
# Empirical Investigations of Corporate Financial Disclosure on Social Media

**Thesis submitted for the degree of Doctor of Philosophy**

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# Declaration of authorship

According to the Rules for Submission of Theses for Research Degrees, Section 8(a), the candidate is required to include in each copy of the thesis (including the electronic copy), a signed declaration of original authorship. I hereby declare my contribution to a co-authored publication that will be included in my PhD dissertation.

Regarding the following publication:
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# Dedication

*To my beloved parents*

*for their unconditional love and support.*

# Abstract

This thesis aims to make contribution on the empirical investigation of corporate financial disclosure on social media in two principal ways. Underpinned by two alternative theoretical frameworks in voluntary disclosure research, two empirical studies are conducted in this thesis.

The first study investigates the strategic use of defensive and assertive impression management strategies and the influence of firm performance on accounting narratives. Social media provides firms with a great level of control over the corporate image they intend to construct during corporate communication processes on this platform. This study investigates earnings-related disclosures of FTSE 100 companies on Twitter. The findings indicate that firms tend to minimise negative earnings information but employ self-presentational patterns and dissemination tools to emphasise positive information on social media. Specifically, improving performers tend to disclose and disseminate more earnings information to achieve a higher degree of stakeholder engagement comparing to declining performers. Based on these findings, this study concludes that firms opportunistically present themselves on social media so as to construct or maintain a positive corporate image.

The second study draws from the stakeholder theory perspective and investigates whether board independence is a key determinant of firms' financial disclosure on social media in terms of the level and connectivity of financial disclosure. The sample of this study consists of 868 firm-year observations of earnings-related disclosure on Twitter from FTSE 350 companies. This study finds that the level of financial information on social media is positively and significantly associated with the proportion of independent

directors on the board. Moreover, the connectivity of financial disclosure which captures the communicative effectiveness of disclosure, measured by the *CONNECT* index score, is also positively and significantly associated with board independence. Findings from additional analysis suggests that board independence is not a direct determinant of the level of stakeholder engagement on social media. Financial disclosure attributes including the volume and connectivity of disclosure are found to be associated with the level of stakeholder engagement on social media. This study concludes that higher board independence enhances corporate transparency and communicative effectiveness through increased amount and enhanced connectivity of disclosure during financial communications with stakeholders on social media.

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# 1 Introduction

## 1.1 Motivation for the thesis

The accelerated development of information and communication technology in the last decade has greatly transformed the landscape of corporate communication. Firms have been increasingly employing social media as one of their key communication platforms for corporate reporting and financial communication (Miller and Skinner 2015). According to the 2015 FT–ICSA Boardroom Bellwether survey, around two-thirds of FTSE 350 boards have discussed a social media strategy in their board meetings (Gordon 2015). Research shows that financial stakeholders including individual investors, institutional investors and analysts, as well as other stakeholders including customers, employees and local communities, use social media to monitor corporate news and expect engagement with firms on the platform (Jorce 2013, Brunswick 2014, 2015, Businesswire 2015).

*Uniqueness of social media*

As an emerging corporate disclosure and communication channel, the uniqueness of social media provides a potentially fertile research avenue to investigate firms' financial disclosure behaviours within an intriguing empirical setting. Social media differs from conventional corporate disclosure outlets in several ways.

First, it is interactive. Social media provides an interactive and widely accessible disclosure platform, where the traditional one-way passive information disclosure is replaced by an interactive two-way communication and multidirectional information

diffusion (Lee et al. 2013, Cade 2018). Audiences on social media no longer consist of mere information consumers – these individuals also serve as information transmitters and commenters, who actively participate in the corporate communication process. Moreover, unlike traditional corporate financial disclosure outlets, the majority of audiences on social media are constituted by a wide range of stakeholders rather than information-savvy investors.

Second, social media is a media-rich corporate disclosure venue. Various textual and visual tools are available on social media to facilitate the presentation of financial information. Firms have an abundant range of choices and a great level of flexibility to decide on what financial information is selected to be disclosed and how these financial narratives are presented and communicated to stakeholders on social media (Blankespoor 2018, Brennan and Merkl-Davies 2018).

Third, social media itself is also an information dissemination channel. In addition to its role as a disclosure venue, a range of tools and functions on social media assist the wider dissemination of financial news in a timely manner (Blankespoor et al. 2014, Elliott et al. 2018). Firms also have a great level of discretion in terms of how they use these tools and functions to disseminate financial information.

*Tensions in the literature*

An increasing interest in the area of corporate use of social media for financial communication has started to emerge in recent accounting and finance literature (Miller and Skinner 2015). One stream of research investigates whether information or opinions posted on social media predict stock returns or firms' future prospects (Bollen et al. 2011,

Chen et al. 2014, Bartov et al. 2017, Hales et al. 2018). Another stream of studies focuses on investor responses on social media in the process of corporate financial communication (Kadous et al. 2017, Cade 2018, Elliott et al. 2018, Guggenmos and Bennett 2018). A third growing strand of research focuses on how companies employ social media to communicate financial information to investors. Within this stream of research, several pioneering studies document empirical evidences that social media reduces information asymmetry between management and shareholders via additional disclosure and direct information dissemination (Blankespoor et al. 2014, Lee et al. 2015, Jung et al. 2018). In a nutshell, academic research on the corporate use of social media for financial communication is still largely in its infant stage. More theoretical explorations and empirical investigations are urgently needed to advance our understanding and knowledge of this emerging phenomenon in the landscape of corporate communication.

Extant research on corporate financial disclosure on social media as a whole is predominantly built on traditional economic arguments and adopts an investor-centric view with a predominant focus on capital market consequences. However, Elliott et al. (2018) point out that the majority of financial disclosures on social media are not first-hand original financial information that cannot be found anywhere else. Instead, they are usually extracts or highlights of existing financial messages that have been disclosed in traditional disclosure outlets. Jung et al. (2018) find that firms are strategic in their dissemination of financial information on social media. Moreover, the interactive nature of social media may create more uncertainty in the already complex information environment. Several studies provide early evidences that financial communications on social media sometimes backfire and lead to negative capital market consequences as a

result of the audiences' participation in the communication process (Lee et al. 2015, Jung et al. 2018).

Therefore, it seems natural to question whether the traditional economic perspective, with an investor-centric view of financial disclosure, is able to provide sufficient explanations for managerial motives for voluntary financial disclosure within this unique empirical setting. Like any other kind of human behaviour, the nature of firms' disclosure behaviour is complex. Especially within an increasingly rich, complex and uncertain information environment, managerial motives for voluntarily providing financial information on social media can be multifaceted (Festre 2010, Beattie 2014).

Voluntary disclosure literature has witnessed a narrative turn in recent years, with growing interest among accounting scholars in applying a broad range of theoretical perspectives from social sciences in addition to economic traditions (Beattie 2014). Given the uniqueness of social media, as discussed above, and the characteristics of financial disclosures on this platform, alternative theoretical perspectives, especially those with a *social* nature, are likely to provide useful explanations and predictions for managerial motives and determinants of firms' financial disclosure behaviour on social media. So far, studies that have examined these emerging phenomena from social perspectives are surprisingly scarce. In addition, prior empirical investigations have a principal focus on the behaviour of the 'supply side' of corporate disclosure. Empirical investigations into the responses of the audience side towards firms' financial disclosure on social media are deficient in the literature.

Therefore, against the backdrop of the narrative turn in accounting research, this thesis aims to examine the motives and determinants of firms' financial disclosure behaviour on social media by adopting two emerging theoretical constructs from social psychology and social politics respectively. In addition, the thesis also aims to provide initial insights into the behaviour of the audience side of corporate disclosure on social media. The rationales for the choice of theoretical perspectives are discussed in the following section.

## 1.2 Rationales for the choice of theories

*The relevance of impression management theory*

The study in Chapter 4 draws from the impression management perspective and examines the impact of financial performance on the use of different impression management strategies in accounting narratives on social media. This study focuses on the disclosure behaviour on Twitter of FTSE 100 companies in the UK. The information environments of these large public firms are already rich with many analysts and media followings. Therefore, it is questionable whether several additional financial tweets posted during a firm's annual earnings announcement events actually provide any substantial contributions to the information asymmetry reduction between firms and information-savvy investors. If not, then the additional financial disclosure on social media is very likely to be driven by strategic motives. Jung et al. (2018) document early evidence that firms' dissemination of earnings news is biased towards good news on Twitter.

The media richness of social media grants firms with great flexibility in terms of how financial performance is portrayed through discretional employment of presentational formats. This flexibility in information disclosure presentation on social media provides firms with enormous convenience to construct a desired corporate image. Moreover, prior impression management literature documents evidence that unsophisticated users are more likely to be misled by biased financial reporting practices (Beattie and Jones 2002, Tan et al. 2014). As discussed in the previous section, the majority of audiences on social media are stakeholders in general rather than well-informed investors. Thus, financial disclosure on social media is very likely to target those unsophisticated audiences with an aim of manipulating their perceptions of corporate performance. Therefore, impression management theory is adopted as the theoretical framework in this study.

*The relevance of stakeholder theory*

The study in Chapter 5 adopts a stakeholder theory perspective to examine the association between board independence and firms' financial disclosure on social media in terms of the level and connectivity of financial disclosure. Stakeholder theory has been frequently adopted to explain corporate social and environmental reporting rather than financial reporting decisions. In this study, the financial disclosure on social media is considered to be useful to meet stakeholders' information needs and to improve engagement with them. Although earnings announcements are of first-order importance to shareholders, gaining an insight into a firm's annual financial performance is also one of the top interests for many other stakeholder groups. Survey shows that people increasingly prefer to receive the latest news through social media platforms, given the growing reliance on mobile devices (Greenslade 2014). Other stakeholder groups may reply on social media to get updated with the latest corporate news.

A wide range of stakeholder groups constitute a great proportion of the audiences on social media. These audiences include customers, employees, suppliers, lenders, communities, the media, environmentalists, customer advocates and so on. From the social legitimacy perspective, meeting these stakeholders' information needs is necessary for a firm to acquire support and resources for its business activities (Alam 2006, Deegan and Unerman 2011). Moreover, these stakeholders are empowered by the interactive functions on social media and these may cause negative effects or interruptions to a firm's reputation. As an important corporate governance monitoring mechanism, independent directors on boards are outside directors who are supposed to act in the interests of stakeholders and to oversee a firm's accountability issues of corporate transparency and stakeholder engagement. Therefore, a stakeholder perspective could provide useful

insights into how companies communicate and engage with stakeholders through financial disclosure on social media and how stakeholders respond to firms' financial communication on the platform.

*The conflicts and linkages*

It can be seen that the underlying assumptions of the role of financial disclosure on social media in these two studies conflict with each other, The impression management theory adopted in Chapter 4 views voluntary disclosure in an opportunistic way and assumes that financial disclosure on social media is biased as a result of managerial manipulation. The stakeholder theory perspective in Chapter 5 views that financial disclosure on social media is informative and serves as a mechanism to enhance firms' accountability for a wide range of stakeholders.

Disclosure behaviour, like any other human behaviour, is complex in nature. It would be unilateral to argue that financial communication on social media is purely for manipulation purposes. In order to gain a more complete understanding of the emerging phenomenon of corporate reporting on social media, this thesis aims to provide insights from both sides of the coin: the 'evil' side, represented by the impression management perspective; and the 'good' side, represented by the stakeholder perspective. Blankespoor et al. (2014) find that the effect of information asymmetry reduction by disseminating earnings news on Twitter may be trivial for large firms but it is significant for firms with relatively low visibility. Thus in line with this finding, by including FTSE 250 firms into the sample, the second study assumes that the disclosure is informative to stakeholders in general. The detailed research questions and objectives of the two studies are discussed in the following section.

## 1.3 Research questions and objectives

This thesis seeks to investigate the managerial motives and determinants of corporate financial disclosure on social media by applying two alternative theoretical perspectives with a *social* nature: impression management theory and stakeholder theory. It will do this by undertaking two empirical studies within the empirical setting of Twitter in the UK context.

Drawing upon impression management theory, the key research question of the first study, presented in Chapter 4, is:

- Do firms differentially employ defensive and assertive impression management strategies in their accounting narratives when they report financial performance on social media in order to construct a favourable corporate image?

In seeking to address the research question of this study, the following research objectives will be met accordingly:

- To identify relevant impression management strategies and tactics by critically reviewing the literature in the area of impression management and accounting narratives.
- To collect data on firms' financial performance and financial disclosure on Twitter.
- To classify sample firms into improving and declining performers based on their financial performance in the past period.
- To classify sample firms' earnings-related tweets into positive, negative and neutral based on the tone of tweets.

- To examine whether firms differentially employ defensive or assertive impression management strategies when they disclose earnings news on Twitter depending on 1) the tone of tweets and 2) their financial performance respectively.
- To examine whether firms differentially employ assertive impression management strategies when they disseminate earnings news on Twitter depending on 1) the tone of tweets and 2) their financial performance respectively.
- To investigate whether there are any differences in the outcome of impression management on Twitter depending on 1) the tone of tweets and 2) firms' financial performance respectively.

The other study, presented in Chapter 5, adopts a stakeholder theory perspective. The primary research question of the study is:

- Does board independence matter for firms' financial disclosure on social media in terms of the level and connectivity of disclosure?

Accordingly, the following objectives are set in order to address the research question:

- To conduct a critical literature review in the area of corporate governance and voluntary disclosure in general with an emphasis on prior empirical evidences on the relations between board compositions and voluntary disclosure.
- To collect data on firms' board compositions, firm-specific characteristics and financial disclosure on Twitter.
- To develop a self-constructed index to measure the connectivity of financial disclosure on Twitter based on prior literature.
- To investigate the relations between board independence and the level and connectivity of financial disclosure on Twitter respectively.

- To construct a subsample for additional analysis in order to examine the determinants of stakeholder engagement of financial disclosure on Twitter.
- To investigate the relations among board independence, financial disclosure on Twitter (level and connectivity) and stakeholder engagement on Twitter.

Having outlined the research questions and objectives of the thesis, the next section will provide a methodological overview of it.

## 1.4 Methodological overview

The methodological approach adopted in developing this thesis is a positivist one. Quantitative methods are used to collect and analyse the data. The research design follows a sequence of stages in order to address the abovementioned research questions and objectives. The initial stage starts with a critical review of theoretical literature and prior empirical studies in order to identify the strengths, limitations and gaps in the literature. After the gaps are identified, the research questions and objectives are defined in stage two. The next stage identifies an appropriate theoretical framework and develops research hypotheses based on the predictions of the selected theory. Then secondary data is collected and analysed using quantitative methods to test research hypotheses in the next stage. Since the disclosure data on Twitter is unstructured and textual, manual content analysis is employed to quantify these data. The final stage discusses the data analysis results, draws conclusions and reflects on potential limitations in the research process.

In this thesis, Twitter is used as a representative of social media because it has the highest adoption rate for financial disclosures in comparison with other social media platforms such as Facebook, LinkedIn and YouTube (Zhang 2015, Rivera-Arrubla and Zorio-Grima 2016, Jung et al. 2018). It is also the most prevalent social media channel used by investors, professionals and other stakeholders to monitor corporate news (Jorce 2013).

The first study in Chapter 4 uses a dataset of 57 FTSE 100 companies listed on the London Stock Exchange for the fiscal year of 2014. Firms' disclosure data is manually collected from Twitter.com by downloading all the earnings-related tweets posted by a firm's official Twitter account on its annual earnings announcement day. Manual coding

and content analysis are conducted to quantify the disclosure data. Data on firms' financial performance and firm characteristics are collected for the fiscal years of 2013 and 2014 from the Osiris database. The data analysis procedures include descriptive statistics of all variables, univariate analysis and multivariate analysis. To examine the research hypotheses, a t-test of means is adopted to test the statistical differences in the use of impression management strategies in firms' financial disclosures on Twitter depending on 1) the tone of tweets and 2) the financial performance. To examine the robustness of the results, non-parametric tests and multivariate analysis are used to test the hypotheses. The Poisson regression model is estimated for multivariate analysis since the dependent variables are count data.

The second study in Chapter 5 is based on a dataset of 868 firm-year observations of 309 FTSE 350 firms listed on the London Stock Exchange over a three-year period from the fiscal years of 2014 to 2016. In terms of the data on financial disclosure on Twitter, a similar data collection process to the study in Chapter 4 is used. The data is collected from Twitter.com by downloading earnings-related tweets during firms' annual earnings announcement events. Manual coding and content analysis are used to prepare the data for quantitative analysis. To measure the connectivity of disclosure on Twitter, a *CONNECT* index is designed to compute a *CONNECT* score for each firm. The data on corporate governance and firm characteristics is collected from Bloomberg for the period of 2014 to 2016. Descriptive statistics, Pearson correlation and the Poisson regression analysis are used for the analytical procedures. In the robustness tests, a fixed-effect panel regression controlling for firm-fixed and year-fixed effects is run in an attempt to address some endogeneity concerns. In the additional analyses, a subsample is constructed by focusing on the fiscal year of 2016 to test the relations among board compositions,

financial disclosure and stakeholder engagement on Twitter. The Poisson regression models are used for analysis. In addition, in order to test whether there is any moderating effect of board independence on the relations between financial disclosure and stakeholder engagement, this study models the interactions of board independence with the level and connectivity of financial disclosure on Twitter respectively.

Details of the research methods and the justifications for the choice of methods are more fully discussed in Chapter 4 and Chapter 5 respectively. As with any other study, the research design used in this thesis is not without methodological limitations. A reflective discussion of the methodological limitations of this thesis is provided in Chapter 6.

## 1.5 Intended contributions of the thesis

This thesis attempts to contribute to the growing voluntary disclosure literature by empirically investigating corporate financial disclosure on social media through two emerging theoretical constructs from social science: impression management and stakeholder theory.

More specifically, the contribution of the study in Chapter 4 is threefold. First, it applies impression management theory from a social psychology perspective, as an emerging theoretical construct, to explain the phenomenon of corporate use of social media for financial communication. So far, the most recent studies have examined only the informational role of voluntary disclosures on social media (Blankespoor et al. 2014, Chen et al. 2014, Zhang 2015, Elliott et al. 2018, Jung et al. 2018). Thus, systematic analysis of how firms present themselves on social media to impress audiences is lacking in the literature. Jung et al. (2018) document early evidence for the manipulation of the number of tweets when firms report earnings news on Twitter in the US context. On the one hand, this study provides UK evidence that is consistent with the findings in Jung et al. (2018). On the other hand, it extends the investigation scope of impression management tactics adopted by firms on social media by analysing how they employ a range of self-presentational patterns and dissemination tools in their tweets to cast a favourable light on their performance on Twitter. Twitter is a rich media platform that aids vivid information presentation. This study provides a better understanding of corporate self-presentational behaviours on social media.

Second, the study advances impression management research by examining the manipulation of information dissemination. While previous studies have concentrated on

the manipulation of either the presentation or the disclosure of information (Merkl-Davies and Brennan 2007), this study explores how firms use unique Twitter features such as hyperlinks and hashtags and/or cashtags to disseminate favourable earnings news. It finds that the manipulation of information dissemination enables positive information to go viral.

Finally, this study contributes to impression management research by providing empirical evidence of the effect of using impression management strategies. Many studies on accounting narratives have explicitly focused on firms' use of different impression management techniques (Beattie and Jones 2002, Courtis 2004b, Aerts 2005, Clatworthy and Jones 2006, Li 2008, Brennan et al. 2010, Cho et al. 2010, García Osma and Guillamón-Saorín 2011, Benson et al. 2015, Cho et al. 2015, Leung et al. 2015); however, little research has examined the outcome of impression management. 'Best tweets', which automatically displays tweets that receive a higher degree of engagement in a larger font size, provides us with an opportunity to assess whether impression management strategies achieve their purpose.

The study in Chapter 5 investigates board independence and financial communication on social media and contributes to the literature in three ways. First, theoretically, this study pushes the boundary of extant literature of corporate financial disclosure on social media from a shareholder-centric view to a stakeholder-centric stance. Prior literature largely focuses on whether financial disclosure on social media provides useful information for capital markets (Blankespoor et al. 2014, Chen et al. 2014, Lee et al. 2015, Bartov et al. 2017, Hales et al. 2018). The role of financial disclosure on social media in enhancing corporate accountability for stakeholders, who constitute the majority of audiences on the

platform, is insufficiently investigated in prior literature. Despite the fact that stakeholder theory has been widely adopted for social and environmental disclosure research, it was rarely applied to explain corporate financial disclosure decisions and practices. One reason might be that the focus of traditional financial disclosure research is usually mandatory financial disclosures that are prepared for shareholders. However, financial disclosure on social media is purely voluntary and targeted at different user groups. Social media provides firms with great convenience to communicate important information and engage with a wide range of stakeholders. This study draws from a broad stakeholder accountability perspective and applies the alternative theoretical construct within the novel empirical setting of earnings announcements on Twitter. It provides evidence that board compositions play a role in enhancing corporate transparency and communicative effectiveness on social media through increased amount of disclosure and improved connectivity of disclosure.

Second, empirically, this study adds to the corporate governance and voluntary disclosure literature by providing empirical evidence of the effect of board independence, gender diversity and board size on a firm's financial disclosure decisions on the interactive communication platform of social media. Methodologically, the study advances the emerging connectivity literature by developing a connectivity index to measure the connectivity of corporate disclosure on Twitter. The findings provide novel empirical evidence of the associations between board compositions and the connectivity, as measured by the connectivity index. The evidence suggests that in addition to traditional attributes of corporate disclosure, the connectivity of disclosure, which captures the communicative effectiveness, is also an interesting and potentially fruitful research area. The self-constructed connectivity index developed in this study is a potentially useful

tool for future research to undertake more systematic empirical investigations into the connectivity of corporate disclosure on social media.

Third, this study contributes to the emerging literature on the investigation of stakeholder responses towards firms' disclosure decisions on social media platforms (Cade 2018, Elliott et al. 2018). It provides initial insight into the relationship among board compositions, firms' financial disclosure decisions and the level of stakeholder engagement on social media. The results reveal that the influence of the board does not directly translate to the level of stakeholder engagement on social media. Instead, the attributes of a firm's financial disclosure on social media are more likely to be the direct determinants of the actual engagement level. Stakeholders on Twitter are more likely to engage with firms that post a greater level of financial information and have a higher level of connectivity in their tweets, relational and textual connectivity in particular.

## 1.6 Outline of the thesis

The remainder of the thesis proceeds as follows. Chapter 2 reviews and discusses the theoretical frameworks in corporate voluntary disclosure research. Theories from economics, social psychology and social politics are described respectively. Chapter 3 presents a critical literature review of prior empirical studies in corporate voluntary disclosure research. Firstly, accounting narratives and impression management studies are reviewed and synthesised. The review is organised by three impression management methods widely documented in prior literature, namely, syntactic manipulation, thematic manipulation and presentational manipulation. Secondly, extant studies on corporate governance mechanisms and voluntary disclosure are systematically summarised and discussed. The review has a focus on the relations between board characteristics and corporate voluntary disclosure. Thirdly, an in-depth review of the development of recent literature on corporate financial disclosure on social media is conducted.

Chapter 4 presents the empirical investigation of accounting narratives and impression management on social media. Research hypotheses are developed based on defensive and assertive impression management strategies. This is followed by the description of the research sample and methodology. Empirical results and discussions are then presented. Next, additional tests are conducted to examine the robustness of the results. A summary of the study is offered to synthesise the findings of this chapter. Chapter 5 presents the empirical study of board independence and corporate financial communication on social media adopting a stakeholder perspective. A brief literature on board independence and voluntary disclosure is firstly discussed, followed by background information on the connectivity of financial information on social media. Hypotheses are then developed based on the arguments of stakeholder theory. Following this, the research design, data

analysis and regression results are presented. The chapter then proceeds with additional analyses on stakeholder engagement and summarises with concluding remarks. Chapter 6 summarises key findings of the thesis, reflects on the limitations and discusses future research avenues.

# 2 Theoretical frameworks on corporate voluntary disclosure

## 2.1 Introduction

Corporate financial disclosure on social media falls into the realm of voluntary disclosure. The motives behind managers' different voluntary disclosure decisions are intriguing. Due to disclosure's voluntary nature, management of a firm have a great level of discretion in terms of whether or not to disclose, what to disclose and how to disclose. Nowadays, the information environment for corporate reporting is increasingly complex (Beyer et al. 2010). The corporate reporting process involves multiple parties, including managers of companies, institutional investors, sophisticated and unsophisticated individual investors, creditors, analysts, auditors, employees, medias, local communities and other related stakeholder groups (Beattie 2014). Within such a complex and rich information environment, the motives of managerial behaviour can be *economic* or *social* in nature (Festre 2010). The empirical setting of this thesis, social media, by definition, are *social* networking platforms. Prior studies that investigate the phenomenon of reporting earnings on social media are developed mainly from an *economic* perspective, whereas theoretical perspectives with a *social* nature are insufficiently investigated despite the *social* nature of social media platforms. Thus, this thesis adopts a social perspective rather than an economic perspective to examine corporate financial disclosure on social media. The justifications are provided in the following.

First, financial disclosure on social media is hardly fresh news. A key feature of corporate disclosure made on a social media platform like Twitter is that the information is usually

a repetition of corporate disclosure that has already been disclosed in other traditional corporate disclosure outlets rather than first-hand new information (Elliott et al. 2018). Especially for earnings-related disclosure on Twitter, the earnings information disclosed is usually extracts or highlights selected from management presentations or earnings press releases. Thus, earnings-related disclosure on Twitter is selective in nature and does not provide much new earnings information for the market. Therefore, economic information asymmetry arguments may not be able to fully explain firms' motives for why managers use Twitter to disclose financial information that has already been disclosed somewhere else.

Second, disclosing and disseminating financial information on social media does not always help to reduce information asymmetry. Due to its interactive nature, firms do not have full control over the disclosure and dissemination process of financial information on social media. Social media empowers audiences in corporate financial communication and allows them to directly participate in and potentially influence the communication process (Comunello and Anzera 2012, Nielsen 2013, Ronson 2016, Toubiana and Zietsma 2017). Users on social media can embed their own comments and opinions when forwarding corporate news to their social networks. To some extent, this can exert risk and uncertainty into the information dissemination process on social media. Prior studies highlight the downside of using social media for financial communication and document evidences that the posting activities of other users on social media could exaggerate negative reaction and increase information asymmetry (Lee et al. 2015, Miller and Skinner 2015, Jung et al. 2018). It can be seen that corporate financial communication on social media is a complicated process within a complex information environment; thus, solely relying on economic arguments to provide explanations is insufficient.

Third, the audiences that involve in corporate financial communication on social media are stakeholders rather than shareholders only. Capital market research adopting an economic perspective focus on investors alone. However, the majority of audiences on social media not only include financial stakeholders such as individual investors, institutional investors and analysts but also many other stakeholder groups such as customers, employees, competitors, industry peers, journalists and the public (Greenwich 2015). Financial stakeholders and non-financial stakeholders have different information needs and expectations. Moreover, they have different sophistication levels when processing and interpreting the financial information disclosed by firms on Twitter. For financial stakeholders, especially for sophisticated investors, the short-length financial performance highlights disclosed on Twitter are unlikely to be the best information source upon which investment decisions are made. Thus, this thesis argues that the targeted audiences for financial disclosure on social media are stakeholders at large. Additionally, stakeholder engagement could be achieved in a more convenient manner with the assistance of the various information dissemination functions and medium-rich presentation tools on social media.

Therefore, this thesis argues that theoretical frameworks with a *social* nature could provide better explanations for managerial motives for financial disclosure on social media and generate useful insights into the complex corporate communication process on social networking platforms.

Literature reviews are conducted in chapters 2 and 3. Chapter 2 reviews theoretical frameworks that are frequently adopted in corporate disclosure research. Chapter 3 reviews prior empirical research that is related to the empirical investigations of this

thesis. The rest of this chapter is organised as follows. Section 2.2 provides an overview of voluntary disclosure and accounting narrative research. Section 2.3 describes two economic theories in voluntary disclosure research, which are agency theory and signalling theory. Section 2.4 presents the arguments of impression management and attribution theory from social psychology theory. Section 2.5 describes social political theories applied in accounting disclosure research. In this section, stakeholder theory and institutional theory will be discussed in detail. Section 2.6 evaluates the appropriateness and limitations of the above theoretical frameworks and discusses the choice of theories that are adopted in this thesis.

## 2.2 Voluntary disclosure and accounting narratives

Voluntary disclosure refers to the type of information that managers voluntarily provide to external users in addition to mandatory disclosure, such as financial statements, in corporate annual reports. It is usually narrative in nature and not audited by external auditors. The narratives include textual and visual narratives such as pictures, graphs and videos. The two terminologies, voluntary disclosure and accounting narratives, are usually used interchangeably in accounting disclosure research, although voluntary disclosure signals a tradition of positivist North American research and accounting narratives indicates an origin of European research (Beattie 2014).

Healy and Palepu (2001) conduct a literature review on prior empirical archival studies on voluntary disclosure in accounting and finance research. It can be seen from this review that the majority of prior literature on voluntary disclosure has a strong focus on capital market consequences of this disclosure. The authors summarise managers' motives for providing voluntary disclosure into six capital market-related hypotheses: capital market transactions, corporate control contests, stock compensation, litigation, proprietary costs and management talent signalling. Among these six hypotheses, the proprietary costs hypothesis is the only one that assumes no conflicting interests between management and shareholders. The other five hypotheses are fundamentally about reducing information asymmetry so as to reduce cost of capital (Myers and Majluf 1984, Barry and Brown 1985, Merton 1987), to avoid litigation cost (Skinner 1994), to guarantee stock compensation (Healy and Palepu 2001), to ensure corporate control (DeAngelo 1988, Warner et al. 1988, Weisbach 1988) and to signal management talent (Trueman 1986).

Core (2001) further complements the literature review in Healy and Palepu (2001) and highlights the economic nature of prior voluntary disclosure literature by explicitly referring to corporate finance theory from an economic perspective. The function of voluntary disclosure is to reduce the information asymmetry between management and capital providers with the ultimate aim of reducing cost of capital. In his discussion, Core (2001) points out the limitations in prior literature by highlighting the measurement problems in the proxies for information asymmetry and disclosure quality.

Beyer et al. (2010) further extend the review of literature on voluntary disclosure by considering studies that examine corporate information environments. In addition to managers and shareholders, the role of information intermediaries such as analysts is also highlighted in the overall corporate disclosure landscape. This review underlines the importance of corporate information environments in shaping corporate disclosure decisions. Beyer et al. (2010) acknowledge and encourage more studies that adopt an alternative theoretical lens on voluntary disclosure in addition to economic theory.

In recent years, in addition to the economic-based mainstream disclosure research, a number of linguistic studies on accounting narratives adopting theories from social sciences have emerged in accounting literature. In a relatively recent review and discussion on corporate disclosure research, Beattie (2014) focuses her analysis on the development of accounting narrative research and highlights the importance of the 'narrative turn' in accounting studies. This is the result of a wider recognition of the importance of narrative in generating meanings and making sense of human actions (Beattie 2014). This line of accounting narrative studies has been generating new insights and new understandings of managerial motives for providing voluntary disclosure and

accounting narratives with a range of empirical settings. In order to further extend the accounting narrative literature, Beattie (2014) therefore calls for accounting scholars to conduct research that adopts alternative theoretical perspectives with a social nature from humanity and social sciences to further examine and explore the nature of corporate disclosure in this new age.

Reflecting on the development and trends in voluntary disclosure research, the following sections will summarise and describe several of the most widely employed theoretical frameworks in corporate voluntary disclosure research with an economic or social nature. These theoretical perspectives include economic, social psychological and social political perspectives.

## 2.3 Economic theories in corporate voluntary disclosure

The economic perspective views voluntary disclosure as complimentary corporate information voluntarily provided by managers to reduce information asymmetry and thus cost of capital. Under this perspective, voluntary disclosure contains incremental information content for decision-making. Voluntary disclosure decisions are viewed as rational decisions made by managers after weighing up the benefits and costs of providing additional information to outsiders of the business. The economic perspective has been the principal theoretical construct for empirical studies on voluntary disclosure in accounting and finance research.

### 2.3.1 Agency theory

Agency theory views organisations from a principal–agent perspective. According to Jensen and Meckling (1976: 308), the relationship of principal and agent is ‘a contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent’. For public companies, an agency relationship exists between the owners and the managers of the business where the shareholders are the principals and the managers are the agents.

Drawing from economics literature, two important assumptions underpin agency theory. One assumption argues that the principal–agent relationship is affected by the goal of utility maximisation from both parties since the interests of the principal and the agent are not always aligned (Berle and Means 1932, Jensen and Meckling 1976). The shareholders of the business seek the maximisation of their wealth, while the managers of the business may prioritise their own opportunistic and individualistic interests. Thus,

the agency problem that agents do not always act in the best interests of principals is inherent in any principal–agent relationship.

Another assumption of agency theory concerns the existence of information asymmetry between the principal and the agent, which further exacerbates the agency problem. Due to the separation of ownership and control, the information asymmetry between management and shareholders prevails in public firms (Jensen and Meckling 1976, Jensen 1986). Managers have information advantages over shareholders because they directly participate in the day-to-day operations of the business (Scott 1997). The prevailing information asymmetry between shareholders and managers may lead to agency problems such as moral hazards and adverse selection (Subramaniam 2006).

In order to mitigate the negative consequences of agency problems, the shareholders of a firm may elect to increase monitoring over managers' behaviour and decision-making or to provide incentives in managers' compensation schemes so as to better align the interests of management with shareholders. Among several monitoring strategies, voluntary disclosure is an important monitoring tool to improve transparency and to provide additional information beyond mandatory requirements so as to narrow the information gap between management and shareholders (Healy and Palepu 2001, Verrecchia 2001).

### 2.3.2 Signalling theory

Signalling theory is essentially about reducing the information asymmetry between signallers and receivers in a variety of social and economic phenomena (Spence 2002). Utilising the job market as an example, Spence (1973) models the signalling role of

higher education in communicating a good job candidate's unobservable characteristics. Due to the existence of information asymmetry between employers and potential job candidates, the employers may not be able to distinguish good and bad job candidates. Thus, good job candidates could use the higher education that they received to signal their good quality and reduce the information asymmetry.

Kirmani and Rao (2000) illustrate a signalling model to distinguish high-quality firms from low-quality firms. The assumption is that information asymmetry exists between both types of firms and their outside investors. When the benefits of signalling outweigh not signalling for high-quality firms and the benefits of not signalling outweigh signalling for low-quality firms, high-quality firms have incentives to signal while low-quality firms do not. As a result, this leads to a separating equilibrium where outsiders could easily distinguish different groups of firms. When the benefits of signalling outweigh not signalling for both high-quality firms and low-quality firms, a pooling equilibrium forms and outsiders are not able to accurately distinguish two types of firms.

In accounting and finance research, corporate disclosure serves as one of the means to communicate and signal outstanding corporate performance and activities to outsiders including investors and stakeholders from a signalling theory perspective. Managers in good performing firms are motivated to voluntarily disclose more information so as to signal their superiority through greater corporate transparency.

## 2.4 Social psychology theories in corporate voluntary disclosure

In addition to economic explanations for the motives of voluntary disclosure, theories that originate from social science have started to gain popularity in accounting disclosure research since the 1980s. Adelberg (1979) explicitly uses the terminology 'narrative' in a study that examines whether the purpose of accounting narrative is to communicate or to manipulate. Interest in the managerial manipulation hypothesis for accounting disclosure decisions continue to emerge, with theories from social psychology starting to be applied in accounting narrative studies. From a social psychological perspective, accounting narratives are tools for managerial self-presentation and manipulation with the aim of influencing outsiders' perceptions of firm performance (Aerts 1994, Beattie and Jones 2002, Merkl-Davies and Brennan 2007).

### 2.4.1 Impression management

The concept of impression management originates from social psychology, which suggests that in social interactions, individuals tend to manage other people's impressions of them by altering their manner, appearance and setting in different social scenarios (Goffman 1959). Jones (1990) points out that impression management is not about deceit or dishonesty; it is more about 'selective disclosures and omissions, or matters of emphasis and timing' (Jones 1990, p.175).

One of the earliest works on impression management dates back to 1959 when sociologist Erving Goffman published the book named *The Presentation of Self in Everyday Life* (Goffman 1959). In his book, Goffman (1959) employs a dramaturgical analysis of social interactions where individuals are engaged in a social endeavour to present themselves

to others in a particular way, just like actors playing characters on stage in front of an audience in a theatre. The impression formed in others' eyes is established through the expressions that are given and given off (Goffman 1959). Expressions given refer to the verbal signs that carry the primary intended information, while expressions given off are usually non-verbal cues that present the information in a certain manner. In social interactions, both the content and the way the content is presented play crucial roles in creating impressions.

In accounting narrative studies, the impression management literature suggests that firms have an incentive to manage impressions of their organisational image and reputation by presenting a self-serving view of their performance (Jones and Shoemaker 1994, Aerts 2005, Merkl-Davies and Brennan 2007, Beattie and Jones 2008, Brennan et al. 2009, García Osma and Guillamón-Saorín 2011). Once motivated to present themselves in the most favourable light, firms will enter the impression construction stage, deciding how to enhance, retain or repair their corporate image and reputation with proper impression management strategies (Leary and Kowalski 1990). Within this theoretical perspective, voluntary disclosure is no longer a tool for information asymmetry reduction. Instead, it is viewed as a vehicle for managerial impression management. Managers may employ various impression management strategies in corporate narratives to construct a favourable corporate image. The study in Chapter 4 adopts the impression management perspective to investigate the use of different impression management strategies in accounting narratives on Twitter.

## 2.4.2 Attribution theory

As one form of impression management, attributional bias, as argued by attribution theory, is another theoretical construct from a social psychological perspective. Psychologist Heider (1958) was the first scholar that proposed a theory of attribution in psychology. Weiner (1985) further develops attribution theory and it has become a major theoretical construct in social psychology. Attribution theory is fundamentally concerned with assigning causes to behaviour. When people try to make sense of events, they may make attributional explanations by attributing one or several causing factors to events.

In accounting narrative research, consistent evidences suggest that attributional bias widely exists in accounting narratives when management explain corporate performance and activities (Aerts 1994, Aerts 2001, Clatworthy and Jones 2003, Aerts 2005). Managers tend to attribute good performance or positive outcomes to internal factors or the firm's own actions and poor performance or negative outcomes to external factors or constraints. Thus, from the perspective of attribution theory, management employ voluntary disclosure as extended textual narratives to provide biased attributional explanations for corporate activities and outcomes.

## 2.5 Social political theories in corporate voluntary disclosure

With the increasing interest in corporate social and environmental disclosure research, theories from a social political perspective also start to permeate into accounting disclosure research. Social political theories recognise the importance of the wider societal context that firms are within and provide broader explanations for firms' voluntary disclosure decisions, especially in the social and environmental dimension (Scott 1997). Gaining social legitimacy sits at the core of social political arguments (Alam 2006). Abernethy and Chua (1996) argue that in addition to technical and operational efficiency, social legitimacy is also what firms should achieve in order to survive in society. From a social political perspective, accounting disclosure is one of the means for managers to respond to external institutional pressures and to the demands from multiple stakeholder groups.

### 2.5.1 Stakeholder theory

In management literature, the shareholder theory and the stakeholder theory of the firm have been two opposing theoretical perspectives on how value should be created and traded and for whom management should be held accountable (Shankman 1999, Parmar et al. 2010). In finance and accounting research, the shareholder theory of the firm has been the principal theoretical construct with its shareholder-centric view of an organisation (Friedman 1962, 1970). Since shareholders provide capital and own properties of a firm, Friedman (1970) suggests that maximising shareholder wealth should be the one and only objective for a firm. This view of the firm has been reinforced by economic theories because its application is believed to lead to a win-win situation with enhanced wealth and a better allocation of resources (Quinn and Jones 1995). In line

with the shareholder perspective of the firm, agency theory argues that management are agents for a firm's shareholders and thus should act in the best interests of shareholders (Jensen and Meckling 1976, Fama 1980).

Stakeholder theory challenges the shareholder theory of companies by arguing that management of a firm need to be responsive to a wide range of stakeholder groups rather than just shareholders (Freeman 1984, Clarkson 1995, Mitchell et al. 1997). From the perspective of stakeholder theory, a firm can be seen as an organisation that is constituted by a set of relationships among groups who can influence or are influenced by the activities of the business (Freeman 1984, Jones 1995, Walsh 2005). These groups include shareholders, customers, employees, suppliers, local communicates and governments, and so on. The role of management is to manage these relationships, to maximise value creation for stakeholders at large and to distribute value created (Freeman 1984). Compared to the shareholder theory of the firm, stakeholder theory adopts a much broader view of an organisation and recognises the importance of meeting the goals of multiple stakeholder groups.

From a stakeholder perspective, accounting is defined as a wider scope of accountability for a firm's financial, social and environmental performance and reporting (Alam 2006). Thus, under the theoretical lens of stakeholder theory, management are motivated to disclose more financial, social and environmental-related information so as to meet the information needs of a wide range of stakeholders in terms of a firm's financial performance, operational activities and the influences of business operations and eventually to enhance the engagement with stakeholders at large.

Stakeholder theory has two branches: an ethical branch and a managerial branch (Deegan and Unerman 2011). The ethical branch is normative in nature and argues that all stakeholder groups, regardless of their relative stakeholder power, should be given equal consideration by management (Donaldson and Preston 1995, Hasnas 1998, Stoney and Winstanley 2001). Within the ethical branch of stakeholder theory, all stakeholder groups have rights to information regarding how an organisation's activity is affecting them, even if they opt not to use this information and even if they do not have the power to influence the organisation's survival. In other words, providing voluntary disclosure is a moral responsibility of managers. Whereas the managerial branch argues that managers will not consider all stakeholder groups equally but only respond to stakeholder groups that are more powerful and more important to the organisation (Gray et al. 1996, Bailey et al. 2000). Therefore, corporate voluntary disclosure is viewed as an organisational tool to respond to powerful stakeholders' information needs, with the aim of gaining support or distracting opposition (Gray et al. 1996). The ethical branch provides a perspective of what companies *should* do when they respond to stakeholder groups' demands, which does not necessarily reflect what is happening in practice. The managerial branch of stakeholder theory is more relevant to the empirical nature and setting of this thesis.

### 2.5.2 Institutional theory

Institutional theory originated in the management academic literature in the 1970s. It provides theoretical explanations for why organisations operating in 'a recognised area of institutional life' (DiMaggio and Powell 1983: 147) tend to adopt similar organisational structures and actions. Institutional theory views organisations within a broader societal context and emphasises the importance of institutional environments and contexts to organisational decision-making. Institutional theorists argue that a variety of

mechanisms, including regulative elements such as laws and regulations, normative elements such as rules, routines and social norms, and cultural-cognitive elements such as values and beliefs about appropriate organisation behaviours within society, drive organisations to conform to institutional pressures and expectations in similar ways (Meyer and Rowan 1977, Zucker 1977, DiMaggio and Powell 1983, Meyer and Scott 1983, DiMaggio and Powell 1991, Scott 1995).

Thus, under the assumption of an institutional perspective, managers' voluntary disclosure decisions can be viewed as strategic responses towards external and internal institutional pressures and expectations rather than cost-minimising motives from an economic perspective. There are similarities between institutional theory and stakeholder theory in that both highlight the importance of gaining social legitimacy and acceptance within a broader societal context when explaining voluntary disclosure motives. However, stakeholder theory emphasises more of a stakeholder perspective where voluntary disclosure is to meet stakeholders' information needs and to engage and build relations with them. While institutional theory focuses more on the institutional environment that companies are within and voluntary disclosure decisions are viewed as corporate strategies to cope with external and internal institutional pressures.

## 2.6 Conclusions

This chapter reviewed a range of theories that have been adopted in prior corporate voluntary disclosure and accounting narrative research. In particular, agency theory and signalling theory from an economic perspective, impression management and attribution theory from a social psychological perspective, and stakeholder theory and institutional theory from a social political perspective are described and discussed in this chapter.

As discussed in previous sections, theoretical perspectives with a *social* nature are considered to be more relevant and more appropriate to the empirical setting of this thesis. The two theories from the economic camp have some limitations in explaining voluntary disclosure decisions. First, the limitation of agency theory is that it adopts an investor-centric view and focuses solely on the principal-agent relationship between shareholders and management. Meeting the information needs of the capital providers is viewed as the goal for information asymmetry reduction via voluntary disclosure. Stakeholders' information needs are largely neglected under this theoretical perspective. Second, the limitation of signalling theory lies in its focus on good performers. It is usually applied to explain good performers' behaviour as one way to distinguish their outstanding performance from firms with poor performance (Merkl-Davies and Brennan 2007). Poor performers are largely muted and their behaviour is given little consideration within this theoretical perspective. Therefore, these two theories are not the most appropriate theoretical constructs for the empirical setting of this thesis.

Attribution theory from the social psychological perspective is not adopted in this thesis because it involves causal reasoning analysis to identify the attributional patterns. Attribution analysis is usually applied in the narratives that with a relatively longer length,

such as the chairman statements in annual reports, to allow logical reasoning. It is difficult to conduct reasoning analysis within the empirical setting of Twitter, given the short length of each tweet. Institutional theory may be a promising theoretical construct for future research but it is not considered in the scope of this thesis. One potential limitation of institutional theory lies in its overemphasis on institutional environments in the process of conformity and isomorphism (DiMaggio and Zucker 1988, Oliver 1991, Scott 1991). Firms may consciously employ strategic responses for self-serving benefits.

Given the limitations and inappropriateness of alternative theories discussed in this chapter, impression management from a social psychological perspective and stakeholder theory from a social political perspective are adopted to guide the empirical investigations of corporate financial disclosure on social media in chapters 4 and 5 respectively. The rationales for the choice of theories have been summarised in Chapter 1 Section 1.2. The study in Chapter 4 develops hypotheses based on the impression management theory and investigates managerial employment of different impression management strategies when companies report annual earnings on Twitter. Accordingly, in Chapter 3, a literature review of empirical research will be conducted in the area of impression management in accounting narratives with a focus on impression management strategies and tactics.

Developed upon the stakeholder theory, the study in Chapter 5 examines the associations between board composition, financial disclosure and stakeholder engagement on Twitter. Thus, in Chapter 3, a review of empirical research in the field of corporate governance and voluntary disclosure will be conducted with a focus on corporate board characteristics. Although this thesis focuses on financial disclosures on Twitter,

stakeholder theory has been a popular theoretical framework applied in studies that examine corporate social and environmental disclosures. Thus, relevant empirical work on the relations between board composition and non-financial disclosures are also included in the scope of the review in Chapter 3.

# 3 Empirical studies of the corporate voluntary disclosure literature

## 3.1 Introduction

In Chapter 2, a range of theoretical frameworks that explain managerial motives for corporate voluntary disclosure is discussed and evaluated. Impression management theory, from the social psychological perspective, and stakeholder theory, from the social political perspective, are of particular relevance to the empirical investigations of this thesis. In this chapter, the literature review will focus on related empirical work in prior voluntary disclosure literature. Corporate voluntary disclosure literature is broad and rich. The scope of the empirical literature review in this chapter covers prior studies that are closely related to the empirical investigations in chapters 4 and 5. More specifically, this chapter aims to provide a systematic review of empirical studies on 1) accounting narratives and impression management; 2) board composition and voluntary disclosure; and 3) corporate reporting on social media.

The study in Chapter 4 adopts the impression management perspective and examines whether the use of impression management strategies in financial disclosure and dissemination on social media is affected by firms' financial performance. In this chapter, a systematic review of prior empirical studies on accounting narratives and impression management is conducted. The study in Chapter 5 examines whether corporate governance is a key determinant for firms' disclosure decisions on social media. More specifically, it investigates the association between board independence and the level and connectivity of financial disclosure adopting a stakeholder theory perspective. A broad

review of corporate governance and voluntary disclosure is presented in this chapter covering related empirical studies on corporate governance control variables.

Another goal of this review is to summarise and map out the state of the emerging research area: corporate reporting on social media. This stream of literature is relatively recent since using social media to communicate financial performance is an emerging phenomenon. Several pioneering studies will be reviewed in detail in this chapter.

