



# CEO-TMT overseas experience differences and firm performance: A self-categorization theory perspective

Zhaocheng Xu\*

School of Business, Shanghai Dianji University, Shanghai, China

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## ABSTRACT

Based on upper echelons and self-categorization theories, this study empirically examines the relationship between CEO-top management team (TMT) overseas experience differences and firm performance and the moderating effects of hometown connectedness, ownership nature, and environmental dynamics. We use data on Chinese manufacturing listed companies from 2012 to 2021. The results show that CEO-TMT overseas experience differences significantly and negatively affect firm performance. Hometown connectedness positively moderates this relationship; as CEO-TMT hometown connectedness increases, the negative impact of CEO-TMT overseas experience differences on firm performance decreases. Finally, state ownership and higher environmental dynamics mitigate the negative relationship between CEO-TMT's overseas experiences and firm performance.

## 1. Introduction

According to upper echelons theory, corporate strategic choices and decision-making behavior are influenced by the background characteristics of the top management team (TMT), which in turn play an important role in firm performance [1]. TMTs with overseas experience are often considered intellectual groups with cutting-edge technology and advanced management concepts [2]. They have advantages in knowledge structure, mindset, global interpersonal networks and communication, and collaboration skills [3,4]. In particular, executives with overseas experience can help advance international operations and, thus, improve corporate performance [5]. Currently, China is undergoing a critical period of economic transformation and upgrading. Industrial restructuring and the demand for high-level talent have increased, including many high-level overseas trips. For instance, the proportion of students who have studied abroad and returned has increased from 30.6% in 2007 to 82.5% in 2019 and continues to increase annually [6]. Among these returnees, some are bound to take up critical positions in firms' senior management teams and serve as the core strength of enterprise development.

Accordingly, studies have concentrated mainly on the influences of the overseas experience of different executives on firm performance from two aspects: First, at the overall TMT level, most studies show that TMTs with overseas experience can improve firm performance more than those without overseas experience, including directors with overseas experience and firm performance [4,7], TMT functional diversity and firm performance [8], and returnee executives and new ventures performance [9]. Second, studies focus on CEOs, entrepreneurs, chairpersons, or founders, among others, and find that their overseas experience enhances firm performance. For instance, returnee entrepreneurs can influence firm export performance [10], while returnee entrepreneurial learning [11],

\* Corresponding author.

E-mail address: [xuzc@sdju.edu.cn](mailto:xuzc@sdju.edu.cn).

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returnee entrepreneurs' overseas top management experience [12], and core founders' functional experience diversity (CFFED) can also influence firm performance [13].

However, TMT members often do have different overseas experiences. This can lead to differences in cognitive patterns and values among TMT members, resulting in conflicts, contradictions, and inefficient decision-making [14,15]. Differences in experience between individual executives and other TMT members, particularly between the CEO, as the corporate strategy maker and top decision-maker, and other members of TMT (referred to as "CEO-TMT") are also crucial to firm performance. When the CEO, as the TMT's top leader, is different from other TMT members in educational background and career experience (such as overseas experience), it can reduce the efficiency of communication and cooperation between the two. This can cause conflicts in decision-making, mutual distrust, and even disharmony in interpersonal relationships (including negative emotions such as hatred and hostility), ultimately affecting firm performance. The CEO's knowledge, ability, and preferences largely influence the firm's strategic choices and performance goals. However, the CEO is not an isolated agent but must interact with the rest of the TMT and is usually constrained or driven by the TMT. Accordingly, studies have suggested that the critical factor which affects the TMT's influence on firm performance is the TMT's internal composition and the interaction process between the team members rather than their demographic characteristics [16–18]. Especially in the Chinese context, research on the impact of differentiated situations embodied by the interaction process on the TMT's operational efficiency is more prominent. A few studies have explored the influence of interpersonal attraction on team members' behavior, brought about by similar internal characteristics of TMT. However, there is still room to study the effect of differences in overseas experiences of executive members on firm performance from a CEO-TMT perspective.

Based on this, we ask: If there are some overseas experience differences in CEO-TMT (hereafter, "CEO-TMT overseas experience difference"), how does it affect firm performance? These differences belong to the research category of TMT heterogeneity. Research also recognizes that team heterogeneity is a "double-edged sword." On the one hand, it may broaden cognitive perspectives, improve team information processing capability, and enhance problem-solving capacity. On the other hand, it may also lead to conflicts and reduce team cohesion due to cognitive differences. There is no unanimous conclusion on its effect. Based on upper echelons and self-classification theories, this study empirically investigates the effect of CEO-TMT overseas experience differences on corporate performance and the moderating effects of hometown connectedness, ownership nature, and environmental dynamics. We use data on Chinese listed manufacturing companies during the period 2012–2021. We aim to enrich and develop the role of CEO-TMT heterogeneity in firm performance using upper echelons theory and provide ideas for enterprises to utilize heterogeneous resources within the team effectively.

## 2. Theoretical background and hypothesis

### 2.1. CEO-TMT overseas experience differences and firm performance

Self-categorization theory emphasizes that individuals classify themselves and others by demographic characteristics (e.g., gender, origin, educational background, and work experience). Individuals self-identify with the own group they belong to (in-group) and reject or discriminate against other groups (out-group). This causes in-group preferences and out-group biases, ultimately affecting firm behavior and outcomes [19,20]. Individuals who are overly enthusiastic about their group believe it is better than others, seek positive self-identity, experience intergroup differences in self-esteem, and are prone to intergroup prejudice, conflict, and hostility [21]. Self-categorization theory explains that the level and type of self- and other-identity vary with people's cognitive structure, value, background knowledge, and past social experiences [20]. Executive overseas experience, including education or work experience, is TMT members' unique demographic attribute and can form an essential basis for self-categorization.

