


Article

Does Gender Matter? The Relationship Comparison of Strategic Leadership on Organizational Ambidextrous Behavior between Male and Female CEOs

Gang Zhang, Ziang Jia *  and Shimei Yan

Department of Leadership and Organization Management, School of Management, Zhejiang University, Hangzhou 310027, China; zg@zju.edu.cn (G.Z.); shimeiyang@zju.edu.cn (S.Y.)

* Correspondence: 11920047@zju.edu.cn

Abstract: This paper aims to examine the relationship difference of strategic leadership to organizational ambidextrous behavior between male and female CEOs, taking into account the balancing effect and combined effect of explorative and exploitative behaviors. A quantitative analysis is conducted from demographic data and relevant organizational ambidextrous data of male and female CEOs of listed companies from 2016 to 2020. In total, 226 valid male-female CEOs pairs are used to test whether there is a significant difference on gender between strategic leadership and organizational ambidextrous behavior. The findings revealed that female strategic leaders with an ambidextrous advantage do not behave inferior to males. This study clarifies the intrinsic relationship between female strategic leadership and organizational ambidexterity, affirming the ambidextrous synergistic effect of female executives in corporate strategic decision-making. The presentation of women in top management may contribute to a better organizational performance through balancing and combining ambidextrous activities, and this study calls on upholding the cultural values of gender diversity and inclusiveness, and to focus on merits of female leaders.



check for updates

Citation: Zhang, G.; Jia, Z.; Yan, S. Does Gender Matter? The Relationship Comparison of Strategic Leadership on Organizational Ambidextrous Behavior between Male and Female CEOs. *Sustainability* **2022**, *14*, 8559. <https://doi.org/10.3390/su14148559>

Academic Editor: Sooksan Kantabutra

Received: 13 June 2022

Accepted: 11 July 2022

Published: 13 July 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Keywords: organization ambidexterity; ambidextrous behavior; strategic leadership; female leadership; balancing effect; combined effect

1. Introduction

Under the unpredictable external environment, enterprises not only carry out current business efficiently to maintain immediate survive, but also persist in cultivating new capabilities to expand long-term competitive advantages [1]; thus, it is indispensable for organizations to possess ambidextrous behavior [2]. Organizational ambidexterity is essentially about strategic decision of exploration and exploitation, inevitably affected by self-cognition of top managers [3]; therefore, exploring how to construct an ambidextrous organization from the perspective of top manager is of great necessity. The realization of organizational ambidexterity through mechanisms such as structural separation, situational design, and organizational network is highly influenced by top managers [3].

As top managers are always at the core of organizations, their strategic decisions represent the efficiency of allocation and integration of internal resources [2], which further determines the degree of dynamic consideration and balance of organizational ambidexterity [4]. Therefore, the balance between efficiency and flexibility is the key to win under dynamic environments [2]. The current situation of organizational ambidexterity puts forward higher requirements on ambidextrous leadership of managers, and they are often faced with two kinds of contradictory and tense leadership situations [5]. As Birkinshaw and Gupta [5] suggested, ambidextrous behavior at organizational level can be realized through managerial capacity, which is inseparable from the relationship network of managers. Managers obtain diverse resources and information through a huge network of relationships to prevent polarization between explorative and exploitative behaviors [6].

Mom et al. [7] defined ambidexterity of managers as the behavioral orientation of managers integrating explorative and exploitative activities in a certain period, and proposed that ambidextrous leaders always have multiple roles and different tasks at one time.

Existing empirical studies have announced that diversified senior management teams are more innovative [8] and could respond better to competitive threats [9]. Gender composition is a kind of non-functional diversity that is beneficial to higher organizational performance [10]. The introduction of qualified women into all-male boards increases the cognitive diversity of boards; thus, they are likely to generate more in-depth considerations about strategic decision options [11]. Moreno-gomez et al. [12] further confirmed that gender diversity of TMT has positive impacts on organizational performance, and female leadership behavior leads to higher decision-making behavior flexibility with less hierarchical attention, higher level of collaboration, and longer-term strategic orientation. Therefore, gender issues in management should also become the focus of organizational behavior research.

Since the 1970s, the topics of female leadership have focused on gender discrimination [13], gender stereotypes [14], opt-out [15], and glass-ceiling [16] that women may encounter in the workplace. Among them, the correlation between gender and stereotypes has always been the topic that is most studied in gender in management literatures [17]. The inconsistency between female gender roles and leadership roles would result in two kinds of bias [18]. The first one thought leadership is more in line with male traits, leading to lower assessment of female leadership potential than men. The second bias judges leadership behavior as more suitable for men, so evaluation of female actual leadership behavior is lower than that of men [19]. Female leaders are often trapped in a dilemma as followers may have negative perceptions of female leaders, whether she displays agentic leadership behavior or not [20]. This topic is highly focused in academia, mainly to explain why female leaders are still at a disadvantage when getting promoted [21].

With the continuous improvement of female social status and increasing awareness of female groups, rising numbers of women have broken the shackles of reality and joined top management team (TMT), and the proportion of female managers has increased globally since 1970s [22]. In the context of constant organizational change, women also started to run their own businesses or promoted to be CEOs of enterprises [23]. According to Catalyst, by the end of April 2021, the number of female CEOs in S&P reached 5.8%, with an increase of 1% from the previous year [24]. As the 'pilot' of the organization, CEO shoulders completely different tasks and missions compared with middle-level managers [25]. At present, few studies have focused on the role of gender in organizational ambidexterity, the influence of female strategic leaders on ambidextrous organizational behavior has also been neglected. As the top strategic leader in an organization, how does the CEO exert strategic leadership to influence the organizational ambidextrous behavior? Is strategic leadership of female CEOs still significantly inferior to that of male CEOs in building ambidextrous organizations?

In order to answer the above questions, based on Upper Echelons Theory (UET) and Role Congruity Theory, this study adopts secondary data to compare the relationship differences of strategic leadership to organizational ambidextrous behavior between male and female CEOs. Section 2 reviews gender-related literature on strategic leadership and organizational ambidextrous behavior, and makes hypotheses on the relationship between them. Section 3 introduces the research method and process of sample collection of secondary data. Section 4 tests the significance of the relationship between strategic leadership and organizational ambidextrous behavior of male and female CEOs. Section 5 discusses the significance test analysis results of paired samples, and the last section describes the theoretical and practical significance, limitations and future research prospects of this study.

2. Theory

2.1. Strategic Leadership and Organizational Ambidextrous Behavior

Upper echelons theory (UET) brought strategic leadership into academia, mainly to describe ‘the decisive role of characteristics of senior managers on corporate strategic decisions and corporate performance’ [26]. Strategic decisions are formed by senior managers in terms of scanning, filtering and interpreting information [27]. Due to bounded rationality [28], strategic decisions of senior managers will also be influenced by personal preferences, cognitive style and prior experience. There are three main perspectives to define the connotation of strategic leadership of senior executives, namely, the ability perspective [29], the process perspective [30] and the style perspective [31]. From the perspective of ability, strategic leadership is understood as an organizational vision that extremely depended on individual abilities [30]; the process perspective is committed to opening the black box of strategic leadership and exploring the internal mechanism of action [32], while the style perspective is essentially the embodiment of the long-term behavior of leaders [33]. However, strategic leadership cannot be described from any aspect without the subjective initiative factor of ‘people’, that is, the initiator of all strategic actions may be CEOs, senior managers, top management team [34], or even employees within the organization [35]. Although the role of TMT and BOD in corporate decision-making process cannot be underestimated, there is growing literatures supporting ‘CEO effect’ [36]. This emphasizes the irreplaceable influence of CEO on making strategic decisions [37]. The overall behavior pattern, strategic flexibility, and performance at critical moments of the organization all depend on the ability of CEO [38].

UET gradually opens the black box of strategic leadership, from executive characteristics—strategic choice and executive characteristics—organizational performance [39]. Hambrick [40] integrated executives’ personal traits, corporate strategic choice and performance into upper-echelon analysis. It draws the significance of cognitive pattern represented by executives’ demographic characteristics and strategic behavior on long-term performance. Its internal logic is that cognition of strategic leaders could effectively explain and predict future strategic choices of organization, while organizational behavior of senior executives is the external reflection of their cognition, which further determines long-term performance. Different from traditional economic analysis, UET believes that strategic decision-making is a cognitive process restricted by executives’ bounded rationality, bounded cognition and behavioral factors [40]. The difference of individual traits results in different individual cognition, thus making different strategic choices. Strategic leaders with cognitive complexity and behavioral complexity could effectively influence leadership effectiveness under the information overloaded environment [38]. The influence of strategic leadership behavior on organization has become a highlight of strategic leadership theory [41] in recent years. Consistent with the above, Bromiley and Rau [42] proposed a comprehensive system to explore how cognitive and behavioral factors of CEO, TMT, and CEO-TMT interface affect strategic decision making. Hence, this paper considers that cognition and behavior are two parallel dimensions of strategic leadership. Therefore, the connotation of strategic leadership can be described from two parallel perspectives of cognition and behavior, and the influence of CEO’s strategic leadership on the performance of organizational ambidextrous behaviors can also be discussed.

