

Toward a Unified Framework: A Study on the Registration of Data Intellectual Property Rights

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Abstract

As an important institutional practice in the field of data registration, there are some points of disagreement in theory and practice that need to be harmonized. The object of registration of data intellectual property rights should be data, and the limitations of the object of registration should be three: first, the data should be collected or obtained in accordance with the law; second, the data should be processed by certain rules; third, the data should have practical value. Registration of data intellectual property rights should follow the principle of “limited substantive review” and build a composite review framework. Registration of data intellectual property rights should be given an effect of rights determination, the right holder would hold a new type of intellectual property right upon registration.

Keywords: data intellectual property registration, object of registration, review models, legal effects

1. Introduction

Data elements have become the core kinetic energy for the high-quality development of the digital economy, and the establishment of a data base system that promotes the compliant and efficient circulation of data is a necessary measure to comply with the digital transformation of the economy and society. At present, the path of data rights has become the focus of heated discussions in the academic community, and the related data circulation and registration and other supporting systems reflect the characteristics of “practice first”. In September 2021, the Central Committee of the Communist Party of China and the State Council issued the “Outline for Building a Strong Intellectual Property Rights Country (2021-2035)”, which explicitly proposes to

“study the construction of rules for the protection of data intellectual property rights”. In December 2022, Article 3 of the “Opinions of the CPC Central Committee and the State Council on Constructing a Data-Based System to Better Utilize the Role of Data Elements” (hereinafter referred to as the “Twenty Articles on Data”) proposed to “Explore the system of structural subdivision of data property rights”. In March 2023, the State Intellectual Property Office issued the “Annual Work Guidelines for Promoting High-Quality Development of Intellectual Property Rights (2023)”, proposing to “explore the construction of a data intellectual property protection system and a registration system”. Under the guidance of the policy document, several provinces and cities in China have started to carry out pilot work on data

intellectual property registration in an orderly manner, and nine provinces and cities have already announced the administrative measures for data intellectual property registration (including drafts for comments).

Data and intellectual property objects have similar object attributes, and at the same time have the essential characteristics of information, and there is also a right theory foundation and system objectives. (Feng, Xiaoqing, 2022) It is one of the mainstream views of the current academic community to build a data rights and protection system within the intellectual property system, and scholars have put forward the ideas of synergistic governance of intellectual property specialization law (Wu, Gui-De, 2022), new type of intellectual property object empowerment path (Gao Yang, 2022) and so on. On the basis of this theory, exploring the new way of data property rights registration through the theory and practice is reasonable and suitable, and it is an institutional arrangement that meets the current policy orientation and practical needs of exploring the data property rights system and protecting data intellectual property rights.

The registration of data intellectual property rights runs through the whole process of data resource realization, it can not only prove the ownership of data, but also help to reduce the cost of data transaction and protect data property rights and transaction security. (Cheng Tsao, 2023) However, in the case of unresolved data rights issues, registration of data intellectual property rights practices first often lacks the basis of superior law, does not clarify the attributes of data rights, and is unable to unify the object of registration, determine the review mode and determine its legal effect. Therefore, against the background of the successive development of registration of data intellectual property rights practices, it is necessary to clarify the theoretical disputes and practical differences of registration of data intellectual property rights, to theoretically define the object of registration of data intellectual property rights, the review mode and the legal effect of registration, and to provide theoretical supplies and references for legal effect practices.

2. Definition of the Object of Registration of Data Intellectual Property Rights

Defining the object of registration of data

intellectual property rights is the foremost issue in a registration of data intellectual property rights system. The Twenty Articles on Data propose to explore a structural separation system for data property rights, i.e. a property rights operation mechanism that separates the right to hold data resources, the right to use data processing, and the right to operate data products. However, this policy formulation needs to clarify the boundaries of registrable data through legal language in order to better serve practice. The determination of the object of registration of data intellectual property rights requires exploring the process of data factorization, clarifying the different data forms involved in the chain from raw data to data products, and examining and measuring them in comparison with intellectual property objects. At the same time, some limitations have been set on the registration object of data intellectual property rights, such as publicity, etc. These conditions should also be included in the discussion of the registration object in order to more accurately define the scope of the registration object.