Studies have used upper echelons theory as a model to incorporate TMT characteristics, strategic choices, and firm performance. For instance, TMT demographic characteristics or experiences influence managers' cognitive patterns, affecting business performance [1]. In almost any organization, the CEO is the most influential mastermind [22,23] and the ultimate decision-making body of the firm's strategic goal. The CEO's Individuality characteristics, strategic identification, knowledge structure, and life experience influence the firm's strategic choices, which are crucial to their success [24,25]. However, these decisions are often not directly decided by the CEO and are usually the result of a joint CEO-TMT interaction. In this situation, the different overseas experiences of the executive team can result in CEO-TMT fault lines, creating exclusion between different out-groups. This can affect the effectiveness of CEO-TMT interaction. Thus, CEO-TMT overseas experience differences can hinder the frequency of interaction and communication between the two and affect the effectiveness of strategic decision-making. The social categorization process among the diverse TMT groups formed by overseas experience will deepen their stereotypes and prejudices, intensify conflicts, reduce team cohesion [26,27], and ultimately affect firm performance.

We argue that unlike the characteristic demographic attributes of TMT members, such as gender, age, and tenure, overseas experience is often the best evidence that a person has an outstanding educational background or expertise skills. A sophisticated management concept, leading-edge professional and technical knowledge, wide international horizons, and solid macro-control skills are all part of the overseas experience [28,29]. TMTs with overseas experience can also utilize the professional knowledge and skills they have accumulated abroad, which has an essential impact on enterprises' strategic choices and decision-making behavior [29].

We argue that the more effective the CEO-TMT overseas experience difference in skills, knowledge, values, etc., the lower the firm performance. First, CEO-TMT overseas experience differences cause easy cognitive biases between members due to information asymmetry and risk preferences, resulting in interpersonal conflicts. These conflicts can lead to more complex communication between members and inefficient communication within the team [30,31], impairing the team's function and, thus, reducing the firm performance [18]. Li and Hambrick [31] indicate that TMT overseas experience differences can create a demographic gap between

various factions, conflicting tasks and emotions, and the disintegration of behavior, inhibiting firm performances. Second, CEO-TMT overseas experience differences may reduce interaction and communication frequency, reducing team cohesion. Formulating strategic decisions requires CEO-TMT to have adequate interaction, trust each other, and ensure sufficient information exchange and sharing before they are willing to accomplish challenging work and ensure high firm performance. CEO-TMT overseas experience differences may result in decision-making cognition and values differences between the two, triggering conflicts and contradictions, weakening team cohesion and cooperation, and ultimately leading to a decline in firm performance [18]. Third, the different overseas experiences may also lead to differences in work habits or behaviors, resulting in significant discrepancies in thinking and problem-solving styles. These variabilities may lead to a sense of distance and conflict, resulting in inefficient communication among team members and inhibiting team identity and decision-making efficiency. Therefore, we propose our first hypothesis as follows:

**H1.** *CEO-TMT overseas experience differences negatively influence firm performance.*

## 2.2. Analysis of moderating mechanisms

We further consider whether the negative impact of CEO-TMT overseas experience differences on firm performance varies with contextual conditions, such as the TMT's characteristics and different types of organizational environments. These factors can influence firm performance differently, even with the same CEO-TMT overseas experience. We argue that considering CEO-TMT overseas experience differences, the differences in the TMTs' characteristics and the various types of firm environments they face affect the efficiency of CEO-TMTs' communication and exchange with each other. This can affect the CEO-TMTs' mutual identification and the motivation, ability, and underlying conditions of corporate strategy choices, influencing firm performance [32]. Thus, the impact of CEO-TMT overseas experience differences on firm performance depends on the TMT's characteristics (hometown connectedness) and constraining factors such as the internal organizational (ownership nature) and the external market environments (environmental dynamics) in which the CEO-TMT is located.

### 2.2.1. Executives characteristics: the moderating effect of hometown connectedness

As the saying goes, "When old folks see old folks, they have tears in their eyes." Hometown connectedness is based on geography and is usually defined as people with the exact origin. Hometown connectedness is rooted in the traditional Chinese culture and prevalent in the social life of Chinese people. Thus, executives may follow the interpersonal principles of Chinese relationship culture [33]. Drawing on self-categorization theory [20], when there is hometown connectedness between TMT members and CEOs, they may have similarities in culture, values, and ways of doing things. This similarity allows the CEO-TMT to re-establish new in-group preferences, which effectively enhances mutual identification, improves cooperation and communication efficiency, guarantees effective corporate operations, and ultimately helps improve firm performance. Similarity attraction theory also points out that the process of relational interaction between members of different ranks within TMTs often tends to have a strong interpersonal attraction due to specific similar characteristics [34,35], which impacts firm performance.

We argue that CEO-TMT hometown connectedness may mitigate the negative impact of CEO-TMT overseas experience differences on corporate performance. First, when the TMT has members who have hometown connectedness with the CEO, it may decrease the emotional distance between the two and mitigate the conflicts and contradictions between them due to the differences in overseas experiences. Further, the cultural commonality generated by hometown connectedness can reduce the communication and coordination costs of the CEO-TMT [36], help bring them closer psychologically, and improve their interpersonal relationship. Second, when CEO-TMTs have hometown connectedness, they are more likely to enhance their cooperation, social identity, and team cohesion. This can make forming identity and emotional trust mechanisms easier between the CEO and other TMT members from the same region, resulting in higher loyalty [37], trust, and information communication. The higher the percentage of hometown connectedness in this trust relationship, the stronger the TMT's cohesion and the more it mitigates the negative effect on firm performance [38]. Third, when the TMT members are from the same place as the CEO, they may share similar regional cultures, values, and ways of doing things, making the relationship closer and "friendlier" [37]. The close relationship allows CEO-TMTs to establish and maintain social identity among individuals, generate new "in-group preferences," reduce cognitive conflicts caused by differences, and support self-categorization [39]. Thus, we propose our second hypothesis as follows:

**H2.** *The negative inhibitory effect of CEO-TMT overseas experience difference on firm performance level are mitigated under hometown connectedness between CEO-TMT.*

### 2.2.2. Organizational environment characteristics: the moderating effect of ownership nature

Ownership determines the composition of TMT and internal corporate governance, influencing corporate strategic decisions and, thus, firm performance [40]. Chinese enterprises can be currently divided into two main categories based on their ownership: state and non-state owned enterprises (i.e., SOEs and non-SOEs). Firms with different ownership may differ in their organizational and institutional environments and corporate cultures. These are mainly manifested in the differences in corporate strategic decisions, innovative behaviors, objectives, and operating environment, which affect corporate performance goals [41].