The remainder of the chapter is structured as follows. Section 3.2 discusses accounting narratives and impression management literature. Section 3.3 presents empirical studies on corporate governance and voluntary disclosure. Studies in the area of corporate reporting on social media are summarised in Section 3.4. Each of the above sections are concluded by a discussion of the strengths, limitations and gaps identified in the literature. Finally, Section 3.5 offers a summary and concluding remarks.

## 3.2 Accounting narratives and impression management

The phenomenon of impression management originates from social psychology, which suggests that in social interactions, individuals tend to manage other people's impressions of them by altering their manner, appearance and setting in different social scenarios (Goffman 1959). Accounting scholars that adopt the impression management perspective in accounting narrative research are under the assumption that voluntary disclosure is driven by self-serving motives and that information disclosed is not neutral and unbiased (Jones and Shoemaker 1994, Merkl-Davies and Brennan 2007, Beattie and Jones 2008, Brennan et al. 2009). Managers are motivated to hide adverse information and emphasise their success in order to distort investors' perceptions of firm performance (Adelberg 1979, Bloomfield 2002).

Tedeschi and Melburg (1984) argue that impression management strategies can be largely classified into defensive and assertive strategies. In the context of accounting narrative research, firms employ assertive impression management strategies to proactively establish and manage a particular organisational identity of themselves through emphasis, enhancement and ingratiation in accounting narratives (Bolino et al. 2008, Benson et al. 2015). However, when a firm is in unfavourable circumstances, defensive impression management strategies are employed by means of downplaying, minimising or concealment (Desai 2014, Illia et al. 2014). The purpose of defensive impression management is to manage or maintain their organisational image in negative circumstances (Abrahamson and Choelsoon 1994, Westphal et al. 2012). Depending on which type of impression management strategies – assertive or defensive – firms would like to adopt under different circumstances, they can use a range of different impression management tactics to achieve their purposes.

A number of impression management tactics employed in accounting narratives have been identified in voluntary disclosure literature. Brennan et al. (2009) identified several impression management tactics which can be classified into three categories based on the types of content analysis involved: syntactical manipulation, thematic manipulation and presentational manipulation. Syntactic manipulation mainly focuses on the analysis of the readability of accounting narratives without parsing the meaning of texts. Thematic manipulation involves the analysis of managerial attribution of outcomes and tone management. Presentational manipulation focuses on the analysis of how firm performance is presented using a range of self-presentational patterns including qualitative, quantitative and visual formats. The following sections provide a review of empirical work in these three categories respectively. Section 3.2.4 summarises the strengths, limitations and gaps in the literature.

### 3.2.1 Syntactical manipulation in accounting narratives

Syntactic studies constitute one of the largest groups of research in prior impression management literature. These studies have focused on the linguistic feature of natural language, which is measured by readability. The assumption behind readability studies is that managers have incentives to manipulate the readability of corporate reports. In order to obfuscate investors' perceptions of firm performance, managers use language that is more difficult to read in corporate reports, especially when they report poor performance.

*Readability studies*

Readability studies adopt readability formulas such as the Flesch index, the Dale-Chall index and the Fog index to measure the probable readability of texts from the perspective of syntactical complexity (Jones and Shoemaker 1994). Readability studies of textual

disclosures in corporate reports focus mainly on four aspects: (1) reading ease of corporate reports (Barnett and Leoffler 1979, Courtis 1986, Jones 1988, Smith and Taffler 1992b); (2) reading difficulty of different sections in corporate reports (Courtis 1986, Schroeder and Gibson. 1990, Smith and Taffler 1992a, Clatworthy and Jones 2001, Courtis 2004b); (3) change of readability of corporate reports over time read (Pashalian and Crissy 1952, Soper and Dolphin 1964, Smith and Smith 1971); (4) correlation studies between corporate report readability and other variables such as firm performance (Baker and Kare 1979, Courtis 1986, Smith and Taffler 1992b, Subramanian et al. 1993, Courtis 1995, Clatworthy and Jones 2001, Rutherford 2003, Li 2010, Miller 2010, Lee 2012, Loughran and McDonald 2014).

Jones and Shoemaker (1994) and Merkl-Davies and Brennan (2007) have reviewed and summarised the empirical research on readability of accounting narratives. Using Flesch and other indexes, most studies have come to a general consensus that corporate reports are difficult to read (Barnett and Leoffler 1979, Courtis 1986, Jones 1988, Smith and Taffler 1992b). By replicating previous readability studies (Pashalian and Crissy 1952, Smith and Smith 1971, Smith and Taffler 1992a), some studies agree that readability of corporate reports declines over time (Soper and Dolphin 1964, Barnett and Leoffler 1979). Jones (1988) also finds a significant downward trend in readability by looking at one UK firm from 1952 to 1985. However, there are inconclusive results regarding readability of different sections in annual reports. Some studies compare footnotes to chairman narratives and find that footnotes have a lower reading ease (Courtis 1986, Schroeder and Gibson. 1990). Clatworthy and Jones (2001) conclude that readability variability is not associated with firm performance, while Courtis (2004b) finds that bad news leads to high readability variability. Additionally, some researchers (Miller 2010, Lee 2012)

examine the correlation between readability and market efficiency. For example, by examining 13,000 10-K filings from 1995 to 2006, Miller (2010) finds that reports with higher complexity lead to lower trading activity, which is mainly caused by a reduction in trading activity of small investors. Lee (2012) suggests that complex reports hinder earnings-related information being efficiently incorporated into stock prices.

The relation between firm performance and readability is the most examined study area among readability studies and mixed results have been found. Linguistic-centred studies that examine the association between readability level and firm performance mainly test the managerial obfuscation hypothesis (Adelberg 1979, Courtis 1998, Li 2008, Miller 2010, Lee 2012, Loughran and McDonald 2014). The salience of this hypothesis is twofold: managers in poorly performing firms deliberately construct barriers in communications between management and stakeholders by using difficult and complex writing; and well performing firms seek to use clear and simple writing to increase reading ease and accordingly promote effective communication (Courtis 1998, 2004b). Many studies have confirmed this result. For example, Li (2008) investigates the readability of annual reports using two readability measurements: the Fog index and document length. He finds that poor earnings performance is associated with high reading difficulty and easier to read annual reports are positively associated with consistently good earnings performance. Some authors provide similar evidence that low readability is associated with poor firm performance (Smith and Taffler 1992b, a, Subramanian et al. 1993). By investigating large samples using computational-based approaches, several studies also find associations between readability and stock market reactions (Li 2010, Miller 2010, Loughran and McDonald 2014). Whereas some studies find there is no

significant relationship between readability and firm performance (Baker and Kare 1979, Courtis 1986, Courtis 1995, Clatworthy and Jones 2001, Rutherford 2003).

*Criticisms of readability studies*

Despite the fact that most of the readability formulas, such as the Fog index and the Flesch index, provide relatively objective assessments of texts, they are questionable in terms of their appropriateness and reliability for evaluating readability. One aspect that weakens the reliability of formula-based approaches is oversimplification (Eakpisankit 2012). Based on word complexity and sentence length for measurement, readability formulas ignore several factors that affect the complexity of text. Dreyer (1984) points out that different positioning of clauses or other sentence components could make a difference to the overall text readability. He also argued that a well-structured text with coherence and logic could score similarly to a poorly organised text since readability formulas only measure on word and sentence level without considering the logical organisation of narratives.

Second, the vagueness caused by formula components themselves challenges their appropriateness when being applied in business contexts. Jones and Shoemaker (1994) question their appropriateness in their review that readability formulas were originally designed for analysing children's material. (Loughran and McDonald 2014) find that the Fog index is not a reliable approach in business contexts as the word count of 'complex' words consists of a significant amount of business terms that can be easily understood by investors.

Third, although some computational-based large-sample studies have been performed in recent years, many previous readability studies are small-sample based and have a limited time range, and therefore lack robustness (Baker and Kare 1979, Jones 1988, Subramanian et al. 1993, Courtis 1995, Rutherford 2003). Furthermore, there is a lack of empirical evidence that readability manipulation performed on the syntactic attribution of words and sentences can lead to meaning distortion. Rutherford (2003) argues that reading ease is neither a reliable indicator of firm performance nor a managerial obfuscation tool. Instead, high reading difficulty is a result of complex corporate events that simply require extra words to explain. There is another concern about using readability to indicate effective communication. Reading ease does not comprehensively represent the actual process of users receiving and understanding information produced by preparers. Thus, whether readability is an appropriate surrogate to indicate managerial impression management behaviour is questionable.

In terms of the empirical setting of this thesis, there is also a practical difficulty to analyse the readability of tweets. Since readability studies have to be performed on passages with sufficient length, such as at least 100 words (Courtis 1998), they are not suitable for the study of tweets, which have a maximum of 280 characters. Thus, given the above limitations of readability measurement as one impression management tactic, readability analysis is not adopted, as in the empirical investigation in Chapter 4.

*Understandability studies*

Responding to the criticisms of readability studies, understandability studies have emerged as one small stream of research in impression management literature. Some scholars point out that nearly every prior study is based on the perception that readability

equates to understandability (Jones and Shoemaker 1994). Smith and Taffler (1992b) and Smith and Jones (2014) suggest that readability and understandability are two different concepts that measure different textual features.

The characteristics and sophistication levels of readers cannot be ignored when the textual complexity of corporate disclosure is assessed. Bloomfield (2012) highlights the importance of users' prior understanding in exhibiting higher disclosure efficiency. Prior literature (Oliver 1974, Smith and Taffler 1992a) documents the differences in understanding financial narratives between different groups of users with various degrees of accounting sophistication. For instance, Smith and Taffler (1992a) suggest that due to different prior knowledge bases, backgrounds and experience, sophisticated and unsophisticated users have different capacities in processing accounting narratives. Additionally, an experimental study conducted by Tan et al. (2014) reveals that the perceptions of less sophisticated investors are more easily affected by impression management strategies than sophisticated users.

Understandability is a reader-centred analysis of textual disclosures, which is contingent on both syntactical complexity and readers' comprehensive characteristics, such as background and prior knowledge (Jones 1997). According to Smith and Jones (2014), some prior studies have pointed out that readability and understandability are two different approaches to measuring textual difficulty as the latter focuses on psycholinguistic and sociolinguistic analysis of narratives (Smith and Taffler 1992b, Jones and Shoemaker 1994, Clatworthy and Jones 2001).

The Cloze procedure is primarily used in prior studies as a proxy for understandability under various accounting narrative contexts (Adelberg and Razek 1984, Raabe et al. 1984, Smith and Taffler 1992b, Shaffer et al. 1993). By deleting every fifth or tenth word in a passage, Cloze is assumed to test readers' comprehension through filling in missing words. Smith and Taffler (1992b) test the understandability of 18 passages in annual reports on accounting students and accounting practitioners using Cloze and find that only three and eight passages are understandable respectively. Moreover, low correlation between Cloze and readability formulas in their experiment results provide evidence that Cloze does measure something different to readability.

*Criticisms of understandability studies*

Understandability studies are still in an infant stage due to several methodological limitations. There are many criticisms of the Cloze procedure serving as a proxy for understandability. First, several researchers argue that Cloze measures something else instead of understandability, such as the predictability of missing words (Shanahan et al. 1982, Kintsch and Miller 1984, Jones 1997), the redundancy of text (Kintsch and Vipond 1979) and sentence comprehension (Royer 2004).

Second, there is no consensus on the benchmark criteria scores of the Cloze procedure (Jones 1997). Cloze is benchmarked against multiple choice scores but the score criterias vary in different studies (Bormuth 1967, Bormuth 1968, Rankin and Culhane 1969, Entin and Klare 1978). Therefore, the interpretation of the Cloze score is problematic. Finally, synonyms make it more difficult and time-consuming to process the scores of Cloze than alternative methods (Smith and Jones 2014).

Smith and Jones (2014) examine three alternative methods for measuring understandability, which are the C-test, the meaning identification test (MIT) and the sentence verification technique (SVT). The C-test is a variant of a simplified Cloze procedure while the MIT and the SVT are comprehension tests in the form of questions and answers. By conducting four tests on 44 UK undergraduate students, they find low correlations between Cloze/C-test and MIT/SVT, which reinforce the criticism that Cloze-type procedures do not actually measure the understandability of text. While the MIT and the SVT seem be more relevant in measuring understandability, the MIT is more supported by several researchers due to its greater validity and reliability than the SVT (Marchant et al. 1988, Fisher et al. 1999).

### 3.2.2 Thematic manipulation in accounting narratives

Thematic studies in impression management literature focus on the analysis of meaning or linguistic sentiment of corporate disclosures. Thematic analysis is to 'extract and analyse themes inherent within the message' (Jones and Shoemaker 1994: 143) so as to find trends, correlations or attitudes from the text. Fisher (1984) argues that all forms of human communication can be viewed as types of storytelling consisting of reasons, based on which receivers interpret stories and make decisions. As one special type of narrative, corporate stories are crafted accounting narratives with deliberate consciousness (Czarniawska 2004, Riessman 2008). By making use of rhetorical strategies, impression management is viewed as an organisational behaviour underpinned by the art of persuasion (Beattie 2014). Prior thematic studies broadly fall into two realms: (1) management attribution studies built on attribution theory; and (2) meaning modification and conditioning through tone management.

*Management attribution studies*

Drawing from attribution theory, a number of prior studies investigate management attribution patterns in corporate disclosures using thematic analysis (Bowman and Haire 1976, Chan 1979, Ingram and Frazier 1980, Bettman and Barton 1983, Staw et al. 1983, Aerts 1994, Baginski et al. 2000, Aerts 2001, Clatworthy and Jones 2003, Baginski et al. 2004, Li 2011). This group of research examines managerial attribution of firm performance by analysing patterns of causal reasoning in accounting narratives. Several studies provide empirical evidence that management tend to attribute positive performance to internal factors while blaming external factors for negative performance (Aerts 1994, Aerts 2001, Clatworthy and Jones 2003).

A number of studies (Bettman and Barton 1983, Aerts 1994, Clatworthy and Jones 2003, Aerts 2005) have focused on chairmen's statements or directors' reports in annual reports to examine the existence of managerial self-serving attribution through the lens of impression management. Aerts (2005) compares the attribution patterns from the directors' reports of 95 listed and 72 unlisted firms in Belgium for the year of 1997. He finds that listed firms are more likely to involve higher levels of attributions than unlisted firms and the defensive attribution tendency of listed firms is particularly significant when firm performance is poor. His study also highlights the importance of content and context factors in managerial motivational studies. In a large sample study, Li (2011) finds that management more frequently use first-person pronouns when firms have positive performance, indicating self-serving attribution.

Moreover, a number of prior studies investigate the rhetorical strategy of enhancing the credibility or persuading power of a narrative by referring to authorities with reputation,

expertise or power (Nørreklit 2003, Young 2003, Cianci and Kaplan 2010, Higgins and Walker 2012, Westphal et al. 2012). For instance, Cianci and Kaplan (2010) conduct two experiments on MBA students in order to investigate the influence of a CEO's pre-existing reputation and the plausibility of managerial explanation on unsophisticated investors' judgements of future firm performance and management reputation. Their findings suggest that unsophisticated investors tend to perceive a positive management reputation when a favourable pre-existing reputation is provided, despite the implausible management explanation. Additionally, Higgins and Walker (2012) find that some firms extensively appeal to authority by emphasising expertise, history, self-criticism and similitude, so as to persuade readers that they are credible and trustworthy as socially and environmentally responsible firms. Westphal et al. (2012) also investigate the persuasive power of referring to third party authority in corporate communication. They find that third party authority helps to lead to positive coverage of firm performance by journalists.

*Tone management studies*

Tone management is another major stream of thematic studies in prior literature. The assumption of tone management studies is that managers have an incentive to tailor the sentiment of their language to influence investors' perceptions of firm performance. Despite the general requirement that corporate disclosures should be neutral, the sentiment of accounting narratives is manipulated towards a more positive or negative tone under difference circumstances for impression management purposes. In a recent survey of textual analysis literature, Loughran and McDonald (2016) summarise the three most adopted approaches for tone analysis, including: (1) word lists for accounting and finance research (Henry 2008, Loughran and McDonald 2011); (2) Harvard General

Inquirer word lists and DICTION for general use with various word categories; and (3) the computational linguistics tool, Naïve Bayes classification.

A number of studies conduct empirical tests to examine whether the tone in corporate reports provides incremental information serving as indicators of financial performance or if it is used as a vehicle for impression management. Inconclusive results have been found in this research area. Some studies draw conclusions that narrative information can serve as an indicator of future performance (Frazier et al. 1984, Tennyson et al. 1990, Abrahamson and Amir 1996). Some recent computational-based large-sample studies are also consistent with this argument. For example, by using the Bayesian statistical approach, Li (2010) finds that the level of optimism in MD&As is positively associated with future firm performance. By examining the tone of textual disclosures, Kothari et al. (2009) reveal that favourable disclosures are negatively correlated with firms' risk levels, while Feldman et al. (2010) find that favourable disclosures are positively correlated with market short-term responses.

On the other hand, some empirical evidences also support that biased reporting exists as a result of impression management. A number of empirical studies (Feldman et al. 2010, Loughran and McDonald 2013, Huang et al. 2014) build on Loughran and McDonald (2011) word lists to gauge the tone of disclosure specifically in accounting and finance contexts. Assertive impression management strategies suggest that managers tend to employ a positive tone to strengthen the favourable image of firm fundamentals. Some studies (Feldman et al. 2010, Huang et al. 2014, Tan et al. 2014) document the persuasive power of language sentiment on investor perception and reaction. For instance, Feldman et al. (2010) argue that a tone change in a Management Discussion and Analysis (MD&A)

section of 10-K filings provides incremental information for investors. They document a significant association between tone change in MD&A disclosure and short-window returns during filing dates, as well as excess return drift. However, some studies provide contradictory evidences that support a strategic perspective. Based on 14,475 observations of abnormal positive tones in annual earnings press releases from 1997 to 2007, Huang et al. (2014) document that an abnormal positive tone in an earnings press release has a temporary misleading effect on investors, which is reflected in an immediate positive stock return during the earnings announcement period. However, a delayed negative stock return is observed after one or two quarters, due to market correction.

Additionally, some studies find that positive words in corporate disclosure could sometimes backfire. Tan et al. (2014) conduct an experiment on 142 MBA students from two Singapore universities to examine the joint effect of tone and form manipulation on the perception of investors with different levels of accounting sophistication. Their findings suggest that when disclosure is difficult to read, less sophisticated investors perceive a favourable earnings performance if the earnings release has a positive tone, while more sophisticated investors make a judgement of lower performance. The effect of tone on investors' perceptions is not significant when textual content is easy to process. Although they use the term 'readability' in their study, the way they manipulate 'readability' in the experiment is form manipulation, because their rewriting involves changes in word and sentence length as well as presentation layout.[1] Findings in Tan et al. (2014) not only provide evidence that tone does affect investors' judgements but also

[1] The authors convert visual narratives, such as tables and bullet presentations, into textual narratives in order to create a text with lower readability.

indicate a joint effect of both form manipulation at the syntactical level and tone management at the thematic level.

### 3.2.3 Presentational manipulation in accounting narratives

In addition to syntactical manipulation and thematic manipulation, presentational manipulation is another area that has been widely examined in impression management literature. This line of research investigates the use of self-presentational patterns (such as texts, numbers and visuals) in corporate disclosures. According to Merkl-Davies and Brennan (2007), one type of managerial impression management behaviour is to emphasise good news through the manipulation of presentational forms. Form manipulation can be realised by selectivity, measurement distortion and presentational enhancement (Beattie and Jones 2002, 2008), so as to provide receivers with more positive initial impressions of firm performance.

Leung et al. (2015) find that minimal narrative disclosure serves as a concealment strategy to cover up or diminish negative performance, in a study of annual reports of 517 Hong Kong listed firms published between 2005 and 2006. Furthermore, some studies (Behn and Vaupel 1982, Wallsten and Budescu 1990) suggest that quantitative information is more precise in comparison to qualitative information, as the latter is usually open to interpretation and therefore can be biased. This argument is not completely true as numerical disclosure can also be biased due to selectivity in the choice of earning numbers (Merkl-Davies and Brennan 2007, Brennan et al. 2009, García Osma and Guillamón-Saorín 2011). Therefore, quantitative disclosure in corporate reports can

be used strategically to emphasise good performance for impression management purposes rather than providing incremental information.

Additionally, compared to textual narratives, communication through visual narratives such as photos, pictures or graphs has the potential to influence investors' perceptions (Beattie and Jones 2000, 2002, Davison 2007, Beattie and Jones 2008, Davison 2015), from the perspectives of human cognition and memory (Tversky 1974, Anderson 1980). Davison (2015) reviews and synthesises a wide range of interdisciplinary research on the use of visuals in accounting narratives. A relatively comprehensive review of literature on corporate use of financial graphs in corporate reports is presented in Beattie and Jones (2008).

Beattie and Jones (2000) analyse the use of financial graphs in firms' annual reports based on a sample of 137 large firms in the UK for a five-year period from 1988 to 1992. The authors provide supporting evidence for biased use of financial graphs in annual reports since the results show that firms' choices to use key financial graphs in annual reports are significantly associated with favourable corporate performance. Moreover, measurement distortion in graphs is one technique usually adopted by firms in corporate reports to portray a favourable image of financial performance to manipulate investors' perceptions. Using an experimental method, Beattie and Jones (2002) find evidence that investors' perceptions of a firm are likely to be affected if the measurement distortion in financial graphs in corporate reports is greater than 10%, especially for non-professional investors. Cho et al. (2009) examine whether media richness in corporate social and environmental disclosure on corporate websites affects stakeholders' trust in these disclosures and whether this affects stakeholders' perceptions of firms' social and

environmental performance. The authors find that media richness in corporate social and environment disclosure is significantly and positively associated with stakeholders' perceptions of corporate social responsibility. They provide supporting evidence that stakeholders' perceptions of corporate performance can be potentially misled by media-rich presentation of corporate disclosure.

### 3.2.4 Strengths, limitations and gaps

*Strengths*

The body of literature on impression management in accounting narratives is characterised by two aspects of strengths. First, one fundamental strength is that it demonstrates the relevance, usefulness and effectiveness of impression management as an alternative theoretical construct in explaining managerial strategic disclosure behaviours. The predominate theoretical perspective in corporate disclosure literature has been the economic argument, which views voluntary disclosure as a means of providing incremental information to reduce information asymmetry between investors and management. The width and richness of the impression management and corporate disclosure literature provide a great deal of empirical evidences and knowledge of managerial opportunistic behaviours in a variety of corporate disclosure outlets and contexts.

Second, this body of literature identifies a number of impression management tactics adopted in corporate disclosures and develops various measurements for these tactics. Impression management itself is a complex human behaviour which involves subtle and sophisticated techniques in different social scenarios and circumstances. The review of empirical studies in this chapter summarised a broad array of impression management

tactics in terms of syntactical, thematical and presentational manipulations identified in traditional corporate disclosure outlets. Despite the criticisms of various measurement issues of these tactics, this body of literature provides a solid foundation and framework for accounting scholars to further refine methodological issues in measurement and to explore new impression management tactics in emerging disclosure channels in a systematic manner.

*Limitations*

The methodological limitations and challenges in prior impression management and accounting narrative literature will be discussed in the following. First, in terms of syntactic studies, readability formulas have been questioned for their appropriateness and reliability as measures for textual complexity. Based on the calculations of word length and sentence length, readability formulas ignore several important factors that affect textual complexity, such as grammars, logical organisations and contexts. These criticisms have been discussed in detail in Section 3.2.1. Moreover, as highlighted by understandability studies, readability studies also ignore the differences in readers' backgrounds, prior knowledge and accounting sophistications when they gauge the actual textual complexity of accounting narratives.

Second, in terms of thematic and presentational studies, these have a strong methodological flavour (Li 2010), which indicates a diverse range of recording units and coding approaches adopted by researchers. Many of these studies involve intensive manual content analysis of qualitative data with linguistic subtleties (Brennan et al. 2009). It is time-consuming and also challenging to ensure consensus and consistency among different coders. Subjectivity in the human coding and author interpretation processes

weakens the robustness of many thematic and presentational content analysis studies. Even the recent computational natural language processing approach also involves human coding in the initial data training process.

*Gaps*

After reviewing the empirical literature in the area of impression management and accounting narratives, several gaps can be identified. First, the impression management and accounting narrative literature predominantly focuses on traditional corporate disclosure outlets, especially annual reports. There is an increasing trend of examining alternative disclosure outlets, such as management forecasts, press releases and conference call manuscripts. Nevertheless, almost all of them are print-based traditional disclosure outlets.

The rapid development in information and communication technology in this decade has brought significant changes in the corporate communication landscape. In this digital era, social media has quickly become a key communication tool which facilitates direct communication with stakeholders at large. However, empirical investigations into corporate impression management behaviour in emerging communication channels such as social media are still scarce. For example, we do not know whether firms have further expanded their impression management stage to this new communication channel. If so, we still do not know how firms employ different impression management strategies when they report different performance on social media, and how they apply or adapt those identified impression management tactics in traditional disclosure outlets to these social networking platforms.

Second, new corporate disclosure outlets such as social media provide a potentially fruitful avenue to explore new impression management tactics. Prevailing impression management tactics have been documented and well investigated in traditional print-based corporate disclosures. However, social media is a distinctive creature compared to traditional communication channels. It is direct, quick and interactive. What makes social media unique is its broad array of rich medias, information dissemination tools and interactive functions. We do not know whether firms have started to employ new impression management tactics that have not been identified in prior literature and we do not know how they use these new tactics in their disclosure on social media.

Third, as a whole, this body of literature has an overemphasis on the behaviour of the supply side of corporate disclosures. The demand side, which represents the users of corporate disclosures, is largely neglected in prior literature. Impression management is fundamentally about influencing people's perceptions. The outcome of impression management remains unclear in terms of whether users' perceptions of firm performance are influenced or changed by impression management tactics (Brennan et al. 2009). Some studies use capital market reactions as evidences of changes in investors' perceptions. However, this indicates the aggregate effect of the capital market as a whole and is investor-centric. As discussed in Section 3.2.1, the outcome of impression management may vary between different types of users with different levels of accounting sophistication. Especially within the empirical setting of this thesis, social media, audiences are constituted by a wide array of different stakeholder groups with less accounting sophistication compared to investors. It remains unknown how these less sophisticated stakeholders would respond to firms' use of impression management strategies and tactics within this unique context. The interactive nature of social media

provides an opportunity to gain an insight into the behaviour of the demand side of corporate disclosures. Thus, it is an intriguing research question to examine the responses of users of corporate disclosures in order to gain a more fine-grained understanding of the outcome and process of impression management.

The empirical study conducted in Chapter 4 aims to fill the abovementioned gaps in the impression management and accounting narrative literature. This study uses FTSE 100 firms' earnings announcements on Twitter as the empirical setting. It aims to examine firms' use of different impression management strategies and tactics in their financial tweets during earnings announcement events. It also aims to provide an initial insight into the outcome of impression management, as evidenced by stakeholder engagement on Twitter.

## 3.3 Empirical studies on corporate governance and voluntary disclosure

Corporate governance research has been an important strand of studies in the accounting and finance literature. In the accounting and finance field, agency theory is the prevailing theoretical construct adopted to posit the relationship between corporate governance and firm performance, as well as transparency. From an agency theory perspective, the separation of ownership and control in organisations gives rise to the information asymmetry between management and investors (Jensen and Meckling 1976, Jensen 1986). Since agency theory assumes that managers and investors have conflicting interests, a fundamental concern of the theory is to align the interests between the two through effective monitoring and control (Jensen and Meckling 1976, Fama 1980, Fama and Jensen 1983). Corporate governance serves as an important control and monitoring mechanism to mitigate the agency problem and foster a transparent information environment (Shleifer and Vishny 1997, Bushman and Smith 2001).

Despite the same theoretical perspective being used in research, finance and accounting scholars concern themselves with different focuses of investigation. Prior governance research in finance has primarily investigated the influence of corporate governance on financial performance and firm value, while accounting literature focuses on the impact of corporate governance on the mechanisms of transparency in terms of the extent or the quality of corporate reporting. Among several corporate reporting mechanisms, voluntary disclosure is one important means that improves transparency by providing additional information beyond mandatory requirements (Healy and Palepu 2001, Verrecchia 2001). Prior accounting literature has investigated various types of voluntary disclosure, such as

management earnings forecasts (Ajinkya et al. 2005), earnings press releases (García Osma and Guillamón-Saorín 2011), corporate social responsibility (CSR) and environmental disclosure (Lewis et al. 2014, Liao et al. 2015), intellectual capital disclosure (Li et al. 2012) and internet reporting (Abdelsalam and Street 2007).

Empirical studies on the effect of corporate governance on corporate reporting decisions concentrate on the characteristics of corporate boardrooms including boards of directors' characteristics and audit committee characteristics. A board of directors sit at the heart of corporate governance mechanisms. An effective and well-functioning board oversees the executive management's decision-making to ensure that they act in the interests of shareholders (Fama and Jensen 1983). The role of the audit committee in corporate voluntary disclosure decisions is also widely investigated due to its function in overseeing corporate reporting processes. This section reviews 32 prior studies on corporate governance and voluntary disclosure that have been published in top accounting and financial journals over the past 15 years. Based on the most investigated, but not exhaustive, corporate governance variables in these articles, three main camps of studies can be identified, namely board composition, board demographic diversity and audit committee characteristics. Table 3.1 provides a brief summary of the empirical papers that are reviewed in this section.

## 3.3.1 Board composition and voluntary disclosure

*Independent directors*

A substantial amount of literature has investigated the contribution of independent directors towards good corporate governance. In prior literature, different terms have been used to refer to the board of directors who are not executive directors of a firm, such

as *independent directors*, *outside directors* or *non-executive directors*. In this review, these terms are used interchangeably. However, it should be noted that depending on how '*outside*' or '*independent*' are defined, these terms may result in slight differences. Agency theory argues that independent directors on the board act as an effective internal control mechanism to mitigate agency conflicts by monitoring and evaluating inside directors' management decision-making (Fama 1980, Fama and Jensen 1983). One important aspect of non-executive directors' responsibility, as specified in the Tyson Report (2003), is to oversee the adequacy and veracity of the financial disclosure and other types of corporate disclosure provided to stakeholders. Non-executive directors can reduce managerial self-serving behaviours by supervising corporate disclosure processes to promote an environment that embraces greater transparency (Ajinkya et al. 2005).

A number of studies establish a positive association between board independence and several corporate disclosure variables: disclosure quality (Beasley 1996, Klein 2002, Yekini et al. 2015), the frequency and timing of earnings disclosure (Sengupta 2004, Ajinkya et al. 2005, Karamanou and Vafeas 2005) and the level of voluntary disclosure in annual reports (Cheng and Courtenay 2006, Lim et al. 2007, Patelli and Prencipe 2007, Li et al. 2008, Chau and Gray 2010, Mallin and Ow-Yong 2012, Jizi et al. 2014, Elshandidy and Neri 2015, Liu 2015, Muttakin et al. 2018).

Ajinkya et al. (2005) find that the proportion of outside directors is positively and significantly associated with both the likelihood and the frequency of issuing management earnings forecasts. Elshandidy and Neri (2015) investigate the risk disclosure practices in 290 UK firms and 88 Italian firms for a five-year period from 2005 to 2010. Their findings suggest that a positive and significant relation exists between

board independence and voluntary risk disclosure in UK firms. Using a sample of 4,253 firm-year observations of Chinese listed firms from 2008 to 2012, Liu (2015) finds that higher board independence helps to increase the extent of forward-looking disclosure in annual reports.

Nevertheless, empirical evidences of the effectiveness of outside directors in improving corporate transparency are inconclusive. Within a Singapore context, Eng and Mak (2003) document a negative association between board independence and the level of voluntary disclosure in annual reports. Abdelsalam and Street (2007) also add evidences to the negative association camp by showing that UK firms with higher percentages of independent directors are less likely to make timely corporate internet reporting on their websites. Moreover, findings in some studies indicate that there is no significant association between board independence and corporate disclosure or that the relation only exits in certain industries (Park and Shin 2004, Prado-Lorenzo and Garcia-Sanchez 2010, Hidalgo et al. 2011, Hodgdon and Hughes 2016, Katmon and Al Farooque 2017). For example, Park and Shin (2004) provide Canadian evidences that having more independent directors on the board does not reduce earnings management. By analysing the voluntary disclosure practices in 100 firms in Mexico from 2005 to 2007, Hidalgo et al. (2011) suggest no significant association exists between board independence and intellectual capital disclosure within a Mexican context. Additionally, Hodgdon and Hughes (2016) find that the significant relation between independent directors and the disclosure of judgements and estimates in the notes of financial statements is found only in manufacturing firms after investigating 147 EU firms across 35 industries.

*Board size*

The number of directors on the board is arguably an important factor that affects board performance. Some argue that firms with a larger board size are more likely to be wary of agency problems because there are more directors overseeing managers' decision-making. A larger board enhances the advising and monitoring capacity by pooling together a variety of experiences, resources and perspectives and, therefore, leads to greater corporate transparency (John and Senbet 1998, Lim et al. 2007, Hidalgo et al. 2011). However, despite the increased monitoring capacity brought about by more directors on the board, Jensen (1993) suggests that oversized boards would hinder board performance due to impaired decision-making efficiency and additional cost of communication and coordination.

Prior empirical studies provide mixed evidences of the effect of board size on board monitoring performance. Several studies document the adverse effect of oversized boards on performance and transparency (Yermack 1996, Cerbioni and Parbonetti 2007, Prado-Lorenzo and Garcia-Sanchez 2010, Faleye et al. 2011). Based on a sample of 452 US firms from 1984 to 1991, Yermack (1996) finds that firm value is negatively associated with the number of directors on the board. Cerbioni and Parbonetti (2007) analyse 54 European biotech firms during the period of 2002 to 2004 and find a negative association between the amount and quality of intellectual capital disclosure and board size. While the evidence provided by Cheng and Courtenay (2006) suggests no significant association exists between the level of voluntary disclosure and board size based on a sample of 104 firms in the Singapore context.

However, a number of studies support the benefits of a larger board size (Kiel and Nicholson 2003, Lim et al. 2007, Laksmana 2008, Hidalgo et al. 2011, Mallin and Ow-Yong 2012, Elshandidy and Neri 2015). For example, Kiel and Nicholson (2003) analyse 348 large firms listed on the Australian Stock Exchange and find that firm performance is positively and significantly associated with the number of board directors. Mallin and Ow-Yong (2012) investigate 300 firms listed on the Alternative Investment Market index in the UK and conclude that a greater number of directors on the board leads to a higher level of voluntary disclosure. Elshandidy and Neri (2015) examine the risk disclosure practices in the annual reports of 290 UK non-financial firms from 2005 to 2010 and find that the level of voluntary risk disclosure in annual reports is positively associated with board size.

### 3.3.2 Board demographic diversity and voluntary disclosure

*Gender diversity*

Gender diversity among board directors constitutes a vital aspect of board diversity. The differences in cognitive and behavioural traits between males and females allow female directors to play an important role in balancing board decisions by providing female perspectives, communication skills, risk-averse attitudes, aggressions and egos management, concerns for broader societal issues beyond short-term interests and so on (Clarke 2005, Huse and Grethe Solberg 2006, McInerney-Lacombe et al. 2008). Hillman et al. (2007) argue that female directors have the potential to promote greater corporate transparency and to stimulate discussions by providing a broader range of perspectives and alternative solutions to non-routine problems. Several countries in Europe have brought in gender quota legislations. For example, Norway and Spain require at least 40%

female representation in the boardroom, while the legislated ratio in Sweden is 25% (Burke and Vinnicombe 2008, Tatli et al. 2012). In the UK, Higgs (2003) reviews the corporate governance mechanisms in UK firms and also encourages them to have a higher female representation on the board.

Despite the fact that female representation on the board has become increasingly prevalent on a global scale, empirical evidences of the benefits of female representation in the boardroom are inconclusive. In accounting and finance research, the investigation largely focuses on the effect of female directors on firm performance (Adams and Ferreira 2009), earnings quality (Krishnan and Parsons 2008, Barua et al. 2010, Srinidhi et al. 2011, Sun et al. 2011, Liu et al. 2016) and voluntary disclosure (Gul et al. 2011, Liao et al. 2015, Hoang et al. 2018). For instance, Adams and Ferreira (2009) document a positive effect of female representation on the board on overseeing directors' inputs in board committee activities; whereas on average a higher level of gender diversity leads to poorer firm performance. They point out that over-monitoring might be an explanation for the negative effect of board gender diversity on shareholder value. As for the relation between female directors and earnings quality, a number of studies find a positive association between the two (Krishnan and Parsons 2008, Barua et al. 2010, Srinidhi et al. 2011, Liu et al. 2016). For example, by examining the accrual quality with a sample of US firms from 2001 to 2007, Srinidhi et al. (2011) conclude that higher female representation is significantly associated with higher earnings quality. However, after investigating the earnings management of S&P 500 firms from 2003 to 2005, Sun et al. (2011) find no significant association exists between earnings management and the percentage of female directors on the audit committee.

In terms of voluntary disclosure, the empirical findings are also mixed. Gul et al. (2011) conclude that female directorship helps promote greater corporate transparency through increased investor-oriented corporate disclosure. Liao et al. (2015) also provide supportive evidence for the positive effect of gender diversity in the UK context by documenting an increased voluntary disclosure of greenhouse gas information in firms with more gender-diverse boards. Whereas the findings in Prado-Lorenzo and Garcia-Sanchez (2010) suggest no significant association between gender diversity and the disclosure level of greenhouse gas information.

*Age*

Prior economics and psychology literature suggests that individuals tend to be more conservative, risk-averse and ethical as they age (Morin and Suarez 1983, Palsson 1996, Peterson et al. 2001). There are several studies investigating the relations between the age of the board of directors and financial reporting decisions (Loe et al. 2000, Graham et al. 2005, Bamber et al. 2010, Huang et al. 2012, Dao et al. 2013, Davis et al. 2015). For example, Dao et al. (2013) document a negative association between the age of the board of directors and cost of capital. The authors argue that older directors are more likely to be risk-averse which leads to higher financial reporting quality, and thus lower cost of capital. Furthermore, by investigating 3,413 firms from 2005 to 2008, Huang et al. (2012) find that firms with older CEOs are more likely to meet or beat analyst earnings forecasts and are less to likely to have financial restatements. Whereas the findings in Bamber et al. (2010) suggest that managers who were born before World War II are less willing to provide voluntary financial information than younger managers. At the same time, the results in Davis et al. (2015) and Schrand and Zechman (2012) did not report a significant effect of director age on financial disclosure choices.

*Tenure*

Directors sitting on the board for a relatively long time have a better understanding of firms' strategies and operations, and are thus more familiar with executive teams' practice. On the one hand, long tenure indicates directors' commitment, experiences and skills. On the other hand, long tenure might result in directors' resistance to changes, less effective oversights or empowering CEOs to change or swing board opinions (Finkelstein et al. 2009). The length of board tenure is found to be associated with influence over managers in strategic decision-making (Golden and Zajac 2001, Anderson et al. 2004) and the monitoring of management in the financial accounting process (Vafeas 2003). In addition, executive tenure is also found to be associated with corporate reporting decisions. Schrand and Zechman (2012) find that managers with longer tenures are less likely to be involved in financial misreporting and fraud. Hazarika et al. (2012) also document a negative association between CEO tenure and earnings management. However, Lewis et al. (2014) examine 589 US firms from 2002 to 2008 and find that short-tenured CEOs are more likely to respond to institutional pressure by providing more environmental disclosure.

### 3.3.3 Audit committees and voluntary disclosure

Studies of audit committee characteristics and corporate financial reporting decisions mostly arrive at conclusions that are consistent with agency theory. The audit committee plays an important role in financial reporting processes by enhancing the effectiveness of board monitoring over management (Klein 2002, Spira 2003). Similar to general board composition studies, research on audit committees has investigated the effect of audit committee size (Bedard et al. 2004, Mangena and Pike 2005, Yang and Krishnan 2005, Cornett et al. 2009, Li et al. 2012, Katmon and Al Farooque 2017), audit committee

independence (Bedard et al. 2004, Mangena and Tauringana 2007, Li et al. 2012), financial expertise on audit committees (Klein 2002, Bedard et al. 2004, Mangena and Pike 2005, Mangena and Tauringana 2007), and meeting frequency and attendance (Sharma et al. 2009, Li et al. 2012, Katmon and Al Farooque 2017) on corporate disclosure decisions.

Prior studies document the important role of audit committees in overseeing financial reporting processes to guarantee transparency and disclosure quality (DeFond and Jiambalvo 1991, Forker 1992, Mangena and Pike 2005, García Osma and Guillamón-Saorín 2011, Li et al. 2012, Samaha et al. 2015). A larger audit committee is able to provide more diversified expertise and views, which enables more effective monitoring of corporate reporting. For instance, Li et al. (2012) find that audit committee size is positively and significantly associated with firms' intellectual capital disclosure.

Frequent audit committee meetings ensure directors devote sufficient time and effort to discuss firms' disclosure policies, evaluate the consequences of disclosures before taking decisions and stimulate information sharing among directors. Xie et al. (2003) find that audit committee meeting frequency is negatively related to the level of discretionary accruals. Laksmana (2008) also finds a positive association between meeting frequency and the extent of compensation disclosure, which leads to greater transparency. In addition to meeting frequency, audit committee meeting attendance is also an important measure for directors' inputs (Adams and Ferreira 2009, Masulis et al. 2012). Attendance enables direct discussions among directors regarding various aspects of corporate disclosure policies, and represents a great opportunity to perform their monitoring duties through sufficient participation in decision-making. By conducting interviews with three

large Canadian firms, Gendron and Bédard (2006) provide qualitative evidence that audit committee meetings and attendees' participations play a key role in enhancing board effectiveness.

### 3.3.4 Strengths, limitations and gaps

*Strengths*

The literature on corporate governance and voluntary disclosure is broad and rich. A broad array of corporate governance variables and disclosure variables have been identified and examined under a variety of empirical settings and institutional contexts. Benefiting from a well-established body of literature and continuous scrutiny, the studies reviewed are built on a solid base of research design and are methodologically strong. Moreover, this line of research also has important practical implications. The empirical findings of corporate governance literature have formed the basis of progress in the development of various corporate governance codes in the UK, USA, EU and many other countries and regions globally.

*Limitations*

Despite the strengths of this line of research, the empirical literature is also characterised by several evident limitations. First, there is a lack of consensus on the direction of the relations between corporate governance variables and corporate disclosures. In terms of board independence, it seems that having more independent directors on boards is encouraged by the regulators globally. However, some scholars argue that greater board independence may not always be ideal or beneficial to every company or in every institutional environment (Raheja 2005, Adams and Ferreira 2009). Inside directors may bring more unique benefits to a firm than outside directors because they have

substantially more knowledge of the firm (Raheja 2005). Empirically, although a number of studies have established a positive relation between board independence and voluntary disclosure amount or quality, negative or non-significant relations are also documented in prior literature (Eng and Mak 2003, Park and Shin 2004, Abdelsalam and Street 2007, Prado-Lorenzo and Garcia-Sanchez 2010, Hidalgo et al. 2011, Hodgdon and Hughes 2016, Katmon and Al Farooque 2017). As discussed in previous sections, the inconclusive empirical results are also evident in other corporate governance variables, such as board size, gender diversity and audit committee characteristics. The understanding of the influence of corporate governance mechanisms on voluntary disclosure decisions is limited by these inconclusive results. More research is necessary to further understand the nature of the relations between the two.

Second, one pervasive limitation across empirical corporate governance literature is endogeneity issues (Wintoki et al. 2012). So is the corporate governance and voluntary disclosure literature. When determining board composition and selecting individual directors, management may have direct involvement in the decision-making process. Additionally, a mutual selection problem may also exist in the board of directors labour market when a board of directors may select one firm over another due to some firm-specific characteristics. Moreover, other unobserved variables may also affect the dynamic relations between the two. It has been acknowledged that it is not easy to identify reliable exogenous instruments to examine the causal relations between corporate governance and corporate disclosures. Among the empirical studies reviewed in this chapter, the majority generally draw conclusions in a way that board compositions and characteristics cause the differences in corporate disclosure decisions. Some scholars explicitly attempt to address endogeneity concerns in their studies, while some continue

to draw causal inferences ignoring the potential risks caused by endogeneity issues. Therefore, the usefulness of the empirical findings of this body of literature may be impaired if the endogeneity issues are not properly addressed.

*Gaps*

Apart from the abovementioned limitations in this line of literature, there are gaps which require further investigations in the future. First, almost all of the prior studies on corporate governance and voluntary financial disclosure adopt agency theory as their theoretical construct. Alternative theoretical perspectives are rarely explored, except for studies that examine corporate social and environmental reporting. As discussed in Chapter 2, agency theory is an investor-centric theoretical perspective. Disclosure research adopting an agency theory perspective relies on economic assumptions such as efficient market hypotheses. It seems that prior studies take a stance that investors are the only users of financial disclosures and capital market reactions are the only things that matter. Whereas in the empirical setting of this thesis, this stance may not be as appropriate as it used to be. The users of financial disclosure on social media are probably stakeholders in general rather than shareholders. Understanding who the main users of financial disclosure are in a specific context is important to understand the nature of the effect of corporate governance on financial disclosure decisions. Therefore, an alternative theoretical perspective, such as stakeholder theory, may provide more useful insight into the nature of the relations between the two. Thus, the study in Chapter 5 adopts a stakeholder theory perspective to explain the influence of board compositions on financial disclosure decisions on social media.

Second, social media is a new corporate disclosure channel characterised by unique interactivity and high media richness. It provides a unique and intriguing empirical setting to further test the relations between corporate governance mechanisms and financial disclosure decisions on this emerging communication channel. Unlike traditional disclosure outlets, corporate disclosures are out of the complete control of firms on social media. The interactive functions on social media bring a great deal of uncertainties and risks to the communication process. We do not know whether the positive relation between board independence and financial disclosures automatically applies to social media. If so, we still do not know whether the influence of board compositions also applies to unique information disclosure and dissemination functions on social media.

Third, the final point echoes the discussion in Section 3.2.4, which underlines the problem of a lack of investigations into the demand side of corporate disclosures. Traditional print-based corporate disclosures represent a model of one-way information disclosure or persuasion. Social media provides a chance to realise two-way communication between firms and stakeholders on an extraordinary scale. Stakeholder engagement on social media is one area that has not been systematically examined in prior corporate disclosure research. Many questions remain unanswered. For instance, we do not know which factors affect the level of stakeholder engagement on social media, whether board compositions have any influence on stakeholder engagement and what the relations are among board compositions, financial disclosure and stakeholder engagement on social media.

Therefore, the empirical study in Chapter 5 aims to fill in the abovementioned gaps in the literature and attempts to answer these questions. More specifically, this study will examine whether board independence is positively related to the level and connectivity of financial disclosure on Twitter during earnings announcement events. In addition, in order to gain more understanding of the mechanism of the communication process between firms and stakeholders on social media, the study will look further into the communication process to examine the relations among board independence, financial disclosure and stakeholder engagement on Twitter.

