Deciphering CEO disclosure tone inconsistency: a behavioural exploration

Article *in* Review of Behavioral Finance · September 2024

DOI: 10.1108/RBF-04-2024-0112

3 authors:

Azam Pouryousof
Payame Noor University

Farzaneh Nassirzadeh
Ferdowsi University Of Mashhad

Davood Askarany
University of Auckland

The current issue and full text archive of this journal is available on Emerald Insight at:
https://www.emerald.com/insight/1940-5979.htm

Deciphering CEO disclosure tone inconsistency: a behavioural exploration

Review of Behavioral Finance

Azam Pouryousof
Faculty of Management, Economics and Accounting, Payame Noor University, Tehran, Iran
Farzaneh Nassirzadeh
Faculty of Economics and Administrative Sciences, Ferdowsi University of Mashhad, Mashhad, Iran, and
Davood Askarany
Department of Accounting and Finance, The University of Auckland, Auckland, New Zealand

Received 20 April 2024
Revised 22 June 2024
Accepted 4 August 2024

Abstract

Purpose – This research employs a behavioural approach to investigate the determinants of CEO disclosure tone inconsistency. By examining CEO characteristics and psychological attributes, the study aims to unravel the complexities underlying tone variations in Management Discussion and Analysis (MD&A) reports. Through this exploration, the research seeks to contribute to understanding ethical considerations in corporate communications and provide insights into the nuanced interplay between personal, job-related and psychological factors influencing CEO disclosure tone.

Design/methodology/approach – The study utilises a dataset comprising 1,411 MD&A reports from 143 companies listed on the Tehran Stock Exchange between 2012 and 2021. Multiple regression analyses with year- and industry-fixed effects are employed to examine the relationships between CEO gender, tenure, duality, ability and psychological attributes such as narcissism, myopia, overconfidence and tone inconsistency. Data analysis involves MAXQDA software for analysing MD&A reports and Rahavard Novin software for document analysis, supplemented by audited financial statements.

Findings – The findings reveal significant relationships between CEO characteristics, psychological attributes and tone inconsistency. Female CEOs exhibit reduced tone inconsistency, contrasting with previous research trends. CEO tenure correlates negatively with tone inconsistency, whereas CEO ability shows a positive correlation, indicating a nuanced relationship with performance. However, CEO duality does not exhibit a significant association. Psychological attributes such as narcissism and myopia are positively associated with tone inconsistency, while no substantial connection is found with managerial overconfidence.

Originality/value – This research contributes to the inaugural exploration of CEO disclosure tone inconsistency through a behavioural lens, advancing measurement precision in the field. By delving into CEO characteristics and psychological attributes, the study offers unique insights into the roots of tone inconsistency. Applying comprehensive lexicon and phraseology enriches the methodological approach, fostering dialogue among diverse stakeholders and adding distinct perspectives to the discourse on ethical issues in business. Through its meticulous examination of behavioural underpinnings, this study becomes a catalyst for reflection, dialogue and progress in corporate communications and ethical considerations.

Keywords Writing tone, Tone inconsistency, Personal characteristics, Overconfidence, Narcissism, Myopia
Paper type Research paper

Introduction

The tone CEOs adopt in their disclosures is critical in corporate communications, drawing significant scrutiny (Loughran and McDonald, 2015). This study uses a behavioural approach to explore the complex determinants of CEO disclosure tone inconsistency. This study aligns with the Journal of Business Ethics' commitment to promoting research on ethical business practices.

We would like to express our sincere gratitude to the anonymous reviewers for their insightful and constructive comments throughout the review process. Their feedback has been invaluable in enhancing the quality and clarity of this manuscript. Thank you for their times and expertise.

1940-5979
DOI 10.1108/RBF-04-2024-0112

The research focuses on CEO disclosure tone inconsistency, influenced by personal, job-related, and psychological attributes embedded in ethical decision-making. Using a comprehensive dataset from the Tehran Stock Exchange, covering nearly a decade of Management Discussion and Analysis (MD&A) reports, the study employs rigorous methodologies, such as multiple regression analyses with year and industry-fixed effects.

Key findings include the impact of CEO gender, tenure, psychological attributes, and CEO duality on tone inconsistency. Female CEOs and longer tenures are associated with less tone inconsistency, while psychological attributes play a significant role. Despite no significant link found with overconfidence, these factors illuminate the complex interplay influencing CEO communication.

This research broadens the understanding of CEO disclosure tone inconsistency, emphasizing the importance of considering diverse attributes beyond traditional motivations. The implications extend to practical recommendations for stakeholders in capital markets, offering avenues for further inquiry. The study fosters dialogue across academia and corporate boardrooms, enriching the discourse on ethical business practices and transparency in corporate communications.

With this contextual backdrop, this paper is poised to unravel the complexities underlying CEO disclosure tone inconsistency, adding a distinct hue to the evolving discourse on business ethics. Through its meticulous examination of behavioural underpinnings, this study becomes a catalyst for reflection, dialogue, and progress in corporate communications and ethical considerations.

Literature review

Companies need to use both quantitative and qualitative information for communicating with the capital market as recent studies have shown that quantitative information does not provide a complete picture of the company's position and performance (Arslan-Ayaydin *et al.*, 2016; Davis *et al.*, 2015; Huang *et al.*, 2014). Qualitative disclosures, such as earnings announcements, earnings press releases, conference calls, MD&As, and letters to shareholders, play an essential role in helping users process quantitative information. Organisational behaviour research is increasingly recognizing the importance of qualitative data, including the tone and language of earnings press releases (Herrbach, 2006), news flashes (Hales *et al.*, 2011), MD&As (Engelberg, 2008), letters to shareholders, conference calls (Feldman *et al.*, 2008), and explanatory notes.

In recent years, a growing body of research has examined qualitative reports' readability, tone, clarity, and format, mainly focusing on their influence on investor decision-making. The concept of tone pertains to the level of optimism or pessimism conveyed through the language employed in managers' financial reports. It is typically quantified by calculating the difference between the count of positive words and negative words. The term "abnormal tone" or "residual tone" refers to positive language that the company's economic circumstances and fundamental factors cannot adequately justify.

The source of inconsistency in the tone of CEO disclosures can be examined from three different perspectives. According to the first perspective, CEOs may use a disclosure tone to signal the market, reducing information asymmetry. The second perspective emphasizes the opportunistic behaviour and personal incentives of CEOs. According to the third perspective, CEO disclosure tone is unintentional and stems from their individual characteristics. Therefore, it is necessary to investigate whether disclosure tone inconsistency is a positive phenomenon that indicates managers' deliberate effort to signal to investors. This negative phenomenon suggests a deliberate attempt by CEOs to pursue their personal interests or the result of managers' unintentional behaviours.

Prior research has documented the existence of tone inconsistency in CEO disclosures, but the reasons for this inconsistency and whether it is intentional or unintentional are not well understood. Therefore, the present research seeks to fill this gap in the literature by investigating CEOs' personal and behavioural characteristics as a potential source of tone inconsistency in MD&As. The tone of MD&As is measured based on residual tone, and the factors affecting tone inconsistency are investigated from a behavioural perspective. Liu and Nguyen (2020) and Loughran (2018) have also called for investigations into the sources of tone inconsistency. Second, word combinations are added to the common word list, which has been a limitation in some studies.

Following Liu and Nguyen (2020) and Pouryousof *et al.* (2022), the present research uses residual tone to measure CEO disclosure tone inconsistency in Iran.

We believe conducting this study in Iran, an emerging market with cultural and contextual differences from the Western world, will provide valuable insights into the unique factors influencing CEO disclosure tone consistency. Iran presents a distinctive context for studying CEO disclosure tone inconsistency as an emerging market. Emerging markets' economic, political, and regulatory environments differ significantly from established ones. These differences can influence managerial behaviours, including the tone of corporate disclosures. Examining CEO disclosure tone inconsistency in Iran will enhance our understanding of disclosure practices within emerging economies, contributing to the broader literature on corporate communication and governance.

