

Theoretical Analysis on the Influence of the Background Characteristics of the Senior Management Team on the Performance of Enterprise Technological Innovation

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Abstract

How to improve the R&D and innovation strength of enterprises is important to promote the optimization and upgrading of our industrial structure. As the decision-makers of the company's strategy, the senior management team plays a decisive role in the development of R&D and innovation activities, and is a key factor affecting corporate R&D innovation. The article uses high-level echelon theory, managerial behavior integration theory and psychological theory and other discipline theories, and adopts research methods such as normative analysis and system analysis to analyze the relationship between the demographic background characteristics of the senior management team and the technological innovation performance of the enterprise, as well as its mechanism and conduction. A standardized analysis of issues such as pathways provides theoretical support for the study of the relationship between the demographic background characteristics of the senior management team and the technological innovation performance of the enterprise.

Keywords

The Background Characteristics of Top Management Team; The Performance of Enterprise Technological Innovation; The Theoretical Analysis Framework.

1. Introduction

In the case of the separation of ownership and control, managers, as the owners of control rights, have a decisive influence on the technological innovation activities of enterprises. According to the theory of high-ladder team, managers with different demographic characteristics, such as gender, age, education background, working time and work experience, have different effects on technological innovation activities of enterprises. In recent years, Chinese and foreign scholars have conducted a large number of studies in this field, and the results show that the demographic characteristics of the top management team, such as age, gender, education background and tenure, all have different influences on the firm's technological innovation performance. The reason is that managers with different demographic background characteristics have different psychological characteristics, value tendency and behavioral choice [1]. However, there are generally three problems in previous studies. First, they mainly focus on the impact of the egalitarianism and heterogeneity of the top management team, but lack of in-depth analysis of the impact of the "vertical influence" of the top management team. Second, there is little analysis on the moderating effect of demographic background characteristics of top management team on technological innovation, and it is difficult to explain the problem of "why". Third, there are few people who analyze the senior management team and it is difficult to explain how the background characteristics affect the transmission path of enterprise technological innovation. In order to solve the above problems and more comprehensively and deeply study the relationship between demographic characteristics of

top management team and enterprise technology innovation performance, this paper attempts to establish a theoretical analysis framework to study this issue.

2. The Basic Analysis of the Influence of the Background Characteristics of Top Management Team on the Performance of Technological Innovation

According to the high-ladder team theory, due to the complexity and variability of the business environment, the diversification of decision-making information and the limitation of personal knowledge and ability, the analysis of the demographic background characteristics of the top management team is more explanatory than the analysis of the impact of the demographic background characteristics of the managers on the decision-making and performance of technological innovation of the firm. According to the existing literature, the demographic background characteristics of top management team generally include three aspects: first, the average level of demographic background characteristics of top management team, such as the average gender, average age, average educational background and average tenure; The second is the heterogeneity of demographic background characteristics of top management team, such as gender difference, age difference, educational background difference and tenure difference. The third is the "vertical alignment" of demographic background characteristics of the top management team, such as gender difference, age difference, educational background difference and tenure difference between top executives and chairman. Among them, the average level of demographic background characteristics of top management team reflects the average level of demographic background characteristics of top management team members; The heterogeneity of demographic background characteristics of top management team reflects the discrete distribution of demographic background characteristics of top management team members. The "vertical alignment" of demographic background characteristics of top management team reflects the difference of demographic background characteristics among the superior and subordinate members of top management team. These characteristics will have different influences on enterprises' technological innovation decisions and performance.

2.1. The Influence of Average Level Characteristics

According to the theory of psychology, upper echelon theory and human resources management theory, the senior management team in gender, age, record of formal schooling and term on the background of population characteristics, such as average to a certain extent, reflect the characteristics of different demographic background of executive team psychological preference, to the enterprise technology innovation affect the enterprise technology innovation performance. For example, in terms of age, compared with older executives, younger executives are more open, risk-taking and innovative. In terms of gender, compared with male executives, female executives are more careful, good at communication and less officialish style, which is conducive to the formation of an innovative atmosphere and the improvement of team creativity. In terms of educational background, executives with higher educational background will be more willing to accept new ideas and new technologies, and have a stronger ability to obtain information and adapt to the environment, which will help promote technological innovation of enterprises. In terms of tenure, the longer the tenure, the more likely the executives are to breed conceit and stick to the rules, which may lead to the rigidity of enterprise management strategy and hinder enterprise innovation.

