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CEO'S EMOTIONAL EXPRESSION AND ORGANIZATIONAL PERFORMANCE: AN EMPIRICAL STUDY BASED ON DEEP LEARNING TEXT ANALYSIS

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Abstract. In the context of increasing market competition and stakeholder expectations, understanding how top executives influence organizational outcomes has become crucial for both academic research and business practice. While upper echelons theory has traditionally focused on demographic characteristics and cognitive bases of executives, there is growing recognition of the importance of emotional factors in leadership effectiveness. This study aims to investigate the impact of CEO emotional expression on organizational performance, addressing a significant gap in both upper echelons theory and leadership emotion literature. We constructed an organizational-level model based on upper echelons theory to explore this relationship. Based on 396 observations from 131 listed companies, the results indicate that the CEO's positive emotional expression is positively related to organizational performance, while the negative emotional expression is negatively related to organizational performance. Theoretically, our study extended research on the upper echelons theory by identifying CEO's emotional expression as a novel antecedent of organizational consequence, we also extended the literature of leader emotional expression by exploring its effect on organizational-level performance. The practical implications for senior leaders, CEOs, shareholders, investors, the general public, and policy makers collectively underscore the importance of emotional aspects in leadership and their wide-ranging consequences.

Keywords: CEO, emotional expression, organizational performance, upper echelons theory, deep learning, text analysis.

JEL Classification: M12, M54, L25, M10, C45, C88.

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1. Introduction

In today's volatile business landscape, CEO communication has become a critical signal for stakeholders assessing organizational health and future prospects. Recent crises—from the COVID-19 pandemic to tariff trade war—have underscored the critical role of leadership communication in shaping stakeholder trust and operational performance. Recent research suggests that the emotional tone of CEO communication can significantly influence stakeholder perceptions and organizational outcomes (Schoofs & Claeys, 2021). In this context, the emotional management and expression abilities of CEOs have become critical factors in determining an organization's success (Ashkanasy et al., 2017). Particularly in responding to economic fluctuations, market competition, and internal organizational changes, the emotional expressions of CEOs not only affect morale and collaboration efficiency within the organization, but also have a profound impact on the organization's strategic decisions and performance (Geddes et al., 2020; Schoofs & Claeys, 2021). For example, Jack Welch, the former CEO of General Electric (GE), was known for his dynamic leadership style and emotional expression. His ability to motivate and inspire employees played a crucial role in implementing large-scale changes and restructuring within GE. Welch's emotional expression helped build a strong leadership presence and boosted employee morale and creativity. Under his leadership, GE's market value grew from $12 billion to over $410 billion, making it one of the most competitive and diversified companies globally. Therefore, exploring the impact of top managers' emotional expressions on organizational outcomes holds not only significant theoretical value but also practical implications for guiding real-world business practices.

Empirical studies have shown that CEO's age, tenure, duality, educational background, ownership, prior career experience, origin from outside or inside of the organization, can influence organizational performance (Belenzon et al., 2019; Bhaskar et al., 2024; Garcia-Blandon et al., 2019; King et al., 2016; Mendiratta & Tasheva, 2025; Oyinlola, 2025; Setiawan et al., 2024; Shahrour et al., 2024; Wang et al., 2016; Yahaya, 2025). CEO political partisanship is positively related to corporate misconduct (Fewer & Tarakci, 2025). Researchers have also shown that psychological variables and leader behaviors, such as CEO's internal locus of control (Boone et al., 2007), proactiveness (Kiss et al., 2022), servant leadership behaviors (Peterson et al., 2012), charismatic leadership behaviors (Waldman et al., 2004), responsible leadership behavior (Wang et al., 2023), task-focused behaviors (Wang et al., 2011) are positively related to organizational performance. Conversely, CEO hubris and overconfidence are negatively related to organizational performance (Park et al., 2015; Zheng et al., 2025), and CEO narcissism positively related to variance of organizational performance (Chatterjee & Hambrick, 2007). Baron (2008) proposed that entrepreneurs who express a high degree of positive emotion concerning their ideas and new ventures may be more effective in influencing their investors, customers, potential employees and others. Additionally, research suggests that a CEO's emotions may affect organizational outcomes, such as organizational reputation (Schoofs & Claeys, 2021). In fact, leader's emotional expression can influence leader effectiveness (Connelly & Ruark, 2010), their followers' work engagement and royalty (Silard, 2018), voice behavior (Song, 2018; Song et al., 2019) and performance (Cheng & Lin, 2012). In the organization level, CEO's emotional carrying capacity with chairperson is positively related to firm performance (Stephens et al., 2024). According to the upper echelons theory, CEOs have a significant impact on the entire organization (Hambrick & Finkelstein, 1987). Empirical studies have demonstrated that CEOs greatly affect organizational performance (Hambrick & Quigley, 2014; Mackey, 2008; Withers & Fitza, 2016), with the impact being stronger when CEOs have greater managerial autonomy (Hambrick & Finkelstein, 1987).

