



The Value of Looking into the Future: Top Managers' Long-Term Orientation and ESG Engagement

Hongyan Sheng¹ · Taiwen Feng² · Yufei Huang^{3,4}

Received: 7 October 2023 / Accepted: 18 April 2026
© The Author(s), under exclusive licence to Springer Nature B.V. 2026

Abstract

Although prior research has explored how managers' intuitive and affective processing mechanisms shape corporate ethical behaviors, limited attention has been dedicated to top managers' temporal cognitive orientation—a relatively stable tendency to perceive time. Drawing on upper echelons theory and the attention-based view, we theorize that long-term orientation expands managerial attention to encompass the future consequences of current decisions, thereby affecting environmental, social, and governance (ESG) engagement. This study first uses text analysis and machine learning methods to construct top managers' long-term orientation index and then empirically tests three hypotheses employing the panel data of Chinese A-share listed companies from 2010 to 2023. The results of a high-dimensional fixed effect model indicate that long-term-oriented top managers engage more substantively with ESG initiatives. The conclusion remains robust after various checks. We also find that regulatory pressure and shareholder value strengthen the positive impact of long-term orientation on ESG engagement. This study contributes to business ethics by demonstrating that long-term orientation serves as a cognitive foundation that enables ESG engagement by fostering a thicker conception of corporate responsibility.

Keywords Long-term orientation · ESG engagement · Upper echelons theory · Attention-based view · Machine learning

Introduction

Engaging in environmental, social, and governance (ESG) has evolved into a mainstream strategy for firms to operationalize corporate sustainability, the integrated capacity to sustain ecological integrity, social equity, and economic viability across short-term actions and long-term horizons (Kind et al., 2023). ESG serves as a framework for

incorporating ethical considerations into corporate practices, with the primary aim of addressing distinct stakeholders' demands by alleviating environmental and social issues (Heubeck & Ahrens, 2025). In essence, ESG embodies the core principles of business ethics by guiding firms to transcend profit maximization. It is widely acknowledged that ESG enables firms to reconcile tensions between short-term financial pressures and long-term societal welfare (Lee et al., 2016), thereby contributing to business sustainability (Du et al., 2023).

Given the importance of ESG in improving stakeholders' welfare, previous research has examined ESG engagement from various perspectives. A key lens is the upper echelons theory, which focuses on the role of top managers' characteristics, including demographics (Chang et al., 2025; Sun et al., 2024), prior experiences (O'Sullivan et al., 2021), ability (Lu et al., 2025), and personality (Al-Shammari et al., 2025; Kind et al., 2023), in firms' engagement in socially responsible behavior, as reflected in enterprises' ESG practices. Although several studies have investigated top managers' psychological traits (e.g., narcissism, hubris, and greed), the main emphasis has been placed on intuitive and irrational affective processing mechanisms. However, ESG-related

✉ Taiwen Feng
taiwenfeng@hit.edu.cn

Hongyan Sheng
18829286855@163.com

Yufei Huang
yufei.huang@tcd.ie

¹ School of Business Administration, Shandong University of Finance and Economics, Jinan, China

² School of Economics and Management, Harbin Institute of Technology (Weihai), Weihai, China

³ Trinity Business School, Trinity College Dublin, Dublin, Ireland

⁴ UCL School of Management, University College London, London, UK

decision-making inherently involves ethical trade-offs—between present and future stakeholders, between shareholders and broader society, and between economic efficiency and social justice (Choi et al., 2023). Unlike decisions driven by affective impulses, navigating these multidimensional trade-offs requires rational and deliberative cognitive processes. How managers cognitively process these trade-offs fundamentally shapes whether ESG becomes a substantive expression of corporate responsibility or merely symbolic compliance. Temporal orientation, which governs how managers balance conflicting goals (e.g., short-term profits vs. long-term social impact) (Choi et al., 2023), serves as a core mediator for navigating such tensions in corporate sustainability. Grounded in such deliberative cognition, this orientation offers a theoretically distinct lens for understanding ESG decision-making. Despite its significance, prior studies have largely neglected the role of top managers' temporal orientation in ESG, limiting the completeness of the theory.

To address this research gap, we draw on insights from upper echelons theory and the attention-based view to examine how top managers' temporal orientation shapes ethical decision-making. Specifically, this study focuses on top managers' long-term orientation, which refers to the extent to which top managers value planning, perseverance, and present effort in pursuit of future rewards, with an emphasis on tradition and sustained commitment to long-term goals (Gamache & McNamara, 2019; Nevins et al., 2007). As one type of psychological characteristic, long-term orientation reflects managers' capacity to transcend immediate pressures and systematically consider the extended temporal consequences of their actions. It enables managers to break free from the dogmatic logic of prioritizing short-term financial goals and drive ethical decision-making that balances economic, social, and environmental objectives. Such a cognitive focus aligns with the core of ESG, where sustained attention to long-term impacts is more important than immediate gains. In this vein, we argue that managers with a long-term orientation tend to prioritize long-term activities and actively engage in ESG.

Moreover, the attention-based view suggests that the focus of top managers is contingent on the specific contexts in which they are situated, which is called “the principle of situated attention” (Ocasio, 1997). In this study, two contextual factors at the environmental and organizational levels (i.e., regulatory pressure and shareholder value) are examined. Specifically, high regulatory pressure pushes top managers to allocate attention to external compliance requirements (Zhang et al., 2021). When shareholder value is sufficiently secured, top managers with a long-term orientation are less likely to be distracted by short-term performance pressures. Taken together, we propose that the relationship between top managers' long-term orientation and ESG engagement is stronger under a high-attention focus.

These contextual factors shape not only where managerial attention is directed but also whether long-term ethical considerations receive sufficient cognitive resources.

Understanding the drivers of ESG engagement has become an important research topic in business ethics. Using a panel dataset of 8275 Chinese A-share listed companies, we find that top managers' long-term orientation is positively associated with ESG engagement. This result demonstrates that long-term orientation can cushion the time risks associated with ESG costs and benefits. With respect to the moderating effect, we find that regulatory pressure and shareholder value strengthen the positive relationship between long-term orientation and ESG engagement, which is consistent with the findings of research highlighting the pivotal role of managerial attention.

Our study contributes to the literature in three ways. First, we extend the business ethics literature by shifting attention from affective to deliberative cognitive processes in shaping ethical behaviors. By doing so, this study illustrates how decision-makers address ESG challenges by systematically considering the long-term consequences of their choices. Second, this study extends the attention-based view to the ethical domain by examining the contingent factors of regulatory pressure and shareholder value. This perspective suggests that ethical behavior is not merely a function of moral character or emotional disposition, but also of how managers cognitively structure their attention across temporal horizons. Third, this study contributes to the growing literature that attempts to measure top managers' long-term orientation. Using text analysis combined with machine learning, we develop a textual index that directly captures top managers' long-term orientation. This approach provides a more rigorous means to investigate the effect of managerial cognition on ethical decision-making.

Theoretical Background and Hypotheses

Upper Echelons Theory and the Attention-Based View

To understand how top managers' long-term orientation shapes corporate ESG engagement, we integrate upper echelons theory and the attention-based view, two complementary perspectives that jointly explain the mechanisms linking top managers' psychological traits to organizational decisions. Upper echelons theory posits that managers' personalized interpretations of strategic situations, shaped by their experiences, values, and personalities, are the central driving force behind organizational outcomes (Hambrick, 2007). The core of upper echelons theory is bounded rationality. As top managers often encounter information overload, uncertain signals, conflicting goals, and shifting institutional

constraints, they have to rely on their cognitive frameworks and values to make decisions (Connelly et al., 2011).

The attention-based view extends this logic by explaining how these cognitive frameworks are translated into specific organizational actions. This perspective argues that “what managers do depends on what issues and answers they focus their attention on” (Ocasio, 1997). Attention is a finite resource, and managers' allocation of attention to particular issues or solutions is constrained by both their internal cognitive frameworks and external situational cues. Prior research has indicated that an organization's strategic orientation and outcomes is strongly shaped by managerial attention allocation, for example, corporate social responsibility activities (Zhang et al., 2021), corporate innovation (Yadav, 2007), and firm performance (Shimizu et al., 2025).

Building on this integration of upper echelons theory and the attention-based view, this study posits that managers' attention allocation is systematically shaped by their inherent psychological characteristics (Keil et al., 2017). These characteristics act as cognitive filters that govern both the scope and depth of their attention deployment (Zhang et al., 2021). This filtering process inevitably leads to attention biases, wherein managers focus on information that is congruent with their cognitive frameworks while suppressing conflicting inputs (Ocasio, 1997), ultimately guiding organizational outcomes.

Top Managers' Long-Term Orientation and ESG Engagement

How individuals perceive and engage with time horizons has a critical influence on both personal and professional life (Mosakowski & Earley, 2000). Within this landscape, long-term orientation emerges as a perspective that prioritizes the future and draws on enduring practices. It encompasses two core sub-dimensions: planning and tradition (Nevins et al., 2007). Planning involves proactive thinking, perseverance, and present effort in pursuit of future rewards, whereas tradition entails respect for time-honored values and practices that guide current actions. Existing studies show that individuals with a long-term orientation tend to hold stronger ethical values (Nevins et al., 2007). Their focus on long-term consequences (through planning) and adherence to traditional values (rooted in tradition) discourage unethical behaviors, such as environmental harm. Such a focus on planning, respect for meaningful traditions, and alignment with stronger ethical values establishes a link between long-term orientation and ESG engagement.

In particular, top managers with a long-term orientation demonstrate a stronger ethical belief. From a planning perspective, a long-term mindset enables managers to better recognize the risks associated with unethical behaviors, as such behavior may lead to negative consequences that could

hinder the implementation of the strategic plan. This awareness, in turn, encourages behaviors that protect firms' credibility and sustain long-term growth (Xu et al., 2024). From a traditional perspective, top managers place high importance on values such as integrity and honesty, which are incompatible with unethical behaviors. This ethical belief leads top managers to view ESG not as an optional initiative but as a coherent extension of their core values. Guided by this mindset, top managers naturally direct more attention and resources toward ESG issues, recognizing them as essential to sustainable growth (Yadav et al., 2007). Thus, ESG becomes a central element of top managers' strategic vision, reflecting their ethical commitment and deliberate prioritization of lasting societal and environmental value.