The magnitude of CEO-TMT overseas experience differences in firm performance can be limited by ownership nature. Specifically, we argue that SOEs' particular institutional environment can limit this negative impact. First, SOEs have a more complete organizational information communication system than non-SOEs. This is conducive to reducing the communication barriers caused by out-group conflicts. SOEs' particular decision channel environment helps form a harmonious atmosphere of mutual trust, communication, and understanding between CEO-TMT. Further, the balanced team atmosphere mitigates conflicts arising from differences between

CEO-TMTs' experiences. It enhances the level of cooperation and frequency of communication between CEO-TMTs, thereby improving the level of decision-making participation of team members [42].

Second, the relative concentration of equity in SOEs and the greater power of the CEO are conducive to improving CEO-TMT cohesion and mitigating the negative impact of CEO-TMT overseas experience differences on corporate performance. SOEs often depend on the government to access essential resources like finance, staffing, and material products. They have lower risk-taking levels and more specific and well-defined regulatory processes, subjecting them to formal and informal state control and constraints [43] and less to the personal will of management. This helps to enhance the cooperation and trust between CEO-TMT.

Third, top managers of SOEs are usually under the government's administrative appointments and direct intervention, which can reduce conflicts and contradictions to a certain extent. Thus, SOEs are effectively under the government's administrative executive control and supervision. They have relatively straightforward policy mandates and performance assessment goals, which may reduce the exclusion or discrimination brought by CEO-TMT overseas experience differences [30]. Unlike non-SOEs, SOEs require CEOs to ensure a stable corporate governance environment. Further, the negative impact from differences in background characteristics of CEO-TMT is weaker and more conducive to achieving corporate performance goals and overall strategic objectives. Therefore, we propose our third hypothesis as follows:

**H3.** *Compared with non-SOEs, the negative inhibitory effect of CEO-TMT overseas experience difference on firm performance is mitigated in SOEs.*

### 2.2.3. External environment characteristics: the moderating effect of environmental dynamics

Environmental dynamism describes the magnitude and frequency of changes in an enterprise's external environment and the irregularity and unpredictability of these changes [44,45]. A volatile and changing external environment means that external market demands, competitors, technological developments, and policies and regulations are complex and changeable. Thus, the firm faces more prominent decision risks and challenges [46]. Operating in such external environments will require CEO-TMTs to be more aware of task and goal interdependence when specific characteristic differences exist in the firm [47]. Crucially, environmental dynamics create an external environment that can be exploited to exchange knowledge or information between CEO-TMT subgroups based on their overseas experience differences and gain competitive advantage.

We argue that environmental dynamics positively moderate the negative relationship between CEO-TMT overseas experience differences and firm performance. First, firms in a more dynamic environment can mitigate interpersonal conflicts and communication barriers from these overseas experience differences. Meanwhile, in a relatively stable climate, CEOs and TMTs have less information to monitor and make decisions without extensive information exchange [47]. Thus, the inhibitory influence of CEO-TMT overseas experience differences on firm performance can hardly be mitigated. The dynamic environment will require more integrated information processing by cutting down the social reclassification process resulting from CEO-TMT overseas experience differences [48]. This will require CEO-TMTs to make quick and effective decisions when faced with conflict and communication issues [49].

Second, a volatile and changing business environment helps the CEO-TMT to collaborate and enhance trust and cohesion between the two actors. Firms in more dynamic environments require increased CEO-TMT task interdependence [50], which is conducive to reducing out-group bias based on social identity caused by CEO-TMT overseas experience differences. This can also enhance CEO-TMT trust and cooperation and improve cohesiveness [32]. Essentially, the volatile and changing characteristics of the external environment require shifting the CEO-TMTs' attention from "me versus them" or "him versus us" to "we" to ensure that the firm achieves common goals in such dynamic and complex survival environments [45,51].

Third, firms in a more dynamic environment may have lesser conflicts arising from different mindsets and cultural values among CEO-TMTs due to their different overseas experiences. The highly dynamic external environment requires them to promptly offer a broader range of knowledge to deal with the vagaries of market conditions [52]. The specific social and cultural attributes of overseas experience provide crucial knowledge for enterprises to make strategic decisions [53]. This can bring a broader breadth of thinking, absorb advanced management concepts from abroad, and broaden their global vision. Therefore, we propose our fourth hypothesis as follows:

**H4.** *The negative inhibitory effect of CEO-TMT overseas experience differences on firm performance levels may be mitigated for firms in a more dynamic environment.*

## 3. Research methodology

### 3.1. Sampling and data source

We focus on all listed companies in China's manufacturing industry from 2012 to 2021. The manufacturing industry is a knowledge-intensive industry that requires a very high level of performance from knowledge-based enterprises and relatively high standards of product innovation. In addition, it occupies an important position in the national economy.

The sample is screened as follows: [1] exclude samples with distorted or missing information in the main variables; [2] exclude samples with missing data on the control variables; and [3] exclude companies engaged in the financial and real estate industries, and those with harmful growth. This results in a sample of 2113 listed companies and 14,093 observations. The data mainly come from the China Securities Market and Accounting Research (CSMAR) database. To mitigate the impact of outliers, the main variables are winsorized at the 1% level [54].

### 3.2. Definition of main variables

#### 3.2.1. Dependent variables

We take firm performance ( $PF_{i,t}$ ) as the explanatory variable. Following prior research [18,55], return on assets (ROA), the ratio of net income divided by total assets, is used to measure firm performance.

#### 3.2.2. Independent variables

TMT is all directors, supervisors, managers, board secretaries, and other executives, except the CEO. Since the concept of CEO was introduced late in Chinese companies, we consider the position of “President” or “General Manager” as a CEO position. Our independent variable is whether there is a difference between CEO and TMTs in their overseas experience ( $OED_{i,t}$ ).

Following prior research [14,47,56], we measure the independent variable as follows: First, the percentage of TMTs with the same background as the CEO is computed. Second, 1 is subtracted from the percentage of TMTs with the same overseas background as the CEO. The absolute value of the difference between the two is the degree of difference in overseas experience. The higher the value, the greater the difference in overseas experience.