CEOs are not entirely rational and continuously to experience various emotions during their work, which can influence the organization and enterprise at large (Hambrick, 2007). Furthermore, Hambrick and Mason (1984) called for more studies to explore the impact of psychological variables of CEOs on organizational outcomes. Emotion of top managers is crucial in shaping organizational culture, employee engagement, and influencing strategy management (Ashkanasy et al., 2002; Barsade & Gibson, 2007). Understanding and managing these emotional dynamics can be key to achieving sustained organizational success. In order to address the problem mentioned above, the present study will investigate the influence of

CEO emotional expression on organizational performance. Here, *CEO emotional expression* is defined as the ability of CEOs to convey their own emotional information to others to ensure the healthy operation and innovative development of the organization (Riggio et al., 2008); while *organizational performance* refers to the accumulated results of all the organization's work activities (Robbins & Coulter, 2012). Generally speaking, the *scientific problem* addressed is: what effect can CEO emotional expressions generate on organizational performance?

While the upper echelons theory establishes a fundamental link between executive characteristics and organizational outcomes, its very logic is predicated upon a critical fundamental precondition: the existence of managerial discretion (Hambrick, 2007). Managerial discretion is a critical factor that varies across environments, organizations, and individuals. It defines the very possibility for CEOs to imprint their personal characteristics upon the organization (Li & Tang, 2010). Consequently, the observed relationship between any specific CEO characteristics and organizational performance is inherently confounded by the omnipresent influence of their discretion. To isolate the unique effect of CEOs' emotional expressions and ensure that our empirical models are not capturing this broader, foundational capacity to act, it is methodologically essential to account for and partial out the variance attributable to managerial discretion. Therefore, in alignment with best practices for estimating effects in leadership research (Chin et al., 2021), we treat managerial discretion as a core control variable to obtain a clearer and less biased estimate of the relationship under investigation.

The remnant of the paper proceeds as follow. Next section signifies theoretical background and hypothesis development to elucidate the prior study interlinking with the current study. Sample, data collection, and measures for the independent, dependent and control variables is illustrated at the section of method. Then, empirical results are explained followed by the discussion. The last section focuses on the conclusion, practical implications and study limitations.

2. Theory and hypothesis development

2.1. Upper echelons theory

The upper echelons theory, developed by Hambrick and Mason (1984), posits that the characteristics and cognitive bases of top executives within an organization significantly influence their interpretations and choices, which in turn affect organizational outcomes. This theory underscores the role of top managers in shaping atmospheres of the organization, suggesting that their personal backgrounds, values, and experiences are reflected in the organization's performance.

The theory is grounded in the belief that executives are not fully rational actors due to bounded rationality; instead, they make decisions based on their subjective interpretations of the situation. These interpretations are shaped by their unique experiences, values, personalities and emotions. As such, the theory provides a framework for understanding how the upper echelons—particularly the CEO and top management team—can impact the firm's performance.

In essence, upper echelons theory offers a lens through which to view the complex interplay between executive characteristics and organizational outcomes. It highlights the importance of considering the human element at the top of the organizational hierarchy when analyzing and predicting the performance of an organization. This perspective is particularly relevant in the study of organizational behavior, leadership, and strategic management, providing valuable insights into the ways in which leaders' attributes can shape the course of a business.

2.2. CEO's emotional expression and organization performance

According to the upper echelons theory (Hambrick & Mason, 1984), the characteristics of CEOs influence organizational outcomes, and the greater their autonomy, the stronger their impact on the organization (Hambrick & Finkelstein, 1987). Undoubtedly, CEOs with greater autonomy bear the responsibility of motivating and guiding employees towards organizational goals, and their every move can influence the organization. Therefore, the emotional expression of CEOs can predict organizational performance for the following reasons:

Firstly, the CEO's emotional expression in letters to shareholders conveys expectations for the organization's future performance. Compared to quantitative information such as financial data in annual reports, qualitative information like letters to shareholders from the CEO have a more lasting impact (Engelberg, 2008). As voluntarily disclosed information, these letters contain specific intentions of the management (Huang et al., 2014). Letters to shareholders provide additional insights beyond the financial information in annual reports, including emotional cues from the CEO or other top managers, conveying their perception of the organization's future performance, which is crucial for predicting the next year's performance (Feldman et al., 2010). Research also indicates that the tone of CEO in earnings conference calls can provide incremental information about future organizational performance, a more positive overall tone implies higher expectations for future organizational performance (Xie & Lin, 2015). Utilizing text analysis to analyze Management Discussion and Analysis (MD&A) sections of Chinese listed companies, Wu et al. (2021) found that the more positive the emotional expression of the CEOs, the higher the organizational value the next year. This suggests that CEOs can convey their positive expectations for the future of the organization through MD&A.

