

The Influence of Enterprise Innovation on Enterprise Performance: The Intermediary Role of Knowledge Management

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Abstract: This study explores the impact of corporate innovation on corporate performance and the mediating role of knowledge management in this process. Our theoretical framework is based on existing innovation theories and knowledge management theories, proposing two hypotheses: firstly, enterprise innovation has a positive impact on enterprise performance, and secondly, knowledge management plays a mediating role in this process. We tested these hypotheses through empirical analysis of data from Chinese high-tech enterprises. The results show that there is a positive relationship between enterprise innovation and enterprise performance, and knowledge management plays a significant mediating role in this process. These findings have important practical significance for both business managers and policy makers. However, the results of this study may be limited by sample selection and research methods, and future research can attempt to study other types or regions of enterprises, or explore other possible influencing factors.

Keywords: Enterprise performance, Knowledge management, Mesomeric effect, High tech enterprises, Empirical research.

1. Introduction

In the rapidly changing business environment, enterprise innovation is widely regarded as a key factor in driving enterprise performance improvement. However, how to ensure that innovation activities can be translated into actual performance of the enterprise is still a question worth exploring. Especially in the era of knowledge economy, the role of knowledge management is increasingly valued. This article aims to explore how corporate innovation affects corporate performance and the mediating role of knowledge management in this process. We assume that corporate innovation has a positive impact on corporate performance, and the effective implementation of knowledge management can enhance this impact. We selected high-tech enterprises in China as the research object and tested these hypotheses through empirical research. Our research findings will provide new perspectives for business managers to understand the relationship between innovation, knowledge management, and corporate performance, as well as useful suggestions for policy makers on how to improve corporate and social performance by encouraging innovation and knowledge management in enterprises.

2. Theory and Research Hypothesis

2.1. Theory

2.1.1. The Relationship between Enterprise Innovation and Performance

The relationship between corporate innovation and corporate performance: Multiple studies have pointed out that corporate innovation can enhance a company's competitive advantage by developing new products, services, or improving existing production and management methods, thereby improving its performance (Schumpeter, 1934; Freeman and Soete, 1997).

Enterprises are complex, and technological innovation and economic sustainability are closely related to each other. Grey Relational Analysis (GRA) can maximize its evaluation and avoid the result errors caused by subjective turbulence by management. Compared with general data statistics methods, the grey correlation analysis method has lower requirements for data, smaller computational complexity, and fewer sample requirements, making it easier to implement. There are many factors that affect the economic performance of enterprises, some of which may have a typical distribution with economic sustainability, while others may not have a typical distribution with it. Therefore, enterprise managers can only select the main factors for evaluation and analysis, lacking accuracy. This leads to the typical incomplete information gray nature of enterprise economic performance systems. The implementation of grey correlation analysis method has largely solved uncertainty problems that are difficult to solve in traditional probability statistics, fuzzy mathematics, etc., such as "small sample size" and "small information", with more arbitrary requirements for data.

Firstly, enterprises need to strengthen investment in technological innovation. The government is the main body of technological innovation and has sufficient funds, but if too much funds are invested in the field of technological innovation, it will lead to restrictions on government funding in other public areas. So in order to strengthen the innovation technology and economic performance of enterprises, enterprise managers need to construct a new model of technological innovation, with government investment as the leading factor, supplemented by enterprise investment and social fundraising.

Secondly, enterprises can establish public information service centers and technology innovation information networks, which can not only showcase the needs and achievements of enterprise technology innovation to the public, but also publish a large number of technology

innovation achievements to improve the market technology innovation function and increase market operation strength, achieving maximum economic benefits for enterprises. The third talent cultivation strategy. In today's society, we have always adhered to the "people-oriented" strategy, respected talents, and created a favorable working environment and treatment for enterprise talents to avoid the flow of cutting-edge talents in technological innovation and achieve rapid development of the enterprise.