2.1 The Object of Registration of Data Intellectual Property Rights Shall Be Data

In practice, there are two main types of object of registration of data intellectual property rights, namely, “data” or “data sets”. Except for Zhejiang Province, which provides that the object of registration is “data”, the registration methods of other provinces and cities all specify that the object of registration is “collection of data”. Theoretical research on the object of registration of data intellectual property rights also exists original data, data collection, data products and other differences. Data as a whole concept must include the object of registration of data intellectual property rights, but based on certain classification standards for data type distinction, to find suitable for registration and in line with the similar characteristics of intellectual property rights of the data type, is the object of registration of data intellectual property rights more accurate identification.

From the viewpoint of the process of data factorization, individual data containing information are collected as raw data resources, a large number of raw data are converged to form a data collection through certain data processing logic, and finally data products are developed through algorithms and other technologies. As a result, a three-level

progressive value chain of “data resources — data collection — data products” has been formed within the data. (Shin Sat, 2023) According to the different degrees of data processing, data can be divided into original data and derivative data. Putting the two in the above data value chain, the original data is the basic data resource, and the derivative data is the use of algorithms and analytical models to process, analyze and refine the massive raw data to generate market-valued data products, which carry a large amount of intellectual labor input from data processors. (Gao Yang, 2022) In practice, there is no strict definition of “data products”, and the tradable “data products” in the data market include both derivative data products that have undergone in-depth technical processing and aggregated data products that have undergone simple processing such as desensitization and compilation.

Taken together, whether or not to emphasize that the object of registration is a “collection of data” means whether or not to emphasize the scale of the data; and whether or not to differentiate between data, data resources and data products is a matter of varying requirements as to the degree of processing of the data. From the perspective of the future unity of data rights and data registration, it is appropriate to determine the object of registration of data intellectual property as data. On the one hand, data, data resources, data collection and data products are divided into data from the perspective of economics, and from the perspective of civil rights object, data has the independence and property of civil rights object, is a new type of civil rights object in the modern civil law, (Cheng Tsao, 2023) therefore, it can also become the object of intellectual property rights. Data resources, collection of data and data products are only products derived from data, and their essence is data. On the other hand, in the era of big data, data generates greater value due to its scale, which is the inevitable result of larger data collections, but it is not necessary to emphasize the scale of the object of registration of data intellectual property rights through the condition of “collection of data”, because the next question is what is the minimum size of a collection of data that should be maintained in order to meet expectations, this size criterion cannot be conclusively determined, so data as the object of registration is the most uniform

approach. The other requirements for such data to be eligible for registration are left to be specified in a number of limiting conditions for the data.

2.2 Limitations on the Object of Registration of Data Intellectual Property Rights

Looking at the provinces and cities that have issued registration of data intellectual property rights methods (including exposure drafts), there is some consensus and points of divergence as to the restrictive conditions for the object of registration. There are three main points of consensus: first, the data should be collected or obtained in accordance with the law; second, the data should be processed by certain rules or algorithms; and third, the data should have practical or commercial value. There are also two main points of disagreement: first, whether the data is required to be in an undisclosed state. Second, whether the data is required to have the attribute of intellectual achievement. From a theoretical point of view, the starting and ending points of the local regulations for setting these restrictive conditions need to be demonstrated in order to analyze the necessity and reasonableness of their existence.

First, the legality of data acquisition is a prerequisite element for the generation and enjoyment of data-related rights, and the current practice of anti-unfair competition law protection of data rights and interests also focuses on the legality of data acquisition. (Kong, Xiangjun, 2022) This is a requirement of the data security legal system constructed by China’s Personal Information Protection Law, Cybersecurity Law and Data Security Law to regulate data processing activities, which is of great significance in safeguarding the data security of individuals and organizations. It is worth noting that reviewing the lawful compliance of data collections of a large scale poses certain challenges to the review methodology of the registry organization, an issue that will continue to be explored in subsequent research on the review model.