Secondly, the positive emotions of CEOs broaden their attentional scope, making their cognition more flexible (Fredrickson & Branigan, 2005). They are better able to utilize their tacit knowledge and hold stronger beliefs (George, 2000), thus making better decisions (Forgas, 1995), which positively affects organizational performance. The positive emotions of CEOs also prompt them to adopt more flexible strategies, which is crucial for improving organizational performance in this dynamic business environment (Nadkarni & Herrmann, 2010). Additionally, the emotions, cognition, feelings, attitudes, and behaviors of CEOs influence those of employees (Wo et al., 2015). Consequently, the positive emotions of CEOs can trickle down to frontline employees through middle managers, with emotions among organizational members gradually converging through emotional contagion (Neumann & Strack, 2000). The positive emotions of CEOs can spread throughout the organization, setting a positive emotional tone (Sy et al., 2005). Being in an organization filled with positive emotions expands employees' cognition and attentional scope, helping them discover more resources or unearth their potential, providing long-term reserves for improving their performance (Hatfield et al., 1993). Research shows that positive emotions provide additional resources for cognitive processes, which help improve cognitive organization, promote the integration of existing cognitive structures and new information in the brain, thereby enhancing the precision and flexibility of thinking and cognition (Lee & Sternthal, 1999). A broader attentional scope and fine-grained, flexible cognition contribute to employees performing excellently in their tasks and improving organizational performance. Furthermore, the positive emotions of CEOs convey a sense of stability to organizational members, which can stimulate friendly behavior among organizational members, making coordination among various levels and departments within the organization stronger (Sy et al., 2005), and internal coordination is a key prerequisite for enterprises to achieve high performance (Yuan & Jiang, 2022).

Third, CEOs' negative emotional expressions such as pessimism, anxiety, or hostility may signal perceived threats or instability, adversely affecting organizational performance. Negative emotions narrow attentional scope, rigidify cognition (Gable & Harmon-Jones, 2010), consume extra resources (Hobfoll et al., 2018), and constrain decision-making flexibility—key drivers of suboptimal strategic choices (Forgas, 1995). For instance, CEOs emphasizing risks over opportunities may be perceived as expressing negative emotions and inadvertently dampen investor confidence and employee morale (Davis et al., 2012), cascading into reduced operational efficiency. Empirically, negative tones in CEO earnings calls correlate with lower subsequent firm profitability (Patelli & Pedrini, 2014), while pessimistic language in MD&A sections predicts declining market valuations (Li, 2010). CEOs' negativity spreads through organizational hierarchies (Barsade & Gibson, 2007), fostering conflict (Sy et al., 2005), eroding cross-departmental coordination (Yuan & Jiang, 2022), and depleting employees' cognitive resources (Hobfoll et al., 2018), ultimately impairing performance.

Therefore, we propose the following hypothesis:

H1: The emotional expression of CEOs significantly predicts organizational performance.

H1-1: The positive emotional expression of CEOs positively predicts organizational performance.

H1-2: The negative emotional expression of CEOs negatively predicts organizational performance.

3. Method

3.1. Sample and data collection

We utilized non-financial and non-ST listed companies on the A-share market of the Shanghai and Shenzhen stock exchanges from 2009 to 2019 as the initial sample. The historical dataset is appropriate for this study as it allows for a robust test of the foundational tenets of upper echelons theory, which posits timeless relationships between executive characteristics and firm outcomes. The CEO's letters to shareholders of listed companies were sourced from the Cninfo website (http://www.cninfo.com.cn/new/index), while other data were obtained from the China Stock Market & Accounting Research Database (CSMAR).

The data acquisition process proceeded as follows:

1. Python code was applied to retrieve PDF versions of annual reports of target listed companies from the Cninfo website, which were then converted into TXT format;
2. Python code was used to scan through all annual reports, identifying those containing keywords such as "to shareholders," or "letter," and the CEO's speeches were manually screened out;
3. Sentiment knowledge-enhanced pre-trained model in Python was applied to calculate the CEO's positive and negative emotional expression scores;
4. After matching and eliminating missing values, we obtained a final sample of 396 firm-year observations from 131 listed companies covering the period 2009–2019. It should be noted that over the 11 years period, it is possible that one company might have the letters authored by the same CEO for multiple years in a row. The letters were segmented into 10982 sentences, with 9672 classified as positive and 1220 as negative based on SKEP model sentiment analysis.

3.2. Measures

Measures of the study are summarized in Table 1.