Cultural and contextual factors significantly impact managerial decision-making and communication styles. Iran has a rich cultural heritage, and unique societal norms shape business practices. Studying CEO disclosure tone inconsistency in Iran will shed light on how cultural and contextual factors influence disclosure practices and provide valuable comparative insights for scholars and practitioners across different regions.

Iran's corporate disclosure regulatory framework may differ from that of its Western counterparts. Understanding how these regulations influence CEO disclosure tone inconsistency can guide policymakers, regulatory bodies, and market participants. It will also aid in identifying potential gaps or areas of improvement in the existing regulatory framework, contributing to enhancing transparency and accountability in Iran's business environment.

Our proposed study adopts a behavioural perspective to investigate the factors affecting CEO disclosure tone inconsistency. This approach recognizes the influence of individual characteristics, cognitive biases, and psychological factors on managerial decision-making and communication. Examining these behavioural aspects in the Iranian context can enrich our understanding of how psychological factors interact with cultural and contextual factors to shape CEO disclosure tone inconsistency.

Theoretical perspective

We are conducting this study via the lens of behavioural analysis theory. This theory posits that personal characteristics, cognitive biases, and psychological attributes influence individual behaviour (Calma, 2019; Rahman, 2020). In this study, the researchers investigate the determinants of CEO disclosure tone inconsistency by examining CEO personal and job characteristics (such as gender, tenure, and duality) and psychological factors (including narcissism, myopia, and overconfidence). The study's findings align with behavioural theory by demonstrating how these individual characteristics and psychological traits influence CEO behaviour, specifically in disclosure tone inconsistency.

Furthermore, the study employs multiple regression analyses to explore the relationships between these factors, a common method used in behavioural research to analyse the influence of various variables on human behaviour. The emphasis on understanding CEOs' psychological attributes and personal characteristics in shaping their disclosure behaviour aligns with the central tenets of Behavioural Theory, which emphasizes the importance of individual decision-making processes and psychological factors in shaping behaviour (Calma, 2019; Rahman, 2020).

By adopting a behavioural perspective and examining how individual characteristics and psychological attributes influence CEO disclosure tone inconsistency, this study aligns with Behavioural Theory. It contributes to our understanding of how human behaviour affects corporate communication practices.

We believe this research study will contribute to the literature on CEO disclosure tone inconsistency and corporate communication from a behavioural perspective. Additionally, it will offer valuable insights into the unique context of Iran as an emerging market, addressing the gaps in current research focused on Western markets.

In recent years, Iran's ranking has fallen in the Strength of Investor Protection Index [1]. Mary Jo White, former chair of the United States Securities and Exchange Commission, states that the critical mission of the SEC is protecting investors. The market may not take biased disclosure tones (intentional or unintentional) seriously due to the voluntary nature of these disclosures. However, it can mislead investors and lead to stock price fluctuations. Various studies have shown that shareholders and market pricing deviation are the results of tone management (Baginski *et al.*, 2018). Hossain *et al.* (2020) find that an abnormal positive disclosure tone is associated with a higher likelihood of a going-concern modified audit opinion. They also find that the abnormal tone of disclosures is associated with lower type II and type I errors for going-concern modified audit opinions. Therefore, it is necessary to investigate the origins and determinants of disclosure tone inconsistency.

According to the websites and domestic news of Iran and Varnamkhasti (2022), in recent years in Iran, we have seen an increase in earning management, fraud and embezzlement and a decrease in financial transparency in large institutions. While these institutions are facing significant problems in providing resources, liquidity, and investment, there is no sign of disclosing these problems in financial reports. In other words, the managers' tone in the explanatory reports is positive and biased. Therefore, it seems necessary to investigate reasons for inconsistency and whether it is intentional or unintentional. We are motivated to examine the origin of biased tone according to different perspectives in this research and future research. The findings will affect regulators, policymakers, and practitioners seeking to enhance transparency and accountability in emerging economies.

The present research contributes to the literature in two significant ways. First, it responds to the calls by Loughran (2018) and Liu and Nguyen (2020) for investigations into the sources of tone inconsistency by providing a thorough study of CEO disclosure tone inconsistency from a behavioural perspective, which has been a gap in the literature (Stuart *et al.*, 2021). To do so, the effect of individual characteristics (gender), job characteristics (tenure, duality, and ability), and psychological characteristics (narcissism, myopia, and overconfidence) on CEO disclosure tone inconsistency are examined. The results of this research shed light on whether tone inconsistency is intentional or unintentional. CEO disclosure tone inconsistency can increase stock price volatility, increase information asymmetry, reduce the information content of reports, and lower market efficiency, and finding its roots can be helpful in reducing these detrimental effects. Second, the present research uses a common word list along with word combinations to measure tone, which addresses the limitations of the word list to some extent.

Hypothesis development

Companies communicate with their shareholders through quantitative and qualitative information (Tran *et al.*, 2023). Prior research suggests that quantitative information does not provide a complete picture of a company's performance and must be accompanied by qualitative disclosures (e.g. earnings announcements, press releases, conference calls, MD&A sections in 10-Ks or 10-Qs, letters to shareholders, etc.) to help stakeholders process the information provided in financial reports (e.g. Davis *et al.*, 2015; Arslan-Ayaydin *et al.*, 2016; Luo and Zhou, 2017). Various studies have shown that managers' tone can be informative and significantly influence investor decisions (e.g. Huang *et al.*, 2014). Like opportunistic reporting of quantitative information, inflating the tone of qualitative disclosures can negatively impact shareholders' wealth (Huang *et al.*, 2014) and thus increase the company's litigation risk (Rogers *et al.*, 2011). Therefore, it is essential to investigate disclosure tone's usefulness, determinants, and measures.

Prior reviews e.g. (Li, 2010) have focused on the measures and consequences of financial disclosure tone, while its determinants have primarily been overlooked. For example, Li (2010) reviews the methods for measuring disclosure tone and readability and discusses its implications for earnings quality, stock returns, and corporate financial policies. Kearney and Liu (2014) focus on the behavioural aspect of disclosure tone by examining sentiment in corporate disclosures, media articles, and Internet postings and its effect on returns, trading volume, and volatility. Meanwhile, Henry and Leone (2016) compare alternative measures of narrative disclosure tone, such as word count and actions, based on Naïve Bayesian machine learning (Loughran and McDonald, 2011). The present research contributes to the extant literature by reviewing the determinants of disclosure tone while providing an updated summary of its measures and usefulness.

The usefulness of disclosure tone

Disclosure tone significantly influences users' decisions, such as investors, analysts, and auditors. Various studies have shown that the tone of disclosures affects stock returns and return volatility e.g. (Kothari *et al.*, 2009). For instance, confident language in letters to shareholders can lead to higher stock returns (Swales, 1988) and vice versa (Abrahamson and Amir, 1996). Feldman *et al.* (2008) showed that the market reacts more positively when the disclosure tone in Forms 10-Q and 10-K is overly optimistic. Loughran and McDonald (2011) observed higher market returns in response to positive sentiment in 10-K filings. Demers and Vega (2010) found that an overly optimistic tone in earnings announcements is associated with abnormal positive returns and post-earnings announcement drift. Bowen *et al.* (2018) documented a positive association between the tone of the private meeting summary reports and stock market reactions. On the other hand, the impact of tone on stock market reactions increases the litigation risk associated with qualitative disclosures. Rogers *et al.* (2011) found that firms whose tone of earnings announcements is overly optimistic have a higher risk of litigation.