Secondly, the requirement that data should be processed by certain rules or algorithms is in fact an antecedent requirement for data to have the attribute of intellectual achievement, and it is also the best interpretation of the attribute of intellectual achievement that data possess. Therefore, the processing requirement of data

can include the intellectual property requirement and be unified as “processed by certain rules”. This can be argued from two perspectives. On the one hand, from the perspective of data generation, data producers need to pay a lot of human and capital investment, adding physical and mental labor, including multiple labor, in order to collect a large number of data resources using data collection tools, and through technical means to anonymize and desensitize the data collection, and even build algorithmic models, in order to process fragmented data into data collections and even data products with practical value. This process is actually the result of human intellectual labor, reflecting the intellectual input from data collection to processing. On the other hand, from the perspective of data presentation, after processing structured data to a certain extent reflects the intellectual achievements of data attributes, “data structure” is the embodiment of human intellectual achievements. (Lv Bingbin, 2024) Because of this, the registration of data intellectual property rights method of the registration of data intellectual property rights matters contain data structure, data structure mainly includes data type, data item field name, data format name, data record number and so on. Structured data collections are also the dominant form in the existing data circulation market. In addition, there are slight differences in the expression of the requirement of “data processed” in specific registration methods, such as Zhejiang Province requires “processed by certain algorithms”, Beijing requires “processed by certain rules or algorithms”, Guangdong Province requires “processed by certain rules or algorithms”, such provisions appear to juxtapose algorithms and rules, but algorithms are essentially more complex rules for processing data, and the technical aspects of processing data by means of algorithms are not made clear, i.e., such provisions essentially require that the processing of data requires the adoption of certain rules in order to comply with the intellectual property attributes of most intellectual property objects. In some areas, limiting the rules for processing registrable data to algorithms will affect the ability of some commercially valuable data that are not processed by or do not need to be processed by complex rules to obtain the benefits of facilitating circulation through registration, and

will not be conducive to giving full play to the positive effects of registration in the early stages of establishing a market for data elements.

Once again, there are two expressions for the value attribute that data should have: commercial value and practical value, which, for the purpose of applying to different types of data, is preferably identified as “practical value”. For commercial data, having practical value often means having commercial value, and practical value and commercial value can be equated in the commercial field. It is worth noting that the “Twenty Articles on Data” divides data into three categories, namely, public data, enterprise data and personal data, from the perspective of the main body of the data carrier, in which personal information data can be collected, held, hosted and used by the data processor in the scope of personal authorization in accordance with the law, and the resulting data collection is often used by enterprises for commercial purposes, while public data is generated by party and government organs at all levels and enterprises and institutions in the process of performing their duties or providing public services according to law, and its value lies in the provision of public services and the protection of public welfare. (Deng, She-Min & Wang, C.W., 2024) The expression of “practical value” is more appropriate in a comprehensive view.

Finally, as to whether the data should be in an undisclosed state, it is not appropriate to limit the data to an undisclosed state in view of the value-oriented approach to encouraging data circulation. First of all, if the data protected by the registration of data intellectual property rights has a non- public nature, such data can be directly protected by trade secrets, the function of the registration of data intellectual property rights and trade secrets overlap, and it is not conducive to the circulation of data value-added to achieve the maximization of data value. Secondly, for data in a public state, if it does not meet the requirement of originality of copyright law, it is not protected by copyright law, and it can only rely on the legal regulation of the competitive behavior of the data market to be passively protected, which will seriously restrict the certainty of its legal protection. (Liu, X., 2023) Finally, the commercial value of data in the era of big data lies in its scale, and even if the substantive information content of the data is described and publicized through registration or

some sample data is displayed, there will be no depletion of the economic value of the data. (Tong, Jung-Young, 2024)

3. Review Model for Registration of Data Intellectual Property Rights

The modes of review in the registration process can be broadly categorized into formal and substantive review, with special provisions and procedures for review in different registration processes depending on the object of registration. Rather than simply choosing between formal and substantive review, how data, as a new type of factor of production, is reviewed in the early stages of marketization is a matter of examining registration of data intellectual property rights in comparison with existing intellectual property registration procedures in order to determine the scope and manner in which registration of data intellectual property rights should be reviewed.

