The Impact of Gender Diversity of Board of Directors on Enterprise Performance: the Intermermediary Role Based on Innovation Ability

Song Yanping
Dhurakij Pundit University, Thailand
E-mail:181015230@qq.com

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Abstract

With the increasing participation of women in the business and social fields, the issue of gender diversity in corporate governance on the board of directors has received increasing attention. This article is mainly based on the high-order echelon theory and resource dependence theory, focusing on the impact of board gender diversity on corporate performance. Using large sample empirical data of A-share listed companies in Shanghai and Shenzhen from 2012 to 2017, and using Stata statistical software, descriptive statistical analysis, correlation analysis, regression analysis and other methods, empirical analysis was conducted. Through empirical analysis, two main aspects of research were carried out: (1) The main effect analysis of board gender diversity on corporate performance. (2) An analysis of the mediating effect of corporate innovation capability between board gender diversity and corporate performance. The research results indicate that: (1) Gender diversity in the board of directors has a significant promoting effect on corporate performance. (2) The innovation capability of enterprises partially mediates the relationship between board gender diversity and corporate performance.

Keywords: Gender diversity in the board of directors; corporateperformance; corporate innovation capability

Introduction

In recent years, the power of women in the board of directors of listed companies in China has been continuously increasing. In 2021, the proportion of women in the board of directors has increased to 13.8%, and gender diversity in the board of directors has been greatly improved. This has to some extent improved the situation where female directors cannot fully utilize their advantages due to their low proportion. Therefore, the impact of genderdiversity in the board of directors on the innovation ability and performance ofenterprises cannot be ignored. According to the theory of high echelon teams, the age, gender, education level, experience, and professional characteristics of top managers will have an impact on their subjective awareness of cognitive structure and values. Top managers will make strategic choices based on their own cognition and values, which will directly affect corporate performance. According to the theory of resource dependence, members of the company's board of directors Add more related papers

provide strategic resources to the company through their own information, experience, and network, and provide certain guidance for the daily management behavior of the company's management. Today, studying

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the relationship between the personal characteristics of directors on the board of directors and corporate performance has become a hot topic for management and economic research. This article will explore whether the different perspectives and approaches formed by women joining the board of directors and male directors can promote the improvement of corporate performancebased on the high-order echelon theory and resource dependence theory.

Research Objective

Explore the impact of board gender diversity on corporate performance.
Most studies have explored the impact of board characteristics on corporate performance, with little research on the impact of women's various characteristics on the board of directors on the company.

Explore the impact of corporate innovation capability on the relationship between board gender diversity and corporate performance. Corporate performance is very important to a company, and innovation is an important way for a company to achieve performance. However, most literature focuses on the impact of factors such as equity structure, corporate governance, and whether it is a family business on corporate performance. There are few studies on the impact of corporate innovation capability on corporate performance.Therefore, one of the important research objectives of thisarticle is to explore the impact of a company's innovationcapability on the relationship between board genderdiversity and company performance.

Research Scope

1. Gender diversity in the board of directors and corporate performance

The high-order echelon theory suggests that in enterprise management, managers are influenced by their own cognitive structure and values when processing information. They selectively observe information and process it according to their own preferences (Hambrick&Mason, 1984: 193). Foreign scholars have found that women joining the board of directors can bring competitive advantages to enterprises and help accelerate the promotion of new products. This is mainly because the participation of women leads to a gender diverse executive team, and there are significant differences in norms, attitudes, and beliefs among

directors of different genders (Chen Baojie, 2015: 146). Therefore, directors of different genders are often able to better consider issues from their own

social cognitive perspectives, thereby enhancing team creativity. Secondly, women have innate advantages in communication. Their gentle image canpromote friendly interactions among team members and also help establish

smooth communication channels between superiors and subordinates. In this way, they can accurately and effectively communicate organizational policies to various departments, and can also respond promptly to the needs and suggestions of employees. This good communication environment is very beneficial for the stable development within the organization and lays a solid foundation for improving enterprise performance. Female executives can fully leverage their strengths, establish good relationships with relevant organizations and departments when communicating with the outside world, smoothly seek financing, expand customer channels, and enhance relationships with customers and competitors (Hillman et al, 2000: 235). A report released by Harvard Business Review in

the United States shows that when there are at least three female executives on the board of directors, making decisions on the board can promote communication and interaction, enhance the spirit of cooperation and mutual assistance, thereby promoting the formulation of corporate strategy, improving thequality of corporate strategic decisions, and ultimately improving corporate performance.