#### 3.2.3. Moderating variables

3.2.3.1. *Hometown connectedness* ( $HC_{i,t}$ ). Following prior research [33], hometown connectedness of CEO-TMT is defined as the number of TMTs with the same province of origin as the CEO divided by the number of TMTs.

3.2.3.2. *Ownership nature* ( $EN_{i,t}$ ). Following the literature [57,58], the nature of ownership is determined by whether the firm is state-owned (SOEs); for SOEs,  $EN = 1$ ; otherwise,  $EN = 0$ .

3.2.3.3. *Environmental dynamics* ( $ED_{i,t}$ ). Based on Richard et al. [55], the standard deviation (i.e., coefficient of variation) of industry-adjusted firms’ sales revenue over the previous five years is used to measure environmental dynamics. The larger the standard deviation, the greater the volatility and, thus, the dynamism of the firm’s business environment.

#### 3.2.4. Control variables

Drawing on previous studies [8,14,55,59] and considering the actual development of enterprises, this study also controls for other variables that affect firm performance: [1] Firm Size ( $FS_{i,t}$ ): The natural logarithm of the book value of total assets. [2] Firm Age ( $FA_{i,t}$ ): The natural logarithm of the years from the firm establishment. [3] Capital Structure ( $CS_{i,t}$ ): The ratio of long-term debt over the book value of assets. [4] Market Share ( $MS_{i,t}$ ): The ratio of the firm’s revenue from its main business to the industry’s total revenue from its main business. [5] CEO tenure ( $CT_{i,t}$ ): The natural logarithm of the number of years a CEO has been in the role. [6] Average TMT tenure ( $AT_{i,t}$ ): The natural logarithm of the average tenure of TMT members in the TMT. [7] Equity concentration ( $SH2_{i,t}$ ): The sum of the shareholding ratio of enterprises’ top three significant shareholders. [8] CEO dominance ( $CD_{i,t}$ ): It reflects the amount of CEO power. We use the CEO’s pay slice (CPS), which reflects the relative significance of the CEO in terms of abilities, contribution, or power [60]. It is measured as the ratio of the CEO’s compensation to the highest compensation of the TMT members. [9] Financial Leverage ( $CFL_{i,t}$ ): The ownership interest divided by total assets. [10] Firm Growth ( $FG_{i,t}$ ): This is the growth rate of revenues. [11] Academic Experience Differences ( $AED_{i,t}$ ): The difference in academic experience between CEO and TMT is computed similarly to the  $OED_{i,t}$ . [12] Power Difference ( $PD_{i,t}$ ): The salary gap between CEO and TMT. It is measured by the coefficient of variation of salary across the CEO-TMT. Besides, we control for the year ( $YR_t$ ) and industry ( $IT_{i,t}$ ) dummy variables.

### 3.3. Regression model

To examine the theoretical hypotheses proposed, we build the following model:

$$PF_{i,t} = \beta_0 + \beta_1 \times \sum CN_{i,t} + \varepsilon_{i,t} \tag{1}$$

$$PF_{i,t} = \beta_0 + \beta_1 \times OED_{i,t} + \beta_2 \times \sum CN_{i,t} + \varepsilon_{i,t} \tag{2}$$

$$PF_{i,t} = \beta_0 + \beta_1 \times OED_{i,t} + \beta_2 \times OED_{i,t} \times HC_{i,t} + \beta_3 \times HC_{i,t} + \beta_4 \times \sum CN_{i,t} + \varepsilon_{i,t} \tag{3}$$

$$PF_{i,t} = \beta_0 + \beta_1 \times OED_{i,t} + \beta_2 \times OED_{i,t} \times EN_{i,t} + \beta_3 \times EN_{i,t} + \beta_4 \times \sum CN_{i,t} + \varepsilon_{i,t} \tag{4}$$

$$PF_{i,t} = \beta_0 + \beta_1 \times OED_{i,t} + \beta_2 \times OED_{i,t} \times ED_{i,t} + \beta_3 \times ED_{i,t} + \beta_4 \times \sum CN_{i,t} + \varepsilon_{i,t} \tag{5}$$

$$PF_{i,t} = \beta_0 + \beta_1 \times OED_{i,t} + \beta_2 \times OED_{i,t} \times HC_{i,t} + \beta_3 \times HC_{i,t} + \beta_4 \times OED_{i,t} \times EN_{i,t} + \beta_5 \times EN_{i,t} + \beta_6 \times OED_{i,t} \times ED_{i,t} + \beta_7 \times ED_{i,t} + \beta_8 \times \sum CN_{i,t} + \varepsilon_{i,t} \tag{6}$$

$PF_{i,t}$  is the dependent variable, indicating the performance of firm  $i$  at period  $t$ .  $OED_{i,t}$  is the independent variable, showing the

degree of variation in the overseas experience of firm  $i$  in period  $t$ .  $\sum CN_{i,t}$  ( $CN_{i,t}$ ) are the control variables at both individual and firm levels. Model [1] is the benchmark model: the effect of control variables other than independent variables on firm performance. Model [2] is the model after further inclusion of the independent variables. Models [3–5] test the moderating effects of hometown connectedness, ownership nature, and environmental dynamics, respectively, adding the three moderating variables and the interaction term. Model [6] is the full model, which is based on model [2] with the addition of three moderating univariate and interaction terms.

## 4. Empirical results

### 4.1. Descriptive statistics analysis

The descriptive statistics of the key variables (see Table 1) show that the mean (S.D.) firm performance is 0.0202 (0.0273). This indicates significant differences in the performance level of different companies. Meanwhile, the mean (S.D.) of  $OED_{i,t}$  is 0.0938 (0.238), suggesting a more significant variation in  $OED_{i,t}$  across companies. Besides, there are substantial variations in hometown connectedness, ownership nature, and environmental dynamics.

### 4.2. CEO-TMT overseas experience differences and firm performance

Table 2 (as shown in equation [1,2]) shows that the effect of CEO-TMT overseas experience differences on firm performance is significant and negative ( $OED_{i,t}$ : Beta =  $-0.0045$ ,  $p < 0.01$ ) with an F-value of 318.18 ( $p < 0.01$ ). Each standard deviation increase in  $OED_{i,t}$  decreases firm performance by 5.3% ( $-0.0045 \times 0.238/0.0202 = -0.053$ ). Thus, a one standard deviation increase in OED is associated with a 0.1% point decrease in the win rate ( $-0.0045 \times 0.238 = -0.001$ ). This result remains robust in models [1–4] in Table 3 (as shown in equation [3–6]). This suggests that the greater the overseas experience differences, the more significant the differences in their knowledge, perceptions, and values, and thus, the lower firm performance. Thus, hypothesis H1 is supported.