Moreover, ESG is inherently a long-term endeavor, requiring ongoing resource allocation and persistent strategic efforts to yield returns (Heubeck & Ahrens, 2025). This aligns closely with the principles of long-term orientation, which emphasize extended temporal horizons and consistent organizational commitment. Specifically, top managers with a long-term orientation structurally sustain their attention on ESG-related goals over extended time horizons (Nadkarni & Chen, 2014). Rather than being diverted by short-term performance pressures, they are inclined to maintain a focus on ESG projects even when outcomes are distant or uncertain (Shi et al., 2012). This tendency to prioritize extended value creation ensures that resources and efforts remain dedicated to ESG objectives, which often require multi-year engagement to achieve meaningful impact (Choi et al., 2023). Synthesizing the arguments above, we propose the following hypothesis:

H1: *Top managers' long-term orientation is positively related to ESG engagement.*

The Moderating Effect of Regulatory Pressure

Drawing on the insights of the attention-based view, the issues and solutions that top managers focus on, as well as their specific actions, are determined by the unique context or situation that they are in, which is called the “principle of situated attention.” This principle suggests that contextual stimuli can guide where top managers direct their attention (Stevens et al., 2015). Following this line of inquiry, we further explore the potential boundary conditions of the impact of top managers' long-term orientation on ESG engagement, with regulatory pressure emerging as a critical situational stimulus that shapes managerial attention.

Regulatory pressure is a system constraint established and implemented by the government to exert pressure on firms in terms of their environmental performance and responsible activities (Jiang et al., 2021). Since ESG engagement

requires greater financial commitment and returns may not be realized in the short term, it is often not supported by other investors and managers. In this case, regulatory pressure is significant because it constrains the range of action choices that are available to managers through guidelines (Crossland & Hambrick, 2007) and redirects their attention toward the long-term activities. This dynamic aligns with the principle of situated attention, which holds that top managers will adjust their focus of attention based on context, with their behavior depending more on environmental characteristics than on individual traits in such situations (Zhang et al., 2021). When regulatory pressure intensifies, top managers tend to shift their attention toward compliance and long-term responsible practices. This heightened focus enhances the discretion of top managers to translate long-term orientation into corporate ESG engagement.

In addition, when regulatory pressure is high, top managers' efforts in regard to ESG engagement can be legitimized by stakeholders, thus enhancing personal reputation and bolstering organizational legitimacy (Edelman & Suchman, 1997). In turn, such legitimacy provides rights and discretion for top managers to translate long-term orientation into ESG engagement without the distraction of short-term market volatility (Kanashiro & Rivera, 2019). In contrast, when regulatory pressure is lower, stakeholders are less likely to prioritize ESG-related issues, diverting top managers' attention away from their long-term proposals. With limited external pressure to sustain focus on these initiatives, managerial attention often shifts to short-term priorities that gain stakeholder support. Therefore, we propose the following hypothesis:

H2: *Regulatory pressure strengthens the impact of top managers' long-term orientation on ESG engagement. Specifically, the positive impact of top managers' long-term orientation on ESG engagement becomes stronger when regulatory pressure becomes stricter.*

The Moderating Effect of Shareholder Value

Shareholders are another important force that shapes managerial attention. They have the right to supervise and participate in major decisions of the firm and can use voting power to influence corporate governance (Amao & Amaeshi, 2008; Wangrow et al., 2015). Enterprises typically need to balance shareholders' economic demands and social responsibility requirements (Queen, 2015). This dual role necessitates careful consideration and trade-offs in resource allocation. We posit that top managers need to ensure that shareholders' interests are met before they can effectively address and fulfill social responsibilities.

When shareholders receive high returns, they tend to be satisfied with enterprises' performance. On the premise that their interests are satisfied, they are more willing to give long-term-oriented managers greater discretion and support their ESG-related projects (Wang et al., 2015). Specifically, high shareholder value may contribute to increased trust in and satisfaction with top managers. Satisfaction, in turn, can direct the attention of long-term-oriented managers in terms of ESG development, as shareholders may assume that managers will make the best decisions to ensure the future growth of the firm (Wangrow et al., 2015). Therefore, from the perspective of attention allocation, high shareholder value can insulate top managers from short-term shareholder demands, allowing them to focus more on ESG initiatives.

Moreover, increased shareholder value typically occurs in parallel with business growth and financial stability (Campbell et al., 2012), which may provide financial security for top managers' ESG initiatives. This financial security reduces the need for managers to allocate attention to short-term profit-generating activities, allowing them to focus more on ESG. In contrast, when shareholder value is low, long-term-oriented managers may be limited in their commitment to ESG resources because shareholders prefer them to engage in practices that increase short-term performance (Wangrow et al., 2015), thus diverting managerial attention away from ESG engagement. For these reasons, we propose the following hypothesis:

H3: *Shareholder value strengthens the impact of top managers' long-term orientation on ESG engagement. Specifically, the positive impact of top managers' long-term orientation on ESG engagement becomes stronger when shareholder value increases.*

Method

Data and Sample

This study tested the hypotheses using a panel dataset of Chinese A-share listed companies during the period 2010–2023. We merged data from multiple sources. The ESG engagement data came from the Chinese Research Data Services (CNRDS) platform. We manually collected information on top managers' long-term orientation from corporate annual reports. The latitude and longitude coordinates of listed companies used to calculate regulatory pressure were collected from Google Maps. The data on shareholder value and all control variables came from the China Stock Market and Accounting Research (CSMAR) database.

We excluded financial and insurance firms because the accounting standards and reporting structures in the financial

and insurance industry differ significantly from those in other industries. Specially treated (ST) and *ST firms¹ were also excluded, as abnormal data could interfere with the results. After removing samples with missing or incomplete data, we obtained a final sample of 8275 observations.

Owing to the possible extreme values of the control variables such as cash, ROA, and leverage, we winsorized the continuous variables at the 1st and 99th percentiles to ensure the robustness of the findings. Table 1 reports the characteristics of sample firms across industries and years.

Table 1 Sample description

Panel A: The distribution of sample firms by industry

CSRC Code	Industry	Frequency	Percentage (%)
A	Agriculture, forestry, animal husbandry and fishery	114	1.38
B	Mining and quarrying	324	3.92
C	Manufacturing	4752	57.42
D	Electricity, heat, gas and water production and supply	501	6.05
E	Construction	277	3.35
F	Wholesale and retail trade	469	5.67
G	Transportation, warehousing and postal services	465	5.62
H	Accommodation and food services	15	0.18
I	Information transmission, software and information technology services	364	4.40
K	Real estate	493	5.96
L	Leasing and business services	83	1.00
M	Scientific research and technical services	55	0.66
N	Water conservancy and public facility management	87	1.05
O	Resident services, repair and other services	2	0.02
P	Education	8	0.10
Q	Health and social work	27	0.33
R	Culture, sports and entertainment	168	2.03
S	Composite	71	0.86
Total		8275	100

Panel B: The distribution of sample firms by year

Year	Frequency	Percentage (%)
2010	324	3.92
2011	358	4.33
2012	389	4.70
2013	481	5.81
2014	507	6.13
2015	511	6.18
2016	526	6.36
2017	566	6.84
2018	590	7.13
2019	644	7.78
2020	673	8.13
2021	697	8.42
2022	910	11.00
2023	1099	13.28
Total	8275	100

CSRC indicates China Securities Regulatory Commission

Measurement

Dependent Variable

Data on ESG engagement were obtained from the CNRDS platform. The CNRDS platform adopts a comprehensive six-dimensional evaluation framework that assesses corporate ESG engagement through the dual perspectives of “strengths” and “concerns.” This framework systematically examines six key domains: philanthropy and volunteer activities, corporate governance, diversity, employee relations, environmental practices, and product responsibility. Within each dimension, multiple dummy variables are constructed to quantify both positive ESG initiatives and potential risk factors. For our measurement of ESG engagement, we focus on “strength” indicators, which capture affirmative corporate actions such as establishing dedicated CSR departments, implementing energy conservation policies, and supporting educational programs. By aggregating these positive practice indicators across all dimensions, we derive an ESG strengths score that measures the extent of a firm’s proactive ESG engagement.

Independent Variable

In the existing literature, scholars mainly employ surveys (Lin et al., 2019), proxy variables (Graafland & Noorderhaven, 2020), and the dictionary method (Brochet et al., 2015) to measure long-term orientation. Among them, surveys have the problem of subjective cognitive bias, and proxy variables capture only after-action behaviors rather than the real cognition of managers. Although the dictionary method can effectively capture long-term orientation, it is unsuitable for translating English keywords to other contexts because of the complexity of semantic expressions. In other words, it is impossible to accurately assess the multiple expressions of Chinese vocabulary in financial texts without the use of machine learning to study corpora. Furthermore, Pennebaker et al. (2003) propose that the psychological processes of a subject can be reliably inferred from the types and frequency of words that he or she uses in a text. Frequent emphasis on words, such as “day,” “short-term,” “short-run,” and “ever,” reflects individuals’ short-term orientation, whereas frequent use of words such as “long-term,” “anticipate,” “looking-ahead,” and “expect” indicates their long-term orientation. This view confirms the effectiveness of text analysis in capturing the psychological traits of top managers, which are important but difficult to verify (Jung et al., 2025; Quevedo et al., 2026).

In 2005, the China Securities Regulatory Commission (CSRC) mandated the disclosure of management discussion and analysis (MD&A) in annual reports, which differs from the voluntary disclosures proposed by Cho et al.

(2010). MD&A sections review a firm’s operational conditions during the reporting period and offer a forward-looking perspective on future development, which is widely recognized for capturing managers’ subconscious cognition and characteristics. Consistent with the statement above, we developed a Chinese word set that reflects the long-term orientation of top managers and constructed an index based on text analysis of MD&A disclosure and the Word2Vec machine learning method. In this study, top managers refer to all inside top-level managers, including the chairperson, general manager, CEO, and business unit heads.

