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The Influence of External Drivers on Collaborative Innovation

Siyu Zhang[1,a,*]

[1]*Business and Economics, University of Melbourne, Melbourne Victoria, 3052, Australia*
a. SZ5@student.unimelb.edu.au
**corresponding author*

Abstract: Collaborative innovation has become a critical strategy for enterprises navigating the complexities of modern technological development. This study examines how external drivers can be adjusted to foster and enhance collaborative innovation. Foucusing on key factors such as government support, market competition, and intellectual property protection, the research highlights their impact on the success of collaborative innovation. Drawing on qualitative research and case analysis, this study identifies challenges such as market failure, resource allocation inefficiencies, and risks of knowledge leakage. The findings reveal that government policies, financial assistance, and fostering an innovation ecosystem significantly enhance collaborative efforts, while robust intellectual property protection bolsters confidence in knowledge sharing and commercialization. Additionally, the study highlights the importance of cultivating a collaborative culture within enterprises, supported by clear objectives, talent development, and ethical practices. This research offers actionable insights for optimizing external drivers to maximize the benefits of cross-organizational innovation, contributing to a more sustainable and efficient innovation ecosystem.

Keywords: collaborative innovation, synergy innovation, government support, market competition, intellectual property protection

1. Introduction

Innovation is widely regarded as a key driver for enterprise long-term growth and development [1, 2]. In the context of open innovation, technological innovation is increasingly complex and integrated, and most innovations cannot succeed in isolation [3, 4]. Therefore, a growing number of enterprises and organizations are moving toward ecological evolution, bringing together heterogeneous but complementary resources and capabilities through multi-party interaction to achieve cross-organizational collaborative innovation, thus improving innovation efficiency [5, 6].

At the macro level, many countries are strategically supporting resource-intensive innovation networks to address global innovation needs. Collaborative innovation mechanism creates huge innovation opportunities for enterprises. In business practice, collaborative innovation has become an important part of enterprise strategy [7].

However, innovation networks bring together multiple stakeholders with varying interests. Achieving efficient collaborative innovation in such complex networks requires understanding the impact of both external and internal drivers on innovation activities. This paper focuses on the analysis of how external drivers have an impact on enterprise collaborative innovation, and how

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external drivers promote the development of enterprise collaborative innovation. Through qualitative research and case analysis, effective strategies are provided to strengthen the positive impact of external drivers on collaborative innovation.

2. Challenges

Studies on the influence of external factors on collaborative innovation mainly focus on two aspects: institutional support and market competition [8]. These two aspects make enterprises face challenges in collaborative innovation. The political system is divided into formal and informal systems [8]. Formal system refers to the government through the formulation of policies to create a good atmosphere to promote enterprises to carry out collaborative innovation. As collaborative innovation is a more complex way of innovation organization, it is mainly manifested as the process of industry-university-research cooperation [9]. As a knowledge production activity, the spillover of collaborative innovation may lead to market failure [10]. Informal system refers to the promotion of ethical collaborative innovation by various stakeholders through informal systems such as culture, values and rules. Collaborative innovation involves multiple stakeholders. Due to the different interest demands and purposes of each stakeholder, they may put individual interests above group interests [9, 10]. These problems will increase the risk of instability and failure of collaborative innovation and restrict the innovation activities and development of enterprises. Prime Planet Energy & Solutions, a joint venture between Toyota and Panasonic, confronts issues of knowledge spillover and free-riding within its supply chain. Certain small-to-medium-sized battery component suppliers, having acquired advanced materials and design technologies through collaboration with Prime Planet, have subsequently utilized these technologies to produce similar products in partnership with other competitors. This practice allows them to reap additional industry benefits without incurring the costs of technological research and development. Consequently, the external enterprises' exploitation of technology spillover diminishes Prime Planet's motivation to pursue further research and development. Notably, Panasonic, as the principal supplier of battery technology, has not fully realized market returns proportionate to its R&D investments.

