at the 0.05 level (*t* =2.57, *df* =65, *p* =.012) from unfavourable indicators (*M* = 2.21, *SD* = 1.67). Thus, Hypothesis 3(b) is strongly supported. However, this result was also clearly driven by the different significance of favourable and unfavourable performance indicators highlighted by sizeable or bold font (*t* =2.75, *df* =53, *p* =.008).

In addition to visual emphasis, companies may also employ text effects to emphasise favourable performance. As shown earlier, infographics are employed for narrative emphasis by mainly applying size and bold font effects. This highlighting mechanism has more power to attract audience attention than colour highlighting. As suggested in the media psychology literature, a reader enters a written document by initially looking at the larger object and then considers reading remaining texts (Zillmann et al., 2001). The lager object can be a picture or a large font size as in our case. Hence, the visual power of sizeable and bold font can be used for rhetorical IM purposes, which justifies the higher application of it within the infographics.

Overall, there was evidence of the implementation of IMSs by utilising infographics in CSR reporting. Infographics are employed for presenting biased, selective, comparative and emphasised sustainability performance indicators. Companies seem to use choose visual and text effects in infographics to communicate a more favourable view of social and environmental performance. This is consistent with the literature on self-serving behaviour in the financial reporting context in which favourable financial performance is highly stressed (Courtis, 2004b; Guillamon-Saorin et al., 2012). However, given the power of infographics, self-serving reporting practice in the CSR context is heightened. By combining images with

texts, infographics can be used to establish a visual rhetoric that boosts their narrative content. Hence, infographics can be used as a visual rhetorical tool to emphasise messages of being socially and environmental sustainable using only favourable performance indicators.

Table 4.12 Analysis of performance indicators highlighted by text effects

CSR area	Narrative highlighting	Indicators natural based on performance trend							
		Favourable	%	Unfavourable	%	No trend	%	Total	%
Social	Sizeable or bold font	103	53.4	7	63.6	256	47.0	366	48.9
	Colourful font	0	-	0	-	30	5.5	30	4.0
	Both 1 and 2	4	2.1	0	-	51	9.4	55	7.3
	No highlighting	86	44.6	4	36.4	208	38.2	298	39.8
	Total	193	100	11	100	545	100	749	100
Environmental	Sizeable or bold font	*249*	55.2	*21*	50.0	236	49.7	506	52.3
	Colourful font	*1*	0.2	*2*	4.8	8	1.7	11	1.1
	Both 1 and 2	18	4.0	1	2.4	64	13.5	83	8.6
	No highlighting	183	40.6	18	42.9	167	35.2	368	38.0
	Total	451	100	42	100	475	100	968	100
Overall	Sizeable or bold font	*352*	54.7	*28*	52.8	492	48.2	872	50.8
	Colourful font	*1*	0.2	*2*	3.8	38	3.7	41	2.4
	Both 1 and 2	*22*	3.4	*1*	1.9	115	11.3	138	8.0
	No highlighting	269	41.8	22	41.5	375	36.8	666	38.8
	Total	644	100	53	100	1020	100	1717	100

4.3   IM and CSR disclosure association

The third and final objective of our investigation was to determine whether the levels of IMSs by using infographics in CSR are associated with the scores of social and environmental sustainability disclosures. As shown in Tables 4.13 and 4.14, hierarchical multiple regression is used to determine the influence of control variables in a sequential way on our main association prediction. Hence, there are three models under each IMS, Model 1 shows the association between the variable of interest and dependent variable individually while Model 2 and Model 3 include company size and industry membership sensitivity progressively to see

if they also play a role in determining the level of IM. Further, by providing results of the three models, the contribution of each variable to overall prediction of association between IMSs and sustainability disclosure can be observed through changes in *coefficients*, *p*-value and R^2 across the three models. This holistic assessment provides more insights into our regression analysis results.

We begin by examining this association in the social dimension, reflected in Hypothesis 4(a). As shown in Table 4.13, the results of regression models for the relation between selectivity manipulation and social disclosure are located in the first column. Model 3 reveals that selectivity and *SODISC* are positively associated at 10% significance level (*Coeff*.= 0.272, at *p* < 0.10). *Coefficients* of *SODISC* slightly increased across models by adding control variables, but *p-values* are increased which leads to a weak significance relation. Model 3 also reveals that *SIZE* and *SOSEIN* are not associated with the level of selectivity. Furthermore, R^2 suggests a low explanatory power between regression variables. It is decreased from 0.054 to 0.029 across models. Overall, the results provide a weak evidence that firms received higher social disclosure score are engaged in a higher level of IM measured by selectivity.