Determinants of disclosure tone

Various studies have explored the determinants of tone in the last decade. In general, these factors can be divided into three categories:

(1) Firm fundamentals (e.g. growth, size, complexity); for example, Yan and Hwang (2021), Wu *et al.* (2021) and Patelli and Pedrini (2015).

(2) Managerial opportunism (e.g. compensation, CEO power); for example (Cheng *et al.*, 2020; Huang *et al.*, 2014; Lee and Park, 2019) Arslan-Ayaydin *et al.* (2016), Davis *et al.* (2012) and Huang *et al.* (2014).

(3) Management characteristics (e.g. optimism, narcissism, age, ability) are presented in the next section.

Management characteristics

Various studies have shown that individual managers' characteristics significantly affect company financial reporting choices. This is especially true for the tone and language of financial disclosures (Davis *et al.*, 2015). The tone of financial disclosure is affected by management opportunism as well as individual managerial characteristics such as optimism (Davis *et al.*, 2015), narcissism (Buchholz *et al.*, 2018), age and ability (Luo and Zhou, 2017). For example, Davis *et al.* (2015) found that managers' optimistic/pessimistic tendencies due to their past experiences affect disclosure tone beyond what is explained by current or future financial performance. They also found that disclosure tone is influenced by manager-specific factors such as early career experiences and involvement in charitable organizations.

So, the sources of inconsistency in CEO disclosure tone can be examined from three different perspectives: the signalling perspective (rational decision), the opportunistic perspective (personal incentives), and the behavioural perspective (personal and behavioural characteristics). The behavioural perspective was proposed by Merkl-Davies and Brennan (2007). They argue that the use of tone and its inconsistency may be the result of unintentional biases that stem from the CEO's personal characteristics (e.g. age, gender), job characteristics (e.g. tenure, experience, ability), or psychological aspects (e.g. personality, overconfidence, narcissism, optimism, myopia).

Also, studies in Iran have investigated the behavioural characteristics of managers and the effects they can have on financial reporting:

Emami *et al.* (2024) showed that entrepreneurs' narcissism positively affects their social responsibility, while entrepreneurs' hubris negatively affects their social responsibility. Gender moderates the relationship between entrepreneurs' hubris and narcissism on personal social responsibility. Our findings suggest that personality traits (i.e. narcissism and hubris) and gender play a more critical role in an entrepreneur's tendency toward social responsibility than experience.

Arianpoor and Yazdanpanah (2023) showed that the cash flow from operations and accrual management significantly affects the credit rating quality. The managerial entrenchment, managerial narcissism and managerial myopia have significant adverse effects on credit rating quality, while the impact of managerial overconfidence on credit rating quality is insignificant.

Arianpoor *et al.* (2023) showed that managerial myopia/managerial entrenchment) has a negative effect on SCME.

Salehi *et al.* (2021) showed that managers with narcissistic personality traits prioritize their position, interests and goals. Therefore, there is more possibility of information distortion and denying the existing internal controls, leading to increased misreporting.

Almaleki *et al.* (2021) showed that managerial narcissism is positively and significantly associated with Iran's financial statement comparability.

Development of hypotheses

Patelli and Pedrini (2015) argue that the positive tone of CEOs in conference calls can be explained by their age, gender, and work experience. They find that using an inflated tone (i.e. overly optimistic tone) is less common in companies with female or younger CEOs. DeBoskey *et al.* (2019) report that powerful CEOs (longer tenure and duality) tend to have an abnormally positive tone. Liu and Nguyen (2020) find that the CEO's gender affects their tone, with female CEOs using a more neutral tone. Similarly, Bassyouny *et al.* (2020) report that older CEOs, female CEOs, and CEOs with financial experience have a less positive tone. Similarly, Arslan-Ayaydin *et al.* (2016) show that an overly optimistic tone is more common when CEOs are younger, less capable, and less experienced. Ezat (2020) finds that CEO tenure is the only variable related to the CEO's power significantly associated with disclosure tone.

Yan and Hwang (2021) show that CEOs with high ability are likelier to hide bad news and thus tend to display more inconsistency in disclosure tone. Demerjian *et al.* (2012) argue that managers with high knowledge have a better understanding of the company and the industry, thus making more reliable predictions and displaying less overconfidence. Johnson and Fowler (2011) support this prediction as they define overconfidence as an "error" in judgement about one's capabilities, the difficulty of a task, or possible risks. Similarly, Trevelyan (2008) highlights that optimism and overconfidence are two independent concepts in that optimism benefits managers, while overconfidence prevents managers from thoroughly assessing risks. Therefore, managers with high ability will be optimistic rather than overconfident because they have better judgement, which can reduce cognitive bias.

Given the results of these studies, we expect that CEOs' personal and job characteristics will affect their disclosure tone and be associated with tone inconsistencies. Therefore, the first hypothesis is developed as follows:

H1. There is a significant relationship between the personal and job characteristics of the CEO and their disclosure tone inconsistency.

H1a. There is a significant relationship between the gender of the CEO and their disclosure tone inconsistency.

H1b. There is a significant relationship between CEO tenure and disclosure tone inconsistency.

H1c. There is a significant relationship between the duality of the CEO and their disclosure tone inconsistency.

H1d. There is a significant relationship between the ability of CEOs and their disclosure tone inconsistency.

Liu and Nguyen (2020) show that more confident CEOs use more positive words and less negative words in MD&As. That is because overconfident CEOs have an overly optimistic view of their abilities and the company's prospects and thus underestimate risks. Matsumoto *et al.* (2011) argue that overconfident CEOs have an irrational bias. They attribute good performance to their efforts and poor performance to the external environment. Hence, overconfident managers may view current poor performance as temporary and avoid or delay its disclosure, leading to tone inconsistency. Kim (2017) uses tone to measure CEO overconfidence. Ataullah *et al.* (2018)find that overconfidence extends the maturity of debt instruments. Lee and Park (2019) provide evidence that overconfident CEOs reduce corporate social responsibility (CSR) activities. In addition, the relationship between CEO overconfidence and their tone has been documented in Yan and Hwang (2021), Davis *et al.* (2015), Kearney and Liu (2014) and Merkl-Davies and Brennan (2007).

In addition, recent research suggests that narcissistic CEOs are more likely to paint an overly optimistic picture of their companies' financial position. For example, narcissistic managers have a more positive tone in earnings announcements and 10-K filings (Buchholz *et al.*, 2018), and overly positive and optimistic earnings lead to fraudulent financial reporting, real earnings management. Buchholz *et al.* (2018) and Bassyouny *et al.* (2020) show that narcissistic CEOs tend to be more optimistic than non-narcissistic CEOs. However, the relationship between myopia and CEO disclosure tone has not been investigated. Myopic CEOs focus on short-term performance and place less importance on long-term performance. Meanwhile, empirical evidence by Baginski *et al.* (2018) shows that a biased tone will be revealed, and the market cannot be misled in the long term. Therefore, myopic managers may use a more biased tone in their disclosures to paint a favourable picture of the financial position and performance of the company or to justify current poor performance, which will lead to tone inconsistency.

According to these arguments, the second hypothesis is developed as follows:

H2. There is a significant relationship between the psychological state of the CEO and the disclosure tone inconsistency.

H2a. There is a significant relationship between the myopia of the CEO and their disclosure tone inconsistency.

H2b. There is a significant relationship between the narcissism of the CEO and their disclosure tone inconsistency.

H2c. There is a significant relationship between the overconfidence of the CEO and their disclosure tone inconsistency.