2.2. The Influence of Heterogeneous Characteristics

According to similarity theory and information decision theory, the heterogeneity of top management team in demographic characteristics such as gender, age, education background

and tenure can reflect the conflict or consistency of top management team with different demographic characteristics in enterprise technology innovation decision-making to a certain extent, and affect enterprise technology innovation performance. There are two different theories to explain this:

One is similarity theory. According to this theory, people are more willing to associate with people with similar situations, experiences, hobbies and characteristics, and are more likely to reach agreement on value orientation and behavior choices. According to this theory, the smaller the heterogeneity of demographic background characteristics of the top management team, the more likely it is for the top management team to form a consensus in the decision-making of technological innovation and improve the decision-making efficiency. On the contrary, the greater the heterogeneity of demographic background characteristics of top management team, the more likely it is to produce conflicts, which is not conducive to technological innovation of enterprises [2].

The second is information decision theory. According to this theory, people with different experiences, interests and expertise in decision-making may have different knowledge structures and information sources. Therefore, in the face of complex and changing environment, these diverse individuals will contribute to a comprehensive understanding and in-depth understanding of decision-making problems and improve the quality of decision-making. According to this theory, the greater the difference in demographic characteristics among members of the top management team, the richer the knowledge and information that can be shared, exchanged and integrated, which is conducive to improving the decision-making quality of the team. Studies have shown that in terms of age differences, older employees have higher crystal-intelligence, while younger employees have higher fluid intelligence. Such intelligence differences caused by age differences are conducive to comprehensively understanding enterprise decision-making problems from multiple perspectives and improving decision-making quality. It can be seen that the greater the heterogeneity of top management team members in demographic characteristics such as gender, age, education background and tenure, the more conducive to improving the quality of decision-making and improving the innovation performance of the firm.

2.3. The Influence of "Vertical Pair " Characteristics

The "vertical pair" of the background characteristics of the executive team usually refers to the difference between the demographic background characteristics such as gender, age, educational background and tenure of each member of the executive team and the chairman. The chairman of the board of directors is the legal representative in China's enterprises. Generally, he is appointed by the controlling shareholder or is the controlling shareholder himself. He has the largest control power and is in the core leadership position in the senior management team. According to the theory of organizational structure, the role of an individual in an organization depends largely on his position in the organization, and he should abide by the bureaucratic management norms. According to this theory, such "vertical pair" differences not only reflect the cognitive differences between executives and chairmen in the choice of corporate behavior to some extent, but also emphasize the hierarchical relationship within the top management team and the status and rights of executives at different levels. Therefore, correct understanding and dealing with the senior management team members and the chairman of the board of directors in gender, age, record of formal schooling and term on the background of population characteristics, such as "vertical" differences, will be conducive to better deal with relationship between the superior and the subordinate, the chairman of the board of directors can better unify and coordinate the executives of cognition and behavior, is more advantageous to implement the strategy of enterprise goal, integrate the various resources, promote enterprise technology innovation.

The greater the "vertical pair" difference in tenure, the lower the psychological sense of belonging among team members; The differences of background characteristics between superiors and subordinates will shake the trust relationship between them and affect the quality of the relationship between them. In conclusion, managers with different background characteristics have different cognitive structures, value orientations and behavioral choices, so the "vertical pair" difference will increase the difficulty of communication among members, increase the probability of role conflict, affect the harmony and cohesion of the team, and lead to the decline of the decision-making ability of the team. According to the similarity theory, the smaller the "vertical pair" difference between each executive and the chairman in demographic characteristics such as gender, age, education background and tenure, the easier it is to establish a good relationship between the chairman and each executive and strengthen communication and cooperation, which is conducive to promoting technological innovation of the enterprise.

3. Analysis on the Moderating Effect of Demographic Background Characteristics of Top Management Team on Enterprise Technological Innovation Performance

This paper only considers the moderating effect of five variables, such as salary incentive, human relationship, chairman visibility, corporate culture and market competition, because these five variables will directly affect the decision-making behavior of top management teams with different demographic background characteristics.

