

# *Challenges and Responses to Intellectual Property Protection in New Industries*

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**Keywords:** New industry, Intellectual property law, Innovation

**Abstract:** The “new industry” is a new economic or industrial form resulting from the integration of industries in the context of the development of information technology such as the Internet, big data and cloud computing. In terms of structure, the new industry is mainly “heavy” on new technology and “light” on fixed assets; in terms of industrial form, it presents the integration of industrial boundaries and has broad development prospects in terms of market outlook. As an institutional arrangement for stimulating innovative activities, distributing the benefits of innovation and maintaining the order of market competition, the IP legal system is an essential institutional support for the development of new business models. The innovation, diffusion and utilisation of knowledge triggered by the new business has changed significantly in different degrees compared to the traditional business.

## **1. Introduction**

The object of intellectual property is knowledge, and the changing ecology of innovation, dissemination and use of knowledge determines, to some extent, the structure and system of the intellectual property system. Compared to traditional industries, the innovation, dissemination and utilisation of knowledge triggered by new industries have undergone significant changes to varying degrees. The analysis of the specificity of the objects of intellectual property protection in new industries is the starting point of the research. This part first clarifies the connotation and characteristics of new industries, and then focuses on the special characteristics of IPR protection in new industries.

## **2. The meaning and characteristics of the new business**

The term "industry" refers to a form of industry formed by social development. A new industry is a new form of industry or industry situation formed by social development. For example, scholars in the field of management believe that “new industry” is “a new type of economy or industrial form generated by market-oriented, technology-, application- and model-oriented innovation in the context of the new generation of information technology revolution, the new industrial revolution and the integration and development of manufacturing and service industries” [1]. Another

definition believes that, “new industry” refers to the organization of new enterprises, businesses and industries based on the combination of different industries, the differentiation and integration of internal value chains and external industry chains, the integration of industries across borders and the integration of information and Internet technologies. Business model innovation and business model innovation form new industry models, and new industry models are called new business models. According to scholars in the field of sociology, “new industry” refers to a series of new organisations, new businesses and new industries that have emerged as a result of internal upgrading and external cross-border integration based on information technologies such as the Internet, big data and cloud computing, or that have been created as a result[2].

In view of the fact that there is no authoritative or unified definition of the meaning of “new industry”, the above-mentioned definitions from different perspectives of scholars in different fields can be summarised as “new industry” is a new economic or industrial form arising from the interconnection of industries in the context of the development of information technology such as the Internet, big data and cloud computing. It is important to note that new technologies and new business models are somewhat related, but they are not equivalent. Technological innovation is the creation of new products and services by technology research and development enterprises, while business innovation is the application of new technologies by information technology application enterprises to upgrade production methods and transform business models in traditional industries. The adoption of new technologies does not mean the creation of new business models. If a single technology is adopted to improve efficiency, it is not considered business model innovation, but only changes to production methods and business models are new business models. Therefore, the adoption of new technologies does not necessarily give rise to new business models, but new business models must be based on new technologies, especially information technology[3].

Nowadays, the new industry has been manifested to varying degrees in traditional industry sectors such as agriculture, manufacturing and services. In the agricultural sector, the typical embodiment of the new agricultural industry is e-commerce for agricultural products and smart agriculture. Among them, e-commerce for agricultural products has been well developed thanks to the popularity of e-commerce, while smart agriculture at the production end requires the intervention of capital, the participation of highly qualified labour, land transfer and centralisation systems, and other constraints, and the current level of development is relatively low. In the manufacturing sector, the typical forms of the new manufacturing industry are smart manufacturing and shared manufacturing. Among them, the new smart manufacturing industry aims to achieve unmanned and intelligent production processes, while the new shared manufacturing industry aims to achieve a series of shared production processes such as design, R&D and equipment. In the service sector, new service industries are the most diverse areas of development, with new industries such as e-commerce, sharing economy, net-contracting, and Internet now flourishing. The new e-commerce sector has gained price advantages and higher profit margins by saving on commercial rents, the new sharing economy sector has unlocked potential consumer demand by improving the efficiency of resource allocation, and net-hailing has increased social employment and improved consumer welfare by lowering barriers to entry and exit.