Research methodology

The population of interest for this study encompasses all companies listed on the Tehran Stock Exchange (TSE) from 2009 to 2021. TSE database is a reliable source of information (Daryaei *et al.*, 2022; Eghbal *et al.*, 2024; Nassirzadeh *et al.*, 2022, 2023; Pouryousof *et al.*, 2022; Shandiz *et al.*, 2022; Nassir Zadeh *et al.*, 2023). The sample selection criteria include companies that maintained continuous activity throughout the research period without experiencing a trading halt exceeding six months. However, given the unique nature of activities undertaken by investment firms, insurance companies, banks, credit institutions, and holding and leasing companies, they were excluded from the sample. As a result, a total of 143 companies were included in the sample. The hypotheses are tested using data from 2012 to 2021, while data from the sample companies from 2009 to 2011 are also utilized to calculate historical tone inconsistency.

The managers' disclosure tone data in Management Discussion and Analysis (MD&A) reports are analysed using MAXQDA software. Other relevant data is also collected through document analysis utilizing Rahavard Novin software and the audited financial statements of companies listed on the TSE.

Model and variables

The following model is estimated to test the hypotheses regarding the relationship between management *characteristics* and disclosure tone inconsistency. Variables and their measurement are also presented in Table 1.

$$
\begin{aligned}
RSD\_TONE_{it} = {} & \beta_0 + \beta_1 CEO\_FE_{it} + \beta_2 CEO - \ TENU_{it} + \beta_3 CEO - \ DUL_{it} \\
& + \beta_4 CEO\_ABI_{it} + \beta_5 CEO\_OVRECONF_{it} + \beta_6 CEO\_MY_{it} + \beta_7 CEO\_NAR_{it} \\
& + \sum \alpha_t \, year + \sum \alpha_t \, ind + \sum cont + \varepsilon_{it}
\end{aligned}
$$

Measuring tone disclosure inconsistency

Following Henry (2008) and Henry and Leone (2016), disclosure tone is measured as follows using a word list:

Panel A. Main variables

Variable		Proxy	Measurement	Expected sign
Dependent	Residual tone	*RSD_TONE*	The absolute value of the error term in the second equation	
Independent H1	CEO gender	*CEO_GEN*	Male CEO number one and female CEO number zero	+
	CEO tenure	*CEO_TEN*	If the tenure of the CEO is less than the sample average, the number is one; otherwise, the number is zero	+
	CEO duality	*CEO_DUA*	If the CEO is also a board of directors member, the number is one; otherwise, the number is zero	+
	CEO ability	*CEO_ABI*	Model of Demerjian *et al.* (2012)	–
Independent H2	CEO myopia	*CEO_MYO*	Model of Anderson (1982)	+
	CEO narcissism	*CEO_NAR*	Based on two proxies, including the cash bonus approved in the shareholders' meeting divided by the total salary and bonus paid for the financial year and CEO Signature	+
	CEO overconfidence	*CEO_OVE*	Model of Lin (2005)	+

Panel B. Control variables

Variable		Proxy	Measurement	Expected sign	
Firm size		*SIZE*	The logarithm of the market value of equity at the end of the period	Li (2010)	+
Growth opportunities		*MB*	Market to book value of equity		
Financial performance		*ROA*	Net income divided by total assets	Iatridis (2016)	–
		ROE	Net income divided by shareholder's equity		
Financial risk		*STDROA*	The standard deviation of previous and current year ROA		+
		STDROE	The standard deviation of previous and current year ROE		
Company-specific tone inconsistency		*HRSD*	Residual tone of managers in the last three years	Huang *et al.* (2014)	–
Industry-specific tone inconsistency		*IRSD*	The residual tone of disclosures across the industry	Luo and Zhou (2017) Efretuei (2021)	–
Corporate governance	Gender diversity of the board of directors	*GENDERDIV*	Percentage of women on the board of directors	DeBoskey *et al.* (2019) Lee and Park (2019)	–
	tasks diversity	*TASKDIV*	Percentage of non-executive directors	Bassyouny *et al.* (2020)	
	audit quality	*AUDGUL*	Equal to 1 if the Iran Audit Organization audits the firm and 0 otherwise	Ezat (2020)	
	Concentration of ownership	*CON_OWN*	Percentage of shares owned by the largest shareholder		
	Institutional ownership	*INS_OWN*	Percentage of shares owned by institutional investors		

Source(s): Created by the authors

Table 1.
Variables and their measurement

$$Tone = \frac{PW - NW}{PW + NW} \qquad \text{Eq. (1)}$$

PW: The number of positive words, *NW*: The number of negative words.

The present research uses finance-oriented dictionaries from Loughran and McDonald's (L&M). Finally, tone inconsistency is measured as the absolute value of residual (abnormal) tone. Following Huang *et al.* (2014), we regress TONE on a set of variables that proxy for expected risk and return to identify residual tone. Our proxy for residual tone (RSD_TONE) is thus the residual (ε) from the following model:

$$\begin{aligned} Tone_{it} = {} & \beta_0 + \beta_1 EARN_{it} + \beta_2 SIZE_{it} + \beta_3 BTM_{it} \\ & + \beta_4 RET_{it} + \beta_4 STD\_EARN_{it} + \beta_4 STD\_RET_{it} + \beta_4 LOSS_{it} + \beta_4 AGE_{it} + \beta_4 \Delta EARN_{it} \\ & + \varepsilon_{it} \end{aligned} \qquad \text{Eq. (2)}$$

EARN: reported profit, *SIZE*:logarithm of the market value of the total assets, *BTM*:book value to market value, *RET*: annual stock return, *STD_EARN*:standard deviation of the profit, *STD_RET*: standard deviation of the annual stock return, *LOSS*: if the company has a profit, it is one and otherwise is zero, *AGE*: natural logarithm of the years of the company's life and $\Delta EARN$: change in the profit.

Findings

Descriptive statistics

A sample of 1,411 annual reports over the ten years from 2012 to 2021 are analysed. Descriptive statistics are presented in Table 2. The descriptive statistics of the variables show that less than 2% of the observations are female, and the rest are male. Moreover, more than 73% of the observations are myopic CEOs, more than 86% are narcissistic, and the Iran Audit Organization audits more than 80% of the companies with a higher audit quality than other firms. The remainder of the observations have a normal distribution.

Hypothesis testing

The research model is estimated, and the results are presented in Table 3.

The findings in the table above demonstrate the fitted model's statistical significance and reasonable efficiency. The adjusted coefficient of determination reveals that approximately 46.2% of the variability in CEO disclosure tone inconsistency can be accounted for by the variables related to CEOs' personal and psychological characteristics, along with the control variables. Regarding the first hypothesis about the relationship between CEOs' unique and job characteristics and their disclosure tone inconsistency, the results confirm the hypothesis concerning gender. However, the direction of the relationship between CEO tenure and ability is contrary to expectations based on the theoretical framework. While the association is significant, it is opposite to what was hypothesized.

The second hypothesis, which examines the association between the psychological characteristics of CEOs and their disclosure tone inconsistency, is supported for narcissism and myopia at a 95% confidence interval. However, no significant relationship is observed between CEO overconfidence and disclosure tone inconsistency. In other words, the findings suggest that myopic and narcissistic managers tend to exhibit a more biased tone in their disclosures.