Table 3.1 Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Hoang et al. (2018) | Vietnam | 133 firms listed on the Ho Chi Minh Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) in 2010 | an index of corporate social disclosure which incorporates the quantity and quality of disclosure in annual reports | board diversity index (gender, age, education, nationality) | Board diversity is significantly and positively associated with corporate social disclosure in annual reports. |
| Muttakin et al. (2018) | Bangladesh | 1,005 firm-year observations of public firms that are listed on the Dhaka Stock Exchange in Bangladesh from 2005 to 2013 | the level of corporate social responsibility (CSR) disclosure in annual reports | outside directors' experiences and expertise, CEO power (index) | This study finds that outside directors' experiences and expertise are positively associated with the level of CSR disclosure in annual reports. CEO power is negatively associated with the level of CSR disclosures and affects negatively the positive effect of board human capital on the level of CSR disclosures. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Katmon and Al Farooque (2017) | UK | 145 matched-pair samples of winners and non-winners of Investor Relations Magazine Award (IRAWARD) from 2004 to 2008 in the UK | disclosure quality, earnings management | board independence, audit committee independence, board size, audit committee size, board meetings, audit committee meetings, audit committee expertise | No significant association is found between earnings management and board and audit committee characteristics. |
| Hodgdon and Hughes (2016) | EU | 147 firms from 24 countries and 35 industries in various EU stock exchange in 2007 | a separate disclosure of judgements and estimates within the financial statement notes | independent directors, auditor choice, US listing, global activity | A significant association between corporate governance (board independence) and a separate disclosure of judgements and estimates is only found in manufacturing firms. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Liu et al. (2016) | China | 11,644 firm-year observations from non-financial firms listed in the Shanghai and Shenzhen Stock Exchange from 1999 to 2011 | earnings management | CFO gender | A female CFO is associated with a lower level of total accruals, discretionary current accruals, abnormal production costs and a higher level of abnormal discretionary expenditure. |
| Elshandidy and Neri (2015) | UK, Italy | 290 British non-financial firms with 1,450 firm-year observations and 88 Italian non-financial firms with 440 firm-year observations from 2005 to 2010 | mandatory and voluntary risk disclosure in annual reports | board size, board independence, CEO duality, dividend yield, concentrated ownership structure, audit quality | Voluntary risk disclosure is positively and significantly associated with board size and board independence. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Liao et al. (2015) | UK | 329 FTSE 350 firms in 2011 | greenhouse gas emission disclosure | gender diversity, board independence, environment committee, board size, board meeting, non-executive chair, CEO duality | The disclosure of greenhouse gas emission is positively and significantly associated with gender diversity, board independence, environment committees and board size. |
| Liu (2015) | China | 4,253 firm-year observations of public firms listed on the Shanghai Stock Exchange from 2008 to 2012 | the extent of forward-looking disclosure | board size, board independence, CEO duality, financial expertise on audit committee, managerial ownership, foreign ownership, state ownership | Foreign ownership, board independence and financial expertise on audit committees are positively and significantly associated with a higher level of forward-looking disclosure. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Yekini et al. (2015) | UK | 73 FTSE 350 firms from 2002 to 2012 with 803 firm-year observations | the quality of community disclosure in annual reports | board independence, board size, board meeting frequency, audit committee size, audit meeting frequency, CSR committee existence | The quality of community-related disclosure in annual reports is positively and significantly associated with board independence, audit committee meeting frequency and the existence of a CSR committee on the board. A negative association is found for audit committee size. |
| Chan et al. (2014) | Australia | 222 public firms listed on the ASX in Australia in 2004 | the quantity of CSR disclosure in annual reports | CG quality (a ranking based on WHK Horwath report) | Firms with higher corporate governance ratings are more likely to have a higher level of CSR disclosure. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Jizi et al. (2014) | US | 291 firm-year observations from 2009 to 2011 in the banking sector | the quality of CSR disclosure in annual reports | board independence, board size, CEO duality, audit committee size, audit committee financial expertise, board meeting, audit committee meeting | Board independence and board size are positively related to the quality of CSR disclosure. CEO duality is negatively associated with the CSR disclosure quality. |
| Mallin and Ow-Yong (2012) | UK | 300 UK companies listed on AIM in 2006 | the disclosure level of compliance with Quoted Companies Alliance (QCA) recommendations on corporate governance | board size, board independence, institutional ownership, managerial ownership, ex-main market listing, absence of turnover, firm size, gearing | Board size and board independence are positively and significantly associated with the voluntary disclosure level of corporate governance. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| García Osma and Guillamón-Saorín (2011) | Spain | 243 Spanish listed firms in 2005 and 2006 | impression management in annual results in press releases (score) | corporate governance score (board independence, institutional directors, independent chairman, nomination-remuneration committee, board meeting, AC meeting, RC meeting, board size) | Strong corporate governance is associated with less impression management annual earnings press releases. |
| Hidalgo et al. (2011) | Mexico | 100 Mexican listed firms from 2005 to 2007 | voluntary disclosure of intellectual capital in annual reports (index) | board size, board independence, audit committee size, CEO duality, manager and director ownership | The voluntary disclosure of intellectual capital in annual reports is positively associated with board size, but with a maximum size of 15 directors, otherwise there will be an adverse effect. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Gul et al. (2011) | US | 5,021 firm-year observations from 2001 to 2006 | stock price informativeness, disclosure of 8k items | gender diversity variables, board size, board independence | Firms with higher gender diversity are more likely to have greater share price informativeness. Gender diversity on the board is positively and significantly associated with the level of voluntary disclosure in 8k items for large firms. |
| Srinidhi et al. (2011) | US | 2,480 firm-year observations from 2001 to 2007 | earnings quality | percentage of female directors (on board, NED, audit committee), tenure, CEO power, board size, audit committee size, financial expertise | Higher female representation on the board leads to higher earnings quality. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Sun et al. (2011) | US | 525 firm-year observations of S&P 500 firms from 2003 to 2005 | earnings management | female directors on audit committee, accounting expertise on audit committee, long-term directors (ten years+) on audit committee, directorship at other firms, audit committee size | No significant association is found between gender diversity on audit committees and earnings management. |
| Barua et al. (2010) | US | 2,781 firm-year observations from 2004 to 2005 | accrual quality | CFO gender. Controls: firm characteristic variables | Firms with female CFOs are more likely to have higher accrual quality (lower discretionary accrual and lower accrual estimation error). |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Chau and Gray (2010) | Hong Kong | 273 listed HK firms in 2002 | the extent of voluntary disclosure in annual reports (index) | family ownership, independent chairman, independent non-executive directors | The level of voluntary disclosure in annual reports is positively and significantly associated with independent chairman and board independence. It is negatively associated with family ownership. |
| Prado-Lorenzo and Garcia-Sanchez (2010) | UK | 283 FTSE Global Equity Index Series, the Global 500 firms in 2007 | carbon disclosure index score | board independence, CEO duality, gender diversity, controls | No significant associations are found between carbon disclosure scores and board independence as well as gender diversity on the board. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Adams and Ferreira (2009) | US | 86,714 directorships (director firm years) in 8,253 firm years of data on 1,939 firms from 1996 to 2003 | directors' attendance behaviour, committee assignment, CEO turnover, director compensation, CEO compensation, firm performance | percentage of female directors | Female directors have better attendance than male directors. Male directors in firms with higher gender diversity have a better attendance record. Female directors are more likely to be on monitoring committees. Gender diversity on the board is positively associated with equity-based pay for directors, and is negatively associated with firm performance. |
| Krishnan and Parsons (2008) | US | 353 Fortune 500 firms from 1996 to 2000 | earnings quality | gender diversity in senior management | Gender diversity in management executives is positively associated with earnings quality. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Li et al. (2008) | UK | 100 UK listed firms in 2004 | intellectual capital disclosure in annual reports | independent non-executive directors, CEO duality, concentrated share ownership, audit committee size, audit committee meeting | The disclosure of intellectual capital in annual reports is positively and significantly associated with independent non-executive directors, audit committee size and audit committee meetings. It is negatively related to CEO duality and share concentration. |
| Abdelsalam and Street (2007) | UK | 115 UK listed firms in 2006 | timeliness of corporate internet reporting | board independence, CEO duality, board cross directorship, board age, tenure of executive directors, tenure of non-executive directors | A significant and negative association is documented between the timeliness of internet reporting and board independence, cross directorship and tenure of executive directors. A positive and significant association is found for board experience measured by board age. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Cerbioni and Parbonetti (2007) | EU | 54 European biotech firms from 2002 to 2004 | the quantity and quality of intellectual capital disclosure (index) | board size, board independence, CEO duality, board committees' independence | Board size, CEO duality and board committees' independence are negatively associated with intellectual capital disclosure. Board independence is positively associated with the amount of intellectual capital disclosure. |
| Lim et al. (2007) | Australia | 181 Australian listed firms in 2001 | voluntary disclosure in annual reports (index) | board independence | Board independence is positively associated with the total level of voluntary disclosure, forward-looking information and strategic information. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Patelli and Prencipe (2007) | Italy | 175 non-financial Italian firms listed on the Milan Stock Exchange in 2002 | the level of voluntary disclosure in annual reports | board independence | A positive and significant association is documented between board independence and the voluntary disclosure in annual reports. |
| Cheng and Courtenay (2006) | Singapore | 104 Singapore listed firms in 2000 | voluntary disclosure in annual reports (index) | independent non-executive directors, board size, regulatory regime | Board independence is positively associated with voluntary disclosure. No significant association is found for board size and CEO duality. |
| Ajinkya et al. (2005) | US | 2,934 annual earnings forecasts disclosed by 1,467 firms from 1997 to 2002 | management earnings forecast occurrence, frequency, forecast specificity, forecast accuracy, optimistic forecast | outside directors, institutional ownership | The percentage of outside directors on the board is positively associated with management earnings forecast occurrence, frequency and forecast accuracy. It is negatively associated with optimistic forecasts. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Karamanou and Vafeas (2005) | US | 275 firms with 1,274 firm-year observations from 1995 to 2000 | the likelihood of issuing a management earnings forecast, the precision of management earnings forecast, the accuracy and bias of management earnings forecast | outside directors, board size, board meeting, insider ownership, institutional ownership, % of outside directors on audit committee, % of financial expertise on audit committee, audit committee size, audit committee meeting | Outside directors are positively associated with the likelihood of issuing a management earnings forecast and its accuracy. They are negatively associated with the precision of management earnings forecasts. Audit committee size is negatively associated with the occurrence and the precision of earnings forecasts. Audit committee financial expertise is negatively associated with the precision of forecasts. |

Table 3.1 (Continued) Summary of empirical studies on corporate governance and voluntary disclosure

| Study | Context | Sample | Dependent variables | Independent variables | Key findings |
|---|---|---|---|---|---|
| Eng and Mak (2003) | Singapore | 158 Singapore listed firms in 1995 | voluntary disclosure in annual reports (index) | managerial ownership, blockholder ownership, government ownership, independent directors | Voluntary disclosure is negatively associated with board independence and managerial ownership. It is positively associated with government ownership. |
| Kiel and Nicholson (2003) | Australia | 348 firms listed in ASX in 1996 | firm performance | board size, proportion of outside directors, CEO duality | Board size is positively and significantly associated with market-based measures of firm performance (Tobin's Q), but not with accounting-based measures of performance (ROA). The proportion of outside directors is negatively associated with performance (market-based). |

## 3.4 Financial communication on social media

Since its arrival about a decade ago, social media has been gradually transforming society in many significant ways, from how business activities are conducted to the way political campaigns are run. Especially in recent years, firms are increasingly incorporating social media into their key strategies for corporate communication (Miller and Skinner 2015). Social media is a platform where firms can directly communicate important information to stakeholders bypassing the traditional information gatekeepers (Blankespoor et al. 2014). A survey conducted by Gordon (2015) indicates that more than 66% of FTSE 350 firms have discussed their social media strategy during their board meetings. A growing number of public companies are starting to utilise social media platforms to disclose and disseminate their financial information during important corporate events such as earnings announcement events. Research shows that financial stakeholders including individual investors, institutional investors and analysts as well as other stakeholders use social media to monitor corporate news and expect engagement with firms on social media (Brunswick 2014, 2015, Businesswire 2015).

Academic research of corporate communication on social media is a relatively recent study area since social media platforms were created only about a decade ago. For example, Facebook was launched in 2004 and Twitter in 2006. Research of corporate financial communication on social media so far largely falls into three strands. One strand of literature is the Wisdom of Crowds research, which investigates whether content that is generated by general social media users predicts stock market or future prospects. One stream of research examines how firms use social media, this emerging communication channel, to disclose and disseminate financial information to investors. Another emerging strand of research examines investors' responses towards firms' financial news on social

media. The empirical studies in these three broad areas will be reviewed in the following sections respectively.

### 3.4.1 Predicting stock markets via information on social media

A growing number of researches examine the predicative power of information on social media platforms in forecasting a firm's share performance in the capital market (Bollen et al. 2011, Mao et al. 2012, Chen et al. 2014, Sprenger et al. 2014a, Sprenger et al. 2014b, Curtis et al. 2016, Bartov et al. 2017, Behrendt and Schmidt 2018, Hales et al. 2018, Nisar and Yeung 2018).

Bollen et al. (2011) is one of the earliest studies that examines the role of Twitter sentiment in predicting stock market performance. By analysing a total number of 9,853,498 tweets that were posted from February to December 2008 by 2.7 million Twitter users, Bollen et al. (2011) find that the public mood states derived from their large sample of tweets are predictive of the closing value of the Dow Jones Industrial Average (DJIA). The authors employ two methods to measure the textual tone of the tweets. One is Opinion Finder, which classifies tweets into positive and negative tones. The other method is Google-Profile of Mood States (GPOMS), which could detect six dimensions of public mood from the tweets. Both methods generate consistent supporting evidence that the textual tone of tweets predicts capital market performance.

Mao et al. (2012) focus their analyses on the total number of tweets rather than the textual tone in predicting stock market performance. The findings in Mao et al. (2012) show that the daily number of public tweets that contain cashtags ($) of Standard & Poor 500 (S&P 500) companies is significantly associated with the S&P 500 daily closing price, price

change and absolute price change. In addition, the authors also find that the total number of tweets is also significantly associated with the daily trading volume at industry level.

Chen et al. (2014) examine whether investor opinions generated on social media platform Seeking Alpha are predictive of a firm's future stock returns and its earnings surprises. The authors conduct textual analysis on a sample of 97,079 articles published on Seeking Alpha from 2005 to 2012 to extract investor opinions by measuring the frequency of negative words. Chen et al. (2014) find that the tone of Seeking Alpha articles is predictive of stock returns over a three-month period. The authors also find that investors' opinions provide valuable information, which predicts subsequent earnings surprises.

Using a sample of 249,533 stock-related tweets of Standard & Poor 100 companies for a six-month period from January 2010 to June 2010, Sprenger et al. (2014b) examine whether the textual sentiment in stock-related tweets predicts stock market performance of individual stocks rather than stock market indices. Computational linguistics is used in this study to measure the textual sentiment, volume and the level of agreements in stock-related tweets. Their results suggest that the textual sentiment of tweets is significantly associated with stock returns of individual stocks. In addition, the authors also document a significant association between the volume of stock-related tweets and the trading volume of stocks. Sprenger et al. (2014b) also provide evidence that tweets that contain above average advices are more likely to be retweeted and are more likely to attract more followers on Twitter.

Bartov et al. (2017) examine whether information related to firms in individual tweets is able to predict firms' future stock returns and earnings using a sample of 869,733 tweets

that are related to Russel 3000 firms from 2009 to 2012. They observe firms' quarterly earnings announcement events on Twitter and collect stock-related tweets posted by individuals in the nine-trading-day period before the events. They find that aggregate opinions from these tweets predict a firm's earnings results and stock performance for the next quarter. The results also suggest that the predictive power of the opinions on Twitter is particularly strong for firms within a weak information environment.

Hales et al. (2018) focus their analysis on the predictive power of employee opinions extracted from Glassdoor.com for the prediction of firms' future performance and disclosure decisions. Using a sample of 158,352 employee reviews from 1,265 Standard & Poor 1500 companies from 2012 to 2015, Hales et al. (2018) provide evidence that employees' outlooks of firms gauged from employee reviews on Glassdoor.com predict firms' future performance, earnings surprises and corporate news in quarterly and annual management forecasts.

### 3.4.2 Corporate financial disclosure and dissemination on social media

Another strand of research focuses on corporate use of social media for financial communication with investors. This line of research mainly draws from economic information asymmetry reduction arguments and investigates the role of financial disclosure and dissemination initiated by companies on social media in narrowing the information gap between management and investors (Blankespoor et al. 2014, Lee et al. 2015, Jung et al. 2018).

Blankespoor et al. (2014) is one of the pioneering studies that examines corporate use of social media for financial reporting. The analysis focuses on whether the dissemination

of earnings news through Twitter during earnings announcement events helps to reduce information asymmetry. They conduct analyses based on a sample of 79 US technology firms with 233 earnings announcement events. Blankespoor et al. (2014) define information asymmetry as the bid-ask spread of a firm, and information dissemination on Twitter is measured by the number of earnings announcement related tweets with hyperlinks. The findings in Blankespoor et al. (2014) suggest that additional dissemination of earnings news on Twitter is associated with lower bid-ask spread and greater bid-ask depth, which provide evidence that financial information dissemination on Twitter helps to reduce information asymmetry.

Lee et al. (2015) examine corporate use of social media under the empirical setting of firms' product recall events. The authors investigate the use of social media platforms, including Twitter and Facebook, in minimising the negative stock reactions caused by adverse product recall announcements. The sample consists of 405 product recalls from 2000 to 2012. The results of their study indicate that firms with social media presence are associated with reduced negative stock price reactions towards firms' product recall announcements. Moreover, Lee et al. (2015) also find that an increased number of tweets posted by firms attenuates the negative price reaction, while an increased frequency of tweets by other uses on Twitter actually exacerbates the negative stock price reaction. Their findings highlight the uncertainties and downsides of corporate communication on social media platforms due to the loss of full control over information flow in this interactive communication channel.

Jung et al. (2018) highlight the strategic behaviour in the dissemination process of earnings news on Twitter based on a sample of Standard & Poor 1500 firms' quarterly

earnings announcement events. The authors find firms' decisions to disseminate earnings news on Twitter is associated with the direction of earnings news. More specifically, when firms report bad earnings news and when the magnitude of firms' news is worse, they are less likely to disseminate earnings news on Twitter. Moreover, the total quantity of earnings announcement-related tweets is also significantly associated with earnings news direction. Firms tend to post fewer earnings announcement-related tweets when they report bad earnings news. Additionally, the authors also provide evidence that the retweeting of bad news by other users on Twitter could exacerbate the negative effect since the number of retweets by firms' followers is associated with the number of negative news articles written in the traditional media. Jung et al. (2018) document the strategic behaviours in firms' financial disclosure and dissemination on social media and also highlight the potential negative effects of social media dissemination.

### 3.4.3 Investor response on social media

A recent emerging stand of literature in this area examines investors' responses towards financial communication on social media using experimental methods in a laboratory setting (Kadous et al. 2017, Cade 2018, Elliott et al. 2018, Guggenmos and Bennett 2018). Social media enables convenient direct conversations between stakeholders and companies. For example, investors no longer have to call or meet managers in person for extended communication. Instead, they can directly communicate and engage with companies and other investors by simply clicking a button on social media platforms. Moreover, the managerial selection of disclosed financial information content, the medium-rich presentation of information and the informality of language used on social media are potential factors that affect investor response on this unique corporate communication channel (Blankespoor 2018). Thus, social media provides an intriguing

empirical setting to examine how stakeholders respond to a firm's financial communication on the platform.

Kadous et al. (2017) conduct two experiments to examine how investors respond to investment advice on social media platform StockTwits. The authors find that investment advice provided on social media affects investors' valuations of stocks even if the predictive value of the investment advice is low. In addition, the authors also find that some investors are not aware of this influence when they are tested on whether the advice affects their decision-making. The results of this study also suggest that the content of investment advice and the credibility of advice sources do not affect advice influence.

Cade (2018) examines how the communication between a firm and investors affects investors' perceptions of firms on Twitter. Using a case in which a firm is criticised by a Twitter user for its adjustment of earnings figures, the author investigates how the way managers respond to criticism differently affects the perceptions of investors towards the firm. Cade (2018) finds evidence that viewing a criticism of a firm on social media affects non-professional investors' perceptions of the firm negatively; especially when there is no response from the firm, the negative effect is exacerbated by the total number of retweets of the criticism tweet. The findings in Cade (2018) also suggest that managerial attempts to provide explanations for the criticism or to redirect investors' attention could help attenuate the negative influence caused by the criticism on non-professional investors' perceptions of the firm.

Elliott et al. (2018) focus on the analyses of CEOs' use of Twitter for corporate financial communication. The results of this study suggest that direct communication from a

CEO's individual Twitter account following a negative earnings surprise helps to build enduring investor trust, since investors are more likely to invest in the firm than when the communication is made via a corporate website or corporate Twitter account. In addition, Elliott et al. (2018) also find that when investors are informed about negative earnings surprises from CEOs' individual Twitter accounts, they are less likely to be further affected by the repeating of negative earnings news. However, investors are more likely to be further negatively affected if the news is sent from a corporate Twitter account. This study highlights the benefits and costs of corporate and managerial employment of social media for financial communication.

### 3.4.4 Strengths, challenges and future directions

Compared to the literature review conducted in sections 3.2 and 3.3, this line of research seems to be more scattered with a handful of studies in each topic area. It is indeed a growing line of research in the accounting and finance literature and requires future studies to uncover and explore many of the unknowns. In this section, I will briefly discuss the strengths, challenges and future directions of the literature on corporate financial communication on social media.

*Strengths*

This line of research is a new and emerging area which has a lot of potential. Although many of these studies in the accounting and finance literature are still largely in their infant stage, the empirical research summarised in this review has demonstrated a broad array of research questions and approaches. The research opportunities brought about by social media are extensively discussed in sections 3.2.4 and 3.3.4. In short, it is an exciting and potentially fruitful research area which is on its way to becoming a more established body of literature.

*Challenges*

It is a challenging empirical setting for accounting scholars to work with. Social media platforms are constantly changing and evolving at an extraordinary speed. They are by nature much more dynamic than traditional disclosure channels (Blankespoor 2018). The implication of this for accounting scholars who work in this area is that they need to closely follow these changes and be able to quickly incorporate these into their research designs to ensure their work remains relevant and up to date. Moreover, there are more questions than answers in this research area. Many areas remain unexplored and sometimes there is not much prior literature to refer to. Accounting scholars need to be creative and bold in their research designs but at the same time should always ensure methodological rigour.

*Future directions*

Theoretically, future research should look for alternative theoretical frameworks from social perspectives to provide a more complete picture of corporate financial communication on social media. It can be seen from the review in Section 2.4 that prior research on corporate financial communication on social media is built on economic-based predictions and has a predominant focus on capital market consequences of disclosures. The investor-centric mindset should be extended to consider the majority of audiences on social media and to consider the complex nature of the communication environment and process on the social networking platforms.

Empirically, future research should gradually shift its focus from the supply side of corporate disclosures to the demand side. A relatively good understanding of firms' disclosure behaviour has been gained in prior literature within a range of theoretical

perspectives and empirical settings. However, understanding of users' behaviours and responses towards corporate disclosure on social media is very scarce. Brennan and Merkl-Davies (2018) point out that investigations into the dialogic nature of corporate communications on social media are key steps to further our understanding of what contributes to meaningful and effective communications between firms and stakeholders. Brennan and Merkl-Davies (2018) introduce the concept of *connectivity* in their work and call for more future research into the connectivity of corporate disclosures and the communicative effectiveness on social media.

## 3.5 Conclusions

This chapter has reviewed empirical studies in the following three areas. The first area is the literature on accounting narratives and impression management. The review is organised by different impression management methods, namely syntactical manipulations, thematic manipulations and presentational manipulations. For syntactic studies, prior empirical work on textual readability of accounting narratives and related understandability studies have been reviewed. Thematic studies including managerial attribution studies and tone management studies have been summarised and discussed. They are followed by a review of studies that investigate the use of self-presentational patterns as a method of presentational manipulation in accounting narratives. At the end of Section 3.2, the strengths, limitations and gaps in this line of literature have been identified and discussed. The corporate governance and voluntary disclosure literature has been reviewed in Section 3.3. The empirical papers reviewed largely fall into three groups: board composition, board demographic diversity and audit committee features. The section is concluded by an evaluation of the strengths, limitations and gaps in corporate governance and voluntary disclosure literature. In addition, the recent literature on corporate reporting on social media has been reviewed and classified into three broad territories: user-generated content on social media and capital market consequences, corporate-initiated financial disclosure on social media and investor response. The strengths, challenges and future directions of this emerging body of literature have been discussed.

It can be seen from the review in Section 3.4 that the current literature on corporate financial communication on social media is dominated by economic theoretical perspectives and information asymmetry arguments. The predominant focus on the

investigation of the capital market consequences of no matter user-generated financial content or company-initiated financial disclosure on social media indicates that financial communication on this emerging corporate communication platform is largely treated as a means of providing capital investment-related information so as to satisfy capital providers' information needs.

However, as discussed in previous sections, economic information asymmetry reduction arguments may not be the most appropriate theoretical construct to fully explain firms' financial disclosure decisions on social media, given their 'social' nature and unique features of financial communication on this platform. What is largely unexplored in the current literature is empirical investigations that adopt social perspectives, as alternative theoretical constructs, to provide a more complete picture of the corporate financial communication landscape on this unique social networking communication channel.

Empirically, it can be seen from the literature reviews in sections 3.2 and 3.3 that the majority of prior empirical studies on voluntary disclosure concentrate on the textual content in corporate annual reports or other print-based traditional corporate disclosure mediums. Social media is a media-rich disclosure platform embedded with a variety of tools for information dissemination and stakeholder engagement. Therefore, it is a unique corporate communication venue that incorporates three key functions in one: disclosure, dissemination and engagement. It provides a rich and intriguing empirical setting for impression management hypotheses and corporate governance influences on corporate disclosure.

Therefore, this thesis aims to fill the gaps in the literature, as discussed in sections 3.2.4, 3.3.4 and 3.4.4. The empirical studies in this thesis apply two theoretical frameworks from social psychological theory and social political theory to provide novel empirical evidences and insights into the social dimensions of corporate financial communication on social media. The study in Chapter 4 employs impression management theory and aims to examine the influence of financial performance on the use of different impression management strategies in firms' earnings-related disclosure and dissemination on Twitter. The study in Chapter 5 adopts a stakeholder perspective to investigate the effect of board independence on the level and connectivity of financial disclosure on Twitter.

# 4 Accounting narratives and impression management on social media

## 4.1 Introduction

This study investigates FTSE 100 companies' self-presentational behaviours for the disclosure and dissemination of earnings news on Twitter. This study answers Miller and Skinner's (2015) call for studies of the corporate use of social media. They argue that information technology has shaped the evolving landscape of corporate disclosures. Indeed, the last decade has witnessed the rise of social media and its prevailing adoption across society, and this emergent interactive disclosure vehicle has become an increasingly vital element of organisational communication strategies. To date, research in this area has mainly drawn on economic theory and examined the role of social media in reducing information asymmetry (Blankespoor et al. 2014, Zhang 2015, Jung et al. 2018), predicting capital market returns (Chen et al. 2014, Sprenger et al. 2014b), and influencing stakeholder perceptions (Lee et al. 2015). Further, in these studies, corporate disclosures on social media are viewed as incremental information that is voluntarily provided by firms.

According to Elliott et al. (2018), most disclosures on social media are a reiteration of existing information that has already been presented in traditional media, such as press releases and annual reports. Especially for earnings announcement events, earning-related information posted by firms on social media platforms such as Twitter are largely the extracts or highlights from management presentation or earnings press release. For sophisticated financial stakeholders such as investors or analysts, earning-related

information on Twitter may provide little incremental value for their decision-making given their rich information access via alternative channels. However, for many unsophisticated users of financial information on social media, it is likely that their perceptions toward a firm's financial performance might be influenced by those carefully selected and delicately crafted accounting narratives on a firm's social media account. In 2013, the US Securities and Exchange Commission approved the disclosure of material information on social media by companies on the premise that investors have been informed about the use of social media beforehand[2]. In March 2015, the Financial Conduct Authority in the UK released a specific guidance on the use of social media for customer communication and financial promotions, in which they require all corporate communications on social media to be clear, fair and not misleading[3]. However, so far there have been no specific requirement or guidance governing corporate use of social media for financial information disclosure in the UK.

The absence of regulation for financial disclosure on social media creates space for potential managerial impression management behaviour. Impression management has been documented in a number of corporate disclosure settings where accounting narratives are used to present a self-serving view of corporate performance (Neu et al. 1998, Beattie and Jones 2002, Merkl-Davies and Brennan 2007, García Osma and Guillamón-Saorín 2011). Social media provides a rich and interesting empirical setting to examine firms' self-presentational behaviour on this emerging corporate communication channel. Unlike traditional text-based corporate disclosure outlets, the richness of media on social media flatforms grants firms with great flexibility and

[2] See SEC Says Social Media OK for Company Announcements if Investors Are Alerted
[3] See https://www.fca.org.uk/publication/finalised-guidance/fg15-04.pdf.

discretion in the way how accounting narratives are presented and communicated. Financial disclosures in the form of videos, pictures, graphs, infographics and condensed texts are the main presentational formats in the corporate reporting playfield on social media. Moreover, unique information dissemination functions on social media allow firms to proactively manage the direction and speed of their information dissemination. It is an interesting research question to examine how firms adopt or adapt impression management tactics on social media and whether any new impression management tactics have been developed. Additionally, the interactive nature of social media provides an interesting setting to examine the outcome of impression management because the audience responses on these platforms are immediately and directly observable. However, on the other hand, the interactivity of social media creates uncertainty as firms lose full control of corporate communication process (Miller and Skinner 2015). Several studies find that inputs from other users on social media in the communication process may cause negative effects and even major interruptions to organisations (Lee et al. 2015, Toubiana and Zietsma 2017, Cade 2018). Thus the tension between the convenience for managerial self-presentation and the uncertainty of the communication flow makes it even more interesting to extend the investigation of impression management in accounting narratives to social media.

Jung et al. (2018) find that corporate use of social media is opportunistic when companies disseminate earnings news on Twitter. This study argues that firms selectively provide information about themselves and carefully share this information to construct a positive public image on social media. Under the assumption of impression management theory, corporate disclosures are driven by self-serving motives, and the information that is disclosed is neither neutral nor unbiased (Jones and Shoemaker 1994, Merkl-Davies and

Brennan 2007, Beattie and Jones 2008, Brennan et al. 2009). Managers are motivated to hide adverse information and enhance their successes by their desire to distort stakeholders' perceptions of firm performance (Adelberg 1979, Bloomfield 2002).

This study builds on the work of Jung et al. (2018) and further extends the scope of investigation. In this study, defensive and assertive impression management hypotheses are developed to test whether firms differentially manage the disclosures of positive and negative earnings-related news, and this study further tests whether firms disclose their financial performance in a strategic way. More specifically, the defensive impression management hypotheses follow the predications in Jung et al. (2018) and focus on the investigation of the total volume of earnings-related tweets without parsing the content of tweets. The assertive impression management hypotheses extend the scope and investigate the strategic behaviour in the use of presentational forms and dissemination tools within the tweets. Finally, the outcome of impression management in terms of stakeholder engagement is also tested, which focuses on the responses from the audience side. To do so, earnings-related tweets are manually collected from official corporate Twitter accounts; the tone of each tweet is firstly determined and then content analysis is used to measure disclosure patterns. Overall, this study finds that firms minimise negative earnings-related news but employ various self-presentational patterns and dissemination techniques through Twitter to emphasise positive news. Specifically, when firms report improved performance, they are more willing to post and disseminate earnings-related tweets. More importantly, improving performers attain a higher degree of stakeholder engagement than declining performers on Twitter. The rest of the study is organised as follows: the next section develops hypotheses; the data and methodology are described next; the presentation of the results is offered in the penultimate section; and, finally, the summary and discussion are provided in the last section.

## 4.2 Hypotheses development

The impression management hypothesis relies on the assumption that management believes that accounting narratives are able to influence the perceptions of audiences. Tan et al. (2014) suggest that the influence of language sentiments on investors' earnings judgement is contingent on the investor sophistication level. They find that unsophisticated investors are more likely to be affected to a greater extent. For public firms especially those large firms, the perceptions of sophisticated stakeholders, such as institutional investors and analysts, are less likely to be changed by several 280-character tweets given their rich information environment. This study argues that it is the perceptions of unsophisticated users of financial information that firms attempt to influence on Twitter. Unsophisticated users may browse the content on Twitter for a general purpose but their perceptions of a firm are likely to be consciously or unconsciously shaped by these short yet carefully selected financial information appeared in their tweet updates.

As discussed in Chapter 2, impression management strategies can be either defensive or assertive (Tedeschi and Melburg 1984). A defensive impression management strategy highlights the underreporting, omitting, or minimising by which firms manage or maintain a positive impression of their organisational image in the context of negative circumstances (Abrahamson and Choelsoon 1994, Westphal et al. 2012). An assertive impression management strategy relates to how firms can use language and presentational patterns to signal good performance (Morris 1987, Smith and Taffler 1992a) and make attributions about positive outcomes to their own actions (Clapham and Schwenk 1991, Aerts 2005).

A growing accounting literature has documented the employment of these two strategies in corporate narratives, depending on different circumstances (Clatworthy and Jones 2003, Ogden and Clarke 2005, Cho et al. 2010, Samkin and Schneider 2010, Merkl-Davies et al. 2011, Guillamon-Saorin et al. 2012, Cooper and Slack 2015). For example, Cooper and Slack (2015) suggest that firms adopt a defensive impression management strategy such as omission or concealment in water leakage disclosures when they fail to meet the regulation target and employ an assertive strategy such as visual effects to emphasise target attainment. This study builds hypotheses upon both defensive and assertive impression management strategies to investigate how firms employ different impression management strategies for the disclosure and dissemination of earnings news on Twitter and how effective these impression management strategies are.

### 4.2.1 Defensive hypotheses

Defensive impression management studies have mainly tested the managerial obfuscation hypothesis (Adelberg 1979, Courtis 1998, Li 2008, Miller 2010, Lee 2012, Loughran and McDonald 2014). According to Merkl-Davies and Brennan (2007), firms can manipulate reading ease and rhetoric to conceal negative information. For example, managers in poorly performing firms deliberately construct communication barriers between management and stakeholders by using difficult and complex writing (Courtis 1998, 2004b). In extending Merkl-Davies and Brennan's (2007) framework, Leung et al. (2015) suggest that minimal narrative disclosure serves as another concealment strategy to cover up or diminish negative information.

Lee et al. (2015) find that firm-initiated disclosures on social media in a crisis setting are able to influence stakeholders' perceptions regarding a negative event and to minimise

potential damage to a firm's reputation. However, disseminating negative information on social media can also exacerbate a crisis by spreading bad news to a broader audience more directly and quickly than traditional media (Lee et al. 2015, Miller and Skinner 2015). Because the information environment on social media is uncontrollable, it is difficult to predict the outcome of disseminating negative information (Lee et al. 2013, Cade 2018, Elliott et al. 2018). Therefore, firms employ strategic disclosures to control their presence on social media. The most recent empirical studies suggest that minimising negative earnings news is a prevailing disclosure strategy on Twitter (Jung et al. 2018). In particular, poorly performing firms tend to omit or minimise earnings disclosures to divert investors' attention from poor performance or unfavourable company news (Bloomfield 2002, Clatworthy and Jones 2003, Merkl-Davies and Brennan 2007, Leung et al. 2015). These arguments lead to the first set of hypotheses:

**H1a.** Firms are less likely to post negative earnings-related tweets than positive earnings-related tweets.

**H1b.** Declining performers post fewer earnings-related tweets than improving performers.

### 4.2.2 Assertive hypotheses

Managers in good performing firms have an incentive to provide and highlight positive information in order to signal their superior performance and distinguish themselves from firms that report poor performance (Healy and Palepu 2001, Verrecchia 2001). Firms employ an assertive impression management strategy by emphasising positive information through presentation manipulation (Beattie et al. 2004, Merkl-Davies and Brennan 2007, Beattie and Jones 2008, Brennan et al. 2009). Such a strategy can be

achieved through *visual effects*, *repetition*, *reinforcement* and *positioning* (Beattie and Jones 2000, Courtis 2004a, Bowen et al. 2005, Clatworthy and Jones 2006, Elliott 2006, Brennan et al. 2010, García Osma and Guillamón-Saorín 2011). To summarise, an assertive impression management strategy is employed to make a positive outcome more obvious to an audience.

Compared to traditional disclosure channels, the power of some of the emphasis strategies that have been adopted is diluted on social media. For example, a visual emphasis through presentational effects can be found for every tweet because of the default settings on Twitter. All of the earnings tweets are comparable to headlines, which are effectively organised visually. In addition, most earnings tweets contain information that has already been disclosed in earnings press releases. Therefore, they are largely repetitive in nature. However, the multimedia tools and dissemination functions available on social media still enable firms to reinforce and position their positive information for the purpose of corporate image building.

*Presentation manipulation*

Firms can reinforce positive information by using self-presentational patterns such as textual narratives, quantitative formats or visual aids to cast a favourable light on their performance (García Osma and Guillamón-Saorín 2011). Prior textual narrative studies (Lounsbury and Glynn 2001, Martens et al. 2007, Parhankangas and Ehrlich 2014) find that managers extensively employ crafted narratives to construct a confident and credible image of their business in order to secure external funding. Moreover, Skinner (1994) documents a quantitative bias in earnings-related voluntary disclosures, as managers tend to present positive information in quantitative formats instead of qualitative statements. Examining the disclosure patterns in chairmen's statements from 100 UK companies,

Clatworthy and Jones (2006) find that profitable firms are more likely to use key financial indicators and quantitative references than declining performers in order to emphasise their favourable results.

From the perspective of human cognition and memory (Tversky 1974, Anderson 1990), visual presentations are effective for information display and impression construction (Beattie and Jones 2008, Bell and Davison 2013, Davison 2015). For instance, Beattie and Jones (2000) find that the manipulation of financial graphs is related to firm performance, as firms with increased income and earnings per share (EPS) are more likely to include financial graphs in their annual reports in order to portray a favourable impression of firm performance. Therefore, based on the above arguments and the availability of various presentational forms on Twitter, this study proposes the following hypotheses:

**H2a.** Firms are more likely to employ self-presentational patterns to emphasise positive earnings-related tweets than negative or neutral earnings-related tweets.

**H2b.** Improving performers are more likely to employ multiple self-presentational patterns than declining performers on Twitter.

*Dissemination manipulation*

Social media is not only a disclosure venue but also a platform for direct and immediate information dissemination, bypassing third-party media (Blankespoor et al. 2014). Firms can use this accelerated dissemination channel to construct a desired corporate image at great convenience and a lower cost than traditional information dissemination media. In traditional corporate documents, firms employ the emphasis strategy of strategic positioning to distort readers' attention by directing them to more positive information

placed in more visible locations (Merkl-Davies and Brennan 2007, Brennan et al. 2009, García Osma and Guillamón-Saorín 2011). On Twitter, firms can achieve such distortion by deliberately making the positive information more easily accessible and searchable with the aid of new dissemination functions (Cade 2018, Elliott et al. 2018). Moreover, firms can send the information to followers' news feeds by selectively linking the positive information to webpages with more detailed elaborations. By doing so, firms direct stakeholders' attention to the information that they would like to show and share on social media. In this regard, Jung et al. (2018) study strategic information dissemination on Twitter during earnings announcement events and find that firms are opportunistic in their dissemination in such a way that good news is more likely to be disseminated than bad news. Firms are expected to use Twitter as a manipulation tool for strategic information dissemination with the aim of enhancing their corporate image and reputation. This study therefore proposes the following hypotheses:

**H3a.** Firms are more likely to disseminate positive earnings-related tweets than negative or neutral earnings-related tweets.

**H3b.** Improving performers are more likely to disseminate earnings-related tweets than declining performers.

### 4.2.3 Impression management outcome

In the arguments for impression management, influencing others' perceptions is the ultimate goal of using self-presentational strategies (Goffman 1959, Jones 1990, Leary and Kowalski 1990). Traditional impression management studies provide experimental evidence that the manipulation of disclosure presentations can influence readers' perceptions about firm performance (Beattie and Jones 2002, Elliott 2006, Tan et al.

2014). For example, Beattie and Jones (2002) find that measurement distortion in financial graphs misleads readers to perceive a more favourable impression of firms' financial performance. Elliott (2006) concludes that the positioning emphasis of pro forma earnings before GAAP earnings induces some investors to make significantly higher judgements of financial performance. Additionally, Tan et al. (2014) find that the manipulation of disclosure forms and linguistic tone have a joint effect on investors' judgements of earnings performance.

Social media brings a revolutionary change to corporate disclosure practices by realising two-way communication between firms and stakeholders at any time and at any geographic location. It provides firms with great convenience and control for managing the impressions that stakeholders directly perceive; the favourable impression that stakeholders perceive can be emphasised through the use of self-presentational patterns. Moreover, the dissemination manipulation can broadly influence people's perceptions and enable the emphasised information to be circulated and widely engaged with on social media – that is, to go viral. Berger and Milkman (2012) examine the content characteristics that make a piece of information go viral online and find that positive information is more likely to go viral than negative information. Lee et al. (2013) find that tweets that are posted by firms with higher corporate social responsibility (CSR) ratings receive more 'retweets' than those with lower CSR ratings. Based on the findings in traditional impression management narrative studies and recent evidence on social media virality, this study argues that stakeholders' favourable perceptions of firm performance can be further enhanced by the self-presentational patterns and strategic dissemination of positive information. Consequently, more attention and engagement are gathered from stakeholders. Therefore, this study posits the following hypotheses:

**H4a.** Positive earnings-related tweets are more likely to attain stakeholder engagement than negative or neutral earnings-related tweets.

**H4b.** Improving performers are more likely to attain stakeholder engagement than declining performers on Twitter.

## 4.3 Sample and methodology

To test the hypotheses, two groups of firms with improving and declining performance on the basis of profitability in the fiscal years (FY) of 2014 and 2013 are constructed. Financial performance data were collected from Osiris and earnings tweets were collected from firms' official corporate Twitter accounts. Earnings tweets were classified into three categories based on their tone (i.e., positive, negative or neutral). Then a manual form-oriented content analysis was conducted to document a range of impression management variables and t-tests were used to examine the different self-presentational behaviours and their outcome. The procedures are described in the following sections.

### 4.3.1 Sample selection

The initial sample of this study included FTSE 100 companies that were listed on the London Stock Exchange as of January 2015. The analyses of this study focus on large firms for a number of reasons. First, about 60% of FTSE 100 companies use social media for earnings disclosures on Twitter, whereas 28% of FTSE 250 companies do so. Furthermore, this study aims to reduce the noise caused by inclusion in different indices because the communication strategies of the firms listed in these different indices might show substantial divergence. More importantly, FTSE 100 companies usually have high visibility, and they have already attracted a number of analyst followers and much media coverage. Therefore, the motive for their additional earnings disclosures on Twitter is an intriguing research question that is worth exploring.

The first step is to search for the official Twitter accounts of sample firms by visiting each company's corporate site, searching keywords on Twitter and using Google. Firms that do not have an official Twitter account or a group Twitter account were excluded

from the sample. Then firms whose Twitter account serves as a platform for customer service, marketing or career information were also excluded. Additionally, firms whose Twitter accounts restrict public access or were inactive in the year of an earnings announcement were excluded. Firms that have never posted earnings tweets since their Twitter account creation were also excluded. Two firms – HSBC Holdings and Intertek Group – posted earnings tweets in prior years but did not tweet on FY 2014 earnings events. They both experienced declining profits in comparison with the previous year; they may have been aiming, with strategic purpose, to avoid extra media exposure. However, since the analyses concentrate on the characteristics of earnings-related tweets and the firms that made such disclosures, these two firms were removed from the sample. In applying these stringent standards to sample selection, a final sample of 57 FTSE 100 firms were secured. Table 4.1 presents a detailed breakdown of the sample selection process that we used in our analysis.

This study focuses on the analysis of the earnings-related tweets posted on firms' annual earnings announcement day. The decision to focus on annual earnings announcement events rather than quarterly or interim events is out of two considerations. First, a firm's annual earnings announcement event is one of the top concerns of investors and many stakeholder groups. Therefore, compared to quarterly and interim earnings announcement, the audiences on social media-a mixture of a wide range of different stakeholders-are more likely to pay attention to this high-profile annual corporate event. Second, in the data collection process, attempts have been made to collect tweets that were posted on quarterly and interim earnings announcement events. However, majority of FTSE 100 firms only tweeted their annual earnings results. Very few posted earnings-related tweets on their quarterly and interim earnings events. Thus, for the purpose of

consistency across the sample firms, this study focuses on the most tweeted annual earnings announcement events.

Additionally, the analysis of this study focuses on the tweets posted on day 0 rather than a period. In fact, I observed and checked tweets posted by the sample firms between day -7 and day +7 of their earnings announcement events in the data collection process. However, there was hardly any earnings-related tweets after day 0. Very few firms sent a reminder tweet on day-1 but majority only tweeted on day 0. Some firms started to post other non-earnings-related tweets on day 0 as soon as the event ended. This observation reveals a phenomenon that many firms use Twitter during earnings announcement events for live news updates. To some extent, it makes sense because Twitter is a popular social media platform for monitoring breaking news. There is a possibility that the reminder tweets posted on day -1 or non-earnings-related tweets posted on day 0 may form a part of managerial impression management strategy as a way of attracting or diverting attention. It might generate some interesting insight if the observations can be extended to a period in future research. However, given the scarce number of such tweets from the sample firms, I decided to concentrate on earnings-related tweets posted on day 0 of event for consistency.

Table 4.1 Sample selection

| **Sample selection criteria** | **Excluded** | **Sample size** |
|---|---|---|
| FTSE 100 on 1 January 2015 | | 100 |
| No Twitter accounts | 9 | |
| No group Twitter accounts | 1 | |
| Main Twitter account is for careers, customer services or marketing | 7 | |
| Twitter account has no public access | 1 | |
| Twitter account was not active in 2014 | 8 | |
| Twitter account never posted earnings tweets | 15 | |
| Twitter account did not post earnings tweets in 2014 | 2 | |
| **Total sample from FTSE 100** | | **57** |

### 4.3.2 Classification of firms

This study aims to examine the effects of profitability on accounting narratives. Therefore, the 57 firms were divided into two groups – *improving performers* and *declining performers* – by calculating the percentage change in profit before taxation for the period between 2013 and 2014. This method is adopted by referring to prior studies that employed similar sampling procedures (Courtis 1998, Clatworthy and Jones 2003, Clatworthy and Jones 2006). Moreover, this study uses profit rather than street earnings for the following reasons. Street earnings seems to be the number that management and many sophisticated financial stakeholders care most about. In this study, we conjecture that the targeted audiences for impression management on social media are mainly constituted by a number of non-financial stakeholders who are unsophisticated users of financial information. The perceptions of sophisticated users are less likely to be manipulated given their rich alternative information sources. Despite the limitations of profitability as a sound performance attribute, there is still a prevailing emphasis on it in the media and in the public perception. A profit increase is portrayed as a sign of good management whereas poor profitability is used as a basis for criticism (Deegan and Unerman 2011). Thus we conjecture that profitability might be one of the key performance indicators that many unsophisticated users on social media tend to pay attention to when firms talk about their annual financial performance on Twitter. In this study, we follow the method adopted in prior studies (Clatworthy and Jones 2003, Clatworthy and Jones 2006) and use profit before taxation as a grouping basis. It should be acknowledged that a firm's earnings announcement involves a mixture of multiple performance indicators. It may generate different groups of firms depending on the selection of performance indicators. This is one of the methodological limitations of this study, which is also discussed in Chapter 6.2 Research limitations.

Clatworthy and Jones (2003) examine the differences when reporting good and bad news between firms with improving and declining performance. They study the top 50 and bottom 50 non-financial UK listed companies based on the percentage change in profit before taxation. However, because using Twitter to report earnings remains an emerging phenomenon for FTSE 100 firms, the sample of this study is relatively small after the sample selection criteria were applied. Therefore, to keep as many qualifying firms in the analyses as possible, all 57 firms were included in this study and the direction of percentage change was used as grouping benchmarks. The grouping procedure yielded 31 improving performers with a positive percentage change in profit before taxation and 26 declining performers with a negative percentage change. This study posits that the disclosure behaviours between improving and declining performers differ.

Table 4.2 Descriptive statistics for firm performance

| **Profit before taxation (£b)** | **Improving performers (n=31)** | | **Declining performers (n=26)** | |
|---|---|---|---|---|
| **Year** | **2014** | **2013** | **2014** | **2013** |
| Mean | 1.51 | 0.68 | 1.83 | 4.33 |
| Standard deviation | 1.76 | 2.25 | 5.94 | 8.34 |
| Min | 0.15 | –8.24 | –6.41 | 0.28 |
| Max | 7.65 | 7.11 | 28.59 | 33.59 |

Table 4.2 summarises the descriptive statistics of the sample firms' profit before taxation. Improving firms report an average of £1.51b in 2014 compared with £0.68b in 2013. The mean profit figure thus more than doubled year over year. In contrast, the average profit before taxation for declining performers is £1.83b in 2014 compared with £4.33b in 2013, showing a significant drop in mean profit.