### 4.3. Analysis of moderating mechanisms

#### 4.3.1. Executives characteristics: the moderating effect of hometown connectedness

Model [1] in Table 3 (as shown in equation [3]) presents the results for the moderating effect of hometown connectedness. The coefficient of the cross term between hometown connectedness ( $HC_{i,t}$ ) and  $OED_{i,t}$  is significant and positive (Beta = 0.3097,  $p < 0.05$ ). This indicates that the greater the CEO-TMT hometown connectedness, the closer the CEO-TMTs' relationship, and thus, their psychological distance. This may reduce the cognitive and decision conflicts caused by overseas experience differences and make it easier to reach a consensus when making strategic decisions, thereby mitigating the negative effect of overseas experience differences. Thus, H2 is supported.

#### 4.3.2. Organizational environment: the moderating effect of ownership nature

Model [2] in Table 3 (as shown in equation [4]) presents the results for the moderating effect of ownership nature. The cross-term coefficient between ownership nature ( $EN_{i,t}$ ) and CEO-TMT overseas experience differences ( $OED_{i,t}$ ) is significantly positive (Beta = 0.0063,  $p < 0.01$ ). This indicates that the specificity of the institutional context of SOEs regarding their overall strategic goals constrains the freedom in CEO-TMT decision-making behavior to enhance their strategic identity. Thus, even if CEO-TMT differences in

**Table 1**  
Descriptive statistics of main variables.

Variables	Mean	S.D.	Min.	Max	Md.
Firm performance	0.0202	0.0273	-0.0203	0.170	0.0128
CEO-TMT overseas experience differences	0.0938	0.238	0	1	0
Firm size	21.77	1.093	19.59	25.25	21.65
Capital structure	0.398	0.191	0.0609	0.838	0.389
Firm age	2.613	0.410	1.099	3.367	2.708
Market share	6.6e-05	0.0001	4.6e-07	0.00096	2.2e-05
CEO tenure (years)	4.430	1.030	0.693	5.252	4.787
Average TMT tenure (years)	2.819	1.821	0.0833	8.979	2.458
Equity concentration	49.29	14.53	16.25	84.60	49.27
CEO dominance	1.209	0.432	0.206	3.306	1.157
Financial leverage	1.895	0.811	1.065	6.179	1.637
Firm growth	0.214	0.480	-0.615	3.649	0.113
Academic experience differences	0.204	0.344	0	1	0
Power difference	0.00314	0.00503	0	0.146	0.00181
Hometown connectedness	0.0065	0.0642	0	1	0
Ownership nature	0.344	0.475	0	1	0
Environmental dynamics	0.143	0.121	0.0140	0.861	0.106

Note [1]: The number of observations is 14,093 [2]; Source: CSMAR database.



**Table 2**  
Panel data estimations of the determinants of firm performance.

Variables	Model [1] Base	Model [2] Main Effect
<i>OED<sub>i,t</sub></i>		-0.0045*** (0.0012)
<i>FS<sub>i,t</sub></i>	0.0024*** (0.0007)	0.0025*** (0.0007)
<i>CS<sub>i,t</sub></i>	-0.0233*** (0.0041)	-0.0228*** (0.0039)
<i>FA<sub>i,t</sub></i>	-0.0083*** (0.0015)	-0.0088*** (0.0015)
<i>MS<sub>i,t</sub></i>	3.7038 (3.6572)	3.5736 (3.7652)
<i>CT<sub>i,t</sub></i>	0.0001 (0.0001)	0.0001 (0.0001)
<i>AT<sub>i,t</sub></i>	0.0002** (0.0001)	0.0002** (0.0001)
<i>SH2<sub>i,t</sub></i>	0.0001** (0.0000)	0.0001** (0.0000)
<i>CD<sub>i,t</sub></i>	-0.0005 (0.0006)	-0.0005 (0.0006)
<i>CFL<sub>i,t</sub></i>	0.0008 (0.0008)	0.0007 (0.0008)
<i>FG<sub>i,t</sub></i>	-0.0029*** (0.0006)	-0.0029*** (0.0006)
<i>AED<sub>i,t</sub></i>	-0.0003 (0.0005)	-0.0001 (0.0005)
<i>PD<sub>i,t</sub></i>	0.2645*** (0.0111)	0.2737*** (0.0132)
Constant	-0.0135 (0.0103)	-0.0128 (0.0106)
<i>YR<sub>i</sub> &amp; IT<sub>i,t</sub></i>	Yes	Yes
<i>N</i>	4005	4005
<i>R<sup>2</sup></i>	0.1168	0.1184

Note [1]: \*p < 0.1, \*\*p < 0.05, and \*\*\*p < 0.01 [2]; Year and industry dummy variables are included in each model [3]; The results are adjusted by Driscoll-Kraay's standard error [4,61] The software package used in the paper is stata 14, and the system GMM command is xtabond2.

