

Conflict and Resolution of Data Property Ownership under Structural Separation

Linqi Li, Yabin Wang

School of Law, Henan Normal University, Xinxiang, 453007, China.

Abstract

The key to exploring the construction of a structured separation system for data property rights is to clarify the ownership of data property rights. Data property rights have been recognized as a new type of property rights. Based on the source and composition of data, personal data, corporate data, and public data have become the main factors determining data property rights, and there is no consensus on the ownership of data property rights. Due to the content and flow of data, conflicts of rights between different data types are inevitable. The construction of a structured division of data property rights system needs to start from the premise of protecting personal information rights, with data processing as the core and reasonable use as the boundary to determine the principle of resolving the ownership of data property rights. By introducing Locke's labor property rights theory and Coase's theorem, the ownership of data property rights is indeed fixed within the overall environment of data circulation and utilization, in order to resolve property rights conflicts between data subjects and clarify the rights content of structured division of data property rights, Reasonably safeguard the rights of all data subjects, and establish a sound structured separation system for data property rights.

Keywords

Structural Separation of Data Property Rights, Ownership of Data Property Rights, Resolution of Conflicts.

1. Introduction

Since the release of the "Opinions on Building a Data Infrastructure System to Better Play the Role of Data Elements" (hereinafter referred to as the "Twenty Data Articles"), the goal of building a data property rights system has received numerous practical and theoretical attention. Data property rights, as a product of the data age, reflect the value of digital development in the era, while also endowing data and data rights with more contemporary connotations. As a production factor that can bring value to society, data, as a non property content, contains an unprecedented property nature[1].The enjoyment of rights is a prerequisite for the exercise of the rights subject, as well as the basis for the rights subject to protect their own rights and obligations not to infringe on the rights of others. It represents the active and creative exertion of the rights subject and the enjoyment of material and spiritual interests[2].The market value and role of data elements lies not only in the active initiative of data subjects but also in the enjoyment of data rights. In the process of rapid integration of data into market production, circulation, and utilization, disputes over the ownership of data rights have become a major obstacle to the development of the digital economy. For example, in the first national big data ownership case and the first public data unfair competition case tried by the Hangzhou Internet Court, the plaintiff Taobao Company and the defendant Meimei Company have resolved the dispute over the rights they have to develop and operate data products[3],This is a microcosm of the unclear ownership of data property rights. The innovative exploration of the structural separation system of data property rights in the

“Twenty Data Articles” is sufficient to demonstrate the importance of data property rights for the development of data elements. The latest “Data 23 Regulations” issued by Beijing on June 20, 2023 also prioritize the implementation of data property rights and income distribution systems, demonstrating the importance of data property rights. The existing legal system does not clearly define the ownership and content of data property rights, and the legal issues arising from data ownership disputes urgently need to be resolved. Therefore, it is necessary to analyze the construction of a structural division system for data property rights from the perspective of ownership.

2. Theoretical Disputes over the Ownership of Data Property Rights

Data property rights, as a product of the development of the digital age, have become an important part of the development process of the digital economy. Article 127 of the Civil Code affirms the property value of data through the form of the Basic Law. Based on the interpretation of the text, this provision provides for the juxtaposition of data and network virtual property. The property value of network virtual property itself affirms the property value of data, providing a foundation for the property characteristics of data property rights. The “Twenty Data Articles” clarify the connotation of the digital economy, and data, as a new production factor alongside land, labor, and other factors, is the unique difference between the digital economy and other economies.

2.1. Debate over the Definition of Data Property Rights

Data property rights include two parts: data and property rights. As a frequently used proprietary term in the fields of economics and law, property rights are not clearly defined[4]. However, in practice, scholars still define property rights from different perspectives. According to Yu Zhongning, property rights are a plural concept defined by the national system with exclusive ownership as the core, which can be decomposed into the sum of responsibilities, rights, interests, and rules such as ownership, possession, use, and profit rights[5]. Professor Wang Liming Directly Identifies Property Rights as Property Rights[6]. The Decision of the Central Committee of the Communist Party of China on Several Issues Concerning the Improvement of the Socialist Market Economy System (hereinafter referred to as the Decision) at the Third Plenary Session of the 16th Central Committee of the Communist Party of China elaborated on the relationship between property rights and ownership, and clarified that property rights include various types of property rights such as property rights, creditor's rights, equity, and intellectual property. It can be clearly stated that pure data may not necessarily have property value, but data property rights are endowed with the connotation of property rights due to the connotation of property rights, and data property rights are connected to data property rights. As Rousseau said, only after established property rights can they become true rights[7].