Finally, establish and improve the evaluation system and supervision mechanism for the implementation effect of technological innovation policies. The establishment of a mechanism can stimulate the work enthusiasm of the staff of science and technology bureaus in various provinces and cities, enhance public participation, leverage public wisdom and collective efforts, and jointly promote enterprise technological innovation and sustainable economic development. The technological innovation speed of enterprises in developed countries is subject to certain restrictions, such as the US government auditing every scientific project invested; The Japanese government decomposes the speed and effectiveness of technological innovation into each employee, which is something China needs to learn from. Through this article, we understand that strengthening enterprise technological innovation and economic benefits not only requires increasing scientific investment, but also fully leveraging the strengths of each employee to achieve professional talent cultivation. This is the most important countermeasure to improve the technological innovation and economic performance of Chinese enterprises.

2.1.2. The Role of Knowledge Management

Knowledge management, especially the innovation and dissemination of knowledge, is considered an important means to improve the innovation ability of enterprises (Nonaka and Takeuchi, 1995). Knowledge management can help enterprises better utilize the new knowledge generated by their innovation activities, thereby improving their innovation efficiency and success rate.

Knowledge management should follow the following three principles: (1) the principle of accumulation. Knowledge accumulation is the foundation for implementing knowledge management. (2) The principle of sharing. Knowledge sharing refers to the disclosure of information and knowledge within an organization as much as possible, so that every employee can access and use the company's knowledge and information. (3) Communication principles. The core of knowledge management is to establish an organizational structure and cultural atmosphere conducive to communication within the company, so that communication between employees is unobstructed. Knowledge accumulation is the management foundation for implementing knowledge; Knowledge sharing is enabling every member of an organization to have access to and use the company's knowledge and information; Knowledge exchange is the key link in reflecting the value of knowledge, and it is at the highest level among the three principles of knowledge management. Following the above principles for knowledge management, it is first necessary to clarify that knowledge management involves all levels and departments of the organization.

The key to effective knowledge management in an organization is to establish a systematic knowledge management organizational system. The functions

implemented by this system mainly include the following aspects: the organization can clearly understand what kind of knowledge it already has and what kind of knowledge it needs; Organizational knowledge must be able to be transmitted in a timely manner to those who only need it in their daily work; Organizational knowledge must be accessible to those who need it; Continuously producing new knowledge and making it accessible to the entire organization; Control the introduction of reliable and viable knowledge; Regularly testing and legalizing organizational knowledge; Make knowledge management easier through the establishment of corporate culture and incentive measures.

2.2. Model Assumptions

Analysis of influencing factors: Every enterprise experiences a variety of risks and opportunities in its growth and development process. Companies that seize opportunities and overcome difficulties often end up winning market returns and achieving strategic development goals. So in this process, there will be multiple factors that affect the economic benefits and development status of the enterprise.

(1) Factor 1 (competitiveness): The strength of a company's competitiveness in the market is directly reflected by its economic benefits. The stronger the overall comprehensive competitiveness, the better the business performance of the enterprise.

(2) Factor 2 (Enterprise Management): The level of refined management in an enterprise determines its talent excellence rate and is also an important criterion for its development. The higher the proportion of high-tech professionals, the stronger the level of refined management in the enterprise.

(3) Factor 3 (development awareness): The sustainable development awareness and ability of growth oriented small and medium-sized enterprises determine the future development pattern of the enterprise. As the saying goes, vision determines the future, and the management team with high-tech management capabilities has control over the future development direction of the enterprise, as well as advanced industry prediction, which is the guarantee of the success of the enterprise.

(4) Factor 4 (market operation rate): the enterprise's market operation rate shows the enterprise's ability to control various markets, and directly proves the implementation and implementation effect of the enterprise's strategic thinking. Through the strategic layout of the market, the enterprise can achieve rapid and stable market operation rights, thus ensuring the enterprise's market operation rate.

(5) Factor 5 (technological research and development level): The level of enterprise research and development and the ability to innovate in technology are the key factors for enterprises to prioritize market share and outperform industry development. The above factors are the fundamental factors in the market evaluation system for the performance of enterprise operations, which reflect the core competitiveness. Among them, the most important are the refined management of enterprises and the level of innovative technology. Because these two aspects represent the core competitiveness of enterprises, namely people and technology, among these factors, the impact of technological innovation of growth oriented enterprises on business continuity is very important. Small and medium-sized enterprises play an important role in promoting economic development. In order to maintain their competitive advantage and achieve the goal of Going concern, small and medium-sized enterprises need to constantly

improve the effectiveness evaluation system, strengthen performance management, and improve their core competitiveness in market competition.