**Table 3**  
Regression results of the moderating effect.

Variables	Moderating Effect			
	Model [1]	Model [2]	Model [3]	Model [4]
	Hometown Connectedness	Ownership Nature	Environmental Dynamics	Full Model
<i>OED<sub>i,t</sub></i>	-0.0045*** (0.0014)	-0.0071*** (0.0015)	-0.0072*** (0.0018)	-0.0090*** (0.0024)
<i>HC<sub>i,t</sub></i>	0.0008 (0.0047)			0.0039 (0.0024)
<i>HC<sub>i,t</sub> × OED<sub>i,t</sub></i>	0.3097** (0.1294)			0.2806** (0.1058)
<i>EN<sub>i,t</sub></i>		-0.0061*** (0.0005)		-0.0058*** (0.0006)
<i>EN<sub>i,t</sub> × OED<sub>i,t</sub></i>		0.0063*** (0.0012)		0.0053*** (0.0015)
<i>ED<sub>i,t</sub></i>			-0.0010 (0.0011)	-0.0015 (0.0010)
<i>ED<sub>i,t</sub> × OED<sub>i,t</sub></i>			0.0188*** (0.0055)	0.0162** (0.0064)
<i>FS<sub>i,t</sub></i>	0.0025** (0.0010)	0.0025*** (0.0007)	0.0028*** (0.0007)	0.0029*** (0.0007)
<i>CS<sub>i,t</sub></i>	-0.0228*** (0.0054)	-0.0229*** (0.0040)	-0.0238*** (0.0036)	-0.0239*** (0.0038)
<i>FA<sub>i,t</sub></i>	-0.0089*** (0.0019)	-0.0094*** (0.0012)	-0.0087*** (0.0011)	-0.0094*** (0.0010)
<i>MS<sub>i,t</sub></i>	3.5765 (3.9687)	4.1976 (3.6765)	3.4814 (3.5734)	4.0586 (3.5343)
<i>CT<sub>i,t</sub></i>	0.0001 (0.0002)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
<i>AT<sub>i,t</sub></i>	0.0002 (0.0001)	0.0002** (0.0001)	0.0001 (0.0001)	0.0001* (0.0001)
<i>SH2<sub>i,t</sub></i>	0.0001* (0.0000)	0.0001* (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
<i>CD<sub>i,t</sub></i>	-0.0005 (0.0007)	-0.0005 (0.0006)	-0.0007 (0.0006)	-0.0008 (0.0006)
<i>CFL<sub>i,t</sub></i>	0.0007 (0.0010)	0.0008 (0.0008)	0.0005 (0.0008)	0.0006 (0.0008)
<i>FG<sub>i,t</sub></i>	-0.0029*** (0.0006)	-0.0030*** (0.0005)	-0.0026*** (0.0007)	-0.0026*** (0.0006)
<i>AED<sub>i,t</sub></i>	-0.0001 (0.0005)	0.0000 (0.0006)	-0.0000 (0.0005)	0.0001 (0.0005)
<i>PD<sub>i,t</sub></i>	0.2739*** (0.0156)	0.2603*** (0.0117)	0.2841*** (0.0138)	0.2713*** (0.0123)
Constant	-0.0124 (0.0162)	-0.0083 (0.0109)	-0.0177 (0.0119)	-0.0142 (0.0120)
<i>YR<sub>i</sub> &amp; IT<sub>i,t</sub></i>	Yes	Yes	Yes	Yes
<i>N</i>	4005	4005	3942	3942
<i>R<sup>2</sup></i>	0.1186	0.1237	0.1242	0.1289

Note [1]: \*p < 0.1, \*\*p < 0.05, and \*\*\*p < 0.01 [2]; Year and industry dummy variables are included in each model [3]; The results are adjusted by Driscoll-Kraay's standard errors [4,61] The software package used in the paper is stata 14, and the system GMM command is xtsc.

overseas experience are significant, they may be constrained by the institutional context to accomplish performance goals better, thereby mitigating the negative effect of overseas experience differences. Thus, H3 is supported.

4.3.3. External environment: the moderating effect of environmental dynamics

Model [3] in Table 3 (as shown in equation [5]) presents the results for the moderating effect of environmental dynamism. The coefficient of the cross term between environmental dynamism (*ED<sub>i,t</sub>*) and the independent variable (*OED<sub>i,t</sub>*) is significantly positive (Beta = 0.0188, p < 0.01). This shows that even though CEO-TMTs may differ in terms of overseas experience, as the degree of dynamism in the external environment increases, they prefer to “seek common ground while reserving differences” to deal with changes in the volatile market environment, reduce the risks that may arise in the implementation of decisions, and “seek stability” as the optimal behavioral choice in this situation. This can mitigate the negative impact of overseas experience differences on firm

performance. Thus, H4 is supported.

#### 4.4. Robustness tests

##### 4.4.1. Proxy variables for firm performance

We conduct robustness tests by replacing the dependent variable for firm performance.

First, following prior studies [62,63], we use return on net assets ( $ROE_{i,t}$ ), which is the ratio of net income to net assets. The regression result shows that the coefficients of both main effect and moderating interaction terms are generally the same as those in Tables 2 and 3. Thus, hypotheses H1–H4 hold.

Second, following prior studies [63], we use the ratio of  $EBIT_{i,t}$  to average total assets ( $EBIT_{i,t}$ ) as a proxy variable for firm performance. Except for the positive but insignificant moderating effects of environmental dynamics, the remaining results hold. Hypotheses 1, 3, and 4 remain supported. The above regression results are omitted due to space constraints.

##### 4.4.2. Substitution of independent variables

We select the independent variables as dummy variables; we divide CEO-TMT overseas experience into two cases: with and without overseas experience. The results are the same as those in Tables 2 and 3. For the main effect, the test result indicates that CEO-TMT overseas experience differences have a significant negative correlation with firm performance. All of the moderating cross-sectional terms are verified except for the cross-sectional term of environmental dynamics, which is positively insignificant. The regression results are omitted due to space constraints.

##### 4.4.3. Transformation econometric models

We replace the regression method and use heteroskedasticity robust and clustering standard errors and D-K standard errors to further correct for possible heteroskedasticity and autocorrelation in the panel data. First, we use the fixed effect model with heteroskedasticity robust standards errors to correct for possible problems such as heteroskedasticity. The new findings are listed in Tables 4 and 5. Second, since this study is panel data, there could be intra-group autocorrelation or heteroskedasticity. Therefore, we adopt a fixed effect model with clustering standard error by firm level to further correct for within-group autocorrelation and heteroskedasticity. From the above regression results, our results are generally the same as those in Tables 2 and 3, except that the cross-sectional term of environmental dynamics is insignificant. For example, for the main effect, the test results show that  $OED_{i,t}$  is significantly and negatively related to firm performance ( $OED_{i,t}$ : Beta =  $-0.0045$ ,  $p < 0.05$ ). That is,  $OED_{i,t}$  is negatively significant with firm performance at the 5% level and decreases the level of firm performance by 5.3% ( $-0.0045 \times 0.238/0.0202 = -0.053$ ) for each additional standard deviation of  $OED_{i,t}$ . In other words, a one standard deviation increase in OED is associated with a 0.1% point decrease in the win rate ( $-0.0045 \times 0.238 = -0.001$  equals 0.1% points). This shows that the conclusions are robust and reliable. The regression results are omitted due to space constraints.