How to coordinate the relationship between two types of activities so as to obtain ambidexterity has become a key issue in organizational theory research and practice. There are two different ways to understand the connotation of organizational ambidexterity. The former pays attention to the absolute strength of both, suggesting that we should enhance the combined degree of ambidexterity. The latter argues that achieving organizational ambidexterity should increase the balance, that is, the relative strength of exploration and exploitation. Combined ambidexterity is believed that exploration and exploitation are orthogonal relationships with no competition, but complementarity and synergy effects to certain degrees. In other words, an organization integrates internal resources with external resources acquired through alliance or merger, thus forming a virtuous cycle [43]. Balanced ambidexterity regards exploration and exploitation as a continuum of both ends, existing

in a reciprocal relationship. The final balance is the result of a zero-sum game, that is, achieve optimal allocation of resources under limited organizational resources, reducing the differences between explorative and exploitative behaviors, and trying to avoid the risk due to extreme or excessive tilt [44].

He and Wong [45] proposed two methods of interaction and balance to measure organizational ambidexterity from the perspective of strategic matching: the larger product of the two, the better interaction effect, and more ambidexterity the organization will have; the smaller difference between explorative and exploitative scores, the better balancing effect and ambidexterity of organization. Gupta et al. [46] pointed out that exploration and exploitation may occur in complementary fields without resource competition. The combination of exploration and exploitation can make full use of organizational resources and capabilities, and its occurrence process can help the two promote each other to improve organizational performance. Enterprises are required to carry out explorative and exploitative behaviors simultaneously within the organization, as well as interdependence and embeddedness, which can produce a certain synergistic effect [47]. Therefore, organizational ambidexterity is considered as a general continuous process of weighing pros and cons of different choices, similar to the parallel application of contradictory strategies. The goal is to ensure the sustainable competitiveness of both short-term performance and long-term development of the organization [48].

Eisenhardt [49] elaborated the thinking transformation of ambidexterity in managerial research, and believed that reform of organizational ambidexterity depends on exploring organizational tension in creative ways, grasping and exploring the two extremes by making full use of inherent paradox logic of ambidexterity. Most relevant studies regard ambidexterity as an organizational phenomenon, focusing on the impact of ambidexterity on organizational performance [50,51]. With in-depth discussion of organizational ambidexterity, researchers have gradually realized that ambidexterity is not only a feature of organizations, and then the concept of ambidexterity shifts from macro to micro level [52]. Tushman and Smith [53] pointed out that ambidextrous flexibility is facilitated by internal processes within TMT. Subsequently, Smith and Tushman [3] (2005) focused on the coping strategies of TMT when facing ambidextrous contradictions, and figured out that the ambidextrous-thinking ability of senior managers is key to solving conflicts in ambidextrous organizations. Hu et al. [54] further applied organizational ambidexterity to TMT, but empirical studies on micro level are very rare, especially on CEO.

The cognitive framework is stable for understanding situations and creating situations for complex cognitive processes and behavioral responses. As early as 1992, Phillips et al. [55] concluded that strategic leadership is essentially a high level of cognitive complexity, focusing on cognition, values, attention, and construal levels. Later, strategic leadership was conformed closely related to how individuals choose information to understand and process information [56]. On the basis of UET, Kiss et al. [57] conducted empirical research on the relationship between CEO's cognitive characteristics and the success of organizational ambidexterity, and realized that cognitive flexibility of CEO, tendency of mind, emotion, and behavior to adapt to changing conditions may contribute a lot in achieving organizational ambidexterity. Complex and well-developed cognitive Schema proposed by Yim [58] and cognitive ability proposed by Hunter [59] constitute the cognitive dimension of strategic leaders together. Currently, the relevance between ambidextrous leaders with paradoxical cognition [3], behavioral repertoire (ability to fulfil different roles), and behavioral differentiation (ability to lead differently under different contexts) [60] in enabling ambidextrous firms has been witnessed. The research conducted on CEOs showed [61] that both CEO's perception and the amount of information that can be explained will significantly affect short-term performance and long-term goals [62,63]. When making strategic choices, CEOs with high flexibility were more likely to seek out and match new information to keep pace with dynamic environment [64]. The successful realization of organizational ambidexterity is related to the ability of top managers to acquire, share, differentiate, and integrate different information [65,66]). Kiss et al. [57] also confirmed that

CEOs with cognitive complexity and flexibility would allocate more attention to detailed information search activities. When the organization conducts information search, a CEO's cognitive characteristics will play greater roles in various information search activities. This increases the quality, quantity, richness, and completeness of information received, which in turn may help CEOs achieve a more complex thought of structured problems [57].

Based on the above theoretical deduction, the following hypothesis is made in this study:

Hypothesis (H1a). *The cognitions of strategic leader have positive impacts on organizational ambidextrous behavior.*

Under increasingly dynamic environments, Eisenhardt and Martin [49] argued that policy makers adjust strategies through short-term positive actions to create long-term advantages for organizational development. Bernal and Jaramilo [67] supported this view and argued that the behavior of strategic decision itself could fundamentally affect organizational ambidexterity. Numerous studies have confirmed that the integration of opening and closing leadership behavior has significant influences on promotion of organizational ambidexterity [68,69]. By definition, opening leadership behavior facilitates the formation of a strong climate of empowerment and giving subordinates enough space to act independently [54]. Through this process, organizations would be able to obtain new knowledge and prevent possible organizational inertia [68]. Closing leadership behavior include taking corrective actions and setting clear guidelines for achieving a shared organizational goal [69].

Their leadership behaviors and formulation and implementation of organizational policies shape organizational situations and influence followers' attitudes and behaviors [70], thus determining future performance and fate [71]. As a branch of leadership theory research, Bass' [72] transactional and transformational leadership framework was developed in a broader organizational environment, and has been described the process in which CEO's strategic leadership behavior affects variables at the organizational level. When external environment becomes increasingly complex, transactional leadership behavior and transformational leadership behavior are not mutually exclusive and could play a synergistic effect [73]. Consistent with Quinn's [74] model of value competition, a strategic leader must possess a behavioral complexity, being equipped with the ability to act out contradictory leadership behaviors simultaneously [75]. Similar to the views above, Rowe and Nejad [76] believed that the behavioral dimension of strategic leadership is the combination of managerial leadership behavior and visionary leadership behavior, focusing on both present and future. The behavior of strategic leaders produces synergistic effects on organizational development, putting forward future growth strategy, and influences daily decisions made spontaneously by subordinates. These strategic behaviors not only maintain the stability of organizational wealth, but also contribute to long-term development in the future [77].

UET suggests that the resources and capital invested by an enterprise are visual indicators of the enterprise's strategic behaviors [26]. These strategic behaviors usually include small scale and gradual business strategies, such as pricing and inventory that focus on short-term performance. It also includes strategic decisions that involve significant risks, such as acquisition and product diversification, that are closely related to long-term development of the enterprise [27]. Strategic behavior enables enterprises to pursue potential profit opportunities, which is conducive to future performance [4]. Participating in strategic actions shows that the company is proactive, willing to take risks and make changes, thus enabling companies to take advantage of favorable market conditions, as well as avoiding potential adverse conditions [78].

Based on the above theoretical deduction, the following hypothesis is made in this study:

Hypothesis (H1b). *The behaviors of strategic leader have positive impacts on organizational ambidextrous behavior.*

2.2. The Effect of Gender on Organizational Ambidexterity

With further research, a consensus is being reached that gender itself, as a feature, influences strategic decisions through its values [79]. Hillman et al. [80] pointed out that females have unique characteristics compared with males, and this view is gradually recognized by the female leadership research institute [81]. Helgesen [82] put forward the theory of female managerial style in the 1990s, emphasizing that the advantages of female managers come from their own traits, and studied the leadership behavior of female managers from the perspective of female characteristics. Later, Rosener's [83] research basically confirmed Helgesen's theory of female managerial style, proposing that female managers mostly adopt transformational leadership style, and pointed out that this kind of leadership behavior breaks through the glass ceiling significantly, enhancing the survival chance of the organization to cope with the highly uncertain environment outside.

Zuraik et al. [69] applied ambidextrous leadership theory to explore the impact of team leader gender on ambidextrous innovation results, by collecting self-report survey of team members. Compared with male team leaders, female team leaders show less explorative behaviors, such as creativity, adventure, and exploration. Female leaders also had less influence than their male colleagues when they engaged in role-allocation and scheduling exploitation behaviors [69]. This is the first study to examine the effects of gender and ambidextrous leadership on team outcomes, but so far, there is no relevant research on the impact of female CEOs on organizational ambidexterity on individual level. Although rising number of educated women have shown their unique advantages in managerial practice, gender stereotypes and glass ceiling still profoundly restrict the career development of female managers in the workplace [84]. Social role theory [18] emphasizes the reason women and men have different experiences is due to the different social expectations, while male and female executives also have different cognitive values and leadership decision-making behaviors. Socially accepted gender roles require women to be gentle; leadership roles, on the other hand, embody traits associated with men, such as strength, ambition, and decisiveness [18]. As a consequence, the contradiction caused by the inconsistency between gender role and leadership role has become a stumbling block that restrict the development and promotion of female executives, and the conflicts between family and career also make female leaders fall into a dilemma. It is easy for women to fall into traditional 'gender stereotypes' that explain why they are not treated equally with men. If women are at the top, they will be regarded as the exception; while women who don't make it to the top of their organizations may get feedback that they are not pushing enough themselves. Ely [85] also showed that the male-dominated organizational environment was not conducive to harmonizing the relationship between female leaders and other women in the organization. The low proportion of women in senior leadership seemed to signal to other women in the company that women needed to choose between appearing competitive and being likeable. It also discourages potential female leaders from turning to existing female executives for advice or help, gradually leading to fewer women at the top of companies and a vicious cycle of female leadership development. In view of the above deduction, the following hypotheses are proposed in this study:

Hypothesis (H2). *Female strategic leaders impair effects on the relationship between strategic leadership and organizational ambidextrous behavior.*

Based on the above theoretical deduction, this study proposed the following conceptual framework, that is, the relationship of CEO strategic leadership on organizational ambidexterity (see Figure 1).