According to the characteristics of data circulation and use, data property rights can be understood as the rights enjoyed by data subjects regarding their property interests during the process of data generation, circulation, and use. Only in this way can the combination of data and property rights be reasonably explained. According to the definition of property rights including property rights, creditor's rights, and other types of property rights in the “Decision”, it can be considered that data property rights should include property rights based on data, creditor's rights, intellectual property rights, and other property rights. Rather than being a new type of property rights, it should be a special property right that is independent of ordinary property rights. Only in this way can data property rights respond to various forms of rights that arise in economic development.

2.2. The Dispute over the Ownership of Data Property Rights

Rights can only play their role if enjoyed. The determination of ownership is the key to the enjoyment of rights, and the theory of ownership of data property rights is still unclear. The "Twenty Articles of Data" proposed the division of rights among data holding rights, data processing rights, and data product management rights, without specifying who the rights should belong to. Its purpose is to clarify the principles and mechanisms of data property innovation. However, in the face of continuous disputes over data ownership, frequent infringement of rights, and unclear ownership of data property rights in practice, it will inevitably hinder the construction of data property rights systems and the role of data elements. Scholars have different judgments on the ownership of data property rights based on different starting points in theory. Yan Lidong believes that the data that can generate value is data that has been cleaned and processed. Based on labor endowment, data property rights should mainly be enjoyed by data owners[8]. Zhang Chi also believes that rights do not belong to data producers but to data collectors and miners[9]. Liu Xinyu divides the subject into users and data operators, and believes that users have data ownership, while operators have data management and asset rights[10]. From the perspective of enterprise data, Ma Yufei believes that the property rights of enterprise data are based on the use rights under the user information rights authorization contract[11]. Of course, there are also scholars who analyze the ownership of data property rights from the perspective of raw data and secondary (derivative) data[12].

From different perspectives of scholars, it can be seen that whether it is claiming ownership of data owners or dividing ownership subjects and data content, the core issue is how property rights should be determined and by whom they should be enjoyed. Since data property rights are data property rights, it is necessary to analyze whether data has property value from the perspective of property rights. According to the core idea of Locke's labor theory, the problem of determining property rights can be solved, which is whether there is labor[13]. This coincides with Marx's recognition of value, which reflects social necessary labor and objective usefulness[14].

3. Conflict of data property ownership

The "Twenty Data Articles" define the scope of data subjects, including public data, enterprise data, and personal data. From the perspective of the relationship between the three, there is inevitably a crossover in data content. On the one hand, enterprise platforms collect personal data for desensitization, processing, and other purposes to form data with commercial purposes for enterprises. On the other hand, for data of a public nature that is collected and generated by organs and units in the process of performing public services or exercising responsibilities, this public data not only involves personal data, but also enterprise data. Therefore, the content conflict of the three types of data directly affects the determination of data property ownership.

3.1. Conflict between personal data and corporate data

The conflict between personal data and corporate data is the most common and typical conflict. Personal data, as the raw supply content composed of data sets or databases, plays a fundamental role in the operation and marketing development direction of enterprise platforms in the development of the digital economy. Taking existing mobile software or mini programs as an example, when using or receiving a service, there are two extreme situations: accepting the service, agreeing to the service agreement, and not accepting it. In this case, if the user uses or accepts the service, they need to use "consent" as a prerequisite[15]. In the future, we will obtain information such as the user's avatar, nickname, contact information, geographic

location, and even obtain user photo albums and address books. If you choose not to accept the service, it will automatically exit or become unusable. Whether in terms of the formation process of enterprise data or the collection content of receipts, the aggregation of original personal data is the primary link in the formation of data value, thereby achieving data value[16].