Table 1. Variables measurement summary

Variable types	Variable names	Variable abbre-viation	Measurement	Data sources
Explained variable	Organizational performance	MTB	Book value of the firm divided by market value of the firm	CSMAR
		ROA	Total assets divided by net profit at the end of the year	CSMAR
Explanatory variable	CEO's positive emotional expression	CPE	Number of total sentences divided by the number of positive sentences in CEOs' letters to shareholders	Cninfo website
	CEO's negative emotional expression	CNE	Number of total sentences divided by the number of negative sentences in CEOs' letters to shareholders	Cninfo website
Control variables	CEO's gender	Gend	/	CSMAR
	CEO's age	Age	/	CSMAR
	CEO's oversea background	OB	/	CSMAR
	CEO's education level	EDU	/	CSMAR
	CEO's tenure	TEN	/	CSMAR
	Environmental discretion	MI	Five aspects include the relationship between government and market, the development of the non-state (private) sector, the development of product and factor markets, the development of market intermediaries, and the market-friendly legal environment	Wang and Fan (2024)
	Organizational discretion	Dual	Chair-CEO duality (dummy variable, 1 for yes and 0 for no)	CSMAR
	Additional discretion	SOE	Dummy variable, 1 for state-owned firms and 0 for non-state-owned firms	CSMAR
	Price-earnings ratio	PER	Earnings per share divided by price per share	CSMAR
	Debt-to-assets ratio	DAR	Total liabilities divided by total assets	CSMAR
	Profit growth rate	PGR	Previous net profit divided by the difference between current net profit and previous net profit	CSMAR
	Organization size	Size	Logarithm of total organizational assets at the end of the year	CSMAR
	Organization age	OA	Difference between the year of annual report and company's establishment year	CSMAR
	Ownership structure	OS	Total shares divided by shares owned by top ten shareholders	CSMAR

End of Table 1

Variable types	Variable names	Variable abbre-viation	Measurement	Data sources
	Industry concentration	CR4	Total core business revenue of the entire industry divided by the top 4 firms in that industry	CSMAR
	Industry revenue growth rate	ORG	Industrial previous revenue divided by the difference between current revenue and previous revenue	CSMAR

CEO's emotional expression. In research, directly measuring the emotional expression of CEO is challenging. Academic research faces difficulties in directly obtaining the emotional expression of CEO in listed companies. Given these challenges, researchers suggested employing text analysis to measure the emotional expression of CEO (Li et al., 2023). In fact, the management field has already begun using text analysis to measure the traits and behaviors of CEO, such as hubris, temporal depth, and focus adjustment (Gamache et al., 2015; Nadkarni et al., 2016; Park et al., 2015).

Text analysis is a widely used method in management studies to measure the emotions or sentiments of management (Xie & Lin, 2015), laying the methodological foundation for measuring leadership emotional expression through text analysis. Some listed companies attach letters from the CEO to shareholders in their annual reports. Measuring the emotional expression of CEO through these letters is beneficial for horizontal comparisons between companies, and it also allows for obtaining letters from the CEO to shareholders from the same organization in different years, facilitating the construction of panel data. The CEO's letter to shareholders is an existing text, written by the CEO or at least outlined, proofread, and approved by the CEO (Gamache et al., 2015). The content and form of the letter are relatively free-spirited compared to legal regulations, allowing it to largely reflect the emotional expression of the CEO (Li et al., 2023).

The SKEP model developed by Tian et al. (2020) was employed to conduct sentiment analysis on the CEO's letter to shareholders. Benefiting from the support of the Baidu PaddlePaddle framework, we directly called its Senta module through Python code to perform sentence-level sentiment analysis. Each sentence in the CEO's letter to shareholders, segmented by periods, was judged as positive or negative. Following Li et al. (2023) and their method for measuring emotions through text analysis, we separately calculated the scores for net positive emotional expression and net negative emotional expression through the CEO's letter to shareholders (Li et al., 2023), with the formulas as follows:

$$CPE_{itj} = \frac{P_{itj}}{P_{itj} + N_{itj}}; \tag{1}$$

$$CNE_{itj} = \frac{N_{itj}}{P_{itj} + N_{itj}}. \tag{2}$$

In Equations (1) and (2), P_{itj} and N_{itj} respectively represent the total number of positive and negative sentences in CEO's Letter *j* of organization *i* in year *t*. *CPE* and *CNE* scores range from 0 to 1. Higher *CPE* scores indicate a more positive emotional expression in the

CEO's letter to shareholders, while a higher *CNE* score indicates a more negative emotional expression in the CEO's letter to shareholders.

Organizational performance. We use market-to-book ratio (MTB) to measure organizational performance. MTB is a measure of growth opportunities. A higher MTB indicates a sign of high growth options. The calculation formula is as follows:

$$MTB = \frac{Market\ value\ of\ the\ firm}{Book\ value\ of\ the\ firm}. \tag{3}$$

Control variables. Given that the current performance of an organization is often influenced by its past performance, asset-liability ratio, profit growth rate, and organization size, this study considers them as control variables. The calculation method for current performance is consistent with that of past performance.