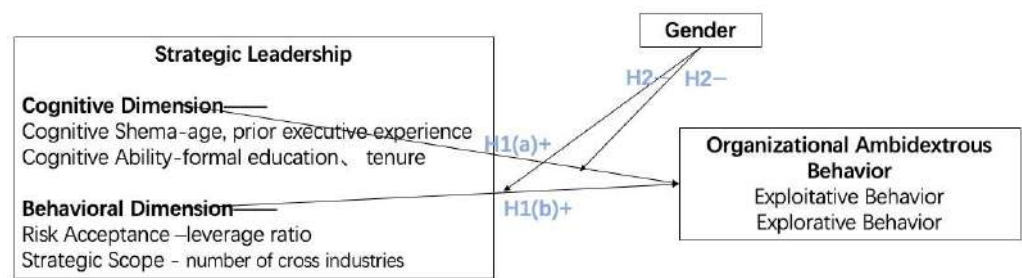


Figure 1. Conceptual Framework.

3. Methodology

3.1. Measurements of Variables

Observable characteristics of senior executives are the starting point of strategic leadership research. Demographic data are ‘a reasonable proxy for potential differences in cognition, value and perception’, reflecting socialization and experiential differences in decision-making [86]. At the same time, the psychological cognition and strategic behavior from strategic leaders, which are difficult to observe, are explained for convenience and operability [87]. However, researchers are no longer limited to simple inference of the relationship between observable characteristics of executives and organizational results. A single demographic approach is too simplified to measure organizational constructs, and it will also cause duplication and omission between different constructs [88], thus impairing accuracy and rigor of research. Secondly, there may be other alternative explanations for the relationship between proxy variables and organizational outcomes, which cannot fully reflect the relationship among senior executives’ cognition, values, and organizational performance. Taking demographic elements as surrogate variables of potential psychological constructs is an indirect measure of leaders’ traits. Nevertheless, the validity of theoretical constructs will be reduced, for example, adopting tenure to measure the attitude of risk acceptance. Therefore, demographic data are not enough to comprehensively describe a strategic leader, and there is still significance to consider executives’ cognitive view and behavioral preference.

3.1.1. Measurement of Independent Variables

Cognition of strategic leadership (IV) is divided into cognitive schema and cognitive ability. The cognitive schema was measured by two proxy variables: age [89] and prior working experience [90]. The former believed that senior executives have more time to mature and consolidate complex cognition; while the latter believed that prior working experience will affect knowledge, attitude, values, and information processing methods used to make strategic judgments about the future. In other words, older executives may be more focused on the current of organization and less likely to take on riskier tasks [89]. At the same time, in a meta-analysis, Wang et al. [91] (2016) found that older executives are relatively conservative and often become a stumbling block on corporate acquisition, R&D investment, and internationalization. However, their rich experience will also bring high profits and more effective management system to enterprises. Prior working experience provides executives a template career for the future, enabling arrangement of the mess information according to accumulated professional experience, and identification and evaluation of the current business environment, thus affecting the executive cognitive preferences and strategic choices, including adventure, invention, patent, strategic innovation, the choice of product market, and internationalization. Nevertheless, it also depends on industry volatility. Cognitive ability was proxys for formal education and tenure. Formal education refers to the number of formal educations received, which represents curiosity and openness to new concepts, and highly educated executives have a more comprehensive understanding of the organizational environment, higher openness, and motivation to pursue outstanding corporate performance [92], thus promoting organizational innovation and reform. In the face of unpredictable business environment, executives with higher formal

education are equipped with the necessary absorptive and transformational abilities [93], constantly innovating to pursue enterprise strategy that keeps pace with the current times, and have a deeper understanding of future risks. Upper echelons theorists believe that tenure is one of the most explored executive characteristics [27], which represents cognitive persistence and commitment to the status of organization [9]. Executives with longer tenures are less willing to initiate and fund new strategic decisions [94]. On the contrary, since short-term executives often face higher risks of dismissal early in their tenure, they are eager to prove competence and demonstrate their power, and are more inclined to make aggressive strategic decisions. Similar to age, the longer tenure CEOs stay in office, the more powerful they are and more willing to maintain current status, rather than make strategic changes [95]. With the development of individual career, Henderson et al. [96] found that in stable industries, task performance increased with the increase of CEO tenure. However, in unstable industries, task performance decreased with the increase of CEO tenure. That is to say, those CEOs with longer tenure have higher cognitive abilities. Both cognitive schema and cognitive abilities demonstrate the necessity of industry as a control variable.

The behavior of strategic leadership (IV) can be divided into strategic behavioral risk that CEO is willing to take [97] and the scope of strategic behavior [98]. The former captures the risks of innovation, capital expenditure, and leverage (i.e., long-term debt) [97], and the degree of risk acceptance is represented by financial leverage ratio [93]. Leverage ratio is the reciprocal of leverage multiple. The higher leverage multiple is, the more likely it is to be affected by the yield rate and loan interest rate. Four of the latter are closely related to strategic areas: acquisition, divestiture, international diversification, and product diversification [94]. All of the four strategic actions above are regular ways for companies to increase or decrease new products and regional markets within the existing strategic scope. The composition of product markets is represented by product diversity, which is proxied by the number of cross-industries [98]. The more cross-industries there are, the richer the product category of the enterprise is.

3.1.2. Dependent Variable Measurement

The ambidextrous behavior of organizational behavior (DV) is divided into exploitative behavior and explorative behavior. The former is the expansion of existing technologies, products and markets within the organization, which is ultimately reflected in the operating efficiency of enterprise. Therefore, the ratio of operational ratio (CSI_t) is used as the agent. The latter represents the radical innovation behavior and potential risks that an enterprise is willing to take, the acceptance of new products and technologies and the identification of potential new opportunities in the market, which can be measured by R&D intensity [99]. Mom et al. [7] were the first group of scholars to analyze the dilemma between exploitative and explorative behavior at the individual level. They developed the managerial ambidexterity scale, which measures managers' exploitative and explorative activities, respectively, and uses the product operation of the two to describe ambidexterity. Later, some scholars also changed the ambidexterity operation of managers into the absolute value of the difference between exploitative and explorative activities to represent balance between the two [100]. In this article, the absolute value of explorative behavior minus exploitative activities was adopted.

Based on the statements above, this study implies that:

$$Y_{(\text{Amb-balancing})} = \alpha \cdot X_{\text{Cognition}} + \beta \cdot X_{\text{Behavior}} \quad (1)$$

$$Y_{(\text{Amb-combined})} = \gamma \cdot X_{\text{Cognition}} + \delta \cdot X_{\text{Behavior}} \quad (2)$$

That is to say, the balancing dimension of organizational ambidexterity consists of cognition and behavior, their coefficients are α and β respectively. As for combined dimension, coefficients are γ and δ , respectively. Therefore, Equations (1) and (2) above are produced.

As for the calculation of cognition and behavior, the cognitive dimension is composed of demographic elements mentioned above, and z-value calculation method is adopted. The Z value method is the standard deviation for the ruler to measure the age, tenure, education level, and the prior years of executives, that is, the deviation of the average distance. The units of original data collection vary a lot. After all the original scores are converted into Z scores, the standard normal distribution is formed, and the standard scores of cognitive dimensions are obtained after addition, and then linear regression is made. This step refers to the measurement method of narcissistic CEO published in ASQ by Hambrick et al. [40], which is reliable in operation. The behavioral dimension works in the same way; thus, Equations (3) and (4) are shown below:

$$\text{Cognition}_{[i]} = (\text{age}_{[i]} - \text{age_mean})/\text{age_std} + (\text{formal_edu}_{[i]} - \text{formal_edu_mean})/\text{formal_edu_std} + (\text{tenure}_{[i]} - \text{tenure_mean})/\text{tenure_std} + (\text{prior_exp}_{[i]} - \text{prior_mean})/\text{prior_exp_std} \quad (3)$$

$$\text{Behavior}_{[i]} = (\text{cross_industry}_{[i]} - \text{cross_industry_mean})/\text{cross_industry_std} + (\text{leverage}_{[i]} - \text{leverage_mean})/\text{leverage_std} \quad (4)$$

In terms of the description of $Y_{(\text{Amb-balancing})}$, we adopted the absolute value of R&D intensity minus ratio of operating cost, and adopted the product of the two to represent $Y_{(\text{Amb-combined})}$; thus, Equations (5) and (6) are produced.

$$Y_{(\text{Amb-balancing})} = |\text{R\&D intensity} - \text{ratio of operating cost}| = |\text{R\&D expense}/\text{operating revenue} - \text{operating cost}/\text{operating revenue}| \quad (5)$$

$$Y_{(\text{Amb-combined})} = \text{R\&D intensity} \times \text{ratio of operating cost} = \text{R\&D expense}/\text{operating revenue} \times \text{operating cost}/\text{operating revenue} \quad (6)$$

Moreover, we substitute the values of Equations (3) and (4) into Equations (1) and (2), and substitute the values of Equations (5) and (6) into $Y_{(\text{Amb-balancing})}$ and $Y_{(\text{Amb-combined})}$ in Equations (1) and (2), respectively. After regression, 4 coefficients (α , β , γ and δ) are produced, thus the relationship between IV and DV is clear.