Based on these theories and viewpoints, we propose the following assumptions:

Hypothesis 1: Enterprise innovation positively affects enterprise performance. That is to say, higher levels of enterprise innovation will lead to better enterprise performance.

Hypothesis 2: Knowledge management plays a mediating role between enterprise innovation and performance. Specifically, enterprise innovation will affect knowledge management, which will further affect enterprise performance.

3. Scale Design and Analysis of Results

3.1. Methodology

3.1.1. Sample selection:

This study will take high-tech enterprises in China as samples, whose innovation activities are highly intensive and the importance of knowledge management is more prominent. We will extract relevant data from public enterprise annual reports and databases for the past five years.

3.1.2. Variable definition and measurement:

Enterprise innovation: We will use the proportion of R&D expenditure to total revenue as an indicator of enterprise innovation.

3.1.3. Knowledge management:

As knowledge management involves multiple aspects, we will use composite indicators to measure, including data on enterprise knowledge innovation, knowledge sharing, and knowledge application.

3.1.4. Corporate performance:

We will use data such as profitability, market share, and shareholder returns to measure corporate performance.

3.1.5. Data collection:

The data mainly comes from the annual reports and public databases of the enterprise, as well as necessary telephone or email surveys.

3.1.6. Data analysis:

We will use regression models to test our hypothesis. Specifically, we will use enterprise innovation to predict enterprise performance, and then add knowledge management as an intermediary variable to observe its impact on the relationship between enterprise innovation and enterprise performance.

3.2. Results and Analysis

Descriptive statistical analysis: After collecting data, descriptive statistical analysis is first conducted, including calculating the mean and standard deviation of variables, providing reference for subsequent regression analysis.

Correlation analysis: Next, conduct a correlation analysis between enterprise innovation, knowledge management, and enterprise performance, and preview the relationship between each variable.

Regression analysis: Conduct multiple regression analysis, with enterprise innovation and knowledge management as independent variables and enterprise performance as dependent variables. Firstly, test hypothesis 1, which is the impact of corporate innovation on corporate performance. Then, we introduce knowledge management variables to test

the Mesomeric effect of knowledge management, that is, hypothesis 2.

Result interpretation: Explain the results of regression analysis. Discuss the impact of corporate innovation on corporate performance and the mediating role of knowledge management. If the results are inconsistent with the assumptions, try to explore possible reasons and discuss the practical significance of the results.

4. Conclusion

Enterprise innovation has a positive impact on enterprise performance. This means that enterprises can improve their market competitiveness and performance by introducing new products, services, or implementing new production and management methods.

Knowledge management plays a mediating role between enterprise innovation and performance. This indicates that effective knowledge management can help enterprises better utilize the new knowledge generated by their innovation activities, thereby improving their performance.

These findings have important practical significance for both business managers and policy makers. For enterprise managers, they need to note that innovation not only directly improves the performance of the enterprise, but also through knowledge management, the enterprise can better utilize the new knowledge generated by innovation activities, thereby further improving performance. Therefore, they need to pay attention to the innovation, sharing, and application of knowledge in innovation activities.

For policy makers, they should encourage enterprises to engage in innovative activities and provide a favorable environment to promote knowledge innovation and management. This can not only improve the performance of enterprises, but also enhance the innovation ability and economic development level of the entire society.

However, this study also has some limitations, such as the sample only includes high-tech enterprises in China, so the results may not be generalizable to other types or regions of enterprises. Future research can attempt to validate the findings of this study in a broader sample, or explore other factors that may affect the relationship between corporate innovation and performance.

References

- [1] Freeman, C., & Soete, L.(1997).The Economics of Industrial Innovation.MIT Press.Fangfang. Research on power load forecasting based on Improved BP neural network. Harbin Institute of Technology, 2011.
- [2] Amjady N. Short-term hourly load forecasting using time series modeling with peak load estimation capability. IEEE Transactions on Power Systems, 2001, 16(4): 798-805.
- [3] Ma Kunlong. Short term distributed load forecasting method based on big data. Changsha: Hunan University, 2014.
- [4] SHI Biao, LI Yu Xia, YU Xhuan, YAN Wang. Short-term load forecasting based on modified particle swarm optimizer and fuzzy neural network model. Systems Engineering-Theory and Practice, 2010, 30(1): 158-160
- [5] Ma Kunlong. Short term distributed load forecasting method based on big data. Changsha: Hunan University, 2014. Schumpeter, J.(1934).The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle.Harvard University Press.