### 4.3.3 Classification of tweets

This study also investigated the corporate use of impression management strategies on Twitter, considering the tone of earnings-related tweets. After excluding announcement-only reminder tweets, the rest of the earnings-related tweets were classified into three tone types: positive, neutral and negative. Because this study focuses on the accounting narratives at the syntactic level, namely the disclosure patterns or forms, analysing the tone of tweets is for categorising purposes. This approach is different from that taken in prior thematic studies, which aim to parse the 'optimism' level of disclosures (Cho et al. 2010, Loughran and McDonald 2013, Chen et al. 2014). As the 280-character limit[4] on Twitter makes each tweet a relatively independent unit, the classification was conducted tweet by tweet. By referring to the categorising method adopted for sentences in Rodrigue et al. (2015), manual coding was conducted to assess the tweets individually by examining whether the attitude or activity that is reflected in each tweet is beneficial, detrimental or indifferent to the firms. Figure 4.1 shows example tweets that are classified as positive from British Land, negative from Johnson Matthey and neutral from Tullow Oil, respectively. Two teams were employed to work on the classification separately in order to reduce the subjectivity in the coding process, and similar coding stages were

[4] It used to be 140-character limit for each tweet. Twitter.com increased the limit to 280-character in 2017.

followed when coding for impression management variables. The detailed processes will be discussed in the measure of impression management.

Figure 4.1 Examples of narrative earnings-related tweets in three tone types

Table 4.3 Descriptive statistics for narrative earnings-related tweets

| **Type** | **No. of earnings-related tweets** | | |
|---|---|---|---|
| | **Total** | **Improving performers** | **Declining performers** |
| *Positive* | 290 | 214 (74%) | 76 (26%) |
| *Negative* | 12 | 8 (67%) | 4 (33%) |
| *Neutral* | 82 | 41 (50%) | 41 (50%) |

**Note**: This table summarises the total number of tweets that contain earnings-related narratives, excluding 86 announcement-only tweets. The total number of earnings-related tweets including announcement-only tweets is 470.

*Positive* = Narrative earnings-related tweets that contain **ONLY** positive information;
*Negative* = Narrative earnings-related tweets that contain **ANY** negative information;
*Neutral* = Narrative earnings-related tweets that contain neutral information.

Table 4.3 presents the descriptive statistics of the tone of the earnings-related tweets that are used in the analyses. A total of 290 tweets include positive information, which constitutes almost 62% of all of the earnings-related tweets. In contrast, only 12 tweets contain negative information (see Appendix), comprising just 2.5% of all earnings-related tweets. The total number of narrative earnings-related tweets is 384. Given the character-limit in each tweet, the total amount of financial information in the sample may seem trivial for FTSE 100 companies whose traditional disclosure channels may contain hundreds and thousands of pages of detailed information. However, different corporate communication channels may vary in their functions and serve different purposes. The purpose that companies use Twitter for financial disclosure is not likely to provide as much detailed information as traditional corporate disclosure outlets such as press release or annual report. Instead, limited space for information disclosure on Twitter determines the selective nature of financial disclosure on Twitter. Firms will need to filter out the most important piece of earnings information in their views or the most preferred messages they would like their audience to read on Twitter. In other words, despite the

small amount of earnings-related information posted on Twitter, these information are probably the 'essence' of financial messages that firms are most keen to communicate to their targeted audiences on social media. Moreover, the audiences of a earnings-related tweet is not restricted to a firm's own followers. One earnings-related tweet posted by a firm might be retweeted by an influential user on Twitter such the official Twitter account of BBC or Financial Times. As a result, one 280-character tweet, no matter whether or not the content reflects a true and fair picture of a firm's financial performance, could travel much further and have much more profound influence within the online networks with the 'help' of the influencers on Twitter. Therefore, although the financial disclosures on Twitter may not be able to compete with traditional disclosure outlets in terms of the aggregate amount of information, they can play their part in achieving a wider dissemination of key financial messages to stakeholders within the networks on Twitter.

### 4.3.4 Measure of impression management

Directly measuring impression management in accounting narratives is difficult (García Osma and Guillamón-Saorín 2011). To examine the differences in the disclosure and dissemination of earnings news contingent on the tone type and firm performance, seven variables (see Table 3.4) were used to capture the unique features of Twitter for defensive and assertive impression management strategies, as well as impression management outcomes. A dichotomous scheme (1 = yes, 0 = no) was adopted to code these features for each tweet and counted the number of earnings tweets that were posted by each firm. In doing so, this study is able to reveal the strategic disclosure and dissemination of financial information and impression management outcomes.

Manual content analysis was conducted in three stages to ensure the rigour of the coding results and to alleviate any problems caused by subjectivity. In the first stage, two coders worked independently to code 470 tweets based on the measurement for each variable. One coder is myself. The other coder is an undergraduate research assistant. Detailed textual coding guidance was provided. Initially, a sample of coding from both coders were compared and checked to ensure that the coding guidance was applied consistently. In the second stage, the two coders compared the coding results and checked them for consistency and coding errors. An agreement ratio was computed for the coding results of each variable. On average, there was over 96% agreement between the two coders, which is viewed as a favourable rate of agreement according to prior literature (Clatworthy and Jones 2003, García Osma and Guillamón-Saorín 2011). In the last stage, the two coders reviewed the tweets with coding inconsistencies that were identified in Stage 2 and discussed the interpretations that support their coding. Finally, the coding results were refined through a process based on mutual agreement.

Table 4.4 Impression management (IM) strategies and functions

| IM strategy | Technique | Variable | IM function |
|---|---|---|---|
| ***Defensive*** | Minimising | Volume | Reducing the volume of tweets can help avoid extra media exposure and avoid public attention. |
| ***Assertive*** | Self-presentational patterns | Narrative information (see Figure 3.2) | Using narrative information to describe earnings details can enhance managerial interpretations of good firm performance. |
| | | Quantitative information (see Figure 3.3) | Highlighting key financial indicators or performance comparison with numbers, percentages or monetary formats can assist firms in emphasising good financial results. |
| | | Visual information (see Figure 3.4) | Graphs, pictures or videos can be embedded in tweets to help present positive information in a vivid, eye-catching manner. |
| | Dissemination | Hashtag/Cashtag (see Figure 3.5) | Using a hashtag # or cashtag $ in tweets helps firms highlight the tweets with information that they would like to show and share by making them more easily searchable than other tweets. |
| | | Hyperlink (see Figure 3.5) | Incorporating hyperlinks in tweets enables firms to manipulate the dissemination of information. They can direct audiences to a piece of information that they would like to disseminate by linking them to external websites with detailed elaborations. |
| **IM outcome** | | | |
| ***Engagement*** | | Best tweets (see Figure 3.6) | A unique function on Twitter that automatically displays the tweets that receive more engagement in terms of likes, retweets and replies in a larger font size. |

*Defensive impression management strategy: minimising through reduced disclosure*

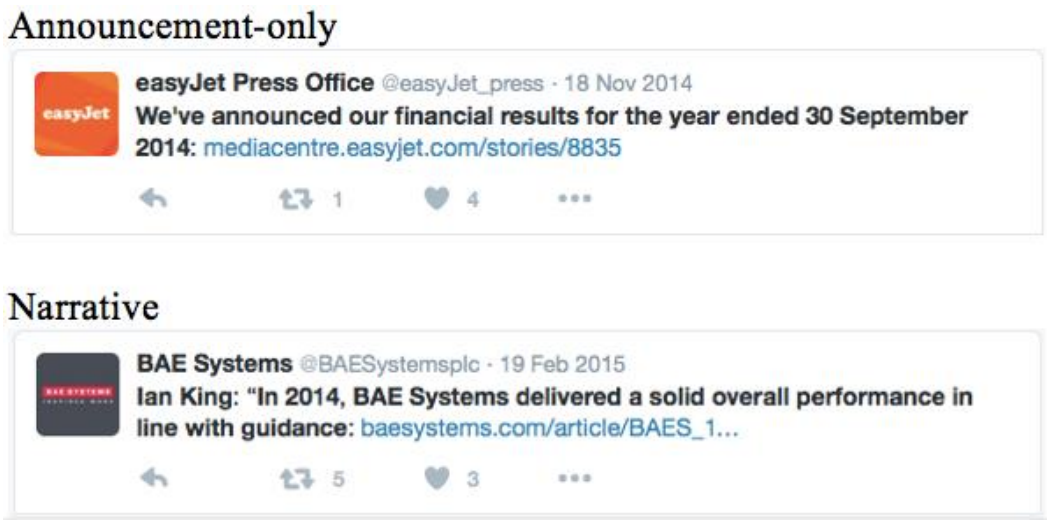
*Volume.* One method to omit unfavourable information and minimise any unnecessary disclosure is to reduce the total disclosure quantity. Leung et al. (2015) adopt a score-rating index to examine the existence of 77 informational items in the annual reports of Hong Kong firms in order to measure the extent of minimal disclosure. This method may be useful for investigating lengthy corporate documents that initially provide relatively sufficient narratives; however, it is inappropriate for headline-style earnings tweets with condensed narratives. Prior studies of corporate disclosures on Twitter use the number of tweets as a measure for the extent of disclosures in their analysis (Blankespoor et al. 2014, Lee et al. 2015, Jung et al. 2018). For example, Lee et al. (2015) count the daily number of tweets regarding product recalls that are posted by firms and other users to distinguish firm-initiated disclosures from the content that is generated by other users. This study uses the total number of earnings-related tweets that are posted by each firm on the earnings announcement day to gauge the extent of disclosures. To gauge the level of the different types of information that were disclosed, the number of positive and negative earnings-related tweets were counted.

*Assertive impression management strategy: emphasis through presentation manipulation*

*Narrative information.* There are two types of earnings-related tweets on Twitter: announcements-only tweets and tweets that contain narrative information. The former are earnings announcement reminders that inform firms' Twitter followers about the release of annual results or the timing of presentations. These tweets do not contain any material information about financial performance. Meanwhile, earnings-related tweets that contain narrative information describing earnings details can help to enhance favourable managerial interpretations of good firm performance. Thus, this study

distinguishes the announcement-only tweets from narrative tweets. Figure 4.2 shows an example of an announcement-only tweet from easyJet and a narrative tweet from BAE Systems.

Figure 4.2 Examples of an announcement-only earnings-related tweet and a narrative earnings-related tweet




*Quantitative information.* Quantitative formats can be used as hard quantitative references to highlight key financial indicators or performance comparisons for the purpose of emphasising positive earnings results (Clatworthy and Jones 2006). Guillamon-Saorin et al. (2012) suggest that, regardless of their performance, firms are inclined to emphasise the good news with performance figures in order to reinforce a positive outcome. In this study, three types of quantitative formats (see Figure 4.3) were identified: (i) numerical monetary amount, (ii) performance percentage and (iii) any other performance number. Type (iii) includes only standalone numbers that provide performance-related information such as '4th' in AstraZeneca's tweet in Figure 4.3;

therefore, dates and times (end of financial year, time of presentation) were excluded in the coding.

Figure 4.3 Examples of earnings-related tweets with quantitative information


*Visual information*. Posting visuals on Twitter is an emphasis technique to attract readers' attention with the potential to influence their perceptions. Visuals, especially graphs, are powerful for communicating trends or patterns in a vivid and direct manner in financial disclosures (Beattie and Jones 2008). Pictures or photographs may not be effective in communicating financial information, but their expressive representation of objects can cognitively convey the intended information to both sophisticated and unsophisticated readers (Davison 2015). Videos that are attached to tweets are also powerful visual aids for information presentation. In this regard, Elliott et al. (2012) find that financial disclosures through videos retain more investor attention and therefore investor trust and that investments are especially increased when managers make internal attributions for the restatements. For corporate events, such as earnings announcements, videos of presentations or interviews with managers are usually embedded in earnings-related tweets. In this study, graphs, pictures, photographs and videos were coded aggregately as visuals. Figure 4.4 is an example of an earnings-related tweet with visuals from the Royal Bank of Scotland.

Figure 4.4 Example of an earnings-related tweet with visuals

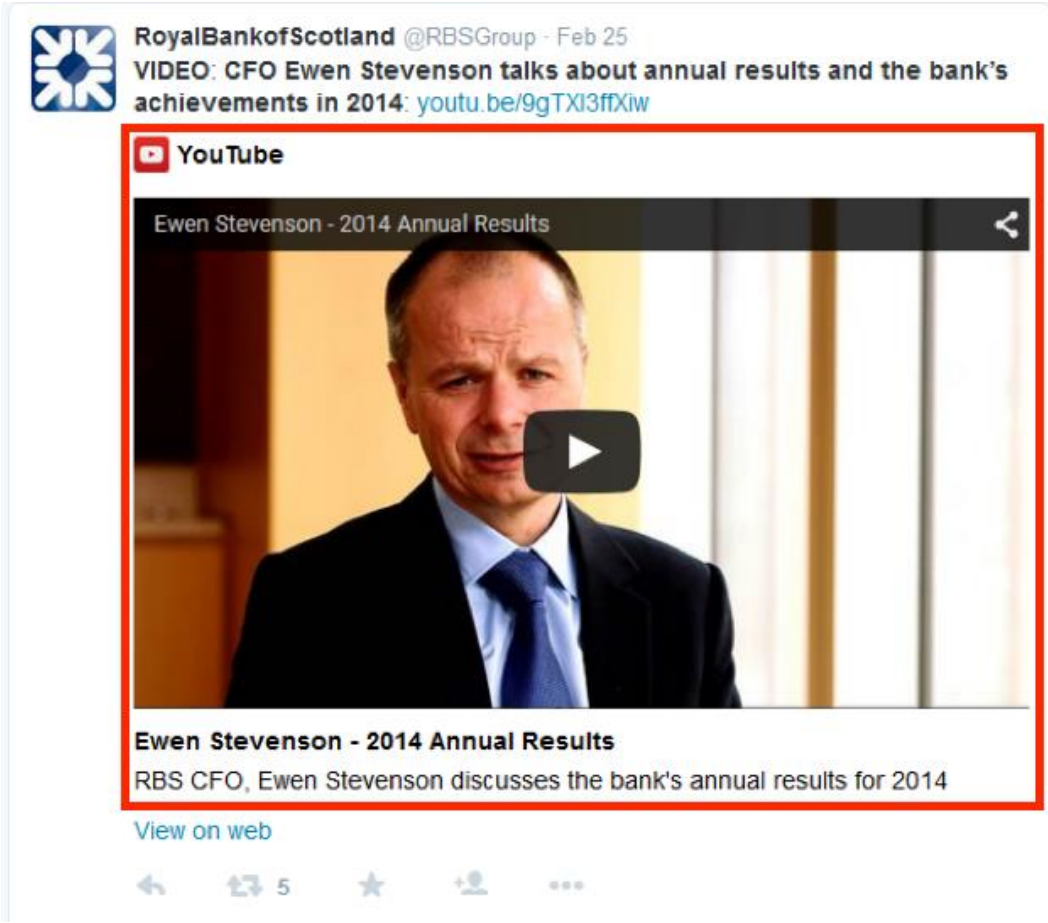



Figure 4.5 Example of an earnings-related tweet with information dissemination functions

*Assertive impression management strategy: emphasis through dissemination manipulation*

*Hashtag/Cashtag.* On Twitter, firms can use a hashtag (#) or cashtag ($) in tweets to make the information that they wish to disseminate more easily searchable than it would be if conveyed without these elements, as Twitter enables users to preface a keyword or topic with a hashtag or cashtag symbol before a stock ticker symbol. This function allows tweets with the same or similar hashtag/cashtag to appear more easily in a Twitter search. In this study, tweets that contained hashtags or cashtags were coded as evidence of the use of dissemination manipulation for assertive emphasis. Figure 4.5 shows an example tweet with the hashtag '#ARMEarnings' and the cashtag '$ARMH' from ARM Holdings.

*Hyperlink.* By incorporating hyperlinks in certain tweets, firms can direct stakeholders' attention to a piece of information that they wish to emphasise with further elaboration. For earnings announcement events, firms usually insert hyperlinks of their corporate or third-party media webpages in earnings-related tweets as a means of additional information dissemination (Blankespoor et al. 2014). Therefore, the employment of hyperlinks in tweets is used as a measure of information dissemination to reveal potential opportunistic dissemination behaviour. In Figure 4.5, the example earnings-related tweet from ARM Holdings also contains a hyperlink.

*Impression management outcome*

*Best tweets.* Twitter, as a social network website, offers a variety of interactive functions to encourage conversations between users and to assist network expansion. 'Best tweet' is a unique feature on Twitter that automatically displays tweets with a higher level of engagement in terms of the number of 'retweets', 'likes' and 'replies' in a larger font size. 'Retweeting' is similar to the behaviour of sharing a piece of information by

forwarding and circulating it to users' own online networks. To 'like' is to show agreement or appreciation towards a tweet, while 'replies' refer to the comments that are posted by other users below a tweet. These interactive functions provide an opportunity to observe the immediate responses from stakeholders, and thus they allow us to gain insight into whether firms successfully construct a desired corporate image through their self-presentational emphasis and strategic information dissemination. Each firm's profile page on Twitter was visited to identify whether a tweet is displayed in a larger font size. Figure 4.6 presents an example illustrating a larger tweet in comparison with a normal tweet from Barclays:

Figure 4.6 Example of a 'best tweet'


## 4.3.5 Summary statistics

Table 4.5 presents some descriptive statistics regarding the impression management variables that are used in the analyses. A total of 470 earnings tweets were obtained from 57 firms, of which 86 tweets are the announcement-only type. The total numbers of earnings tweets with self-presentational patterns in narrative, quantitative and visual forms are 384, 167 and 113, respectively. A total of 279 of 470 earnings tweets include hyperlinks, while 239 earnings tweets contain hashtags and/or cashtags. Eighty-one

earnings tweets are labelled ‘best tweets’, which are displayed in a larger font size on firms’ Twitter profile pages.

Table 4.5 Descriptive statistics for key IM variables in earnings-related tweets

| IM Type | Variables | No. (%) of earnings-related tweets[5] posted | | |
|---|---|---|---|---|
| | | **All firms** | **Improving performers** | **Declining performers** |
| Minimising | *Volume* | 470 | 311 (66%) | 159 (34%) |
| Self-presentational patterns | *Announcement-only* | 86 | 48 (56%) | 38 (44%) |
| | *Narrative information* | 384 | 263 (69%) | 121 (31%) |
| | *Quantitative information* | 167 | 127 (76%) | 40 (24%) |
| | *Visual information* | 113 | 91 (81%) | 22 (19%) |
| Dissemination | *Hashtag/Cashtag* | 239 | 134 (56%) | 105 (44%) |
| | *Hyperlink* | 279 | 184 (66%) | 95 (34%) |
| Engagement | *Best tweets* | 81 | 70 (86%) | 11 (14%) |

Variable definitions:

*Volume* = The total number of earnings-related tweets posted on a firm's annual earnings announcement day, including announcement-only tweets;

*Announcement-only* = Earnings-related tweets that are only earnings announcement reminders without any detailed performance information;

*Narrative information* = Earnings-related tweets containing detailed narratives about a firm's financial performance;

*Quantitative information* = Earnings-related tweets that contain numbers, percentages or a monetary format;

*Visual* information = Earnings-related tweets that are embedded with graphs, pictures, or videos;

*Hashtag/Cashtag* = Earnings-related tweets that contain hashtag # or cashtag $;

*Hyperlink* = Earnings-related tweets with hyperlinks that provide links to corporate websites or other external websites;

*Best tweets* = Earnings-related tweets that are displayed in a larger font size.

[5] No. of earnings-related tweets with visuals, hashtag/cashtag, hyperlink and best tweets is the sum of announcements-only tweets and tweets that contain narrative information.

## 4.4 Results

This study used one-tailed t-tests to examine the statistical significance of four sets of hypotheses. The results for the defensive hypotheses are summarised in Table 4.6 and Table 4.7. Table 4.6 shows the results of tests regarding *H1a*; these compare the mean volume of positive and negative earnings-related tweets that are posted by each firm on earnings announcement day. Table 4.7 presents the difference in the mean disclosure volume of improving and declining performers to test *H1b*. Table 4.8 and Table 4.9 illustrate the test results for an assertive impression management strategy and outcome. As summarised in Table 4.8, the results for *H2a*, *H3a*, and *H4a* show the differences between positive and other types of earnings-related tweets in terms of the use of self-presentational patterns, the use of dissemination, and their impression management outcome, respectively. Table 4.9 shows the results for *H2b*, *H3b* and *H4b*, which compare the differences in the mean percentages of firms adopting assertive emphasis and receiving 'best tweets' in their earnings disclosures between the two groups.

### 4.4.1 Defensive impression management strategy

The first hypothesis (*H1a*) predicts that firms are less likely to post negative information than positive information on Twitter and thus addresses the use of a defensive strategy in different tone types. Table 4.6 shows that the total number of positive and negative earnings-related tweets that were posted by all 57 firms is 302. This study first compared the volume of the two types of earnings-related tweets that were posted by each firm in the full sample (n=57). The mean volume of negative earnings-related tweets is 0.21, whereas the mean volume is 5.09 for positive earnings-related tweets. The difference is highly significant at the 0.01 level. Additionally, two sub-samples were constructed by distinguishing the tweets that were posted by improving and declining performers in

order to examine whether the results still hold within each group. For the improving group, the mean volume of negative earnings-related tweets is 0.26, which is significantly lower than that of positive earnings-related tweets (6.90) at the 0.01 level. The significant difference also holds for declining performers ($p<0.01$). Thus, *H1a* is supported. The results therefore show that regardless of firm performance, all firms tend to disclose a significantly lower volume of negative earnings-related information than positive earnings-related information on Twitter.

Table 4.6 Comparisons of the mean volume of positive and negative earnings-related tweets

| | No. of tweets[6] | Mean | | Difference |
|---|---|---|---|---|
| | | Positive | Negative | |
| **Disclosure volume** | | | | |
| All | 302 | 5.09 | 0.21 | 4.88*** |
| Improving performers | 222 | 6.90 | 0.26 | 6.64*** |
| Declining performers | 80 | 2.92 | 0.15 | 2.77*** |

**Note**: *** indicates significant difference at the 0.01 level in one-tailed t-tests.

Table 4.7 Comparisons of the mean disclosure volume posted by improving performers and declining performers

| | No. of tweets | Mean | | Difference |
|---|---|---|---|---|
| | | Improving performers | Declining performers | |
| **Disclosure volume** | | | | |
| All | 470 | 10.03 | 6.12 | 3.91** |
| Announcement-only | 86 | 1.55 | 1.46 | 0.09 |
| Narrative information | 384 | 8.48 | 4.65 | 3.83** |

**Note**: ** indicates significant difference at the 0.05 level in one-tailed t-tests.

[6] No. of tweets is the sum of positive and negative earnings-related tweets, but excluding neutral tweets in Table 4.3.

*H1b* centres on the differences between improving and declining performers in their adoption of a defensive strategy. According to *H1b,* declining performers are more likely to minimise earnings disclosures than their counterpart group. The mean volume of all earnings-related tweets for declining performers is 6.12, whereas the mean volume is 10.03 for improving performers (see Table 4.7). The difference in the means is statistically significant at the 0.05 level. Since the announcement-only tweets constitute approximately 18% of all earnings-related tweets, this study further distinguished them from other earnings-related tweets to determine whether *H1b* can still be supported after these reminder tweets were excluded. In Table 4.7, it is interesting to note that both groups seem to post a similar amount of reminder earnings-related tweets. After excluded these tweets were excluded, declining performers post a mean volume of 4.65 earnings-related tweets with narrative information, whereas the mean volume is 8.48 for improving performers. The difference is also significant at the 0.05 level. Therefore, based on the results, *H1b* is supported. Firms with declining performance tend to minimise earnings disclosures, especially narrative disclosures, in order to avoid public attention on Twitter.

Table 4.8 Comparisons of the mean number of different types of earnings-related tweets that employ an assertive strategy and IM outcome

| **No. of tweets**[7] | | **Mean** | | **Difference** |
|---|---|---|---|---|
| | | **Positive** | **Neutral & negative** | |
| **Self-presentational patterns** | | | | |
| Narrative | 384 | 5.09 | 1.65 | 3.44*** |
| Quantitative | 167 | 2.53 | 0.40 | 2.13*** |
| Visual | 99 | 1.11 | 0.63 | 0.48** |
| **Dissemination tools** | | | | |
| Hashtag/Cashtag | 196 | 2.49 | 0.95 | 1.54*** |
| Hyperlink | 199 | 2.39 | 1.11 | 1.28*** |
| **IM outcome** | | | | |
| Best tweets | 70 | 0.89 | 0.33 | 0.56*** |

**Note**: ** and *** indicate significant difference at the 0.05 and 0.01 levels respectively, in one-tailed t-tests.

[7] No. of tweets with visuals, hashtag/cashtag, hyperlink and best tweets is the sum of earnings-related tweets presented in tweets that contain narrative information, but excluding announcement-only tweets in Table 4.5.

### 4.4.2 Assertive impression management strategy

The second set of hypotheses – *H2a* and *H2b* – concentrates on the use of self-presentational patterns in earnings-related tweets as means of assertive emphasis. *H2a* predicts that firms tend to employ self-presentational patterns, including textual narrative and quantitative and visual formats, to emphasise positive information over other types of information (i.e., negative and neutral) on Twitter. The results for *H2a* are summarised in Table 4.8. Notably, the mean number of positive earnings-related tweets that contain narrative information is 5.09, while the mean number of other types of narrative earnings-related tweets is 1.65. This difference in means is highly significant at the 0.01 level. A significant difference ($p<0.01$) is also found for the quantitative format. The mean number of pieces of quantitative information in positive earnings-related tweets is 2.53, whereas the mean number is 0.40 for negative and neutral earnings-related tweets. As for the use of visuals, the mean number of positive earnings-related tweets with embedded visuals is 1.11, while it is 0.63 for other types of earnings-related tweets. The difference is statistically significant at the 0.05 level. *H2a* is thus supported. Positive earnings-related tweets are more likely to be emphasised with a more extensive use of narrative, quantitative and visual presentations than negative and neutral earnings-related tweets.

Table 4.9 Comparisons of the mean proportion of firms in improving and declining categories that adopt an assertive IM strategy and IM outcome

| | No. of firms | % of firm in each group | | Difference |
|---|---|---|---|---|
| | | Improving performers | Declining performers | |
| **Self-presentational patterns** | | | | |
| All three patterns | 29 | 61.3 | 38.5 | 22.8%** |
| **Dissemination tools** | | | | |
| Both tools | 25 | 74.2 | 42.3 | 31.9%** |
| **IM outcome** | | | | |
| Best tweets | 30 | 80.6 | 19.2 | 61.4%*** |

**Note**: ** and *** indicate significant difference at the 0.05 and 0.01 levels respectively, in one-tailed t-tests.

*H2b* predicts that firms with improving performance are more likely to adopt multiple self-presentational patterns than their counterparts on Twitter. This study thus compared the adoption of all three of the above self-presentational patterns between the two groups. From Table 4.9, it can be seen that 61.3% of improving firms adopt all three patterns, which is significantly higher than the 38.5% in the declining group at the 0.05 level. The results thus support the prediction of *H2b*. Therefore, multiple self-presentational patterns are not only used to emphasise positive earnings-related information but also more likely to be employed by improving performers to enhance their favourable position.

Hypotheses *H3a* and *H3b* address dissemination manipulation for the purpose of assertive emphasis. *H3a* focuses on the dissemination of different types of earnings information, while *H3b* compares the proportion of adopters of dissemination tools considering improving and declining performers. In *H3a,* it is anticipated that firms are more likely to disseminate positive earnings-related tweets than negative and neutral

earnings-related tweets on Twitter. The results in Table 4.8 show that the mean number of positive earnings-related tweets that are embedded with hashtags and/or cashtags is 2.49, whereas the mean number is 0.95 for negative and neutral earnings-related tweets. This difference is highly significant at the 0.01 level. As for hyperlinks, the mean number of positive earnings-related tweets with hyperlinks (2.39) is also significantly higher than that of negative and neutral earnings-related tweets with hyperlinks (1.11) at the 0.01 level. *H3a* is thus supported.

*H3b* predicts that firms with improving performance are more likely to disseminate their earnings news than their declining counterparts on Twitter. Firms are coded as adopters of dissemination tools if they utilise both hyperlinks and hashtags and/or cashtags in their earnings disclosures. The results for *H3b* are presented in Table 4.9. The mean proportion of improving firms adopting dissemination tools (74.2%) is significantly higher than that of declining performers (42.3%) at the 0.05 level. The results thus also support *H3b*. Therefore, the results for *H3a* and *H3b* suggest that dissemination tools are more likely to be inserted into positive information than into other types of information and that improving performers are more likely to exploit dissemination manipulation than declining performers.

### 4.4.3 Impression management outcome

The last set of hypotheses concerns the outcome of impression management as reflected in the level of engagement on Twitter. In *H4a*, this study posits that positive earnings-related tweets have the potential to better engage stakeholders than other earnings tweets given the multiple emphases that are placed on them by firms. From Table 4.8, it can be seen that the mean number of positive earnings-related tweets that are displayed in a

larger font as ‘best tweets’ is 0.89, which is significantly higher than that of negative and neutral tweets (0.33) at the 0.01 level. *H4a* is thus supported. This study also compared the percentage of firms with earnings-related tweets that are displayed as ‘best tweets’ between improving and declining performers. Table 4.9 shows that 80.6% of improving performers and 19.2% of declining performers have earnings-related tweets that are displayed in a larger font size. This difference is also highly significant at the 0.01 level (see Table 4.9). Thus, the results support the prediction of *H4b* that firms with improving performance are more likely to obtain stakeholder engagement than declining firms on Twitter.

## 4.5 Robustness tests

### 4.5.1 Non-parametric tests

In the main analysis, t-test is adopted to test the hypotheses. Parametric tests such as t-tests can perform well with non-normal data if the sample size is greater than 15 in each group (Pearson 1931, Bartlett 1935, Geary 1947). In order to reassure the robustness of the results, non-parametric tests are also conducted to run the tests again. For *H1a*, *H2a*, *H3a* and *H4a*, Wilcoxon signed-rank test is used because the focus is to compare the differences in the earnings-related tweets with different tones from all 57 sample firms. Wilcoxon signed-rank test is a distribution equality test on matched data, which tests the null hypothesis that both distributions are the same. For *H1b*, *H2b*, *H3b* and *H4b*, Mann-Whitney test is adopted because these hypotheses focus on the differences between improving performers (n=31) and declining performers (n=26). Mann-Whitney test is a distribution equality test on unmatched data, which tests the null hypothesis that both distributions are the same.

Wilcoxon signed-rank test results for *H1a* are reported in Table 4.10. The test results for *H2a*, *H3a* and *H4a* are summarised in Table 4.12. Table 4.11 shows the Mann-Whitney test for *H1b*. Table 4.13 reports the results for *H2b*, *H3b* and *H4b*. Overall, the results of non-parametric tests for *H1a*, *H3a*, *H3b*, *H4a*, *H4b* are statistically significant at the 0.01 level, providing additional support for the t-test results in the main analysis. *H1b* is only weakly supported ($p<0.1$, see Table 4.11) when comparing all earnings-related tweets of improving performers with that of declining performers. The significance level was 0.05 in the t-test for *H1b* (see Table 4.7). The difference is moderately significant at the 0.05 level when announcement-only tweets are excluded (see Table 4.11). This is in line with the t-test results for *H1b*. For *H2a*, among the three self-presentational patterns, the non-

parametric test results for emphasis through narrative information and quantitative information are in line with the t-test results ($p<0.01$, see Table 4.12). The difference for emphasis through visual formats between positive tweets and negative & neutral tweets is only weakly significant at the 0.1 level (see Table 4.12). It was moderately supported at the 0.05 level in the t-test (see Table 4.8). *H2b* is moderately supported at the 0.05 level (see Table 4.13), which is in line with the t-test results.

Table 4.10 Comparisons of the distribution of positive and negative earnings-related tweets

| | **No. of tweets[8]** | **Mean** | | **z-score** |
|---|---|---|---|---|
| | | **Positive** | **Negative** | |
| **Disclosure volume** | | | | |
| All | 302 | 5.09 | 0.21 | 6.12*** |
| Improving performers | 222 | 6.90 | 0.26 | 4.81*** |
| Declining performers | 80 | 2.92 | 0.15 | 3.61*** |

**Note**: *** indicates significant difference at the 0.01 level in one-tailed Wilcoxon signed-rank tests.

Table 4.11 Comparisons of the distribution of the disclosure volume posted by improving performers and declining performers

| | **No. of tweets** | **Mean** | | **z-score** |
|---|---|---|---|---|
| | | **Improving performers** | **Declining performers** | |
| **Disclosure volume** | | | | |
| All | 470 | 10.03 | 6.12 | -1.53* |
| Announcement-only | 86 | 1.55 | 1.46 | 0.253 |
| Narrative information | 384 | 8.48 | 4.65 | -1.75** |

**Note**: * and ** indicate significant difference at the 0.1 level and 0.05 level respectively, in one-tailed Mann-Whitney tests.

[8] No. of tweets is the sum of positive and negative earnings-related tweets, but excluding neutral tweets in Table 4.3.

Table 4.12 Comparisons of the distribution of the number of different types of earnings-related tweets that employ an assertive strategy and IM outcome

| **No. of tweets**[9] | | **Mean** | | **z-score** |
|---|---|---|---|---|
| | | **Positive** | **Neutral & negative** | |
| **Self-presentational patterns** | | | | |
| Narrative | 384 | 5.09 | 1.65 | 4.33*** |
| Quantitative | 167 | 2.53 | 0.40 | 4.87*** |
| Visual | 99 | 1.11 | 0.63 | 1.34* |
| **Dissemination tools** | | | | |
| Hashtag/Cashtag | 196 | 2.49 | 0.95 | 2.72*** |
| Hyperlink | 199 | 2.39 | 1.11 | 2.37*** |
| **IM outcome** | | | | |
| Best tweets | 70 | 0.89 | 0.33 | 3.33*** |

**Note**: * and *** indicate significant difference at the 0.1 and 0.01 levels respectively, in one-tailed Wilcoxon signed-rank tests.

[9] No. of tweets with visuals, hashtag/cashtag, hyperlink and best tweets is the sum of earnings-related tweets presented in tweets that contain narrative information, but excluding announcement-only tweets in Table 4.5.

Table 4.13 Comparisons of the distribution of proportion of firms in improving and declining categories that adopt an assertive IM strategy and IM outcome

| | No. of firms | % of firm in each group | | z-score |
|---|---|---|---|---|
| | | Improving performers | Declining performers | |
| **Self-presentational patterns** | | | | |
| All three patterns | 29 | 61.3 | 38.5 | -1.99** |
| **Dissemination tools** | | | | |
| Both tools | 25 | 74.2 | 42.3 | -2.42*** |
| **IM outcome** | | | | |
| Best tweets | 30 | 80.6 | 19.2 | -4.58*** |

**Note**: ** and *** indicate significant difference at the 0.05 and 0.01 levels respectively, in one-tailed Mann-Whitney tests.

## 4.5.2 Regression analysis

So far, the empirical analysis of this study focuses on univariate analysis. One limitation is that the results might be exposed to the risk of omitted variables. Therefore, in order to further assess the robustness of the results, I extend the research design to a multivariate level by conducing regression analysis. In the main analysis, hypotheses are developed to test the differences in the firms' use of different impression management strategies when they disclose earnings-related news on Twitter, depending on the tone of tweets and their financial performance. In line with the hypotheses developed in Section 4.2, this section aims to systematically investigate whether firms' financial performance is related to the use of IM strategies in the accounting narratives on Twitter. More specifically, using regression analysis, this section aims to investigate 1) the relationship between financial performance and defensive IM strategy; 2) the relationship between financial performance and assertive IM strategy; and 3) the relationship between financial

performance and the IM outcome on Twitter.

The sample of the regression analysis consists of 57 FTSE 100 firms that posted earnings-related tweets on their annual earnings announcement events on Twitter in the fiscal year of 2014. The same dataset is used for t-tests and regression analysis, whereas several additional control variables are added to the original dataset in the regression analysis. The following equation is estimated to test the relationships between firms' financial performance and IM variables on Twitter. Poisson regression is adopted for the analysis.

$$IM\ variables = \alpha + \beta_1 Performance + \beta_2 Size + \beta_3 Leverage + \beta_4 MTB + \beta_5 Followers + \beta_6 Followings + \beta_7 Twitter\_age + \beta_8 IndustryDummies + \varepsilon$$

A summary of the detailed definitions of variables is presented in Table 4.14. IM variables are consistent with the IM variables used in t-tests. *Performance*, is a dummy variable that equals to 1 of a firm's profit before taxation of FY2014 is greater than that of FY2013; 0 otherwise. Following prior literature on voluntary disclosure on social media (Blankespoor et al. 2014, Zhang 2015, Jung et al. 2018), this study controls for several firm characteristics that may affect a firm's self-presentational behaviours on social media. Control variables include: *Size*, as measured by a firm's market capitalisation; *Leverage*, measured by total debt over total assets; and market to book ratio (*MTB*). I also control for the number of followers, the number of followings and Twitter age of a firm's corporate Twitter account[10]. *Followers*, refers to the total number of Twitter users that subscribe to a firm's news feed on Twitter. *Followings*, refers to the total number of Twitter users that a firm subscribes to on Twitter. *Twitter_age*, measures

[10] Data of followers, followings, and Twitter age were collected as of June 2015.

the total time period that a firm had been on Twitter. These three variables capture the size of a firm's social network on Twitter, which potentially affect a firm's disclosure behaviours and the IM outcome. Additionally, this study also controls for industry effect by adding ten industry dummy variables, based on the classification of Industry Classification Benchmark (ICB).

First, I examine the relation between financial performance and defensive IM strategy. The proxy used for defensive IM strategy is *Volume*, the total number of earnings-related tweets of a firm. The results are presented in Table 4.15 column (1). The estimated coefficient of *Performance* is positive and statistically significant at the 1% significance level. The results indicate that the total volume of earnings-related tweets is positively and significantly associated with a firm's financial performance. It provides additional supporting evidence that declining performers are more likely to avoid additional disclosure of earnings news on Twitter.

Second, I investigate the relation between financial performance and assertive IM strategy. Similar to the t-tests in the main analysis, assertive IM strategy is divided into two types: emphasis through self-presentational patterns and emphasis through dissemination tools. Three IM variables are used as the proxies for presentational emphasis: *Narrative*, *Quantitative*, and *Visual*. Two IM variables are identified for the proxies for dissemination emphasis: *Hashtag/Cashtag* and *Hyperlink*. The results for *Narrative*, *Quantitative* and *Visual* are summarised in Table 4.15 column (2), (5) and (6) respectively. It can be seen that the estimated coefficients of the three IM variables are all positive and statistically significant ($p<0.01$). The results indicate that the use of self-presentational patterns in earnings-related tweets is positively and significantly

associated with firm performance. For additional analysis, I also split *Narrative* earnings-related tweets into *Positive* and *Negative* earnings-related tweets, and then regress them on firm performance respectively. The results are reported in Table 4.15 column (3) and (4). The number of positive earnings-related tweets are positively and significantly associated with firm performance whereas no significant association is found for negative earnings-related tweets. The results suggest that improving performers are more likely to emphasise good performance with positive tone than declining performers. The use of negative tone in earnings-related tweets is not related to firm performance, given the overall scarce amount. The results for the emphasis through dissemination tools are presented in Table 4.15 column (7) and (8). No significant association is found between the use of *Hashtag/Cashtag* and firm performance. Whereas the number of earnings-related tweets with *Hyperlink* is positively and significantly related to firm performance ($p<0.01$). Overall, the regression results support the positive relation between assertive IM strategy and firm performance.

Third, I examine the relation between firm performance and the IM outcome (*Best tweets*). The results are summarised in Table 4.15 column (9). The estimated coefficient on *Performance* is 2.1258, which is statistically significant at the 1% level. This provides supporting evidence that improving performers are more likely to have a greater number of best tweets than declining performance.

In a nutshell, the results of additional regression analyses are consistent with the findings of t-tests. Declining performers are more likely to use defensive IM strategy to post a smaller amount of earnings-related tweets than improving performers. Improving performers are more likely to employ a range of self-presentational patterns,

dissemination tools and positive tone to emphasise their good financial performance on Twitter. As a result, improving performers are more likely to have more *Best tweets* than declining performers due to a higher level of engagement received from the audiences Thus, the results from the main analysis of this study remain robust in the multivariate design.

Table 4.14 Variable definitions.

| Variables | Definitions | Sources |
|---|---|---|
| ***Dependent variables*** | | |
| *Defensive IM strategy* | | |
| Volume | The total number of earnings-related tweets posted on a firm's annual earnings announcement day. | Twitter.com |
| *Assertive IM strategy* | | |
| Narrative | The number of earnings-related tweets that contain a firm's financial performance details. | Twitter.com |
| Positive | The number of narrative earnings-related tweets that contain ONLY positive information. | Twitter.com |
| Negative | The number of narrative earnings-related tweets that contain ANY negative information. | Twitter.com |
| Quantitative | The number of earnings-related tweets that contain numbers, percentages or a monetary format. | Twitter.com |
| Visual | The number of earnings-related tweets that are embedded with graphs, pictures, or videos. | Twitter.com |
| Hashtag/Cashtag | The number of earnings-related tweets that contain hashtag # or cashtag $. | Twitter.com |
| Hyperlink | The number of earnings-related tweets with hyperlinks that provide links to corporate websites or other external websites. | Twitter.com |
| *IM outcome* | | |
| Best tweets | The number of earnings-related tweets that are displayed in a larger font size. | Twitter.com |
| ***Independent variables*** | | |
| Performance | A dummy variable that equals to 1 if a firm's profit before taxation in FY2014 is greater than that of FY2013; 0 otherwise. | Bloomberg |
| ***Control variables*** | | |
| Size | Market capitalisation of FY2014. | Bloomberg |
| Leverage | The ratio of total debt divided by total assets of FY2014. | Bloomberg |
| MTB | The market to book ratio of FY2014. | Bloomberg |
| Followers | The number of Twitter users that follow a firm's Twitter account as of June 2015. | Twitter.com |
| Followings | The number of users that a firm's Twitter account follow as of June 2015. | Twitter.com |
| Twitter_age | The number of years that a firm had been on Twitter as of June 2015. | Twitter.com |
| Industry dummies | Ten industry dummy variables based on the classification of Industry Classification Benchmark (ICB). | Bloomberg |

This table summarises the definitions and data sources of dependent variables, independent variables and control variables used in Poisson regression analyses.

Table 4.15 Poisson regression results: IM variables and financial performance

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Volume | Narrative | Positive | Negative | Quantitative | Visual | Hash/cash tag | Hyperlink | Best tweets |
| | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) |
| Performance | 0.7676*** | 0.9013*** | 1.0441*** | 1.5322 | 1.3755*** | 1.1933*** | 0.205 | 0.8715*** | 2.1258*** |
| | (-4.09) | (-3.88) | (-4.27) | (-0.95) | (-3.94) | (-3.49) | (-0.52) | (-4.82) | (-4.3) |
| Size | 0.1446 | 0.1456 | 0.0061 | 0.8851* | -0.1311 | 0.7376** | 0.8215*** | -0.0711 | 0.2869 |
| | (-1) | (-0.9) | (-0.03) | (-1.96) | (-0.51) | (-2.44) | (-2.67) | (-0.33) | (-1.4) |
| Leverage | -0.0447 | -0.0663 | -0.0953 | 0.1785 | -0.0203 | -0.2679 | -0.2707 | 0.082 | 0.0052 |
| | (-0.61) | (-0.91) | (-1.27) | (-0.53) | (-0.19) | (-1.49) | (-1.29) | (-1.15) | (-0.04) |
| MTB | 0.3523*** | 0.4337*** | 0.4815*** | 0.7869 | 0.6514*** | -0.1841 | 0.6064** | 0.2748** | 0.0461 |
| | (-3.61) | (-3.79) | (-3.75) | (-1.24) | (-3.67) | (-1.12) | (-2.42) | (-2.34) | (-0.26) |
| Followers | 0.0364 | 0.0726 | 0.3130* | -1.1058* | 0.1336 | -0.3546* | -0.3812* | 0.1127 | -0.3194 |
| | (-0.31) | (-0.54) | (-1.74) | (-1.79) | (-0.62) | (-1.85) | (-1.88) | (-0.49) | (-1.25) |
| Followings | 0.0936 | 0.1166 | 0.0775 | -0.6438 | 0.1398 | -0.0953 | 0.4753** | 0.1034 | 0.3305** |
| | (-1.05) | (-1.02) | (-0.61) | (-0.36) | (-0.8) | (-0.57) | (-2.57) | (-0.7) | (-2.05) |
| Twitter age | -0.2169** | -0.2279* | -0.2098 | -0.6853 | -0.1526 | -0.1107 | -0.2256 | -0.2421* | -0.2331 |
| | (-2.09) | (-1.89) | (-1.56) | (-1.23) | (-0.83) | (-0.66) | (-1.14) | (-1.82) | (-1.61) |
| Constant | 0.6370* | 0.0662 | -0.1995 | -22.9365*** | -0.9899** | -0.4084 | 0.899 | 0.3775 | -1.9018* |
| | (-1.87) | (-0.17) | (-0.57) | (-5.18) | (-2.01) | (-0.80) | (-1.2) | -1.09 | (-1.77) |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| No. of Obs. | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 |

* p<0.1, ** p<0.05, *** p<0.01

This table reports the Poisson regression results of IM variables on financial performance. The definitions of variables are summarised in Table 4.14. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

## 4.6 Summary

This study addresses an important topic that has rarely been studied in the accounting narrative research: the examination of corporate self-presentational behaviours for earnings news disclosure and dissemination on Twitter through the lens of impression management. Prior social media studies on corporate disclosures largely focus on the role of social media as voluntary disclosure outlets and additional information dissemination channels (Blankespoor et al. 2014, Lee et al. 2015, Jung et al. 2018). However, the voluntary nature of this rich media platform grants firms great flexibility to disclose and disseminate earnings news as they wish. In this regard, social media provides an ideal setting for organisational self-presentation.

Using a sample of 57 FTSE 100 companies with a total of 470 earnings-related tweets, this study finds that firms adopt defensive and assertive impression management strategies for a self-presentational purpose when reporting earnings news on Twitter. Firstly, the findings of this study indicate that companies, regardless of reporting good or poor financial performance, tend to minimise the volume of negative earnings-related tweets on Twitter in general. When firms are to report declining performance, they tend to employ defensive impression management strategy to minimise and avoid extra disclosure of earnings news on Twitter. Secondly, the results of this study reveal that positive earnings-related tweets on Twitter are more likely to be embedded with self-presentational emphases such as the employment of narrative details, quantitative indicators and visual presentations. Especially when reporting improving performance, firms are more likely to use assertive impression management strategy to emphasise their outstanding performance in their earnings-related tweets. Thirdly, this study also document evidence that the biased use of defensive and assertive strategies also exists in

the information dissemination process in a way that positive earnings-related tweets are more likely to be disseminated than negative earnings-related tweets. Last but not least, this study provides initial evidence on the outcome of using different impression management strategies. The findings suggest that positive earnings-related tweets tend to attract more stakeholder engagement and improving performers are more likely to attain a higher level of engagement on Twitter.