The specific measurement process is as follows. Based on the English long-term orientation word set proposed by Brochet et al. (2015), we first read MD&A sections to obtain the characteristics of textual information. Then, we developed a seed word set for long-term orientation, including “next year,” “prospect,” “believe,” and “plan.” Since people often use multiple semantically similar words to describe the same concept, it becomes necessary to expand the seed word set with similar words. As an unsupervised machine learning technique, Word2Vec machine learning is an important means to perform similar word expansion (Valtonen et al., 2024). It expresses words into multi-dimensional vectors according to contextual semantic information and obtains the semantic similarity between words by calculating the similarity between vectors (Poschmann et al., 2024). Our study chose the Skip-gram model in Word2Vec to train on Chinese annual reports. The Skip-gram model can predict the context (surrounding words) according to the seed word. By maximizing the objective function, the Word2Vec word vector corresponding to the seed word can be determined (Appendix A shows relevant details). By calculating the vector similarity, we obtained similar words to the seed words (Table 8 in Appendix B shows the example of Word2Vec similar words results).

Next, we invited 3 academic experts to independently evaluate the word set and judge whether it indicated long-term orientation. Each expert coded each word as either “relevant” or “not relevant” to long-term orientation. To ensure inter-coder reliability, we calculated Fleiss’ Kappa coefficient for the 3 experts’ coding decisions, yielding a value of 0.887, thereby confirming the validity and consistency of the expert evaluation process (Araujo & Kollat, 2018; O’Kane et al., 2021; Speer et al., 2025). Subsequently, we utilized the Python crawler to count the frequency of long-term orientation words in MD&A sections. After excluding words that occurred fewer than 400 times, we ultimately acquired a word set containing 88 long-term orientation words (see Table 9 in Appendix B). Following the same procedure, we obtained short-term orientation words and calculated their frequencies. Top managers’ long-term orientation is calculated as the ratio of the difference between

the frequency of long-term orientation words and short-term orientation words to the total number of MD&A words in year $t-1$.

$$Long-termorientation_{i,t-1} = \frac{Long-termorientationwords_{i,t-1} - short-termorientationwords_{i,t-1}}{TotalnumberofMD\&Awords_{i,t-1}}$$

Moderating Variables

The first moderator is regulatory pressure. In general, the closer the geographical distance between companies and regulatory authorities is, the greater the regulatory pressure (Husted et al., 2016). Therefore, we calculated the spherical distance from the registered locations of listed companies to the provincial branch of the CSRC where they are located to measure regulatory pressure. The latitude and longitude coordinates of listed companies were collected from Google Maps.

The second moderator, shareholder value, was measured as the ratio of net profit to total shares. We consider a one-year lagged shareholder value in our regression analysis because shareholders need to evaluate the performance of top managers based on the previous year's earnings. The data on net profit and total shares came from the CSMAR database.

Control Variables

This study also controls for other variables that could influence ESG engagement at the board chair, firm, and industry levels, including firm size, firm age, dual, payment, cash, ROA, leverage, loss, top_holder, board, insti_holder, SOE, female, growth, and the Herfindahl–Hirschman index (HHI). Table 10 in Appendix B presents the definitions and sources of all the variables.

Estimation Model

We test the hypotheses using a multidimensional fixed effects regression model. To examine the impact of top managers' long-term orientation on ESG engagement, we use the model shown in Eq. (1). The model in Eq. (2) is constructed to test the moderating effects. In all models, this study employs robust standard errors to control for heteroscedasticity and time series issues in the error terms.

$$ESG_{i,t} = \alpha + \beta Lt_index_{i,t-1} + \delta_i Controls_{i,t} + Industry + Year + Firm + \epsilon_{i,t} \quad (1)$$

$$ESG_{i,t} = \alpha + \beta_1 Lt_index_{i,t-1} + \beta_2 RP_{i,t} + \beta_3 SV_{i,t-1} + \beta_4 Lt_index_{i,t-1} \times RP_{i,t} + \beta_5 Lt_index_{i,t-1} \times SV_{i,t-1} + \delta_i Controls_{i,t} + Industry + Year + Firms + \epsilon_{i,t} \quad (2)$$

where $ESG_{i,t}$ represents the ESG engagement of firm i in year t , $Lt_index_{i,t-1}$ represents top managers' long-term orientation of firm i in year $t-1$, and $RP_{i,t}$ and $SV_{i,t-1}$ represent regulatory pressure and shareholder value, respectively.

Validity Test of Top Managers' Long-Term Orientation Index

Before the empirical analysis, we need to verify the validity of the long-term orientation index. First, in 2020, The Paper and the Institute of Public & Environmental Affairs (IPE) jointly released the first "China's Listed Companies Environmental Performance List" (including the top 100 and bottom 100). The purpose was to assist stakeholders in identifying the environmental risks of listed companies and to promote corporate responsibility practices. We selected the top 50 and bottom 50 companies on the list under the assumption that the managers of the top 50 companies are likely to be long-term-oriented, with leading practices and strategies in environmental protection and sustainable development. In contrast, the managers of the bottom 50 are short-sighted, with relatively insufficient investment and performance in these areas. We matched the list with our sample, and 34 were successfully matched (10 in the top 50 and 24 in the bottom 50). Then, we sorted the long-term orientation index in the sample into 5 groups from smallest to largest. Group 1 represents the lowest degree of long-term orientation, and group 5 represents the highest degree. The results (top 50) show that 50% of the managers (5) are classified in the highest group ($=5$), 70% of the managers (7) are in the higher group (≥ 4), and 80% of the managers (8) belong to the medium-high group (≥ 3). Additionally, the results for the bottom 50 indicate that 29% of the managers (7) are classified in the lowest group ($=1$), 50% of the managers (12) are in the lower group (≤ 2), and 83% of the managers (20) belong to the medium-low group (≤ 3). The results above prove the validity of the long-term orientation index.

Second, this study also verifies the validity of the long-term orientation index by comparing its findings with existing empirical conclusions. Yadav et al. (2007) suggest that CEOs' future focus is a critical driver of innovation. Based on the empirical methods and procedures of Yadav et al. (2007), this study investigated the impact of the long-term orientation index on corporate innovation, including detection speed, development speed, and deployment breadth. Detection speed is measured as the ratio of R&D

expenditures to total revenue. Development speed is measured as the natural logarithm of the total number of patent applications (including invention patents, utility models, and design patents), with weights assigned at a ratio of 3:2:1. Deployment breadth is measured as the natural logarithm of the total number of patents granted (including invention patents, utility models, and design patents), with weights also assigned at a ratio of 3:2:1. The results in Table 2 are in line with our expectations, verifying the validity of the long-term orientation index.

Third, to further validate the validity of the long-term orientation index, we examined its correlation with R&D intensity. This validation approach is grounded in the view of Liang et al. (2018), who argue that R&D intensity represents a manager's long-term orientation, since implementing R&D requires firms to allocate substantial resources to expenditures that may not generate immediate financial returns. The result shows that R&D intensity is significantly and positively correlated with the long-term orientation index ($r=0.212$, $p<0.001$). This finding indicates that the index can effectively capture top managers' temporal orientation.

Results

Main Results

The descriptive statistics and correlations of our variables are summarized in Table 3. The mean score of ESG engagement is 17.296. The statistics indicate that ESG scores vary among firms, with more than half of the firms having ESG scores below the average level. This finding proves the

necessity and practical significance of our study to explore the driving factors of ESG engagement. We further checked the variance inflation factor (VIF) for our variables. The results show that the maximum VIF is 2.23 and that the mean VIF is 1.44, suggesting that there are no serious multicollinearity problems.

Table 4 shows the regression analysis results. Model 1 includes all the control variables. Model 2 reports the impact of top managers' long-term orientation on ESG engagement. The results suggest that the coefficient of top managers' long-term orientation is statistically significant and positive ($\beta=0.696$, $p<0.001$), supporting H1.

Model 3 and Model 4 report the moderating effects of regulatory pressure and shareholder value, respectively. To avoid potential multicollinearity problems, this study centralized independent and moderating variables. In Model 3, the interaction between top managers' long-term orientation and regulatory pressure is positive and significant ($\beta=0.003$, $p<0.1$). This result suggests that regulatory pressure positively moderates the impact of top managers' long-term orientation on ESG engagement, supporting H2. As shown in Fig. 1, we illustrate the moderating effect of regulatory pressure in a more visible way: When regulatory pressure becomes stronger, the positive impact of top managers' long-term orientation on ESG engagement becomes much steeper. Model 4 indicates that the interaction between top managers' long-term orientation and shareholder value is positive and significant ($\beta=0.419$, $p<0.05$), which is consistent with H3. Figure 2 further shows the moderating effect of shareholder value: When the level of shareholder value increases, the positive impact of top managers' long-term orientation on ESG engagement is much steeper. In Model 5, we added all the variables to the full model and obtained consistent results.

Heterogeneity Analysis

We also explored the heterogeneity in the effect of top managers' long-term orientation on ESG engagement in terms of geographical divisions, pollution levels, and the nature of property rights. First, considering the differences in the development of eastern, central, and western China, the geographical environment where an enterprise is located may affect the relationship between top managers' long-term orientation and ESG engagement. We divided the sample into three subgroups: east, central, and west. Panel A in Table 5 shows that in the eastern region, top managers' long-term orientation exerts a stronger influence on ESG engagement. One possible explanation is that firms in the eastern region may face stricter regulations or a more competitive market environment, thus incentivizing them to adopt sustainable practices.