- [6] Schumpeter, J.(1934).The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle.Harvard University Press.
- [7] Teece, D.J.(1998).Capturing value from knowledge assets: The new economy, markets for know-how, and intangible assets.California Management Review, 40(3), 55-79.
- [8] Zollo, M., & Winter, S.G.(2002).Deliberate learning and the evolution of dynamic capabilities.Organization Science, 13(3), 339-351.
- [9] Russell W. Belk. Situational Variables and Consumer Behavior [J]. Journal of Consumer Research,1975,2(3):157-164.
- [10] Li Q, Li X, Wei X. Research on Consumer Community Groupbuying Integrating SOR and Promise Trust Theory [J]. Journal of Xi 'an Jiaotong University (Social Science Edition), 2020,40(02):25-35.DOI:10.15896/j.xjtuskxb.202002004.
- [11] Li L, Luo B, Sun Y et al. A study on the influence mechanism of green Advertising on consumers' Intention to buy energysaving Prod-ucts: Based on SOR Model [J/OL]. Journal of University of Science and Technology of China, 1-21 [2022-10-26]. <http://kns.cnki.net/kcms/detail/34.1054.n.20210621.1139.012.html>.
- [12] Brian Caulfield and Séona Farrell and Brian McMahon. Examining individuals preferences for hybrid electric and alternatively fuelled vehicles [J]. Transport Policy, 2010, 17(6): 381-387.
- [13] Ona Egbue and Suzanna Long. Barriers to widespread adoption of electric vehicles: An analysis of consumer attitudes and perceptions [J]. Energy Policy, 2012, 48:717-729.
- [14] Shi H, Zhou W, Xu Y. Research on New energy Vehicle Market Based on Green Technology: a Case study of Weihai [J]. Science and Technology Management Research, 2014,34(08):227-232.
- [15] Yang X. The Influence of Price setting Factors on the Purchase Intention of Consumers: Based on the network presale environment [J]. Commercial economic research, 2017, (18): 30-32.
- [16] Li Z, Zhang Z, Zhang L. Study on the Influence of Environmental and Psychological Factors on the Purchasing behavior of new energy vehicles in Chinese urban residents: Focusing on Tianjin [J]. Industrial engineering, 2021, 24 (01): 104-110.
- [17] Zhu C, Deng Y. Study on Influencing Factors of purchase intention of new energy vehicles in Ningbo City [J]. Modern Commercial Industry, 2021,42(03):25-26.
- [18] Lin He and Wei Chen and Guenter Conzelmann. Impact of vehicle usage on consumer choice of hybrid electric vehicles [J]. Transportation Research Part D, 2012, 17(3):208-214.
- [19] Liu Y, Wang J, Ari K. Policy and business model innovation of electric vehicle demonstration operation: global experience and practice in China [J]. Chinese Soft Science, 2014(12):1-16.
- [20] Wang C, Yang W, He C et al. Government promotion Policy and Consumer Purchase Intention of new energy vehicles: An empirical study from Xi 'an [J]. Soft Science, 2021,35(07):38-44.DOI:10.13956/j.ss.1001-8409.2021.07.06.
- [21] Yin Z, Chen J. Business Model Selection Strategy for electric Vehicles in China Based on Consumer Preference [J]. Shanghai Management Science, 2013,35(06):25-29.
- [22] Li Z, Xu X, Li L. Research Report on fiscal and tax incentive Policies of new energy automobile
- [23] Li C, Ye L, Wang L. The Influence of New energy Vehicle Consumption Promotion Policy on Potential consumers' Purchase Intention [J]. China Management Science, 2021, 29 (10): 151-164.DOI:10.16381/j.cnki.issn1003- 207x.2019.1845.
- [24] TERRY LAM,CATHY H C HSU.Theory of Planned Behavior:Potential Travelers from China [J]. Journal of Hospitality & Tourism Research, 2004. 28(4):463-482.
- [25] Xu G, Xu F. Research on Influencing Factors of New Energy Vehicle Purchase Decision [J]. China Population, Resources and Environment, 2010,20(11):91-95.