3.1 Formal and Substantive Review in the Registration Process

The review in the registration process begins with the review of the immovable property registration. In China's real estate registration procedures, there is a distinction between formal and substantive review. Generally speaking, the formal review means that the registration authority only examines whether the registration application materials submitted by the parties comply with the legal format and requirements, and examines on the surface whether these materials are complete, comply with the legal requirements and do not conflict with each other, without investigating the authenticity of the information itself. Substantive review means that in addition to examining the registration application procedures, whether the submitted materials are legal and complete, should also examine the substantive law on the rights and obligations of the relationship between the consistent and effective. (Wang, K. Stable, 2008)

The review in the registration procedure of intellectual property rights mainly includes the voluntary registration of copyright, the review in the patent application and the review in the trademark registration, and the review in these three procedures are different depending on the object of registration and the function of registration. The copyright registration procedure follows the principle of voluntary registration. Authors and other copyright

holders applying for work registration should present proof of identity or provide proof indicating the ownership of the rights of the work, etc. The registered work is verified by the work registration authority and a work registration certificate is issued. This is a typical formal review, and the work registration authority will not examine the copyrightability of the work. This is due to the fact that works are rich in types and forms, and the contents are difficult to be examined quantitatively, so it is difficult to determine the review standard for copyrightability, and the review cost is too high. In the patent application procedure, there are two steps in the review of a patent, namely, preliminary review and substantive review, in which the scope of preliminary review includes the review of the form of the application document, the review of the obvious substantive defects of the application document, the review of the form of other documents, and the review of the relevant fees, while the scope of substantive review includes the application for not granting a patent, the specification and the claims, and the novelty, creativity and utility of the invention and creation. In the trademark registration procedure, as the trademark applied for registration must comply with the constituent elements stipulated in the law and have distinctiveness, and the law has clearly stipulated the signs that cannot be used as trademarks, the Trademark Office is bound to carry out substantive review in order to ensure that the trademarks applied for registration comply with the provisions of the law, and there is no damage to prior rights, pre-emptive registration, and the same or similar situation with the registered or preliminarily examined trademarks.

In existing registration of data intellectual property rights practices, most areas explicitly provide for a formal review of the matters subject to an application for registration, which focuses on the completeness of the materials (completed registration application form and supporting documents) and compliance with the prescribed requirements. However, in the non-registration provisions, the non-registration actually involves the scope of substantive review. The Shandong Province registration of data intellectual property rights Management Rules (for Trial Implementation) provides for a "preliminary + review" review model, whereby the registration platform operation and

management organization carries out a preliminary review of the completeness of the information on data intellectual property rights applied for registration, and then a review is carried out by the registration organization. There are also places that explicitly take the substantive review as a supplement to the formal review, for example, "Hunan Province registration of data intellectual property rights Management Measures" stipulates that the registration authority shall carry out the formal review and the review of obvious substantive deficiencies on the registration application, and the main contents of the formal review and the review of obvious substantive deficiencies are enumerated in detail, in which the contents of the substantive review include the proof of the legitimacy of the source of the data, whether the data processing activities are obvious. The substantive review includes proof of the legality of the data source, whether the data processing activities obviously violate the relevant laws and regulations, whether the sample data conforms to the description of the data structure in the application form for registration, whether the subject of registration obviously has disputes over ownership, whether the application for registration obviously jeopardizes the security of the national data, the public interest or the privacy of the individual, and so on.