	Obs	Mean	Median	Max	Min	Std. Dev	Skewness
RSD_TONE	1,411	0.082	0.064	0.875	0.0001	0.074	2.255
CEO_ABI	1,411	0.03	0.02	0.94	−0.61	0.32	0.65
SIZE	1,411	14.45	14.27	20.23	10.35	1.5	0.85
M/B	1,411	6.67	2.58	2,607	−59.96	70.21	36.08
ROA	1,411	0.189	0.12	5.67	−5.46	0.428	3.11
ROE	1,411	0.58	0.43	42.63	−3.002	1.48	20.86
STDROA	1,411	0.098	0.04	3.79	0.000	0.257	7.6
STDROE	1,411	0.17	0.19	29.47	0.000	1.013	22.14
HRSD	1,411	0.072	0.06	0.74	0.000	0.059	3.25
IRSD	1,411	0.08	0.076	0.48	0.000	0.033	2.45
GENDERDIV	1,411	0.019	0.000	0.2	0.000	0.059	2.67
TASKDIV	1,411	0.715	0.8	8	0.000	0.28	11.99
CON_OWN	1,411	49.42	51	94.94	0.000	21.82	−0.2
INS_OWN	1,411	38.2	28.36	677	0.000	35.53	4.45

Frequently distribution

	0		1	
CEO_GEN	18	1.27%	1,402	98.73%
CEO_TEN	954	67.18%	466	32.82%
CEO_DUA	876	61.69%	544	38.31%
CEO_MYO	1,041	73.31%	379	26.69%
CEO_NAR	194	13.66%	1,226	86.34%
CEO_OVE	503	35.42%	917	58.68%
AUDGUL	1,137	80/07%	283	19.93%

Source(s): Created by the authors

Table 2.
Descriptive statistics

		VIF			VIF
CEO_GEN	0.016* (2.83)	1.457	ROE	0.006 (1.06)	1.389
CEO_TEN	−0.023* (2.17)	1.325	STDROA	−0.0009 (−0.109)	1.498
CEO_DUA	−0.0004 (−0.096)	1.654	STDROE	0.008 (−0.9068)	1.354
CEO_ABI	0.026* (2.599)	1.258	HRSD	0.42* (14.01)	2
CEO_MYO	0.008* (2.613)	1.325	IRSD	0.882* (15.172)	1.369
CEO_NAR	0.088* (2.799)	2.314	GENDERDIV	0.086 (1.84)	1.102
CEO_OVE	−0.003 (−0.949)	2.412	TASKDIV	0.016 (2.89)	2.452
SIZE	−0.002 (−1.449)	2.319	AUDGUL	−0.004 (−0.834)	2.012
M/B	−0.00007 (−0.331)		CON_OWN	0.00002 (0.25)	
ROA	−0.0006 (−0.112)	1.784	INS_OWN	−0.00004 (−0/76)	2.1
Constant			−0.017 (−0.53)		
Year FE	Yes		R2	46.2%	
Firm FE	Yes		*F*-statistics	8.546	
Observations	1,411		Durbin-Watson stat	2.189	

Note(s): *significance at the 5% level. The coefficient for each variable is reported, and *t*-test values appear in brackets
Source(s): Created by the authors

Table 3.
Summary of regression model estimation and estimated coefficients

Furthermore, the results indicate that both past biased and industry-specific biased tones are positively related to tone inconsistency. However, factors such as firm size, growth opportunities, financial and risk performance, and corporate governance mechanisms do not significantly impact tone inconsistency, contrary to theoretical and empirical expectations.

The assumptions of the regression model were also assessed. The results of the Jarque-Bera test indicate that the error term adheres to the standard assumptions. Additionally, the Durbin-Watson statistic of 2.18 suggests no autocorrelation among the residuals of the regression model. The variance inflation factor (VIF), as reported in Table 4, demonstrates the absence of multicollinearity among the independent variables. Lastly, the results of the Breusch-Pagan test indicate the lack of heteroskedasticity in the residuals.

Robustness tests

The independent variables are divided into quartiles, and the models are estimated based on the 1st and 4th quartiles (Table 4, Panel A). The difference between the coefficients of the first and fourth quartiles in other independent variables is also clear, and all the coefficients are significant. This coefficient difference shows the effect of CEO tenure, CEO ability, CEO myopia and CEO narcissism on tone inconsistency and confirms the research hypotheses.

Research models are estimated for a subsample of the 1411 MD&As (Table 4, Panel B). 20% of the sample (282 reports) are randomly selected and tested. The results show that the coefficients of independent variables are significant. These coefficients are close to the baseline estimates.

The models are estimated using random instead of fixed effects (Table 4, Panel C). The estimation results are not significantly different from the baseline findings.

Discussion

The present research investigated CEOs' personal, job, and psychological characteristics as a source of inconsistency in their disclosure tone. Residual tone as a measure of CEO tone inconsistency and its relationship with personal/job characteristics (gender, tenure, duality, and ability) and psychological factors (myopia, narcissism, and overconfidence) were examined. That part of management disclosure tone related to economic news and fundamental principles is separated from the remaining (biased) tone caused by noise or bias. The remaining tone shows the inconsistency in the tone of the manager's disclosures and, finally, the relationship of four variables, including gender, tenure, the duality of duty and ability as individual and job variables, as well as the relationship of 3 variables, including

Independent Variable	Panel A: Estimating the models for the 1st and 4th quartiles		Pane B: Estimating the models with a randomly selected subsample	Panel C: Estimating the models using random effects
	1st Quartile	4th Quartile		
CEO_GEN	0.009** (3.06)	0.067** (1.97)	0.035** (2.9)	0.045** (1.9)
CEO_TEN	0.01* (2.16)	0.08** (3.14)	0.025* (3.85)	0.46** (3.03)
CEO_DUA	−0.0001** (4.63)	−0.004 (1.06)	−0.012** (1.96)	−0.007* (2.06)
CEO_ABI	−0.012** (3.12)	−0.095* (2.85)	−0.024** (2.35)	−0.05** (2.97)
CEO_MYO	−0.003** (3.12)	−0.095* (2.85)	−0.085* (2.85)	−0.055* (2.85)
CEO_NAR	−0.055** (3.12)	−0.125* (2.85)	−0.085* (2.85)	−0.035* (2.85)
CEO_OVE	−0.002 (1.22)	−0.012 (0.85)	−0.039 (1.15)	−0.016 (1.15)

Note(s): *Significant at the 90% level; ** significant at the 95% level; *** significant at the 99% level
These results are only provided for the independent variables
Source(s): Created by the authors

Table 4.
Results of robustness tests

myopia, narcissism and overconfidence as psychological variables with inconsistency The tone of managers' disclosure has been checked.

Regarding personal/job characteristics, the results of estimating the model showed that:

(1) Female CEOs display less tone inconsistency. The significance of the relationship between CEO gender and tone inconsistency is consistent with previous studies such as Patelli and Pedrini (2015), Liu and Nguyen (2020), and Bassyouny *et al.* (2020).

(2) CEO tenure also has a negative association with tone inconsistency. This is inconsistent with the results of previous studies such as DeBoskey *et al.* (2019) and Ezat (2020). Contrary to the arguments presented for the first hypothesis, Iranian CEOs with shorter tenures have a more biased tone in MD&As. In other words, Iranian managers become more consistent in terms of tone as their tenure increases. According to DeBoskey *et al.* (2019) and Ezat (2020), tenure is one of the components of power that enables the CEO to exert control over the company and its financial reporting practices. That is because longer tenure allows the CEO to understand the company's operations and environment better. Increased power over time enables the CEO to use the long-term relationships established with various members inside and outside the board to control the flow of information and allocation of resources. Therefore, longer tenure allows managers to increase their knowledge, which, in turn, increases their power. This drives CEOs to take more risks, which could lead them to adopt a positive tone to protect their interests. However, the results of the present research indicated that managers with shorter tenure have a more biased tone, which could be attributed to the lack of job security in Iranian CEOs and the motivation of new CEOs to maintain their position. These findings should be interpreted and generalized with caution.

(3) CEO ability was positively associated with tone inconsistency, which is inconsistent with the results of Torsin *et al.* (2018). Contrary to expectations, Iranian CEOs with higher ability tend to have a more biased tone in MD&As. The positive association between CEO ability and tone inconsistency may be because Iranian CEOs use their power to mask the company's poor performance in MD&As. It must be noted that a CEO's biased tone may be their attempt to signal the market to make rational decisions. In other words, capable managers may choose a positive tone due to the knowledge and certainty of the company's performance and favourable financial position in the future, which leads to tone inconsistency, in which case, the positive relationship between CEO ability and tone inconsistency is justifiable. CEOs with higher power have a better understanding of the circumstances and future performance of the company and can inform the market about the company's prospects in MD&As.

