

# Research on the Relationship Between IPR Capability and Responsible Innovation

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**Abstract:** Global economic development is facing new challenges. Based on innovation ecosystem theory and knowledge management theory, the study explores the influence mechanism of IPR capability on responsible innovation and the moderating role of environmental ethical responsibility. The study finds that the impact of IPR capability on responsible innovation has an inverted U-shape, while environmental ethical responsibility has a moderating effect. The findings of the study provide a reference for responsible innovation in companies.

**Keywords:** Responsible Innovation; IPR; Environmental Ethical Responsibility

## 1. Introduction

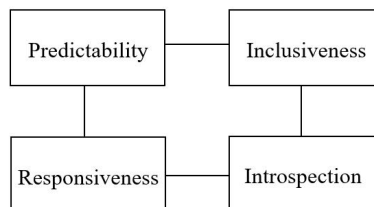
With the "dual carbon goal" becoming one of the important global development directions, the concept of innovation ecosystem is gradually being widely used<sup>[1]</sup>. In the innovation ecosystem, intellectual property is one of the key factors to stimulate innovation<sup>[2]</sup>. Based on innovation ecosystem theory and knowledge management theory, the study decouples intellectual property capability into four dimensions, deeply investigates the influence mechanism of intellectual property capability on responsible innovation, and examines the moderating role of environmental ethical responsibility.

## 2. Mechanism

### 2.1 IPR Creation Ability and Responsible Innovation

IPR creation capability refers to the ability of enterprises to create unique IPR through exploring and developing new technologies and knowledge. In terms of theoretical framework, Stilgoet<sup>[3]</sup> proposed a four dimensional model that includes predictability, introspection, inclusivity, and responsiveness.

The model is shown in Figure 1.



**Fig.1** Four Dimensional Model of Responsible Innovation

To a certain extent, the creation of corporate intellectual property facilitates technological innovation. First, the ability to create intellectual property rights is an important guarantee for corporate innovation, which can promote the mastery and application of technology and thus promote the development of responsible innovation. Second, an enterprise's IPR creation capability is conducive to improving market competitiveness, which has a positive impact on the development of responsible innovation. Finally, a firm's ability to create IPR is conducive to improving the moral and ethical level of the firm and alleviating moral surplus or dilemma, thus promoting the development of responsible innovation.

However, over-emphasis on the ability to create IPRs can have a negative impact on responsible innovation. First, over-emphasis on a firm's IPR creation capability may lead to neglecting the technological innovation achievements of its competitors. Second, IPR creation often requires firms to continuously and extensively invest in R&D and rights maintenance costs. Therefore, over-emphasis on IPR creation can cause enterprises to fall into an "innovation trap", greatly increase their cost burden. Finally, over-emphasis on the creation of IPRs by enterprises may lead to neglect of customer needs, resulting in loss of customer perceived value and difficulty in compensating for innovation costs. Based on the above analysis, the study concludes that the impact of IPR creation capability on corporate responsible innovation is inverted U-shaped.

## **2.2 IPR Protection Capability and Responsible Innovation**

IPR protection capability refers to the ability of enterprises to take various measures to protect their IPR from infringement. First, a company's IPR protection capability helps inhibit plagiarism by competitors, protect the heterogeneity of knowledge resources, and create a good innovative environment. Therefore, it can induce enterprises to be more willing to disclose information related to responsible innovation and break information asymmetry, which is conducive to winning the trust of investors and consumers. Second, protecting enterprises' intellectual property rights is conducive to stimulating their sense of social responsibility, which is conducive to promoting the development of responsible innovation. Finally, the protection of intellectual property rights by enterprises is largely aimed at protecting their differentiated resource advantages, thus enhancing their brand value, which makes it easier to win the trust of their stakeholders.

Yet there are also some negative effects of IPR protection capabilities. First, excessive protection of IPR by enterprises may form an insurmountable innovation barrier in the industry, making each enterprise fall into a knowledge silo and lose the opportunity to absorb external experience and knowledge. Second, excessive protection of IPR by leading firms may lead to market monopoly, which may upset the balance of fair competition in the industry. Finally, maintaining the ability to protect IPRs requires continuous investment, which may impose a heavy cost burden on firms. Based on the above analysis, the study concludes that the impact of IPR protection capability on responsible corporate innovation is inverted U-shaped.

## **2.3 IPR Management Capability and Responsible Innovation**

IPR management capability refers to a company's ability to manage IPR strategies, tactics, processes, etc. To a certain extent, IPR management capability facilitates the development of responsible innovation activities. First, an enterprise's IPR management capability can provide support and guarantee for responsible innovation by protecting intellectual property rights and promoting technology transfer and cooperation. Secondly, IPR management capability can help enterprises effectively organize and manage knowledge sharing, learning and innovation, thus helping to avoid IPR disputes caused by innovation risks and improve the performance of responsible innovation. Finally, enterprises with strong IPR management capabilities can form a positive and healthy corporate culture through the effective organization and management of knowledge resources such as knowledge-based talents, thereby promoting the development of responsible innovation.