Due to previous research indicating significant individual differences between female and male directors, their participation in the board of directors not onlybrings higher quality human capital to the board, but also enhances its ability

to fulfill its responsibilities; On the other hand, Huang Qin et al. (2016: 2) argue that due to differences in perspectives, ways of thinking, and cognitive structures between female and male directors, the addition of female directors will break the inherent comfort zone of male directors, introduce more competitiveinteractions, deepen discussions, and force both male and female directors to fulfill their directorial duties more seriously, thereby improving the supervisory ability of the board of directors.

According to the theory of resource dependence, the structure of the boardof directors affects the acquisition of internal and external resources of the company, as well as the relationship between the company and direct

and indirect stakeholders, which in turn has a positive or negative impact on board decision-making. Improving the diversity of the gender structure of the board of directors can provide more diverse resource conditions and effectively promote company performance in the long run. In addition, a large number of empirical studies have also demonstrated the significant impact of board genderdiversity on corporate performance (Carter et al, 2003: 33).

Based on the above analysis, this article proposes the hypothesis:

H1: Gender diversity in the board of directors is significantly and positivelycorrelated with corporate performance, meaning that the higher the degree of gender diversity in the board of directors, the better the corporate performance.

2. The mediating role of enterprise innovation capability

2.1 Gender diversity in the board of directors and corporate innovation capabilities

The resource dependence theory suggests that the board of directors is an important resource for a company (Hillman et al., 2000: 235), and its ability to provide strategic resources and advice largely depends on the richness of board capital. Board members possess resources such as knowledge, experience, and connections in different fields, which can be utilized by the company and the board of directors. When the diversity of board members is high, the board can provide more types of resources for the enterprise (Hillman et al., 2000:235). Carter et al. (2003: 33) found that female directors have better learning and knowledge acquisition abilities compared to male directors, enabling them to provide broader knowledge and bring new ideas and perspectives to board decision-making. This helps the company better grasp market dynamics, understand market environment, and provide different innovative solutions for the company's development, thereby improving the company's innovation capability.

Secondly, with the rapid development of the global economy, women's status inhouseholds is increasingly elevated, and they have a more important voice and control over household purchasing decisions. With the improvement of women'sfamily status, they are closer to the market, able to better understand the hearts of consumers, grasp their consumption needs, and provide better ideas and more accurate directions for the development direction and product innovation of enterprises.The high-order echelon theory proposed by Hambrick and Mason (1984: 193) suggests that the formation of a manager's cognitive framework is a comprehensive

influence of experience, cognition, and values, which in turn have a significant impact on the decision-making of a company's activities. Women are able to process information in different ways, which can lead to more diverse ways of interpreting information. Adams and Ferreira (2009: 291) believe that a diversified board of directors can better capture consumer demand and business development opportunities through deeper market analysis and understanding, thereby improving the level of board decision-making and the innovation capability of the enterprise. Researchers Torchia et al (2018: 215) conducted a study using 317 Norwegian companies as samples and found that women play a positive role in enhancing the innovation capabilities ofenterprises. Especially when the number of female directors reaches a certain proportion, this effect becomes more significant. In the study, Campbell and Minguez Vera (2008: 83) selected data from the Spanish stock market and found that when listed companies appoint women as executives, the company's stock price will rise to a certain extent, indicating that investors hold a positive viewof female executives. In Chen Baojie's (2015:146) study, small and medium-sized enterprises were selected as the research subjects. Through the study, it was found that female participation in corporate executive teams can significantly increase the number of authorized invention patents obtained by enterprises. In the study by Zeng Ping and Wu Qihong (2012: 773), it was also found that female executives play an important role in promoting technological innovation in enterprises. Smith et al (2006: 569) found that when a country sets specific gender structure regulations for the board of directors, female directors play a positive role in corporate governance.Based on the above analysis, this article proposes the following assumptions:H2: There is a significant and positive correlation between gender diversity in the board of directors and the innovation capability of enterprises. The higher the degree of gender diversity in the board of directors, the stronger the innovation capability of enterprises.

