Research on the Influence of Senior Team Heterogeneity on Enterprise Performance Based on MAR Model——The Perspective of Equity Concentration

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ABSTRACT. In the new period of diversified development of Chinese enterprises, the key role of senior management team for enterprise survival is increasingly prominent. This paper constructs a multiple regression analysis model with ownership concentration as the moderating variable, and conducts linear regression analysis on the impact of demographic characteristics heterogeneity and knowledge heterogeneity of senior management team members on corporate performance of listed enterprises on small and medium-sized board of the Shenzhen Stock Exchange. This study provides further theoretical support for the construction and optimization of senior management team and the improvement of the comprehensive management level of small and medium-sized enterprises.

Keywords: Small and Medium-sized Enterprise, Enterprise management team, Stock equity, MRA model.

1 INTRODUCTION

As we all know, China's economic development has entered a new normal. In this context, advanced management techniques rapidly become productive forces, and our economic growth will rely more on the quality of human capital and technological progress. The individual limitations of leaders, such as limited knowledge reserve and weak innovation acceptance ability, are more prominent when enterprises adapt to fierce market competition and unpredictable environmental changes. The senior management team, which operates in the form of teamwork and communication, is increasingly favored by many enterprises and has gradually become a new core decision-making group of enterprises. The form of collocation and formation plays a pivotal role in the enterprise's operating conditions and future development orientation. In recent years, with the improvement of national economic activity, equity disputes have become an important issue in the process of enterprise development. In the face of the increasingly complex situation of the internal structure and management mechanism of the senior management team, the establishment of equity structure, and maximize the integration efficiency of the senior management team to maintain the ability of enterprises to make stable and coherent strategic decisions, To maintain the level of stable growth performance of enterprises is an important issue for the high-quality development of contemporary enterprises.

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The main innovations of this study are as follows: (1) Expand the research object. Limiting the research objects to listed companies on the Shenzhen Stock Exchange and small and medium-sized board will make the research conclusions more targeted; (2) Enrich the heterogeneity dimension of senior management team. The selection of heterogeneity index of top management team takes into consideration both job heterogeneity and non-job heterogeneity. (3) Using the multiple regression analysis model, the ownership concentration is taken as the moderating variable to further investigate the moderating effect of ownership structure on the relationship between them.

2 LITERATURE REVIEW

Many scholars at home and abroad have carried out a variety of studies on the impact of heterogeneity of executive team on corporate performance, and have also reached different conclusions.

From the perspective of age heterogeneity, there is a great controversy about its impact on corporate performance in academic circles. On the one hand, research by Hambrick et al. and H Mehrabi et al. found that the older the heterogeneous teams are, the less willing they are to share technology and communicate effectively[7-8]. The research of Barney et al, Finkelstein S et al. and other scholars shows that the high age difference of team members can even lead to the collapse of the team[1][5]. Domestic scholar Cui et al. also concluded that age heterogeneity will hinder performance improvement through research[3]. In addition to the two conclusions mentioned above, Zhang et al. pointed out that there is no significant relationship between team age heterogeneity and enterprise performance[24]. Cereola et al. in a sample of private enterprises in Denmark, found that the relationship between the impact of corporate performance and the age heterogeneity of managers showed an inverted U curve[2].

In terms of gender heterogeneity, Lin, Zhu et al. and other scholars believe that male executives generally have more strategic thinking, while female executives may be more inclined to avoid risks, rather than risk development investment[15][25]. Huang et al, Jenson and JP Walsh et al. also pointed out that in companies with positive strategic behaviors, the higher the proportion of team men is, the more obvious the effect of company performance improvement will be[9-11]. Other foreign scholars, such as Cui et al. found a significant negative correlation between gender diversity in senior management and IPO success through a longitudinal study of biotechnology companies listed in the United States[4]. Triana found that the gender diversity of executives in high-tech enterprises will have a positive impact on strategic change[17].