Table 2 Top managers' long-term orientation and corporate innovation

Variables	(1) Detection speed	(2) Development speed	(3) Deployment breadth
Long-term orientation ($t-I$)	0.001* (0.001)	0.102 [†] (0.059)	0.108* (0.054)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Constant	0.041* (0.019)	−9.981*** (1.199)	−9.475*** (1.121)
<i>N</i>	8131	8128	8128
<i>R</i> ²	0.916	0.835	0.845

Robust standard errors are in parentheses; [†] $p<0.1$; * $p<0.05$; *** $p<0.001$

Table 3 Descriptive statistics and correlations

Variables	Mean	S.D	1	2	3	4	5	6	7	8	9	10
1. 1. Long-term orientation	0.793	0.296	1									
2. ESG engagement	17.296	5.912	0.263***	1								
3. Shareholder value	0.580	0.953	0.098***	0.189***	1							
4. Regulatory pressure	67.816	93.934	-0.049***	-0.058***	0.033	1						
5. Firm size	23.333	1.392	0.104***	0.329***	0.206***	-0.112***	1					
6. Firm age	2.604	0.587	0.003	0.066**	-0.088***	-0.053***	0.236***	1				
7. Cash	0.055	0.065	0.088***	0.096***	0.219***	0.103***	0.006	-0.047**	1			
8. ROA	0.038	0.052	0.082***	0.065***	0.427***	0.084***	-0.027	-0.119***	0.494***	1		
9. Leverage	0.494	0.191	-0.045***	0.036***	-0.120***	-0.109***	0.508***	0.171***	-0.249***	-0.417***	1	
10. Loss	0.077	0.267	-0.038†	-0.022	-0.346***	-0.013	-0.061***	0.053	-0.102***	-0.298***	0.118***	1
11. Top_holder	0.370	0.157	0.006	-0.033	0.054***	-0.045**	0.209***	-0.080***	0.067***	0.087***	0.048***	-0.077***
12. SOE	0.590	0.492	-0.054***	-0.064***	-0.054***	-0.105***	0.235***	0.288***	-0.075***	-0.105***	0.161***	0.001
13. Dual	0.187	0.390	0.041*	0.067***	0.069***	0.051***	-0.089***	-0.182***	0.040	0.052***	-0.075***	-0.003
14. Payment	14.776	0.746	0.215***	0.433***	0.298***	-0.118***	0.408***	0.069***	0.134***	0.197***	0.073***	-0.099***
15. Board	2.178	0.205	-0.059***	-0.006	0.007	0.032	0.181***	0.066***	0.028	0.016	0.068***	-0.030
16. Female	0.171	0.106	0.064***	0.135***	0.048**	-0.063***	-0.188***	-0.024	0.045*	0.069***	-0.160***	0.009
17. Insti_holder	0.553	0.215	0.057***	0.070***	0.148***	-0.047**	0.436***	0.035	0.122***	0.141***	0.140***	-0.088***
18. Growth	0.311	0.820	-0.021	-0.091***	-0.038†	-0.092***	0.031	0.042*	-0.139***	-0.026	0.119***	-0.015
19. HHI	0.086	0.076	-0.072***	-0.116***	-0.059***	-0.004	0.037†	-0.023	-0.003	-0.045*	0.019	0.024
Variables	Mean	S.D	11	12	13	14	15	16	17	18		
1. 1. Long-term orientation	0.793	0.296										
2. ESG engagement	17.296	5.912										
3. Shareholder value	0.580	0.953										
4. Regulatory pressure	67.816	93.934										
5. Firm size	23.333	1.392										
6. Firm age	2.604	0.587										
7. Cash	0.055	0.065										
8. ROA	0.038	0.052										
9. Leverage	0.494	0.191										
10. Loss	0.077	0.267										
11. Top_holder	0.370	0.157	1									
12. SOE	0.590	0.492	0.320***	1								
13. Dual	0.187	0.390	-0.106***	-0.313***	1							
14. Payment	14.776	0.746	-0.102***	-0.166***	0.123***	1						
15. Board	2.178	0.205	0.017	0.233***	-0.160***	0.026	1					
16. Female	0.171	0.106	-0.153***	-0.275***	0.156***	0.110***	-0.165***	1				

Table 3 (continued)

Variables	Mean	S.D	11	12	13	14	15	16	17	18
17. Insti_holder	0.553	0.215	0.605***	0.393***	-0.155***	0.098***	0.195***	-0.206***	1	
18. Growth	0.311	0.820	0.014	0.027	-0.019	0.004	-0.047**	0.041*	0.004	1
19. HHI	0.086	0.076	0.080***	0.073***	-0.031	-0.140***	0.014	-0.155***	0.064***	0.024

† $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Second, compared with clean firms, firms in polluting industries may face technology and innovation-driven constraints that limit their ability to improve environmental technologies over the long term, hindering the effectiveness of top managers' long-term orientation. To test this argument, we divided the sample into two subgroups²: polluting and clean firms, designated "1" and "0," respectively. We performed group regression. Panel B in Table 5 indicates that the coefficient of clean firms is significantly positive, while the coefficient for polluting firms is not significant. These results suggest that the impact of top managers' long-term orientation on ESG engagement is stronger for firms in the clean industries.

Third, the nature of property rights may influence the relationship between top managers' long-term orientation and ESG engagement. State-owned enterprises' unique political-economic duality imposes stronger policy compliance requirements and social responsibility obligations, motivating long-term-oriented managers to strategically adopt ESG practices for institutional legitimacy and political capital. Moreover, with their unique resource endowments and policy support, state-owned enterprises overcome short-term profit pressures, providing institutional guarantees and resource bases for managers to continuously invest in ESG projects. Panel C in Table 5 shows that the coefficient of state-owned firms is significantly positive, while the coefficient for other firms is not significant. These results reveal that the impact of top managers' long-term orientation on ESG engagement is more prominent in state-owned firms than in other firms.

Robustness Tests

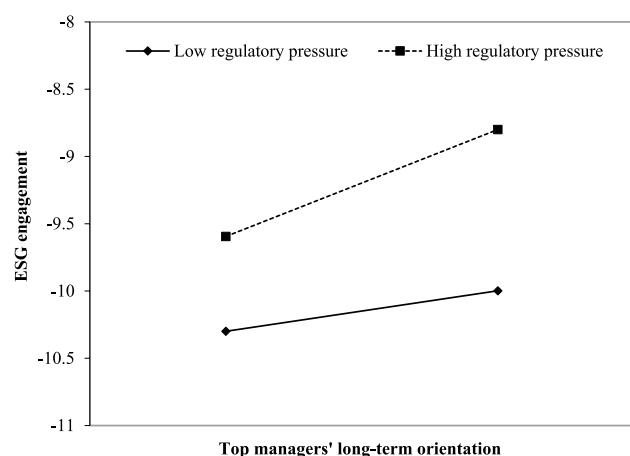
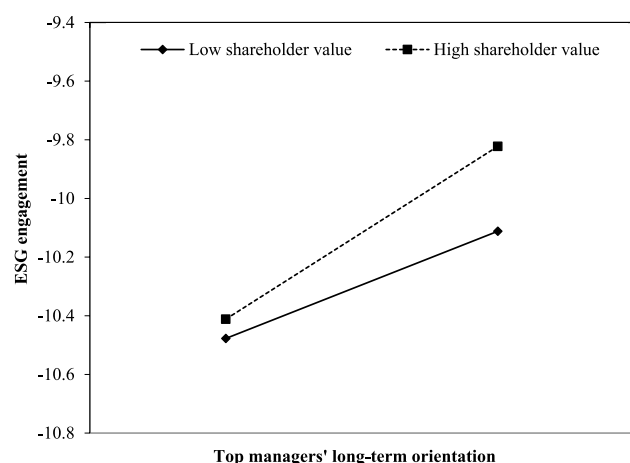
We conducted several robustness tests to examine the robustness of our main findings, including instrumental variables, propensity score matching (PSM), directed acyclic graph (DAG) analysis, alternative measures of top managers' long-term orientation and ESG engagement, and additional regional fixed effects.

Endogeneity Check

Instrumental variables. Our findings may suffer from reverse causality. Specifically, a firm with better ESG engagement may attract top managers with stronger long-term orientation. To alleviate the potential endogeneity issue, we employed instrumental variable two-stage least squares regression. Considering that an instrumental variable needs to satisfy two requirements, namely, correlation and exogeneity, this study chooses top managers' send-down movement experience, coded as "1" if top managers were born between 1949 and 1962, and "0" otherwise. The send-down

Table 4 Regression analysis

Variables	ESG engagement				
	Model 1	Model 2	Model 3	Model 4	Model 5
Long – term orientation ($t - 1$)		0.696*** (0.184)	0.735*** (0.184)	0.730*** (0.184)	0.766*** (0.185)
Long – term orientation ($t - 1$) $\times$ Regulatory pressure			0.003 [†] (0.002)		0.003 [†] (0.002)
Long – term orientation ($t - 1$) $\times$ Shareholder value ($t - 1$)				0.419* (0.212)	0.403 [†] (0.214)
Regulatory pressure			0.001 (0.002)		0.001 (0.002)
Shareholder value ($t - 1$)				– 0.128 (0.090)	– 0.126 (0.090)
Firm size	0.992*** (0.143)	1.008*** (0.143)	1.013*** (0.143)	1.028*** (0.145)	1.033*** (0.145)
Firm age	– 0.926** (0.341)	– 0.956** (0.340)	– 0.979** (0.340)	– 0.953** (0.340)	– 0.974** (0.340)
Cash	0.528 (0.781)	0.487 (0.781)	0.485 (0.781)	0.527 (0.781)	0.523 (0.782)
ROA	1.792 (1.200)	1.607 (1.202)	1.561 (1.201)	2.044 [†] (1.216)	1.992 (1.216)
Leverage	– 0.629 (0.542)	– 0.711 (0.542)	– 0.723 (0.543)	– 0.775 (0.544)	– 0.786 (0.544)
Loss	– 0.304 [†] (0.171)	– 0.290 [†] (0.171)	– 0.290 [†] (0.171)	– 0.408* (0.186)	– 0.407* (0.186)
Top_holder	0.566 (0.831)	0.568 (0.832)	0.611 (0.831)	0.568 (0.831)	0.609 (0.830)
SOE	0.245 (0.362)	0.257 (0.362)	0.276 (0.361)	0.249 (0.361)	0.267 (0.361)
Dual	– 0.026 (0.163)	– 0.015 (0.163)	– 0.009 (0.163)	– 0.011 (0.163)	– 0.005 (0.163)
Payment	0.375** (0.127)	0.368** (0.126)	0.368** (0.126)	0.382** (0.127)	0.382** (0.127)
Board	0.099 (0.411)	0.109 (0.411)	0.115 (0.412)	0.112 (0.412)	0.118 (0.412)
Female	2.223** (0.766)	2.216** (0.764)	2.215** (0.766)	2.197** (0.763)	2.198** (0.765)
Insti_holder	0.170 (0.587)	0.136 (0.587)	0.164 (0.587)	0.182 (0.586)	0.207 (0.586)
Growth	– 0.100 (0.062)	– 0.101 (0.062)	– 0.101 (0.062)	– 0.104 [†] (0.062)	– 0.104 [†] (0.062)
HHI	– 2.367 [†] (1.374)	– 2.177 (1.373)	– 2.234 (1.372)	– 2.183 (1.375)	– 2.235 (1.374)
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Constant	– 9.555** (3.480)	– 10.259** (3.487)	– 10.485** (3.500)	– 10.918** (3.531)	– 11.142** (3.543)
<i>N</i>	8275	8275	8275	8275	8275
<i>R</i> ²	0.773	0.774	0.774	0.774	0.775