2.2 Innovation capability and performance of enterprisesEnterprise innovation is an important means to improve the performance and competitiveness of enterprises, and the level of enterprise performance can directly reflect whether the enterprise has high innovation capabilities. Based on the different innovative behaviors of enterprises, the innovation capability ofenterprises is refined into "substantive innovation" and "strategic innovation", and the impact of enterprise innovation capability on enterprise performance is examined from the dimensions of "substantive innovation" and "strategic innovation". "Substantive innovation" mainly focuses on the number of invention patents, which better reflects the advantages of high quality, high technology, and high added value of patented technology, and also better reflects the substantial innovation ability of enterprises (Li Wenjing and Zheng Manni, 2016: 60). By engaging in substantial innovation, enterprises can enhance their independent innovation capabilities, gain sustained competitive advantages, and enhance profitability, thereby improving their performance. Liu Xiaoqing and Chen Xiangdong (2010: 65) used patents as an indicator to measure innovation output and found a positive correlation between patents and corporate performance. Chu Shuzhen and Du Lanna (2017: 136) analyzed pharmaceutical manufacturing enterprises and found that in the pharmaceutical industry, the innovation output of enterprises can to some extent promote the growth of enterprise performance. Li Jing et al. (2010: 117) conducted a study on 165 listed companies and concluded that there is a positive correlation between a company's innovation capability and its performance.Strategic innovation tends to innovate to cater to government policies, witha focus on non invention patents. Strategic innovation tends to pursue quantity and speed while neglecting quality. However, regardless of the purpose, both "substantive innovation" and "strategic innovation"

may have a strong promoting effect on corporate performance. "Substantive innovation" reflects the strategic orientation of an enterprise's innovation capability and the degree of enrichmentof original innovation. Compared to appearance design and utility model patents, the R&D investment scale and R&D cycle of original invention innovation are larger. The original invention innovation results are always high-quality enterprise technological innovation results, which can bring higher value to the enterprise (Gu Xiaoyan et al., 2021: 31). That is to say, "substantive innovation"plays an irreplaceable role in promoting innovation output and efficiency, giving birth to emerging industries, and forming a healthy value chain, greatly improving the trade environment. "Substantive innovation" can effectively integrate new and existing technologies, help enterprises better absorb and transform existing knowledge, form their own competitive advantages, and continuously improve enterprise performance.In summary, we propose the following assumptions:H3: There is a significant and positive correlation between corporate innovationcapability and corporate performance, that is, the stronger the corporate innovation capability, the better the corporate performance.