The results of regression models for the relation between performance comparison manipulation and social disclosure are located in the second column of Table 4.13. Model 3 reveals that comparison manipulation and *SODISC* are not associated (*Coeff.* = 0.208, at *p* > 0.10). A plausible explanation is that comparison manipulation matrix does not capture the IM level. It may also sample size of this regression model is not enough. Only 43 cases that have social disclosure scores and IM levels available were included in this regression analysis.

The third column of Table 4.13 reports the results of regression models for the relation between visual emphasis manipulation and social disclosure. Model 3 reveals that visual emphasis and *SODISC* are positively associated at 5% significance level (*Coeff.* = 0.315, at *p* < 0.05).

Coefficients of *SODISC* slightly increased across models by adding control variables reflecting an enhancement in relation between visual emphasis and *SODISC*. However, *p-values* are increased which leads to a weak significance relation in our prediction. R^2 also suggests a low explanatory power between regression variables. It is decreased from 0.070 to 0.054 across models. Overall, the results provide fair evidence that an increase in social disclosure is associated with an increase in IM level measured by visual emphasis.

The results of regression models for the relation between text emphasis manipulation and social disclosure is located in the fourth column of Table 4.13. Model 3 reveals that there is no association between text emphasis manipulation and *SODISC* (*Coeff.* = 0.281, at $p > 0.10$). This insignificant result can be explained by lack of measurements quality and sample size. Similarly, the inclusion of control variables provides no positive impact on our main prediction.

Overall, in regard to the social aspect of CSR, social disclosure scores are positively and significantly associated with selectivity (at $p < 0.10$) and visual emphasis (at $p < 0.05$) strategies. The results suggest that the higher the level of social disclosure provided by companies, the more likely that companies present favourable information selectively, and highlighted favourable information visually within social infographics. Accordingly, Hypothesis 4(a) is supported in relation to selectivity and visual emphasis strategies. Although companies in our sample include more comparisons and highlighted text for favourable social indicators than for unfavourable, no significant relation at conventional levels is found with performance comparison and text emphasis strategies. Potential explanations are that our IM measurements for those IMSs do not capture the level of manipulation and shortage of cases number in the regression.

We then examined the association between the levels of IMSs by using infographics in CSR reporting and the scores of environmental sustainability disclosure, reflected in Hypothesis

4(b). Table 4.14 reports the results of regression analysis of this association, controlling for company size and industry environment sensitivity effects.

The results of regression models for the relation between selectivity manipulation and environmental disclosure are located in the first column of Table 4.14. Model 3 reveals that selectivity and *ENDISC* are positively and significantly associated at 10% significance level (*Coeff.* = 0.216, at $p < 0.10$). *Coefficients* of *ENDISC* decreased across models by adding control variables indicating that these variables weaken the association between selectivity and *ENDISC*. Further, *p-values* are increased which leads to a weak significance relationship of our predication. Model 3 also reveals that the *Coefficients* of *SIZE* and *SOSEIN* are positive but not significant. R^2 suggests a low explanatory power between regression variables. It is decreased from 0.047 to 0.040 across. Overall, the results provide a weak evidence that firms received higher environmental disclosure score are engaged in a higher level of IM measured by selectivity.

The results of regression models for the relation between performance comparison manipulation and environmental disclosure are located in the second column of Table 4.14. Model 3 reveals that comparison manipulation and *ENDISC* are positively and significantly associated at 10% significance level (*Coeff.* = 0.0217, at $p < 0.10$). *Coefficients* of *ENDISC* dramatically decreased across models by adding control variables, but *p-values* are increased which leads to a weak significance relation. Model 3 also reveals that *SIZE* and *SOSEIN* are not associated with the level of performance comparison manipulation. Further, R^2 suggests a low explanatory power between regression variables. Overall, the results provide a weak evidence that firms received higher environmental disclosure score are engaged in a higher level of IM measured by performance comparison manipulation.