Table 4 (continued)Robust standard errors are in parentheses; $^{\dagger} p < 0.1$; $^* p < 0.05$; $^{**} p < 0.01$; $^{***} p < 0.001$ **Fig. 1** Interactive effect of top managers' long-term orientation and regulatory pressure on ESG engagement**Fig. 2** Interactive effect of top managers' long-term orientation and shareholder value on ESG engagement

movement, which occurred in China from the 1950s to the 1970s, mandated sending urban youth to remote rural areas for re-education. It was a coercive national campaign that affected more than 17 million urban youth, who were asked to leave their families and comfortable city lives for re-education in the countryside. This movement left a lasting impact on those who experienced it, as early life experiences often shape a person's traits and vision, regardless of subsequent environmental changes. Hence, the instrumental variable selected meets the requirement of correlation. Meanwhile, as the birth year of managers and their send-down movement experiences are random, they do not directly influence ESG engagement, which meets the exogeneity requirement. The results are shown in Table 6. Column (1)

shows that the coefficient of send-down movement experience is significantly positive ($\beta = 0.040$, $p < 0.001$), which confirms the validity of our instrumental variable. The result of the second stage shows that top managers' long-term orientation still has a significant effect on ESG engagement after considering possible endogeneity issues, which is consistent with the baseline regression results.

PSM. To address potential endogeneity issues arising from sample selection bias and systematic differences in control variables, this study employs PSM to verify the robustness of our findings. Specifically, we divided the samples into high long-term orientation (coded as "1") and low long-term orientation groups (coded as "0"), with the division benchmark set as the median level within the same industry and year. All control variables were then selected as covariates, and a 1:2 nearest neighbor matching strategy was implemented between the two groups to ensure that each sample in the high long-term orientation group could find matching counterparts in the low long-term orientation group with the closest covariate characteristics. The matching results demonstrate that while significant distributional differences existed between groups prior to matching, the post-matching propensity score distributions show substantial overlap, indicating successful balancing of covariates across groups. As reported in column (3), the coefficient of long-term orientation remains positive and statistically significant ($\beta = 0.578$, $p < 0.01$), confirming that the positive relationship between top managers' long-term orientation and ESG engagement persists after controlling for selection bias through PSM.

DAG analysis. To better identify the causal relationship between long-term orientation and ESG engagement, we further employed the DAG method proposed by Spirtes et al. (2000). This method analyzes the correlations between residuals to accurately identify contemporaneous causal relationships between variables. The analysis results (see Appendix C) confirm the existence of an effect pathway between top managers' long-term orientation and ESG engagement.

Alternative Measures of Top Managers' Long-Term Orientation

In the baseline regression model, this study measures top managers' long-term orientation through text analysis of MD&A sections. To ensure robustness, we drew on Brochet et al. (2015) and used the ratio of long-term orientation words to short-term orientation words to measure top managers' long-term orientation. Column (1) in Table 7 shows that long-term orientation still has a positive effect on ESG engagement ($\beta = 0.008$, $p < 0.1$).

Table 5 Heterogeneity analysis

Panel A: Geographical divisions

Variables	East	Central	West
Long – term orientation ($t - I$)	0.841*** (0.220)	0.148 (0.426)	0.285 (0.569)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Constant	– 13.564 [†] (4.303)	– 10.393 [†] (9.177)	– 7.894 (9.829)
N	5902	1319	1054
R^2	0.778	0.771	0.777

Panel B: Pollution levels

Variables	Polluting	Clean
Long – term orientation ($t - I$)	0.510 (0.338)	0.774*** (0.218)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
Constant	– 2.835 (5.701)	– 13.931** (4.503)
N	3001	5274
R^2	0.766	0.784

Panel C: The nature of property rights

Variables	State – owned	Others
Long – term orientation (tI)	0.899*** (0.227)	0.092 (0.305)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
Constant	– 5.481 (4.991)	– 11.613 (5.377)
N	4885	3390
R^2	0.753	0.821

Robust standard errors are in parentheses; [†] $p < 0.1$; ** $p < 0.01$; *** $p < 0.001$

Furthermore, this study referred to Choi et al. (2023) and employed R&D intensity as an alternative measure. R&D intensity was measured as the ratio of R&D investment to total assets. Column (2) in Table 7 presents that R&D intensity is positively correlated with ESG engagement ($\beta = 0.067$, $p < 0.05$), which is consistent with the baseline regression results. In column (3), we also considered a two-year lagged long-term orientation in our model and conducted the regression. The relationship is still positive and significant.

Alternative Measure of ESG Engagement

Instead of using the ESG scores of the sample firms disclosed by the CNRDS platform, we use Huazheng's ESG ratings as a proxy variable for corporate ESG engagement. Since 2009, the Huazheng Index has been evaluating the ESG engagement of A-share listed companies. This index has gained wide recognition in industry and academia. Column (4) in Table 7 indicates that the result is consistent with our conclusions ($\beta = 0.223$, $p < 0.01$).

Table 6 Endogeneity check

Variables	Instrumental variables		PSM
	(1)	(2)	(3)
	Long – term orientation ($t-1$)	ESG engagement	ESG engagement
Long – term orientation ($t-1$)		7.123** (3.295)	0.578** (0.193)
Send – down	0.040*** (0.009)		
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Constant	0.946** (0.306)	– 16.206*** (5.421)	– 10.729 (3.711)
<i>N</i>	7930	7930	7030

Robust standard errors are in parentheses; [†] $p < 0.1$; ** $p < 0.01$; *** $p < 0.001$

Considering Regional Fixed Effects

Regional policies may affect the ESG engagement of enterprises. To investigate whether the result is robust for enterprises in different regions, this study further included regional fixed effects in the model. We repeated the regression analysis, and column (5) in Table 7 shows that the result is consistent with the main analysis.

Discussion and Conclusions

In emerging markets such as China, firms are encouraged to operate ethically and expand their goals beyond pure economic objectives. As an important way to address sustainability challenges, ESG has broader positive impacts on society and the environment (Hockerts & Searcy, 2023). From a business ethics perspective, ESG engagement reflects firms' acknowledgment of moral responsibilities toward multiple stakeholders, including employees, communities, and future generations (Greenwood & Freeman, 2018). By committing to environmental protection and social welfare, firms engage in ethical reasoning that weighs competing obligations and prioritizes long-term societal well-being over short-term financial gains.

However, encouraging more widespread ESG participation is a challenge that requires thoughtful strategies. Based

Table 7 Robustness check

Variables	Alternative long – term orientation measures			Alternative ESG engagement measure	Regional fixed effect
	(1)	(2)	(3)	(4)	(5)
	ESG engagement	ESG engagement	ESG engagement	ESG_Huazheng	ESG engagement
Long – term orientation ($t-1$)				0.223** (0.067)	0.693*** (0.184)
Long – term orientation ($t-2$)			0.387 [†] (0.220)		
Long – short	0.008 [†] (0.005)				
R&D intensity		0.067* (0.033)			
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Regional FE	No	No	No	No	Yes
Constant	– 9.618* (3.479)	– 13.703 (4.478)	– 7.376 (5.168)	– 9.741 (3.486)	– 9.931 (3.513)
<i>N</i>	8275	6526	5306	8240	8275
<i>R</i> ²	0.774	0.772	0.774	0.774	0.775

Robust standard errors are in parentheses; [†] $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

on upper echelons theory and the attention-based view, this study examines how temporal orientation shapes ethical reasoning about ESG engagement. Our results indicate that top managers' long-term orientation has a positive impact on ESG engagement. For ESG decision-making, we believe that long-term-oriented top managers may be more capable of engaging with the ethical dimensions of sustainability. Rather than viewing ESG investments solely through the lens of short-term cost–benefit calculations, temporally distant thinking enables consideration of obligations to future stakeholders, alignment with principles of environmental stewardship, and commitment to social justice. This represents the substantive ethical content that distinguishes meaningful corporate responsibility from symbolic compliance. This view is consistent with the stream of literature proposing that time matters for responsible practices (Choi et al., 2023; Wang & Bansal, 2012). Therefore, understanding ESG engagement requires attention not only to strategic motivations but also to the cognitive processes through which managers engage with moral complexity.

While long-term orientation provides the cognitive foundation for ethical deliberation about ESG, the translation of this deliberative capacity into action depends on regulatory pressure that supports responsible behavior. Strong regulatory pressure can amplify the role of long-term-oriented managers in advocating for responsible actions, even in the face of competing proposals put forth by other investors. The moderating effect of regulatory pressure in our theoretical model is intuitive, as regulation can establish clear normative expectations about corporate responsibilities and create accountability mechanisms that align corporate behavior with societal interests. The findings further indicate that shareholder value is another important force that shapes managerial attention. Existing studies generally agree that shareholders can influence corporate governance and decision-making through their voting rights (Amao & Amaeshi, 2008; Ren et al., 2021). However, there is often friction between shareholders and ESG practices, as ESG practices are often premised on sacrificing the interests of shareholders. Our result indicates that higher shareholder value is associated with greater shareholder openness to supporting top managers' decisions regarding ESG projects. The evidence above demonstrates that environmental and organizational contexts matter when the impact of top managers' temporal orientation is examined.

Theoretical Implications

This study brings three theoretical contributions to the literature. First, this study enriches business ethics research by integrating top managers' deliberative cognitive mechanism into the analysis of corporate responsibility. Prior studies on socially responsible behavior have focused

mainly on the irrational affective processing mechanisms of top managers, such as narcissism (Al-Shammari et al., 2025), hubris (Li & Tang, 2010; Tang et al., 2015) and greed (Sajko et al., 2021). Our findings complement this work by demonstrating that deliberative cognitive processes constitute a distinct pathway to ethical engagement with corporate responsibility. Based on the ethical frameworks of Greenwood and Freeman (2017, 2018) and Greenwood and Islam (2025), we show how long-term orientation enables managers to navigate the ethical complexity of ESG decisions, extending understanding of the cognitive foundations of ethical behavior in organizations. This perspective advances business ethics scholarship by demonstrating that managers' temporal orientation shapes their perception of ethical obligations embedded in ESG decisions, thereby providing evidence that ethical attention is temporally structured.