3.2 Registration of Data Intellectual Property Rights Should Adopt a Substantive Review Model

The guiding ideology of the Twenty Data Articles for the construction of a data base system emphasizes "safeguarding national data security, protecting personal information and commercial secrets as a prerequisite, and promoting the compliant and efficient circulation and use of data to empower the real economy as the main line", so it can be seen that the protection of data security and the promotion of the circulation of data are the two key functions in the construction of a data registration system. This is also the embodiment of the security value and efficiency value of the law in the construction process of the data registration system. From the perspective of value orientation, the security value aims to ensure that the registered rights are real and effective, to avoid the wrong registration infringement of personal privacy and public interests, and to trigger the conflict of rights, in order to maintain national data security, personal information security and data market

order. The efficiency value focuses on the simplicity and speed of the registration process, completing registration at the lowest possible cost, enabling data intellectual property rights to be protected quickly, facilitating the efficient flow and utilization of data, and obtaining the highest possible benefits. For data intellectual property registration, prioritizing security value is the best choice in line with the current state of data market development.

First, at the initial stage of building a registration of data intellectual property rights system, the standardization of the data market needs to be improved, and the registration authority should focus on guaranteeing the authenticity of the data registration, improving the credibility of the certificate of registration of data intellectual property rights in transactions, effectively guaranteeing the security of data transactions, and providing basic guarantees for the safe and efficient operation of the data market. Secondly, data has non-materiality, non-exclusivity and non-consumability, and the initial holder of the data is often unable to exclude the use of the data by others. If only a formal review is adopted in the data registration procedure, it is not only difficult to guarantee the legitimacy of the source of the data, but also difficult to recognize the existence of disputes over the rights on the data, which will lead to an increase in the transaction cost and judicial cost, and ultimately affect the healthy development of the data market. Finally, the security value of guaranteeing the registration of data intellectual property rights is also to some extent conducive to the realization of the efficiency value. In the long run, reliable registration results can reduce data transaction disputes, lower transaction risks, enhance the trust of all kinds of market players in data intellectual property rights, promote the orderly circulation and efficient use of data, thus realizing the efficiency value at a higher level and maximizing the security value and efficiency value in general.

After determining that it is appropriate to adopt a substantive review model for the registration of data intellectual property rights, it is possible to take the aforementioned restrictive conditions of the object of registration of data intellectual property rights as the focus of the review, make adaptive adjustments on the basis of reference to existing intellectual property rights review rules, follow the principle of "limited substantive review", and construct a composite review

framework. First of all, the review of the legitimacy of data sources should be differentiated according to different data sources. For personal data, the review should be based on the materials proving the consent of the individual; for public data, the review should focus on whether the public data opened under the condition has the qualification and authorization conditions; for the independent collection (self-production) by enterprises, the review should be based on whether they have the qualification and production capacity; for the acquisition by transfer and other successive methods, the review should be based on the materials of the contract. (Tong, Jung-Young, 2024) Secondly, the data should be processed by certain rules of the review, in view of the preceding has argued that the processing of data, that is, intellectual labor, can be directly examined to apply for registration of data whether the substantive labor, such as the collection of data collection tools, data operation of technical documents, data processing algorithms used and data processing link complete records and so on. Again, for the review of the practical value of data, you can review the data in specific areas of the landing cases or test reports to verify its application scenarios, through the industry demand white paper or procurement intent to examine the existence of market demand, the use of benchmark data sets comparative analysis to detect the technical efficacy of the benchmark data set, you can also review the data format or interface standards for compliance with the requirements of the target industry, etc., and review whether the data applied for registration can transform technical usability into commercial viability in specific fields. In addition, the registry should establish a mechanism for dynamic maintenance of the data, and when the content of the registered data is changed or added, the application materials for registration of the change should be updated and reviewed.

4. Legal Effects of Registration of Data Intellectual Property Rights

In the intellectual property registration process, the registration of works serves to simplify the proof of rights, the registration of patents builds the boundary of technological monopoly, and the registration of trademarks establishes the order of commercial signs, whose legal effect is the result of the balance between the strength of

legislation on the protection of intellectual property products and the public interest, and is also affected by the characteristics of the object and the mode of scrutiny. In determining the legal effect of registration of data intellectual property rights, it is also necessary to consider the public nature of the object and the depth of the review, and at the same time comprehensively integrate the existing data intellectual property registration practice, and comprehensively consider the registration of data intellectual property registration practices in order to build a more unified data intellectual property rights registration system.