This study contributes to impression management research by providing novel evidence of the corporate use of social media during earnings announcement events. In addition to reducing the information gap, large firms, irrespective of their performance, tend to use different corporate disclosure strategies to construct a favourable corporate image on social media. This study adds to the work of Jung et al. (2018) by providing evidence that firms not only strategically manage the volume of their earnings news on Twitter but also strategically employ a range of self-presentational patterns and information dissemination tools in their tweets to cast a favourable light on their financial performance. Furthermore, in prior accounting narrative studies, impression management behaviours are more pronounced for firms who need to retain or repair their corporate image and reputation in unfavourable circumstances, such as reporting poor financial or environmental performance (Courtis 1998, 2004b, Li 2008, Cho et al. 2010, Leung et al. 2015) or requiring legitimacy construction (Ogden and Clarke 2005, Criado-Jiménez et al. 2008, Samkin and Schneider 2010). This study adds to the impression management literature by showing that firms also extensively involve self-presentational behaviours to enhance their corporate image in favourable circumstances. Additionally, the findings of this study demonstrate that firms are adaptive in the employment of impression management strategies for the new disclosure medium; not only is the disclosure itself biased, but the dissemination of the disclosure is also manipulated to achieve a more

favourable image construction. Finally, this study provides initial insight into the outcome of impression management by examining the immediate responses from stakeholders enabled by the interactive functions on Twitter.

# 5 Board independence and corporate financial communication on social media: a stakeholder perspective

## 5.1 Introduction

This study examines the relationship between board independence and financial disclosure on social media drawing from a stakeholder theory perspective. Stakeholder theory argues that business objectives should be extended to creating values for a broad range of stakeholder groups rather than merely focusing on the maximisation of shareholder wealth (Freeman 1984, Clarkson 1995, Mitchell et al. 1997). Corporate scandals in the past few decades also indicate that a good corporate governance mechanism should embrace a broader view of business responsibilities and ensure that management act in the best interests of both shareholders and stakeholders at large (Alam 2006, Solomon 2007). A stakeholder theory perspective is particularly relevant to the empirical setting of this study – corporate financial communication on social media – where the majority of the audience on social media are a firm's stakeholders who are empowered by this interactive communication channel. The theoretical lens of stakeholder theory provides interesting insight into the relationship between corporate governance, financial communication decisions and stakeholder engagement on this unique communication platform.

The board of directors in a company play an important role in monitoring management decisions. Having a higher percentage of independent directors on a corporate board

would enhance the monitoring capacity of the board and reduce managerial opportunistic behaviour (Fama 1980, Fama and Jensen 1983, Adams et al. 2010). From a stakeholder perspective, independent directors are outside directors who are less aligned to management and thus are expected to represent the interests of not only shareholders but also a wide range of stakeholders (Forker 1992, Ajinkya et al. 2005, Peasnell et al. 2005). It is the responsibility of independent directors to oversee the nature and type of corporate communication with stakeholders by promoting a transparent information environment and enhancing stakeholder engagement. Mitchell et al. (1997) argue that independent directors on the board have the legitimacy and power to monitor management of the quality and adequacy of corporate disclosure.

Gul and Leung (2004: 354) point out that 'Corporate disclosure is primarily a decision that emanates from the board'. Evidences show that many corporate boards of large companies do have responsibility for and control over a firm's social media policy. The Boardroom Bellwether survey conducted by FT–ICSA shows that around 66% of FTSE 350 boards have discussed a social media strategy in their board meetings (ICSA 2015). Among these companies, 49% of FTSE 350 boards discussed a company's social media strategy one to three times in one year and 8% discussed it four to six times during board meetings in the past 12 months. According to the talks given by investor relations professionals and social media managers from several FTSE 100 firms, earnings-related content posted on social media needs to be approved by the CEO or CFO beforehand and a company's engagement performance on social media is monitored and constantly reported to executives and boardrooms. Thus, characteristics of a firm's board potentially influence a company's social media communication strategy.

Adopting an impression management perspective, Chapter 4 provides empirical evidence that firms may use social media opportunistically to construct a positive corporate image during earnings announcement events. The underlying assumption of Chapter 4 is that earnings-related tweets are neither neutral nor unbiased and they are mainly used for impression management purposes. However, theories of accounting are abstractions of reality; thus, no one theory is expected to provide full and perfect explanation of human behaviour (Deegan and Unerman 2011). For corporate financial communication practices, it is likely that motivations of both social and economic nature exist given the increasingly complex corporate reporting environment (Festre 2010, Beattie 2014). Several prior studies find that capital markets do react to earnings-related information on Twitter despite the fact that information may have been published elsewhere, such as in press releases (Blankespoor et al. 2014, Jung et al. 2018). For instance, Blankespoor et al. (2014) find that firms that use Twitter to disseminate their earnings news are associated with lower abnormal bid-ask spread, greater abnormal depths and higher liquidity. The authors conclude that information dissemination on Twitter during earnings announcement events helps improve a firm's information environment. Therefore, consistent with these early evidences provided by this stream of research, the underlying assumption adopted in Chapter 5 is that earnings-related tweets on Twitter are informative and are used for meeting stakeholders' information needs and engaging with stakeholders at large.

Prior studies document that corporate voluntary disclosure plays an important role in reducing the information gap between a company's management and less-informed outside investors, as well as stakeholders at large (Kim and Verrecchia 1994, Healy and Palepu 2001, Verrecchia 2001, Beyer et al. 2010). Corporate governance literature

provides evidence that corporate voluntary disclosure is positively associated with board quality in general. However, whether or not this positive relationship still holds for social media platforms remains uncertain. A unique feature that distinguishes social media from traditional disclosure outlets is its interactive nature. This interactive nature is a double-edged sword for companies. It provides a handy and cost-effective channel to have stakeholder dialogues online. However, at the same time it greatly empowers a number of stakeholders on social media who used to be silent or muted in traditional corporate communication settings. In other words, firms lose full control of corporate communication processes on social media because stakeholder groups on these platforms have become potentially powerful stakeholders who might cause damage to corporate reputation or trigger disruption to business operations. Lee et al. (2015) find that the tweeting activities of other users other than firms (retweets) exacerbate the negative price reaction to a firm's product recall announcements. Cade (2018) also finds that the number of retweets of a criticism tweet about a firm by other users on Twitter worsens investors' perceptions. Toubiana and Zietsma (2017) provide qualitative evidence that strong negative emotions expressed by stakeholders caused by a violation of expectations are amplified on Facebook, which ultimately leads to regret and adaptation by the organisation.

It can be seen that on the one hand, social media provides an additional communication channel to improve corporate transparency and to enhance stakeholder engagement. On the other hand, the interactive nature of it brings uncertainty and tension into corporate communication processes on social media. Thus, it becomes a crucial task for top management and the board of directors to balance the benefits and risks in their decision-making in respect of a firm's social media strategy. Therefore, it is an intriguing research

question to ask whether or not the positive association between board composition and corporate voluntary disclosure automatically applies to social media given its unpredictable information environment.

Miller and Skinner (2015) call for more future corporate disclosure research to examine how firms use social media for corporate communication and how they manage their information environment on this interactive platform. In their recent work, Brennan and Merkl-Davies (2018) highlight the importance of connectivity in effective corporate communication and call for more future research to develop measures for connectivity and to empirically investigate the role of connectivity in corporate communication, especially on social media platforms. Thus, using earnings announcement events as the empirical setting, this study responds to these two calls and examines whether board independence is a key determinant of a firm's financial disclosure decisions on Twitter, drawing from a stakeholder theory perspective. The sample of this study consists of 868 firm-year observations of FTSE 350 firms over a three-year period from 2014 to 2016.

This study firstly investigates whether board independence is positively associated with the level of financial disclosure on Twitter. The rationale behind this investigation is to examine whether independent directors on the board play a role in narrowing the information gap between management and stakeholders through greater transparency on social media. This study then investigates whether board independence is positively associated with the communicative effectiveness of financial disclosure on Twitter, namely the connectivity of financial disclosure. In addition, despite the interactive nature of social media, research that investigates direct stakeholder responses and engagement in corporate financial communication on social media is still very scarce. Therefore, this

study also aims to provide an initial insight into the outcome of corporate financial communication on social media, by examining the association between the level of stakeholder engagement and board independence, as well as firms' financial disclosure decisions on Twitter.

The remainder of this chapter is organised as follows. Section 5.2 presents prior literature and develops hypotheses. The research design is described in Section 5.3. The data analyses and empirical results are provided in Section 5.4. Section 5.5 presents the additional analyses on stakeholder engagement on Twitter. In the final section, a summary and concluding remarks are provided.

## 5.2 Literature and hypotheses development

### 5.2.1 Board independence and voluntary disclosure

From a stakeholder perspective, accounting is concerned with a wide scope of accountability for a firm's financial, social and environmental performance and reporting. The stakeholder theory of the firm promotes a more transparent information environment where management are expected to disclose more financial, social and environmental information so that a wide range of stakeholders can be informed about a firm's performance, operation activities and their effects (Alam 2006). Corporate governance serves as an important control and monitoring mechanism to foster a transparent information environment for both shareholders and stakeholders at large (Shleifer and Vishny 1997, Bushman and Smith 2001).

Voluntary disclosure is an important tool for improving transparency, providing additional information beyond mandatory requirements (Healy and Palepu 2001, Verrecchia 2001). Research on voluntary disclosure is fundamentally intertwined with corporate governance literature (Bushman and Smith 2001, Core 2001, Beyer et al. 2010). Previous studies have examined the role of corporate governance mechanisms in a variety of corporate voluntary disclosure decisions (Ajinkya et al. 2005, Cheng and Courtenay 2006, Lim et al. 2007, Ettredge et al. 2011, García Osma and Guillamón-Saorín 2011, Gul et al. 2011, Hidalgo et al. 2011).

In corporate governance mechanisms, a broad consensus has been reached among academics and practitioners that the independence of the corporate board is a key element of board composition (Fama 1980, Fama and Jensen 1983, Adams et al. 2010, Hayat and Kabir Hassan 2017). The monitoring role of independent directors on the board of

management's decision-making has been extensively investigated in prior corporate governance literature (Johnson et al. 1996). Daily and Dalton (1994) argue that firms with a higher percentage of outside directors on the board are more likely to realise corporate objectives. Fama and Jensen (1983) argue that independent directors have incentives to signal their expertise and capabilities in decision control through effective monitoring of internal managers. Moreover, since independent board directors are outsiders of a firm, the presence of independent directors on the board could better represent the interests of other stakeholder groups including employees, customers, suppliers, local communities and investors (Forker 1992, Ho and Wong 2001, Haniffa and Cooke 2002, Webb 2004). As a result, independent directors will have greater influence and monitoring power over the quantity and quality of corporate disclosure that are orientated for stakeholders' information needs (Forker 1992, Mangena and Pike 2005).

A number of prior studies have established an association between board independence and the quantity and quality of various types of corporate disclosure (Forker 1992, Beasley 1996, Chen and Jaggi 2000, Ho and Wong 2001, Klein 2002, Eng and Mak 2003, Sengupta 2004, Ajinkya et al. 2005, Cheng and Courtenay 2006, Lim et al. 2007, Patelli and Prencipe 2007, Jizi et al. 2014, Liao et al. 2015, Yekini et al. 2015). For example, Ajinkya et al. (2005) find that firms with a higher proportion of outside directors on the board are more likely to issue management earnings forecasts and to issue them more frequently. They also find that the quality of these earnings forecasts is also positively associated with higher board independence. Liao et al. (2015) document a positive association between board independence and a firm's voluntary disclosure of greenhouse gas emission-related information based on the UK evidences. Yekini et al. (2015) find

that board independence is positively associated with the quality of community disclosure in annual reports with a sample of UK FTSE 350 firms.

However, a handful of studies report inconclusive evidence on the relationship between board independence and voluntary disclosure decisions. For instance, Eng and Mak (2003) document a negative association between board independence and the level of voluntary disclosure with a sample of 158 listed companies in Singapore. Ho and Wong (2001), meanwhile, report that no significant association is found between board independence and the extent of voluntary disclosure based on a sample of Hong Kong-listed firms. One possible reason for negative or no association is that different countries may have different institutional environments, which leads to different expectations of the roles played by independent directors and voluntary disclosure. The two might be substitutes rather than complementary in certain institutional contexts.

So far, few studies have investigated the relationship between board composition and corporate voluntary disclosure on the emerging corporate communication channel of social media. As discussed in the previous section, the interactivity of social media brings both chances and risks to corporate communication with stakeholders. Whether the positive association between board independence and voluntary disclosure on social media continues to hold is an intriguing question worth exploring.

### 5.2.2 Communicative effectiveness on social media: connectivity

Brennan and Merkl-Davies (2018) identify three communication strategies that reflect three different perspectives on corporate communication models, namely information strategy, persuasion strategy and dialogue strategy. Information strategy views corporate

communication as one-way information disclosure and dissemination from firms to passive information recipients including investors and other stakeholders. Persuasion strategy, meanwhile, entails a two-way asymmetrical communication process where the main purpose of corporate communication is to persuade stakeholders in the hope of obtaining agreement and support. In these two strategies, corporate communication is merely to serve firms' purposes of either conveying financial information or persuading audiences. In addition to the above two traditional perspectives on communication, a third emerging communication strategy is dialogue strategy (Brennan and Merkl-Davies 2018). Under this perspective, firms and stakeholders are involved in a two-way symmetrical dialogic process where the purpose of communication is to build relationships through interactions and engagement between companies and stakeholders.

Brennan and Merkl-Davies (2018) highlight the concept of 'connectivity' as a key element of effective dialogic corporate communication. For a meaningful corporate conversation with stakeholders, not only the quantity but also the communicative effectiveness of financial messages is essential. The concept of 'connectivity' in the work of Brennan and Merkl-Davies (2018) echoes the seven criteria of effective communication in the work of de Beaugrande and Dressler (1981), where cohesion, coherence, intertextuality, intentionality, acceptability, informativity and situationality are regarded as constitutive principles that should be fulfilled for effective communication.

According to Brennan and Merkl-Davies (2018), there are three components of connectivity: 1) textual connectivity; 2) intertextual connectivity; and 3) relational connectivity. Firstly, textual connectivity, in nature, concerns whether or not the content

of the message conveyed is meaningful through the organisation of words, phrases and sentences (Brennan and Merkl-Davies 2018). Effective use of such words, phrases and sentences as well as the linkage between different parts of a message is the key to achieve effective communication. Secondly, intertextual connectivity refers to the ability to connect texts of 1) different corporate genres or 2) different periods of time (Brennan and Merkl-Davies 2018). Firms are able to leverage social media's unique dissemination functions to improve the intertextual connectivity of financial information through effective linkage of financial information from various sources and different time periods. Thirdly, relational connectivity refers to the ability to stimulate dialogue, feedback and engagement between firms and various stakeholders (Brennan and Merkl-Davies 2018). Relational connectivity emphasises the creation of dialogue opportunities which encourage direct engagement and conversation. The social-networking nature of social media makes it an effective tool to connect with stakeholders. Given the interactive setting of social media, Brennan and Merkl-Davies (2018) call for more research that investigates the connectivity of corporate communication on this unique communication channel.

A handful of prior studies have implicitly or explicitly investigated some aspects of connectivity of corporate disclosure on digital media platforms (Koehler 2014, Rivera-Arrubla and Zorio-Grima 2016, Saleh and Roberts 2017, Yang and Liu 2017). So far, empirical research that systematically examines the connectivity of financial communication on social media has been very scarce. Social media, the interactive corporate reporting platform, provides a rich venue to examine how firms connect and engage with stakeholders in the dialogic financial communication process.

It can be seen from Chapter 3 that prior literature on corporate use of social media for corporate reporting is dominated by research that examines the capital market implications, adopting a shareholder-centric view. Very few studies investigate the drivers or determinants for a firm's financial communication decisions on social media in terms of corporate governance influences. Prior studies on board independence and voluntary disclosure largely focus on the investigation of voluntary disclosure in traditional textual-based corporate disclosure outlets such as annual reports. Compared to traditional textual-based printed corporate disclosure, social media has strengths in enhancing the intertextual and relational connectivity of financial disclosure in particular. Thus, this study aims to add to prior literature by examining the influence of board independence on the level and connectivity of financial communication on social media from a stakeholder theory perspective. The research hypotheses are developed in the following section.

### 5.2.3 Hypotheses development

*The level of financial disclosure on social media*

A number of prior studies have established a positive association between board independence and the quantity of corporate voluntary disclosure (Ajinkya et al. 2005, Cheng and Courtenay 2006, Lim et al. 2007, Liao et al. 2015, Muttakin et al. 2018). Ajinkya et al. (2005) find that board independence is positively associated with the frequency of issuing management earnings forecasts. Cheng and Courtenay (2006) document that having more independent directors on the board is associated with a higher level of voluntary disclosure in annual reports based on a sample of 104 firms listed on the Singapore Stock Exchange in 2000. Using a sample of FTSE 350 firms in the UK context, Liao et al. (2015) also provide supporting evidence that higher board

independence leads to more greenhouse gas emission information being disclosed in Carbon Disclosure Project reports.

In the context of this study, social media platforms like Twitter can be used as an effective tool to help foster a more transparent information environment. Twitter has several unique features that facilitate greater disclosure and dissemination of earnings news to a wide range of stakeholders. First, earnings-related tweets on Twitter are usually headline-style statements summarising a firm's key performance indicators in a concise manner. Therefore, compared to conventional disclosure outlets, financial disclosure on Twitter highlights key information from numerous earnings disclosures, which reduces the information processing cost for stakeholders. In addition, firms can send reminder tweets before earnings announcement events and post recap tweets after the events, which could inform and attract stakeholders on Twitter to follow and contribute to the financial conversations. Moreover, on Twitter, disclosing earnings information through tweets is itself also a dissemination process because the tweets posted by a Twitter user will be automatically disseminated to and appear in its followers' news feed. Therefore, posting a higher volume of earnings-related tweets during a firm's earnings announcement event not only means that a greater amount of earnings information is disclosed and disseminated to stakeholders, but also that stakeholders on Twitter are more likely to notice and thus participate in the financial conversations as a result of a higher frequency of earnings-related tweets that are shown in their news feed.

Additionally, Lee et al. (2015) find that increased numbers of tweets initiated by firms helps reduce the negative reaction of capital markets following product recall announcements, indicating that proactive engagement in online dialogues with

stakeholders attenuates damage to firms' reputations. Cade (2018) also provides evidence that a firm's active participation on Twitter helps mitigate non-professional investors' negative evaluation of firms. Given the above-mentioned advantages of Twitter in information dissemination and reputation management, this study argues that independent directors on the board would promote a more transparent information environment by encouraging managers to employ Twitter as an additional and accelerated communication channel to proactively disseminate a greater level of earnings news to stakeholders. Therefore, in line with prior literature, this study posits that firms with a higher proportion of independent directors on the board are more likely to have a greater level of financial disclosure on social media than firms with a lower proportion of independent board directors. The first hypothesis is stated as follows:

> **H1**. Board independence is positively associated with the level of financial disclosure on social media.

*The connectivity of financial disclosure on social media*

Apart from the level of disclosure, the quality of disclosure is another frequently investigated disclosure attribute in traditional voluntary disclosure literature. Prior empirical studies on board independence and the content of voluntary disclosure largely focus on the quality of textual disclosure due to the textual nature of print-based corporate disclosure outlets such as annual reports. A number of studies document a positive association between the proportion of independent directors on the board and the quality of corporate disclosure (Beasley 1996, Klein 2002, Ajinkya et al. 2005, Lim et al. 2007, Patelli and Prencipe 2007, Jizi et al. 2014, Yekini et al. 2015). Klein (2002) finds that board independence is negatively associated with earnings management in the US context.

He concludes that having more independent directors on the board leads to more effective monitoring of corporate financial accounting reporting processes. The findings of Ajinkya et al. (2005) suggest that earnings management forecasts disclosed by firms with higher board independence are more specific, accurate and less biased than firms with less independent directors on the board. Lim et al. (2007) find that higher board independence leads to more forward-looking and strategic information disclosed in annual reports. In a study of board independence and community disclosure in annual reports within the UK context, Yekini et al. (2015) find that board independence is positively associated with the quality of disclosure of community activities in annual reports.

In this study, the investigation focuses on the connectivity of disclosure rather than the quality of disclosure. One reason for this is that the textual content of financial disclosure on Twitter is largely a reiteration of earnings news that has already been disclosed in press releases (Elliott et al. 2018). There is hardly any new piece of financial information for the capital markets, although the information may be useful to keep non-professional investors and other stakeholders on social media informed. The quality of textual disclosure in traditional outlets such as press releases has already been extensively investigated in prior literature. Thus, it would be repetitive to re-examine the well-established positive association between board independence and earnings disclosure quality on social media. The other reason is that a range of unique disclosure techniques and new disclosure attributes have emerged in corporate financial disclosure on Twitter. The more interesting part of financial disclosure on Twitter is how this earnings news is presented and communicated to stakeholders with the assistance of these new functions which potentially could enhance communicative effectiveness with stakeholders. The

connectivity of financial disclosure constitutes a key element of communicative effectiveness on social media platforms such as Twitter (Brennan and Merkl-Davies 2018). Therefore, the investigation will focus on the connectivity of financial disclosure within the intriguing empirical setting of Twitter.

Greater connectivity of financial disclosure on social media provides several benefits to firms. First, Twitter offers a range of dissemination tools including hyperlinks, hashtags and cashtags, which could enhance the intertextual connectivity of disclosure. Moreover, on Twitter, firms could employ a combination of multimedia, such as infographics, pictures and videos, when they communicate their financial performance. These visual aids not only help firms extend their disclosure beyond the character limit of each tweet, but also help attract more stakeholder attention and engagement (Rivera-Arrubla and Zorio-Grima 2016, Blankespoor 2018, Brennan and Merkl-Davies 2018). These new features and functions on Twitter can assist firms to enhance effective information dissemination and to have more direct dialogue with audiences on social media, which ultimately can lead to better informed and engaged stakeholders (Lee et al. 2015, Lodhia and Stone 2017, Manetti et al. 2017).

Based on prior evidences of the association between board independence and disclosure quality, as well as the benefits of greater connectivity of disclosure, this study anticipates that the monitoring mechanism of independent directors also applies to the connectivity of disclosure on social media. From a stakeholder theory perspective, independent directors exert their monitoring power over financial disclosure processes to enhance the communicative effectiveness of financial conversations with stakeholders on social media through improved connectivity of disclosure. As discussed in Section 5.2.2, the

connectivity of disclosure involves three different aspects. At the strategic level, the board of directors are more likely to be concerned with the *overall* connectivity of disclosure on social media rather than specific connectivity components. At the operational level, a firm's public relations professionals or social media team are more likely to be involved in the use of specific connectivity techniques based on the strategic decision from the top. Therefore, this study argues that firms with a higher proportion of independent directors on the board are more likely to have greater *overall* connectivity in their financial disclosure on Twitter than firms with lower board independence. The hypothesis is formally stated as follows:

> **H2**. Board independence is positively associated with the connectivity of financial disclosure on social media.

## 5.3 Research design

### 5.3.1 Sample and data

The sample of this study consists of 868 firm-year observations of FTSE 350 companies listed on the London Stock Exchange as of January 2015 over a three-year period from the fiscal year of 2014 to 2016. Data on corporate governance variables and firm characteristic variables are collected from Bloomberg. I start with the entire population of FTSE 350 firms from 2014 to 2016, which generates a total of 1,050 firm-year observations. 182 firm-year observations are dropped from the sample due to 1) firms being acquired by other firms during the period; and 2) firms having missing data on Bloomberg. Thus, this results in a final sample of 868 firm-year observations from 309 FTSE 350 firms over a three-year period from 2014 to 2016.

Data on corporate financial communication on Twitter are hand-collected from Twitter.com. I identify firms' official Twitter accounts through the links provided on corporate websites, and by searching keywords on Twitter.com if links are not available. This study concentrates on the official Twitter accounts that are active and publicly accessible. For firms with multiple Twitter accounts, the focus is on the corporate Twitter accounts that are dedicated to corporate financial information or corporate news.[11] Then, I observe the 2014, 2015 and 2016 full-year earnings announcement events on these Twitter accounts. This study chooses the full-year earnings announcement events as the empirical setting, as a firm's annual financial performance is not only one of the top concerns of shareholders but also arguably one of the major corporate events that receives

[11] Firms may create multiple Twitter accounts for different specialisations. It is rare for a firm to disclose financial information on a Twitter account that specialises in non-financial information.

wide attention from the public, the media and other stakeholders. In addition, firms are more likely to disclose full-year earnings on Twitter compared to quarterly or interim earnings. This study selects the period of 2014 to 2016 since the US Securities and Exchange Commission (SEC) permitted the corporate use of social media for material information disclosure in April 2013.[12] There is evidence that firms have been increasingly adopting social media for financial communication thereafter (Zhang 2015, Jung et al. 2018). This regulation potentially also has an impact on the disclosure behaviour of multinational firms in the UK.

Table 5.1 summarises the breakdown of sample composition by industry as classified by the Industry Classification Benchmark (ICB). It can be seen from this that the financial industry occupies the highest proportion among the sample, which is 23.27% out of the full sample with 202 firm-year observations. It is followed by the customer service industry, including general retailers, the media, and travel and leisure sectors, which contributes 191 firm-year observations accounting for 22% of the full sample.

[12] See SEC Says Social Media OK for Company Announcements if Investors Are Alerted

Table 5.1 Sample firms by industry

| ICB Code | Description | Firm-Years (#) | Percentage (%) |
|---|---|---|---|
| 0 | Oil & Gas | 38 | 4.38 |
| 1 | Basic Materials | 64 | 7.37 |
| 2 | Industrials | 184 | 21.2 |
| 3 | Consumer Goods | 88 | 10.14 |
| 4 | Healthcare | 39 | 4.49 |
| 5 | Consumer Services | 191 | 22 |
| 6 | Telecommunications | 17 | 1.96 |
| 7 | Utilities | 22 | 2.53 |
| 8 | Financials | 202 | 23.27 |
| 9 | Technology | 23 | 2.65 |
| Total | | 868 | 100 |

This table shows the breakdown of sample firms by ten industries based on the Industry Classification Benchmark (ICB). The sample includes 868 firm-year observations of 309 FTSE 350 companies from fiscal year 2014 to 2016. The column labelled "Firm-Years (#)" shows the number of firm-year observations from a certain industry. The column labelled "Percentage (%)" shows the proportion of firm-year observations from a certain industry out of the total observations.

## 5.3.2 Measurement of dependent and independent variables

*The level of financial disclosure*

To measure the level of financial disclosure on Twitter, I count the total number of earnings-related tweets that a firm posted on its annual earnings announcement day (*VOLUME*). The default setting of Twitter determines that the disclosure and dissemination of financial information on it are largely intertwined with each other. This is because posting any tweets on this platform itself constitutes an information dissemination process since the tweets will be automatically disseminated to their followers' news feeds. In the work of Jung et al. (2018), the authors use the total number

of earnings-related tweets as a proxy for information dissemination to examine whether firms strategically disseminate earnings news on Twitter. Following Jung et al. (2018), this study uses *VOLUME*, the total number of earnings-related tweets that were posted on a firm's annual earnings announcement day, to capture the level of a firm's financial disclosure on Twitter during its annual earnings announcement event. The reason to focus on the earnings announcement day only is that it is observed that firms hardly post any earnings-related tweets after their earnings announcement date. In most cases, firms' Twitter accounts post live tweets while the earnings announcement is in progress and start to post other unrelated tweets as soon as the events end.

*The connectivity of financial disclosure*

A handful of prior studies develop connectivity indexes to measure the effectiveness of communication in corporate web pages, integrated reporting or multiple social media platforms focusing on one or two aspects of connectivity (Koehler 2014, Rivera-Arrubla and Zorio-Grima 2016, Saleh and Roberts 2017). For example, Rivera-Arrubla and Zorio-Grima (2016) create a connectivity index to examine the factors that influence the connectivity of integrated reports.

Based on the framework of Brennan and Merkl-Davies (2018), in this study I develop an index for connectivity of disclosure on Twitter (*CONNECT*), which captures three aspects of connectivity, to measure the communicative effectiveness of financial disclosure on Twitter. Four techniques are identified to increase the connectivity of financial information on Twitter. One disclosure technique each is identified for textual connectivity and relational connectivity respectively. Two techniques are identified for intertextual connectivity. Four dummy variables, *TEXT*, *HYPERLINK*, *HASH* and

*VISUAL*, are created for coding purposes. Table 5.2 summarises the method that I used to compute the *CONNECT* score. First, coding is conducted for each firm based on the four disclosure techniques as shown in Table 5.2. Each disclosure technique variable is coded as 1 if such a technique is used in a firm's earnings-related tweets; 0 otherwise. Then, a *CONNECT* score is computed for each firm by adding up the total scores. Equal weighting is adopted when calculating the total *CONNECT* score. The minimum *CONNECT* score is 0 and the maximum score is 4. Detailed coding methods for each of the components are explained in the following.

Table 5.2 Method to calculate the *CONNECT* index score

| **Category of connectivity** | **Techniques on Twitter** | **Description** | **Score** |
|---|---|---|---|
| Textual Connectivity | Detail (*TEXT*) | Earnings-related tweets containing performance details including quantitative indicators or qualitative descriptions. | 1, otherwise 0. |
| Intertextual Connectivity (different genre) | Hyperlink (*HYPERLINK*) | Earnings-related tweets containing hyperlinks. | 1, otherwise 0. |
| Intertextual Connectivity (different time period) | Hashtag (*HASH*) | Earnings-related tweets containing hashtag (#) or cashtag ($). | 1, otherwise 0. |
| Relational Connectivity | Visual (*VISUAL*) | Earnings-related tweets containing visuals including videos, graphs, photos or pictures. | 1, otherwise 0. |
| Min. *CONNECT* score | | | 0 |
| Max. *CONNECT* score | | | 4 |

This table summarises the components of the *CONNECT* index score and the method of calculation for each firm-year observation. *TEXT*, *HYPERLINK*, *HASH* and *VISUAL* are dummy variables. Equal weighting is used to calculate the total score. The value range of the *CONNECT* score is 0 to 4.

*Textual connectivity*. Textual connectivity refers to effective linkage between words, phrases and sentences which connects texts and corporate events in a meaningful way

(Brennan and Merkl-Davies 2018). In the context of financial communication with stakeholders on Twitter, a meaningful disclosure should be informative about the performance of a company in a past period. Financial disclosure on Twitter with greater textual connectivity conveys a firm's earnings results with effective use of quantitative indictors or qualitative descriptions in a concise and informative manner. These financial disclosures are able to link the condensed texts with a firm's financial performance, which assists with financial communication with stakeholders on social media. However, on Twitter, not all earnings-related tweets contain textual details of a firm's financial performance. For example, some earnings-related tweets are announcement-only tweets, which serve as a reminder message to notify stakeholders on Twitter regarding the date and time of a firm's earnings announcement events. These announcement-only tweets are not as effective as tweets that contain financial performance details in informing stakeholders on social media. Therefore, *TEXT* is coded as 1 if a firm's earnings-related tweets contain quantitative indicators or qualitative details of financial performance; 0 otherwise.

*Intertextual connectivity*. Intertextual connectivity refers to the ability of disclosure to connect texts of 1) different corporate genres or 2) different periods of time (Brennan and Merkl-Davies 2018). On Twitter, two information dissemination tools are employed by firms to enhance the intertextual connectivity of earnings-related tweets. One method is to insert hyperlinks in tweets, which allows firms to connect the short performance highlights disclosed in tweets with more elaborated performance details on external websites. By doing so, firms can directly send clickable links from their corporate websites to their followers' Twitter news feeds, bypassing third-party information intermediaries. This is a cost-effective and time-efficient method to link different

corporate disclosure genres within one short tweet, which greatly reduces the information accessing cost for stakeholders. In this study, *HYPERLINK* is coded 1 if a firm's earnings-related tweets contain hyperlinks; 0 otherwise.

In addition to hyperlinks, firms can also insert a hashtag (#) or cashtag ($) in earnings-related tweets to bring together financial messages that are posted in different tweets at different time periods. In corporate use of Twitter, the hashtag is widely used for specific corporate events or campaigns to attract stakeholders' attention and to encourage discussions. By placing the hash character '#' in front of one user-generated phrase in tweets, it generates a tag which groups all the tweets that contain the same tag together when searching for that specific hashtag. For example, if a hashtag of '#BarclaysResults' is inserted in tweets, when stakeholders search '#BarclaysResults' on Twitter, a collection of all tweets with this hashtag will be shown in the search results. These tweets might be posted on the same day or on different occasions of corporate events. The sender of these tweets might be the company Barclays itself or any Twitter user who inserts this hashtag. Similarly, a dollar sign '$' is usually inserted before stock tickers so that stakeholders can easily find all the tweets that are related to one specific stock as long as they are embedded with the same cashtag.

The employment of a hashtag or cashtag in earnings-related tweets not only enhances the intertextual connectivity by connecting tweets posted from different time periods, but also creates a forum where stakeholders can also join the discussion by using the same hashtag or cashtag in their posting. In this respect, a hashtag or cashtag can also be viewed as elements of relational connectivity, which are used to stimulate the engagement between firms and stakeholders. Whereas in this study, the use of a hashtag or cashtag is

categorised into intertextual connectivity for earnings announcement events on Twitter, the main users of these hashtags or cashtags are still largely firms rather than audiences. Firms generate their own hashtag or cashtag in their tweets to group earnings-related tweets posted during the day. Stakeholders are more likely to engage in the conversation by retweeting, replying or liking the tweets rather than posting with the same hashtag or cashtag. Thus, it is classified as an additional proxy for intertextual connectivity. *HASH* takes the value of 1 if a hashtag or cashtag is embedded in a firm's earnings-related tweets; 0 otherwise.

*Relational connectivity.* Relational connectivity emphasises the creation of dialogue opportunities which encourage direct engagement and conversation between firms and stakeholders. One way to increase the relational connectivity on social media platforms is to utilise visual strategies to enhance the presentation and informativeness of financial disclosure (Rivera-Arrubla and Zorio-Grima 2016, Yang and Liu 2017, Brennan and Merkl-Davies 2018). Visuals such as videos, graphs or pictures are powerful communication vehicles to display trends, patterns and key messages in a vivid and information-rich manner in financial communication (Beattie and Jones 2008, Davison 2015). For example, in earnings-related tweets, many firms post interview videos of CEOs or CFOs talking about their financial results over the past period. Compared to tweets that contain pure text of performance details, a video from the management of a firm adds a more human touch to the financial conversation. It helps audiences who watch these videos build an image of having an actual conversation with the managers, which consequently encourages them to engage with the firm and respond to the messages that are being conveyed. Elliott et al. (2012) find that investor responses towards CEOs' restatement announcements are stronger when the announcement is made via video than

when it is released in text. In this study I classify the employment of visuals in tweets as one method to enhance relational connectivity of financial disclosure on Twitter. *VISUAL* is coded as 1 if a firm's earnings-related tweets contain visuals including video, graphs, pictures or photos; 0 otherwise.

*Board independence*

Several prior studies use the proportion of non-executive or outside directors as the equivalent to board independence (Park and Shin 2004, Ajinkya et al. 2005, Liao et al. 2015, Samaha et al. 2015, Yekini et al. 2015). However, non-executive or outside directors are not necessarily independent. According to Provision 10 in the UK Corporate Governance Code[13], companies are expected to report in annual reports to identify whether or not each non-executive director is considered independent based on several criteria. A non-executive director's independence is considered to be impaired if a director 1) has been the company/group's employee within the last five years; 2) has been directly or indirectly involved in a material business relationship with the company/group within the last three years; 3) has participated in another pay or pension scheme, or received additional remuneration apart from a directorship fee; 4) has a family relationship with directors, advisers or senior employees; 5) has cross-directorships or has substantial links with other directors in other companies; 6) represents a major shareholder; or 7) has a board tenure of more than nine years.

[13] The Financial Reporting Council published the latest UK Corporate Governance Code in July 2018, available at https://www.frc.org.uk/directors/corporate-governance-and-stewardship/uk-corporate-governance-code.

It should be noted that the criteria set out in the Code is not exhaustive and companies may develop their own relevant criteria apart from these circumstances. Companies are expected to clearly explain in annual reports where other circumstances apply. The Code provides a basis to define independence and this may vary from company to company based on their specific circumstances. This study uses Bloomberg's measurement for board independence, which measures the percentage of independent directors on the company's board, as reported by the company (*IND*). Independence is defined according to the company's own criteria based on the provision in the UK Corporate Governance Code. It should be acknowledged that true board independence may not be as straightforward as what has been reported by companies. However, the board independence data from Bloomberg at least provides a relatively consistent and valid measurement on the premise that companies follow the disclosure requirement of the UK Corporate Governance Code.

### 5.3.3 Measurement of control variables

Firstly, this study controls for several corporate governance variables that potentially affect corporate disclosure decisions. According to Denis and Sarin (1999) and Lim et al. (2007), board size is an important element of a board composition. However, the empirical results regarding the relationship between board size and voluntary disclosure are mixed. Some studies find a positive association between the two, supporting the argument that a larger board enhances the advising and monitoring capacity by pooling together a variety of experiences, resources and perspectives and, therefore, leads to greater corporate transparency (John and Senbet 1998, Lim et al. 2007, Hidalgo et al. 2011). However, several studies document the adverse effect of oversized boards due to impaired decision-making efficiency and additional cost of intense monitoring (Yermack 1996, Prado-Lorenzo and Garcia-Sanchez 2010, Faleye et al. 2011, García Osma and

Guillamón-Saorín 2011). As one of the corporate governance control variables, board size (*BoD_SIZE*) is measured by the number of directors on the board.

Higgs (2003) reviews corporate governance mechanisms in the UK and encourages firms to have a higher female representation on the board. Female directors have the potential to promote greater corporate transparency and to stimulate discussions by providing a broader range of perspectives and alternative solutions to non-routine problems (Hillman et al. 2007). Prior literature has documented mixed results regarding the association between the proportion of female directors and corporate disclosure and reporting quality (Gul et al. 2011, Srinidhi et al. 2011, Liao et al. 2015). This study includes gender diversity (*WOMEN*) in the model as one control variable. *WOMEN* is calculated as the percentage of female directors on the board.

In addition, this study also controls for audit committee size. Prior studies provide evidence that the audit committee plays a vital role in monitoring corporate financial reporting processes to ensure disclosure quality and transparency (DeFond and Jiambalvo 1991, Forker 1992, Mangena and Pike 2005, García Osma and Guillamón-Saorín 2011, Li et al. 2012, Samaha et al. 2015). In this study, audit committee size (*AUDIT_SIZE*) is measured by the total number of directors on a firm's audit committee.

Moreover, frequent board and audit committee meetings are indispensable in the corporate governance mechanism to guarantee the effectiveness of a board. For instance, Conger et al. (1998) argue that having frequent and well-organised board meetings is one way to improve boardroom performance. Frequent board and audit committee meetings ensure directors devote sufficient time and effort to discuss firms' disclosure policies, to

evaluate the consequences of disclosures before making decisions and to stimulate information sharing among directors. Xie et al. (2003) find that board and audit committee meeting frequency is negatively related to the level of discretionary accruals. Laksmana (2008) also finds a positive association between meeting frequency and the extent of compensation disclosure. This study controls for the frequency of both board meetings and audit committee meetings. Board meeting frequency (*BoD_MEET*) is measured by the total number of board meetings held in one fiscal year. The frequency of audit committee meetings (*AUDIT_MEET*) is measured by the total number of meetings held by a firm's audit committee in one fiscal year.

Finally, following the voluntary disclosure and information dissemination on social media literature (Blankespoor et al. 2014, Zhang 2015, Jung et al. 2018), this study also controls for observable firm characteristics that may affect a company's financial reporting decision on social media. In particular, firm size, as measured by a firm's market capitalisation (*SIZE*), leverage, measured by total debt over total assets (*LEVERAGE*), and profitability, measured by return on assets (*ROA*) as well as market to book ratio (*MTB*), are included in the regression analysis. In addition, this study also controls for year effect by adding year dummy variables for FY2014, FY2015 and FY2016. Based on the Industry Classification Benchmark (ICB), industry effect is also controlled by adding ten industry dummy variables in the models including the industries of Oil & Gas, Basic Materials, Industrials, Consumer Goods, Healthcare, Consumer Services, Telecommunications, Utilities, Financial and Technology. A summary of variable definitions is presented in Appendix 3.

## 5.4 Data analysis and regression results

### 5.4.1 Data analysis

Table 5.3 provides descriptive statistics for independent variables, dependent variables and control variables. It can be seen from Table 5.3 that the mean for the level of financial disclosure on Twitter, as measured by the total number of earnings-related tweets (*VOLUME*), is 2.86. In terms of the connectivity of financial disclosure on Twitter, the average *CONNECT* score is 1.15 with a standard deviation of 1.56. In addition, I also break down the *CONNECT* score into its four component variables and present their summary statistics in Table 5.3. In the sample, 32% of sample firms post performance details (*TEXT*) in earnings-related tweets. The percentages of firms that use hyperlinks (*HYPERLINK*) and hashtags/cashtags (*HASH*) in earnings-related tweets are 40% and 19% respectively. 25% of the sample firms have earnings-related tweets that contain visuals such as pictures, graphs or videos. In terms of board composition variables, the average percentage of independent directors on the board (*IND*) is 64%. The mean percentage of female representation on the board (*WOMEN*) is 21%. Sample firms have a mean board size of 9.29 and the average number of board meetings held in a year is 8.39. The average number of board directors on an audit committee is 3.91. The number of audit committee meetings held each year is 4.85 on average.

The Pearson correlation matrix for study variables is summarised in Table 5.4. Pearson correlation coefficients and significance at 10%, 5% and 1% levels are reported. Table 5.4 shows that the level of financial disclosure, *VOLUME*, is positively and significantly correlated with board independence (*IND*). The connectivity of financial disclosure on Twitter (*CONNECT*) is also positively and significantly correlated with board independence (*IND*). Among the control variables, female representation on the board

(*WOMEN*), board size (*BoD_SIZE*), audit committee size (*AUDIT_SIZE*) and audit committee meeting frequency (*AUDIT_MEET*), as well as firm size (*SIZE*), are positively and significantly correlated with the level of financial disclosure (*VOLUME*) and the connectivity of financial disclosure (*CONNECT*). The coefficients in the Pearson correlation matrix suggest no major multicollinearity concerns among independent variables.

Table 5.3 Summary statistics

| Variable | N | Mean | Std.Dev. | P25 | Median | P75 |
|---|---|---|---|---|---|---|
| *Financial disclosure variables* | | | | | | |
| VOLUME | 868 | 2.86 | 5.70 | 0 | 0 | 3 |
| CONNECT | 868 | 1.16 | 1.56 | 0 | 0 | 3 |
| TEXT | 868 | 0.32 | 0.47 | 0 | 0 | 1 |
| HYPERLINK | 868 | 0.40 | 0.49 | 0 | 0 | 1 |
| HASH | 868 | 0.19 | 0.40 | 0 | 0 | 0 |
| VISUAL | 868 | 0.25 | 0.43 | 0 | 0 | 0 |
| *Corporate governance variables* | | | | | | |
| IND (%) | 868 | 0.64 | 0.12 | 0.56 | 0.67 | 0.75 |
| WOMEN (%) | 868 | 0.21 | 0.09 | 0.14 | 0.22 | 0.27 |
| BoD_SIZE | 868 | 9.29 | 2.26 | 8 | 9 | 10 |
| BoD_MEET | 868 | 8.39 | 2.85 | 7 | 8 | 10 |
| AUDIT_SIZE | 868 | 3.91 | 1.02 | 3 | 4 | 4 |
| AUDIT_MEET | 868 | 4.85 | 1.78 | 4 | 4 | 6 |
| *Other control variables* | | | | | | |
| SIZE (£m) | 868 | 7803.75 | 17328.78 | 1055.96 | 2171.52 | 5329.55 |
| ROA | 868 | 20.95 | 103.96 | 6.84 | 14.95 | 21.84 |
| LEVERAGE | 868 | 95.65 | 162.64 | 18.55 | 52.41 | 105.07 |
| MTB | 868 | 5.02 | 26.18 | 1.37 | 2.62 | 4.63 |

This table shows the descriptive statistics for 868 firm-year observations. The main variables under investigation are defined as follows: *VOLUME* is the total number of earnings-related tweets posted by a firm on Twitter on its annual earnings announcement day. *CONNECT* is the index score for the overall connectivity of a firm's financial disclosure on Twitter. *TEXT*, *HYPERLINK*, *HASH* and *VISUAL* are dummy variables. They are the component variables of *CONNECT* index. The definition of them and the method to calculate *CONNECT* are summarised in Table 5.2. *IND* is the percentage of independent directors on a company's board. The definitions for all variables are summarised in Appendix 3.

Table 5.4 Pearson correlation matrix

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) VOLUME | 1 | | | | | | | | | | | |
| (2) CONNECT | 0.927*** | 1 | | | | | | | | | | |
| (3) IND | 0.227*** | 0.245*** | 1 | | | | | | | | | |
| (4) WOMEN | 0.190*** | 0.199*** | 0.340*** | 1 | | | | | | | | |
| (5) BoD_SIZE | 0.298*** | 0.285*** | 0.074** | 0.155*** | 1 | | | | | | | |
| (6) BoD_MEET | 0.019 | 0.035 | 0.080** | 0.0201 | -0.004 | 1 | | | | | | |
| (7) AUDIT_SIZE | 0.179*** | 0.190*** | 0.260*** | 0.214*** | 0.418*** | 0.001 | 1 | | | | | |
| (8) AUDIT_MEET | 0.160*** | 0.155*** | 0.201*** | 0.044 | 0.334*** | 0.220*** | 0.073** | 1 | | | | |
| (9) SIZE | 0.325*** | 0.331*** | 0.334*** | 0.220*** | 0.475*** | 0.037 | 0.207*** | 0.352*** | 1 | | | |
| (10) ROA | -0.030 | -0.029 | -0.002 | 0.069** | -0.026 | -0.031 | -0.030 | -0.025 | -0.001 | 1 | | |
| (11) LEVERAGE | 0.068** | 0.059* | 0.014 | 0.034 | 0.097*** | 0.041 | 0.021 | 0.106** | 0.076** | -0.024 | 1 | |
| (12) MTB | -0.031 | -0.032 | 0.009 | 0.053 | -0.020 | -0.014 | -0.036 | 0.000 | 0.008 | 0.972*** | 0.031 | 1 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the pairwise Pearson correlation coefficients of study variables and the p-values which test whether the correlation coefficients are significantly different from 0. The definitions of the variables are summarised in Appendix 3.

## 5.4.2 Regression results and discussion

To investigate the empirical association between board independence and financial disclosure on Twitter in terms of the level (*VOLUME*) and the connectivity of disclosure (*CONNECT*), equation (1) is estimated. Since the dependent variables *VOLUME* and *CONNECT* are both count data, Poisson regression is used to perform analysis. Poisson regression is a generalised linear model to model count variables.

$$DISCLOSURE = \alpha + \beta_1 IND + \beta_2 WOMEN + \beta_3 BoD\_SIZE + \beta_4 BoD\_MEET + \beta_5 AUDIT\_SIZE + \beta_6 AUDIT\_MEET + \beta_7 SIZE + \beta_8 ROA + \beta_9 LEVERAGE + \beta_{10} MTB + \beta_{11} IndustryDummies + \beta_{12} YearDummies + \varepsilon \quad (1)$$

I firstly test H1, which predicts the association between the level of financial disclosure on Twitter and board independence. Regression results of H1 are presented in Table 5.5. Column (1) in Table 5.5 presents the Poisson regression results of the level of financial disclosure on board independence and other control variables with the estimated coefficients reported. As shown in Table 5.5 column (1), the coefficient on board independence (*IND*) is positive and statistically significant at the 1% level (coefficient = 0.2261, $p<0.01$). This means that for one standard deviation increase in firms' board independence (12%), the difference in the logs of expected volume of earnings-related tweets is expected to increase by 0.2261 while holding other variables in the model constant. Since Poisson regression is a log-linear model, it is still less informative about the actual economic significance. Thus for easier interpretation, the exponentiated values of the coefficients are reported in column (2). The exponentiated value of the coefficient on board independence is 1.2537. This means that the volume of earnings-related tweets will be about 1.25 times greater for one standard deviation increase in the percentage of

independent directors on the board (12%), given other variables in the model are held constant. In other words, there will be a 25.37% increase in the level of financial disclosure on Twitter for one standard deviation increase in the board independence (12%). Thus, H1 is supported. In addition, the total number of earnings-related tweets that contain hyperlinks is also used as an alternative measure for the level of financial disclosure, following Blankespoor et. al (2014). Unreported regression results are in line with the results presented in Table 5.5, providing further support for H1. The evidence indicates that firms with a higher percentage of independent directors on the board are more likely to post a higher number of earnings-related tweets during a firm's annual earnings announcement event than firms with a lower board independence. The results lend support for the argument that having more independent directors on the board helps narrow the information gap between management and stakeholders through proactive dissemination of financial information on Twitter.