The results of regression models for the relation between visual emphasis manipulation and environmental disclosure are located in the third column of Table 4.14. Model 3 reveals that visual emphasis and *ENDISC* are positively and significantly associated at 5% significance level (*Coeff.* = 0.263, at $p < 0.05$). *Coefficients* of *ENDISC* decreased across models by adding control variables indicating that these variables weaken the association between visual emphasis and *ENDISC*. Further, *p-values* are increased which leads to a weak significance relationship of our predication. Model 3 also reveals that the *Coefficients* of *SIZE* and *SOSEIN* are positive but not significant. Further, R^2 suggests a low explanatory power between regression variables. It is decreased from 0.074 to 0.065 across models. Overall, the results provide fair evidence that an increase in environmental disclosure is associated with an increase in IM level measured by visual emphasis.

The results of regression models for the relation between text emphasis manipulation and environmental disclosure are located in the fourth column of Table 4.14. Model 3 reveals that text emphasis manipulation and *ENDISC* are not associated (*Coeff.* = 0.152, at $p > 0.10$). This insignificant result can be explained by lack of measurements quality and sample size. The inclusion of control variables in models 2 and 3 has no positive impact on our main prediction.

Overall, environmental disclosure scores are positively and significantly associated with selectivity and performance comparison strategies (both at $p < 0.10$) and visual emphasis (at $p < 0.05$). The results provide evidence that the higher the level of environmental disclosure provided by companies, the more likely that companies present favourable indicators selectively, compare indicators in favourable manner and visually highlighted favourable indicators within environmental infographics. Accordingly, Hypothesis 4(b) is supported in relation to selectivity, performance comparison and visual emphasis strategies. The lack of

association evidence with text emphasis strategy also suggests that matrix does not capture the level of manipulation and small sample size in in the regression model.

Overall, although our regression analysis models provide a relatively low R^2, our prediction of the relation between IM and social and environmental sustainability disclosures is confirmed. As noted by Cho et al. (2012b), the lack of explanatory power of R^2 can be explained by the suggestion that the decision to produce CSR reports is itself an IM strategy, hence organisational factors (e.g., size and industry) play a small role in influencing specific implemented IMSs. Consistent with this argument, our control variables clearly provide little support for our regression analysis reported in "both Model 1 and 2" across Tables 4.13 and 4.14. However, evidence of association between sustainability disclosure and IMSs are moderate with visual emphasis, limited with selectivity, mixed with performance comparison and lack of evidence with text emphasis.

Two key points can be drawn from the above regression analysis results. First, we found higher social disclosure is associated with IM level by using infographics, and this relation holds with selectivity and visual emphasis strategies. Adopting legitimacy theory, companies in our sample may symbolically respond to societal pressures by disclosing more favourable social indictors and employing the rhetorical power of the visual within the infographics utilised. Second, higher environmental disclosure is found to be related to IM level by using infographics, and this relation holds with selectivity, performance comparison and visual emphasis strategies. Similarly, this result suggests that companies in our sample provide symbolic environmental disclosure for green-washing purposes by reporting selectively, biasing their performance comparison information and visually emphasising cues of environmental activities. Therefore, these findings suggest that the amount of social and environmental disclosures may not usually reflect underlying sustainability performance, but

can be a strategy to construct an image of being all-around responsible (Hrasky, 2012). Further, environmental disclosure should be cautiously considered, as our evidence shows a greater extend of IM engagement at such disclosure compare to the social dimension.

Table 4.13 IMSs and social disclosure's hierarchical regression results

Predictor	Selectivity			Performance Comparison			Visual Emphasise			Text Emphasise		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
SODISC												
Coefficients	0.269	0.271	0.272	0.219	0.226	0.208	0.301	0.316	0.315	0.234	0.263	0.281
t-value	1.971	1.987	1.903	1.452	1.507	1.313	2.093	2.197	2.087	1.18	1.304	1.366
p-value	.054*	.053*	.063*	0.154	0.139	0.197	0.042**	0.033**	0.043**	0.25	0.205	0.168
SIZE												
Coefficients		0.119	0.119		0.183	0.189		0.163	0.164		0.187	0.144
t-value		0.871	0.849		1.224	1.244		1.130	1.101		0.926	0.678
p-value		0.388	0.40		0.228	0.221		0.265	0.277		0.364	0.505
SOSEIN												
Coefficients			0.003			-0.059			-0.006			0.145
t-value			0.019			-0.373			-0.037			0.678
p-value			0.985			0.711			0.971			0.505
DF	51	51	51	43	43	43	45	45	45	25	25	25
R-Sq (adj)	0.054	0.049	0.029	0.025	0.037	0.016	0.070	0.076	0.054	0.015	0.010	0.014
F	3.887	2.313	1.511	2.108	1.816	1.232	4.381	2.842	1.851	1.393	1.121	0.883
P	0.054*	0.11	0.224	0.154	0.175	0.311	0.042**	0.069*	0.153	0.250	0.343	0.465