3.2. Data Collection

Based on the CSMAR database, this study selected demographic data and relevant organizational ambidextrous data of male and female CEOs of listed companies from January 1st 2016 to December 31st 2020 (a total of five years). Listed companies were selected as samples because there are objective data publicly disclosed, which facilitated the paired sampling and data collection of male and female CEOs. EXCEL and SPSS software were used for data collection and regression analysis respectively. Finally, this study adopted Python Script to assist the raw data analysis.

3.2.1. Demographic Data Collection

In CSMAR database, the first female CEO started her term of office in 1997, but the previous secondary receipts were not perfect in characterization of managers. Combined with the literature on organizational behavior research using s secondary data in SMJ magazine in recent years, demographic data of female executives of Chinese listed companies in the past five years were selected. This included age, the start and end of tenure, formal education, and prior executive experience.

In terms of CEO age, the end of tenure was the age of selection. Having considered that senior executives need to be in office for a period of time to exert their leadership and produce performance, samples with tenure of less than six months were excluded, and those with tenure of 0.5–1 year were calculated as 1 year. Tenure was calculated by subtracting the year when the CEO starts to take office from the sample year. Data of female CEOs were first collected in this study, and then the corresponding Chinese male samples were selected using the same collection method. Since the formal education level of CEOs in CSMAR database was incomplete, this study attempted to search more demographic

data of CEOs in the annual reports from official website. Formal education was mainly divided into the following six categories: 1 = technical secondary school or below, 2 = junior college, 3 = undergraduate, 4 = Master's degree, 5 = Doctoral degree, 6 = other (published in other forms, such as honorary doctor, correspondence, etc.), and 7 = MBA/EMBA. Prior executive experience was the sum of the professional years that CEO has worked as an executive before the current term of office, which was used to measure the impact of professional experience on organizational ambidexterity. This step needed to add the number of years after obtaining the CEO resume information. After removing incomplete samples, 283 female CEOs and 283 male CEOs were collected.

3.2.2. Sample Collection of Male and Female CEOs Matching

Industry types were first matched, with the aim of minimizing the impact of industry fluctuations. If there were fewer enterprises in some specific industries, no male samples were matched and the corresponding female samples should also be deleted. In this study, the data of industry categories of relevant enterprises were found in GuoAn database. With regard to industry classification of China Securities Regulatory Commission, there were 19 categories in total: 1 = A Agriculture, forestry, animal husbandry and fishery; 2 = B Mining; 3 = C Manufacturing; 4 = D Public of utilities; 5 = E Construction; 6 = F Wholesale and retailing; 7 = G Transport and storage; 8 = H Accommodation and catering; 9 = I Information technology; 10 = J Finance; 11 = K Real estate; 12 = L Business services; 13 = M Scientific research services; 14 = N Public environmental protection; 15 = O Resident services; 16 = P Education; 17 = Q Health; 18 = R Cultural communication; and 19 = S Composition. When matching industry, the industry code mentioned above shall be given priority to matching. After matching of whole industry, the length of tenure should be matched, that was, the difference between the year of the end of tenure and the year of the beginning of tenure, so as to reduce the influence of different tenure on DV.

Male CEOs currently outnumber women, proportionately, so with exactly the same industry category and tenure, female samples could be sequenced first, followed by the paired male sample, and then matched with female sample. In addition, some of the samples were executives of companies before listed, so the year of the company's listing was chosen as the beginning of the CEO's tenure. After matching industry categories and tenure, demographic factors related to CEOs characteristics, such as age, education, and years of prior executive experience, were matched to obtain 226 valid male-female CEOs matching samples. In Section 4.3, variance analysis will be conducted for the matched samples of male and female CEOs to compare the relationship with ambidextrous behaviors.

3.2.3. Dependent Variable Sample Collection

Dependent variable data mainly come from listed companies' annual reports or home pages. The exploitative behavior of an enterprise was measured by the operating cost ratio (CSI_t), which was calculated by the ratio of operating cost to operating revenue, that was, the average operational cost during the tenure of an executive divided by the average operational revenue during the tenure of a CEO. Explorative behavior is a strategy to search for new technologies and opportunities in the market. R&D intensity is proxy measured by the ratio of R&D expense to operating revenue, that is, the average R&D expense during the tenure divided by the average operating revenue during the tenure. R&D expenses were generally included in the notes to the annual report [101]. This study adopted the operation method of Cao and Zhang [102]: ambidextrous balancing effect (BA_t) is the absolute value of subtraction between exploration and exploitation. The smaller the value is, the better ambidextrous balancing effect is. Ambidextrous combined effect (MA_t) is the product of exploration and exploitation, and the larger the value is, the better combined effect will be.

3.2.4. Control Variable Sample Collection

Since R&D and production costs vary a lot among different industries, in this study, industry was taken as a control variable. For the control of enterprise size, three methods

covering number of employees, operating income and total assets can be selected, and operating income was adopted in this study. As both R&D intensity and operating cost ratio in the calculation of dependent variables were related to operating revenue, this study did not control these variables.

4. Results

4.1. Descriptive Analysis of the Demographic Elements of the Sample

The average age of female executives is 49.6 years old, while that of male CEO is 52.6 years old. The overall age of male executives is older than female CEOs, but the difference is not significant ($p = 0.194$). In terms of educational background, the average educational background of Chinese male and female samples is 3.918 and 3.381, respectively, indicating that the educational level of male samples is slightly higher than that of female samples, but the variance analysis suggests that the difference is not significant ($p = 0.256$), indicating that the educational level of male and female CEOs is mainly concentrated in bachelor degree. In terms of tenure, the average duration of tenure in the Chinese male and female samples is 7.46 years and 6.39 years, respectively. Although there are some slight differences between the male and female samples; ANOVA shows that the difference is not significant ($p = 0.763$). The purpose of demographic analysis of the samples is to confirm that there are no significant differences between the samples to avoid the possibility of low internal validity in subsequent main effect analysis (See Table 1).

Table 1. Demographic Information of Sample.

	Male CEOs (<i>n</i> = 283)				Female CEOs (<i>n</i> = 283)				F (<i>p</i>)
	Min	Max	Mean	Std	Min	Max	Mean	Std	
Age	33	76	52.84	6.78	29	68	49.12	7.94	3.784 (0.194)
Tenure	1	25	7.46	5.75	2	31	6.39	4.55	0.019 (0.763)
Education	1	7	3.76	0.91	2	7	3.62	0.93	0.784 (0.256)
Prior exp	2	24	11.01	5.19	0	25	8.20	4.65	3.864 (0.062)

4.2. Main Effect Analysis

The main effect analysis on balancing effect and combined effect of ambidextrous behavior on two dimensions of male and female CEOs are carried out respectively. The standardized Z-value of age, education background, years of prior executive experience, current tenure in cognitive dimension, as well as the number of cross-industry, leverage ratio in behavioral dimension are carried out respectively. Then, the two representations of cognitive and behavioral dimensions are added up one by one, and then the two representations of cognitive and behavioral dimensions are linearly regressed to the two values in the dependent variables. In this way, male CEOs get four regression coefficients, 0.008, 0.0005, 0.018, and 0.0003, all of which are greater than 0. Therefore, it can be shown that the cognition of male strategic leaders has a positive impact on the balancing and combined effect of organizational ambidexterity, and the behavior of male strategic leaders has a positive impact on the balancing and combined effect of organizational ambidexterity. The same is true for women (see Table 2).

Table 2. Main Effect Analysis.

	Male CEOs		Female CEOs	
	Balancing	Combined	Balancing	Combined
Cognition	0.008	0.0005	0.006	0.002
Behavior	0.018	0.0003	0.028	0.002

The Z value method is the standard deviation for the ruler to measure the age, tenure, education level, and the prior years of executives, that is, the deviation of the average

distance. Since the units of original data collection vary a lot. After all the original scores are converted into Z scores, the standard normal distribution is formed, and the standard scores of cognitive dimensions are obtained after addition, and then linear regression is made. This step refers to the measurement method of narcissistic CEO published in ASQ by Hambrick et al. [40], which is reliable in operation. The aim of main effect analysis is to prove that cognition and behavior of male strategic leaders positively affect the balancing effect and combined effect of organizational ambidexterity, and the cognition and behavior of female strategic leaders positively affect the balancing effect and combined effect of organizational ambidexterity, in order to show the organization as a strategic leader for men and women can make a positive contribution to organizational ambidextrous behavior. For the sake of showing male and female strategic leaders' contribution to organizational ambidextrous behavior, the four regression coefficients of each gender group are compared between male and female CEOs, and the results reveal that the difference is not significant, indicating that male and female CEOs have basically equal contributions to organizational ambidexterity in both cognitive and behavioral dimensions on the main effect. Female CEOs' balance between explorative and exploitative behaviors in the organization is no worse than that of males', which can be confirmed that H1a and H1b proposed in Section 2 are true.