The price-earnings ratio is calculated as follows:

$$PER = \frac{Price\ per\ share}{Earnings\ per\ share}. \tag{4}$$

The asset-liability ratio is calculated as follows:

$$DAR = \frac{Total\ liabilities}{Total\ assets}. \tag{5}$$

The profit growth rate is calculated as follows:

$$PGR = \frac{Current\ net\ profit - previous\ net\ profit}{Previous\ net\ profit}. \tag{6}$$

Organization size is the natural logarithm of total assets and is calculated as follows:

$$Size = \ln(Total\ assets). \tag{7}$$

The ownership structure is measured by the top ten shareholder's rate and is calculated as follows:

$$OS = \frac{Shares\ owned\ by\ top\ ten\ shareholders}{Total\ shares}. \tag{8}$$

The industry concentration is measured by CR4, which reflects the revenue share of the 4 largest firms in that industry. CR4 is calculated as follows:

$$CR4 = \frac{Core\ business\ revenue\ of\ the\ top\ 4\ firms\ in\ the\ industry}{Total\ core\ business\ revenue\ of\ the\ entire\ industry}. \tag{9}$$

The industrial revenue growth rate is calculated as follows:

$$ORG = \frac{Industrial\ current\ revenue - industrial\ previous\ revenue}{Industrial\ previous\ revenue}. \tag{10}$$

Additionally, the CEO's gender, age, oversea background, education level, tenure, managerial discretion which is measured by environment discretion, organization discretion and additional discretion (Chin et al., 2021), and the age of company, may influence their emotional expression. Therefore, we also include these factors as control variables in our analysis.

4. Result

4.1. Descriptive statistics and correlations

The descriptive statistics and correlation analysis of the variables are presented in Table 2. The mean positive emotion expressed in CEO's letters to shareholders is 0.90, while the mean negative emotion expressed in CEO's letters to shareholders is 0.10, indicating that the sentiment expressed in most CEO's letters to shareholders is more positive.

4.2. Hypothesis testing

The present study utilizes panel data, which comprises two dimensions: cross-sectional and time series. This allows for the inclusion of both the dynamic changes of a single organization across the event dimension and the differences between various companies on the cross-sectional dimension. Such an approach can mitigate the impact of multicollinearity on time series data.

Our hypotheses suggest that the positive emotional expression of CEO is positively related to organizational performance, while the negative emotional expression of CEO is negatively related to organizational performance. To test these, a two-way fixed effects model in STATA 18.0 is employed for regression analysis. Moreover, to prevent the interference of reverse causality between the variables under examination, we lagged the independent and control variables one year so that they were used to predict the dependent variable in the following year. When considering control variables, the models are established as follows:

$$MTB_{it} = \beta_0 + \beta_1 CPE_{it-1} + \sum \beta_2 X_{it-1} + \alpha_i + z_t + \varepsilon_{it-1}; \tag{11}$$

$$MTB_{it} = \beta_0 + \beta_1 CNE_{it-1} + \sum \beta_2 X_{it-1} + \alpha_i + z_t + \varepsilon_{it-1}, \tag{12}$$

where MTB_{it} represent the performance of organization i in year t and year t–1 respectively, CPE_{it-1} and CNE_{it-1} represents the positive and negative emotions expressed in CEO's letters to shareholders by organization i in year t–1, respectively, X_{it-1} represents the control variables, α_i represents the firm fixed effects, z_t represents the time fixed effects.

The regression results are presented in Table 3. In Model 2, after controlling for several CEO's individual level, organizational level, and industrial level variables, the regression coefficient of CEO's positive emotional expression on organizational performance (MTB) remains significant (β = 0.79, p = 0.033), providing support for H1-1. In model 3, after controlling for several CEO's individual level, organizational level, and industrial level variables, the regression coefficient of negative emotional expression of CEOs on organizational performance (MTB) remains significant (β = –0.77, p = 0.036), providing support for H1-2.