(4) No significant relationship was found between CEO duality and tone inconsistency, which is inconsistent with the results of previous studies such as DeBoskey *et al.* (2019) and Ezat (2020).

Regarding the psychological characteristics, the results of estimating the model showed that:

(1) CEO myopia is positively associated with biased tone. To our knowledge, the present research is the first to investigate and document this relationship. Myopic CEOs tend to focus on performance in short-term windows and place less importance on the company's long-term performance. Since a biased tone is revealed over time and the market cannot be misled in the long term, myopic CEOs may use a more biased tone in their disclosures to paint a more favourable picture of the financial position and performance of the company or to justify its poor performance, which will lead to tone inconsistency.

(2) CEO narcissism was positively associated with a biased tone, consistent with the results of Buchholz *et al.* (2018) and Bassyouny *et al.* (2020). In other words, narcissistic CEOs tend to use a more optimistic and biased tone in MD&As than their non-narcissistic counterparts.

(3) No significant relationship was found between CEO overconfidence and tone inconsistency, contrary to the results of prior research such as Kearney and Liu (2014) and Liu and Nguyen (2020). These studies find that overconfidence affects the CEO's assessment of current events and their implications, thus influencing their tone in describing the events. Overconfident CEOs tend to have a more positive tone, which may lead to inconsistencies in their disclosures. This was not documented in the Iranian context, and conclusions and generalizations will require further investigation.

There has been an increasing research interest in the tone and language of corporate disclosures. The present research attempted to provide a comprehensive picture of the determinants of disclosure tone. Given the nascence of this field, there are numerous opportunities for further investigation. For example, it is still not clear whether tone management is driven by firm fundamentals, managerial self-interest, or management's cognitive biases. Future research can explore the causal relationships and effects of the various drivers of tone management.

Moreover, prior research in this field has primarily focused on the tone of critical disclosures such as conference calls, earnings press releases, and MD&A sections of 10-K and 10-Q filings (e.g. Davis *et al.*, 2012; Huang *et al.*, 2014). Therefore, a potential avenue for future research could be to investigate other non-financial disclosures, such as corporate environmental disclosures and corporate social responsibility reports. Additionally, the tone of non-corporate disclosures and reports (e.g. news articles) has not been fully explored. Although there has been limited research on the tone of articles in Dow Jones News Service and Wall Street Journal (Tetlock, 2007; Tetlock *et al.*, 2008), future research can shed more light on this issue as the language of these articles can affect market reaction and, consequently, stock prices.

Practical and managerial implications

The findings of the study have several practical and managerial implications:

1. CEO Selection and Training:

   - **Gender and Tone Inconsistency:** Female CEOs exhibit less tone inconsistency, suggesting organizations could benefit from gender diversity in leadership for more consistent disclosures.
   - **Tenure and Tone Inconsistency:** Longer CEO tenure correlates with less tone inconsistency, emphasizing the importance of leadership stability. Training programs for new CEOs could reduce biased disclosures.
   - **CEO Ability:** Higher ability correlates with tone inconsistency, indicating that skilled CEOs might manipulate tone. Thus, ethical training is crucial to ensure transparency.

2. Performance Evaluation and Monitoring:

   - **Psychological Attributes:** CEO narcissism and myopia are linked to higher tone inconsistency. Incorporating psychological evaluations in performance reviews and providing regular counselling can mitigate these traits' impacts.

- **Overconfidence:** While no significant link was found, overconfidence should still be monitored. Training on realistic goal setting and self-awareness could address potential issues.

3. Corporate Governance and Reporting Standards:
   - **Disclosure Practices:** Clear and consistent disclosure practices are essential. To enhance reliability, boards and audit committees should establish guidelines and review processes, possibly including third-party audits.
   - **Duality and Tone Inconsistency:** The lack of a significant relationship suggests duality alone is not critical. However, companies should still prevent conflicts of interest and ensure robust governance.
4. Stakeholder Communication and Trust:
   - **Transparency and Trust:** A consistent disclosure tone is vital for stakeholder trust. Companies should prioritize transparent communication and address factors leading to tone inconsistency through regular engagement and feedback.
   - **Ethical Considerations:** Ethical behaviour and transparency should be integral to organizational culture. Clear ethical guidelines for CEOs and executives are necessary.
5. Regulatory and Policy Implications:
   - **Regulatory Frameworks:** Findings can inform regulations promoting gender diversity, psychological assessments, and ethical training for CEOs to reduce tone inconsistency.
   - **Market Reactions:** Understanding tone inconsistency determinants helps market analysts and investors interpret disclosures better, informing investment decisions and enhancing market transparency.
6. Future Research and Methodological Improvements:
   - **Broader Contexts:** Further research is needed in different cultural and economic contexts to understand global factors influencing CEO disclosure tone inconsistency.
   - **Advanced Tools:** Future studies should use advanced analytical tools and machine learning techniques to improve the precision and scope of tone analysis in corporate disclosures.

The study's implications highlight the importance of gender diversity, leadership stability, psychological evaluation, ethical training, transparent disclosures, and robust governance structures to foster consistent, transparent, and ethical corporate communications.

Conclusion

This study embarked on an exploratory journey to decipher the factors underlying CEO disclosure tone inconsistency, employing a behavioural perspective. The findings of this research have brought forth significant relationships that illuminate the intricate web of determinants influencing the tone disparity observed in CEO disclosures.

The study's revelations hold significance in personal and job characteristics. Notably, the discovery that female CEOs manifest lower levels of tone inconsistency resonates with prior investigations. On the contrary, the unexpected negative correlation between CEO tenure and tone inconsistency hints at the complexities of Iranian CEOs' motivations. Those with shorter terms appear inclined toward a more biased tone, which could emanate from job insecurity and a quest to safeguard their positions. Intriguingly, CEO ability is positively linked with tone inconsistency, deviating from conventional wisdom. Here, Iranian CEOs might employ tone as a veil to obscure unfavourable performance, offering a fresh dimension to the discourse. Conversely, CEO duality failed to exhibit a significant association, defying earlier research trends.

Delving into the realm of psychological attributes, the study magnifies our understanding. The positive associations between CEO myopia and narcissism with a biased tone align with existing literature. Myopic CEOs, driven by short-term performance focus, exhibit a more biased tone, while their narcissistic counterparts tend to infuse optimism and emotion. Contrary to earlier findings, CEO overconfidence displayed no substantial correlation with tone inconsistency in this study.

This research's significance extends beyond its immediate findings. It underscores the importance of capital market stakeholders, consistent with the Journal's ethos, considering multifaceted management characteristics while decoding CEO disclosures. The choice of tone is not unidimensional, guided solely by rational or opportunistic motives. As a recommendation, future inquiries could systematically devise lexicons and employ appropriate tools to analyse disclosures across diverse contexts. Expanding the horizon, potential investigations could delve into sources of tone inconsistency, such as signalling, agency quandaries, and CEOs' opportunistic incentives within Iran and internationally.

Notwithstanding its contributions, this study acknowledges its limitations. By focusing on Iranian companies and manually curating word combinations for analysis, caution in generalizing findings is warranted. Robust validations across varying settings are imperative. Future research vistas encompass exploring causative relationships, scrutinizing the ramifications of tone management drivers, probing into non-financial disclosures, and scrutinizing non-corporate communications.