SODISC= Social disclosure score, **SOSEIN**= Socially sensitive industry
*** significant at the .01 level, ****** significant at the .05 level, ***** significant at the .10 level

Table 4.14 IMSs and environmental disclosure's hierarchical regression results

Predictor	Selectivity			Performance Comparison			Visual Emphasise			Text Emphasise		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
ENDISC												
Coefficients	0.243	0.247	0.216	0.298	0.29	0.217	0.295	0.299	0.263	0.164	0.168	0.152
t-value	2.208	2.232	1.885	2.533	2.454	1.755	2.547	2.549	2.162	1.066	1.074	0.932
p-value	0.030**	0.029**	0.063*	0.014**	0.017**	0.084*	0.013**	0.013**	0.034**	0.293	0.289	0.357
SIZE												
Coefficients		-0.054	-0.051		0.103	0.105		-0.037	-0.017		-0.039	-0.032
t-value		-0.485	-0.465		0.873	0.901		-0.312	-0.147		-0.249	-0.198
p-value		0.629	-0.031		0.386	0.371		0.756	0.884		0.804	0.844
ENSEIN												
Coefficients			0.126			0.216			0.138			0.065
t-value			1.104			1.752			1.136			0.396
p-value			0.273			0.085*			0.260			0.694
DF	78	78	78	67	67	67	69	69	69	42	42	42
R-Sq (adj)	0.047	0.037	0.040	0.075	0.071	0.100	0.074	0.061	0.065	0.003	0.020	0.042
F	4.874	2.531	2.098	6.418	3.579	3.485	6.489	3.25	2.606	1.137	0.586	0.435
P	.030**	.086*	0.107	0.014**	0.034**	0.021**	0.013**	0.045**	0.059*	0.293	0.561	0.729

ENDISC= Environmental disclosure score, **ENSEIN**= Environmentally sensitive industry
*** significant at the .01 level, ****** significant at the .05 level, ***** significant at the .10 level

5. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

5.1   Conclusions

This study investigated the utilisation of infographics in 147 stand-alone SRs issued by US companies in 2015. Companies are increasingly producing CSR reports, potentially motivated by a desire to enhance corporate transparency and accountability. Prior studies have examined the use of traditional graphs in disclosing CSR information and found that they are used as an IM tool to portray social and environmental disclosure in a favourable light, rather than to discharge accountability (Jones 2011; Cho et al., 2012b; Hrasky, 2012). This study extends this prior research to consider the use of infographics, which are commonly used in CSR reports. Given the greater rhetorical power of infographics when compared to traditional graphs, this study aimed to investigate whether infographics are used in CSR reports for IM purposes. To achieve this aim, this study established three research objectives, which are summarised below with the study findings.

First, the practice and features of infographics in SRs were explored. Infographics are utilised widely by companies for sustainability disclosure suggesting that these infographics are valued communicative tools. They were used more by companies in environmentally sensitive industries, which suggests they are effective in demonstrating environmental responsibility and for legitimatisation purposes. The most common infographics type was the annotated chart, which is well-suited for reporting purposes, facilitating reporting numerical data and time trends in relation to sustainability performance. The most popular components of infographics were graphs, illustrations and narrative annotations that are visually powerful in communicating information.

Further, infographics were used more for communicating environmental information. Key environmental aspects depicted by infographics were air emissions, energy usage and water consumption. Although less widely used for communicating social information, the social aspects communicated by infographics were mostly related to labour practices and decent work. Infographics were most likely to employ illustrations, shapes and font size effects for highlighting performance indicators. This suggests that infographics are adopted to emphasise sustainability achievements and initiatives. Surprisingly, infographics were rarely used for performance comparisons, that is, performance indicators were presented without any comparison referent and limited to internal benchmarking. This suggests that companies in our sample were attempting to hide unfavourable performance trends.