In the process of data collection, enterprises inevitably involve personal privacy data. Such privacy data is based on authorized use, and the premise for establishing enterprise data is the absence of personal information and public interest data. Therefore, the formation, desensitization, and cleaning of enterprise data are essential. However, the specific degree and boundaries of desensitization and cleaning depend entirely on the purpose of the enterprise's use of the data. Therefore, in the process of utilizing enterprise data, the protection of personal information and privacy rights is a prerequisite for the utilization of enterprise data. The "Twenty Data Articles" clarify the operating mechanism of the "three rights separation" of data property rights. There are still conflicts and ambiguities in the determination of the scope of data ownership rights and the subject of data profit rights in the empowerment and holding of personal data and enterprise data.

3.2. Conflict between personal data and public data

Personal data includes general personal information and sensitive personal information, both of which require consent as a prerequisite for disclosure. Even if there is an emergency situation without personal consent, the notification procedure should be followed after the emergency situation is eliminated. Compared to general information, the collection, processing, and use of sensitive information require stricter requirements. According to the content of the data, on the basis of the coexistence of personal data and public data, it can be divided into non-public data and public data. Non public data includes data that carries personal information and data that does not carry personal information. Similarly, public data also includes data that carries personal information and data that does not carry personal information[17]. Due to the relatively small impact of non-public data on personal data, the focus of this discussion is on the carrying content of public data. Publicity means that it is publicly available, so the conflict between personal data and publicly available data, and identifiability, is the key.

Regarding identifiability, the Civil Code and the Personal Information Protection Law have clarified it from different degrees and perspectives, including not only the name, date of birth, ID number, biometric information, address, phone number, email, health information, whereabouts information, etc. of natural persons, but also religious beliefs, specific identities, medical health, financial accounts, etc., that is, whether others can access public data content, Directly locate or determine the original provider of data. Because once identifiable personal data is made public, personal information and privacy rights can be attacked at any time, and the fundamental rights enjoyed by citizens are violated. Therefore, as the original carrier of publicly available data, whether the publicly available data can meet the standards for protecting individual rights, and thus there is an irreconcilable contradiction between the scope of rights of individuals and the subject of publicly available data regarding the data content and the remedies for rights infringed upon.

3.3. Conflict between enterprise data and public data

The difference between enterprise data and public data is that enterprise data is data collected by enterprises in the production and operation process or obtained from third parties for their own use. Public data, due to its public nature, is more of a data obtained by government agencies in the process of fulfilling management and service functions, including public data and official data[18]. The two are fundamentally different from personal data in terms of content. As mentioned earlier, personal data emphasizes identifiability, while corporate data and public data emphasize control over data[19].

The conflict between public data and enterprise data lies in the fact that there is a certain degree of overlap between the content of public data and enterprise data. Simply put, government and other departments have the right to access enterprise data. Therefore, how should the data collected by the enterprise with a public interest nature be transformed, and what kind of data rights do they have for such data enterprises, such as treating the enterprise as a data holder, So whether it constitutes an infringement on the ownership rights of government and other departments of public data, whether the data ownership rights and data processing and use rights of enterprises can be enjoyed on this basis, and whether the collection and use of data are based on the original data collection authorization or consent of enterprises and individuals, that is, whether it goes beyond the scope of contract relativity and directly affects the data ownership rights of enterprises or government and other public management departments The right to use and even the right to benefit from the use of data.

4. Conflict Resolution Principles for Data Property Ownership

The “Twenty Data Articles” clarify the authorization and confirmation mechanism for personal data, enterprise data, and public data, explore the structural division system of data property rights based on the source and generation characteristics of data, and establish a data property rights system. Whether it is personal data, enterprise data, or public data, they are all based on the perspective of data classification. The diversity of data usage and the nature of data between different entities intersect and transform each other, resulting in conflicts in determining data rights among the aforementioned data. Clear property rights are the foundation of data transaction and circulation. Determining the ownership of data property rights is to protect the data interests of the data subject, and more importantly, to protect data security. The diversity of data subjects requires that the attribution of data property rights should take into account the interests of data stakeholders. Therefore, the determination of data property rights should follow certain principles, starting from the protection of personal data rights, with data processing behavior as the core of property rights determination, while maximizing the value of data, and conducting data circulation and transactions within the scope of reasonable use.