Finally, we shorten the time window. Shortening the time period can better exclude the possible effects of external policies, economic fluctuations, etc. Therefore, we again retest the time periods of 2012–2020 and 2013–2020; the results are the same as Tables 2 and 3 and are omitted due to limited space.

##### 4.4.4. Endogeneity issues

The results may be subject to endogeneity problems arising from omitted variables or reciprocal causal effects, which may bias the estimation results. We use a two-step system GMM estimation method to further validate the impact of CEO-TMT overseas experience differences on firm performance. This is because ordinary panel regression results may be inaccurate when endogenous variables are present in the model. The more effective solution in the current period is to use dynamic panel GMM estimation, including differenced and system GMM; that is, use lagged differential variables as instrumental variables. However, differential GMM is prone to the weak instrumental variable problem [64]. The system GMM estimation method utilizes more sample information than differential GMM, thus providing more valid and consistent estimates [65].

Considering that the consistency of the system GMM estimates depends on the validity of the instrumental variables, the Sargan

**Table 4**  
Robustness test results: Fixed effects model with robust standard errors.

Variables	Model [1]	Model [2]
	Base	Main Effect
$OED_{i,t}$		$-0.0045^{**}$ (0.0019)
Constant	$-0.0135$ (0.0266)	$-0.0128$ (0.0264)
$CN_{i,t}$	Yes	Yes
$YR_i$ & $IT_{i,t}$	Yes	Yes
N	4005	4005
$R^2$	0.117	0.118

Note [1]: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$  [2]; Year and industry dummy variables and control variables are included in each model [3]; The software package used in the paper is stata 14, and robust standard errors command is xtreg.



**Table 5**  
Robustness test results: Fixed effects model with robust standard errors.

Variables	Moderating Effect			
	Model [1]	Model [2]	Model [3]	Model [4]
	Hometown Connectedness	Ownership Nature	Environmental Dynamics	Full Model
$OED_{i,t}$	-0.0045** (0.0019)	-0.0071*** (0.0022)	-0.0072*** (0.0026)	-0.0090*** (0.0028)
$HC_{i,t}$	0.0008 (0.0035)			0.0039 (0.0038)
$HC_{i,t} \times OED_{i,t}$	0.3097*** (0.0440)			0.2806*** (0.0470)
$EN_{i,t}$		-0.0061*** (0.0017)		-0.0058*** (0.0017)
$EN_{i,t} \times OED_{i,t}$		0.0063** (0.0029)		0.0053* (0.0029)
$ED_{i,t}$			-0.0010 (0.0032)	-0.0015 (0.0032)
$ED_{i,t} \times OED_{i,t}$			0.0188 (0.0134)	0.0162 (0.0132)
Constant	-0.0124 (0.0264)	-0.0083 (0.0257)	-0.0177 (0.0282)	-0.0142 (0.0274)
$CN_{i,t}$	Yes	Yes	Yes	Yes
$YR_{i,t}$ & $IT_{i,t}$	Yes	Yes	Yes	Yes
N	4005	4005	3942	3942
R <sup>2</sup>	0.119	0.124	0.124	0.129

Note [1]: \*p < 0.1, \*\*p < 0.05, \*\*\*p < 0.01 [2]; Year and industry dummy variables and control variables are included in each model [3]; The software package used in the paper is stata 14, and robust standard errors command is xtreg.

statistic is not robust to heteroskedasticity or autocorrelation. Thus, Hansen and AR tests are used to make judgments. When the p-value of the Hansen test is not significant, it indicates that instrumental variables are selected with validity. In the AR test, the System GMM estimation method is valid when there is first-order autocorrelation of the disturbance terms (i.e., the p-value of AR [1] is less than 0.1) and there is no second-order autocorrelation (i.e., the p-value of AR [2] is more significant than 0.1). The two-step system GMM regression results are shown in Tables 6 and 7. From the results of the main effect retest, this study passes the Hansen (p-value: 0.239 > 0.1) and AR tests (p-value: 0.004 for AR [1] < 0.1; 0.169 for AR [2] > 0.1), indicating that the system GMM estimation method has validity. The results are generally consistent with Tables 2 and 3. For example, for the main effect, the test results show that  $OED_{i,t}$  is significantly and negatively associated with firm performance ( $OED_{i,t}$ : Beta = -0.011, p < 0.01). That is,  $OED_{i,t}$  is negatively correlated with firm performance at 1% level and decreases the level of firm performance by 12.96% (-0.011 × 0.238/0.0202 = -0.1296) for each additional standard deviation of  $OED_{i,t}$ . In other words, a one standard deviation increase in OED is associated with a 0.1% point decrease in the win rate (-0.011 × 0.238 = -0.0026 equals 0.26% points).

Therefore, the system GMM regression method test shows that our findings are robust and reliable.

## 5. Conclusions and discussion

### 5.1. Research conclusion

This study empirically analyzes the main effect of CEO-TMT overseas experience differences on firm performance and their moderating mechanisms using a two-step system GMM estimation, which reduces the endogeneity problem for Chinese manufacturing listed companies from 2012 to 2021. This study finds that, first, the greater CEO-TMT overseas experience differences, the lower the firm performance as the CEO-TMTs discriminate or conflict with each other due to different out-groups formed by the overseas experience difference. This is detrimental to the formulation and implementation of strategic decisions. Second, the more TMT members from the same region as the CEO, the more they reclassify themselves to generate new in-group preferences due to hometown

**Table 6**  
Endogeneity problem treatment: Two-step system GMM (Main Effect).

Variables	Model [1] Main Effect
$PF_{i,t-1}^*$	0.448*** (0.064)
$OED_{i,t}$	-0.011*** (0.005)
Constant	-0.087*** (0.019)
$CN_{i,t}$	Yes
No. of instruments	264
AR [1] (p-value)	0.004
AR [2] (p-value)	0.169
Hansen J test (p-value)	0.239
N	2351

Note [1]: \*p < 0.1, \*\*p < 0.05, and \*\*\*p < 0.01 [2]; Year and industry dummy variables and control variables are included in each model [3]; In each model, a two-step system GMM estimator is used. The finite sample correction derived by Windmeijer (2005) on the two-level covariance matrix is used [4,66]. The software package used in the paper is stata 14, and the system GMM command is xtabond2.