In the research field of educational heterogeneity, Carpenter et al. pointed out that with different levels of education, senior management members would show more flexibility and creativity in the strategic decision-making process[16]. However, some other scholars hold a negative attitude towards this. Kilduff M and Kor YT found through their research that the greater the difference in team education level, the greater the possibility of poor communication and fierce disagreement among members[12-13]. Gao pointed out through empirical research that too much difference in team education will lead to lower probability of enterprises' active innovation and reform[6].

In terms of functional background heterogeneity, Qian et al. found that the diversification of management members' departments is conducive to improving company performance through relevant research on 11 industries[19]. Singh, D.A. believed that the more heterogeneous the functional background of the team, the better the enterprise to avoid market risk and control uncertainty[20]. However, some scholars hold a negative attitude towards this. Pan et al. found in his research on the top 500 industrial enterprises in the world that it is difficult for members with different functional backgrounds to form a unified opinion when making enterprise strategic decisions, thus reducing the efficiency of team decision-making[18]. Domestic scholars Wu, Wang et al. and Li also believe that functional background heterogeneity will have a significant negative impact on enterprise performance[22-23][14].

3 HYPOTHESES DEVELOPMENT

Individuals at different ages will have completely different growth processes and social backgrounds. Management members at the same age tend to have the same way of thinking, which is conducive to increasing the harmony of team cooperation. Therefore, it is hypothesized that:

H1a. executive team age heterogeneity is negatively associated with the enterprise performance

From the perspective of social psychology, male managers tend to adopt rational thinking and make bold and decisive decisions at key moments, while female managers tend to have emotional thinking and are good at discovering subtle changes in enterprise management activities. Therefore, it is hypothesized that:

H1b. executive team heterogeneity of gender is positively associated with the enterprise performance

The heterogeneity of team education can often bring comprehensive information collection channels to enterprises. Diversified social cognitive ability and information processing ability will enable managers to consider problems more comprehensively. Therefore, it is hypothesized that:

H1c. executive team heterogeneity of education level is positively associated with the enterprise performance

Management experience involves an extremely wide range of knowledge. Team members with large differences in management experience cannot properly aggregate enterprise resources and are prone to conflicts in unfamiliar management fields, thus ignoring the importance of management efficiency. Therefore, it is hypothesized that:

H1d. executive team management experience heterogeneity is negatively linked to the enterprise performance

Managers usually specialize in functions and do their own work. As a result, they bring key knowledge and skills in their respective fields. They have a diversity of knowledge, skills and professional experience that further broadens the cognitive perspective of the entire team. Therefore, it is hypothesized that:

H1e. executive team functions background heterogeneity is positively linked to the enterprise performance

The concentration of ownership will undoubtedly strengthen the supervision of owners on managers, and effective supervision will promote the enthusiasm, initiative and innovation of managers. Therefore, it is hypothesized that:

H2a. ownership concentration in the executive team demographic heterogeneity and knowledge heterogeneity plays a positive impact on corporate performance.

The conceptual model and research hypothesis are shown in Figure 1.

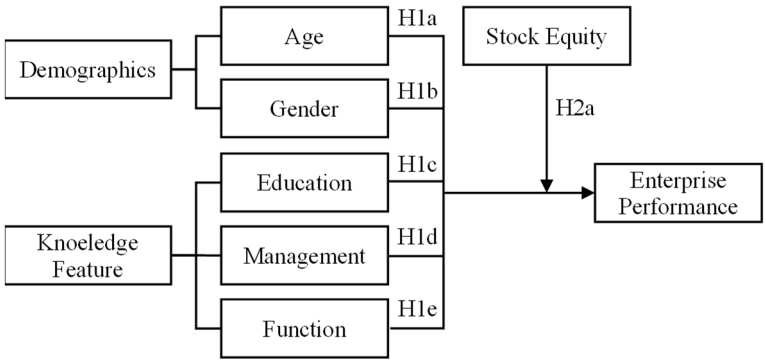

Fig. 1. The conceptual model.

4 RESEARCH DESIGN

4.1 Samples and data source

Small and medium-sized listed companies are the representatives of small and medium-sized enterprises in China. This paper selects the enterprises surviving on the small and medium-sized board in 2019 as the research object. In order to ensure the reasonable validity of the empirical results, data meeting the following conditions were excluded :(1) ST and *ST enterprises with special financial conditions; (2) lack of accounting data or abnormal performance; (3) There are 916 sample enterprises without relevant background information of senior executives.