3.1. Salary Incentive

According to the hypothesis of economic man, people always expect to obtain the maximum benefits, so the compensation incentive system is helpful to solve the conflict of interest between managers and shareholders, restrain the problem of managers' agency, and thus play a role of behavioral integration for managers with different background characteristics. Compensation incentive mainly includes monetary compensation incentive and equity incentive plan. Compared with monetary compensation incentive, equity incentive plan can better connect senior executives' income with the future performance of the enterprise and enable managers to make long-term investment for the long-term development of the enterprise. Therefore, equity incentive plan can better integrate the behavior of managers with different background characteristics. In conclusion, compensation incentive, especially equity incentive plan, has a behavioral integration effect on managers with different background characteristics. In other words, compensation incentive plays a positive moderating role in the influence of background characteristics of top management team on enterprise technological innovation performance.

3.2. Human Relationship

Human relationship refers to a kind of social relationship in which people help each other and exchange needed goods in long-term communication. According to Weber, the human relationship in a group or organization mainly includes: one is the human relationship formed on the basis of natural consanguinity and legally recognized kinship; The other is through some social organizations or groups, such as in schools, companies, the army and other groups formed on the basis of classmates, colleagues and comrade-in-arms relationships. China is a relational society, Chinese culture also attaches great importance to the handling of interpersonal relations, in the continuous development of the society has formed a unique Chinese social relations. The distance of human relationship between people depends on the distance of close kinship, the depth of friendship and the amount of contact time. According to this theory, human relationships in the senior management team can make the relationship

between managers with different demographic background closer and easier to reach a consensus on behavior. It can be seen that the human relationship in the top management team has a behavioral integration effect on managers with different demographic background characteristics, and plays a moderating role in the impact of demographic background characteristics of top management team on the technological innovation performance of enterprises.

3.3. Chairman's Visibility

Research shows that the higher the popularity of the chairman, the greater the personal charm, control ability and social influence of the chairman. From the perspective of positive psychology, these abilities of the chairman of the board of directors will cause executives to have a sense of admiration for the chairman, including appreciation, respect and awe. It is beneficial to the chairman of the board to better unify and coordinate the understanding and behavior of managers with different background characteristics, more conducive to the effective implementation of corporate strategic objectives, reasonable allocation of corporate resources, and promote the sustainable development of the enterprise. Therefore, the author believes that chairman visibility has a behavioral integration effect on managers with different background characteristics, and can play a positive moderating role in the impact of demographic background characteristics of top management team on technological innovation performance of enterprises.

3.4. The Enterprise Culture

Corporate culture, as a collection of ideas, values and behaviors common to all members of an enterprise, is regarded as an informal system to make up for the deficiency of the formal system of an enterprise. It has five aspects of the role: one is the guiding role. In other words, it can alleviate the contradictions between members, restrain the deviation between individual behavior and enterprise behavior, enhance the sense of belonging of individuals to the enterprise, and reduce the communication cost. The second is the constraint effect. That is, through the cultural atmosphere to form collective consciousness, public opinion pressure, code of conduct and moral norms, enhance the members of the self-control consciousness and ability, and then restrain the opportunistic behavior; The third is cohesion. Even if all members unite to form a resultant force of thinking and working in the same direction; The fourth is the incentive effect. Can meet the spiritual needs of members, enhance the sense of honor of members, stimulate the enthusiasm of members; Fifth, the role of reputation. That is to help improve the reputation of the enterprise, expand the market space of the enterprise. It can be seen that corporate culture has a behavioral integration effect on managers with different demographic background characteristics, and corporate culture can play a positive moderating role in the impact of demographic background characteristics of top management team on enterprise technological innovation performance.

3.5. Competition in the Market

According to the new institutional economics, the market is a kind of institutionalized exchange, or an institutional arrangement, which can play the role of "invisible hand" in motivating and restraining enterprises. In the face of fierce market competition pressure, if the managers do not work hard, the enterprise may lose its competitiveness, leading to bankruptcy, and the managers will lose their jobs. Therefore, under the pressure of market competition, managers with different population backgrounds must adjust their behaviors and enhance the competitive advantages of enterprises to cope with such pressure in order to avoid bankruptcy and losing their jobs [3]. In this sense, market competition can have a behavioral integration effect on managers with different demographic background characteristics, and can play a

positive moderating role in the impact of demographic background characteristics of top management team on enterprise technological innovation performance.

4. Analysis on the Transmission Path of the Influence of the Background Characteristics of Top Management Team on the Performance of Technological Innovation

This paper only considers the four variables of R&D capability, debt level, financial performance and stability of top management team, because these four variables all play a role of transfer path in the impact of demographic background characteristics of top management team on technological innovation performance of enterprises.