In summation, this research contributes to the domain of business ethics and casts a revealing light on the enigmatic factors driving CEO disclosure tone inconsistency. Its findings enrich the evolving tapestry of literature exploring language and tone within corporate disclosures, fostering dialogue across diverse stakeholders, including the business fraternity, academic institutions, governmental bodies, and consumer groups.

Notes

1. MoneyShow, 2013–2016.

References

Abrahamson, E. and Amir, E. (1996), "The information content of the president's letter to shareholders", *Journal of Business Finance and Accounting*, Vol. 23 No. 8, pp. 1157-1182, doi: 10.1111/j.1468-5957.1996.tb01163.x.

Almaleki, M., Salehi, M. and Moradi, M. (2021), "The relationship between narcissism, managerial overconfidence and comparability of financial statements of listed companies", *Journal of Facilities Management*, Vol. 19 No. 5, pp. 681-700, doi: 10.1108/jfm-01-2021-0002.

Arianpoor, A., Lamloom, I.T., Moghaddampoor, B., Khayoon, H.M. and Zaidan, A.S. (2023), "The impact of managerial, psychological characteristics on the supply chain management efficiency", *The TQM Journal*, doi: 10.1108/tqm-04-2023-0116.

Arianpoor, A. and Yazdanpanah, R. (2023), "The impact of management practices and managerial behavioral attributes on credit rating quality", *Journal of Asia Business Studies*, Vol. 17 No. 4, pp. 721-740, doi: 10.1108/jabs-04-2022-0122.

Arslan-Ayaydin, Ö., Boudt, K. and Thewissen, J. (2016), "Managers set the tone: equity incentives and the tone of earnings press releases", *Journal of Banking and Finance*, Vol. 72, pp. S132-S147, doi: 10.1016/j.jbankfin.2015.10.007.

Ataullah, A., Vivian, A. and Xu, B. (2018), "Time-varying managerial overconfidence and corporate debt maturity structure", *The European Journal of Finance*, Vol. 24 No. 2, pp. 157-181, doi: 10.1080/1351847x.2016.1274266.

Baginski, S.P., Demers, E., Kausar, A. and Yu, Y.J. (2018), "Linguistic tone and the small trader", *Accounting, Organizations and Society*, Vol. 68, pp. 21-37, doi: 10.1016/j.aos.2018.03.005.

Bassyouny, H., Abdelfattah, T. and Tao, L. (2020), "Beyond narrative disclosure tone: the upper echelons theory perspective", *International Review of Financial Analysis*, Vol. 70, 101499, doi: 10.1016/j.irfa.2020.101499.

Bowen, R.M., Dutta, S., Tang, S. and Zhu, P. (2018), "Inside the 'black box' of private in-house meetings", *Review of Accounting Studies*, Vol. 23 No. 2, pp. 487-527, doi: 10.1007/s11142-017-9433-z.

Buchholz, F., Jaeschke, R., Lopatta, K. and Maas, K. (2018), "The use of optimistic tone by narcissistic CEOs", *Accounting, Auditing and Accountability Journal*, Vol. 31 No. 2, pp. 531-562, doi: 10.1108/aaaj-11-2015-2292.

Calma, A. (2019), "Journal of Behavioral Finance in Retrospect: a review of its publications as a case in behavioral finance in Retrospect", *Review of Behavioral Finance*, Vol. 11 No. 4, pp. 468-476, doi: 10.1108/RBF-06-2018-0059.

Cheng, H., Liu, T. and Wei, K. (2020), "The effects of financial markets on managerial opportunistic behavior: evidence from CEOs' tone manipulation", SSRN 3762252.

Daryaei, A.A., Fattahi, Y., Askarany, D., Askary, S. and Mollazamani, M. (2022), "Accounting comparability, conservatism, executive compensation-performance, and information quality", *Journal of Risk and Financial Management*, Vol. 15 No. 11, p. 489, doi: 10.3390/jrfm15110489.

Davis, A.K., Piger, J.M. and Sedor, L.M. (2012), "Beyond the numbers: measuring the information content of earnings press release language", *Contemporary Accounting Research*, Vol. 29 No. 3, pp. 845-868, doi: 10.1111/j.1911-3846.2011.01130.x.

Davis, A.K., Ge, W., Matsumoto, D. and Zhang, J.L. (2015), "The effect of manager-specific optimism on the tone of earnings conference calls", *Review of Accounting Studies*, Vol. 20 No. 2, pp. 639-673, doi: 10.1007/s11142-014-9309-4.

DeBoskey, D., Luo, Y. and Zhou, L. (2019), "CEO power, board oversight, and earnings announcement tone", *Review of Quantitative Finance and Accounting*, Vol. 52 No. 2, pp. 657-680, doi: 10.1007/s11156-018-0721-x.

Demerjian, P., Lev, B. and McVay, S. (2012), "Quantifying managerial ability: a new measure and validity tests", *Management Science*, Vol. 58 No. 7, pp. 1229-1248.

Demers, E. and Vega, C. (2010), "Soft information in earnings announcements: news or noise?", Papel de trabajo.

Efretuei, E. (2021), "Year and industry-level accounting narrative analysis: readability and tone variation", *Journal of Emerging Technologies in Accounting*, Vol. 18 No. 2, pp. 53-76.

Eghbal, M., Nassirzadeh, F. and Askarany, D. (2024), "The relationship between non-additivity valuations, cash flows and sales growth", *Computational Economics*, Vol. 64, pp. 429-459, doi: 10.1007/s10614-023-10435-x.

Emami, A., Welsh, D.H. and Hakimian, R. (2024), "The impact of entrepreneurial hubris and narcissism on personal social responsibility", *Strategic Change*, Vol. 33 No. 4, pp. 257-274, doi: 10.1002/jsc.2579.

Engelberg, J. (2008), "Costly information processing: evidence from earnings announcements", *AFA 2009 San Francisco Meetings Paper*.

Ezat, A. (2020), "Corporate governance and disclosure verifiability as determinants of disclosure tone in the Egyptian context", المجلة العلمية للدراسات والبحوث المالية والتجارية, Vol. 1 Nos العدد الثانى-الجزء الثانى, pp. 1-56, doi: 10.21608/cfdj.2020.109210.

Feldman, R., Govindaraj, S., Livnat, J. and Segal, B. (2008), "The incremental information content of tone change in management discussion and analysis", available at: https://archive.nyu.edu/bitstream/2451/27580/2/SSRN-id1126962.pdf and https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1301338

Hales, J., Kuang, X. and Venkataraman, S. (2011), "Who believes the hype? An experimental examination of how language affects investor judgments", *Journal of Accounting Research*, Vol. 49 No. 1, pp. 223-255, doi: 10.1111/j.1475-679x.2010.00394.x.

Henry, E. (2008), "Are investors influenced by how earnings press releases are written?", *Journal of Business Communication*, Vol. 45 No. 4, pp. 363-407, (1973), doi: 10.1177/0021943608319388.

Henry, E. and Leone, A.J. (2016), "Measuring qualitative information in capital markets research: comparison of alternative methodologies to measure disclosure tone", *The Accounting Review*, Vol. 91 No. 1, pp. 153-178, doi: 10.2308/accr-51161.

Herrbach, O. (2006), "A matter of feeling? The affective tone of organizational commitment and identification", *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, Vol. 27 No. 5, pp. 629-643, doi: 10.1002/job.362.

Hossain, M., Raghunandan, K. and Rama, D.V. (2020), "Abnormal disclosure tone and going concern modified audit reports", *Journal of Accounting and Public Policy*, Vol. 39 No. 4, 106764, doi: 10.1016/j.jaccpubpol.2020.106764.

Huang, X., Teoh, S.H. and Zhang, Y. (2014), "Tone management", *The Accounting Review*, Vol. 89 No. 3, pp. 1083-1113, doi: 10.2308/accr-50684.