4.2 Variable measurement

4.2.1. Dependent variable

Referring to previous research in related fields, most scholars choose ROA as the enterprise performance indicator, that is, the ratio of after-tax net profit to total assets. The most direct impact of equity concentration on corporate performance is reflected in the financial aspect. ROA indicators can clearly reflect the asset utilization efficiency and profitability of enterprises. Therefore, this paper also selects ROA as an indicator to measure company performance.

4.2.2 Explanatory variable

In this study, age, gender, education level, management experience and functional experience heterogeneity were selected as independent variables. The management experience of members of the senior management team was measured by the number of years each member had spent

in professional management. Therefore, age and years of management experience were measured by coefficient of variation. The degree of education is denoted by 1-6 as junior college, junior college, bachelor's, master's, doctor's and others. Functional experience is represented by 1-6 in terms of production, marketing, technology development and information, economy and finance, management and law. To measure the heterogeneity of gender, education level and functional experience, the Herfindal-Hirschman coefficient adopted by other scholars at home and abroad was used in this study. The calculation formula is as follows:

$$H = 1 - \sum_i^n p_i^2 \quad (1)$$

H value between 0 and 1, the closer to 1 indicates that the higher the heterogeneity of the team.

4.2.3 Moderating variables

Ownership concentration refers to the quantitative index of whether the ownership of all shareholders of a company is concentrated or dispersed due to the different shareholding ratio. It is not only the main index to measure the company's equity allocation, but also the key standard to judge whether the company has stability. As for the measurement of ownership concentration, this paper chooses the proportion of the largest shareholder as the measurement index.

4.2.4 Control variables

In this paper, the following five dimensions are selected as control variables.

Enterprise size is the natural logarithm of total assets. Team size is the number of team members. Asset-liability ratio is the ratio of total liabilities to total assets. The average education level and age is the average of the education level and age of all members of the senior management team.

4.3 Model

Based on the research content mentioned above and the measurement methods of independent variables, control variables, regulating variables and dependent variables, the following seven regression models are constructed in this paper.

Model 1 explains the linear relationship between control variables and dependent variables, and is used to show the relationship between five control variables and enterprise performance. The regression model formula is:

$$Y = \alpha_0 + \alpha_1 ControlVarables_i + \varepsilon \quad (2)$$

On the basis of the control variables in model 1, Model 2 adds five heterogeneous independent variables, which can be expressed as:

$$Y = \alpha_0 + \alpha_1 Hage + \alpha_2 Hgend + \alpha_3 Hedu + \alpha_4 Hmana + \alpha_5 Hfun + \alpha_6 ControlVarables_i + \varepsilon \quad (3)$$

Model 3 to model 7 is the addition of equity concentration, an adjustment variable, on the basis of model 2, that is, the interaction term between equity concentration and five independent variables. The formula is as follows:

$$Y = \alpha_0 + \alpha_1 Hage + \alpha_2 Hgend + \alpha_3 Hedu + \alpha_4 Hmana + \alpha_5 Hfun + \alpha_6 Hage \times Stock + \alpha_7 Hgend \times Stock + \alpha_8 Hedu \times Stock + \alpha_9 Hmana \times Stock + \alpha_{10} Hfun \times Stock + \alpha_{11} ControlVarables_i + \varepsilon \quad (4)$$

5 RESULTS

5.1 Descriptive statistics

The results of descriptive statistical analysis on each variable are shown in Table 1.