Table 2. Descriptive statistics and correlations

	Gend	Age	OB	EDU	TEN	MI	Dual	SOE	PER	DAR	PGR	Size	OA	OS	CR4	ORG	CPE	CNE	MTB	ROA
Age	–0.05																			
OB	–0.01	–0.05																		
EDU	–0.07	–0.19**	0.09																	
TEN	–0.08	0.31**	–0.08	–0.12*																
MI	0.08	0.14**	0.11*	–0.02	0.28**															
Dual	0.12*	–0.15**	0.09	–0.03	0.11*	0.12*														
SOE	–0.10*	0.02	–0.02	0.14**	–0.33**	–0.30**	–0.27**													
PER	–0.01	–0.03	–0.01	0.03	–0.06	–0.17**	–0.03	0.05												
DAR	–0.03	0.02	–0.13**	–0.00	–0.08	–0.18**	–0.13*	0.37**	0.04											
PGR	0.03	–0.03	–0.03	0.05	–0.02	0.00	0.07	0.03	–0.06	0.06										
Size	–0.06	0.16**	–0.03	–0.00	–0.12*	–0.22**	–0.35**	0.53**	–0.04	0.66**	0.01									
OA	0.04	0.13*	–0.09	–0.06	0.47**	0.38**	0.04	–0.29**	–0.02	–0.06	0.06	–0.19**								
OS	0.03	–0.02	0.13**	0.08	–0.39**	–0.15**	–0.23**	0.33**	0.01	–0.03	0.02	0.32**	–0.39**							
CR4	–0.01	0.04	–0.11*	–0.09	–0.23**	–0.13*	–0.13*	0.28**	–0.07	0.33**	0.09	0.40**	–0.27**	0.34**						
ORG	0.01	0.05	–0.06	–0.04	–0.06	0.01	–0.02	0.05	–0.01	0.05	–0.01	0.01	–0.01	–0.03	0.07					
CPE	–0.01	0.08	0.02	0.10*	–0.03	–0.02	0.04	0.06	–0.00	0.07	0.01	0.13**	–0.14**	0.01	0.02	–0.04				
CNE	0.01	–0.08	–0.02	–0.10*	0.03	0.02	–0.04	–0.06	0.00	-0.07	–0.01	–0.13**	0.14**	–0.01	–0.02	0.04	–0.99**			
MTB	0.14**	–0.02	0.08	–0.01	0.13**	0.24**	0.12*	–0.39**	–0.01	–0.61**	–0.02	–0.54**	0.06	–0.10	–0.34**	–0.03	0.01	–0.01		
ROA	0.09	0.13*	0.09	–0.06	0.14**	0.17**	0.06	–0.25**	–0.16**	–0.51**	0.04	–0.27**	0.08	–0.06	–0.29**	0.01	0.02	–0.02	0.58**	
M	1.01	54.65	3.17	3.96	6.49	9.70	0.17	0.57	69.63	0.55	0.47	6.64	17.29	68.25	0.63	13.96	0.90	0.10	1.12	0.05
SD	0.09	6.30	1.76	1.14	4.46	1.09	0.37	0.50	610.85	0.19	1.89	0.77	7.05	18.03	0.17	212.54	0.10	0.10	1.30	0.05

Notes: n = 396; $^{*}p < .05$, $^{**}p < .01$, two-tail test; variable abbreviations are listed in Table 1;
Gend: 1 = male, 2 = female; Dual: 0 = no, 1 = yes; SOE: 0 = non-state-owned firm, 1 = state-owned firm;
Oversea background: 1 = overseas work experience, 2 = overseas education background, 3 = no international background;
Education level: 1 = technical secondary school or below, 2 = junior college (associate degree), 3 = bachelor's degree, 4 = master's degree, 5 = doctoral degree, 6 = other, 7 = MBA/EMBA.

Table 3. Hierarchical regression analysis with CEO's positive/negative emotional expression in the prediction of organizational performance

Variables	MTB			ROA		
	M1	M2	M3	M4	M5	M6
Gend	0.00	0.00	0.00	0.00	0.00	0.00
Age	0.00	0.00	0.00	0.00	0.00	0.00
OB	–0.04	–0.04	–0.04	–0.00	–0.00	–0.00
EDU	0.09	0.09*	0.09*	0.00	0.00	0.00
TEN	–0.00	–0.00	–0.00	–0.00	–0.00	–0.00
MI	–0.10	–0.12	–0.12	–0.00	–0.01	–0.01
Dual	0.13	0.11	0.11	0.00	0.00	0.00
SOE	–0.74**	–0.78**	–0.78**	–0.01	–0.01	–0.01
PER	–0.00	–0.00	–0.00	–0.00	–0.00	–0.00
DAR	–0.24	–0.22	–0.22	–0.07	–0.07	–0.07
PGR	–0.02	–0.02	–0.02	0.00	0.00	0.00
Size	–1.05*	–1.11**	–1.11**	–0.02	–0.03	–0.03
OA	0.02	0.02	0.02	0.00	0.00	0.00
OS	0.01*	0.01*	0.01*	0.00	0.00	0.00
CR4	–0.91	–0.94	–0.94	–0.00	–0.00	–0.00
ORG	–0.00	0.00	0.00	0.00	0.00	0.00
CPE		0.79*			0.06*	
CNE			–0.77*			–0.06*
Constant	8.84	8.65	9.44	0.26	0.24	0.31
R^2	0.33	0.33	0.33	0.14	0.15	0.15

Notes: n = 396; *p < .05, **p < .01; variable abbreviations are listed in Table 1.

4.3. Robustness test

We conducted regression analysis with replaced organizational performance. Organizational performance can be measured by various indicators. To conduct a robustness test, market-to-book ratio (MTB) is substituted for return on assets (ROA) in the model. ROA represents how efficiently an organization uses its assets for generating profit. The calculation formula for return on assets (ROE) is as follows:

$$ROA = \frac{Net\ profit}{Total\ assets}. \tag{13}$$

The regression results are shown in Table 3. In Model 5, CEO's positive emotional expression positively predicts organization performance (ROA) (β = 0.06, p = 0.014), while in Model 6, CEO's negative emotional expression negatively predicts organization performance (ROA) (β = –0.06, p = 0.016), which indicates that after substituting MTB with ROA, the results remain robust.