For the control variables, the results in Table 5.5 indicate that gender diversity on the board is also positively and statistically significantly associated with the level of financial disclosure on Twitter with an exponentiated coefficient value of 1.1633 at the 5% level. This means that there will be a 16.33% increase in the number of earnings-related tweets for one standard deviation increase in the percentage of women directors on the board (9%). Moreover, the results also suggest a positive and significant association between board size and the quantity of financial tweets at the 1% significance level (exponentiated coefficient=1.3677), suggesting that the quantity of financial tweets will be about 1.37 times greater with one standard deviation increase in the board size (2.26). The results indicate that a larger board size and greater gender diversity lead to an increased amount of financial information that is being disseminated through Twitter.

Table 5.5 Poisson regression results: board independence and the level of financial disclosure on Twitter

| | | (1) | (2) |
|---|---|---|---|
| **Variables** | **Expected sign** | **VOLUME** | **VOLUME** |
| | | Coef.<br>(z-stats.) | Exp(Coef.)<br>(z-stats.) |
| IND | + | 0.2261*** | 1.2537*** |
| | | (3.03) | (3.03) |
| WOMEN | +/- | 0.1513** | 1.1633** |
| | | (2.37) | (2.37) |
| BoD_SIZE | +/- | 0.3132*** | 1.3677*** |
| | | (4.71) | (4.71) |
| BoD_MEET | +/- | -0.0474 | 0.9537 |
| | | (0.85) | (0.85) |
| AUDIT_SIZE | +/- | 0.0424 | 1.0433 |
| | | (0.59) | (0.59) |
| AUDIT_MEET | +/- | 0.0321 | 1.0326 |
| | | (0.49) | (0.49) |
| SIZE | + | 0.0294 | 1.0298 |
| | | (0.69) | (0.69) |
| ROA | + | 0.1974 | 1.2182 |
| | | (0.60) | (0.60) |
| LEVERAGE | +/- | 0.0481 | 1.0492 |
| | | (0.94) | (0.94) |
| MTB | +/- | -0.2254 | 0.7981 |
| | | (-0.65) | (-0.65) |
| Constant | | 1.064*** | 2.8982*** |
| | | (6.54) | (6.54) |
| Industry dummies | | Yes | Yes |
| Year dummies | | Yes | Yes |
| No. of Obs. | | 868 | 868 |
| R-Squared | | 0.137 | 0.137 |
| VIF | | 3.13 | 3.13 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the Poisson regression results of the level of financial disclosure on Twitter on board independence and other control variables. Column (1) reports the estimated coefficients and column (2) shows the exponentiated values of the coefficients for easier interpretation. The dependent variable *VOLUME* is the total number of earnings-related tweets posted by a firm on its annual earnings announcement day. *IND* is the percentage of independent directors on a company's board. The definitions for control variables are summarised in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

H2 predicts the relation between board independence and the connectivity of financial disclosure on Twitter. Regression results for H2 are shown in Table 5.6. The regression results of the full model are shown in Table 5.6 column (1). The exponentiated values of the coefficients are summarised in column (2). It can be seen from Table 5.6 column (1) that the coefficient on board independence in the model is positive and significant with a coefficient value of 0.2431 at the 1% level. The exponentiated value of this coefficient is 1.2752 in column (2). This means that the connectivity score of earnings-related tweets will be 1.28 times greater (or increase by 27.52%) for one standard deviation increase in firms' board independence (12%), while holding other variables in the model constant. Therefore, H2 is supported. Additionally, the results also show that the association between gender diversity and the connectivity of financial disclosure on Twitter is also positively and statistically significant at the 1% level (exponentiated coefficient=1.1451). It indicates that the connectivity score of financial disclosure on Twitter will be 1.14 times greater for one standard deviation increase in gender diversity on the board (9%). Furthermore, the results show that the connectivity of financial disclosure on Twitter is also positively and significantly associated with board size (exponentiated coefficient=1.2437, $p<0.01$).

In order to test the robustness of the *CONNECT* score, I also split the aggregate score into its four component variables to examine whether the significant association with board composition still holds when being tested individually. Since the four variables are dummy variables, a logistic regression model is used for analysis. The logistic regression results are reported in Table 5.7. It can be seen from Table 5.7 that board independence is positively and significantly associated with all of the four component variables in the *CONNECT* score at the 1% level. This indicates that firms with higher board

independence are more likely to have higher textual connectivity, higher intertextual connectivity and higher relational connectivity respectively in their financial disclosure on Twitter, compared to firms with lower board independence. In terms of control variables, board size is positively and significantly associated with four connectivity variables. Positive and significant association is also consistent for board gender diversity, except for one intertextual connectivity component *HASH*, measured by the use of hashtags/cashtags in financial tweets.

Overall, the predictions of H1 and H2 are all supported by the results of the regression analyses. The above findings suggest that firms with a higher proportion of independent directors on the board are more likely to proactively disclose a greater level of financial information on Twitter to improve corporate transparency than firms with a lower percentage of independent directors on the board. Moreover, firms with more independent directors on the board are more likely to communicate financial information in a more effective manner by enhancing the overall connectivity of these financial messages on Twitter. More specifically, higher board independence helps enhance the ability of financial disclosure on Twitter to connect the financial information more effectively with corporate earnings performance (textual connectivity), to disseminate and link financial messages within and beyond the Twitter platform (intertextual connectivity) and to stimulate engagement with a wide range of stakeholders on Twitter (relational connectivity). Overall, the findings provide supporting evidence that higher board independence improves board monitoring of the quantity and the communicative effectiveness of corporate financial communication with stakeholders on social media.

Table 5.6 Poisson regression results: board independence and the connectivity of financial disclosure on Twitter

| | | (1) | (2) |
|---|---|---|---|
| **Variables** | **Expected sign** | **CONNECT** | **CONNECT** |
| | | Coef.<br>(z-stats.) | Exp(Coef.)<br>(z-stats.) |
| IND | + | 0.2431*** | 1.2752*** |
| | | (4.61) | (4.61) |
| WOMEN | +/- | 0.1355*** | 1.1451*** |
| | | (2.67) | (2.67) |
| BoD_SIZE | +/- | 0.2181*** | 1.2437*** |
| | | (4.76) | (4.76) |
| BoD_MEET | +/- | 0.0281 | 1.0285 |
| | | (0.65) | (0.65) |
| AUDIT_SIZE | +/- | 0.587 | 1.0605 |
| | | (1.39) | (1.39) |
| AUDIT_MEET | +/- | -0.0269 | 0.9734 |
| | | (-0.66) | (-0.66) |
| SIZE | + | 0.0552* | 1.0567* |
| | | (1.75) | (1.75) |
| ROA | + | 0.1516 | 1.1637 |
| | | (0.80) | (0.80) |
| LEVERAGE | +/- | 0.0564 | 1.0581 |
| | | (1.34) | (1.34) |
| MTB | +/- | -0.2336 | 0.7917 |
| | | (-1.12) | (-1.12) |
| Constant | | 0.1671 | 1.1819 |
| | | (1.56) | (1.56) |
| Industry | | Yes | Yes |
| Year | | Yes | Yes |
| No. of Obs. | | 868 | 868 |
| R-Squared | | 0.098 | 0.098 |
| VIF | | 3.13 | 3.13 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the Poisson regression results of the connectivity of financial disclosure on Twitter on board independence and other control variables. Column (1) reports the estimated coefficients and column (2) shows the exponentiated values of the coefficients for easier interpretation. The dependent variable *CONNECT* is the index score for the overall connectivity of earnings-related tweets posted by a firm on its annual earnings announcement day. *IND* is the percentage of independent directors on a company's board. The definitions for control variables are summarised in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

Table 5.7 Logistic regression results: board independence and the breakdown of connectivity of financial disclosure on Twitter

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| **Variables** | **Expected sign** | **Textual Connectivity (TEXT)** | **Intertextual Connectivity (HYPERLINK)** | **Intertextual Connectivity (HASH)** | **Relational Connectivity (VISUAL)** |
| | | Odds Ratio (z-stats.) | Odds Ratio (z-stats.) | Odds Ratio (z-stats.) | Odds Ratio (z-stats.) |
| IND | + | 1.4727*** | 1.3781*** | 1.4205*** | 1.4282*** |
| | | (3.94) | (3.48) | (3.00) | (3.52) |
| WOMEN | +/- | 1.2814*** | 1.2517*** | 1.1408 | 1.2431** |
| | | (2.69) | (2.69) | (1.21) | (2.28) |
| BoD_SIZE | +/- | 1.5756*** | 1.3888*** | 1.2731** | 1.5661*** |
| | | (4.26) | (3.26) | (2.07) | (4.22) |
| BoD_MEET | +/- | 1.0203 | 1.0369 | 1.1165 | 1.0471 |
| | | (0.25) | (0.46) | (1.26) | (0.55) |
| AUDIT_SIZE | +/- | 1.0055 | 1.1295 | 1.1635 | 0.9612 |
| | | (0.06) | (1.30) | (1.42) | (-0.39) |
| AUDIT_MEET | +/- | 0.8743 | 0.9353 | 1.0417 | 0.8676 |
| | | (-1.50) | (-0.78) | (0.45) | (-1.48) |
| SIZE | + | 1.5434** | 1.3759** | 1.3934** | 1.6127*** |
| | | (2.32) | (2.00) | (2.37) | (2.86) |
| ROA | + | 1.3129 | 1.0050 | 1.9365 | 1.3861 |
| | | (0.81) | (0.01) | (1.64) | (0.82) |
| LEVERAGE | +/- | 1.1867** | 1.0816 | 1.1467* | 1.0280 |
| | | (2.05) | (1.01) | (1.71) | (0.36) |
| MTB | +/- | 0.5362 | 0.6135 | 0.5092 | 0.6424 |
| | | (-1.00) | (-0.84) | (-1.64) | (-1.09) |
| Constant | | 0.4678*** | 0.7921 | 0.2526*** | 0.4511*** |
| | | (-3.60) | (-1.19) | (-5.71) | (-3.67) |
| Industry dummies | | Yes | Yes | Yes | Yes |
| Year dummies | | Yes | Yes | Yes | Yes |
| No. of Obs. | | 868 | 868 | 868 | 868 |
| R-Squared | | 0.146 | 0.119 | 0.135 | 0.152 |
| VIF | | 3.13 | 3.13 | 3.13 | 3.13 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the logistic regression results of the breakdown of the *CONNECT* index on board independence and other control variables. The dependent variables *TEXT*, *HYPERLINK*, *HASH* and *VISUAL* are dummy variables. They are the component variables of the *CONNECT* index. Detailed definitions are summarised in Table 5.2. The definitions for control variables are summarised in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

## 5.4.3 Endogeneity

In this section, endogeneity bias in the above analysis will be discussed. Endogeneity is a central problem in empirical corporate governance research. Hermalin and Weisbach (2003) point out that the board of directors are an endogenously chosen institution, which serves as a response to the inherent agency problems in any organisation. The long-term bargaining process between management and board of directors determines the independence of the board, and leads to the endogenously derived board compositions and its actions. The relationship between corporate governance and voluntary disclosure decisions also faces the challenge of endogeneity problems.

Omitted variables

One endogeneity concern arises due to omitted variables. So far, the analysis suggests that board independence is associated with the level and connectivity of financial disclosure on Twitter. However, the findings cannot be given casual interpretations. The financial disclosure on Twitter and board independence might be jointly determined. For example, board independence might be correlated with other unobserved variable, which is the actual cause for the increase in the level and connectivity of financial disclosure on Twitter. Therefore, omitted variable that affect both board independence and financial disclosure on Twitter could lead to spurious correlations between the two. In the above regression analyses, industry and year dummy variables were used to control for potential industry-specific or year-specific factors. However, this is far from sufficient. In an attempt to further mitigate the endogeneity concern caused by time-invariant firm characteristics, I re-estimate the association between financial disclosure on Twitter and board independence by using fixed effects panel data methods.

For panel regression, the random effects model and the fixed effects model are the two most commonly used estimation models. The former assumes that firm-specific effects are not correlated with independent variables, while the latter assumes that firm-specific effects are correlated with independent variables. The latter fixes for both firm effects and time effects. The firm controls fix for omitted variables that are constant over time but vary across firms, while year controls fix for omitted variables that are constant across firms but vary across years (Wooldridge 2010). Thus, the fixed effects model controls for unobserved heterogeneity and omitted variable bias. In order to determine which model is a better fit, the Hausman test was conducted. The significance of the Hausman chi-square suggests that the fixed effects model is a better fit since this means that there is a systematic difference in the coefficients of the fixed effects model and the random effects model. The results of the Hausman chi-square test for H1 is significant at the 1% level (see Table 5.8), thus the fixed effects model is used for the testing of H1. The regression results are reported in Table 5.8. The Hausman chi-square test for H2 is insignificant (see Table 5.9), therefore the random effects model is a better fit for the testing of H2. The results are summarised in Table 5.9.

In Table 5.8, I re-estimate the association between the level of financial disclosure on Twitter and board independence by controlling for year and firm fixed effects. It can be seen from Table 5.8 that the estimated coefficients of *IND* are positive and statistically significant at the 10% level. The exponentiated value of the coefficient is 1.1007, indicating that there will be a 10.07% increase in the volume of earnings-related tweets for one standard deviation increase in the board independence (12%). Compared to the results in the main analysis, H1 is weakly supported at the 10% significance level in the fixed effects specification. In Table 5.9, the empirical association between the

connectivity of financial disclosure on Twitter and board independence is re-estimated using panel regression with random effects. The association between the connectivity of disclosure (*CONNECT*) and board independence remains positive and statistically significant at the 1% level. However, using panel models to address endogeneity concerns offers a partial, but by no means complete solution. Panel regression with fixed effects is not able to control for other time-varying unobserved variables. In addition, this method for addressing endogeneity is not without problems. Fixed effects method is criticised by some scholars for its exacerbation of measurement problems, elimination of important variations and so on (Griliches and Mairesse 1995, Roberts and Whited 2013).

The finding of instrumental variables is another common solution to endogeneity concerns caused by omitted variables. Instrument variables rely on a clear source of exogenous variation to address endogeneity problem, which must meet the relevance and exclusion restriction conditions (Roberts and Whited 2013). In the context of this study, an valid instrument variable must meet the following two conditions: 1) it should be correlated with the endogenous variable, which is the board independence and; 2) it affects the level and connectivity of financial disclosure on Twitter exclusively via its effect on the board independence. However, voluntary disclosure decisions and corporate governance variables are usually intertwined. Thus such a valid and strong instrument that meets these two conditions is not an easy find. Although some attempts have been made to address endogeneity issues caused by omitted variables, it is still challenging to fully address them. The results of this study should be interpreted with caution with the endogeneity bias caused by underserved heterogeneity in mind.

Selection bias

Another endogeneity problem is related to selection bias. Firstly, the analysis results in this study are subject to sample selection bias. The sample of this study was not randomly selected from the population. This study focuses on the large firms that are listed in the FTSE350 index in the UK context for the period from 2014 to 2016. This selection of large listed firms in the UK may not be representative of all the firms in the population for the relation between board independence and financial disclosure decisions on Twitter. Therefore, the association between the two may not be estimated accurately since the effect of board independence is confounded with the effect of the factors that determine the sample selection process (Heckman 1979).

In addition, the independent variable, the level of board independence, is not randomly determined for the firms in the sample. Independent directors are supposed to provide effective monitoring over management and the board makes decisions on the retention or the replacement of management based on the monitoring. At the same time, management play a role in determining board composition and selecting individual directors. In this regard, the level of board independence is not a random decision but a solution to a complex negotiation process under certain conditions, which may involve strategic and institutional factors. As a result, management characteristics or other firm characteristics may systematically affect the level of independence on the board, which lead to biased estimation on the association between board independence and financial disclosure on Twitter. For example, it is possible that firms with good communication and transparency policy may prefer to have greater board independence to show their strength in the corporate governance mechanisms, creating a self-selection bias. A possible remedy to correct for selection bias is the use of a two-stage Heckman model (Heckman 1976, 1979).

It is usually done by firstly modelling the selection mechanism to obtain a correction term (Inverse Mills Ratio), then in second stage running the regression by including the correction term as an additional explanatory variable. The original research design did not control for selection bias in the regression analysis. Thus the regression results are likely to be exposed to the risk of selection bias.

Reverse causality

Another endogeneity concern is caused by reverse causality. The current scope of this study has not addressed the reverse causality problem, namely board composition affecting voluntary disclosure or voluntary disclosure affecting board composition. In the context of corporate disclosure on Twitter, if there is any direct causal effect between board independence and the level and connectivity financial disclosure on Twitter, it might be difficult to justify that characteristics of financial tweets may cause direct changes to the independence of the board. The opposite direction might be more intuitive in a way that decisions made from the boardroom affect the social media policy at an operational level. However, as this study did not formally control for reverse causality, it cannot eliminate the risk caused by any potential reverse causality problem.

In a nutshell, the regression results of this study are subject to potential endogeneity problems caused by omitted variables, selection bias and reverse causality as discussed in the above. Therefore, the results should be interpreted with caution. It is also challenging to recommend any policy changes based on the empirical results due to the above endogeneity concerns.

Table 5.8 The level of financial disclosure on Twitter and board independence: fixed-effect Poisson regression

| | | (1) | (2) |
|---|---|---|---|
| **Variables** | **Expected sign** | **VOLUME** | **VOLUME** |
| | | Coef.<br>(z-stats.) | Exp(Coef.)<br>(z-stats.) |
| IND | + | 0.0959*<br>(1.79) | 1.1007*<br>(1.79) |
| WOMEN | +/- | -0.0337<br>(-0.72) | 0.9668<br>(-0.72) |
| BoD_SIZE | +/- | 0.1522**<br>(2.51) | 1.1644**<br>(2.51) |
| BoD_MEET | +/- | -0.0765**<br>(-1.97) | 0.9263**<br>(-1.97) |
| AUDIT_SIZE | +/- | -0.0660<br>(-1.46) | 0.9361<br>(-1.46) |
| AUDIT_MEET | +/- | 0.0790*<br>(1.67) | 1.0822*<br>(1.67) |
| SIZE | + | 0.0134<br>(0.22) | 1.0135<br>(0.22) |
| ROA | + | 0.3232***<br>(2.83) | 1.3816***<br>(2.83) |
| LEVERAGE | +/- | -0.0888<br>(-1.58) | 0.9150<br>(-1.58) |
| MTB | +/- | 0.0001<br>(0.00) | 1.0001<br>(0.00) |
| Firm-fixed effects | | Yes | Yes |
| Year-fixed effects | | Yes | Yes |
| No. of Obs. | | 850 | 850 |
| No. of Groups | | 291 | 291 |
| Hausman Chi-square | | 23.33*** | 23.33*** |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the regression results of the level of financial disclosure on Twitter on board independence and other control variables with fixed-effect Poisson regression for panel data. Column (1) reports the estimated coefficients and column (2) shows the exponentiated values of the coefficients for easier interpretation. The dependent variable *VOLUME* is the total number of earnings-related tweets posted by a firm on its annual earnings announcement day. *IND* is the percentage of independent directors on a company's board. The definitions for control variables are summarised in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison. 18 groups (18 observations) are dropped because of only one observation per group.

Table 5.9 The connectivity of financial disclosure on Twitter and board independence: random-effect Poisson regression

| | | (1) | (2) |
|---|---|---|---|
| **Variables** | **Expected sign** | **CONNECT** | **CONNECT** |
| | | Coef. (z-stats.) | Exp(Coef.) (z-stats.) |
| IND | + | 0.1143*** | 1.1211*** |
| | | (3.13) | (3.13) |
| WOMEN | +/- | 0.0590* | 1.0608* |
| | | (1.73) | (1.73) |
| BoD_SIZE | +/- | 0.1218*** | 1.1295*** |
| | | (3.07) | (3.07) |
| BoD_MEET | +/- | 0.0074 | 1.0074 |
| | | (0.24) | (0.24) |
| AUDIT_SIZE | +/- | 0.0113 | 1.0113 |
| | | (0.33) | (0.33) |
| AUDIT_MEET | +/- | -0.0099 | 0.9901 |
| | | (-0.28) | (-0.28) |
| SIZE | + | 0.0694* | 1.0719* |
| | | (1.94) | (1.94) |
| ROA | + | 0.1155 | 1.1224 |
| | | (1.02) | (1.02) |
| LEVERAGE | +/- | 0.0227 | 1.0229 |
| | | (0.71) | (0.71) |
| MTB | +/- | -0.1361 | 0.8728 |
| | | (-1.19) | (-1.19) |
| Constant | | 0.8215*** | 0.8215*** |
| | | (10.82) | (10.82) |
| Industry | | Yes | Yes |
| Year | | Yes | Yes |
| No. of Obs. | | 868 | 868 |
| No. of Groups | | 309 | 309 |
| Hausman Chi-square | | 11.43 | 11.43 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the regression results of the connectivity of financial disclosure on Twitter on board independence and other control variables using random-effect Poisson regression for panel data. Column (1) reports the estimated coefficients and column (2) shows the exponentiated values of the coefficients for easier interpretation. The dependent variable *CONNECT* is the index score for the overall connectivity of earnings-related tweets posted by a firm on its annual earnings announcement day. *IND* is the percentage of independent directors on a company's board. The definitions for control variables are summarised in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

## 5.5 Additional analyses

So far, the study has provided evidence that firms with more independent directors on the board are more likely to have a higher level of financial disclosure on Twitter and this financial disclosure is more likely to have greater connectivity than in companies with less independent directors. The investigation has focused on the side of companies in the financial communication process on Twitter. The response towards firms' financial disclosure on Twitter from the audience side has not yet been examined. Consistent with the argument of stakeholder theory, this study argues that the ultimate purpose of having good financial disclosure on social media is to achieve better stakeholder engagement. Thus, in this section, I aim to provide an initial insight into the relationship between board independence, financial disclosure and stakeholder engagement on Twitter.

As discussed in previous sections, one key feature of social media lies in its interactive nature. For corporate events such as earnings announcements, in this digital age, investors, analysts, customers, employees and a wide range of stakeholders are empowered by social media to join the financial communication without the restriction of time or geographic locations. Moreover, responses from stakeholders on social media are directly observable with the existence of several interactive functions on this platform. Therefore, social media provides a rich avenue to investigate direct stakeholder engagement and its relationship with board composition and financial disclosure.

In this section, a subsample is taken from the full sample by focusing on 108 FTSE 350 firms that posted earnings-related tweets during annual earnings announcement events in the fiscal year of 2016. The reason is that the audience's responses on Twitter are observable only if such earnings-related disclosure is made by firms in the first place.

The observations are restricted to the fiscal year of 2016 mainly due to the availability of stakeholder engagement-related data on Twitter.com. Twitter.com allows a maximum number of 3,200 most recent tweets to be retrieved from a Twitter user. The data collection on stakeholder engagement on Twitter was conducted in September 2017. By the time of the data collection, the majority of earnings-related tweets from 2014 and 2015 were no longer retrievable since many corporate Twitter accounts tweet frequently on a daily basis. As a result, the data on stakeholder engagement, such as the number of replies, retweets and likes of earnings-related tweets in 2014 and 2015, is no longer available for the majority of the firms in the sample. Therefore, the analyses focus on the latest available year, which is the fiscal year of 2016. This is one limitation of this study due to limited data availability. Therefore, with this caveat in mind, this section aims to provide an initial systematic investigation into direct stakeholder responses on Twitter and its relationship with board independence and financial disclosure.

### 5.5.1 Measuring stakeholder engagement on Twitter

To measure the level of stakeholder engagement on Twitter, I count the total number of three key engagement indicators – replies, retweets and likes – that a firm received for all of its earnings-related tweets posted on its annual earnings announcement day. These three engagement performance indicators are embedded within each tweet by default to show the quantity of responses from the audience in the forms of replying (*REPLY*), reposting (*RETWEET*) or showing appreciation (*LIKE*) right below each tweet. *ENGAGE* is the sum of the quantity of these three engagement indicators in all of the earnings-related tweets posted by a firm on its annual earnings announcement day.

*REPLY* is a function that allows the audience to reply to a tweet posted by a firm. The replies posted by Twitter users are also publicly viewable. Thus, not only can the firm

who posted the tweet respond to replies, other people can also view and join the conversation as well. Therefore, the function of *REPLY* enables firms and the audience to build a public conversation thread on Twitter where multi-way communication can be achieved. *RETWEET* allows a Twitter user to forward or repost a tweet with or without further comments added. By doing so, a Twitter user can quickly share that tweet within his/her networks. *RETWEET* can be viewed as one form of information dissemination and sharing initiated by the audience, which helps further expand the audience pool and increase information reach. For example, during a firm's earnings announcement event, media users on Twitter such as the BBC or the Financial Times sometimes retweet the earnings-related tweets posted by a firm. As a result, the followers of the BBC or the Financial Times on Twitter, who may not be followers of this company, will also receive these tweets in their news feed and they can also further forward the tweets to their networks. The function of *LIKE* on Twitter is shown as a small heart sign below a tweet. Twitter users can click on the heart sign to *LIKE* a tweet. It is a quick and convenient way for audiences to engage with firms by showing their appreciation or agreement.

In this study, I firstly count the total number of replies, retweets and likes for each individual earnings-related tweet. Since all the earnings-related tweets posted by a firm on its earnings announcement day are treated as one unit, I then calculate the sum of the total number of replies, retweets and likes for each firm to compute the total level of engagement for each firm (*ENGAGE*).

In the subsample, in addition to variables controlling for firm characteristics, I also control for the number of followers, the number of followings and the Twitter age of a

firm's corporate Twitter account[14]. *FOLLOWERS* of a firm's Twitter account are the total number of subscribers of a firm's news feed, while *FOLLOWINGS* of a firm's Twitter account captures the total number of users that this firm subscribes to. The size of a firm's social network on Twitter, as represented by the number of its followers and followings, potentially affects the total level of engagement a firm receives for its tweet updates.

The descriptive statistics for study variables in the subsample are summarised in Table 5.10. The subsample consists of 108 observations for the fiscal year of 2016. On average, the percentage of independent directors on the board is 68%. In terms of the level of financial disclosure on Twitter, the average number of earnings-related tweets posted by sample firms is 7.76. The mean *CONNECT* score of the subsample is 3.09. The average level of total stakeholder engagement (*ENGAGE*) is 92.87. I also split the total stakeholder engagement into its three components, namely the number of replies, retweets and likes. It can be seen from Table 5.10 that the most commonly used engagement function by the audience is *LIKE*, which reports a mean value of 54.5. It is followed by the number of *RETWEET*s with an average number of 34.87. The mean number of *REPLY*s is 3.52, which is the lowest among these three stakeholder engagement indicators on Twitter. For control variables, the mean number of followers of sample firms is 29,114.25 and the mean number of followings is 755.71. The average number of years that sample firms had been on Twitter as of September 2017 is about seven years.

[14] Data on followers, followings and Twitter age were collected as of September 2017.

Table 5.10 Summary statistics of subsample

| Variable | N | Mean | Std.Dev. | P25 | Median | P75 |
|---|---|---|---|---|---|---|
| *Stakeholder engagement variables* | | | | | | |
| ENGAGE | 108 | 92.87 | 166.17 | 13 | 37 | 92 |
| REPLY | 108 | 3.52 | 7.58 | 0 | 1 | 3 |
| RETWEET | 108 | 34.87 | 51.79 | 5 | 16 | 34 |
| LIKE | 108 | 54.5 | 113.25 | 5 | 17 | 55 |
| *Corporate governance variables* | | | | | | |
| IND (%) | 108 | 0.68 | 0.11 | 0.61 | 0.70 | 0.78 |
| WOMEN (%) | 108 | 0.26 | 0.09 | 0.20 | 0.25 | 0.3 |
| BoD_SIZE | 108 | 9.98 | 2.44 | 8 | 10 | 11 |
| BoD_MEET | 108 | 8.12 | 2.19 | 7 | 8 | 10 |
| AUDIT_SIZE | 108 | 4.17 | 1.09 | 3 | 4 | 5 |
| AUDIT_MEET | 108 | 5.12 | 1.83 | 4 | 5 | 6 |
| *Financial disclosure variables* | | | | | | |
| VOLUME | 108 | 7.76 | 6.67 | 2 | 6 | 12 |
| CONNECT | 108 | 3.09 | 1.00 | 3 | 3 | 4 |
| *Other control variables* | | | | | | |
| SIZE (£m) | 108 | 14,795.63 | 28,504.33 | 1,585.79 | 4,090.02 | 11,770.0 |
| ROA | 108 | 16.24 | 22.44 | 3.67 | 13.07 | 22.45 |
| LEVERAGE | 108 | 115.21 | 160.48 | 34.29 | 61.09 | 145.01 |
| MTB | 108 | 3.58 | 6.85 | 1.21 | 2.33 | 3.69 |
| FOLLOWERS | 108 | 29,114.25 | 62,597.51 | 2,915 | 6,122 | 24,116 |
| FOLLOWINGS | 108 | 755.71 | 899.34 | 237 | 480 | 905 |
| TWITTER_AGE | 108 | 7.02 | 1.67 | 6 | 7 | 8 |

This table shows the descriptive statistics for 108 FTSE 350 firms that posted earnings-related tweets on earnings announcement day in FY2016. The main variables under investigation are defined as follows: *ENGAGE* is the total number of replies, retweets and likes received in a firm's earnings-related tweets posted on its annual earnings announcement day. *IND* is the percentage of independent directors on a company's board. *VOLUME* is the total number of earnings-related tweets posted by a firm on its annual earnings announcement day. *CONNECT* is the index score for the overall connectivity of a firm's financial disclosure on Twitter. The definitions for other variables are summarised in Appendix 3.

## 5.5.2 Board independence and stakeholder engagement

I firstly examine whether or not the extent of stakeholder engagement on Twitter is associated with board independence. According to the argument of stakeholder theory, independent directors are expected to represent the interests of stakeholders at large and to ultimately improve stakeholder engagement. The main findings of this study so far suggest that greater board independence leads to improved financial disclosure on Twitter in terms of the level and connectivity of disclosure. However, it still remains unknown whether or not greater board independence necessarily leads to better stakeholder engagement on Twitter. Thus, equation (2) below is estimated to test the empirical association between the two. The Poisson regression model is adopted since *ENGAGE* is a count variable. Apart from controlling for corporate governance variables and firm characteristic variables, I also control for the number of a firm's Twitter followers, followings and its Twitter age, which potentially affect the total engagement received by a firm.

$$ENGAGE = \alpha + \beta_1 IND + \beta_2 WOMEN + \beta_3 BoD\_SIZE + \beta_4 BoD\_MEET + \beta_5 AUDIT\_SIZE + \beta_6 AUDIT\_MEET + \beta_7 FOLLOWERS + \beta_8 FOLLOWINGS + \beta_9 TWITTER\_AGE + \beta_{10} SIZE + \beta_{11} ROA + \beta_{12} LEVERAGE + \beta_{13} MTB + \beta_{14} IndustryDummies + \varepsilon \quad (2)$$

Table 5.11 reports the Poisson regression results for the level of stakeholder engagement on Twitter when it is regressed on board independence and control variables. I firstly regress *ENGAGE*, the sum of the number of replies, retweets and likes received in a firm's financial tweets, on hypothesised determinants. Then I split *ENGAGE* into its three engagement indictors and regress them separately on independent variables. Column (1)

of Table 5.11 shows the regression results of the total engagement level (*ENGAGE*) while columns (2), (3) and (4) show the regression results of *REPLY*, *RETWEET* and *LIKE* respectively. The exponentiated values of the estimated coefficients are reported in Table 5.12 accordingly. It can be seen that no statistically significant association is found between board independence and total stakeholder engagement (*ENGAGE*) on Twitter. Results are similar when three engagement indictors are regressed separately. The results suggest that firms with higher board independence do not necessarily have better stakeholder engagement on Twitter than firms with fewer independent directors on the board, at least not in a direct way. Interestingly, among corporate governance variables, the coefficient on *AUDIT_MEET*, the number of audit committee meetings in a year, is positive and statistically significant at the 1% level, with an exponentiated coefficient value of 1.6436. This means that the level of stakeholder engagement will increase by 64.36% for one standard deviation increase in the frequency of audit committee meetings (1.83), while holding other variables in the model constant. The results are also consistent across three engagement variables separately. This indicates that firms that have more frequent audit committee meetings are more likely to have better stakeholder engagement on Twitter than firms with less frequent audit committee meetings.

### 5.5.3 Financial disclosure and stakeholder engagement

Second, I examine whether or not improved corporate transparency through an increased level of financial disclosure and enhanced communicative effectiveness through increased connectivity of financial disclosure are associated with better stakeholder engagement on Twitter. In order to test the empirical association between the extent of stakeholder engagement and the level of financial disclosure as well as the connectivity of disclosure, the following equation (3) is estimated through Poisson regression.

$$ENGAGE = \alpha + \beta_1 VOLUME + \beta_2 CONNECT + \beta_3 FOLLOWERS + \beta_4 FOLLOWINGS + \beta_5 TWITTER\_AGE + \beta_6 SIZE + \beta_7 ROA + \beta_8 LEVERAGE + \beta_9 MTB + \beta_{10} IndustryDummies + \varepsilon \quad (3)$$

The regression results are summarised in Table 5.13. Column (1) in Table 5.13 shows the regression results of the main analysis using *ENGAGE* as the dependent variable. I also break down the total level of engagement into its three components and regress them on independent variables separately. Results are shown in Table 5.13 in columns (2), (3) and (4) respectively. The exponentiated values of the coefficients are reported in Table 5.14 accordingly. In Table 5.13 column (1), the coefficient on *VOLUME* is 0.54 and is statistically significant at the 1% level. The exponentiated value of this coefficient as reported in Table 5.14 column (1) is 1.7161, which suggests that there will be a 71.61% increase in the level of stakeholder engagement on Twitter for one standard deviation increase in the volume of earnings-related tweets (6.67). When the three components of total stakeholder engagement are tested separately, the coefficients are also positive and statistically significant at the 1% level. The results suggest that stakeholders are more likely to engage with a firm on Twitter, in the form of replying to, retweeting and liking a firm's tweets, when a firm discloses and disseminates a greater level of financial information on Twitter.

In addition to the level of financial disclosure on Twitter, an analysis is also conducted to examine the association between stakeholder engagement and the connectivity of financial disclosure on Twitter (*CONNECT*). In Table 5.13 column (1), *CONNECT* is significantly and positively related to stakeholder engagement at the 5% level. The exponentiated value of the coefficient on *CONNECT* is 1.2889 (see Table 5.14). The

results suggest that the level of stakeholder engagement will increase by 28.89% for one standard deviation increase in the connectivity score of tweets (1.0). When I separately regress each element of the stakeholder engagement variables on independent variables, the results show that *CONNECT* is positively and significantly associated with the number of *RETWEET*s and the number of *LIKE*s at the 5% level respectively. No significant association is found between *CONNECT* and the number of *REPLY*s. Overall, the results provide supporting evidence that firms that having greater connectivity of financial disclosure in their financial tweets are more likely to attract higher levels of stakeholder engagement on Twitter than firms with lower connectivity in their financial tweets. In a nutshell, firms are more likely to attract more stakeholder engagement on Twitter when they have better financial disclosure in terms of greater amounts and connectivity of disclosure.

Table 5.11 Poisson regression results: stakeholder engagement on Twitter and board independence

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| **Variables** | **Expected sign** | **ENGAGE** | **REPLY** | **RETWEET** | **LIKE** |
| | | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) | Coef. (z-stats.) |
| IND | + | -0.0052 | -0.0742 | 0.0125 | -0.0073 |
| | | (-0.04) | (-0.48) | (0.11) | (-0.06) |
| WOMEN | +/- | -0.1591 | -0.2691* | -0.1341 | -0.1712 |
| | | (-1.35) | (-1.83) | (-1.13) | (-1.36) |
| BoD_SIZE | +/- | 0.1147 | 0.2485 | 0.0880 | 0.1267 |
| | | (0.80) | (1.54) | (0.66) | (0.82) |
| BoD_MEET | +/- | -0.1380 | -0.2444* | -0.1109 | -0.1472 |
| | | (-1.08) | (-1.73) | (-0.83) | (-1.12) |
| AUDIT_SIZE | +/- | 0.0787 | -0.0843 | 0.1172 | 0.0680 |
| | | (0.49) | (-0.46) | (0.78) | (0.40) |
| AUDIT_MEET | +/- | 0.4969*** | 0.4268*** | 0.4140*** | 0.5421*** |
| | | (4.64) | (3.74) | (3.62) | (4.92) |
| FOLLOWERS | +/- | 0.0276 | 0.1259 | 0.0884 | -0.0039 |
| | | (0.36) | (1.15) | (1.34) | (-0.05) |
| FOLLOWINGS | +/- | 0.0311 | 0.0780 | 0.0232 | 0.0288 |
| | | (0.25) | (0.53) | (0.20) | (0.22) |
| TWITTER_AGE | +/- | 0.2456 | -0.0596 | 0.2428 | 0.2713* |
| | | (1.58) | (-0.31) | (1.62) | (1.65) |
| SIZE | + | 0.2494* | 0.1507 | 0.2388* | 0.2588* |
| | | (1.82) | (0.98) | (1.87) | (1.72) |
| ROA | + | -0.2031 | -0.2091 | -0.1834 | -0.2191 |
| | | (-1.49) | (-1.12) | (-1.42) | (-1.47) |
| LEVERAGE | +/- | 0.0498 | 0.1267 | 0.0541 | 0.0426 |
| | | (0.42) | (1.08) | (0.48) | (0.32) |
| MTB | +/- | 0.1241** | 0.2136*** | 0.1377** | 0.1074 |
| | | (1.98) | (3.22) | (2.41) | (1.58) |
| Constant | | 3.6791*** | 0.0420 | 2.9378*** | 2.9938*** |
| | | (15.03) | (0.14) | (11.93) | (11.71) |
| Industry dummies | | Yes | Yes | Yes | Yes |
| No. of Obs. | | 108 | 108 | 108 | 108 |
| Pseudo r2 | | 0.612 | 0.483 | 0.529 | 0.626 |
| VIF | | 1.6 | 1.6 | 1.6 | 1.6 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the Poisson regression results of the level of stakeholder engagement on Twitter on board independence and control variables. Variables are defined in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

Table 5.12 Poisson regression results with exponentiated coefficients: stakeholder engagement on Twitter and board independence

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| **Variables** | **Expected sign** | **ENGAGE** | **REPLY** | **RETWEET** | **LIKE** |
| | | Exp(Coef.) (z-stats.) | Exp(Coef.) (z-stats.) | Exp(Coef.) (z-stats.) | Exp(Coef.) (z-stats.) |
| IND | + | 0.9948 | 0.9285 | 1.0126 | 0.9927 |
| | | (-0.04) | (-0.48) | (0.11) | (-0.06) |
| WOMEN | +/- | 0.8529 | 0.7641* | 0.8745 | 0.8427 |
| | | (-1.35) | (-1.83) | (-1.13) | (-1.36) |
| BoD_SIZE | +/- | 1.1216 | 1.2821 | 1.0920 | 1.1350 |
| | | (0.80) | (1.54) | (0.66) | (0.82) |
| BoD_MEET | +/- | 0.8711 | 0.7831* | 0.8951 | 0.8631 |
| | | (-1.08) | (-1.73) | (-0.83) | (-1.12) |
| AUDIT_SIZE | +/- | 1.0818 | 0.9191 | 1.1243 | 1.0704 |
| | | (0.49) | (-0.46) | (0.78) | (0.40) |
| AUDIT_MEET | +/- | 1.6436*** | 1.5323*** | 1.5128*** | 1.7196*** |
| | | (4.64) | (3.74) | (3.62) | (4.92) |
| FOLLOWERS | +/- | 1.0280 | 1.1341 | 1.0924 | 0.9961 |
| | | (0.36) | (1.15) | (1.34) | (-0.05) |
| FOLLOWINGS | +/- | 1.0316 | 1.0811 | 1.0234 | 1.0292 |
| | | (0.25) | (0.53) | (0.20) | (0.22) |
| TWITTER_AGE | +/- | 1.2784 | 0.9421 | 1.2748 | 1.3117* |
| | | (1.58) | (-0.31) | (1.62) | (1.65) |
| SIZE | + | 1.2833* | 1.1626 | 1.2697* | 1.2954* |
| | | (1.82) | (0.98) | (1.87) | (1.72) |
| ROA | + | 0.8162 | 0.8114 | 0.8325 | 0.8032 |
| | | (-1.49) | (-1.12) | (-1.42) | (-1.47) |
| LEVERAGE | +/- | 1.0511 | 1.1351 | 1.0555 | 1.0435 |
| | | (0.42) | (1.08) | (0.48) | (0.32) |
| MTB | +/- | 1.1322** | 1.2382*** | 1.1476** | 1.1134 |
| | | (1.98) | (3.22) | (2.41) | (1.58) |
| Constant | | 39.6124*** | 1.0429 | 18.8743*** | 19.9624*** |
| | | (15.03) | (0.14) | (11.93) | (11.71) |
| Industry dummies | | Yes | Yes | Yes | Yes |
| No. of Obs. | | 108 | 108 | 108 | 108 |
| Pseudo r2 | | 0.612 | 0.483 | 0.529 | 0.626 |
| VIF | | 1.6 | 1.6 | 1.6 | 1.6 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the Poisson regression results of the level of stakeholder engagement on Twitter on board independence and control variables with the exponentiated coefficients. Variables are defined in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

Table 5.13 Poisson regression results: stakeholder engagement and financial disclosure on Twitter

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| **Variables** | **Expected sign** | **ENGAGE** | **REPLY** | **RETWEET** | **LIKE** |
| | | Coef.<br>z-stats. | Coef.<br>z-stats. | Coef.<br>z-stats. | Coef.<br>z-stats. |
| VOLUME | + | 0.5400***<br>(6.12) | 0.6503***<br>(5.54) | 0.4752***<br>(5.49) | 0.5773***<br>(6.18) |
| CONNECT | + | 0.2538**<br>(2.10) | -0.2677<br>(-1.24) | 0.2884**<br>(2.50) | 0.2686**<br>(2.06) |
| FOLLOWERS | +/- | -0.1723<br>(-1.11) | -0.1139<br>(-0.68) | -0.0133<br>(-0.10) | -0.2563<br>(-1.58) |
| FOLLOWINGS | +/- | 0.1529**<br>(2.06) | 0.1932*<br>(1.85) | 0.1044<br>(1.46) | 0.1741**<br>(2.19) |
| TWITTER_AGE | +/- | 0.0140<br>(0.11) | -0.2508<br>(-1.56) | 0.0568<br>(0.57) | 0.0210<br>(0.15) |
| SIZE | +/- | 0.4964***<br>(3.49) | 0.5011***<br>(3.11) | 0.3732***<br>(3.23) | 0.5663***<br>(3.72) |
| ROA | +/- | -0.2196*<br>(-1.77) | -0.1224<br>(-0.80) | -0.2122*<br>(-1.83) | -0.2365*<br>(-1.71) |
| LEVERAGE | +/- | 0.0007<br>(0.01) | 0.1383<br>(1.30) | 0.0096<br>(0.10) | -0.0090<br>(-0.08) |
| MTB | +/- | 0.0481<br>(1.05) | 0.1039<br>(1.52) | 0.0671*<br>(1.77) | 0.0273<br>(0.53) |
| Constant | | 3.6517***<br>(19.93) | 0.2170<br>(0.71) | 2.9053***<br>(19.85) | 2.9385***<br>(13.54) |
| Industry dummies | | Yes | Yes | Yes | Yes |
| No. of Obs. | | 108 | 108 | 108 | 108 |
| Pseudo r2 | | 0.659 | 0.480 | 0.606 | 0.663 |
| VIF | | 1.5 | 1.5 | 1.5 | 1.5 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the Poisson regression results of the level of stakeholder engagement on Twitter on the level and connectivity of financial disclosure as well as the control variables. Variables are defined in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

Table 5.14 Poisson regression results with exponentiated coefficients: stakeholder engagement and financial disclosure on Twitter

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| **Variables** | **Expected sign** | **ENGAGE** | **REPLY** | **RETWEET** | **LIKE** |
| | | Exp(Coef.)<br>z-stats. | Exp(Coef.)<br>z-stats. | Exp(Coef.)<br>z-stats. | Exp(Coef.)<br>z-stats. |
| VOLUME | + | 1.7161***<br>(6.12) | 1.9162***<br>(5.54) | 1.6083***<br>(5.49) | 1.7813***<br>(6.18) |
| CONNECT | + | 1.2889**<br>(2.10) | 0.7651<br>(-1.24) | 1.3344**<br>(2.50) | 1.3082**<br>(2.06) |
| FOLLOWERS | +/- | 0.8417<br>(-1.11) | 0.8923<br>(-0.68) | 0.9868<br>(-0.10) | 0.7739<br>(-1.58) |
| FOLLOWINGS | +/- | 1.1652**<br>(2.06) | 1.2132*<br>(1.85) | 1.1100<br>(1.46) | 1.1902**<br>(2.19) |
| TWITTER_AGE | +/- | 1.0141<br>(0.11) | 0.7782<br>(-1.56) | 1.0584<br>(0.57) | 1.0212<br>(0.15) |
| SIZE | +/- | 1.6429***<br>(3.49) | 1.6506***<br>(3.11) | 1.4524***<br>(3.23) | 1.7617***<br>(3.72) |
| ROA | +/- | 0.8029*<br>(-1.77) | 0.8848<br>(-0.80) | 0.8088*<br>(-1.83) | 0.7894*<br>(-1.71) |
| LEVERAGE | +/- | 1.0007<br>(0.01) | 1.1483<br>(1.30) | 1.0096<br>(0.10) | 0.9910<br>(-0.08) |
| MTB | +/- | 1.0492<br>(1.05) | 1.1095<br>(1.52) | 1.0694*<br>(1.77) | 1.0277<br>(0.53) |
| Constant | | 38.5395***<br>(19.93) | 1.2423<br>(0.71) | 18.2713***<br>(19.85) | 18.8880***<br>(13.54) |
| Industry dummies | | Yes | Yes | Yes | Yes |
| No. of Obs. | | 108 | 108 | 108 | 108 |
| Pseudo r2 | | 0.659 | 0.480 | 0.606 | 0.663 |
| VIF | | 1.5 | 1.5 | 1.5 | 1.5 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the Poisson regression results of the level of stakeholder engagement on Twitter on the level and connectivity of financial disclosure as well as the control variables with the exponentiated coefficients reported.. Variables are defined in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

### 5.5.4 Board independence, financial disclosure and stakeholder engagement

Third, I examine the relationship between board independence, financial disclosure (level and connectivity) and stakeholder engagement on Twitter. So far, the main results of this study reveal that board independence is positively and significantly associated with both the level and connectivity of financial disclosure on Twitter. The previous section provides supporting evidence that a positive and significant association exists between stakeholder engagement and the level and connectivity of financial disclosure on Twitter. However, no direct significant relation is found between board independence and stakeholder engagement on Twitter. Despite the absence of a direct influence from board independence on stakeholder engagement, it is possible that board independence might play an indirect role between a firm's financial disclosure and stakeholder engagement. Therefore, in this section, I aim to examine whether or not the relation between stakeholder engagement and financial disclosure (level and connectivity) on Twitter changes depending on a firm's board independence.