**Table 7**  
Endogeneity problem treatment: Two-step system GMM (Moderating Effect).

Variables	Moderating Effect		
	Model [2]	Model [3]	Model [4]
	Hometown Connectedness	Ownership Nature	Environmental Dynamics
$PF_{i,t-1}$	0.061*** (0.002)	0.038*** (0.003)	0.038*** (0.002)
$OED_{i,t}$	-0.011*** (0.000)	-0.003*** (0.000)	-0.009*** (0.000)
$HC_{i,t}$	-0.028*** (0.001)		
$HC_{i,t} \times OED_{i,t}$	0.086** (0.042)		
$EN_{i,t}$		-0.001*** (0.000)	
$EN_{i,t} \times OED_{i,t}$		0.011*** (0.001)	
$ED_{i,t}$			-0.014*** (0.000)
$ED_{i,t} \times OED_{i,t}$			0.028*** (0.001)
No. of instruments	364	351	337
Constant	-0.094*** (0.008)	-0.048*** (0.010)	-0.049*** (0.006)
$CN_{i,t}$	Yes	Yes	Yes
AR [1] (p-value)	0.003	0.003	0.007
AR [2] (p-value)	0.180	0.168	0.157
Hansen J test (p-value)	0.202	0.247	0.262
N	2351	2351	2266

Note [1]: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$  [2]; Year and industry dummy variables and control variables are included in each model [3]; In each model, a two-step system GMM estimator is used. The finite sample correction derived by Windmeijer (2005) on the two-level covariance matrix is used [4,66] The software package used in the paper is stata 14, and the system GMM command is xtabond2.

connectedness. Thus, the closer the relationship between CEO-TMTs becomes, which can effectively weaken the negative impact of overseas experience differences. Third, CEO-TMTs operating in SOEs have a greater strategic identity than non-SOEs due to the particular organizational and institutional environment, which mitigates the negative effects. Fourth, all other things being equal, in a more dynamic environment, the more CEO-TMTs tend to “seek common ground while reserving differences” and choose more robust strategic decisions to reduce the risk of decision implementation. Thus, the negative influence of CEO-TMT overseas experience differences on firm performance is lower.

## 5.2. Research innovation

Our work makes the following theoretical contributions: First, unlike previous studies that mainly examine TMT as a whole or the individual CEO, this study separates the CEO from TMT, examines the process of CEO-TMT interaction, and further analyzes the effect of differences in the characteristics of TMT. Our study expands the scope of executive team personnel characteristics, which will further complement and refine the upper echelons theory. Second, we contribute to studying the relationship between CEO-TMT heterogeneity and corporate performance. This study integrates CEO-TMT overseas experience differences into the research framework of corporate performance levels, analyzing the role of CEO-TMT overseas experience differences on corporate performance levels. This is important for further extending the upper echelons theory. Studies show that the heterogeneity of executive team members' experiences, which brings diversity in their knowledge, may enhance corporate performance. However, this study indicates that heterogeneity in the experiences of the CEO and other executive group members may result in conflicts in decision-making due to the formulation of different subgroups, which may rather reduce the firm performance level. Third, we provide empirical evidence for the impact of TMT characteristics on corporate performance in the institutional context of an emerging economy like China. The moderating mechanisms are discussed from the perspectives of executives' characteristics (hometown relationship), organizational (ownership nature), and external environment characteristics (environmental dynamics), considering the specific cultural context in China. In particular, the Chinese culture of “nepotism” brings the executive team members closer together, which can mitigate the negative impact of executive heterogeneity on enterprise performance. In conclusion, our study not only enriches the research on the integration of upper echelons theory and corporation governance but also provides new insights for future understanding of the mechanisms at play in CEO-TMT heterogeneity in the Chinese context.

## 5.3. Management implications

Our findings yield the following managerial insights: First, the efficiency of strategic decisions in TMT is affected by both the cognitive structure of executive members and the process of CEO-TMT interaction. CEO-TMT overseas experience differences can play a role in the correct strategic choice and firm performance improvement. Firms should improve their TMT knowledge structure, which helps them achieve complementary knowledge in strategic decision-making and improve corporate performance goals. Second, the implementation activities of enterprise performance objectives should consider the influence of CEO-TMT life experience differences on company strategic decisions and examine their executives and various environmental characteristics. The established strategic goals may only be achieved by making strategic decision-making appropriate for the various market-oriented environmental conditions. Third, CEO-TMT hometown connectedness plays a crucial role in enhancing firm performance. Therefore, firms should value the critical influence of nepotism among executives on strategy selection and decision-making. In comparison, SOEs require TMTs to make

more robust strategic decisions in the face of a volatile and adapting external market environment, which positively affects the achievement of corporate performance goals.

#### 5.4. Limitations of research and future directions

This study has some limitations. First, the research sample mainly includes listed Chinese manufacturing companies, limiting the generalizability of the findings. Future research can consider data on enterprises from other industries and countries.

Second, in terms of data sources, the research sample in this study mainly comes from listed companies and lacks factual information from field visits of firms. The data can be further extended to non-listed companies. Further, follow-up research on several enterprises can be added to deepen the overall insight of CEOs and TMT background characteristics.

Third, regarding research design, some indicator variables may be missing due to data availability and other reasons, such as hometown connectedness. This concern may be somewhat mitigated as we use a large sample. Future research can further supplement and improve the sample to uncover new findings. In addition, although this study attempts to control for all other factors, there may still be cases of missing variables. Future works can consider other relevant influencing factors.

Finally, to enrich and improve the upper echelons theory, future research needs to explore in depth the mechanisms that impact the influence of executive team heterogeneity on firm performance from different leadership styles, organizational, institutional environment, and organizational resources, among other factors. These insights can help better guide enterprise practice.

#### Author contribution statement

Zhaocheng Xu: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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#### Data availability statement

The raw data required to reproduce these findings cannot be shared.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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