In the new economy, new industries have become the new driving force and engine of economic development. Specifically, new industries have the following characteristics:

Firstly, in terms of reliance on resources, new industries are mainly structured “heavily” on new technologies and “lightly” on fixed assets. Unlike traditional industries or traditional business models, which mostly rely on resources such as land, equipment, plants and capital, new businesses mostly rely on original innovation or integrate existing resources through advanced business models, and are less dependent on traditional fixed assets and other resources[4]. For example, new business models such as online dating and online payment are relying on the Internet, big data and other

information technologies to achieve innovation in business models and gain excess returns through promotion.

Secondly, in terms of industrial form, the new industry presents the fusion of industrial boundaries. The industrial form of the new industry is mainly manifested as the integration across multiple industries. Most of the new industries operate and manage multiple fields across industries, and business is often carried out across industries, for example, online education, online office and internet finance are the integration of innovative thinking of the internet into traditional industries to achieve model innovation of traditional industries.

Thirdly, in terms of market prospects, new industries have broad market prospects. New industries are mostly new economic forms generated by emerging technologies and new business models. On the one hand, new industries create new industries supported by new technologies through upgrading and innovation of industrial chains, which represent advanced and cutting-edge levels of productivity; on the other hand, new industries create new products and services through advanced operations and management, which have broad market prospects. For example, the booming digital economy in recent years has played an important role.

### **3. The legal needs of new businesses for IP protection**

The development of new industries requires the cooperation of various conditions, and a good legal environment is undoubtedly one of the necessary conditions. Among the legal environment, the protection of intellectual property rights is particularly important, and the legal system of intellectual property rights, which serves as an incentive for innovation activities, distributes innovation benefits and maintains the order of market competition, is an essential institutional support for the development of new industries. The new industry is a new form of industrial integration supported by new technology. If there is a lack of intellectual property protection, the development of the new industry will lack a dynamic mechanism, and the chaos that may result, such as mutual copying, will undoubtedly restrict the healthy development of the new industry and is not conducive to creating a good competitive environment. The legal needs of new businesses for IP protection are reflected in the following:

The special requirements for the protection of new industry results. Firstly, new industries are new forms of industrial integration supported by new technologies, and their production and development require intellectual input. The focus on new technology and intellectual input is the basis for the need for intellectual property protection in particular. Secondly, the development and growth of new industries carries greater commercial risks. Some new industries, such as intelligent manufacturing, require high levels of investment, and without effective intellectual property protection, there is a risk that the high level of investment will not be recovered, which in turn is detrimental to the cultivation and growth of new industries. Thirdly, due to the “light” assets, the new industry is characterised by easy copying and plagiarism at low cost. Based on the profit-seeking business environment, intellectual property infringement and unfair competition such as copying and plagiarism are more likely to occur.

The dynamic nature of the development process of new business requires. The dynamic process of the formation, application and marketisation of new industries requires the protection of intellectual property rights. Firstly, the formation of new industries requires IPR institutional arrangements. The formation of a new industry is phased, and the rights and obligations of the relevant R&D personnel at different stages, the definition of risks and responsibilities, and the determination of confidentiality obligations are the prerequisites for the formation of a new industry, which cannot be achieved without the arrangement of the IP system. Secondly, the application of new industries requires the adjustment of the intellectual property system. Compared with

traditional industries, the application of new industries has the characteristics of high investment and high risk, and the smooth implementation of the application of new industries cannot be separated from the adjustment of the intellectual property system. Thirdly, the marketisation of new industries requires the protection of the intellectual property system. Large-scale application and promotion is the inevitable path of new industries. In the process of marketisation of new industries, infringement and unfair competition such as plagiarism, plagiarism and counterfeiting are inevitable, which need to be safeguarded by special laws on intellectual property rights and anti-unfair competition laws.

The new industry has further internationalised its requirements. In the face of a new round of technological revolution and changes in the international landscape, China's new industries such as "Internet" have taken an advantageous position, while the development of new industries has led to more intense competition between different countries. The process of internationalisation of new industries inevitably requires sound international protection of intellectual property rights.

#### **4. The specificity of the object of intellectual property protection in new industries**

The object of intellectual property rights is knowledge[5], and the changes in the ecology of innovation, dissemination and utilization of knowledge have, to a certain extent, determined the structure and system of the intellectual property system[6]. In the era of knowledge economy, compared with traditional industries, the innovation, dissemination and utilisation of knowledge triggered by new industries have undergone significant changes to varying degrees.