Second, our study contributes to the attention-based view by examining how regulatory pressure and shareholder value shape the translation of ethical deliberation into responsible action. Top managers often face constraints in their attention allocation (Hambrick, 2007; Hambrick & Mason, 1984; Lu et al., 2025), and the impact of their long-term orientation is contingent on the specific environmental and organizational contexts in which managers operate. While these theoretical frameworks have been extensively applied to strategic decision-making (Lu et al., 2025; Tang et al., 2015; Zhang et al., 2021), their implications for ethical reasoning have been underexplored. Drawing on the principle of situated attention, we illustrate how institutional logics and stakeholder demands support the expression of ethical reasoning in corporate behavior and confirm that managers' temporal orientation shapes their ethical attention allocation. By doing so, we extend the attention-based view into the ethical domain, highlighting the normative and moral boundaries within which managerial attention is allocated.

Third, this study enriches the growing literature on measuring top managers' long-term orientation by introducing a novel methodological approach. Prior studies primarily employed surveys, proxy variables, and dictionary method to evaluate the temporal orientation of top managers (Graafland & Noorderhaven, 2020; Lin et al., 2019). By integrating text analysis and machine learning methods, we develop a textual index that directly captures top managers' long-term orientation (Bliese et al., 2024). This approach moves beyond conventional proxies and provides deeper insight into managers' subconscious cognition. Importantly, this innovation strengthens the methodological toolkit available to business ethics scholars, enabling more rigorous and nuanced examinations of how managerial cognition informs ethical decision-making in organizations.

Managerial Implications

This study also provides important managerial implications. First, our study presents compelling evidence that a firm's ESG engagement is strongly shaped by top managers' temporal orientation, which underpins how they perceive opportunities and risks. Given that ESG inherently involves balancing short-term costs with long-term societal impact, long-term-oriented managers are more likely to prioritize sustained investments in ESG initiatives. The reason is that such managers prioritize intergenerational equity and long-term organizational legitimacy over immediate financial gains (Islam & Greenwood, 2021). Therefore, firms can cultivate a long-term mindset through leadership development programs or by integrating long-term goals into performance evaluations, ensuring alignment between managerial cognition and corporate sustainability objectives.

Second, we find that the stronger the regulatory pressure is, the more prominent the effect of long-term orientation. This is because strict regulation requirements can direct managerial attention to socially responsible initiatives. In this way, external pressure creates a structured context that enables long-term orientation to be translated into action more effectively. Therefore, regulators can design targeted policies to establish an enabling environment, ensuring that top managers' long-term orientation is supported by institutional guardrails.

Third, shareholders often vote against the ESG initiatives proposed by long-term-oriented managers. Our study shows that when shareholders receive substantial returns, top managers can execute ethical business decisions more smoothly. Therefore, for enterprises or managers who want to engage in ESG initiatives, it is important to ensure that the enterprise is financially sound. By aligning ESG initiatives with shareholder interests, managers can bridge the gap between profit motives and societal commitments, creating a win-win situation for firms and their shareholders.

Limitations and Future Research

Despite its contributions and implications, this study is not without limitations. First, while our study highlights the role of top managers' long-term orientation in improving ESG engagement, it is important to note that temporal orientation includes long-term and short-term orientation as well. Whether these different temporal perspectives have varying effects on ESG engagement is a topic that warrants further investigation. Second, we use the attention-based view to explain the boundary conditions under which top managers' long-term orientation affects ESG engagement. Other factors, such as slack resources or support from other stakeholders, may also affect this relationship.

Future studies may consider this possibility and attempt to confirm this theoretical proposition (Simsek et al., 2022). Third, this study employs instrumental variables to address endogeneity issues. Future research could apply the Gaussian Copula approach as an alternative to instrumental variable regression (Eckert & Hohberger, 2023).

Appendix A: Machine Learning Methodology for Top Managers' Long-Term Orientation Measurement

This study employs Word2Vec, a neural network-based unsupervised machine learning algorithm developed by Mikolov et al. (2013), to construct the long-term orientation index. The Word2Vec algorithm excels in capturing context-specific semantic relationships within financial discourse, ensuring that expanded terms are genuinely relevant to the MD&A linguistic environment rather than reflecting general language usage. Furthermore, this data-driven approach substantially mitigates researcher subjectivity inherent in manually curated dictionaries, thereby enhancing measurement validity and replicability across different research contexts. Specifically, we utilize the Skip-gram model architecture within the Word2Vec framework. The Skip-gram model is designed to predict context words given a center word, with the objective function maximizing the average log probability:

$$\frac{1}{T} \sum_{t=1}^T \sum_{-c \leq j \leq c, j \neq 0} \log p(w_{t+j} | w_t)$$

where T represents the total number of words in the training corpus, c denotes the context window size, w_t is the center word, and w_{t+j} represents context words within the window.

Word2Vec is an unsupervised learning method, as it learns word representations directly from unlabeled text corpora without requiring pre-annotated training data. The algorithm automatically discovers semantic relationships between words by analyzing their co-occurrence patterns in context windows throughout the corpus. We train the Skip-gram model on a comprehensive corpus of Chinese annual financial reports, transforming each word into a high-dimensional vector. This allows for the calculation of cosine similarity between word vectors to identify semantically related terms for lexicon expansion.

Table 8 Example of Word2Vec similar words results

Seed word	Similar words	Similarity
机遇	新机遇	0.877
机遇	契机	0.834
机遇	机会	0.830
机遇	良机	0.812
机遇	商机	0.776
机遇	风口	0.734
机遇	挑战	0.694
机遇	有利条件	0.683
机遇	脉搏	0.670
机遇	大势	0.661

Appendix B: Results Related to Top Managers' Long-Term Orientation Index and Variables Definitions

Appendix C: DAG analysis

Panel Data Unit Root Test

To ensure the stability and reliability of the data, we first conducted a panel data unit root test using Eviews 12.0 software. Table 11 shows that, in models containing only intercept terms, ESG engagement, long-term orientation, regulatory pressure, and shareholder value all had test statistics rejecting the null hypothesis within the 1% significance

Table 9 Long – term orientation word set

Seed words	Similar words
今后、预测、相信、计划、预计、未来、目标、机遇、前景、展望、愿景、挑战、预期、期待、期望、明年、希望、将会、契机、可能	将来、长远、下一阶段、中长期、后续、展望未来、市场预测、判断、数年、成就、十年、总体目标、战略目标、战略规划、规划、测算、安排、战略、方针、预估、估算、持续、指导思想、力争、工作思路、既定目标、新机遇、机会、良机、商机、风口、有利条件、脉搏、大势、发展前景、市场前景、发展潜力、空间、市场潜力、发展趋势、现状、必然趋势、深远影响、使命、世界级、百年、宏伟、引领者、考验、严峻考验、严峻形势、艰巨、困难、信赖、认同、感受、追求、梦想、势必、无疑、必将、时机、切入点、如果、择机、努力完成、理想、可能性

Table 10 Definitions and sources of variables

Variables	Definition	Source
Long – term orientation	Author's calculation according to the corporate annual reports, equaling the ratio of the difference between the frequency of long – term orientation words and short – term orientation words to the total number of MD&A words	Corporate annual reports
ESG engagement	The strengths score from CNRDS platform's six-dimensional evaluation framework	CNRDS platform
Regulatory pressure	The spherical distance from the registered location of listed companies to the provincial branch of the CSRC where they are located	Google Maps
Shareholder value	The ratio of net profit to total shares	CSMAR
Firm size	The natural logarithm of total assets	CSMAR
Firm age	The natural logarithm of the number of years the firm has been listed	CSMAR
Cash	The ratio of monetary assets to total assets	CSMAR
ROA	Return on Assets, equal to net profit over total assets	CSMAR
Leverage	The ratio of total liabilities to total assets	CSMAR
Loss	Dummy variable, coded as "1" if the net profit is negative, and "0" otherwise	CSMAR
Top_holder	The share percentage of the largest shareholder	CSMAR
SOE	Dummy variable, coded as "1" for state-owned firms, and "0" otherwise	CSMAR
Dual	Dummy variable, coded as "1" if the CEO also serves as Chairman, and "0" otherwise	CSMAR
Payment	The natural logarithm of the total compensation of the top three highest-paid managers in a firm	CSMAR
Board	Number of directors	CSMAR
Female	Number of female directors	CSMAR
Insti_holder	Proportion of shares held by institutional investors	CSMAR
Growth	The rate of revenue growth	CSMAR
HHI	The intensity of industry competition, calculated by $HHI = \sum_{i=1}^N (\frac{x_i}{X})^2$, where N represents the number of firms in an industry, X_i represents the sales of firm i in a given year, and X represents total market sales in that year	CSMAR

Table 11 Unit root test

Method	ESG engagement	Long-term orientation	Regulatory pressure	Shareholder value
LLC	− 147.213***	− 80.745***	− 310.931***	− 62.524***
IPS	− 51.265***	− 48.688***	− 36.261***	− 37.696***
ADF – Fisher	4621.690***	2701.850***	561.368***	2473.320***
PP-Fisher	5848.140***	3201.720***	701.319***	2959.620***

*** $p < 0.001$

level. Therefore, the original series for these variables is stationary.

Panel Data Cointegration Test

Since ESG engagement, long-term orientation, regulatory pressure, and shareholder value are integrated under order zero, they all meet the precondition for the cointegration test. This study utilized the Johansen–Fisher panel cointegration test method, and the results are presented in Table 12. As shown in Table 12, Fisher’s trace test and max-Eigen test statistics confirm the existence of cointegrated relationships among ESG engagement, long-term orientation, regulatory pressure, and shareholder value. Therefore, there exists a long-term stable equilibrium relationship among these four variables.

DAG analysis

To obtain contemporaneous causal relationships among ESG engagement and long-term orientation, this study employed the Directed Acyclic Graph (DAG) method to analyze the vector autoregression (VAR) residual correlation matrix. Table 13 indicates the results of the VAR residual correlation matrix.