Second, the IM use of infographics in SRs was investigated. There was strong evidence that infographics were adopted in SRs for the purposes of IM. The evidence in relation to IMSs adopted was consistent with the view that managers may exercise their discretion to disclose information in a self-serving manner. Our results support the selectivity concept that companies are more likely to portray favourable rather than unfavourable time trends of sustainability performance indicators within infographics. In term of performance comparison strategy, our results suggest that companies in our sample use internal referents with favourable rather than unfavourable performance indicators when making comparisons in order to present the information in the best possible light. In term of visual emphasis strategy, companies are most likely to use graphs and sizeable bold font within the infographics to emphasise favourable rather than unfavourable performance indicators, and this tendency was greater with environmental indicators. Results in relation to these IMSs were statistically significant, confirming our overall hypothesis that infographics are used for IM purposes.

Third, the association between IM in the use of infographics in SRs and level of sustainability disclosure was examined. In relation to the social aspect, I found that the increase in social disclosures, depicted by infographics, reflects an attempt by companies to create more a favourable view of their social responsibility in terms of selectivity and visual emphasis strategies. In relation to environmental aspect, more environmental disclosures via infographics were identified, reflecting an attempt by companies to demonstrate more favourable environmental trends in terms of selectivity and performance comparison strategies. The lack of evidence of association with other IMSs may be attributed to the limited sample size and the measures of IM and sustainability disclosure levels. Hence, our initial predictions of the positive relation between IM and social and environmental sustainability disclosures were confirmed suggesting that infographics are used as a disclosure vehicle for IM purposes. Users of CSR reports, accordingly, should be cautious of interpreting positive sustainability disclosures as they are likely the result of IM.

Collectively, the evidence shows that managers utilise infographics in SRs for IM purposes, reflecting the adoption of a strategy to create an impression of social and environmental responsibility. Rather than utilising infographics to improve the effectiveness of CSR communication and thereby corporate accountability, management use them to emphasise favourable, disclosures in relation to sustainability performance. The findings presented in this study are consistent with those that argue SRs are a public relations strategy to manage stakeholders' impressions (Hopwood, 2009; Michelon et al., 2015). Further, they are consistent with the view that the less regulated nature of CSR practice opens the door for potential abuse by managers seeking to enhance company image and provide unwarranted social legitimisation (Dobbs & Staden, 2016; Diouf & Boiral, 2017). Therefore, our study is important as it sheds more light on scepticism surrounding the transparency of CSR disclosures by showing the infographics implications for IM in SRs.

5.2   Limitations and future research

This study has several limitations. Our results were drawn from a single country and a relatively small sample size. An international comparative investigation of infographics practice would enrich our understanding of its role in the CSR context. As noted by Beattie and Jones (2008), other jurisdictions in western countries or Asian countries such as China and India would provide interesting insights into differences in practice. The influence of different country cultures and regulatory structures could be tested in future comparative studies.

Further, our results are limited to a single year of data. We do not know whether our conclusion about the role of infographics in CSR is valid over longer time periods. A longitudinal study of infographics practice in CSR would enhance our understanding of how IM use of infographics is influenced by organisational factors. Investigation of how IM is related to organisational performance changes over several years, similar to that of Cooper and Slack (2015), may provide powerful insights into managerial manipulation. Also, a longitudinal investigation of the absence of performance comparisons has the potential to shed light on whether management hides unfavourable performance by reporting only single year comparison within infographics.

Furthermore, although this study provided clear evidence of IM through infographics utilisation, we do not know whether it affects the perceptions and decisions of users in a CSR context. An experimental study, similar to that of Hellmann et al. (2017), may provide evidence of the influence of infographics presentation on the judgements of non-professional investors. An interesting extension would be an interview study considering CSR infographics designers. As noted by Jones (2011), interviews with management may provide deep insights into graphical presentation drivers and motivations. This methodology could examine assumptions about how environmental disclosure is visually depicted and emphasised.

Finally, our measures of sustainability disclosure and IM are relatively broad. Bloomberg's ESG disclosure metrics may be considered broad as they are based on survey data collection. Hence considering alternative measures in future research may enhance the results of our study. Further, considering the issue of measurement distortion examined by Jones (2011) in relation to infographics design in CSR reporting may capture a better measurement of IM. In addition, considering other control variables that may influence IM level in a further study may enhance the explanatory power of the prediction between IM and sustainability disclosure. Examples of potential variables that could be included in future research are reporting quality (proxy by level of compliance with GRI), external assurance and corporate reputation. Therefore, addressing these research avenues has the potential to expand our understanding of the role of infographics in IM.

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