On the market side, industry competition may affect firms' willingness to collaborate on innovation. On the one hand, the intensification of industry competition will stimulate the vigor and vitality of enterprises, increase the willingness of enterprises to cross border and cooperate with other entities, and fully leverage the innovation resources and innovation capacity of enterprises through collaborative innovation [11]. On the other hand, the uneven distribution of knowledge within innovation ecosystems presents challenges. Collaborative innovation inherently involves resource allocation and knowledge transfer, but knowledge does not transfer automatically. Instead, effective dissemination and internalization require extensive knowledge-sharing efforts within these complex ecosystems. [12]. Through knowledge sharing, stakeholders with different functions can obtain information, know-how and ideas from each other [13]. Therefore, knowledge sharing constitutes a critical aspect of innovation management [14]. However, the collaborative process carries risks, such as the potential for free-riding behavior when enterprises share core technologies and innovation knowledge. Managing collaboration processes and preventing knowledge leakage are difficult tasks for enterprises [15]. In industry competition, the hidden costs of collaborative innovation may reduce the willingness of enterprises to choose collaborative innovation [11]. An empirical study of 598 manufacturing firms in Jiangyin reveals that, when accounting for the hidden costs of collaborative innovation, these costs have a non-linear effect on the firms' propensity for collaborative innovation. Specifically, the willingness of enterprises to engage in collaborative innovation initially diminishes before subsequently intensifying [11]. Overall, while collaborative innovation brings many opportunities for the innovation development of enterprises, it also introduces many external factors

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that may negatively affect the innovation activities of firms, posing complex challenges to their management and execution.

3. Solutions

3.1. Government support

The presence of "market failure" often prevents the efficient allocation of resources,, therefore, the government's support is an important force to promote collaborative innovation. The government plays both direct and indirect roles in facilitating innovation cooperation among enterprises. First, there is government support through policy. The government can formulate relevant laws and rules, provide macro-guidance and institutional arrangements for various innovation entities, and strengthen supervision and constraints on various stakeholders. Reasonable interest and resource allocation mechanism can reduce the contradictions and conflicts of the parties involved in collaborative innovation, and increase the willingness of cooperation and the chance of success [10]. Furthermore, by steering the ecological evolution of innovation and fostering synergies, governments can help build robust innovation ecosystems. Economic support from the government is another key factor. The government provides financial help or subsidies to enterprises. Government financial support for enterprises can increase the scale of funding for collaborative innovation, and can also attract more R&D investment from within or outside enterprises. This not only reduces the pressure of scientific research but also increases the confidence of enterprises in research and development. When companies have sufficient capital and confidence in research and development, the willingness to share knowledge will be stronger. When a single enterprise cannot complete the research and development independently due to insufficient funds and scientific research capacity, it can rely on the resources and knowledge of partners to develop through collaborative innovation, and obtain new knowledge results [16, 17]. Government support can further promote the formation of an innovation ecosystem, enabling all participants to have a good knowledge-resource-R&D cycle. From the research on subsidies and income tax incentives provided by local governments to enterprises, the government's economic assistance positively influences enterprises' innovation activities [18].

However, government subsidies and tax cuts have potential drawbacks. The help of local governments to local enterprises may reduce the resource allocation ability and innovation competitiveness of enterprises in cross-regional collaborative innovation and may also increase the market demand for innovation factors, leading to the rise of innovation factors prices and the increase of enterprises' costs. Therefore, the government should clarify the degree of help to enterprises and avoid the negative impact caused by excessive help.

3.2. Corporate collaboration awareness

Under the background of open innovation, enterprises need to cultivate collaborative consciousness to realize cooperative innovation. According to the empirical study on Toyota, the establishment of bilateral and multilateral knowledge sharing mechanisms to carry out collaborative innovation has an important impact on the success of Toyota, which accelerates the speed of manufacturing and innovation of Toyota and gives it a strong competitive advantage in the automobile industry [19]. In addition to relying on the guidance and arrangement of government policies, enterprises should also incorporate a sense of synergy into their corporate culture by defining its importance, objectives, and phased tasks of collaborative innovation. The setting of goals should align with the company's capabilities while fostering collaborative innovation with partners. Goals should be both actionable and challenging to ensure feasibility and drive progress. [20]. On this basis, strengthen the publicity and training within the enterprise, improve the innovation ability and the ability to absorb knowledge within the enterprise. At the same time, companies and partners should develop clear collaborative