4.3. Significance Test Analysis of Paired Results

After confirming that there is no significant difference in the main effect between male and female CEO groups, the significance test analysis is conducted on the results of male and female executive pairing as a direct proof. In this process, descriptive statistics of the cognitive dimension and behavioral dimension in the paired results are first conducted, for ensuring no significant difference in the relevant background information of the paired samples.

The descriptive statistical results in Table 3 show that there is little difference between male CEOs and female CEOs in cognitive dimension ($p = 0.679$), and there is no significant difference in behavioral dimension shown by the proxy variables leverage ratio and the number of cross-industry ($F = 0.399$, $p = 0.529$). The weak gender differences in cognitive dimensions and behavioral dimensions represent the insignificant differences in strategic leadership between men and women.

Table 3. Significance Test Analysis.

	Male CEOs				Female CEOs				F (p)
	Min	Max	Mean	Std	Min	Max	Mean	Std	
Cognition	−5.52	4.45	1.1×10^{-16}	2.17	−5.37	5.23	-2.04×10^{-16}	2.21	0.172 (0.679)
Behavior	−3.53	4.00	-3.55×10^{-16}	1.58	−3.34	3.75	-8.88×10^{-17}	1.46	0.399 (0.529)

Then, the ambidextrous balancing effect of male and female CEOs paired samples is analyzed for the two groups of sample data after matching in Step 3.2. After obtaining the balancing effect value, variance analysis is conducted to confirm the difference in balancing effect of organizational ambidextrous behavior between female and male CEOs during tenure. Then, the ambidextrous combined effect of male and female CEOs paired samples is analyzed. The method is the same as above, which is consistent with the ambidextrous balancing effect analysis method. The descriptive statistical analysis of ambidextrous balancing effect and combined effect is shown in Table 4, and the variance analysis results of ambidextrous balancing effect and combined effect during the tenure of female and male samples are shown in Table 4.

Table 4. Variance Analysis.

	Male CEOs				Female CEOs				F (<i>p</i>)
	Min	Max	Mean	Std	Min	Max	Mean	Std	
Balancing	0.08	0.94	0.70	0.16	0.19	0.93	0.66	0.17	1.580 (0.211)
Combined	0.00	0.10	0.02	0.02	0.00	0.23	0.03	0.03	5.578 (0.112)

In line with analysis results, the ambidextrous balancing effect of female CEOs during tenure is slightly lower than that of males, but the difference is not significant according to variance analysis ($p = 0.211$). This illustrates that the ambidextrous balancing performance of female strategic leaders is not lower than that of male leaders as a whole. In addition, the results also show that the ambidextrous combined effect of CEOs during tenure was lower than that of males, but the difference is not significant either, with an F value of 5.578 and a significance level of 0.192. This means that the ambidextrous combined performance of female strategic leaders is not lower than that of male leaders as a whole. The gender difference of ambidextrous balancing effect and combined effect is analyzed from the significance level of the two, which suggests that balancing performance of female CEOs in explorative behavior and exploitative effect is closer to that of male (p value $0.211 > 0.112$), so H2 is not supported. To sum up, an excellent female strategic leader can also balance exploration and exploitation of both behaviors, and not perform inferior to a man.

5. Discussion

5.1. Results Discussion

H1a believes that cognition of strategic leadership positively affects organizational ambidexterity. In the main effect analysis of module 4.2, from the cognitive dimension, Table 2 shows that the regression coefficient of the balancing effect of male CEO samples on ambidextrous behavior is 0.008, and that of female CEO sample on ambidextrous behavior is 0.006, both of which are greater than 0. It can be proved that the cognition of strategic leadership of male and female CEOs can positively influence the balance dimension of organizational ambidexterity, that is to say, both men and women are able to coordinate the ratio of exploitative and explorative behaviors. The regression coefficient of the combined effect of male CEO samples on ambidextrous behavior is 0.0005, and that of female CEO samples on ambidextrous behavior is 0.002, with coefficients greater than 0, which proves that the cognition of strategic leadership of male and female CEOs could positively influence the combination dimension of organizational ambidextrous behavior, that is to say, both male and female CEOs can realize the importance of balancing two behaviors at organizational level for the strategic behavior of enterprise. Therefore, in cognitive dimension, both male and female CEOs show trade-offs of the degree of explorative and exploitative activities. Strategic leaders with higher levels of cognitive complexity can absorb diversified information, fully interpret diverse and contradictory information, show more sensitivity to external changes. Moreover, they are able to respond quickly, reduce difference between perceived environment and objective environment, and reduce cognitive bias [57]. In the process of choosing and processing information, it is realized that excessive attention to immediate interests and excessive pursuit of organizational innovation will lead to bias of ambidextrous behavior.

H1a provides a further explanation for the research of Kiss et al. [57]. From a microscopic perspective, it connects the cognitive aspects of CEO strategic leadership with organizational constructs, and further verifies the views of upper-echelons theory. It is believed that the key to enterprise strategy is the choice of enterprise strategy made by CEOs' cognition and values, traits and personal experience constituted by demographic characteristics, as surrogate indicators have strong positive predictions to organizational performance [103]. H1b predicts that CEO's strategic leadership could make contribution to organizational ambidexterity. In Step 4.2, through the analysis of the main effect on behavioral dimension, the regression coefficient of balancing effect of male CEOs on am-

bidextrous behavior is 0.018, and that of female CEOs on ambidextrous behavior is 0.028, both of which are greater than 0, indicating that strategic leadership behavior of male and female CEOs could positively influence the balancing dimension of organizational ambidextrous behavior. The regression coefficient of the combined effect of male CEO samples on ambidextrous behavior is 0.0003, and that of female CEO samples on ambidextrous behavior is 0.002, with coefficients greater than 0, which proves that strategic leadership behavior of male and female CEOs can positively influence the combination dimension of organizational ambidextrous behavior. Hence, in behavioral dimensions, male and female CEOs all show explorative and exploitative activities within the organization in the degree of balancing, appearing a higher level of risk-taking capability and cross-industry strategic leader can capture smaller strategic actions such as stable pricing and inventory, or to merger& acquisition, establish overseas branch these significant strategic actions at the appropriate time. Both H1a and H1b have been supported in empirical research, which indicate that the strategic leadership of CEO has a significant positive correlation with balancing and combined of organizational ambidextrous behavior. This study also confirms that strategic leaders could behave ambidextrous leadership advantage that general leaders do not have, thus further verifying CEO effect mentioned above. H1b is supported and can further verify the importance of behavioral complexity of strategic leaders to financial health and innovation capability development previously proposed by Rowe and Nejad [76]. At the same time, it supports the view that strategic decision-making behavior itself can fundamentally influence organizational ambidexterity [67]. H1a and H1b both reflect that the cognitive complexity and behavioral complexity of strategic leaders will effectively affect organizational capability to adapt to maintain strategic flexibility in the hyper-competitive market environment [38].

H2 believes that gender negatively moderates the ambidextrous behavior of CEO strategic leadership to the organization. However, after the significance analysis of the matching results in module 4.3, it is found that there is no significant difference in the balancing effect and combined effect of strategic leadership of male and female CEOs on the organizational ambidextrous behavior. H2 is intended to illustrate the weak positive contribution of gender differences. In the existing samples, there is almost no gender difference in balancing and combined of the two behaviors in strategic leadership of male and female CEOs. Strategic leadership of female CEOs is no worse than that of male, or even as good as that of male. H2 is supported and strongly refuted the previous literature that female leadership is inferior to male leadership, and also strongly criticized the misunderstanding of female leadership caused by inconsistent leadership and gender roles. As Powell [104] argues, gender stereotypes in management influence individual decisions about leadership or managerial roles. If managerial stereotypes favor gender traits associated with men in gender stereotypes, female candidates are easily put at a disadvantage in leadership roles because they are considered as unsuitable and illegitimate to hold the leader role [22]. Females who are aware of this possible disadvantage may be less willing to pursue careers than men who are equally qualified [105].

5.2. Theoretical Significance

The theoretical contributions of this study are as follows. First of all, in the field of organizational ambidexterity, the relationship between exploration and exploitation is orthogonal or trade-off has always been controversial in the existing research. In the main effect analysis part of this study, the balancing effect and the combined effect of exploration and utilization are used as the outcome variables. The empirical results show that both cognitive and behavioral dimensions of strategic leadership have a positive impact on the two effects, thus confirming the objectivity of the existence of both ambidextrous balancing effect and combined effect. This conclusion further confirms the ambidextrous orthogonal view of Tushman and Smith [53]. Main effect analysis results show that the cognition and behavior of male and female strategic leaders positively affect the balancing effect and the combined effect of organizational ambidexterity. It also indicates the positive impact of

strategic leadership on organizational ambidextrous behavior is highlighted by combining and balancing technological innovation, organizational learning, production efficiency and organizational survival within the organization. This further proves that the dynamic capabilities and the improvement of task performance of enterprises cannot be separated from the influence of strategic leadership factors [106].