Table 1. Descriptive statistics

	Min	Max	Mean	SD
ROA	-0.303	0.279	0.045	0.051
Hage	0.060	0.925	0.153	0.048
Hgend	0.000	0.500	0.289	0.113
Hedu	0.222	0.806	0.625	0.086
Hmana	0.315	1.269	0.723	0.183
Hfun	0.375	0.792	0.636	0.078
Stock	0.053	0.900	0.339	0.149
Size	10.016	18.969	13.216	1.243
Tsize	10.000	34.000	17.870	3.824
Lev	0.037	0.916	0.393	0.197
Average	43.267	59.583	49.844	2.668
Averedu	2.200	4.320	3.455	0.371

In terms of independent variables, the qualitative mean age and gender of the senior management team are less than 0.5, and the standard deviation is relatively small, indicating that the age and gender of the senior management team members in the study sample are not significantly different, and the sample is relatively stable. However, the heterogeneity of education level, management experience and functional background is relatively large, and the standard deviation is relatively small, which indicates that on the whole, the members of the senior management team of the sample enterprises have different levels of education, and there are great differences in management experience and functional experience, especially in the heterogeneity of management experience, between different members of the same team and between different teams, These factors will affect the performance of the company to a certain extent.

As for the adjustment variable, it can be seen from the minimum and maximum data that the difference in the shareholding ratio of the largest shareholder of some enterprises is still relatively significant, but the average value is about 0.339, and the standard deviation is small, indicating that the sample difference of this variable is not large, but there are some extreme cases.

5.2 Correlation analysis

The results of correlation degree and direction analysis among variables are shown in Table 2.

Table 2. correlations

	ROA	age	gend	edu	mana	fun	Stock	Size	Tsize	Lev	Aage	Aedu
ROA	1											
age	-.001	1										

gend	.055	.056	1									
edu	.145**	.245**	.014	1								
mana	-.182**	.010	-.118**	-.195**	1							
fun	.032	.147**	-.263**	.229**	-.050	1						
Stock	.120**	-.106**	.029	.016	.025	-.080*	1					
Size	-.018	-.197**	-.003	-.159**	.169**	-.111**	.140**	1				
Tsize	-.127**	-.168**	-.126**	-.151**	.208**	.108**	.020	.368**	1			
Lev	-.328**	-.133**	-.026	-.138**	.196**	-.139**	.060	.589**	.228**	1		
Aage	.089**	-.117**	-.162**	-.090**	-.007	-.100**	.145**	.209**	.070*	-.001	1	
Aedu	-.074*	-.191**	-.094**	-.354**	.211**	-.085*	-.131**	.407**	.297**	.287**	.062	1

Notes: *p < 0.1; **p < 0.05; ***p < 0.01 (Two-tailed). N=916.

Based on the results of the bilateral Pearson correlation coefficient test among variables, firm performance is negatively correlated with the age of the top management team and the heterogeneity of management experience, and significantly negatively correlated with the heterogeneity of management experience. However, firm performance is positively correlated with the heterogeneity of gender, educational level and functional experience, and is significantly positively correlated with the heterogeneity of educational level. There is a significant positive correlation between ownership concentration and corporate performance, indicating that the larger the shareholding ratio of the largest shareholder, the greater the possibility of corporate performance improvement. From the perspective of control variables, the control variable has a strong correlation with the dependent variable enterprise performance, and the team size and average education level are significantly correlated with the five independent variables, the asset-liability ratio is negatively correlated with gender heterogeneity but not significantly, and the average age is negatively correlated with tenure heterogeneity but not significantly. It shows that the control variables selected in this study will indeed affect the relationship between the two to a certain extent.

5.3 Multiple regression analysis

In this study, the method of step analysis is adopted to make the model more convincing. The results of regression analysis are shown in Table 3.

Table 3. Multiple regression analysis results

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Size	.313**	.299**	.271**	.277**	.277**	.277**	.277**
Tsize	-.127**	-.108**	-.104**	-.107**	-.106**	-.111**	-.107**
Lev	-.474**	-.454**	-.456**	-.456**	-.454**	-.451**	-.454**
Aage	.034	.042	.025	.032	.028	.026	.029
Aedu	-.029	.021	.054	.050	.049	.047	.048
age		-.041	-.129**	-.033	-.029	-.028	-.030
gend		.029	.023	-.077	.025	.025	.026
edu		.115**	.115**	.110**	.077*	.112**	.114**
mana		-.099**	-.102**	-.104**	-.105**	-.177**	-.104**
fun		.002	.009	.008	.007	.009	-.024

S* age			.164**				
S*gend				.170**			
S*edu					.124**		
S*mana						.138**	
S*fun							.112**
F Value	36.471**	21.386**	21.670**	21.447**	21.010**	20.945**	20.783**
Adj R^2	0.171	0.196	0.204	0.202	0.198	0.198	0.197

Notes: *p < 0.1; **p < 0.05; ***p < 0.01 (Two-tailed). N=916.