The complete undirected graph among the variables is shown in Fig. 3. Next, we analyzed the residual correlation matrix mentioned above through PC algorithm in the TETRAD IV software. This analysis aims to compute the dependency and directionality of contemporaneous causal relationships among the variables. The DAG analysis results, as shown in Fig. 4, indicate that at the 10% significance level, there is a contemporaneous causal relationship between top managers’ long-term orientation and ESG engagement.

Table 12 Panel cointegration test

Variables	No. of CE(s)	Fisher trace value		Fisher max-Eigen value	
		Statistics	Prob	Statistics	Prob
ESG engagement and long-term orientation	None	5190.0	0.000	4793.0	0.000
	At most 1	2133.0	0.000	2133.0	0.000
ESG engagement and regulatory pressure	None	4695.0	0.000	4635.0	0.000
	At most 1	2557.0	0.000	2557.0	0.000
ESG engagement and shareholder value	None	6443.0	0.000	5859.0	0.000
	At most 1	3059.0	0.000	3059.0	0.000
Long-term orientation and regulatory orientation	None	3347.0	0.000	3203.0	0.000
	At most 1	1222.0	0.000	1222.0	0.000
Long-term orientation and shareholder value	None	5233.0	0.000	4722.0	0.000
	At most 1	2084.0	0.000	2084.0	0.000

Table 13 Residual correlation coefficient matrix of VAR

Index variables	Long-term orientation	ESG engagement	Regulatory pressure	Shareholder value
Long-term orientation	1			
ESG engagement	0.045	1		
Regulatory pressure	0.034	0.034	1	
Shareholder value	0.016	0.036	0.023	1

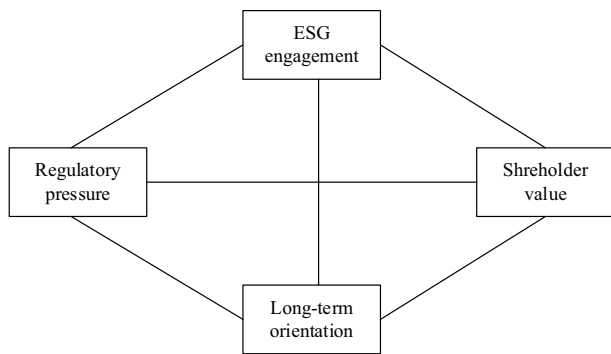


Fig. 3 Complete undirected graph

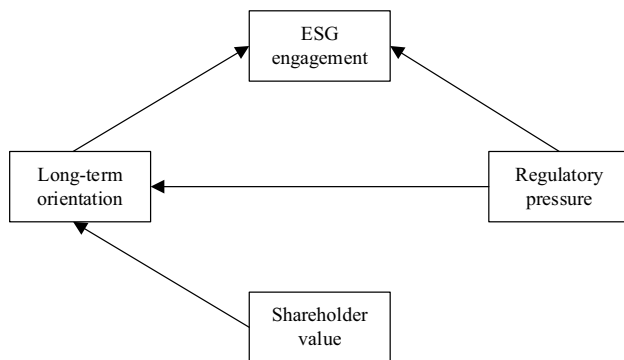


Fig. 4 Directed cyclic graph

Notes

1. According to the *Rules Governing the Listing of Stocks on Shanghai Stock Exchange* and the *Rules Governing the Listing of Stocks on Shenzhen Stock Exchange*, ST denotes a special treatment for listed firms that have incurred losses for two consecutive fiscal years. *ST designates listed firms that have experienced operating losses for three consecutive years. Stocks labeled as ST are subject to a daily price fluctuation limit of 5%, compared to 10% for normal stocks, while *ST firms face a 5% maximum upside limit on Fridays with no restriction on downside movements.
2. According to the *Guidelines on Industry Classification of Listed Companies* revised by the China Securities Regulatory Commission in 2012, the *Management Directory of Industry Classification for Environmental Protection Verification of Listed Companies* formulated by the Ministry of Environmental Protection in 2008, and the *Guidelines on Disclosure of Environmental Information of Listed Companies*, this study defines the following industries as polluting industries: coal mining and washing industry, petroleum and natural

gas extraction industry, ferrous metal ore mining and dressing industry, non-ferrous metal ore mining and dressing industry, textile industry, leather, fur, feather and its product industry, footwear manufacturing industry, papermaking and paper products industry, petroleum processing, coking and nuclear fuel processing industry, chemical raw materials and chemical products manufacturing industry, pharmaceutical manufacturing industry, chemical fiber manufacturing industry, non-metallic mineral products industry, ferrous metal smelting and pressing processing industry, non-ferrous metal smelting and pressing processing industry, metal products industry, electricity, heat production and supply industry.

Acknowledgements The authors would like to thank Section Editor Assaad El Akremi for his invaluable guidance and support, as well as the anonymous reviewers whose constructive comments greatly improved this manuscript. The authors would also like to acknowledge Professor Chengqi Wang (University of Nottingham) for his insightful comments and constructive suggestions on earlier versions of this manuscript, which materially strengthened the study.

Funding This work was partially supported by the National Natural Science Foundation of China (72572051; 72172040), and Key R&D Program (Soft Science Project) of Shandong Province (2025RZA0201).

Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest All authors declare that they have no conflict of interest.

References

- Al-Shammari, M., Banerjee, S. N., Rasheed, A., Al-Shammari, H., & Swimberghe, K. (2025). Sameness and/or otherness: What matters more for narcissist CEOs in the context of non-market strategy? *Journal of Business Ethics*, 199(1), 85–112. <https://doi.org/10.1007/s10551-024-05819-4>
- Amao, O., & Amaeshi, K. (2008). Galvanising shareholder activism: A prerequisite for effective corporate governance and accountability in Nigeria. *Journal of Business Ethics*, 82(1), 119–130. <https://doi.org/10.1007/s10551-007-9566-2>
- Araujo, T., & Kollat, J. (2018). Communicating effectively about CSR on Twitter: The power of engaging strategies and storytelling elements. *Internet Research*, 28(2), 419–431. <https://doi.org/10.1108/IntR-04-2017-0172>
- Bliese, P. D., Certo, S. T., Smith, A. D., Wang, M., & Gruber, M. (2024). Strengthening theory-methods-data links. *Academy of Management Journal*, 67(4), 893–902. <https://doi.org/10.5465/amj.2024.4004>
- Brochet, F., Loumriot, M., & Serafeim, G. (2015). Speaking of the short-term: Disclosure horizon and managerial myopia. *Review of Accounting Studies*, 20(3), 1122–1163. <https://doi.org/10.1007/s11142-015-9329-8>