2.3 The mediating role of enterprise innovation capabilityInnovation is not only the source and driving force for promoting sustainable growth of enterprises, but also a manifestation of their advantages in seeking survival, development, and enhancing competitiveness in market competition. As decision-makers in the enterprise, senior managers will promote the future development and performance improvement of the enterprise from a global perspective. There are differences between women and men in terms of gender,culture, background, and experience. When women join the board of directors, it will lead to different perspectives, thoughts, and ideas between male and female directors in common work communication due to differences in gender, culture, background, and experience. These different perspectives, thoughts, and ideas will provide diversity and innovative thinking for company decision-making, Further enhance the innovation capability of the enterprise. The improvement of a company's innovation capability can promote the generation and development of innovative achievements, and in many cases, innovative achievements have a significant impact on the company's performance. Patents are one of the most important achievements of innovation activities, which have a certain promoting effect on increasing sales revenue, enhancing market value of enterprises, and stock returns (Camisón&Villar López, 2014: 2891). When a company launches new products as its innovative achievements, these new products can bring a strong market competitive advantage to the company for a period of time, thereby having a positive impact on the company's sales situation and annual performance (Wen Zhonglin et al., 2004: 614). This study suggests that by influencing innovation output, gender diversity in the board of directors can have a positive promoting effect on the performance level of enterprises. Patents are the results of enterprise innovation output, and the number of patent authorizations plays a positive role in the process of gender diversity in the board of directors affecting enterprise performance.In summary, we propose the following assumptions:H4: The innovation capability of enterprises plays a mediating role in the impact of board gender diversity on corporate performance, that is, the improvement of board gender diversity can enhance the innovation capability of enterprises and thereby enhance corporate performance.Based on the above analysis, the theoretical logic of this study has been constructed, as shown in Figure 1:

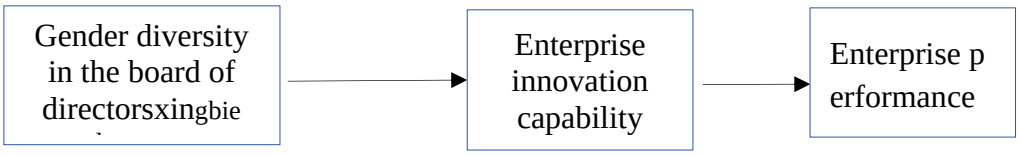

Figure 1 Theoretical Model

Research Methodology

1. Sample selection and data sourcesThe article selected the annual report data and corporate governance related data of A-share listed companies on the Shanghai and Shenzhen Stock Exchanges from 2012 to 2017. The data mainly comes from the CSMAR Guotai An database, and the required number of patent authorizations comes from the China Research Data Service Platform (CNRDS). Due to the lag in corporate performance, this article lags the dependent variable (corporate performance) byone period. According to convention, the sample is screened as follows: excluding listed companies in the financial and insurance industry; Exclude listed companies with special trading status such as * ST, ST, PT, etc; Remove samples with missing or abnormal data. In order to eliminate the influence of extreme values, this article truncated all continuous variables at the 1% level. Finally, 17170 sample observations were obtained from 3534 enterprises.

2. Variable Definition

2.1 Explained Variable

There are multiple indicators for evaluating corporate performance, which can be roughly divided into two methods according to existing literature: one is based on accounting indicators such as ROA and ROE; ROA refers to another type based on market indicators, such as Tobin's Q value and MVA. Scholars have mixed opinions on the effectiveness of these two measurement methods. This article adopts the ROA measurement method as the dependent variable to comprehensively study the relationship between board gender diversity and corporate performance.

2.2 Explanatory variable

The independent variable is gender diversity in the board of directors. This article uses the degree of heterogeneity to measure the diversity of gender in the board of directors. Heterogeneity is usually represented by the Brown coefficient, which is an indicator of the degree of heterogeneity. When measuring gender heterogeneity, its value range is 0-0.5, where 0 represents complete homogenization and 0.5 represents complete heterogeneity. The larger the value, he higher the degree of heterogeneity. The Brown coefficient is widely used to measure team diversity, with Olson et al. (2006: 12), Campbell and M í nguez Vera (2008: 435), Miller and del Carmen Triana (2009: 755) all using the Browncoefficient to measure board gender diversity.In the board of directors, the more female directors there are and the higher the proportion of female directors, the higher the degree of gender homogeneity in the board of directors. The higher the Brownian coefficient value of the board of directors, the higher the degree of gender heterogeneity in the board of directors. In order to further study gender diversity in the board of directors, this study uses the Brownian index (Blau) to measure gender diversity in the board of directors.