Iatridis, G.E. (2016), "Financial reporting language in financial statements: does pessimism restrict the potential for managerial opportunism?", *International Review of Financial Analysis*, Vol. 45, pp. 1-17.

Johnson, D.D. and Fowler, J.H. (2011), "The evolution of overconfidence", *Nature*, Vol. 477 No. 7364, pp. 317-320.

Kearney, C. and Liu, S. (2014), "Textual sentiment in finance: a survey of methods and models", *International Review of Financial Analysis*, Vol. 33, pp. 171-185, doi: 10.1016/j.irfa.2014.02.006.

Kim, S.T. (2017), "Managements' overconfident tone and corporate policies", Summer Program for Undergraduate Research (SPUR), available at: https://repository.upenn.edu/spur/14 and https://core.ac.uk/download/pdf/129587705.pdf (accessed 10 March 2024).

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*, Vol. 84 No. 5, pp. 1639-1670, doi: 10.2308/accr.2009.84.5.1639.

Lee, J. and Park, J. (2019), "The impact of audit committee financial expertise on management discussion and analysis (MD&) tone", *European Accounting Review*, Vol. 28 No. 1, pp. 129-150, doi: 10.1080/09638180.2018.1447387.

Li, F. (2010), "The information content of forward-looking statements in corporate filings—a naïve Bayesian machine learning approach", *Journal of Accounting Research*, Vol. 48 No. 5, pp. 1049-1102, doi: 10.1111/j.1475-679x.2010.00382.x.

Liu, P. and Nguyen, H.T. (2020), "CEO characteristics and tone at the top inconsistency", *Journal of Economics and Business*, Vol. 108, 105887, doi: 10.1016/j.jeconbus.2019.105887.

Loughran, T. (2018), "Linguistic tone and the small trader: measurement issues, regulatory implications, and directions for future research", *Accounting, Organizations and Society*, Vol. 68, pp. 38-41, doi: 10.1016/j.aos.2018.03.001.

Loughran, T. and McDonald, B. (2011), "When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks", *The Journal of Finance*, Vol. 66 No. 1, pp. 35-65, doi: 10.1111/j.1540-6261.2010.01625.x.

Loughran, T. and McDonald, B. (2015), "The use of word lists in textual analysis", *Journal of Behavioral Finance*, Vol. 16 No. 1, pp. 1-11, doi: 10.1080/15427560.2015.1000335.

Luo, Y. and Zhou, L. (2017), "Managerial ability, tone of earnings announcements, and market reaction", *Asian Review of Accounting*, Vol. 25 No. 4, pp. 454-471.

Matsumoto, D., Pronk, M. and Roelofsen, E. (2011), "What makes conference calls useful? The information content of managers' presentations and analysts' discussion sessions", *The Accounting Review*, Vol. 86 No. 4, pp. 1383-1414, doi: 10.2308/accr-10034.

Merkl-Davies, D.M. and Brennan, N.M. (2007), "Discretionary disclosure strategies in corporate narratives: incremental information or impression management?", *Journal of Accounting Literature*, Vol. 27, pp. 116-196.

Nassir Zadeh, F.N., Askarany, D., Shirzad, A. and Faghani, M. (2023), "Audit committee features and earnings management", *Heliyon*, Vol. 9 No. 10, e20825, doi: 10.1016/j.heliyon.2023.e20825.

Nassirzadeh, F., Askarany, D. and Arefiasl, S. (2022), "Accounting conservatism and earnings quality", *Journal of Risk and Financial Management*, Vol. 15 No. 9, p. 413, doi: 10.3390/jrfm15090413.

Nassirzadeh, F., Askarany, D. and Arefi-Asl, S. (2023), "The relationship between changes in corporate governance characteristics and intellectual capital", *Journal of Risk and Financial Management*, Vol. 16 No. 2, p. 133, doi: 10.3390/jrfm16020133.

Patelli, L. and Pedrini, M. (2015), "Is tone at the top associated with financial reporting aggressiveness?", *Journal of Business Ethics*, Vol. 126 No. 1, pp. 3-19, doi: 10.1007/s10551-013-1994-6.

Pouryousof, A., Nassirzadeh, F., Hesarzadeh, R. and Askarany, D. (2022), "The relationship between managers' disclosure tone and the trading volume of investors", *Journal of Risk and Financial Management*, Vol. 15 No. 12, p. 618, doi: 10.3390/jrfm15120618.

Rahman, M. (2020), "Propensity toward financial risk tolerance: an analysis using behavioural factors [Propensity toward FRT]", *Review of Behavioral Finance*, Vol. 12 No. 3, pp. 259-281, doi: 10.1108/RBF-01-2019-0002.

Rogers, J.L., Van Buskirk, A. and Zechman, S.L. (2011), "Disclosure tone and shareholder litigation", *The Accounting Review*, Vol. 86 No. 6, pp. 2155-2183, doi: 10.2308/accr-10137.

Salehi, M., Rajaeei, R. and Edalati Shakib, S. (2021), "The relationship between CEOs' narcissism and internal control weaknesses", *Accounting Research Journal*, Vol. 34 No. 5, pp. 429-446.

Shandiz, M.T., Nassirzadeh, F. and Askarany, D. (2022), "The interactive effect of ownership structure on the relationship between annual board report readability and stock price crash risk", *Journal of Risk and Financial Management*, Vol. 15 No. 6, p. 268, doi: 10.3390/jrfm15060268.

Stuart, A.C., Bedard, J.C. and Clark, C.E. (2021), "Corporate social responsibility disclosures and investor judgments in difficult times: the role of ethical culture and assurance: JBE", *Journal of Business Ethics*, Vol. 171 No. 3, pp. 565-582, doi: 10.1007/s10551-020-04454-z.

Swales, G.S. Jr (1988), "Another look at the president's letter to stockholders", *Financial Analysts Journal*, Vol. 44 No. 2, pp. 71-73, doi: 10.2469/faj.v44.n2.71.

Tetlock, P.C. (2007), "Giving content to investor sentiment: the role of media in the stock market", *The Journal of Finance*, Vol. 62 No. 3, pp. 1139-1168.

Tetlock, P.C., Saar-Tsechansky, M. and Macskassy, S. (2008), "More than words: quantifying language to measure firms' fundamentals", *The Journal of Finance*, Vol. 63 No. 3, pp. 1437-1467.

Torsin, W., Thewissen, J. and Arslan-Ayaydin, Ö. (2018), "Disclosure tone management and labor unions", *World Finance Banking Symposium*.

Tran, L.T.H., Tu, T.T.K., Nguyen, T.T.H., Nguyen, H.T.L. and Vo, X.V. (2023), "Annual report narrative disclosures, information asymmetry and future firm performance: evidence from Vietnam", *International Journal of Emerging Markets*, Vol. 18 No. 2, pp. 351-375, doi: 10.1108/IJOEM-08-2020-0925.

Trevelyan, R. (2008), "Optimism, overconfidence and entrepreneurial activity", *Management Decision*, Vol. 46 No. 7, pp. 986-1001.

Varnamkhasti, J.H. (2022), "Studying the impact of corporate governance on earning management with the mediating role of financial leverage: case study companies listed on the Tehran stock exchange", *International Journal of Health Sciences*, No. III, pp. 4094-4111, doi: 10.53730/ijhs.v6ns3.6663.

Wu, D.X., Yao, X. and Guo, J.L. (2021), "Is textual tone informative or inflated for firm's future value? Evidence from Chinese listed firms", *Economic Modelling*, Vol. 94, pp. 513-525, doi: 10.1016/j.econmod.2020.02.027.

Yan, S. and Hwang, I. (2021), "Why do managers manage the tone? Evidence from China", (October 20, 2021).

Corresponding author
Farzaneh Nassirzadeh can be contacted at: nasirzadeh@um.ac.ir