Firstly, in the field of technological innovation, the R&D costs, innovation forms and the ease of imitation of technological innovation in new industries all reflect the special characteristics of different traditional industries. In terms of the form of technological innovation, the specific form of technological innovation can be divided into discrete and cumulative innovation, with discrete innovation meaning that each technological innovation is separate from the other, and cumulative innovation meaning that subsequent innovation is made through the improvement of existing technologies. New industries are often industry-integrated innovations based on new technologies and are clearly mostly cumulative in nature; for example, the newer iterations of artificial intelligence technologies are successor innovations that continuously improve on existing technologies. As far as speed of development is concerned, it varies greatly from one area of innovation to another, with some requiring a large number of R&D staff to work on them for years, while others require only one person or a small team to develop a technology solution quickly. In terms of the speed of research and development of new industries, relying on the Internet, big data and cloud computing, the speed of research and development in new industries such as smart manufacturing is faster than ever. In terms of the difficulty of imitating new industries, in terms of algorithms, for example, such as Siri voice system, face payment, news writing robots, driverless technology, these technologies all involve algorithms in one way or another, and how to protect the algorithm technology involved in these artificial intelligence products is a matter of great concern at the moment. The research and development costs, innovative forms and ease of imitation of technological innovations in new industries all reflect the special characteristics of traditional industries, and these special characteristics imply necessary interpretation and adjustment of existing patent law rules in terms of object judgment, inventive judgment and intensity of protection.

Secondly, in the field of work creation, "data-driven creation" has become the current trend in work creation, and data-driven work creation, content distribution and data use have all changed significantly from the traditional creative industry. At the creation level, massive amounts of data constitute a database for machine learning, which can be used as material for algorithm creation, applied to news bots writing news, music creation and other scenarios. At the content distribution

level, data-driven algorithms analyse user data to discover their consumption preferences and needs, which can be used as an important basis for customising copyrighted products and enabling precision marketing. At the level of data use, under the data-driven creation model, whether data can be freely accessed and used is the key to the quality of creation, and as such data may include a large number of books, audio, video and other works to which others are entitled to copyright, the process of inputting, storing and using data at this time may face infringement difficulties. The above series of new issues such as the shift in the subject of creation, changes in the distribution of content and the determination of fair use require a response from copyright law.

Thirdly, in the field of trademarks, new industries have brought about changes in the field of consumption while enriching industrial forms and facilitating people's lives, and the evolution of consumption scenarios has brought about new problems in the determination of use and commodity categories in the sense of trademark law. Technologies such as the Internet, big data, the Internet of Things, artificial intelligence, blockchain and virtual reality have greatly changed the retail sector, and these new technologies have brought about the evolution of consumption scenarios in the new retail sector, while the application of new technologies in other areas of writing has also brought about new forms of services, such as shared bicycles, shared rechargeable batteries and so on. For example, the new business model of pushing and picking links may raise the trademark issue of the invisible use of trademarks as keywords for bidding ranking, does this use brought about by new technology constitute trademark use under trademark law? Another example is that the integration of business models in the new consumption scenario brings about the problem of judging the category of goods, while the combination of goods with internet and mobile communication business also leads to the ambiguity of the classification of the type of goods, how to judge the category of goods or services? As another example, artificial intelligence applications such as intelligent voice assistants and predictive retailing assist or even replace consumers in their shopping decisions, and new relationships are being established between artificial intelligence, consumers and trademarks. The use of artificial intelligence in consumer scenarios has changed consumers' perception of trademarks and their habits in the selection of goods, which raises a number of issues related to trademark law.

## 5. Conclusion

New industries are one of the hotspots of social and economic development in recent years, and have become a new driving force and engine of social and economic development, showing vigorous vitality and strong growth potential. At the same time, legal disputes over intellectual property rights and unfair competition related to new industries have occurred frequently, with problems such as imitation and plagiarism and unfair competition gradually coming to the fore, bringing unprecedented challenges to intellectual property protection and also directly or indirectly hindering industry innovation and development. Compared to traditional industry forms, the new industry characterised by industrial integration has undergone significant changes in terms of technological innovation, creation and dissemination of works, and scenarios for the use of commercial logos. Analysis of the practical and salient needs of different areas in light of the characteristics of the new business requires appropriate adjustments to the rules of IP protection.

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