2.3 Mediating variables

Most scholars mainly refer to the research methods of Chu Deyin and LiuWenlong (2021: 71) to evaluate the innovation ability of enterprises. This method measures the number of patent applications of enterprises in the current year by adding 1 and taking its natural logarithm. In order to increase the credibility of the research results, this article will use the natural logarithm of the numberof patent authorizations plus 1 to measure the innovation capability of enterprises.

2.4 Control variable

The article selects variables at the level of company characteristics such as company size, company age, company nature, business growth rate, asset liability ratio, and total asset turnover from the aspects of company characteristics, corporate governance characteristics, and company ownership characteristics, as control variables.The specific measurements of variables are shown in charts 1:

Variable type	Variable	Variable code	Define
Explained Variable	Return on Total Assets	ROA	Net profit/total assets; Double tailed processing at the 1% level□
Mediating variables	Innovation	lnpatent	Number of patent authorizations+1, taking the natural logarithm
Explanatory variable	Blau	Blau	$1-\sum_{i=1}^{n} p_i^2$ Pi refers to the proportion of female and male directors on the board of directors，n=2
Control variable	Enterprise size	Firmsize	Take the logarithm of the total assets of the enterprise□
	Enterprise age	Firmage	The year corresponding to the listing time of the enterprise□□
	Enterprise nature	State	If the actual controller of the enterprise is state-owned, it is 1; otherwise, it is 0□□
	Revenue growth rate	Growth	(Current period income - Previous period income)/Previous period income; 1% horizontal double tailed treatment
	Asset liability ratio	Lev	Total liabilities at the end of the period/total assets at the end of the period
	Total Asset turnover	Zczzl	Operating income/total assets at the end of the period
	Shareholding ratio of the largest shareholder	LHolder	Number of shares held by the largest shareholder/total number of shares
	Board size	Boardsize	Number of directors

Source: This article is organized
charts/1/Variable Definition

3.Modeling

On the basis of variable determination, a panel data model is established. In order to verify the research hypothesis of this article, the following four fixed
effects regression models for panel data are constructed.

Firstly, to examine the impact of board gender diversity on corporate performance (hypothesis H1), combined with theoretical analysis, a control model (1) and
a benchmark regression model incorporating board gender diversity (2) are
constructed:

$$\text{ROA} = a_0 + a_1 z + \mu + \varepsilon \quad (1)$$

$$\text{ROA} = a_0 + a_1 Blau + a_2 z + \mu + \varepsilon \quad (2)$$

Secondly, to further examine the mediating effect of gender diversity inthe board of directors on corporate performance (Hypothesis H2, Hypothesis H3, and Hypothesis H4), this paper constructs models (3), (4), and (5) based
on the approach of multiple mathematicians and the stepwise regression method proposed by Baron and Kenny (1986:1173):

$$\text{Inpatent} = a_0 + a_1 Blau + a_2 z + \mu + \varepsilon \quad (3)$$

$$\text{ROA} = a_0 + a_1 \text{Inpatent} + a_2 z + \mu + \varepsilon \quad (4)$$

$$\text{ROA} = a_0 + a_1 Blau + a_2 Inpatent + a_3 z + \mu + \varepsilon \quad (5)$$

Research Findings

1.Regressive analysis

Charts2 shows the descriptive statistics of variables for the overall sample. Charts3 shows the Pearson correlation coefficients between variables. Charts4 presents the regression results of the main and mediating effects. Specifically, as follows:

variable	N	mean	sd	p25	p50	p75	min	max
ROA	17170	0.041	0.920	0.013	0.035	0.065	-48.3	108
Blau	17170	0.211	0.162	0	0.198	0.346	0	0.5
Inpatent	17170	1.630	1.640	0	1.39	2.83	0	9.84
Firmsize	17170	21.320	1.350	21.310	21.54	22.9	14.85	29.3
Firmage	17170	25	5.250	22	25	29	10	56
State	17170	0.345	0.475	0	0	1	0	1
Growth	17170	0.003	0.045	-0.0002	0.001	0.003	-0.009	3.630
Lev	17170	0.443	0.568	0.254	0.418	0.599	0.008	64
Zczzl	17170	0.152	0.148	0.066	0.115	0.186	0	2.41
LHolder	17170	0.350	0.147	0.235	0.333	0.447	0.23	0.895
Boardsize	17170	8.680	1.830	7	9	9	0	21

Note: The data source is compiled from this study.