Second, in the field of strategic leadership, on the basis of UET, this study proves the unique leadership ability of top leaders in an organization in dynamic environments, further enriching the connotation of strategic leadership, distinguishing traditional leadership from strategic leadership, constructing the internal logic between strategic leadership and organizational ambidextrous behavior, and expanding strategic leadership work [107]. Taking male and female CEOs as samples, this study concentrates on the construction of two dimensions of CEO's strategic leadership, and emphasizes its potential relationship to organizations that pursue ambidexterity, further supporting 'CEO effect' and highlighting the decisive role of CEO in making strategic decisions in a dynamic environment. It builds a bridge between the strategic leadership of CEO at individual level and ambidexterity at organization level.

Finally, in the field of female leadership research, based on the gender consistency theory, this study clarifies the internal relationship between female strategic leadership and organizational ambidexterity, confirms the ambidextrous synergistic effect played by female executives in corporate strategic decision-making, and helps clarify the nature of gender differences in social construction.

5.3. Practical Significance

The results show that the combined effect of organizational ambidextrous behavior and balancing effect in female CEOs is not significant difference with men, that is to say, female CEOs' ambidextrous performance is not worse than men; the results also provide the legitimacy basis for female executives, that is to say, women executives should not be in the path of enterprise personnel appointment and promotion, suffering from unfair treatment. The selection and development of leaders should be based on fair standards, eliminate institutional barriers, objectively and fairly consider the performance of candidates, and provide equal opportunities for women and male competitors to make scientific decisions. Organizations should give spiritual and policy support to women, gradually improve talent development plans, and create more development, promotion and leadership opportunities for women employees in various ways. This study also calls on the society to uphold the cultural values of diversity and inclusiveness, and to focus on the abilities of female leaders, rather than focusing on the disadvantages of women, so as to achieve leadership diversity.

6. Conclusions

This study adopts secondary data of male and female CEOs of Chinese listed companies from January 2016 to December 2020 as samples to collect demographic information of the two groups and data on organizational ambidexterity at the company level, respectively. After analyzing the main effect between independent and dependent variables, we empirically tested the gender difference between the results of male and female CEO pairing on the organizational ambidextrous behavior, and the results of variance analysis show that there is a slight difference between male and female CEOs. As a consequence, it is concluded that both cognition and behavior of strategic leaders have positive correlations with balancing effect and combined effect of organizational ambidexterity. The gender difference is very slight, which indicates that ambidextrous performance of female strategic leaders is not inferior to that of men. This study also demonstrates the importance of getting rid of fixed, innate, or absolute differences between men and women [108].

There are still some limitations that could be further improved. Firstly, future studies can use more proxy variables for repeated validation to enhance the universality of the results. Secondly, current studies on organizational ambidexterity generally focus on exploration behaviors and exploitation behaviors. In this study, R&D intensity and operating cost

ratio are used as proxies, respectively, and subsequent studies can enrich the connotation of the original concept and find other proxy measurements. Moreover, the study on the analysis of the ambidextrous behavior only focuses on the organization objective indicators, further research could depict strategic leadership of a CEO in a multi-dimensional way by combining subjective and objective data, qualitative and quantitative research together.

As a brand-new research topic, female ambidextrous leadership has attracted increasing attention and shown broad prospects for development. However, scholars have not reached a consensus on its connotation; there is also a lack of consistency in research and no consistent conclusion has been formed. In the theoretical analysis framework of the advantages of female ambidextrous leadership, it becomes very crucial to deeply explore the relationship between ambidextrous leadership of female strategic managers and organizational performance. In addition, in line with the situational leadership theory, ambidextrous leadership behavior and the contradiction of treatment will change with external situation, static cross-sectional data can only capture transient problems and ignore long-term changes. It is necessary to strengthen the dynamic research on career development of female executives, combine the research on female leadership with the change of external environment, and use a variety of research methods to cross-verify. The topic of female leadership brings the cognition to the real world, rather than emphasizing the myth that women are inherently disadvantaged. It is to promote the change of thinking mode through the change of actual management process, encourage more women to fully understand their own advantages and recognize their leadership ability, build confidence and give full play to their repressed potential, help them see the risks and difficulties behind every choice, and make full preparations for their own choice. In addition, the whole society should gradually get rid of misunderstanding of female leadership, explore effective reform measures to protect women's rights, and create a fairer competitive environment rather than favoring men.

Author Contributions: Conceptualization, G.Z. and Z.J.; methodology, S.Y. and Z.J.; software, Z.J.; validation, Z.J. and G.Z.; formal analysis, Z.J.; resources, G.Z. and S.Y.; data curation, Z.J.; writing—original draft preparation, Z.J.; writing—review and editing, G.Z. and Z.J.; supervision, G.Z. and S.Y.; project administration, G.Z. All authors have read and agreed to the published version of the manuscript.

Funding: This research received the funding from National Natural Science Foundation of China (Grant No. 71872162).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: All the authors thank editors and anonymous reviewers for their constructive comments and suggestions for improving the quality of this paper.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Duncan, R.B. The Ambidextrous Organization: Designing Dual Structures for Innovation. In *The Management of Organization Design: Strategies and Implementation*; Kilmann, R.H., Pondy, L.R., Slevin, D., Eds.; North Holland: New York, NY, USA, 1976.
2. Samimi, M.; Cortes, A.F.; Anderson, M.H. What is strategic leadership? Developing a framework for future research. *Leadersh. Q.* **2020**, *33*, 101353. [[CrossRef](#)]
3. Smith, W.K.; Tushman, M.L. Managing Strategic Contradictions: A Top Management Model for Managing Innovation Streams. *Organ. Sci.* **2005**, *16*, 522–536. [[CrossRef](#)]
4. Simsek, Z. Organizational Ambidexterity: Towards a Multilevel Understanding. *J. Manag. Stud.* **2009**, *46*, 597–624. [[CrossRef](#)]
5. Birkinshaw, J.; Gupta, K. Clarifying the Distinctive Contribution of Ambidexterity to the Field of Organization Studies. *Acad. Manag. Perspect.* **2013**, *27*, 287–298. [[CrossRef](#)]
6. Birkinshaw, J.; Gibson, C.B. Building an Ambidextrous Organization. *Ssrn. Electron. J.* **2004**, *45*, 47–55.