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goals and plans to ensure that innovation activities are orderly. Due to collaborative innovation involving a large amount of knowledge transfer, the partners should regularly transfer knowledge and share experience through training courses, seminars and sharing sessions. Improving the innovation ability of enterprises cannot be separated from the introduction and training of high-end talents. To continuously drive innovation and development, enterprises should cultivate a collaborative mindset with universities and proactively attract high-end talent and experts in relevant fields. Collaboration between schools and enterprises can further strengthen the innovation ecosystem and enhance the collaborative innovation capabilities of enterprises. At the same time, the cultivation of moral consciousness of all parties should be strengthened to avoid the negative impact of bad activities on innovative activities. Introduce third-party institutions to coordinate multi-party cooperation, set up a clear benefit distribution mechanism, and enhance the confidence of participants in cooperation.

3.3. Intellectual property protection

The research shows that market competition has a U-shaped impact on enterprises' participation in collaborative innovation, and the sub-sample test results show that the positive impact of the market competition mechanism on collaborative innovation can be guaranteed when intellectual property protection is strengthened [8, 11, 21].

First, intellectual property protection can significantly improve the quality of the competitive environment in the market, thus incentivizing enterprises to collaborate on innovation. Research shows that in areas with strong intellectual property protection, enterprises are more willing to conduct technology research and development through industry-university-research cooperation. This is because innovation results can better avoid imitation and encroachment, improving the possibility of innovation into commercial value [21, 22]. For example, by strengthening the protection of patents, trademarks and trade secrets, companies can more confidently share technology and information in collaboration, thus achieving synergies. This is particularly important in high-tech industries, where robust intellectual property protection rules can encourage enterprises to invest more resources in the development of breakthrough technologies. Enhanced protection also facilitates deeper cooperation with universities and research institutions, promoting innovation and collaboration across sectors. [22]. Moreover, intellectual property protection enhances the role of market mechanisms by optimizing government support strategies. In a high-intensity protection environment, enterprises are better able to respond to market competition pressure through industry-university-research cooperation innovation, with this effect being particularly noticeable in scenarios with lower subsidy intensity [21]. In contrast to direct government subsidies, which may distort market competition, intellectual property protection can fundamentally stimulate the innovation momentum of enterprises and form a healthy innovation ecosystem. Strengthening intellectual property protection ensures that innovation rights and interests of enterprises are safeguarded at the institutional level and optimize the market competition environment. The strengthening of the judicial protection of intellectual property rights by the state can promote the collaborative innovation of enterprises, and prompt enterprises, universities and scientific research institutions to form closer ties in the collaborative innovation, thereby effectively promoting technological progress and industrial upgrading.

4. Conclusion

This study underscores the pivotal role of external drivers in shaping the landscape of collaborative innovation. Effective government intervention, including policy frameworks and financial incentives, serves as a catalyst for fostering innovation networks and addressing market failures. Market competition, while stimulating innovation, necessitates robust knowledge management and ethical

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collaboration practices to mitigate adverse effects such as free-riding and resource inefficiencies. Intellectual property protection emerges as a cornerstone for enhancing market confidence, ensuring equitable knowledge sharing, and sustaining innovation ecosystems.

Enterprises must also actively cultivate a culture of collaboration by setting actionable goals, engaging in knowledge-sharing mechanisms, and partnering with academic institutions to attract high-end talent. By integrating these strategies, firms can navigate the challenges posed by external factors and harness collaborative innovation to achieve technological advancement and competitive advantage. Future research should further explore the dynamic interaction between internal capabilities and external drivers to provide a better environment for corporate innovation.