Model 1 shows the effect of control variables on firm performance. As shown in the table above, the adjusted R2 is 0.171, which means that the model is close to the actual situation of the sample companies. In general, the control variables selected in this study are reasonable. Model 2 shows the analysis results of the impact of adding five independent variables on enterprise performance. The change of R2 value also indicates that the difference of top management team affects the performance of the model. As can be seen from the table, although the table shows that enterprise performance is negatively correlated with age heterogeneity, and positively correlated with gender and functional experience heterogeneity, none of them are significant, so the hypothesis H1a, H1b and H1e is not supported. Heterogeneity of educational level has a significant positive effect on enterprise performance, and H1c is verified. Heterogeneity of management experience has a significant negative effect on enterprise performance, which indicates that professional management experience will affect the management efficiency of the whole team to a large extent, so H1d is assumed to be supported.

Interaction terms were added to models 3 to 7, and the results of regression analysis showed that the moderating effect of ownership concentration on the relationship between each independent variable and enterprise performance passed the significance test, and had a positive moderating effect. Among them, the influence coefficient of age and management experience heterogeneity on enterprise performance changed from negative to positive under the adjustment of ownership concentration, and the other three independent variables also significantly enhanced the positive influence on enterprise performance. So, hypothesis H2a is verified.

6 CONCLUSIONS AND IMPLICATIONS

6.1 Theoretical contributions

Through the test, the heterogeneity of education level has a significant positive correlation with the dependent variable, indicating that the presence of team members with different education levels will bring different cognitive perspectives to the team, and the collision of ideas and wisdom through communication, which will have a positive impact on the future performance of enterprises. The heterogeneity of management experience has a significant negative effect on the dependent variable. Members who have been engaged in professional management work for a short time may be hampered by the authority yielding to the wrong decisions made by members with rich management experience, so that they cannot express their opinions on various decisions related to the future development of the enterprise. From the analysis results of interaction terms, it can be seen that the more concentrated the ownership structure of the enterprise, the more the differences in the age, gender, management experience and other aspects of the

senior management team members are conducive to the improvement of the enterprise efficiency. Although equity concentration may also lead to phenomena such as major shareholders' infringement of minority shareholders' rights and interests, in the market environment with various uncertain factors, equity concentration can better improve shareholders' supervision efficiency of management, enhance the inclusiveness of team members' differences, and make contributions to team goals and corporate performance development.

6.2 Practical implications

First, establish a sound executive talent selection system, and improve career promotion path. In addition to paying attention to some external characteristics of managers, enterprises also need to pay attention to their learning efficiency, communication ability and other dimensions, as far as possible to investigate whether the selection of personnel is suitable for the internal needs of the enterprise. A fair and open promotion system can optimize the effect of human resources allocation, promote the cultivation of internal talents, achieve person-job matching, and effectively motivate employees and increase their vitality.

Second, establish an effective communication and consultation mechanism. Effective communication and mediation mechanism is an important guarantee for smooth information sharing channels, which skillfully integrates formal and informal communication. The establishment of effective communication mechanism can reduce information asymmetry, help to enhance mutual identity and cohesion, so as to maximize the complementary effect of heterogeneity, and to some extent weaken the negative impact of excessive heterogeneity resulting in conflicts.

Third, the use of equity incentive system, flexible deployment of senior management members and ownership structure of the relationship. Enterprises should find the equity balance point with the lowest sum of risk cost and governance cost in the continuous development practice, so as to optimize the governance efficiency of enterprises and give full play to the governance efficiency of diverse managers. Equity incentive can help to weaken the negative impact of member heterogeneity on enterprises, maximize the advantage of diversified human capital, maximize its own value and improve corporate governance.

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