7. Mom, T.J.M.; van den Bosch, F.A.J.; Volberda, H.W. Understanding variation in managers' ambidexterity: Investigating direct and interaction effects of formal structural and personal coordination mechanisms. *Organ. Sci.* **2009**, *20*, 812–828. [CrossRef]
8. Bantel, K.A.; Jackson, S.E. Top management and innovations in banking: Does the composition of the top team make a difference? *Strateg. Manag. J.* **1989**, *10*, 107–124. [CrossRef]
9. Finkelstein, S.; Hambrick, D.; Cannella, A.A. *Strategic Leadership*; West Educational Publishing: St. Paul, MN, USA, 1996.
10. Herman, J.L.; Smith, B. *Upper Echelons Theory*; John Wiley & Sons, Ltd.: Hoboken, NJ, USA, 2015.
11. Klein, P.G.; Lien, L.B. Diversification, industry structure, and firm strategy: An organizational economics perspective. *Econ. Inst. Strategy* **2009**, *26*, 289–312.
12. Moreno-Gomez, J.; Lafuente, E.; Vaillant, Y. Gender diversity in the board, women's leadership and business performance. *Gend. Manag.* **2018**, *33*, 104–122. [CrossRef]
13. Fiske, S.T. Stereotyping, prejudice, and discrimination. In *The Handbook of Social Psychology*, 4th ed.; Gilbert, D.T., Fiske, S.T., Lindzey, G., Eds.; McGraw-Hill: Boston, MA, USA, 1988; Volume 2, pp. 357–411.
14. Diekmann, A.B.; Eagly, A.H. Stereotypes as dynamic constructs: Women and men of the past, present, and future. *Personal. Soc. Psychol. Bull.* **2000**, *26*, 1171–1188. [CrossRef]
15. Zimmerman, L.M.; Clark, M.A. Opting-out and opting-in: A review and agenda for future research. *Career Dev. Int.* **2016**, *21*, 603–633. [CrossRef]
16. Ridgeway, C.L. Gender, Status, and Leadership. *J. Soc. Issues* **2001**, *57*, 637–655. [CrossRef]
17. Schein, V.E. Women in management: Reflections and projections. *Women Manag. Rev.* **2007**, *22*, 6–18. [CrossRef]
18. Eagly, A.H.; Karau, S.J. Role congruity theory of prejudice toward female leaders. *Psychol. Rev.* **2002**, *109*, 573–598. [CrossRef]
19. Koenig, A.M.; Eagly, A.H. Evidence for the social role theory of stereotype content: Observations of groups' roles shape stereotypes. *J. Personal. Soc. Psychol.* **2014**, *107*, 371. [CrossRef]
20. Fernandez, W.D.; Burnett, M.F.; Gomez, C.B. Women in the boardroom and corporate social performance: Negotiating the double bind. *Manag. Decis.* **2018**, *57*, 2201–2222. [CrossRef]
21. Booyesen, L.A.E.; Nkomo, S.M. Gender role stereotypes and requisite management characteristics: The case of South Africa. *Gend. Manag. Int. J.* **2010**, *25*, 285–300. [CrossRef]
22. Powell, G.N. *Gender and Leadership*, Sage, London, 2020. Available online: <https://www.credit-suisse.com/about-us-news/en/articles/news-and-expertise/cs-gender-3000-report-2019-201910.html> (accessed on 10 March 2022).
23. Oakley, J.G. Gender-based Barriers to Senior Management Positions: Understanding the Scarcity of Female CEOs. *J. Bus. Ethics* **2000**, *27*, 321–334. [CrossRef]
24. Catalyst Women CEOs of the S&P 500. Catalyst. 2022. Available online: <https://www.catalyst.org/research/women-in-sp-500-companies/> (accessed on 10 March 2022).
25. Hambrick, D.C. Putting Top Managers Back in the Strategy Picture. *Strateg. Manag. J.* **1989**, *10*, 5–15. [CrossRef]
26. Hambrick, D.C.; Mason, P. Upper echelons: The organization as a reflection of its top managers. *Acad. Manag. Rev.* **1984**, *9*, 193–206. [CrossRef]
27. Finkelstein, S.; Hambrick, D.C.; Cannella, A.A. *Strategic Leadership: Theory and Research on Executives, Top Management Teams and Boards*; Oxford University Press: New York, NY, USA, 2009.
28. Simon, H.A. Rational choice and the structure of the environment. *Psychol. Rev.* **1956**, *63*, 129–138. [CrossRef]
29. Agyapong, A.; Boamah, R.B. Business strategies and competitive advantage of family hotel businesses in Ghana: The role of strategic leadership. *J. Appl. Bus. Res.* **2013**, *29*, 531–543. [CrossRef]
30. Hosmer, L.T. The importance of strategic leadership. *J. Bus. Strategy* **1982**, *3*, 47–57. [CrossRef]
31. Azbari, M.E.; Akbari, M.; Chajjani, M.H. The effect of strategic leadership and empowerment on job satisfaction of the employees of University of Guilan. *Int. J. Organ. Leadersh.* **2015**, *4*, 453–464. [CrossRef]
32. Elenkov, D.S.; Judge, W.; Wright, P. Strategic leadership and executive innovation influence: An international multi-cluster comparative study. *Strateg. Manag. J.* **2005**, *26*, 665–682. [CrossRef]
33. Carter, S.M.; Greer, C.R. Strategic leadership: Values, styles, and organizational performance. *J. Leadersh. Organ. Stud.* **2013**, *20*, 375–393. [CrossRef]
34. Mayfield, J.; Mayfield, M.; Sharbrough, W.C., III. Strategic vision and values in top leaders' communications: Motivating language at a higher level. *Int. J. Bus. Commun.* **2015**, *52*, 97–121. [CrossRef]
35. Mueller, J.; Abecassis-Moedas, C. Factors influencing the integration of external evaluations in the open innovation process: A qualitative study in micro-firms in the creative industries. *J. Strategy Manag.* **2017**, *10*, 248–260. [CrossRef]
36. Crossland, C.; Hambrick, D.C. How national systems differ in their constraints on corporate executives: A study of CEO effects in three countries. *Strateg. Manag. J.* **2007**, *28*, 767–789. [CrossRef]
37. Quigley, T.J.; Hambrick, D.C. Has the "CEO effect" increased in recent decades? A new explanation for the great rise in America's attention to corporate leaders. *Strateg. Manag. J.* **2015**, *36*, 821–830. [CrossRef]
38. Boal, K.B.; Hooijberg, R. Strategic leadership research: Moving on. *Leadersh. Q.* **2000**, *11*, 515–549. [CrossRef]
39. Maschke, K. Highest Standard of Leadership. *Leadersh. Manag. Eng.* **2012**, *12*, 94–96. [CrossRef]
40. Chatterjee, A.; Hambrick, D.C. It's All about Me: Narcissistic Chief Executive Officers and Their Effects on Company Strategy and Performance. *Adm. Sci. Q.* **2007**, *52*, 351–386. [CrossRef]
41. Bettis, R.A.; Gambardella, A.; Helfat, C. Theory in Strategic Management. *Strateg. Manag. J.* **2014**, *35*, 1411–1413. [CrossRef]

42. Bromiley, P.; Rau, D. Social, Behavioral, and Cognitive Influences on Upper Echelons During Strategy Process: A Literature Review. *J. Manag.* **2016**, *42*, 174–202. [[CrossRef](#)]
43. Lavie, D.; Kang, J.; Rosenkopf, L. Balance Within and Across Domains: The Performance Implications of Exploration and Exploitation in Alliances. *Organ. Sci.* **2011**, *22*, 1517–1538. [[CrossRef](#)]
44. March, J.G. Exploration and Exploitation in Organizational Learning. *Organ. Sci.* **1991**, *2*, 71–87. [[CrossRef](#)]
45. He, Z.L.; Wong, P.K. Exploration VS. Exploitation: An Empirical Test of the Ambidexterity Hypothesis. *Organ. Sci.* **2004**, *4*, 481–494. [[CrossRef](#)]
46. Gupta, A.K.; Smith, K.G.; Shalley, C.E. The Interplay between Exploration and Exploitation. *Acad. Manag. J.* **2006**, *49*, 693–706. [[CrossRef](#)]
47. Steven, W.F.; Peter, J.L. Strategizing throughout the Organization: Managing Role Conflict in Strategic Renewal. *Acad. Manag. Rev.* **2000**, *25*, 154–177.
48. Rosing, K.; Zacher, H. Individual ambidexterity: The duality of exploration and exploitation and its relationship with innovative performance. *Eur. J. Work. Organ. Psychol.* **2016**, *26*, 694–709. [[CrossRef](#)]
49. Eisenhardt, K.M.; Martin, J.A. Dynamic Capabilities: What Are They? *Strateg. Manag. J.* **2000**, *21*, 1105–1121. [[CrossRef](#)]
50. Mom, T.J.M.; Sebastian, P.L.F.; Jansen, J.J.P. Managers' work experience, ambidexterity and performance: The contingency role of the work context. *Hum. Resour. Manag.* **2015**, *45*, 295–308. [[CrossRef](#)]
51. Raisch, S.; Birkinshaw, J. Organizational ambidexterity: Antecedents, outcomes, and moderators. *J. Manag.* **2008**, *34*, 375–409. [[CrossRef](#)]
52. Turner, N.; Swart, J.; Maylor, H. Mechanisms for managing ambidexterity: A review and research agenda. *Int. J. Manag. Rev.* **2013**, *15*, 317–332. [[CrossRef](#)]
53. Tushman, M.L.; Smith, W.K. *Organizational Technology*; Blackwell: Malden, MA, USA, 2002.
54. Hu, W.; Luo, J.; Chen, Z.; Zhong, J. Ambidextrous leaders helping newcomers get on board: Achieving adjustment and proaction through distinct pathways. *J. Bus. Res.* **2020**, *118*, 406–414. [[CrossRef](#)]
55. Phillips, R.L.; Hunt, J.G.; House, R.J. *Strategic Leadership: A Multiorganizational-Level Perspective*; Quorum Books: Westport, CT, USA, 1992.
56. Thoumrunroje, R. Unveiling internationalization decision-making of burmese managers: A strategic cognition perspective. *J. Asia-Pac. Bus.* **2020**, *21*, 4–26. [[CrossRef](#)]
57. Andreea, K.N.; Dirk, L.; Pamela, B.S.; Tang, W.; Miles, Z.A. CEO cognitive flexibility, information search, and organizational ambidexterity. *Strateg. Manag. J.* **2020**, *41*, 2200–2233.
58. Yim, S. The acquisitiveness of youth: CEO age and acquisition behavior. *J. Financ. Econ.* **2013**, *108*, 250–273. [[CrossRef](#)]
59. Hunter, J.E. Cognitive Ability, Cognitive Aptitudes, Job Knowledge, and Job Performance. *J. Vocat. Behav.* **1986**, *29*, 340–362. [[CrossRef](#)]
60. Carmeli, A.; Halevi, M.Y. How top management team behavioral integration and behavioral complexity enable organizational ambidexterity: The moderating role of contextual ambidexterity. *Leadersh. Q.* **2009**, *20*, 207–218. [[CrossRef](#)]
61. Thomas, J.B.; Clark, S.M.; Gioia, D.A. Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes. *Acad. Manag. J.* **1993**, *36*, 239–270.
62. Kaplan, S. Cognition, capabilities, and incentives: Assessing firm response to the fiberoptic revolution. *Acad. Manag. J.* **2008**, *51*, 672–695.
63. Mitchell, J.; Shepherd, D.; Sharfman, M. Erratic strategic decisions: When and why managers are inconsistent in strategic decision making. *Strateg. Manag. J.* **2011**, *32*, 683–704. [[CrossRef](#)]
64. Miller, D.; Toulouse, J.M. Chief executive personality and corporate strategy and structure in small firms. *Manag. Sci.* **1986**, *32*, 1389–1409. [[CrossRef](#)]
65. Heavey, C.; Simsek, Z. Distributed cognition in top management teams and organizational ambidexterity: The influence of transactive memory systems. *J. Manag.* **2017**, *43*, 919–945. [[CrossRef](#)]
66. Mihalache, O.R.; Jansen, J.J.; Van den Bosch, F.A.; Volberda, H.W. Top management team shared leadership and organizational ambidexterity: A moderated mediation framework. *Strateg. Entrep. J.* **2014**, *8*, 128–148. [[CrossRef](#)]
67. Bernal, O.V.; Toro-Jaramilo, I.D. Organizational Ambidexterity: Exploration and Exploitation. *Int. J. Innov. Technol. Manag.* **2019**, *16*, 1950033.1–1950033.22. [[CrossRef](#)]
68. Tolulope, B.O.; Siwan, M.; Konstantinos, N. Leading innovation: Empirical evidence for ambidextrous leadership from UK high-tech SMEs. *J. Bus. Res.* **2020**, *119*, 195–208.
69. Zuraik, A.; Kelly, L.; Perkins, V. Gender differences in innovation: The role of ambidextrous leadership of the team leads. *Manag. Decis.* **2020**, *58*, 1475–1495. [[CrossRef](#)]
70. Hmieleski, K.M.; Ensley, M.D.A. Contextual Examination of New Venture Performance: Entrepreneur Leadership Behavior, Top Management Team Heterogeneity, and Environmental Dynamism. *J. Organ. Behav.* **2010**, *28*, 865–889. [[CrossRef](#)]
71. Connelly, B.L.; Tihanyi, L.; Certo, S.T. Marching to the Beat of Different Drummers: The Influence of Institutional Owners on Competitive Actions. *Acad. Manag. J.* **2010**, *53*, 723–742. [[CrossRef](#)]
72. Bass, B.M. *Leadership and Performance Beyond Expectations*; Free Press: New York, NY, USA, 1985.
73. Bass, B.M. From transactional to transformational leadership: Learning to share the vision. *Organ. Dyn.* **1990**, *18*, 19–31. [[CrossRef](#)]
74. Cameron, K.; Quinn, R. *Organizational Paradox and Transformation*; Ballinger: Cambridge, MA, USA, 1988; pp. 1–18.