References

[1] *Rubera, G., & Kirca, A. H. (2012). Firm innovativeness and its performance outcomes: A meta-analytic review and theoretical integration. Journal of marketing, 76(3), 130-147.*

[2] *Robbins, P., & O'Connor, G. C. (2023). The professionalization of innovation management: Evolution and implications. Journal of Product Innovation Management, 40(5), 593-609.*

[3] *Grossman, G. M., & Helpman, E. (1993). Innovation and growth in the global economy. MIT press.*

[4] *Adner, R. (2006). Match your innovation strategy to your innovation ecosystem. Harvard business review, 84(4), 98.*

[5] *Rong, K., Liu, X., Wei, J., Hao, F., (2023) Research on innovation ecosystems in the digital era. Journal of Industrial Engineering and Engineering Management (06),1-7. doi: 10.13587/j.cnki.jieem.2023.06.001.*

[6] *Thomas, L. D., & Autio, E. (2019). Innovation ecosystems. Available at SSRN 3476925.*

[7] *Feng, W., Zhao, L., & Chen, Y. (2022). Research on collaborative innovation mode of enterprise group from the perspective of comprehensive innovation management. Sustainability, 14(9), 5304.*

[8] *Huang, H. B., Xu, C. H., & Li, Y. Y. (2024). Can "banding together for warmth" cope with the "cold winter"? Trade policy uncertainty and firm's collaborative innovation: empirical evidence from the US - China trade friction. Finance and Trade Research, 35(7):35-53.*

[9] *Chen, J., & Yang, Y. J. (2012). Theoretical basis and content for collaborative innovation. Studies in Science of Science, 30(2), 161-164.*

[10] *Bai, J. H., & Bian, Y. C. (2015). Does government support promote IUR synergy innovation. Stat. Res, 32, 43-50.*

[11] *Huang, F., Hu, D. D., & Wu Q. (2021). Industry competition and enterprise collaborative innovation: Based on the micro-empirical study of 598 manufacturing enterprises in Jiangyin. Jiangsu social sciences, 2021(6):221-230*

[12] *Ernst, D., & Kim, L. (2002). Global production networks, knowledge diffusion, and local capability formation. Research policy, 31(8-9), 1417-1429.*

[13] *Cruz-Gonzalez, J., Lopez-Saez, P., & Navas-López, J. E. (2015). Absorbing knowledge from supply-chain, industry and science: The distinct moderating role of formal liaison devices on new product development and novelty. Industrial Marketing Management, 47, 75-85.*

[14] *Wang, C., & Hu, Q. (2020). Knowledge sharing in supply chain networks: Effects of collaborative innovation activities and capability on innovation performance. Technovation, 94, 102010.*

[15] *De Man, A. P., & Duysters, G. (2005). Collaboration and innovation: a review of the effects of mergers, acquisitions and alliances on innovation. Technovation, 25(12), 1377-1387.*

[16] *Xie, X., Wu, Y., & Devece, C. (2022). Is collaborative innovation a double-edged sword for firms? The contingent role of ambidextrous learning and TMT shared vision. Technological Forecasting and Social Change, 175, 121340.*

[17] *Van Burg, E., Berends, H., & Van Raaij, E. M. (2014). Framing and interorganizational knowledge transfer: A process study of collaborative innovation in the aircraft industry. Journal of Management Studies, 51(3), 349-378.*

[18] *Xie, W. M., Tang, Q. Q., & Lu, S. S. (2009). Government R&D funding, corporate R&D expenditure and independent innovation: Empirical evidence from listed companies in China. Financial research, (6), 86-99.*

[19] *Dyer, J. H., & Nobeoka, K. (2000). Creating and managing a high-performance knowledge-sharing network: the Toyota case. Strategic management journal, 21(3), 345-367.*

[20] *Lu, W. J. (2024). Research on digital economy helping enterprises innovate and develop. Marketing modernization, 2024(23):139-142*

[21] *Liu, F. R. (2022). Market Competition, Government Support and Industry-University-Research Cooperation Innovation. Modern economic research, 2022(5):88-98*

[22] *Liu, X. C., & Yang, C. R. (2024). The present situation and trend of judicial practice of intellectual property in China are analyzed from typical cases. China's foreign trade, 2024(5):48-50*