4.1. Research and Development Ability

According to the high-ladder team theory, managers with different demographic backgrounds have different influences on R&D capabilities. The research shows that the demographic characteristics of senior executives, such as gender, professional experience, educational background and educational level, all have different effects on R&D investment and its effect. From the impact of R&D capability on the performance of technological innovation, a good R&D capability is a necessary condition and an important way to improve the performance of technological innovation and enhance the competitive advantage. It can be seen that R&D capability is an important transmission channel through which demographic background characteristics of top management team influence enterprise technological innovation performance.

4.2. Debt Levels

From the influence of managers' demographic background characteristics on enterprise debt level, managers with different demographic background characteristics will have different influences on enterprise debt level [4]. For example, the older and more educated male CEOs are, the more likely they are to choose lower debt levels. From the perspective of the impact of debt level on the performance of technological innovation, since the level of debt reflects the size of the financial risk of the enterprise, and the investment in technological innovation is of high risk, the enterprise may reduce the investment in technological innovation in the case of higher debt level. For example, there is a significant negative correlation between enterprise R&D investment and financial leverage [5]. It can be seen that the debt level is an important transmission channel for the demographic background characteristics of top management team to influence the technological innovation performance of enterprises.

4.3. Financial Performance

From the perspective of the impact of demographic background characteristics of managers on corporate financial performance, managers with different demographic background characteristics will have different impacts on corporate financial performance. For example, when senior management team members with different degrees of education encounter problems, they can provide diverse information for the organization to improve the quality of decision-making, thus contributing to the improvement of enterprise performance. The management ability of the top management team is in direct proportion to the duration of tenure. The longer the tenure, the stronger the management ability [6]. From the perspective of the impact of financial performance on technological innovation performance of enterprises, financial performance is undoubtedly the technology of enterprises important economic conditions for innovation activities. If the financial performance is better, the economic strength of enterprises to carry out technological innovation activities will be stronger, and vice versa. It can be seen that financial performance is an important transmission channel through

which demographic background characteristics of top management team influence enterprise technological innovation performance.

4.4. Stability of Senior Management Team

On the surface, the stability of the senior management team is refers to the senior management team for some time the stability of its members and the number of team members remain relatively constant a degree, but essentially the stability of the senior management team is refers to the trust between each member and a reflection of the tacit understanding degree, reflects the level of cohesion among senior team members. From the influence of demographic characteristics of top management team on the stability of top management team, according to the similarity theory, managers with the same demographic characteristics such as gender, age, educational background and tenure may have the same value orientation and sense of identity, thus enhancing the stability and cohesion of top management team [7]. From the perspective of the impact of the stability of top management team on the performance of technological innovation, the stability of top management team, as a manifestation of trust, tacit understanding and cohesion among top executives, will have a positive impact on the investment in technological innovation and its effect. Therefore, some scholars believe that enterprise technological innovation performance is actually a kind of economic consequence of the innovation decision of enterprise top management team. It can be seen that the stability of top management team is an important transmission channel through which the background characteristics of top management team affect the performance of technological innovation of enterprises.

5. Conclusion

In order to comprehensively and deeply study the relationship between TMT background characteristics and firm technological innovation performance, this paper establishes a theoretical analysis framework. Firstly, the impact of the average level, heterogeneity and "vertical pair" of demographic background characteristics of TMT on the firm's technological innovation performance is analyzed from the theory of high-ladder team. Secondly, based on the theory of managers' behavior integration, the moderating effect or behavioral integration effect of salary incentive, human relationship, chairman visibility, corporate culture and market competition on the influence of TMT background characteristics on firm's technological innovation performance is analyzed. Finally, the role of research and development capability, debt level, financial performance and stability of top management team and other factors in the transmission path of the background characteristics of top management team on the firm's technological innovation performance is theoretically analyzed. The significance of this article mainly displays in: one is the population of help from the senior management team background characteristics of enterprise technology innovation performance and its mechanism of action and the influence of the transmission path, etc., set up executive team population background characteristics and the problem of the relationship between enterprise technology innovation performance, and the theoretical analysis framework, enrich the content of research on high ladder team theory; Second, it is helpful to provide empirical evidence for people to deeply understand and enterprises to further improve the role mechanism and transmission path of TMT background characteristics affecting enterprise technological innovation performance. Third, it is helpful to put forward institutional arrangements and countermeasures with certain theoretical reference value for enterprises to strengthen the construction of senior management team and improve the performance of technological innovation from two aspects of internal and external governance mechanisms.

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