- Campbell, J. T., Campbell, T. C., Sirmon, D. G., Bierman, L., & Tugle, C. S. (2012). Shareholder influence over director nomination via proxy access: Implications for agency conflict and stakeholder value. *Strategic Management Journal*, 33(12), 1431–1451. <https://doi.org/10.1002/smj.1989>
- Chang, D. N., Chang, X., & Yan, W. C. (2025). CEO locality and corporate social responsibility. *British Journal of Management*, 36(2), 571–596. <https://doi.org/10.1111/1467-8551.12859>
- Cho, C. H., Roberts, R. W., & Patten, D. M. (2010). The language of US corporate environmental disclosure. *Accounting, Organizations and Society*, 35(4), 431–443. <https://doi.org/10.1016/j.aos.2009.10.002>
- Choi, J. J., Kim, J., & Shenkar, O. (2023). Temporal orientation and corporate social responsibility: Global evidence. *Journal of Management Studies*, 60(1), 82–119. <https://doi.org/10.1111/joms.12861>
- Connelly, B. L., Ketchen, D. J., & Slater, S. F. (2011). Toward a “theoretical toolbox” for sustainability research in marketing. *Journal of the Academy of Marketing Science*, 39(1), 86–100. <https://doi.org/10.1007/s11747-010-0199-0>
- Crossland, C., & Hambrick, D. C. (2007). How national systems differ in their constraints on corporate executives: A study of CEO effects in three countries. *Strategic Management Journal*, 28(8), 767–789. <https://doi.org/10.1002/smj.610>
- Du, S. L., El Akremi, A., & Jia, M. (2023). Quantitative research on corporate social responsibility: A quest for relevance and rigor in a quickly evolving, turbulent world. *Journal of Business Ethics*, 187(1), 1–15. <https://doi.org/10.1007/s10551-022-05297-6>
- Eckert, C., & Hohberger, J. (2023). Addressing endogeneity without instrumental variables: An evaluation of the Gaussian copula approach for management research. *Journal of Management*, 49(4), 1460–1495. <https://doi.org/10.1177/01492063221085913>
- Edelman, L. B., & Suchman, M. C. (1997). The legal environments of organizations. *Annual Review of Sociology*, 23, 479–515. <https://doi.org/10.1146/annurev.soc.23.1.479>
- Gamache, D. L., & McNamara, G. (2019). Responding to bad press: How CEO temporal focus influences the sensitivity to negative media coverage of acquisitions. *Academy of Management Journal*, 62(3), 918–943. <https://doi.org/10.5465/amj.2017.0526>
- Graafland, J., & Noorderhaven, N. (2020). Culture and institutions: How economic freedom and long-term orientation interactively influence corporate social responsibility. *Journal of International Business Studies*, 51(6), 1034–1043. <https://doi.org/10.1057/s41267-019-00301-0>
- Greenwood, M., & Freeman, R. E. (2017). Focusing on ethics and broadening our intellectual base. *Journal of Business Ethics*, 140(1), 1–3. <https://doi.org/10.1007/s10551-016-3414-1>
- Greenwood, M., & Freeman, R. E. (2018). Deepening ethical analysis in business ethics. *Journal of Business Ethics*, 147(1), 1–4. <https://doi.org/10.1007/s10551-017-3766-1>
- Greenwood, M., & Islam, G. (2025). Contributing to business ethics through thick conceptualization. *Journal of Business Ethics*, 196(3), 495–498. <https://doi.org/10.1007/s10551-024-05896-5>
- Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review*, 32(2), 334–343. <https://doi.org/10.5465/amr.2007.24345254>
- Hambrick, D., & Mason, P. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193–206. <https://doi.org/10.2307/258434>
- Heubeck, T., & Ahrens, A. (2025). Governing the responsible investment of slack resources in environmental, social, and governance (ESG) performance: How beneficial are CSR committees? *Journal of Business Ethics*, 198(2), 365–385. <https://doi.org/10.1007/s10551-024-05798-6>
- Hockerts, K., & Searcy, C. (2023). How to sharpen our discourse on corporate sustainability and business ethics—A view from the section editors. *Journal of Business Ethics*, 187(2), 225–235. <https://doi.org/10.1007/s10551-023-05386-0>
- Husted, B. W., Jamali, D., & Saffar, W. (2016). Near and dear? The role of location in CSR engagement. *Strategic Management Journal*, 37(10), 2050–2070. <https://doi.org/10.1002/smj.2437>
- Islam, G., & Greenwood, M. (2021). Reconnecting to the social in business ethics. *Journal of Business Ethics*, 170(1), 1–4. <https://doi.org/10.1007/s10551-021-04775-7>
- Jiang, Z. Y., Wang, Z. J., & Lan, X. (2021). How environmental regulations affect corporate innovation? The coupling mechanism of mandatory rules and voluntary management. *Technology in Society*, 65, Article 101575. <https://doi.org/10.1016/j.techsoc.2021.101575>
- Jung, J., Zhou, W., & Smith, A. D. (2025). From textual data to theoretical insights: Introducing and applying the word-text-topic extraction approach. *Organizational Research Methods*, 28(2), 182–209. <https://doi.org/10.1177/10944281241228186>
- Kanashiro, P., & Rivera, J. (2019). Do chief sustainability officers make companies greener? The moderating role of regulatory pressures. *Journal of Business Ethics*, 155(3), 687–701. <https://doi.org/10.1007/s10551-017-3461-2>
- Keil, T., Maula, M., & Syrigos, E. (2017). CEO entrepreneurial orientation, entrenchment, and firm value creation. *Entrepreneurship Theory and Practice*, 41(4), 475–504. <https://doi.org/10.1111/etp.12213>
- Kind, F. L., Zeppenfeld, J., & Lueg, R. (2023). The impact of chief executive officer narcissism on environmental, social, and governance reporting. *Business Strategy and the Environment*, 32(7), 4448–4466. <https://doi.org/10.1002/bse.3375>
- Lee, K. H., Cin, B. C., & Lee, E. Y. (2016). Environmental responsibility and firm performance: The application of an environmental, social and governance model. *Business Strategy and the Environment*, 25(1), 40–53. <https://doi.org/10.1002/bse.1855>
- Li, J., & Tang, Y. (2010). CEO hubris and firm risk taking in China: The moderating role of managerial discretion. *Academy of Management Journal*, 53(1), 45–68. <https://doi.org/10.5465/AMJ.2010.48036912>
- Liang, H., Marquis, C., Renneboog, L., & Sun, S. L. (2018). Future-time framing: The effect of language on corporate future orientation. *Organization Science*, 29(6), 1093–1111. <https://doi.org/10.1287/orsc.2018.1217>
- Lin, Y., Shi, W., Prescott, J. E., & Yang, H. (2019). In the eye of the beholder: Top managers’ long-term orientation, industry context, and decision-making processes. *Journal of Management*, 45(8), 3114–3145. <https://doi.org/10.1177/0149206318777589>
- Lu, Q., Wan, G. G., & Xu, L. (2025). Generalist versus specialist CEOs and the scope of corporate social responsibility. *Journal of Business Ethics*, 197(1), 143–158. <https://doi.org/10.1007/s10551-024-05733-9>
- Mikolov, T., Sutskever, I., Chen, K., Corrado, G., & Dean, J. (2013). Distributed representations of words and phrases and their compositionality. *Advances in Neural Information Processing Systems*, 26, 3111–3119. <https://doi.org/10.48550/arXiv.1310.4546>
- Mosakowski, E., & Earley, C. (2000). A selective review of time assumptions in strategy research. *Academy of Management Review*, 25(4), 796–812. <https://doi.org/10.2307/259207>
- Nadkarni, S., & Chen, J. (2014). Bridging yesterday, today, and tomorrow: CEO temporal focus, environmental dynamism, and rate of new product introduction. *Academy of Management Journal*, 57(6), 1810–1833. <https://doi.org/10.5465/amj.2011.0401>
- Nevins, J. L., Bearden, W. O., & Money, B. (2007). Ethical values and long-term orientation. *Journal of Business Ethics*, 71(3), 261–274. <https://doi.org/10.1007/s10551-006-9138-x>
- O’Kane, P., Smith, A., & Lerman, M. P. (2021). Building transparency and trustworthiness in inductive research through computer-aided qualitative data analysis software. *Organizational Research*

- Methods*, 24(1), 104–139. <https://doi.org/10.1177/1094428119865016>
- O'Sullivan, D., Zolotoy, L., & Fan, Q. L. (2021). CEO early-life disaster experience and corporate social performance. *Strategic Management Journal*, 42(11), 2137–2161. <https://doi.org/10.1002/smj.3293>
- Ocasio, W. (1997). Towards an attention-based view of the firm. *Strategic Management Journal*, 18(S1), 187–206. [https://doi.org/10.1002/\(SICI\)1097-0266\(199707\)18:1+%3c187::AID-SMJ936%3e3.0.CO;2-K](https://doi.org/10.1002/(SICI)1097-0266(199707)18:1+%3c187::AID-SMJ936%3e3.0.CO;2-K)
- Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology*, 54(1), 547–577. <https://doi.org/10.1146/annurev.psych.54.101601.145041>
- Poschmann, P., Goldenstein, J., Büchel, S., & Hahn, U. (2024). A vector space approach for measuring relationality and multidimensionality of meaning in large text collections. *Organizational Research Methods*, 27(4), 650–680. <https://doi.org/10.1177/10944281231213068>
- Queen, P. E. (2015). Enlightened shareholder maximization: Is this strategy achievable? *Journal of Business Ethics*, 127(3), 683–694. <https://doi.org/10.1007/s10551-014-2070-6>
- Quevedo, G. D., Glaser, A., & Verzat, C. (2026). Enhancing theorization using artificial intelligence: Leveraging large language models for qualitative analysis of online data. *Organizational Research Methods*, 29(1), 92–112. <https://doi.org/10.1177/10944281251339144>
- Ren, S., Wang, Y., Hu, Y., & Yan, J. (2021). CEO hometown identity and firm green innovation. *Business Strategy and the Environment*, 30(2), 756–774. <https://doi.org/10.1002/bse.2652>
- Sajko, M., Boone, C., & Buyl, T. (2021). CEO greed, corporate social responsibility, and organizational resilience to systemic shocks. *Journal of Management*, 47(4), 957–992. <https://doi.org/10.1177/0149206320902528>
- Shi, W. L., Sun, J., & Prescott, J. E. (2012). A temporal perspective of merger and acquisition and strategic alliance initiatives: Review and future direction. *Journal of Management*, 38(1), 164–209. <https://doi.org/10.1177/0149206311424942>
- Shimizu, T., Nagayama, S., & Yamanoi, J. (2025). Attentional uniqueness and firm performance: The mediating role of growth actions. *Journal of Management Studies*, 62(4), 1680–1716. <https://doi.org/10.1111/joms.13122>
- Simsek, Z., Heavey, C., Fox, B. C., & Yu, T. (2022). Compelling questions in research: Seeing what everybody has seen and thinking what nobody has thought. *Journal of Management*, 48(6), 1347–1365. <https://doi.org/10.1177/01492063211073068>
- Speer, A. B., Oswald, F. L., & Putka, D. J. (2025). Reliability evidence for AI-based scores in organizational contexts: Applying lessons learned from psychometrics. *Organizational Research Method*. <https://doi.org/10.1177/10944281251346404>
- Spirtes, P., Glymour, C., & Scheines, R. (2000). *Causation, prediction and search*. Springer. <https://doi.org/10.1007/978-1-4612-2748-9>
- Stevens, R., Moray, N., Bruneel, J., & Clarysse, B. (2015). Attention allocation to multiple goals: The case of for-profit social enterprises. *Strategic Management Journal*, 36(7), 1006–1016. <https://doi.org/10.1002/smj.2265>
- Sun, R. J., Liu, F., Li, Y. N., Wang, R. P., & Luo, J. (2024). Machine learning for predicting corporate violations: How do CEO characteristics matter? *Journal of Business Ethics*, 195(1), 151–166. <https://doi.org/10.1007/s10551-024-05685-0>
- Tang, Y., Qian, C., Chen, G., & Shen, R. (2015). How CEO hubris affects corporate social (ir)responsibility. *Strategic Management Journal*, 36(9), 1338–1357. <https://doi.org/10.1002/smj.2286>
- Valtonen, L., Mäkinen, S. J., & Kirjavainen, J. (2024). Advancing reproducibility and accountability of unsupervised machine learning in text mining: Importance of transparency in reporting preprocessing and algorithm selection. *Organizational Research Methods*, 27(1), 88–113. <https://doi.org/10.1177/10944281221124947>
- Wang, D., Chen, P. H., Yu, T. H. K., & Hsiao, C. Y. (2015). The effects of corporate social responsibility on brand equity and firm performance. *Journal of Business Research*, 68(11), 2232–2236. <https://doi.org/10.1016/j.jbusres.2015.06.003>
- Wang, T., Y., & Bansal, P. (2012). Social responsibility in new ventures: Profiting from a long-term orientation. *Strategic Management Journal*, 33(10), 1135–1153. <https://doi.org/10.1002/smj.1962>
- Wangrow, D. B., Schepker, D. J., & Barker, V. L. (2015). Managerial discretion: An empirical review and focus on future research directions. *Journal of Management*, 41(1), 99–135. <https://doi.org/10.1177/0149206314554214>
- Xu, N., Zhang, D., & Bai, Y. J. (2024). Managerial long-termism and corporate innovation: Evidence from China through text mining approaches. *Business Strategy and the Environment*, 33(3), 2269–2286. <https://doi.org/10.1002/bse.3605>
- Yadav, M. S., Prabhu, J. C., & Chandy, R. K. (2007). Managing the future: CEO attention and innovation outcomes. *Journal of Marketing*, 71(4), 84–101. <https://doi.org/10.1509/jmkg.71.4.84>
- Zhang, Z., Wang, X., & Jia, M. (2021). Echoes of CEO entrepreneurial orientation: How and when CEO entrepreneurial orientation influences dual CSR activities. *Journal of Business Ethics*, 169(4), 609–629. <https://doi.org/10.1007/s10551-020-04553-x>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.