The following equations (4) and (5) are estimated by including the interaction effect between board independence and financial disclosure variables. In equation (4), I firstly examine the interaction effect between board independence and the level of financial disclosure using the interaction term *VOLUME*IND*. Then in equation (5), I examine the interaction effect between board independence and the connectivity of financial disclosure using the interaction term *CONNECT*IND*. The Poisson model is used since *ENGAGE* is a count variable.

$$ENGAGE = \alpha + \beta_1 VOLUME + \beta_2 IND + \beta_3 VOLUME * IND + \beta_4 CONNECT + \beta_5 WOMEN + \beta_6 BoD\_SIZE + \beta_7 BoD\_MEET + \beta_8 AUDIT\_SIZE + \beta_9 AUDIT\_MEET + \beta_{10} FOLLOWERS + \beta_{11} FOLLOWINGS + \beta_{12} TWITTER\_AGE + \beta_{13} SIZE + \beta_{14} ROA + \beta_{15} LEVERAGE + \beta_{16} MTB + \beta_{17} IndustryDummies + \varepsilon \quad (4)$$

$$ENGAGE = \alpha + \beta_1 CONNECT + \beta_2 IND + \beta_3 CONNECT * IND + \beta_4 VOLUME + \beta_5 WOMEN + \beta_6 BoD\_SIZE + \beta_7 BoD\_MEET + \beta_8 AUDIT\_SIZE + \beta_9 AUDIT\_MEET + \beta_{10} FOLLOWERS + \beta_{11} FOLLOWINGS + \beta_{12} TWITTER\_AGE + \beta_{13} SIZE + \beta_{14} ROA + \beta_{15} LEVERAGE + \beta_{16} MTB + \beta_{17} IndustryDummies + \varepsilon \quad (5)$$

This analysis is designed to capture any moderating effect that board independence might have on the relation between stakeholder engagement and financial disclosure on Twitter. A significant positive (negative) interaction term suggests that the positive association between stakeholder engagement and the level (connectivity) of financial disclosure on Twitter is more (less) pronounced when having a higher percentage of independent directors on the board. Table 5.15 summarises the Poisson regression results. Column (1) and (2) show the regression results for the interaction between *VOLUME* and *IND*. Column (2) reports the exponentiated values of the coefficients in column (1). In Table 5.15 column (1), the coefficient on the interaction term *VOLUME*IND* is insignificant. The coefficient on *VOLUME* is 0.494 and is statistically significant at the 1% level. The coefficient on *IND* is not significant. When replacing *VOLUME* with *CONNECT*, similar results are documented. The results are reported in Table 5.15 column (3) and (4). Column (4) shows the exponentiated values of the coefficients in column (3). The coefficient on the interaction term *CONNECT*IND* is not statistically significant either.

In addition, I also create a dummy variable *IND_DUMMY* to further test the interaction effect, replacing the continuous variable *IND*. *IND_DUMMY* equal to 1 if a firm's board independence is greater than the median value of 0.7 (including the median); 0 otherwise. Then I run the tests again replacing *IND* with *IND_DUMMY*. Unreported results show that both interaction terms are not significant either.

Overall, the results indicate that board independence does not affect the strength of the relationship between stakeholder engagement and financial disclosure on Twitter. The combined results from previous sections suggest that the extent of stakeholder engagement on Twitter is more likely to be directly affected by the quantity of financial tweets and the connectivity of these tweets rather than influences from the boardroom.

Table 5.15 Poisson regression results: stakeholder engagement, board independence and financial disclosure on Twitter

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| **Variables** | **Expected sign** | **ENGAGE** | **ENGAGE** | **ENGAGE** | **ENGAGE** |
| | | Coef. (z-stats.) | Exp(Coef.) (z-stats.) | Coef. (z-stats.) | Exp(Coef.) (z-stats.) |
| VOLUME | + | 0.4940*** | 1.6389*** | 0.4979*** | 1.6453*** |
| | | (5.87) | (5.87) | (5.64) | (5.64) |
| CONNECT | + | 0.2663** | 1.3052** | 0.2718*** | 1.3123*** |
| | | (2.40) | (2.40) | (2.60) | (2.60) |
| IND | + | -0.0645 | 0.9376 | -0.0559 | 0.9456 |
| | | (-0.65) | (-0.65) | (-0.62) | (-0.62) |
| VOLUME*IND | +/- | 0.0194 | 1.0196 | | |
| | | (0.29) | (0.29) | | |
| CONNECT*IND | +/- | | | -0.0116 | 0.9884 |
| | | | | (-0.12) | (-0.12) |
| WOMEN | +/- | -0.1229 | 0.8844 | -0.1250 | 0.8825 |
| | | (-0.87) | (-0.87) | (-0.90) | (-0.90) |
| BoD_SIZE | +/- | 0.0398 | 1.0407 | 0.0293 | 1.0298 |
| | | (0.42) | (0.42) | (0.28) | (0.28) |
| BoD_MEET | +/- | -0.1712 | 0.8426 | -0.1698 | 0.8438 |
| | | (-1.36) | (-1.36) | (-1.30) | (-1.30) |
| AUDIT_SIZE | +/- | 0.0217 | 1.0220 | 0.0232 | 1.0235 |
| | | (0.27) | (0.27) | (0.28) | (0.28) |
| AUDIT_MEET | +/- | 0.4588*** | 1.5821*** | 0.4638*** | 1.5902*** |
| | | (6.32) | (6.32) | (6.78) | (6.78) |
| FOLLOWERS | +/- | 0.0422 | 1.0431 | 0.0404 | 1.0412 |
| | | (0.77) | (0.77) | (0.73) | (0.73) |
| FOLLOWING | +/- | 0.1095* | 1.1157* | 0.1061* | 1.1119* |
| | | (1.70) | (1.70) | (1.66) | (1.66) |
| TWITTER_AGE | +/- | 0.1798** | 1.1969** | 0.1777** | 1.1945** |
| | | (2.31) | (2.31) | (2.19) | (2.19) |
| SIZE | +/- | 0.2474*** | 1.2807*** | 0.2543*** | 1.2896*** |
| | | (2.79) | (2.79) | (2.66) | (2.66) |
| ROA | +/- | -0.2675** | 0.7653** | -0.2708** | 0.7628** |
| | | (-2.16) | (-2.16) | (-2.26) | (-2.26) |
| LEVERAGE | +/- | 0.0124 | 1.0124 | 0.0115 | 1.0116 |
| | | (0.13) | (0.13) | (0.12) | (0.12) |
| MTB | +/- | 0.0168 | 1.0170 | 0.0188 | 1.0190 |
| | | (0.32) | (0.32) | (0.37) | (0.37) |

(Continued)

Table 5.15-Continued

| | | | | |
|---|---|---|---|---|
| Constant | 3.2515*** | 25.8298*** | 3.2606*** | 26.0659*** |
| | (15.99) | (15.99) | (15.41) | (15.41) |
| Industry | Yes | Yes | Yes | Yes |
| No. of Obs. | 108 | 108 | 108 | 108 |
| Pseudo R-squared | 0.768 | 0.768 | 0.767 | 0.767 |
| VIF | 1.66 | 1.66 | 1.67 | 1.67 |

* p<0.1, ** p<0.05, *** p<0.01

This table shows the moderating effect of board independence on the relation between stakeholder engagement and financial disclosure on Twitter using the Poisson regression model. Column (1) shows the regression results when board independence interacts with the level of financial disclosure (*IND*VOLUME*). Column (3) shows the results when board independence interacts with the connectivity of financial disclosure on Twitter (*IND*CONNECT*). Column (2) and (4) report the exponentiated values of the coefficients in column (1) and (3) respectively. Variables are defined in Appendix 3. Since independent variables are measured on different scales, all independent variables are standardised for easier interpretation and comparison.

## 5.6 Summary

Using the social-networking platform Twitter as the empirical setting, this study provides evidence that independent directors on the board play a role in influencing firms' financial disclosure decisions on social media. Social media is not only a complementary voluntary disclosure channel for further information dissemination (Blankespoor et al. 2014, Jung et al. 2017), but also a venue to engage stakeholders at large through effective communication (Blankespoor 2018, Brennan and Merkl-Davies 2018). From a stakeholder theory perspective, reporting financial results on social media may serve two purposes: 1) to reduce the information gap between management and stakeholders through additional financial information dissemination; and 2) to enhance communicative effectiveness for better stakeholder engagement with the aid of multimedia and interactive functions on social media. Reflecting these two purposes, this study argues that independent directors on the board, as a key monitoring mechanism over management on behalf of shareholders and stakeholders at large, help enhance corporate transparency and communicative effectiveness via financial communication on social media. The main findings of this study are summarised below.

First, this study finds that firms with a higher proportion of independent directors on the board are more likely to have a higher level of financial disclosure on Twitter during earnings announcement events than firms with a lower proportion of independent directors. This indicates that greater board independence enhances corporate transparency by proactively disseminating a greater amount of earnings-related news to stakeholders on social media.

Second, this study also documents that firms with greater board independence are more likely to have greater communicative effectiveness in their financial disclosure on Twitter, captured by the overall connectivity of disclosure. More specifically, the findings indicate that earnings-related tweets from firms with greater board independence are more likely to 1) disclose more financial performance details in their tweets (textual connectivity); 2) embed additional dissemination tools including hyperlinks and hashtags and cashtags in tweets (intertextual connectivity); and 3) to utilise various visual aids such as videos, pictures and graphs to facilitate financial results communication (relational connectivity).

Third, this study also provides evidence that greater gender diversity on the board and larger board size are both associated with a higher level of financial disclosure and higher communicative effectiveness in a firm's financial disclosure on Twitter. This adds to prior corporate governance literature by providing supporting evidence on the effectiveness of female directors and board size over the financial reporting process within the empirical setting of social media.

Fourth, in the additional analyses, this study investigates the relationship between board independence, financial disclosure and stakeholder engagement on Twitter. The findings show that the influence from the boardroom seems to not directly affect the level of stakeholder engagement on Twitter. No significant association is found between board independence and the total level of stakeholder engagement on Twitter. Interestingly, this study finds that the frequency of audit committee meetings is positively associated with the level of stakeholder engagement on Twitter. This suggests that the effectiveness of audit committees may be a potential determinant of a firm's stakeholder engagement on social media, which may open up a new research avenue in the future.

Fifth, a firm's financial disclosure decisions are more likely to be the direct determinants of the total level of stakeholder engagement received by a firm during earnings announcement events. The results indicate that better stakeholder engagement is achieved when firms post a higher number of earnings-related tweets and when their tweets have greater overall connectivity. This study also examines whether or not board independence plays a moderating role between stakeholder engagement and financial disclosure on Twitter. However, the results further confirm that although board independence is a key determinant of a firm's financial disclosure decisions on Twitter, its monitoring role has not yet been translated to the level of stakeholder engagement. For stakeholders on Twitter, the decision of whether or not to engage with a firm is more likely to be directly influenced by what financial information is disclosed and how these messages are communicated on this platform.

This study is subject to a limitation in that although the main analyses are conducted with a relatively large sample size, with 868 firm-year observations, the analyses on stakeholder holder engagement are conducted on a sample consisting of 108 observations due to data availability. With the increasing penetration of social media in organisations, future research could obtain more data and observe corporate communication and stakeholder engagement in other important corporate events, in addition to earnings announcement events, which may generate a much larger sample size for empirical investigation.

# 6 Conclusions

## 6.1 Summary of the findings of the thesis

The aim of this thesis is to empirically investigate corporate financial disclosure on social media by applying alternative theoretical perspectives of impression management and stakeholder theory. The purpose of Chapter 2 is to review major theoretical constructs that have been adopted in prior voluntary disclosure literature and to justify why theories from social psychology and social politics are of particular relevance to the empirical setting of this thesis. Chapter 3 informs readers about the empirical studies that have been conducted on impression management and accounting narratives, corporate governance and voluntary disclosure, and corporate financial communication on social media, with the aim of identifying gaps in the literature and positioning the intended contributions of the empirical investigations that are conducted in the following chapters.

The study presented in Chapter 4 examines firms' strategic employment of defensive and assertive impression management strategies when they disclose and disseminate earnings news on social media. The sample of this study consists of 57 FTSE 100 companies that disclosed earnings-related information on Twitter during annual earnings announcement events in 2014. The key findings are summarised in the following.

First, this study finds that firms tend to omit negative earnings news by posting a significantly lower volume of negative earnings-related tweets than positive earnings-related tweets. By classifying firms into improving and declining performers, the findings suggest that firms are more likely to minimise disclosure on Twitter if they are reporting declining performance. These findings indicate that to maintain the best possible

corporate image on social media, firms adopt a defensive impression management strategy to avoid drawing extra media exposure and public attention to bad earnings news. These findings are in line with Merkl-Davies and Brennan's (2007) impression management framework on the concealment of negative information and consistent with the findings in Leung et al. (2015) that firms adopt a minimal narrative disclosure strategy in annual reports to camouflage poor financial performance.

Second, by examining the manipulation of information presentation in form-rich financial narratives on Twitter, this study finds that firms employ an assertive impression management strategy to emphasise positive outcomes through multiple self-presentational patterns. When firms report improved performance, they are especially more likely to embellish their disclosures with multifarious presentational patterns than firms that are experiencing declining performance. These self-presentational patterns include the use of textual narratives, quantitative references and visuals. Presentational emphases on good earnings news easily convey rich earnings information and impress stakeholders. These findings are in line with prior evidence on selective presentation in accounting narratives (Skinner 1994, Beattie and Jones 2000, Clatworthy and Jones 2006, Martens et al. 2007, Parhankangas and Ehrlich 2014).

Third, this study also provides supportive evidence of firms' assertive information dissemination behaviour on Twitter. Specifically, it finds that firms are more likely to disseminate positive earnings information than negative and neutral information by strategically utilising dissemination tools. Additionally, improving performers are more likely to disseminate earnings news than declining performers. The selective use of hashtags and/or cashtags related to positive information could cause an information

exposure bias (Elliott et al. 2018), as positive information enjoys the advantage of accelerated and broadened dissemination. Moreover, the manipulative use of hyperlinks in earnings tweets could also lead to biased information dissemination, as stakeholders' news feeds on Twitter become filled with more readily clickable good news and more comprehensive stories to complement a favourable corporate image. Consequently, stakeholders are more likely to be exposed to carefully crafted positive information and are therefore more easily able to form favourable impressions of firm performance. In this regard, the findings support the contention in Jung et al. (2018) that firms are opportunistic in their dissemination of earnings news on Twitter.

Finally, the interactive functions on Twitter help to reveal the outcome of impression management on social media. This study finds that positive earnings news receives a higher level of engagement than other types of information, as positive earnings-related tweets are more often displayed in a larger font size, namely as 'best tweets'. This finding is consistent with Berger and Milkman's (2012) finding that positive content is more likely to go viral online. In addition, this study finds that improving performers are more likely to have earnings-related tweets awarded as 'best tweets' than declining performers. These results are in line with Lee et al.'s (2013) findings on social media virality. The findings suggest that improving performers are more successful at constructing a favourable corporate image on Twitter because they successfully attract stakeholders' attention and 'seduce' them into participating in financial communication. Moreover, the findings may indicate that declining performers are also successful at employing a defensive impression management strategy to avoid public attention and to maintain their existing image.

The study presented in Chapter 5 uses firms' annual earnings announcement events on Twitter as the empirical setting and conducts analyses based on a sample of 868 firm-year observations of FTSE 350 firms listed on the London Stock Exchange from the fiscal years of 2014 to 2016. The main analysis of this study investigates the associations between board independence and two aspects of financial disclosure on Twitter: 1) the total level of financial disclosure and 2) the connectivity of financial disclosure. In the additional analyses, this study examines the relations among board independence, financial disclosure and stakeholder engagement during earnings announcement events on Twitter.

Firstly, this study documents that the total level of earnings-related tweets during annual earnings announcement events is positively associated with the proportion of independent directors on the board. The results suggest board independence is a key monitoring mechanism to increase the total level of financial information that is available to stakeholders on social media. The findings are in line with prior literature on higher board independence enhancing corporate transparency through increased amounts of corporate disclosure (Ajinkya et al. 2005, Cheng and Courtenay 2006, Lim et al. 2007, Liao et al. 2015).

Secondly, the findings indicate that earnings-related tweets posted by firms with greater board independence are more likely to have greater overall connectivity of disclosure on Twitter compared to firms with lower board independence. Moreover, by breaking down the components of the *CONNECT* index – the measurement for connectivity of disclosure – this study also finds that board independence is positively associated with: 1) greater textual connectivity, measured by the disclosure of performance details; 2) greater

intertextual connectivity, measured by the use of hyperlinks or hashtags/cashtags in earnings announcement related tweets; and 3) greater relational connectivity, which uses the employment of visual mediums in financial tweets as the proxy. These findings indicate that having more independent directors on the board provides more effective monitoring over managers' financial disclosure decisions on Twitter, which leads to improved communicative effectiveness in terms of the connectivity of this financial information on Twitter.

Thirdly, in addition to board independence, this study also documents positive and significant associations between firms' financial disclosure decisions on Twitter and board gender diversity, as well as board size. The study also provides empirical evidence that greater gender diversity on the board and larger board size increase the amount of corporate disclosure and enhance the connectivity of financial disclosure on social media, lending support to prior literature on the effectiveness of board composition (John and Senbet 1998, Higgs 2003, Hillman et al. 2007, Lim et al. 2007, Gul et al. 2011, Hidalgo et al. 2011, Srinidhi et al. 2011, Liao et al. 2015).

Fourthly, this study also provides empirical evidence of the relationship among board independence, firms' financial disclosure decisions and the extent of stakeholder engagement on Twitter. The results show that the extent of stakeholder engagement is not associated with board compositions, suggesting that although the board may wish to enhance stakeholder engagement through improved disclosure practices on Twitter, the board compositions do not seem to be direct determinants of the actual engagement level. The level of stakeholder engagement on Twitter is more likely to be directly affected by a firm's disclosure attributes. The findings show that firms that post a greater volume of

earnings-related tweets during annual earnings announcement events are more likely to attain a greater extent of stakeholder engagement in terms of the total number of replies, retweets and likes. Moreover, when higher connectivity is exhibited in earnings-related tweets, stakeholders are more likely to engage and respond to these financial messages on Twitter. In particular, the relational connectivity of financial disclosure on Twitter, as measured by the use of visuals in tweets, leads to a consistently higher level of stakeholder engagement. The results also reveal that relational connectivity is more successful in attracting stakeholder engagement in the form of retweets and likes rather than replies.

## 6.2 Research limitations

Although the empirical studies in this thesis provide novel empirical findings of the organisational impression management behaviours on Twitter and the influence of board compositions on firms' financial disclosure decisions on Twitter, they are not without limitations. When interpreting the results of the thesis, the limitations should be considered. Thus, this section summarises these limitations of this thesis and paves the way for future research avenues discussed in the following section. The discussion of limitations is organised into three aspects: theoretical limitations, methodological limitations and data limitations.

*Theoretical limitations*

In this thesis, theoretical perspectives with a social nature underpin the empirical investigations. More specifically, impression management theory and stakeholder theory are adopted in chapters 4 and 5 to explain the managerial motives for financial disclosure on social media and to predict firms' disclosure decisions on the platform. Rationales for the choice of theories have been discussed in previous chapters. Although these two theories are considered to be most appropriate to address the research questions within the empirical setting of this thesis, it should be acknowledged that the choice of one particular theory in preference to another is subject to the researcher's value judgement. Deegan and Unerman (2011) point out that the selection of research questions, the choice of theoretical perspectives and the belief in which factors drive individual action are all value-laden. Disclosure behaviours, like all other human behaviours, are complex. Especially within an increasingly rich and complex information environment in this digital age, one cannot expect one theory to provide perfect explanations and predictions of organisational disclosure choices and decisions. This thesis provides useful insights

into the complex process of disclosure behaviours from a social psychological perspective and a social political perspective. Future research on corporate disclosure on social media could continue to examine the relevance of economic predictions or to explore alternative theoretical constructs in order to gain multidimensional understandings of corporate disclosure behaviours on social media.

*Methodological limitations*

This thesis is subject to several methodological limitations. To begin with, manual coding and manual content analysis of tweets are labour-intensive and subject to potential bias and errors. To ensure the rigour and consistency of the coding process, two coders worked on the coding task independently at the same time. One of the coders prepared and wrote the coding guidelines. Any inconsistencies were discussed and refined upon mutual agreement in the end. However, it should be acknowledged that the reliance on the manual process of sampling, data collection, coding and content analysis is still subject to subjectivity bias and errors. The determination and handling of sample selection and coding criteria requires the researcher's judgements. For example, the researcher needs to use judgement to decide which kind of tweets are considered to be earnings-related tweets and which kind of earnings-related tweets should be classified as a certain impression management tactic. It requires both coders' judgements to decide whether a earnings-related tweet is in a positive, negative or neutral tone by reading each individual tweet. The number of earnings-related tweets under different coding labels were physically counted by coders for each company. Thus, the manual content process is unlikely to be completely bias-free or error-free.

Second, the measures of some variables are subject to potential measurement bias. In Chapter 4, the classification of improving and declining performers is based on a firm's profit before taxation. It should be acknowledged that a firm's financial performance can be measured by a range of performance indicators and attributes. Although profitability is often emphasised in the media and in the public's perceptions, alternative classification criteria, such as beating or missing earnings forecasts, can be applied to enhance the robustness of the results. In addition, in Chapter 4, 'best tweets' are used for the measurement of the level of stakeholder engagement on Twitter. This function on Twitter automatically shows the tweets that received higher levels of engagement compared to a user's other tweets in a large font size. However, the algorithm for the calculation of 'best tweets' was not published by Twitter.com. Thus, it is quite like a 'black box'. The results should be carefully understood with this caveat in mind.

The study in Chapter 5 is also subject to some measurement bias. For example, the measurement for board independence is based on the board independence data provided by Bloomberg. It measures the percentage of independent directors on the company's board, as reported by the company. Nonetheless true board independence may not be as straightforward as what has been reported by companies even if they comply with the disclosure requirement of UK Corporate Governance Code. The real board independence may vary greatly across firms, which may require a case-by-case analysis. It is a challenging task to find a 'one for all' approach which could capture the real independence of directors across different firms. In addition, when computing the *CONNECT* index score, equal weighting is used for each of the components at the textual connectivity level, the intertextual connectivity level and the relational connectivity level.

There is a possibility that a different connectivity level may influence the communicative effectiveness of disclosure to a varying extent. However, it is also difficult to determine different weightings of each component given the very limited understanding of the effect of different types of connectivity empirically. Thus, future research could continue this line of connectivity studies to gain more understanding of different types of connectivity of disclosures on social media.

Third, the results have potential endogeneity issues. In Chapter 5, several attempts have been made to alleviate endogeneity concerns. Like all other accounting and finance research in the area of corporate governance, endogeneity issues should be taken into consideration when interpreting the results of the thesis. The board of director selection bias and unobserved variables potentially influence the dynamic relations between corporate governance and financial disclosure decisions on social media.

Fourth, the generalisation of the results of accounting research should be carefully considered. Different social contexts and institutional settings are potential factors that lead to inconclusive empirical results. This thesis uses a sample of FTSE 350 companies listed on the London Stock Exchange covering the period of 2014 to 2016. The perceptions, uses and regulatory requirements of social media in corporate settings may vary significantly across countries and cultures. The corporate governance mechanism is also subject to country-specific regulations and requirements. Thus, whether the results will hold in a different cultural or institutional context remains unknown.

*Data limitations*

There are several limitations in the data used in this thesis. First, the sample size is small and the sample period is relatively short. The study in Chapter 4 observes a sample of 57 FTSE 100 firms during their annual earnings announcement events on Twitter for the fiscal year of 2014. One reason is that reporting earnings on Twitter was still an emerging phenomenon among these large listed firms in the UK back at the time the research was conducted. Tweets that are related to quarterly earnings announcements were rarely observed. Tweeting annual earnings announcements was more common and only these 57 firms tweeted their performance on their earnings announcement days. It can be argued that non-disclosure also serves as a defensive impression management tactic and a signal for poor performance. Furthermore, in the current scope of this thesis, the analysis has focused on earnings-related tweets posted on day 0 of annual earnings announcements. There is a possibility that non-earnings-related tweets posted on day 0 may play a part in impression management by diverting readers' attentions on the day. The non-earnings-related tweets and announcement-only reminder tweets posted in a certain period before and after day 0 of announcements may also play a similar role in distorting or reinforcing the corporate image constructed via earnings-related tweets on day 0. This may open up new research avenues in the future.

In addition, the sample of the study in Chapter 5 has a larger sample size than Chapter 4 by focusing on FTSE 350 firms over a period of 2014 to 2016. Nevertheless, the sample size is still relatively small compared to prior longitudinal corporate governance research. The influence of the board on corporate disclosure decisions is not likely to bring short-term or immediate consequences. It may have a lag effect and a longitudinal design with a relatively longer timeframe may provide useful insights and practical implications.

Second, there are restrictions and limitations in the data collection process on Twitter.com. This partly contributes to a relatively small sample size, as discussed above. For example, Twitter put a cap on the maximum number of a user's tweets that can be retrieved. Only 3,200 latest tweets can be found for any user on Twitter. Even Twitter's new premium API cannot surpass this limit. Firms have been increasingly active in their tweeting activities in recent years. As a result, many of the tweets in early days are no longer retrievable. The additional analyses in Chapter 5 are subject to this data limitation and only focus on the year of 2016. The relatively small sample might be one reason that leads to the absence of significant associations between board composition and stakeholder engagement on Twitter.

Moreover, another pitfall when collecting data on Twitter.com is that the data of a user's number of followers and followings only shows in a real-time manner. An historical count of the data is not available. These variables are important attributes when studying a Twitter user's online social network and engagement level. This restriction limits the scope of research that uses historical data on Twitter. Thus, careful planning of data collection procedures in the early stage of research design is necessary to ensure these data, if required, can be collected on an ongoing basis.

## 6.3 Future research

In terms of the use of theoretical lenses in future research, institutional theory is potentially a promising theoretical construct to examine corporate financial communication on social media in terms of how external institutional expectations and pressures affect a firm's disclosure choice, but should fully recognise the role of active agency in adopting strategic responses. Institutional literature has an overemphasis on institutional environments in the process of conformity and isomorphism. Some scholars (DiMaggio and Zucker 1988, Oliver 1991, Scott 1991) argue that institutional environments are not 'iron cages' within which organisations have no choice but to passively conform to institutional pressures and demands sooner or later in order to gain or sustain legitimacy. Instead, organisations may consciously employ strategic responses for self-serving benefits. Nevertheless, insufficient attention has been given to organisations' strategic behaviours driven by active agency, internal dynamics and interests, as well as resistant power between organisations and institutional environments (Covaleski and Dirsmith 1988, DiMaggio and Zucker 1988, Oliver 1991, Powell 1991, Scott 1991, Dillard et al. 2004, Lounsbury 2008).

Reflecting the exercising of strategic choices by organisations, Oliver (1991) put forward a theoretical framework for analysing organisational strategic responses to institutional pressures. She suggests that organisations react to institutional processes with five strategic responses – *acquiescence*, *comprise*, *avoidance*, *defiance* and *manipulation* – that vary in the extent of active agency employed by the organisations from passive conformity to active resistance (Oliver 1991). Five institutional determinants are proposed by Oliver (1991) to predict the occurrence of the above five strategic responses that organisations may employ when reacting to institutional pressures. The five

predictors are *cause*, *constitutes*, *content*, *control* and *context*, which represent the following five fundamental questions of 'why these pressures are being exerted, who is exerting them, what these pressures are, how or by what means they are exerted, and where they occur' (Oliver 1991: 159).

The information environment on social media is rich and complex with a wide range of stakeholder groups that may have multiple institutional expectations and demands. The theoretical framework in Oliver (1991) provides a relatively holistic theoretical framework that incorporates a range of institutional influences that may affect firms' financial disclosure choices on social media. Therefore, it would be interesting to further examine the possible strategic responses of firms in their financial disclosure on social media through the lenses of institutional theory in future research.

Moreover, since corporate disclosure on social media is a disclosure genre that greatly differs from disclosure via traditional outlets, conventional theoretical frameworks might not be adequate to generate comprehensive explanations for this emerging phenomenon. Thus, another fertile avenue for future research would be to conduct qualitative research and develop new theories of corporate disclosure on social media.

As discussed in previous chapters, one limitation of this thesis lies in its relatively small sample size. With the increasing popularity of social media for corporate communications, future research could also extend the sample size and obtain more observations by examining other corporate events under different settings, such as communication on corporate social responsibility, mergers and acquisitions, investment announcements and

new product launches. Data mining techniques can be employed to secure a large sample of observations and to increase the efficiency in data collection and processing.

# References


Abdelsalam, O. H. and Street, D. L., 2007. Corporate governance and the timeliness of corporate internet reporting by uk listed companies. *Journal of International Accounting, Auditing and Taxation*, 16(2), 111-130.

Abernethy, M. A. and Chua, W. F., 1996. A field study of control system "redesign": The impact of institutional processes on strategic choice. *Contemporary Accounting Research*, 13(2), 569-606.

Abrahamson, E. and Amir, E., 1996. The information content of the president's letter to shareholders. *Journal of Business Finance & Accounting*, 23(8), 1157-1182.

Abrahamson, E. and Choelsoon, P., 1994. Concealment of negative organizational outcomes: An agency theory perspective. *Academy of Management Journal*, 37(5), 1302-1334.

Adams, R. B. and Ferreira, D., 2009. Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94(2), 291-309.

Adams, R. B., Hermalin, B. E., and Weisbach, M. S., 2010. The role of boards of directors in corporate governance: A conceptual framework and survey. *Journal of Economic Literature*, 48(1), 58-107.

Adelberg, A. H., 1979. Narrative disclosures contained in financial reports: Means of communication or manipulation? *Accounting and Business Research*, 9(35), 179-190.

Adelberg, A. H. and Razek, J. R., 1984. The cloze procedure: A methodology for determining the understandability of accounting textbooks. *The Accounting Review*, 59(1), 109-122.

Aerts, W., 1994. On the use of accounting logic as an explanatory category in narrative accounting disclosures. *Accounting, Organizations and Society*, 19(4–5), 337-353.

Aerts, W., 2001. Inertia in the attributional content of annual accounting narratives. *European Accounting Review* 10(1), 3-32.

Aerts, W., 2005. Picking up the pieces: Impression management in the retrospective attributional framing of accounting outcomes. *Accounting, Organizations and Society*, 30(6), 493-517.

Ajinkya, B., Bhojraj, S., and Sengupta, P., 2005. The association between outside directors, institutional investors and the properties of management earnings forecasts. *Journal of Accounting Research*, 43(3), 343-376.

Alam, M. 2006. Stakeholder theory, *Methodological issues in accounting research: Theories and methods*: 207-222. London: Spiramus Press.

Anderson, J. R., 1980. *Cognitive psychology and its implications.* San Francisco CA: Freeman.

Anderson, J. R., 1990. *Cognitive psychology and its implications.* 3rd ed. New York: W.H. Freeman.

Anderson, R. C., Mansi, S. A., and Reeb, D. M., 2004. Board characteristics, accounting report integrity, and the cost of debt. *Journal of Accounting and Economics*, 37(3), 315-342.

Baginski, S., Hassell, J., and Hillison, W., 2000. Voluntary causal disclosures: Tendencies and capital market reaction. *Review of Quantitative Finance and Accounting*, 15(4), 371-389.

Baginski, S. P., Hassell, J. M., and Kimbrough, M. D., 2004. Why do managers explain their earnings forecasts? *Journal of Accounting Research*, 42(1), 1-29.

Bailey, D., Harte, G., and Sugden, R., 2000. Corporate disclosure and the deregulation of international investment. *Accounting, Auditing & Accountability Journal*, 13(2), 197-218.

Baker, H. E. and Kare, D. D., 1979. Relationship between annual report readability and corporate financial performance. *Management Research News* 15, 1-4.

Bamber, L. S., Jiang, J., and Wang, I. Y., 2010. What's my style? The influence of top managers on voluntary corporate financial disclosure. *The Accounting Review*, 85(4), 1131-1162.

Barnett, A. and Leoffler, K., 1979. Readability of accounting and auditing messages. *Journal of Business Communication*, 16(3), 49-59.

Barry, C. B. and Brown, S. J., 1985. Differential information and security market equilibrium. *The Journal of Financial and Quantitative Analysis*, 20(4), 407-422.

Bartlett, M., 1935. The effect of non-normality on the t distribution. Paper presented at the mathematical proceedings of the cambridge philosophical society.

Bartov, E., Faurel, L., and Mohanram, P. S., 2017. Can twitter predict firm-level earnings and stock returns? . *The Accounting Review*, 93(3), 25-57.

Barua, A., Davidson, L. F., Rama, D. V., and Thiruvadi, S., 2010. Cfo gender and accruals quality. *Accounting Horizons*, 24(1), 25-39.

Beasley, M. S., 1996. An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review*, 71(4), 443-465.

Beattie, V., 2014. Accounting narratives and the narrative turn in accounting research: Issues, theory, methodology, methods and a research framework. *The British Accounting Review*, 46(2), 111-134.

Beattie, V. and Jones, M. J., 2000. Changing graph use in corporate annual reports: A time-series analysis. *Contemporary Accounting Research*, 17(2), 213-226.

Beattie, V. and Jones, M. J., 2002. Measurement distortion of graphs in corporate reports: An experimental study. *Accounting, Auditing & Accountability Journal*, 15(4), 546-564.

Beattie, V. and Jones, M. J., 2008. Corporate reporting using graphs: A review and synthesis. *Journal of Accounting Literature*, 27(1), 71-110.

Beattie, V., McInnes, B., and Fearnley, S., 2004. A methodology for analysing and evaluating narratives in annual reports: A comprehensive descriptive profile and metrics for disclosure quality attributes. *Accounting Forum*, 28(3), 205-236.

Bedard, J., Chtourou, S. M., and Courteau, L., 2004. The effect of audit committee expertise, independence, and activity on aggressive earnings management. *Auditing: A Journal of Practice & Theory*, 23(2), 13-35.

Behn, R. D. and Vaupel, J. W., 1982. *Quick analysis for busy decision makers.* Basic Books New York.

Behrendt, S. and Schmidt, A., 2018. The twitter myth revisited: Intraday investor sentiment, twitter activity and individual-level stock return volatility. *Journal of Banking & Finance*, 96, 355-367.

Bell, E. and Davison, J., 2013. Visual management studies: Empirical and theoretical approaches. *International Journal of Management Reviews*, 15(2), 167-184.

Benson, D. F., Brau, J. C., Cicon, J., and Ferris, S. P., 2015. Strategically camouflaged corporate governance in ipos: Entrepreneurial masking and impression management. *Journal of Business Venturing*, 30(6), 839-864.

Berger, J. and Milkman, K. L., 2012. What makes online content viral? *Journal of Marketing Research*, 49(2), 192-205.

Berle, A. and Means, G., 1932. *The modern corporation and private property*. New York: Mac-millan.

Bettman, J. R. and Barton, A. W., 1983. Attributions in the board room: Causal reasoning in corporate annual reports. *Administrative Science Quarterly*, 28(2), 165-183.

Beyer, A., Cohen, D. A., Lys, T. Z., and Walther, B. R., 2010. The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics*, 50(2–3), 296-343.

Blankespoor, E., 2018. Firm communication and investor response: A framework and discussion integrating social media. *Accounting, Organizations and Society*, 68, 80-87.

Blankespoor, E., Miller, S. G., and White, D. H., 2014. The role of dissemination in market liquidity: Evidence from firms' use of twitter™. *Accounting Review*, 89(1), 79-112.

Bloomfield, J. R., 2002. The "incomplete revelation hypothesis" and financial reporting. *Accounting Horizons*, 16(3), 233-243.

Bloomfield, R. J., 2012. A pragmatic approach to more efficient corporate disclosure. *Accounting Horizons*, 26(2), 357-370.

Bolino, M. C., Kacmar, K. M., Turnley, W. H., and Gilstrap, J. B., 2008. A multi-level review of impression management motives and behaviors. *Journal of Management*, 34(6), 1080-1109.

Bollen, J., Mao, H., and Zeng, X., 2011. Twitter mood predicts the stock market. *Journal of Computational Science*, 2(1), 1-8.

Bormuth, J. R., 1967. Comparable cloze and multiple-choice comprehension test scores. *Journal of Reading*, 10(5), 291-299.

Bormuth, J. R., 1968. Cloze test readability: Criterion reference scores. *Journal of Educational Measurement*, 5(3), 189-196.

Bowen, M. R., Davis, K. A., and Matrumoto, A. D., 2005. Emphasis on pro forma versus gaap earnings in quarterly press releases: Determinants, sec intervention, and market reactions. *Accounting Review*, 80(4), 1011-1038.

Bowman, E. H. and Haire, M., 1976. Social impact disclosure and corporate annual reports. *Accounting, Organizations and Society*, 1(1), 11-21.

Brennan, N. M., Daly, C. A., and Harrington, C. S., 2010. Rhetoric, argument and impression management in hostile takeover defence documents. *British Accounting Review*, 42(4), 253-268.

Brennan, N. M., Guillamon-Saorin, E., and Pierce, A., 2009. Methodological insights: Impression management: Developing and illustrating a scheme of analysis for narrative disclosures – a methodological note. *Accounting, Auditing & Accountability Journal*, 22(5), 789 - 832.

Brennan, N. M. and Merkl-Davies, D. M., 2018. Do firms effectively communicate with financial stakeholders? A conceptual model of corporate communication in a capital market context. *Accounting and Business Research*, 48(5), 553-577.

Brunswick. 2014. The investment community's use of digital and social media. Available at http://www.brunswickgroup.com/media/266919/Infographic-Digital-Investor-Survey.pdf.

Brunswick. 2015. Investors and digital media 2015: Trends in global media use by the investment community. Available at https://www.brunswickgroup.com/media/578617/2015-investor-digital-and-social-media-survey.pdf.

Burke, R. J. and Vinnicombe, S., 2008. Women on corporate boards of directors: International issues and opportunities. *Women on Corporate Boards of Directors: International Research and Practice*, 1-11.

Bushman, R. M. and Smith, A. J., 2001. Financial accounting information and corporate governance. *Journal of Accounting and Economics*, 32(1), 237-333.

Businesswire. 2015. Tweet this! Td ameritrade brings social research to retail investors.' 2015. Available at http://www.businesswire.com/news/home/20150127005792/en/ADDING-MULTIMEDIA%C2%A0Tweet-This%21-TD-Ameritrade-Brings-Social#.Vdc3pKasNg9.

Cade, N. L., 2018. Corporate social media: How two-way disclosure channels influence investors. *Accounting, Organizations and Society*, 68-69, 63-79.

Cerbioni, F. and Parbonetti, A., 2007. Exploring the effects of corporate governance on intellectual capital disclosure: An analysis of european biotechnology companies. *European Accounting Review*, 16(4), 791-826.

Chan, J. L., 1979. Corporate disclosure in occupational safety and health: Some empirical evidence. *Accounting, Organizations and Society*, 4(4), 273-281.

Chan, M. C., Watson, J., and Woodliff, D., 2014. Corporate governance quality and csr disclosures. *Journal of Business Ethics*, 125(1), 59-73.

Chau, G. and Gray, S. J., 2010. Family ownership, board independence and voluntary disclosure: Evidence from hong kong. *Journal of International Accounting, Auditing and Taxation*, 19(2), 93-109.

Chen, C. J. and Jaggi, B., 2000. Association between independent non-executive directors, family control and financial disclosures in hong kong. *Journal of Accounting and Public policy*, 19(4-5), 285-310.

Chen, H., De, P., Hu, Y. J., and Hwang, B. H., 2014. Wisdom of crowds: The value of stock opinions transmitted through social media. *Review of Financial Studies*, 27(5), 1367-1403.

Cheng, E. C. M. and Courtenay, S. M., 2006. Board composition, regulatory regime and voluntary disclosure. *The International Journal of Accounting*, 41(3), 262-289.

Cho, C. H., Laine, M., Roberts, R. W., and Rodrigue, M., 2015. Organized hypocrisy, organizational façades, and sustainability reporting. *Accounting, Organizations and Society*, 40(0), 78-94.

Cho, C. H., Phillips, J. R., Hageman, A. M., and Patten, D. M., 2009. Media richness, user trust, and perceptions of corporate social responsibility: An experimental investigation of visual web site disclosures. *Accounting, Auditing & Accountability Journal*, 22(6), 933-952.

Cho, C. H., Roberts, R. W., and Patten, D. M., 2010. The language of us corporate environmental disclosure. *Accounting, Organizations and Society*, 35(4), 431-443.

Cianci, A. M. and Kaplan, S. E., 2010. The effect of ceo reputation and explanations for poor performance on investors' judgments about the company's future performance and management. *Accounting, Organizations and Society*, 35(4), 478-495.

Clapham, S. E. and Schwenk, C. R., 1991. Self-serving attributions, managerial cognition, and company performance. *Strategic Management Journal*, 12(3), 219-229.

Clarke, C. J., 2005. The xx factor in the boardroom: Why women make better directors. *Directors Monthly*, 24, 8-10.

Clarkson, M. E., 1995. A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, 20(1), 92-117.

Clatworthy, M. and Jones, M. J., 2001. The effect of thematic structure on the variability of annual report readability. *Accounting, Auditing & Accountability Journal*, 14(3), 311-326.

Clatworthy, M. and Jones, M. J., 2003. Financial reporting of good news and bad news: Evidence from accounting narratives. *Accounting and Business Research*, 33(3), 171-185.

Clatworthy, M. A. and Jones, M. J., 2006. Differential patterns of textual characteristics and company performance in the chairman's statement. *Accounting, Auditing & Accountability Journal*, 19(4), 493-511.

Comunello, F. and Anzera, G., 2012. Will the revolution be tweeted? A conceptual framework for understanding the social media and the arab spring. *Islam and Christian–Muslim Relations*, 23(4), 453-470.

Conger, J. A., Finegold, D., and Lawler, E. E., 1998. Appraising boardroom performance. *Harvard Business Review*, 76, 136-164.

Cooper, S. and Slack, R., 2015. Reporting practice, impression management and company performance: A longitudinal and comparative analysis of water leakage disclosure. *Accounting and Business Research*, 45(6-7), 801-840.

Core, J. E., 2001. A review of the empirical disclosure literature: Discussion. *Journal of Accounting and Economics*, 31(1–3), 441-456.

Cornett, M. M., McNutt, J. J., and Tehranian, H., 2009. Corporate governance and earnings management at large us bank holding companies. *Journal of Corporate Finance*, 15(4), 412-430.

Courtis, J. K., 1986. An investigation into annual report readability and corporate risk-return relationships. *Accounting and Business Research*, 16(64), 285-294.

Courtis, J. K., 1995. Readability of annual reports: Western versus asian evidence. *Accounting, Auditing & Accountability Journal*, 8(2), 4-17.

Courtis, J. K., 1998. Annual report readability variability: Tests of the obfuscation hypothesis. *Accounting, Auditing & Accountability Journal*, 11(4), 459-472.

Courtis, J. K., 2004a. Colour as visual rhetoric in financial reporting. *Accounting Forum*, 28(3), 265-281.

Courtis, J. K., 2004b. Corporate report obfuscation: Artefact or phenomenon? *British Accounting Review*, 36(3), 291-312.

Covaleski, M. A. and Dirsmith, M. W., 1988. An institutional perspective on the rise, social transformation, and fall of a university budget category. *Administrative Science Quarterly*, 33(4), 562-587.

Criado-Jiménez, I., Fernández-Chulián, M., Larrinaga-González, C., and Husillos-Carqués, F. J., 2008. Compliance with mandatory environmental reporting in

financial statements: The case of spain (2001–2003). *Journal of Business Ethics*, 79(3), 245-262.

Curtis, A., Richardson, V., and Schmardebeck, R., 2016. Investor attention and the pricing of earnings news. *Handbook of Sentiment Analysis in Finance (Chapter 8)*, 212–232.

Czarniawska, B., 2004. *Narratives in social science research.* Sage.

Daily, C. M. and Dalton, D. R., 1994. Bankruptcy and corporate governance: The impact of board composition and structure. *Academy of Management Journal*, 37(6), 1603-1617.

Dao, M., Huang, H.-W., and Zhu, J., 2013. The effects of audit committee members' age and additional directorships on the cost of equity capital in the USA. *European Accounting Review*, 22(3), 607-643.

Davis, A., Ge, W., Matsumoto, D., and Zhang, J., 2015. The effect of manager-specific optimism on the tone of earnings conference calls. *Review of Accounting Studies*, 20(2), 639-673.

Davison, J., 2007. Photographs and accountability: Cracking the codes of an ngo. *Accounting, Auditing & Accountability Journal*, 20(1), 133-158.

Davison, J., 2015. Visualising accounting: An interdisciplinary review and synthesis. *Accounting and Business Research*, 45(2), 121-165.

de Beaugrande, R. A. and Dressler, W. U., 1981. *Introduction to text linguistics.* London: Longman.

DeAngelo, L. E., 1988. Managerial competition, information costs, and corporate governance: The use of accounting performance measures in proxy contests. *Journal of Accounting and Economics*, 10(1), 3-36.

Deegan, C. and Unerman, J., 2011. *Financial accounting theory.* 2nd European edition / Craig Deegan, Jeffrey Unerman.. ed. London: London : McGraw-Hill.

DeFond, M. L. and Jiambalvo, J., 1991. Incidence and circumstances of accounting errors. *The Accounting Review*, 643-655.

Denis, D. J. and Sarin, A., 1999. Ownership and board structures in publicly traded corporations. *Journal of Financial Economics*, 52(2), 187-223.

Desai, V. M., 2014. Does disclosure matter? Integrating organizational learning and impression management theories to examine the impact of public disclosure following failures. *Strategic Organization*, 12(2), 85-108.

Dillard, J. F., Rigsby, J. T., and Goodman, C., 2004. The making and remaking of organization context: Duality and the institutionalization process. *Accounting, Auditing & Accountability Journal*, 17(4), 506-542.

DiMaggio, P. and Powell, W. W., 1983. The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields. *American Sociological Review*, 48(2), 147-160.

DiMaggio, P. J. and Powell, W. W., 1991. *The new institutionalism in organizational analysis*. University of Chicago Press Chicago, IL.

DiMaggio, P. J. and Zucker, L. G., 1988. *Institutional patterns and organizations: Culture and environmenti*. Cambridge, MA: Ballinger.

Donaldson, T. and Preston, L. E., 1995. The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65-91.

Dreyer, L. G., 1984. Readability and responsibility. *Journal of Reading*, 27(4), 334-338.

Eakpisankit, A., 2012. *The quality of corporate environmental reporting (cer): Theory and practice*. University of Bath.

Elliott, W. B., 2006. Are investors influenced by pro forma emphasis and reconciliations in earnings announcements? *Accounting Review*, 81(1), 113-133.

Elliott, W. B., Grant, S. M., and Hodge, F. D., 2018. Negative news and investor trust: The role of $ firm and# ceo twitter use. *Journal of Accounting Research*, 56(5), 1483-1519.

Elliott, W. B., Hodge, F. D., and Sedor, L. M., 2012. Using online video to announce a restatement: Influences on investment decisions and the mediating role of trust. *Accounting Review*, 87(2), 513-535.

Elshandidy, T. and Neri, L., 2015. Corporate governance, risk disclosure practices, and market liquidity: Comparative evidence from the uk and italy. *Corporate Governance: An International Review*, 23(4), 331-356.

Eng, L. L. and Mak, Y. T., 2003. Corporate governance and voluntary disclosure. *Journal of Accounting and Public Policy*, 22(4), 325-345.

Entin, E. B. and Klare, G. R., 1978. Some inter-relationships of readability, cloze and multiple choice scores on a reading comprehension test. *Journal of Literacy Research*, 10(4), 417-436.

Ettredge, M., Johnstone, K., Stone, M., and Wang, Q., 2011. The effects of firm size, corporate governance quality, and bad news on disclosure compliance. *Review of Accounting Studies*, 16(4), 866-889.

Faleye, O., Hoitash, R., and Hoitash, U., 2011. The costs of intense board monitoring. *Journal of Financial Economics*, 101(1), 160-181.

Fama, E. F., 1980. Agency problems and the theory of the firm. *The Journal of Political Economy*, 88, 288-307.

Fama, E. F. and Jensen, M. C., 1983. Separation of ownership and control. *The Journal of Law & Economics*, 26(2), 301-325.

Feldman, R., Govindaraj, S., Livnat, J., and Segal, B., 2010. Management's tone change, post earnings announcement drift and accruals. *Review of Accounting Studies*, 15(4), 915-953.