5. Discussion

The findings of this study align with the principles of upper echelons theory, which posits that the characteristics and behaviors of top managers significantly influence organizational outcomes (Hambrick & Mason, 1984). In this case, the results demonstrate that the positive emotional expression of CEOs is associated with improved organizational performance while the negative emotional expression of CEOs is associated with reduced organizational performance. This supports the idea that a CEO's emotional expression can shape the organization's direction and effectiveness, reinforcing the core premise of upper echelons theory that the traits of top managers impact company success. Even after controlling for various CEO's factors such as gender, age, oversea background, and education level, and organizational factors such as financial ratios, growth rates, and company size, the relationship between CEO emotional expression and performance remains significant. This suggests that emotional expression, as an often underexamined psychological construct, plays a meaningful role in leadership effectiveness. Upper echelons theory suggests that top managers' decisions and actions reflect their values, personalities, and other personal attributes, and this study extends that understanding to include emotional expression as a critical factor influencing organizational outcomes. The robustness tests further support the reliability of these findings. By using different measures of CEO emotional expression and organizational performance, the consistency of the results confirms that CEO emotions are not only relevant but also integral to the functioning and performance of the organization. This extends the upper echelons perspective by emphasizing that emotions, alongside other psychological and behavioral factors, shape the strategic direction and overall success of an organization.

This study makes three key theoretical contributions to upper echelons theory and leadership emotion research.

1. Revealing emotion as a missing link in executive influence

We extend upper echelons theory's application by identifying CEO emotional expression as a novel psychological antecedent of organizational performance. While prior work has established how CEOs' demographic and cognitive characteristics affect outcomes (Belenzon et al., 2019; Garcia-Blandon et al., 2019; Kiss et al., 2022), we demonstrate that emotional elements—specifically the valence of emotional expression—represent a distinct class of executive attributes that permeate organizational systems. This responds to recent calls for incorporating micro-level psychological processes into macro leadership theories (Hambrick, 2007).

2. Building the missing bridge between micro affect and macro-outcomes

We bridge the micro-macro divide in emotion research by establishing an empirical link between leader emotion and organization-level outcomes. Existing studies have primarily examined middle managers' emotional expressions at individual (Stollberger et al., 2020) or team levels (Zhang et al., 2023). By contrast, we theorize the cascading mechanisms through which CEO emotion, given its symbolic centrality and amplified dissemination, creates organization-wide effects that transcend departmental boundaries. This answers previous researcher's longstanding call for multi-level emotion research in organizations (Ashkanasy, 2003).

3. Introducing a novel research approach for leadership literature

We advance methodological approaches in leadership studies by employing computational text analysis of annual reports. Whereas previous emotion research relied on lab experiments or self-reports (Chen et al., 2023; Wang et al., 2018), our use of sentiment-enhanced machine learning on authentic speech data addresses critical limitations of ecological validity in experimental designs and common method bias in surveys. This approach sets a precedent for studying psychological constructs through digital traces in strategic leadership research.

These contributions collectively reshape understanding of how executive affect operates at scale, offering both theoretical precision and methodological innovation to the study of leadership's emotional dimensions.

6. Conclusions and insights

6.1. Conclusions

This study proposed a scientific problem: what effect can CEO emotional expressions generate on organizational performance? Our findings solve the problem definitely: CEO emotional valence exerts significant and opposing effects—positive expressions enhance organizational performance, while negative expressions impair it.

6.2. Managerial implication

Our findings demonstrate that CEO emotional expression significantly affects organizational performance. Given leaders' unique status and power, their emotional expressions influence not only their own decision-making but also subordinates, business partners, and overall organizational operations. This yields critical practical implications:

For CEOs. Due to the special status and power of leaders in organizations, their emotional expression not only influences their own decision-making and behavior but also has important implications for subordinates, business partners, and the overall operation of the organization. Our findings demonstrate that CEO emotional expressions in public communications (particularly in shareholder letters) directly affect market perceptions, as evidenced by the significant impact on market-to-book ratios (MTB). This suggests that: first, when delivering public speeches or written addresses, listed company CEOs should be particularly mindful that their emotional tone is being interpreted by investors as a signal of organizational health and future performance potential. The market appears to penalize excessive negative expressions while rewarding appropriately calibrated positive tones. Second, while authentic expression remains paramount, CEOs of publicly traded firms need to develop professional awareness that each emotional display in official communications carries potential market consequences. Our MTB results indicate that markets react not just to financial data but to the emotional subtext of leadership communications. Third, CEO's emotional expression is also an important tool for internal management within the organization. Appropriate emotional expression can influence the behavioral tendencies of other members within the organization, facilitating efficient project advancement. Therefore, senior leaders in companies, especially CEOs of listed firms, need to recognize that emotional expression serves dual purposes - as both an internal management tool and an external market signal. Professional development for public company CEOs should incorporate training on how emotional expressions in various communication formats may influence analyst perceptions and investor decision-making. This goes beyond simple "positive tone" recommendations to develop nuanced emotional expression strategies tailored to different stakeholder groups and communication contexts.