Charts/2/Descriptive Statistics of Population Sample Variables

	ROA	Blau	Inpatent	Firmsize	Firmage	State	Growth	Lev	Zczzl	LHolder	Boardsize
ROA	1										
Blau	0.076***	1									
Inpatent	0.008***	0.038***	1								
Firmsize	-0.029**	0.120***	0.215***	1							
Firmage	0.139***	0.088***	0.179***	0.460***	1						
State	0.147***	0.179***	0.062***	0.359***	0.473***	1					
Growth	0.038***	0.016	0.034***	0.026**	0.019***	-0.028***	1				
Lev	0.427***	0.148***	0.036***	0.611***	0.358***	0.451***	0.162**	1			
Zczzl	0.171***	0.077***	0.042***	0.104***	0.110***	0.100***	0.050***	0.182***	1		
LHolder	0.063***	0.043***	0.085***	0.310***	-0.041***	0.311***	-0.002**	0.076***	0.089***	1	
Boardsize	-0.014	0.065***	0.054**	0.248***	0.176***	0.251***	-0.036*	0.186***	0.038***	0.043***	1

Note: *, * *, and * * * respectively represent significant levels of 0.1, 0.05, and 0.01
Charts/3/Variable correlation coefficients

	（1）	（2）	（3）	（4）	（5）
	ROA	ROA	Inpatent	ROA	ROA
Inpatent				0.009***	0.008***
				(0.004)	(0.003)
Blau		0.064***	0.066***		0.023***
		(0.042)	(0.042)		(0.077)
Firmsize	0.036***	0.034***	0.525***	0.041***	0.039***
	(0.012)	(0.013)	(0.028)	(0.013)	(0.013)
Firmage	0.005***	0.005***	0.031***	0.005***	0.005***
	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)
State	0.031**	0.028*	0.009	0.031**	0.028***
	(0.016)	(0.016)	(0.045)	(0.016)	(0.016)
Growth	-0.000*	-0.001	-0.000*	0.000*	-0.000*
	(0.001)	(0.012)	(0.001)	(0.001)	(0.001)
Lev	-0.625***	-0.625***	0.023**	-0.625***	-0.626***
	(0.012)	(0.012)	(0.015)	(0.012)	(0.012)
Zczzl	0.098***	0.097***	0.525***	0.099**	0.098***
	(0.046)	(0.046)	(0.088)	(0.046)	(0.046)
LHolder	0.000***	0.001***	0.000	-0.001***	-0.001***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Boardsize	0.004*	0.004*	-0.009**	0.004	0.004
	(0.004)	(0.004)	(0.009)	(0.004)	(0.004)

Year	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES
Constant	-0.203***	-0.177***	-2.550***	-0.227***	-0.201***
	(0.115)	(0.032)	(0.286)	(0.115)	(0.116)
Observations	17170	17170	17170	17170	17170
Adj_R ^{2}	0.1710	0.1813	0.1084	0.1908	0.1711
F值	199.35***	182.11***	120.85***	200.05***	104.85***

Note: *, * *, and * * * respectively represent significant levels of 0.1, 0.05, and 0.01
Charts/4/Regression Results of Main and Mediating Effects