4.1 Legal Effects of Intellectual Property Registration Procedures

In the work registration procedure, the work automatically obtains copyright from the completion of its creation, and the registration procedure is only a formal confirmation of the attribution of rights, providing preliminary evidence for the resolution of copyright disputes in judicial proceedings, and cannot produce an exclusionary effect, nor can it counter substantive defenses such as independent creation. The registration of a work is not a procedure for the creation of a right, but only has the effect of proof. This is because the act of creation is private, and the work is a non-standardized intellectual achievement. If the registration mode of granting rights is adopted, it will violate the natural attributes of the act of creation, and the registration procedure may impede the immediate protection and dissemination of the work, which is not conducive to stimulating creation. At the same time, registration of works adopts a formal review, does not carry out a substantive review of the originality of the work, and there is a mismatch between the review mechanism and the results of the review if the registration of a work is given the effect of an encumbrance.

In the patent application procedure, the patent administrative department in the acceptance and review of the patent application, that is, the grant of patent rights, patent rights are granted to produce absolute right to the world, unauthorized implementation of the patent constitutes an infringement. This is the balance between private protection and public interest, but also by the patent object has the attribute of the technical program decided. Patent protection is a practical technological innovation, its object is reproducible, and technical information once

the public is difficult to control through the fact of possession. This characteristic determines that the protection of patents must be given exclusive rights through the statutory authorization procedure, in order to stimulate technological innovation and promote technological disclosure. At the same time, the highly specialized substantive review also provides strong persuasive power for the legal effect of patent rights.

In the trademark registration process, the trademark approved by the registration process has the exclusive right, which is limited to the approved registered trademark and the approved use of goods. Without the permission of the trademark registrant, the use of the same or similar trademark on the same or similar goods constitutes infringement. The trademark registration procedure also adopts the substantive review mode to strengthen its confirmatory effect and has strong credibility. The legal effect of trademark registration is directly related to the distinctiveness and immateriality of the object, and the essence of its legal effect is the legal monopoly of commercial signs, which aims at balancing the interests of operators and consumer awareness. The core function of the trademark is to identify the source, and the immateriality of the trademark requires the establishment of legal possession through registration, and to limit the boundary of the right with the registered class and territory.

4.2 Legal Effect of Registration of Data Intellectual Property Rights

In the existing practice of data intellectual property registration, it has become a common understanding to recognize the probative effect of registration as “prima facie proof of possession of the corresponding data”, which is similar to the evidentiary effect of registration of works. However, this kind of proof effect does not have strong credibility, which not only makes it difficult to regulate the development of data transactions, but also leads to a heavier judicial burden and reduces the efficiency of the data market. In the long run, registration of data intellectual property rights should be given an effect of rights determination, that is, the right holder would hold a new type of intellectual property right upon registration.

From the perspective of the legal effects of registration of data intellectual property rights,

it is advisable in the future to give registration of data intellectual property rights an effect of rights determination. On the one hand, data intellectual property rights as a new right, lack of maturity and stability, give registration of data intellectual property rights an effect of rights determination can objectively play the effect of registration compulsion, coupled with the registry for the source of the data whether the lawfulness of whether the infringement of the rights or interests of others to carry out a substantive review, more conducive to the realization of the flow of the data of the whole process of compliance, based on which to promote the normative development of the data transaction market. (Cheng Tsao, 2023) On the other hand, the important form of data circulation lies in the effective transaction of data, giving registration of data intellectual property rights an effect of rights determination is conducive to making the data conform to the form and content required by the market transaction through the registration procedure, and also can provide more valuable data for the data market through the review of the practical value of the data, and once the efficiency of the utilization of data is improved, based on the marginal cost of the utilization of the data, the marginal benefit of the very low marginal cost is very high, promoting the circulation and transaction of data elements. Once the efficiency of data utilization is improved, based on the extremely low marginal cost and high marginal benefit of data utilization, promoting the circulation and trading of data elements can realize the value growth of data resources. (Bao, Xiaoli & Du, Wanli, 2023)