75. Denison, D.R.; Quinn, H.R.E. Paradox and Performance: Toward a Theory of Behavioral Complexity in Managerial Leadership. *Organ. Sci.* **1995**, *6*, 524–540. [[CrossRef](#)]
76. Rowe, G.; Nejad, M.H. Strategic leadership: Short-term stability and long term viability. *Ivey Bus. J.* **2009**, *73*, 6.
77. Rowe, W.G. Creating Wealth in Organizations: The Role of Strategic Leadership. *Acad. Manag. Exec.* **2001**, *15*, 81–94. [[CrossRef](#)]
78. Nadkarni, S.; Herrmann, P. CEO Personality, Strategic Flexibility, and Firm Performance: The Case of the Indian Business Process Outsourcing Industry. *Acad. Manag. J.* **2010**, *53*, 1050–1073. [[CrossRef](#)]
79. Dixon-Fowler, H.R.; Slater, D.J.; Johnson, J.L. Beyond ‘Does it Pay to be Green?’ A Meta-Analysis of Moderators of the CEP-CFP Relationship. *J. Bus. Ethics* **2013**, *112*, 353–366. [[CrossRef](#)]
80. Hillman, A.J.; Cannella, A.A.; Harris, I.C. Women and Racial Minorities in the Boardroom: How Do Directors Differ? *J. Manag.* **2002**, *28*, 747–763. [[CrossRef](#)]
81. Kark, R.; Waismel-Manor, R.; Shamir, B. Does valuing androgyny and femininity lead to a female advantage? The relationship between gender-role, transformational leadership and identification. *Leadersh. Q.* **2012**, *23*, 620–640. [[CrossRef](#)]
82. Helgesen, S. The Female Advantage: Women’s Ways of Leadership. *J. Midwifery Women’s Health* **1996**, *41*, 410–411.
83. Rosener, J.B. *Ways Women Lead. Leadership, Gender, and Organization*; Springer: Amsterdam, The Netherlands, 2011.
84. Deneen, M.H.; Shahidul, H. When do women receive managerial support? The effects of gender congruence and the manager-employee relationship. *Public Manag. Rev.* **2021**. [[CrossRef](#)]
85. Ely, R.J. The Effects of Organizational Demographics and Social Identity on Relationships among Professional Women. *Adm. Sci. Q.* **1994**, *39*, 203–238. [[CrossRef](#)]
86. Sperber, S.; Linder, C. Gender-specifics in start-up strategies and the role of the entrepreneurial ecosystem. *Small Bus. Econ.* **2018**, *53*, 533–546. [[CrossRef](#)]
87. Carpenter, M.A.; Geletkanycz, M.A.; Sanders, W.G. The upper echelons revisited: Antecedents, elements, and consequences of top management team composition. *J. Manag.* **2004**, *30*, 749–778. [[CrossRef](#)]
88. Bonardi, J.P.; Hitt, M.A.; Vera, D. Special issue on strategic leadership and strategic management. *Leadersh. Q.* **2018**, *29*, 3–4.
89. Serfling, M.A. CEO age and the riskiness of corporate policies. *J. Corp. Financ.* **2014**, *25*, 251–273. [[CrossRef](#)]
90. Lawrence, P.R.; Barnes, L.B.; Lorsch, J.W. *Organizational Behavior and Administration: Cases and Readings*; Richard D. Irwin: Chicago, IL, USA, 1976.
91. Wang, G.; Holmes, R.M., Jr.; Oh, I.S.; Zhu, W. Do CEOs Matter to Firm Strategic Actions and Firm Performance? A Meta-analytic Investigation Based on Upper Echelons Theory. *Pers. Psychol.* **2016**, *69*, 775–862. [[CrossRef](#)]
92. Wally, S.; Baum, J.R. Personal and Structural Determinants of The Pace of Strategic Decision Making. *Acad. Manag. J.* **1994**, *37*, 932–956.
93. Friedman, Y.; Carmeli, A.; Tishler, A. How CEOs and TMTs build adaptive capacity in small entrepreneurial firms. *J. Manag. Stud.* **2016**, *53*, 996–1018. [[CrossRef](#)]
94. Miller, K.; Bromiley, P. Strategic risk and corporate performance: An analysis of alternative risk measure. *Acad. Manag. J.* **1990**, *33*, 759–779.
95. Wiersema, M.F.; Bantel, K.A. Top Management Team Demography and Corporate Strategic Change. *Acad. Manag. J.* **1992**, *35*, 91–121.
96. Henderson, A.D.; Miller, D.; Hambrick, D.C. How quickly do CEOs become obsolete? Industry dynamism, CEO tenure, and company performance. *Strateg. Manag. J.* **2006**, *27*, 447–460. [[CrossRef](#)]
97. Devers, C.E.; McNamara, G.; Wiseman, R.M.; Arrfelt, M. Moving closer to the action: Examining compensation design effects on firm risk. *Organ. Sci.* **2008**, *19*, 548–566. [[CrossRef](#)]
98. Holcomb, T.R.; Holmes, R.M.; Hitt, M.A. Diversification to Achieve Scale and Scope: The Strategic Implications of Resource Management for Value Creation. *Adv. Strateg. Manag.* **2006**, *23*, 549–587.
99. Bromiley, P.; Rau, D.; Zhang, Y. Is R&D risky? *Strateg. Manag. J.* **2017**, *38*, 876–891.
100. Keller, T.; Weibler, J. Behind Managers’ Ambidexterity—Studying Personality Traits, Leadership and Environmental Conditions associated with Exploration and Exploitation. *Schmalenbach Bus. Rev.* **2014**, *15*, 309–333. [[CrossRef](#)]
101. Cohen, W.M.; Levinthal, D.A. Absorptive Capacity: A New Perspective on Learning and Innovation. *Adm. Sci. Q.* **1990**, *35*, 128–152. [[CrossRef](#)]
102. Cao, Q.; Gedajlovic, E.; Zhang, H. Unpacking Organizational Ambidexterity: Dimensions, Contingencies, and Synergistic Effects. *Organ. Sci.* **2009**, *20*, 781–796. [[CrossRef](#)]
103. Gupta, A.K.; Govindarajan, V. Build, Hold, Harvest: Converting Strategic Intentions into Reality. *J. Bus. Strategy* **1984**, *4*, 34–47. [[CrossRef](#)]
104. Powell, G.N.; Butterfield, D.A.; Jiang, X. The “good manager” over five decades: Towards an androgynous profile. *Gend. Manag.* **2021**, *36*, 714–730. [[CrossRef](#)]
105. Powell, G.N.; Butterfield, D.A. Correspondence between self- and good-manager descriptions: Examining stability and change over four decades. *J. Manag.* **2015**, *41*, 1745–1773. [[CrossRef](#)]
106. Raffaelli, R.; Glynn, M.A.; Tushman, M. Frame flexibility: The role of cognitive and emotional framing in innovation adoption by incumbent firms. *Strateg. Manag. J.* **2019**, *40*, 1013–1039. [[CrossRef](#)]
107. Chen, J.; Nadkarni, S. It’s about time! CEOs’ temporal dispositions, temporal leadership, and corporate entrepreneurship. *Adm. Sci. Q.* **2017**, *62*, 31–66. [[CrossRef](#)]
108. Tinsley, C.H.; Ely, R. What Most People Get Wrong About Men and Women. *Harv. Bus. Rev.* **2018**, *96*, 114–121.