This article is an empirical analysis based on imbalanced panel data. Charts4 reports the regression results of board gender diversity, corporate innovation capability, and corporate performance. Regression result model (1) is the regression between the control variable and the dependent variable. The regression results of model (2) show the regression results after adding independent variables. From Table 5.3, it can be seen that the regression coefficient of gender diversity in the board of directors is 0.064, which is significant at the 0.01 level, indicating that gender diversity in the board of directors has a significant positive impact on corporate performance. This regression result supports hypothesis H1. Model (3) is used to test the impact of board gender diversity on corporate innovation capability. The regression coefficient of board gender diversity is 0.066, which is significant at the 0.01 level. The research hypothesis H2 is supported, and board gender diversity has a significant positive impact on corporate innovation capability. Model (4) is used to test the impact of corporate innovation capability on corporate performance. The regression coefficient of corporate innovation capability is 0.009, which is significant at the 0.01 level. The research hypothesis H3 is supported, and corporate innovation capability has a significant positive impact on corporate performance. Model (5) adds enterprise innovation capability on the basis of Model (4), and the regression coefficient of enterprise innovation capability is 0.008, which is significant at the 0.01 significance level. The regression coefficient of gender diversity in the board of directors is 0.023, which is significant at the 0.1 significance level. According to the test criteria for mediating effects, under the premise that the regression coefficient of enterprise innovation capability in Model (5) is significant, the regression coefficients of gender diversity in the board of directors in both Model (5) and Model (2) are significant, and the coefficient of gender diversity in the board of directors in Model (5) is smaller than that in Model (2). Therefore, The relationship between corporate innovation capability and board gender diversity and corporate performance is partially mediated, and hypothesis H4 is supported.

2. Robust Test

This article conducted a robustness test using the method of replacing explanatory variables. That is to say, this article will conduct a robustness test on the degree of gender diversity of companies with female directors replacing the board of directors. In other words, the sample data of companies without female directors will be removed from the sample data of gender diversity of the board of directors, and the sample data of companies with female directors will be retained for robustness testing; This article replaces the gender diversity of the board of directors with the proportion of female directors. The proportion of female directors

refers to the proportion of female members in the board of directors. The results obtained through the above two methods of replacing explanatory variables are consistent with the previous text, indicating that the research results in this article are relatively robust.

Discussion

This study is based on the perspective of corporate governance, starting from the perspective of gender diversity in the board of directors, using the high ladder theory and resource dependence theory as theoretical foundations, to explore the impact and mechanism of gender diversity in the board of directors on corporate performance. The research results show that: (1) gender diversity in the board of directors has a significant positive impact on corporate performance. (2) The innovation capability of enterprises partially mediates the relationship between gender diversity in the board of directors and corporate performance.

Recommendations

Based on the research in this article, the following three suggestions are proposed: Firstly, further improve the gender diversity level of the board of directors of listed companies in China. Female representatives on the board of directors can bring positive changes to the company by introducing innovative and sustainable production methods. Therefore, for enterprises, increasing the proportion of female directors in board staffing can fully leverage the unique advantages of female directors, in order to better implement innovation and improve corporate performance.Secondly, enhance the power of women in the board of directors. Enterprises should build a fair and competitive organizational environment to reduce the constraints on the knowledge and behavioral abilities of female directors and employees, give more voice to female directors, enhance their ability to influence team decision-making, encourage women to fully demonstrate in innovation decision-making, and ultimately improve corporate performance.Thirdly, actively introduce relevant policies to support and encourage female directors. At present, the proportion of female executives in listed companies in China is still significantly lower than that of males. Gender bias remains the main factor limiting the effectiveness of "her power" in current China. In enterprises that may have significant environmental issues, women find it difficult to have equal opportunities to participate in senior management. Even if they obtain a senior position, their voices are easily overlooked in a male dominated environment. These issues will limit women's ability to fully participate in corporate innovation activities. Obviously, eliminating these obstacles requires the efforts of the entire society. Therefore, it is recommended to add provisions in the governance standards of listed companies that encourage the establishment of a minimum proportion of female directors, strengthen information disclosure related to gender diversity in the board of directors, thereby improving corporate performance and promoting sustainable development.

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