Festre, A., 2010. Incentives and social norms: A motivation-based economic analysis of social norms. *Journal of Economic Surveys*, 24(3), 511-538.

Finkelstein, S., Hambrick, D. C., and Cannella, A. A., 2009. *Strategic leadership: Theory and research on executives, top management teams, and boards.* Oxford University Press: New York.

Fisher, D., Fox, D., and Wood, K., 1999. The identification of specific reading difficulties through assessment of listening comprehension skills. *Educational and Child Psychology*, 16(1), 54-59.

Fisher, W. R., 1984. Narration as human communication paradigm: The case of public moral argument. *Communication Monographs*, 51, 1-22.

Forker, J. J., 1992. Corporate governance and disclosure quality. *Accounting and Business Research*, 22(86), 111-124.

Frazier, K. B., Ingram, R. W., and Tennyson, B. M., 1984. A methodology for the analysis of narrative accounting disclosures. *Journal of Accounting Research*, 22(1), 318-331.

Freeman, R. E., 1984. Strategic management: A stakeholder perspective. *Boston: Pitman*, 13.

Friedman, M., 1962. *Capitalism and freedom.* Chicago: University of Chicago Press.

Friedman, M. 1970. The social responsibility of business is to increase its profits, *New York Times Magazine*.

García Osma, B. and Guillamón-Saorín, E., 2011. Corporate governance and impression management in annual results press releases. *Accounting, Organizations and Society*, 36(4–5), 187-208.

Geary, R. C., 1947. Testing for normality. *Biometrika*, 34(3/4), 209-242.

Gendron, Y. and Bédard, J., 2006. On the constitution of audit committee effectiveness. *Accounting, Organizations and Society*, 31(3), 211-239.

Goffman, E., 1959. *The presentation of self in everyday life.* New York: Anchor Books.

Golden, B. R. and Zajac, E. J., 2001. When will boards influence strategy? Inclination× power= strategic change. *Strategic Management Journal*, 22(12), 1087-1111.

Gordon, S., 2015. Uk boards divided on cyber and social media. Financial Times [28 July 2016].

Graham, J. R., Harvey, C. R., and Rajgopal, S., 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1), 3-73.

Gray, R., Owen, D., and Adams, C., 1996. *Accounting & accountability: Changes and challenges in corporate social and environmental reporting.* Prentice Hall.

Greenslade, R. 2014. More digital disruption ahead for mainstream news groups, says survey. The guardian. Available at https://www.theguardian.com/media/greenslade/2014/jun/12/digital-media-social-media.

Greenwich. 2015. Institutional investing in the digital age: How social media informs and shapes the investing process. Greenwich Associates. Available at https://www.greenwich.com/sites/default/files/reports_pdf/IS-Digital_Media-2015-GR.pdf.

Griliches, Z. and Mairesse, J. 1995. Production functions: The search for identification: National Bureau of Economic Research.

Guggenmos, R. and Bennett, G. B., 2018. The effects of company image and communication platform alignment on investor information processing. *Available at SSRN https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2650169*.

Guillamon-Saorin, E., Osma, B. G., and Jones, M. J., 2012. Opportunistic disclosure in press release headlines. *Accounting and Business Research*, 42(2), 143-168.

Gul, F. A. and Leung, S., 2004. Board leadership, outside directors' expertise and voluntary corporate disclosures. *Journal of Accounting and Public Policy*, 23(5), 351-379.

Gul, F. A., Srinidhi, B., and Ng, A. C., 2011. Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics*, 51(3), 314-338.

Hales, J., Moon, J. R., and Swenson, L. A., 2018. A new era of voluntary disclosure? Empirical evidence on how employee postings on social media relate to future corporate disclosures. *Accounting, Organizations and Society*, 68-69, 88-108.

Haniffa, R. M. and Cooke, T. E., 2002. Culture, corporate governance and disclosure in malaysian corporations. *Abacus*, 38(3), 317-349.

Hasnas, J., 1998. The normative theories of business ethics: A guide for the perplexed. *Business Ethics Quarterly*, 8(1), 19-42.

Hayat, R. and Kabir Hassan, M., 2017. Does an islamic label indicate good corporate governance? *Journal of Corporate Finance*, 43, 159-174.

Hazarika, S., Karpoff, J. M., and Nahata, R., 2012. Internal corporate governance, ceo turnover, and earnings management. *Journal of Financial Economics*, 104(1), 44-69.

Healy, P. M. and Palepu, K. G., 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1), 405-440.

Heckman, J. J. 1976. The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models, *Annals of economic and social measurement*, Vol. 5: 475-492: NBER.

Heckman, J. J., 1979. Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society*, 47(1), 153-161.

Heider, F., 1958. *The psychology of interpersonal relations.* Psychology Press.

Henry, E., 2008. Are investors influenced by how earnings press releases are written? *Journal of Business Communication*, 45(4), 363-407.

Hermalin, B. E. and Weisbach, M. S., 2003. Boards of directors as an endogenously determined institution: A survey of the economic literature. *Economic Policy Review*, 9, 7-26.

Hidalgo, R. L., García-Meca, E., and Martínez, I., 2011. Corporate governance and intellectual capital disclosure. *Journal of Business Ethics*, 100(3), 483-495.

Higgins, C. and Walker, R., 2012. Ethos, logos, pathos: Strategies of persuasion in social/environmental reports. Paper presented at the Accounting Forum.

Higgs, D., 2003. Review of the role and effectiveness of nonexecutive directors.

Hillman, A. J., Shropshire, C., and Cannella, A. A., 2007. Organizational predictors of women on corporate boards. *Academy of Management Journal*, 50(4), 941-952.

Ho, S. S. and Wong, K. S., 2001. A study of the relationship between corporate governance structures and the extent of voluntary disclosure7. *Journal of International Accounting, Auditing and Taxation*, 10(2), 139-156.

Hoang, T. C., Abeysekera, I., and Ma, S., 2018. Board diversity and corporate social disclosure: Evidence from vietnam. *Journal of Business Ethics*, 151(3), 833-852.

Hodgdon, C. and Hughes, S. B., 2016. The effect of corporate governance, auditor choice and global activities on eu company disclosures of estimates and judgments. *Journal of International Accounting, Auditing and Taxation*, 26, 28-46.

Huang, H.-W., Rose-Green, E., and Lee, C.-C., 2012. Ceo age and financial reporting quality. *Accounting Horizons*, 26(4), 725-740.

Huang, X., Teoh, S. H., and Zhang, Y., 2014. Tone management. *The Accounting Review*, 89(3), 1083-1113.

Huse, M. and Grethe Solberg, A., 2006. Gender-related boardroom dynamics: How scandinavian women make and can make contributions on corporate boards. *Women in Management Review*, 21(2), 113-130.

ICSA. 2015. Ft-icsa boardroom bellwether: Insights into what boards are thinking from the survey of ftse 350 company secretaries. Available at: https://www.icsa.org.uk/knowledge/research/ft-icsa-boardroom-bellwether.

Illia, L., Sonpar, K., and Bauer, M. W., 2014. Applying co-occurrence text analysis with alceste to studies of impression management. *British Journal of Management*, 25(2), 352-372.

Ingram, R. W. and Frazier, K. B., 1980. Environmental performance and corporate disclosure. *Journal of Accounting Research*, 18(2), 614-622.

Jensen, M. C., 1986. Agency cost of free cash flow, corporate finance, and takeovers. *Corporate Finance, and Takeovers. American Economic Review*, 76(2), 323-329.

Jensen, M. C., 1993. The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance*, 48(3), 831-880.

Jensen, M. C. and Meckling, W. H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.

Jizi, M. I., Salama, A., Dixon, R., and Stratling, R., 2014. Corporate governance and corporate social responsibility disclosure: Evidence from the us banking sector. *Journal of Business Ethics*, 125(4), 601-615.

John, K. and Senbet, L. W., 1998. Corporate governance and board effectiveness. *Journal of Banking & Finance*, 22(4), 371-403.

Johnson, J. L., Daily, C. M., and Ellstrand, A. E., 1996. Boards of directors: A review and research agenda. *Journal of Management*, 22(3), 409-438.

Jones, E. E., 1990. *Interpersonal perception.* New York: WH Freeman.

Jones, M. J., 1988. A longitudinal study of the readability of the chairman's narratives in the corporate reports of a uk company. *Accounting and Business Research*, 18(72), 297-305.

Jones, M. J., 1997. Methodological themes. *Accounting, Auditing & Accountability Journal*, 10(1), 105-128.

Jones, M. J. and Shoemaker, P. A., 1994. Accounting narratives: A review of empirical studies of content and readability. *Journal of Accounting Literature*, 13, 142-184.

Jones, T. M., 1995. Instrumental stakeholder theory: A synthesis of ethics and economics. *Academy of Management Review*, 20(2), 404-437.

Jorce, S., 2013. Public company use of socia media for investor relations 2013. [28 July 2016].

Jung, M. J., Naughton, J. P., Tahoun, A., and Wang, C., 2017. Do firms strategically disseminate? Evidence from corporate use of social media. *The Accounting Review*, 94(4), 225-252.

Jung, M. J., Naughton, J. P., Tahoun, A., and Wang, C., 2018. Do firms strategically disseminate? Evidence from corporate use of social media. *The Accounting Review*, 93(4), 225-252.

Kadous, K., Mercer, M., and Zhou, Y. D., 2017. Undue influence? The effect of social media advice on investment decisions. *Available at SSRN: https://ssrn.com/abstract=2968407*.

Karamanou, I. and Vafeas, N., 2005. The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis. *Journal of Accounting Research*, 43(3), 453-486.

Katmon, N. and Al Farooque, O., 2017. Exploring the impact of internal corporate governance on the relation between disclosure quality and earnings management in the uk listed companies. *Journal of Business Ethics*, 142(2), 345-367.

Kiel, G. C. and Nicholson, G. J., 2003. Board composition and corporate performance: How the australian experience informs contrasting theories of corporate governance. *Corporate Governance: An International Review*, 11(3), 189-205.

Kim, O. and Verrecchia, R. E., 1994. Market liquidity and volume around earnings announcements. *Journal of Accounting and Economics*, 17(1-2), 41-67.

Kintsch, W. and Miller, J. R., 1984. 'Readability: A view from cognitive psychology' in flood, j. (ed.), understanding reading comprehension: Cognition, language, and the structure of prose. *International Reading Association*, 220-232.

Kintsch, W. and Vipond, D. 1979. Reading comprehension and readability in educational practice and psychological theory. In L. Nilsson (Ed.), *Perspectives on memory research*: 329-365.

Kirmani, A. and Rao, R. A., 2000. No pain, no gain: A critical review of the literature on signaling unobservable product quality. *Journal of Marketing*, 64(2), 66-79.

Klein, A., 2002. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33(3), 375-400.

Koehler, K., 2014. Dialogue and relationship building in online financial communications. *International Journal of Strategic Communication*, 8(3), 177-195.

Kothari, S. P., Li, X., and Short, J. E., 2009. The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: A study using content analysis. *The Accounting Review*, 84(5), 1639-1670.

Krishnan, G. V. and Parsons, L. M., 2008. Getting to the bottom line: An exploration of gender and earnings quality. *Journal of Business Ethics*, 78(1), 65-76.

Laksmana, I., 2008. Corporate board governance and voluntary disclosure of executive compensation practices. *Contemporary Accounting Research*, 25(4), 1147-1182.

Leary, M. R. and Kowalski, R. M., 1990. Impression management: A literature review and two-component model. *Psychological Bulletin*, 107(1), 34.

Lee, K., Oh, W. Y., and Kim, N., 2013. Social media for socially responsible firms: Analysis of fortune 500's twitter profiles and their csr/csir ratings. *Journal of Business Ethics*, 118(4), 791-806.

Lee, L. F., Hutton, A. P., and Shu, S., 2015. The role of social media in the capital market: Evidence from consumer product recalls. *Journal of Accounting Research*, 53(2), 367-404.

Lee, Y. J., 2012. The effect of quarterly report readability on information efficiency of stock prices. *Contemporary Accounting Research*, 29(4), 1137-1170.

Leung, S., Parker, L., and Courtis, J., 2015. Impression management through minimal narrative disclosure in annual reports. *British Accounting Review*, 47(3), 275-289.

Lewis, B. W., Walls, J. L., and Dowell, G. W., 2014. Difference in degrees: Ceo characteristics and firm environmental disclosure. *Strategic Management Journal*, 35(5), 712-722.

Li, F., 2008. Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics*, 45(2–3), 221-247.

Li, F., 2010. The information content of forward-looking statements in corporate filings—a naïve bayesian machine learning approach. *Journal of Accounting Research*, 48(5), 1049-1102.

Li, F., 2011. Managers' self-serving attribution bias, overconfidence, and corporate financial policies. *University of Michigan working paper*.

Li, J., Mangena, M., and Pike, R., 2012. The effect of audit committee characteristics on intellectual capital disclosure. *British Accounting Review*, 44(2), 98-110.

Li, J., Pike, R., and Haniffa, R., 2008. Intellectual capital disclosure and corporate governance structure in uk firms. *Accounting and Business Research*, 38(2), 137-159.

Liao, L., Luo, L., and Tang, Q., 2015. Gender diversity, board independence, environmental committee and greenhouse gas disclosure. *British Accounting Review*, 47(4), 409-424.

Lim, S., Matolcsy, Z., and Chow, D., 2007. The association between board composition and different types of voluntary disclosure. *European Accounting Review*, 16(3), 555-583.

Liu, S., 2015. Corporate governance and forward-looking disclosure: Evidence from china. *Journal of International Accounting, Auditing and Taxation*, 25, 16-30.

Liu, Y., Wei, Z., and Xie, F., 2016. Cfo gender and earnings management: Evidence from china. *Review of Quantitative Finance and Accounting*, 46(4), 881-905.

Lodhia, S. and Stone, G., 2017. Integrated reporting in an internet and social media communication environment: Conceptual insights. *Australian Accounting Review*, 27(1), 17-33.

Loe, T. W., Ferrell, L., and Mansfield, P., 2000. A review of empirical studies assessing ethical decision making in business. *Journal of Business Ethics*, 25(3), 185-204.

Loughran, T. and McDonald, B., 2013. Ipo first-day returns, offer price revisions, volatility, and form s-1 language. *Journal of Financial Economics*, 109(2), 307-326.

Loughran, T. and McDonald, B., 2014. Measuring readability in financial disclosures. *Journal of Finance*, 69(4), 1643-1671.

Loughran, T. and McDonald, B., 2016. Textual analysis accounting and finance: A survey. *Journal of Accounting Research*, 54(4), 1187-1230.

Loughran, T. I. M. and McDonald, B., 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-ks. *The Journal of Finance*, 66(1), 35-65.

Lounsbury, M., 2008. Institutional rationality and practice variation: New directions in the institutional analysis of practice. *Accounting, Organizations and Society*, 33(4), 349-361.

Lounsbury, M. and Glynn, M. A., 2001. Cultural entrepreneurship: Stories, legitimacy, and the acquisition of resources. *Strategic Management Journal*, 22(6-7), 545-564.

Mallin, C. and Ow-Yong, K., 2012. Factors influencing corporate governance disclosures: Evidence from alternative investment market (aim) companies in the uk. *The European Journal of Finance*, 18(6), 515-533.

Manetti, G., Bellucci, M., and Bagnoli, L., 2017. Stakeholder engagement and public information through social media: A study of canadian and american public transportation agencies. *The American Review of Public Administration*, 47(8), 991-1009.

Mangena, M. and Pike, R., 2005. The effect of audit committee shareholding, financial expertise and size on interim financial disclosures. *Accounting and Business Research*, 35(4), 327-349.

Mangena, M. and Tauringana, V., 2007. Corporate compliance with non-mandatory statements of best practice: The case of the asb statement on interim reports. *European Accounting Review*, 16(2), 399-427.

Mao, Y., Wei, W., Wang, B., and Liu, B., 2012. Correlating s&p 500 stocks with twitter data. Paper presented at the Proceedings of the first ACM international workshop on hot topics on interdisciplinary social networks research.

Marchant, H. G., Royer, J. M., and Greene, B. A., 1988. Superior reliability and validity for a new form of the sentence verification technique for measuring comprehension. *Educational and Psychological Measurement*, 48(3), 827-834.

Martens, M. L., Jennings, J. E., and Jennings, P. D., 2007. Do the stories they tell get them the money they need? The role of entrepreneurial narratives in resource acquisition. *Academy of Management Journal*, 50(5), 1107-1132.

Masulis, R. W., Wang, C., and Xie, F., 2012. Globalizing the boardroom—the effects of foreign directors on corporate governance and firm performance. *Journal of Accounting and Economics*, 53(3), 527-554.

McInerney-Lacombe, N., Bilimoria, D., and Salipante, P. F., 2008. Championing the discussion of tough issues: How women corporate directors contribute to board deliberations. *Women on corporate boards of directors: International research and practice*, 123-139.

Merkl-Davies, D. M. and Brennan, N. M., 2007. Discretionary disclosure strategies in corporate narratives: Incremental information or impression management? *Journal of Accounting Literature*, 26, 116-196.

Merkl-Davies, D. M., Brennan, N. M., and McLeay, S. J., 2011. Impression management and retrospective sense-making in corporate narratives: A social psychology perspective. *Accounting, Auditing & Accountability Journal*, 24(3), 315-344.

Merton, R. C., 1987. A simple model of capital market equilibrium with incomplete information. *The Journal of Finance*, 42(3), 483-510.

Meyer, J. W. and Rowan, B., 1977. Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340-363.

Meyer, J. W. and Scott, W. R., 1983. Centralization and the legitimacy problems of local government. *Organizational environments: Ritual and rationality*, 199, 215.

Miller, B. P., 2010. The effects of reporting complexity on small and large investor trading. *The Accounting Review*, 85(6), 2107-2143.

Miller, G. S. and Skinner, D. J., 2015. The evolving disclosure landscape: How changes in technology, the media, and capital markets are affecting disclosure. *Journal of Accounting Research*, 53(2), 221-239.

Mitchell, R. K., Agle, B. R., and Wood, D. J., 1997. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853-886.

Morin, R. A. and Suarez, A. F., 1983. Risk aversion revisited. *The Journal of Finance*, 38(4), 1201-1216.

Morris, R. D., 1987. Signalling, agency theory and accounting policy choice. *Accounting and Business Research*, 18(69), 47-56.

Muttakin, M. B., Khan, A., and Mihret, D. G., 2018. The effect of board capital and ceo power on corporate social responsibility disclosures. *Journal of Business Ethics*, 150(1), 41-56.

Myers, S. C. and Majluf, N. S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187-221.

Neu, D., Warsame, H., and Pedwell, K., 1998. Managing public impressions: Environmental disclosures in annual reports. *Accounting, Organizations and Society*, 23(3), 265-282.

Nielsen, R. K., 2013. Mundane internet tools, the risk of exclusion, and reflexive movements—occupy wall street and political uses of digital networked technologies. *The Sociological Quarterly*, 54(2), 173-177.

Nisar, T. M. and Yeung, M., 2018. Twitter as a tool for forecasting stock market movements: A short-window event study. *The Journal of Finance and Data Science*, 4(2), 101-119.

Nørreklit, H., 2003. The balanced scorecard: What is the score? A rhetorical analysis of the balanced scorecard. *Accounting, Organizations and Society*, 28(6), 591-619.

Ogden, S. and Clarke, J., 2005. Customer disclosures, impression management and the construction of legitimacy: Corporate reports in the uk privatised water industry. *Accounting, Auditing & Accountability Journal*, 18(3), 313-345.

Oliver, B. L., 1974. The semantic differential: A device for measuring the interprofessional communication of selected accounting concepts. *Journal of Accounting Research*, 12(2), 299-316.

Oliver, C., 1991. Strategic responses to institutional processes. *Academy of Management Review*, 16(1), 145-179.

Palsson, A.-M., 1996. Does the degree of relative risk aversion vary with household characteristics? *Journal of Economic Psychology*, 17(6), 771-787.

Parhankangas, A. and Ehrlich, M., 2014. How entrepreneurs seduce business angels: An impression management approach. *Journal of Business Venturing*, 29(4), 543-564.

Park, Y. W. and Shin, H.-H., 2004. Board composition and earnings management in canada. *Journal of Corporate Finance*, 10(3), 431-457.

Parmar, B. L., Freeman, R. E., Harrison, J. S., Wicks, A. C., Purnell, L., and De Colle, S., 2010. Stakeholder theory: The state of the art. *The Academy of Management Annals*, 4(1), 403-445.

Pashalian, S. and Crissy, W. J. E., 1952. Corporate annual reports are difficult, dull reading, human interest value low, survey shows. *Journal of Accountancy* 94(2), 215-219.

Patelli, L. and Prencipe, A., 2007. The relationship between voluntary disclosure and independent directors in the presence of a dominant shareholder. *European Accounting Review*, 16(1), 5-33.

Pearson, E. S., 1931. The analysis of variance in cases of non-normal variation. *Biometrika*, 23(No.1/2), 114-133.

Peasnell, K. V., Pope, P. F., and Young, S., 2005. Board monitoring and earnings management: Do outside directors influence abnormal accruals? *Journal of Business Finance & Accounting*, 32(7-8), 1311-1346.

Peterson, D., Rhoads, A., and Vaught, B. C., 2001. Ethical beliefs of business professionals: A study of gender, age and external factors. *Journal of Business Ethics*, 31(3), 225-232.

Powell, W., 1991. Expanding the scope of institutional analysis. *The New institutionalism in Organizational Analysis, Chicago*, 183-203.

Prado-Lorenzo, J.-M. and Garcia-Sanchez, I.-M., 2010. The role of the board of directors in disseminating relevant information on greenhouse gases. *Journal of Business Ethics*, 97(3), 391-424.

Quinn, D. P. and Jones, T. M., 1995. An agent morality view of business policy. *Academy of Management Review*, 20(1), 22-42.

Raabe, A., Stevens, K. C., and Stevens, W. P., 1984. Tax textbook readability: An application of the cloze method. *Journal of American Taxation Association*, 6(1), 66-73.

Raheja, C. G., 2005. Determinants of board size and composition: A theory of corporate boards. *Journal of Financial and Quantitative Analysis*, 40(2), 283-306.

Rankin, E. F. and Culhane, J. W., 1969. Comparable cloze and multiple-choice comprehension test scores. *Journal of Reading*, 13(3), 193-198.

Riessman, C. K., 2008. *Narrative methods for the human sciences.* Sage.

Rivera-Arrubla, Y. A. and Zorio-Grima, A., 2016. Integrated reporting, connectivity, and social media. *Psychology & Marketing*, 33(12), 1159-1165.

Roberts, M. R. and Whited, T. M. 2013. Endogeneity in empirical corporate finance, *Handbook of the economics of finance*, Vol. 2: 493-572: Elsevier.

Rodrigue, M., Cho, C. H., and Laine, M., 2015. Volume and tone of environmental disclosure: A comparative analysis of a corporation and its stakeholders. *Social and Environmental Accountability Journal*, 35(1), 1-16.

Ronson, J., 2016. *So you've been publicly shamed.* Oxford, U.K.: McMillian Publishers.

Royer, J. M., 2004. Uses for the sentence verification technique for measuring language comprehension. *unpublished manuscript, University of Massachusetts*.

Rutherford, B., 2003. Obfuscation, textual complexity and the role of regulated narrative accounting disclosure in corporate governance. *Journal of Management and Governance*, 7(2), 187-210.

Saleh, A. and Roberts, C., 2017. The impact of online corporate reporting quality on analyst following and properties of their eps forecasts. *Accounting and Management Information Systems*, 16(1), 59-88.

Samaha, K., Khlif, H., and Hussainey, K., 2015. The impact of board and audit committee characteristics on voluntary disclosure: A meta-analysis. *Journal of International Accounting, Auditing and Taxation*, 24, 13-28.

Samkin, G. and Schneider, A., 2010. Accountability, narrative reporting and legitimation: The case of a new zealand public benefit entity. *Accounting, Auditing & Accountability Journal*, 23(2), 256-289.

Schrand, C. M. and Zechman, S. L., 2012. Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics*, 53(1), 311-329.

Schroeder, N. and Gibson., C., 1990. Readability of management's discussion and analysis. *Accounting Reading* 560-591.

Scott, W. 1991. Unpacking institutional arguments. S. 164–182 in: W.W. Powell & p. J. Dimaggio (eds.): The new institutionalism in organizational analysis: Chicago: University of Chicago Press.

Scott, W. R., 1995. *Institutions and organizations.* Sage.

Scott, W. R., 1997. *Financial accounting theory.* Prentice Hall Upper Saddle River, NJ.

Sengupta, P., 2004. Disclosure timing: Determinants of quarterly earnings release dates. *Journal of Accounting and Public Policy*, 23(6), 457-482.

Shaffer, R. J., Stevens, K. T., and Stevens, W. P., 1993. Assessing the readability of government standards: The cloze procedure. *Journal of Technical Writing and Communication*, 23, 259-267.

Shanahan, T., Kamil, M. L., and Tobin, A. W., 1982. Cloze as a measure of intersentential comprehension. *Reading Research Quarterly*, 17(2), 229-255.

Shankman, N. A., 1999. Reframing the debate between agency and stakeholder theories of the firm. *Journal of Business Ethics*, 19(4), 319-334.

Sharma, V., Naiker, V., and Lee, B., 2009. Determinants of audit committee meeting frequency: Evidence from a voluntary governance system. *Accounting Horizons*, 23(3), 245-263.

Shleifer, A. and Vishny, R. W., 1997. A survey of corporate governance. *The Journal of Finance*, 52(2), 737-783.

Skinner, D. J., 1994. Why firms voluntarily disclose bad news. *Journal of Accounting Research*, 32(1), 38-60.

Smith, J. E. and Smith, N. P., 1971. Readability: A measure of the performance of the communication function of financial reporting. *The Accounting Review*, 46(3), 552-561.

Smith, M. and Jones, M., 2014. Traditional and alternative methods of measuring the understandability of accounting narratives. *Accounting, Auditing & Accountability Journal*, 27(1), 183-208.

Smith, M. and Taffler, R., 1992a. The chaiman's statement and corporate financial performance *Accounting & Finance*, 32(2), 75-90.

Smith, M. and Taffler, R., 1992b. Readability and understandability: Different measures of the textual complexity of accounting narrative. *Accounting, Auditing & Accountability Journal*, 5(4), 84-98.

Solomon, J., 2007. *Corporate governance and accountability.* John Wiley & Sons.

Soper, F. J. and Dolphin, R., 1964. Readability and corporate annual reports. *The Accounting Review*, 39, 358-362.

Spence, M., 1973. Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374.

Spence, M., 2002. Signaling in retrospect and the informational structure of markets. *American Economic Review*, 92(3), 434-459.

Spira, L. F., 2003. Audit committees: Begging the question? *Corporate Governance: An International Review*, 11(3), 180-188.

Sprenger, T. O., Sandner, P. G., Tumasjan, A., and Welpe, I. M., 2014a. News or noise? Using twitter to identify and understand company-specific news flow. *Journal of Business Finance & Accounting*, 41(7-8), 791-830.

Sprenger, T. O., Tumasjan, A., Sandner, P. G., and Welpe, I. M., 2014b. Tweets and trades: The information content of stock microblogs. *European Financial Management*, 20(5), 926-957.

Srinidhi, B., Gul, F. A., and Tsui, J., 2011. Female directors and earnings quality. *Contemporary Accounting Research*, 28(5), 1610-1644.

Staw, B. M., McKechnie, P. I., and Puffer, S. M., 1983. The justification of organizational performance. *Administrative Science Quarterly*, 28(4), 582-600.

Stoney, C. and Winstanley, D., 2001. Stakeholding: Confusion or utopia? Mapping the conceptual terrain. *Journal of Management Studies*, 38(5), 603-626.

Subramaniam, N. 2006. Agency theory and accounting research: An overview of some conceptual and empirical issues, *Methodological issues in accounting research: Theories and methods*: 55-77. London: Spiramus Press.

Subramanian, R., Insley, R., and Blackwel, R. D., 1993. Performance and readability: A comparison of annual reports of profitable and unprofitable corporations. *The Journal of Business Communication*, 30(1), 49-60.

Sun, J., Liu, G., and Lan, G., 2011. Does female directorship on independent audit committees constrain earnings management? *Journal of Business Ethics*, 99(3), 369-382.

Tan, H. T., Ying Wang, E., and Zhou, B. O., 2014. When the use of positive language backfires: The joint effect of tone, readability, and investor sophistication on earnings judgments. *Journal of Accounting Research*, 52(1), 273-302.

Tatli, A., Vassilopoulou, J., Ariss, A. A., and Özbilgin, M., 2012. The role of regulatory and temporal context in the construction of diversity discourses: The case of the uk, france and germany. *European Journal of Industrial Relations*, 18(4), 293-308.

Tedeschi, J. T. and Melburg, V., 1984. Impression management and influence in the organization. *Research in the Sociology of Organizations*, 3, 31-58.

Tennyson, B. M., Ingram, R. W., and Dugan, M. T., 1990. Assessing the information content of narrative disclosures in explaining bankruptcy. *Journal of Business Finance & Accounting*, 17(3), 391-410.

Toubiana, M. and Zietsma, C., 2017. The message is on the wall? Emotions, social media and the dynamics of institutional complexity. *Academy of Management Journal*, 60(3), 922-953.

Trueman, B., 1986. Why do managers voluntarily release earnings forecasts? *Journal of Accounting and Economics*, 8(1), 53-71.

Tversky, B., 1974. Eye fixations in prediction of recognition and recall. *Memory & Cognition*, 2(2), 275-278.

Tyson, L. D. A., 2003. *The tyson report on the recruitment and development of non-executive directors: A report commissioned by the department of trade & industry following the publication of the higgs review of the role and effectiveness of non-executive directors in january 2003.* London Business School.

Vafeas, N., 2003. Length of board tenure and outside director independence. *Journal of Business Finance & Accounting*, 30(7-8), 1043-1064.

Verrecchia, R. E., 2001. Essays on disclosure. *Journal of Accounting and Economics*, 32(1-3), 97-180.

Wallsten, T. S. and Budescu, D. V., 1990. [quantifying probabilistic expressions]: Comment. *Statistical science*, 23-26.

Walsh, J. P., 2005. Taking stock of stakeholder management. *Academy of Management Review* 30(2), 426-438.

Warner, J. B., Watts, R. L., and Wruck, K. H., 1988. Stock prices and top management changes. *Journal of Financial Economics*, 20(0), 461-492.

Webb, E., 2004. An examination of socially responsible firms' board structure. *Journal of Management and Governance*, 8(3), 255-277.

Weiner, B., 1985. An attributional theory of achievement motivation and emotion. *Psychological Review*, 92(4), 548.

Weisbach, M. S., 1988. Outside directors and ceo turnover. *Journal of Financial Economics*, 20(0), 431-460.

Westphal, J. D., Park, S. H., McDonald, M. L., and Hayward, M. L. A., 2012. Helping other ceos avoid bad press social exchange and impression management support

among ceos in communications with journalists. *Administrative Science Quarterly*, 57(2), 217-268.

Wintoki, M. B., Linck, J. S., and Netter, J. M., 2012. Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, 105(3), 581-606.

Wooldridge, J. M., 2010. *Econometric analysis of cross section and panel data.* MIT press.

Xie, B., Davidson, W. N., and DaDalt, P. J., 2003. Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance*, 9(3), 295-316.

Yang, J. H. and Liu, S., 2017. Accounting narratives and impression management on social media. *Accounting and Business Research*, 47(6), 673-694.

Yang, J. S. and Krishnan, J., 2005. Audit committees and quarterly earnings management. *International Journal of Auditing*, 9(3), 201-219.

Yekini, K. C., Adelopo, I., Andrikopoulos, P., and Yekini, S., 2015. Impact of board independence on the quality of community disclosures in annual reports. *Accounting Forum*, 39(4), 249-267.

Yermack, D., 1996. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185-211.

Young, J. J., 2003. Constructing, persuading and silencing: The rhetoric of accounting standards. *Accounting, Organizations and Society*, 28(6), 621-638.

Zhang, J., 2015. Voluntary information disclosure on social media. *Decision Support Systems*, 73, 28-36.

Zucker, L. G., 1977. The role of institutionalization in cultural persistence. *American Sociological Review*, 726-743.

# Appendices to Chapter 4

**Appendix 1 List of earnings-related tweets with a negative tone**

| Company name | Earnings-related tweets with a negative tone |
|---|---|
| Aviva | FY14 CEO: "It would be wrong to assume our turnaround is nearing completion – we have further to travel than the distance we have come." Mar 05, 2015 **(1)** |
| Johnson Matthey | PMP Manufacturing sales down 3% to £259m, flat at constant rates. Mixed performance in businesses. Live: http://t.co/3nrlNyuzQR Jun 04, 2015 **(2)** |
| | PMP Services sales down 26% to £120m. Impact of Anglo contracts and a mixed year in Refining. Live: http://t.co/3nrlNyuzQR Jun 04, 2015 **(3)** |
| | Precious Metal Products impacted by changes in Anglo contracts. Sales -12% to £379m. Excl. Anglo performance steady http://t.co/3nrlNyuzQR Jun 04, 2015 **(4)** |
| | ROIC fell below our 20% target (18.8%) following change in Anglo Platinum contracts and increase in pgm balances. http://t.co/3nrlNyuzQR Jun 04, 2015 **(5)** |
| | Results: ROIC at 18.8%, down 2% due to loss of income from Anglo Platinum and higher working capital. http://t.co/V4wSmduO4S Jun 04, 2015 **(6)** |
| Reed Elsevier | #ReedElsevier print revenues were just 18% compared with 64% in 2000, or 50% in 2007 #ReedElsevier #results #RELX #digitaltransformation Feb 26, 2015 **(7)** |
| Royal Bank of Scotland Group | RBS results: £3.5bn attributable loss following a £4bn write-down on Citizens. Feb 26, 2015 **(8)** |
| BP | Underlying replacement cost profit for 4Q was $2.2b, compared with $2.8b for 4Q 2013 #BP $BP Feb 03, 2015 **(9)** |
| | Full year underlying replacement cost profit was $12.1b compared with $13.4b reported for 2013 #BP $BP Feb 03, 2015 **(10)** |
| Glaxosmithkline | 2014 Gp sales £23bn (-3%), core EPS 95.4p (-1%).Both ex-div'ments. EPS benefit from cost & fin efficiencies #GSKFY14 http://t.co/W7BKku1b9q Feb 04, 2015 **(11)** |
| Kingfisher | Kingfisher reports sales up 2.9%, adjusted pre-tax profit of £675m, down 7.5% http://t.co/knLAee6s6I #KGFFY Mar 31, 2015 **(12)** |

**Note**: The criteria for negative earnings-related tweets = tweets containing **ANY** negative information.

## Appendix 2 Coding guidelines with examples

*1. Coding for earnings-related tweets*

Earnings-related tweet is defined as a tweet that contains any information related to the content of earnings press release or the management presentation of firm performance held on a firm's annual earnings announcement day. Although majority of the firms in the sample dedicated all their tweets posted on that day to earnings announcement, a handful of firms did tweet some contents that are irrelevant to earnings announcement once the event ended. Thus tweets that are not directly related to a firm's earnings announcement event are coded as non-earnings-related tweets. For example, tweets for customer-orientated communications. Earnings-related tweets are coded as 1; non-earnings-related tweets are coded as 0. See below a coding example for tweets from Barratt Developments and Tullow Oil.

Coding example: earnings-related tweets

| Firm name | EA date | Tweets posted on EA date | Earnings-related tweet (yes-1, no-0) |
|---|---|---|---|
| Barratt Developments PLC | 10/09/14 | This morning we have announced our annual results for the year ended 30 June 2014: http://t.co/GgV0nnnSgZ Sep 10, 2014 | 1 |
| | | Mark Clare said: "The significant improvement in performance has been driven by the £3.9bn we have committed to land investment since 2009" Sep 10, 2014 | 1 |
| | | Today, we have also released our Corporate Socio Economic Footprint 2014 http://t.co/KyKg8SzTYR Sep 10, 2014 | 1 |
| | | @maverick_mac Please DM your address and tel number so we can investigate your query Sep 10, 2014 | 0 |
| Tullow Oil PLC | 11/02/15 | #Tullow announces its 2014 full year results. Further information is available online: http://t.co/sfdDZVoaT4 Feb 11, 2015 | 1 |
| | | #Tullow CEO, Aidan Heavey, we have reset our business and are focusing our capex on high-quality, low-cost oil production in West Africa Feb 11, 2015 | 1 |
| | | #TENProject is 50% complete; on budget and on track for first oil in mid-2016 and ramp up towards FPSO capacity of 80k bopd by end of 2016 Feb 11, 2015 | 1 |
| | | FY results - 2014 revenue of $2.2 billion and pre-tax operating cash flow of $1.5 billion Feb 11, 2015 | 1 |
| | | @christinejoyt Christine, please use the contact us link on the https://t.co/hWOL14ldno website for help with the application. Feb 11, 2015 | 0 |

*2. Coding for the tone of earnings-related tweets*

The tone of earnings-related tweets are classified as positive, negative or neutral. Manual coding was conducted to assess the earnings-related tweets individually by examining whether the attitude or activity that is reflected in each tweet is beneficial, detrimental or indifferent to the firms. The tone of a earnings-related tweet was classified as (1) positive when the tweet emphasised the firm's positive performance or the nature of information is beneficial to the firm, (2) negative when the tweet reports on the firm's negative performance or the nature of information is detrimental to the firm and (3) neutral if the tweet is a neutral fact statement without indicating any beneficial or detrimental effect to the firm. See below a coding example.

Coding example: the tone of earnings-related tweets

| **Firm name** | **EA date** | **Earnings-related tweets** | **Tone** |
|---|---|---|---|
| 3i | 14/05/15 | CEO:"PE had a very successful year thanks to strong earnings growth in the portfolio & better than expected flows from realisations" #3iFY15 May 14, 2015 | Positive |
| | | CEO: "3i's Infrastructure team had a good year as the European portfolio continued to perform well" #3iFY15 May 14, 2015 | Positive |
| Johnson Matthey | 04/06/15 | Results: ROIC at 18.8%, down 2% due to loss of income from Anglo Platinum and higher working capital. http://t.co/V4wSmduO4S Jun 04, 2015 | Negative |
| | | PMP Services sales down 26% to £120m. Impact of Anglo contracts and a mixed year in Refining. Live: http://t.co/3nrlNyuzQR Jun 04, | Negative |
| ARM Holdings | 11/02/15 | An #ARM-based chip was shipped every 380 seconds in 2014, to 12 Billion: http://t.co/yvScHPr6zS $ARMH #ARMEarnings Feb 11, 2015 | Neutral |
| Hammerson | 16/02/15 | We've welcomed 8 million visitors to Terrasses du Port in Marseille #HammersonFY http://t.co/oAYhRLiMVS Feb 16, 2015 | Neutral |

*3. Coding for self-presentational patterns*

*Narrative information*

Narrative earnings-related tweet is distinguished from announcement-only tweet. If an earnings-related tweet contains any narrative information that describes a firm's earnings and performance details, then it is classified as narrative earnings-related tweet. If an earnings-related tweet does not contain any material information about financial performance and only serves as an earnings announcement reminder that informs firms' Twitter followers about the release of annual results or the timing of presentations, then it is classified as announcement-only tweet. A dichotomous coding scheme is adopted for the coding of narrative information in each earnings-related tweet. Narrative earnings-related tweet is coded as 1; and announcement-only tweet is coded as 0. See below a coding example.

Coding example: earnings-related tweets with narrative information

| **Firm name** | **EA date** | **Earnings-related tweets** | **Narrative (yes-1, no-0)** |
|---|---|---|---|
| easyJet | 18/11/14 | We've announced our financial results for the year ended 30 September 2014: http://t.co/zP3yFjjO77 Nov 18, 2014 | 0 |
| BAE Systems | 19/02/15 | Ian King: "In 2014, BAE Systems delivered a solid overall performance in line with guidance: http://t.co/IGsipIOrEQ Feb 19, 2015 | 1 |
| Anglo American | 13/02/15 | We've released our 2014 results, showing significant operational improvements amid lower commodity prices. http://t.co/mhs5mIcA1z Feb 13, 2015 | 1 |
| AstraZeneca | 05/02/15 | AstraZeneca publishes fourth quarter and Full Year 2014 financial results http://t.co/K6TgDbAjKG Feb 05, 2015 | 0 |

*Quantitative information*

Quantitative earnings-related tweets refer to tweets that contain any of the following quantitative indicators: (i) numerical monetary amount, (ii) performance percentage or (iii) any other performance number. Type (iii) includes only standalone numbers that provide performance-related information; therefore, dates and times (end of financial year, time of presentation) were excluded in the coding. A dichotomous coding scheme is adopted for the coding of quantitative information in each earnings-related tweet. If an earnings-related tweet contain any of the above quantitative indicators, then it is code as 1; 0 otherwise.

Coding example: quantitative information

| **Firm name** | **EA date** | **Earnings-related tweets** | **Quantitative (yes-1, no-0)** |
|---|---|---|---|
| AstraZeneca | 05/02/15 | Full year revenue up 3%. Q4 revenue up 2%, 4th consecutive quarter of revenue growth Feb 05, 2015 | 1 |
| BAE Systems | 19/02/15 | Ian King: “In 2014, BAE Systems delivered a solid overall performance in line with guidance: http://t.co/IGsipIOrEQ Feb 19, 2015 | 0 |
| Anglo American | 13/02/15 | We achieved strong new business growth across broad range of strategies, channels, regions with net inflows £24.8bn http://t.co/Zef4BH4zOM Mar 05, 2015 | 1 |
| Anglo American | 13/02/15 | We've released our 2014 results, showing significant operational improvements amid lower commodity prices. http://t.co/mhs5mIcA1z Feb 13, 2015 | 0 |

*Visual information*

Visual earnings-related tweets are earnings-related tweets that contain any graphs, pictures, photographs or videos. A dichotomous coding scheme is adopted for the coding of visual information in each earnings-related tweet. If a earnings-related tweet contains any of the above visual format then it is code as 1; 0 otherwise. See below a coding example.

Coding example: visual information

| **Firm name** | **EA date** | **Earnings-related tweets** | **Visual (yes-1, no-0)** |
|---|---|---|---|
| RSA Insurance Group | 26/02/15 | **RSA Insurance Group** @rsagroup · 26 Feb 2015<br>**"2014 was an important yr for RSA. We did what we set out to do but there are some strong headwinds ahead"** #RSAresults #InvestorPresentation<br>2 | 0 |
| Royal Bank of Scotland | 26/02/15 | **RBS** @RBS · 26 Feb 2015<br>**VIDEO: CFO Ewen Stevenson talks about annual results and the bank's achievements in 2014:**<br>  <br>Ewen Stevenson - 2014 Annual Results<br>RBS CFO, Ewen Stevenson discusses the bank's annual results for 2014<br>youtube.com<br>4 | 1 |
| British Land | 14/05/15 | **British Land PLC** @BritishLandPLC · 14 May 2015<br>**Valuations ahead in retail; rental growth strongest for 7 years; broader range of brands; footfall outperforming**<br>  <br>1,137,000 sq ft<br>8.7% AHEAD OF ERV<br>RETAILER SALES<br>+11%<br>AVERAGE SPEND<br>98.5%<br>OCCUPANCY<br>+4.5%<br>DWELL TIME<br>+1.9%<br>FOOTFALL<br>OUTPERFORMING MARKET BY 290BPS<br>+2.5%<br>ERV GROWTH<br>+4%<br>FREQUENCY OF VISITS<br>RESHAPING RETAIL<br>£1.5bn<br>7<br>1 | 1 |

*4. Coding for dissemination tools*

*Hashtag/cashtag*

A dichotomous coding scheme is adopted for each tweet. If an earnings-related tweet contains any hashtag '#' or cashtag '$', then it is coded as 1; 0 otherwise.

*Hyperlink*

A dichotomous coding scheme is adopted for each tweet. If an earnings-related tweet contains any hyperlink, then it is coded as 1; 0 otherwise.

Coding example: dissemination tools

| **Firm name** | **EA date** | **Earnings-related tweets** | **Hash/ cashtag (yes-1, no-0)** | **Hyper link (yes-1, no-0)** |
|---|---|---|---|---|
| 3i | 14/05/15 |  | 1 | 0 |
| British Land | 14/05/15 |  | 1 | 0 |
| Aviva | 05/03/15 |  | 1 | 1 |
| Johnson Matthey | 04/06/15 |  | 0 | 1 |
| BAE Systems | 19/02/15 |  | 0 | 0 |

*5. Coding for best tweets*

A dichotomous coding scheme is adopted for each tweet. Each firm's profile page on Twitter was visited to identify whether an earnings-related tweet is displayed in a larger font size. If so, the tweet is coded as 1; 0 otherwise. See below a coding example.

Coding example: best tweets

| **Firm name** | **EA date** | **Earnings-related tweets** | **Best tweet (yes-1, no-0)** |
|---|---|---|---|
| Barclays | 03/03/15 |  | 1 |
| Barclays | 03/03/15 |  | 0 |

# Appendix to Chapter 5

**Appendix 3 List of variable definitions**

| Variable | Description | Definition | Sources |
|---|---|---|---|
| VOLUME | Level of financial disclosure | The total number of earnings-related tweets that firms posted during annual earnings announcement events on Twitter. | Twitter.com |
| CONNECT | Connectivity of financial disclosure | An index score that measures the overall connectivity of a firm's earnings-related tweets, ranging from the value of 0 to 4. See Table 5.2 for the method to calculate the CONNECT score. | Twitter.com |
| TEXT | Textual connectivity | A dummy variable that takes a value of 1 if a firm's earnings-related tweets contain performance details; and 0 otherwise. | Twitter.com |
| HYPERLINK | Intertextual connectivity | A dummy variable that takes a value of 1 if a firm's earnings-related tweets contain hyperlinks; and 0 otherwise. | Twitter.com |
| HASH | Intertextual connectivity | A dummy variable that takes a value of 1 if a firm's earnings-related tweets contain hashtags or cashtags; and 0 otherwise. | Twitter.com |
| VISUAL | Relational connectivity | A dummy variable that takes a value of 1 if a firm's earnings-related tweets contain visuals such as videos, photos and pictures; and 0 otherwise. | Twitter.com |
| IND | Board independence | The percentage of independent directors on the corporate board. | Bloomberg |
| WOMEN | Gender diversity | The proportion of female directors on the board. | Bloomberg |
| BoD_SIZE | Board size | The number of directors on the board. | Bloomberg |
| BoD_MEET | Board meeting frequency | The frequency of board meetings in a fiscal year. | Bloomberg |
| AUDIT_SIZE | Audit committee size | The number of directors on the audit committee. | Bloomberg |
| AUDIT_MEET | Audit committee meeting frequency | The frequency of audit committee meetings in a fiscal year. | Bloomberg |

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| ENGAGE | Total stakeholder engagement | The total number of replies, retweets and likes that a firm received for its earnings-related tweets. | Twitter.com |
| REPLY | Stakeholder engagement-replies | The total number of replies that a firm received for its earnings-related tweets. | Twitter.com |
| RETWEET | Stakeholder engagement-retweets | The total number of retweets that a firm received for its earnings-related tweets. | Twitter.com |
| LIKE | Stakeholder engagement-likes | The total number of likes that a firm received for its earnings-related tweets. | Twitter.com |
| FOLLOWERS | Twitter users that subscribe to a firm's Twitter updates | The total number of followers of a firm's official corporate Twitter account as of September 2017. | Twitter.com |
| FOLLOWING | Twitter users that a firm's Twitter account follows | The total number of followings of a firm's official corporate Twitter account as of September 2017. | Twitter.com |
| TWITTER_AGE | Twitter age | The number of years as of September 2017 since the first tweet of a firm's official corporate Twitter account. | Twitter.com |
| SIZE | Firm size | Market capitalisation of a firm. | Bloomberg |
| ROA | ROA | The ratio of net income divided by average total assets. | Bloomberg |
| LEVERAGE | Leverage | The ratio of total debt divided by total assets. | Bloomberg |
| MTB | Market to book ratio | The ratio of book value of a firm divided by market value of a firm. | Bloomberg |