However, excessive IPR management capabilities may not be conducive to promoting responsible innovation. First, companies that rely excessively on IPR management capabilities tend to ignore the legitimate interests of their stakeholders, leading to negative externalities of innovation for the company. Second, excessive emphasis on the quantity and quality of patents by corporate executives may lead to distortions in the nature of innovation. Finally, maintaining IPR management capabilities may increase the operating costs of enterprises. Based on the above analysis, the study argues that IPR management capabilities have an inverted U-shaped impact on responsible corporate innovation.

## 2.4 IPR Application Capability and Responsible Innovation

IPR application capability refers to the ability of enterprises to apply their IPR to business models, product design, marketing and brand building. First of all, IPR application capability can help enterprises better transform their scientific and technological achievements and patent rights, so as to occupy a more favorable position in market competition. Second, the ability of companies to apply IPRs helps them win and maintain market advantages. Finally, IPR application capabilities can help firms integrate internal knowledge and other resources, thus improving their resource allocation and organizational management.

However, excessive IPR application capabilities may be detrimental to the implementation of responsible innovation. On the one hand, a strong IPR application capability may prompt firms to unconsciously adopt excessive IPR protection, thus weakening their ability to access external resources and thus limiting their ability to innovate responsibly. In the era of globalization, such enterprises may fall into the dilemma of closed doors, which is certainly not conducive to the development of responsible innovation. On the other hand, firms with strong IPR application capabilities often tend to use resources to improve or enhance existing resources or products in order to maintain their competitive position. However, due to the high cost of activities such as commercialization of new property rights, it may also weaken enterprises' willingness to innovate. Based on the above analysis, the study argues that the ability to apply intellectual property rights has an inverted U-shaped effect on firms' responsible innovation.

The IPR capability responsible innovation curve proposed is shown in Figure 2:

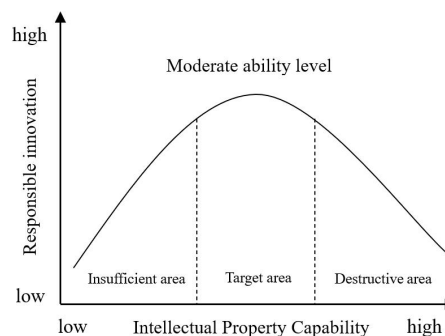


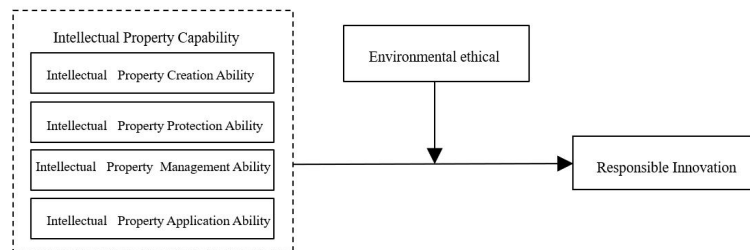
Fig.2 IPR Capability-Responsible Innovation Curve

## 2.5 The regulatory role

Corporate environmental ethical responsibility in the study refers to a voluntary responsibility that a company, as a responsible entity, assumes toward environmental objects. To a certain extent, environmental ethical responsibility has a positive moderating effect. On the one hand, the more a company or executive is willing to assume environmental ethical responsibility, the more willing it is to pay attention to and accept government regulation and stakeholder supervision, which helps companies value and choose responsible innovation. Based on resource theory, corporate environmental ethical responsibility can be regarded as a valuable resource with scarcity and heterogeneity, which can help companies win the recognition and trust of upstream and downstream enterprises and promote collaborative innovation. On the other hand, companies with a strong sense of environmental ethical responsibility tend to value their reputation and image. When their behavior conflicts with their willingness to take responsibility, such companies often engage in strategic rethinking and change their original course of action to meet people's expectations. Thus, to a certain extent, environmental ethical responsibility has a positive impact on the relationship between a firm's IPR capabilities and responsible innovation.

However, environmental ethical responsibility can also lead to imbalanced and unsustainable responsible innovation. Friedman argues that corporate social responsibility (including environmental ethical responsibility) is an unnecessary cost borne outside of business activities. An overemphasis on environmental ethical responsibility may lead companies to neglect the economic benefits of technological innovation, while the practice of corporate environmental responsibility entails significant costs. If these environmental ethical costs are higher than the benefits of undertaking ethical responsibility, it will bring economic losses to the companies. Based on the above analysis, the study argues that environmental ethical responsibility plays a moderating role in the relationship between intellectual property capability and responsible innovation.

The theoretical model is shown in Figure 3:



**Fig.3 Theoretical model**

### 3. Conclusion

Firstly, the relationship between IPR capabilities and responsible innovation in the context of dual carbon is more evident, and the study of the relationship between IPR capabilities and responsible innovation in the context of dual carbon is of great significance. Secondly, the ability to create IPR, protect IPR, manage IPR, and apply IPR has an inverted U-shaped impact on responsible innovation. Finally, the mechanism by which environmental ethical responsibility regulates the role of IPR rights in responsible innovation.

### References

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