In terms of the type of rights granted by a data intellectual property registration, it is appropriate to identify it as a new type of intellectual property right in the future. On the one hand, although data have similar characteristics to traditional intellectual property objects, such as immateriality, non-competition and non-exclusivity, data do not fall within the scope of copyright objects, trademarks and patents, and the protection of data as trade secrets has major disadvantages. There are two points that need to be explained here: First, in the history of extraterritorial data protection, although there is a “double standard” protection mode of copyright protection and special rights protection for databases, (Kong, D. M., 2023) but this special right is aimed at the investment in

acquiring, verifying or presenting data, and does not put forward the requirements of data processing, which leads to the fact that in practice, the database protection in the EU is mainly focused on copyright objects, trademarks and patents, and the protection of data as trade secrets has greater drawbacks. In practice, the protection of databases in the EU mainly targets publishers' databases, and it is difficult to adapt to the development of data processing technology in the era of big data; (Lv Bingbin, 2024) Secondly, to promote the utilization and sharing of data, the essence is to realize the network effect. (Zhou, H. H., 2023) Protecting the data through trade secrets will impede the flow of data, and will not help to give full play to the positive effect of the growth of the value of the data in the flow of data, which is not in line with the policy direction of the "Twenty Data" and the value orientation of the circulation of data. And there is a conflict between the protection of data in the form of trade secrets and the principle of publicity and public trust of registration, which will affect the construction of the entire data intellectual property registration system. On the other hand, data is the fruit of creative intellectual labor of human beings, and it is a new type of knowledge product in the era of digital economy, which is not only the realistic demand of the legislation on data intellectual property rights, but also has sufficient legal support. For one thing, the intellectual property system is innovative and open, and its scope of adjustment is encompassing to data as a type of property. As a special information similar to the object of intellectual property rights such as works, inventions, trademarks, etc., data fits the open and inclusive character of intellectual property system, and can be effectively accepted by intellectual property rights in the process of expanding the scope of the object adjusted by intellectual property rights due to the emergence of new knowledge. Secondly, Article 123 of China's Civil Code incorporates "other objects prescribed by law" into the framework of intellectual property protection as an underlining provision, which leaves sufficient legal space for the introduction of new intellectual property objects such as data, and it is more convenient to invoke Article 123 of the Civil Code to grant intellectual property rights to data than to build a data property rights structure, and the legislative cost is lower. (Liu,

X., 2023) At the same time, in the legal practice of intellectual property both inside and outside the region, there are not only the legislative experience of the protection of compilation works and the protection of special rights in databases for the protection of data, but also the behavioral regulation of the Anti-Unfair Competition Law, which is closely related to intellectual property, which shows the experience advantage of placing data within the framework of intellectual property.

5. Conclusion

The current registration of data intellectual property rights is being carried out one after another in various provinces and cities, and more and more data are registered in practice, which, combined with the construction of a credible data transaction system, provides institutional safeguards for the compliant and efficient development of China's data factor market. However, although the registration methods issued by provinces and cities have built a relatively perfect registration framework based on the function of data intellectual property registration, there are still differences and ambiguities in the key provisions. In view of the fact that the decentralized registration work of the pilots will inevitably be replaced by a unified national registration of data intellectual property rights system in the future, examining the key provisions of the existing registration of data intellectual property rights from both the doctrinal and practical perspectives, and unifying the objects, review modes, and legal effects of registration of data intellectual property rights can provide ideas for the future of data rights enforcement and the unified registration of data intellectual property rights. While the path to be chosen in the future with regard to data rights will have a critical impact on data registration, the study of data intellectual property registration at this stage can also serve to guide the standardization of the data property order, thereby promoting the circulation and use of data and stimulating the production and innovation potential of data elements.

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