For shareholders and investors. Shareholders and investors can analyze CEO emotional expressions in earnings calls, shareholder letters, and public statements as a non-financial indicator of organizational health. Our findings suggest that systematically evaluating emotional tones may help predict long-term performance trends. Investors should advocate for emotional leadership training in leadership development programs, as our results confirm its performance relevance. This could be incorporated into ESG (Environmental, Social, and Governance) evaluation frameworks. Institutional investors might consider CEO emotional expression patterns when assessing leadership quality during board elections or compensation votes, particularly in high-uncertainty industries.

For the general public. The study equips the public with an evidence-based framework to assess organizational leadership beyond traditional metrics. Citizens may evaluate corporate trustworthiness by analyzing the emotional consistency between CEOs' public statements (e.g., sustainability pledges) and subsequent organizational actions. Individuals can consider leadership emotional patterns when making purchasing decisions, particularly for high-involvement products where corporate integrity matters (e.g., pharmaceutical safety, financial services). Job seekers may use CEO emotional expression as a proxy for organizational culture during company selection processes.

For policy makers. First, for corporate governance policy makers, given that CEO emotional tone affects firm outcomes, boards and governance committees should incorporate emotional-related metrics into CEO performance assessments, alongside traditional financial and operational KPIs, mandate emotional communication training for senior executives, particularly in investor-facing contexts, such as earnings calls and shareholder letters. When selecting CEO candidates, boards and governance committees should evaluate not only strategic acumen but also emotional expression consistency, as our results show that negative tones correlate with performance declines. Boards and governance committees and also establish guidelines for CEO communications to ensure emotional messaging aligns with corporate strategy, for example, avoid excessive negativity during crises to prevent morale and market confidence deterioration. Second, for financial regulators, securities commissions and stock exchanges can integrate "leadership communication quality" into ESG scoring frameworks, as consistent emotional transparency may signal stronger corporate governance, and develop training for analysts and investors on interpreting emotional cues in corporate communications, reducing potential misinterpretations that could lead to market overreactions since CEO emotional expressions can influence market perceptions.

6.3. Limitations and future direction

The present study was conducted in the context of Chinese culture, with samples consisting of Chinese listed companies. Therefore, the research conclusion may have cultural limitations and cannot be guaranteed to be validated in other cultural backgrounds. For example, harmony is highly expected in Chinese context, and the CEO's public letters to shareholders are unlikely to convey overly negative information. We also acknowledge that the tendency to avoid negative disclosures in public communications may not be unique to Chinese organizations, as similar patterns have been observed in other cultural contexts where corporate leaders often maintain positive tones in official shareholder communications. Therefore, in future research, researchers can explore different research directions or models involved in this study in other cultural contexts to test the cultural universality of the conclusions drawn in this study.

Text analysis focuses on the CEO's letters to shareholders, which convey limited information. In the future, more extensive text materials can be obtained through platforms such as Weibo, WeChat official accounts, or even videos of performance briefings to capture both textual content and body language of CEO, thus providing a more comprehensive reflection of CEO emotional expression. The present study focused on listed companies in China, limiting the generalizability of the research conclusions. Future research could consider extending to different types of enterprises, such as small and medium-sized enterprises, private enterprises, family businesses, and so on.

While our study controls for CEO tenure to account for potential stability effects, we acknowledge that the relationship between negative emotional expressions and subsequent CEO dismissal remains unexamined. Our data is limited to CEOs during their active tenure, which prevents us from observing whether such emotional expressions ultimately led to turnover events. Future research could extend our findings by tracking post-tenure dismissal outcomes to further examine this relationship.

Although the dataset used in this study is not the most contemporaneous, it remains highly relevant for examining the foundational principles of upper echelons theory. The core tenet that executive characteristics influence firm strategy is a timeless phenomenon. Using historical data allows us to test the robustness of this relationship absent the "noise" of recent, unprecedented events (e.g., the COVID-19 pandemic), thereby establishing a clearer baseline understanding. Future research should build upon this baseline by applying the same rigorous methodology to contemporary data, exploring how these dynamics have evolved in the post-pandemic business landscape.

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Author contributions

Hui Chen and Xiao-Hua (Frank) Wang conceived the study and were responsible for the design and development of the data analysis. Yingsi Yang was responsible for data collection and analysis. Xiao-Hua (Frank) Wang were responsible for data interpretation. Yingsi Yang and Hui Chen wrote the first draft of the article.

Disclosure statement

Authors declare that they have no competing financial, professional, or personal interests from other parties.

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