4.1. On the premise of protecting personal information rights and interests

The rapid development of the digital economy adheres to the principle of people's interests, and the output and circulation of personal information are facing unprecedented speed. At the same time, there are also cases of infringement of personal information rights during the circulation of personal data. Whether it is the leakage of personal information or the infringement of privacy rights, they all reflect the drawbacks of the rapid development of the big data era. Personal data, as the raw supply of enterprise data and public data, carries a large amount of information related to personal life, learning, social interaction, etc. Through the collection, integration, and analysis of data, data processors can easily analyze individuals' social habits with the support of technical means, and then provide accurate data services.

The European Union, as a region that plays a crucial role in global data legislation and development, attaches particular importance to the protection of personal information. In China, whether it is the Personal Information Protection Law or the Data Security Law, the protection of personal information rights and interests is elevated to the level of national will protection in the form of legal provisions, which is a typical manifestation of the balance of interests between data sources and holders[20].The “Twenty Data Articles” have made it clearer to increase the protection of personal information, in order to establish and improve the authorization mechanism for personal information data rights, and fully guarantee the security of personal information data and privacy. Therefore, whether it is necessary for enterprises to collect and process personal data for production and operation, or for government management departments to obtain data during the performance of management

or service processes, the protection of personal information rights and interests needs to be a prerequisite for the circulation and use of data. In this way, the ownership of data property rights can be reasonably determined by combining non “identifiability+labor”.

4.2. Centered around data processing

The core content of data property rights lies in the rights of data in circulation and use. Static data, although of certain value, cannot fully utilize its value. Whether it is personal data, enterprise data, or public data, only in the process of use and circulation can the value of data aggregation be realized, and the economic purpose of data subjects using data can be achieved. The prerequisite for all of this is data processing. The Data Security Law and the Personal Information Protection Law confirm data processing behavior, because any type of data processing behavior involves the other party, which will generate corresponding legal relationships and directly affect their rights and obligations. If the data is not subjected to any desensitization, integration, deletion, etc., the common and characteristic contents of the data cannot be used by the data subject, and thus cannot be targeted for data behavior. At the same time, the direct transaction and use of data that has not been cleaned, desensitized or otherwise processed will inevitably infringe on the information or privacy rights of the data subject, and will inevitably affect the stable development of the data economy.

Data processing, as an important part of determining the ownership of data property rights, is directly reflected in the labor and transaction costs. Taking enterprise data as an example, enterprises obtain personal data information through authorization, informed consent, and other means for commercial use. Enterprises inevitably need to integrate and process the obtained data to achieve the standard of not having personal information and public data. Only in this way, Only enterprises can have corresponding data rights to data, which possesses enterprise characteristics and commercial purposes. At the same time, through processed data, it can be presented in the form of data packets or bundles, and in data transactions or circulation, data advantages can be fully utilized.

4.3. With reasonable use as the boundary

The “Twenty Data Articles” clarify the data “three rights separation” operation mechanism for data resource ownership, data processing and usage rights, and data product management rights. From the expression of this opinion, it can be seen that the construction of the data property rights system does not clearly define independent data ownership, but emphasizes the value concept of data reuse. The reason for this is that the fixed nature of data ownership lacks the circulation efficiency of the market, and it cannot unleash the value of data, that is, data is like water flow[21], Only in the circulation and use of data can it exert its due value.

The use of data is the key to determining data ownership, and in the use of data, there needs to be a clear boundary, that is, reasonable use. The Data Security Law regards reasonable use as one of the conditions for data security. Whether it is enterprise data or public data, it is required to use data on the basis of protecting personal privacy and public interests. The Personal Information Protection Law regards public interests as one of the conditions for reasonable use. The well-known cases of Sina Weibo v. Maimai[22], Sina Weibo v. Yunzhilian[23], and Alibaba Chengxin Tong[24] are all disputes arising from the unreasonable use of data. Once the use of data exceeds a reasonable limit, it may cause more or less damage to the rights and interests of other data subjects. Determining the data behavior of the data subject within a reasonable limit can accurately determine the rights enjoyed by the data subject, such as data holding, data processing and use.

5. The Separation of Rights under the Conflict of Data Property Ownership

In the development of the data economy, the issue of ownership has always been a key topic of discussion among scholars. Whether it is granting ownership to data subjects or data usage rights to data subjects, the ownership of data is ultimately uncertain. Scholars have conducted research from different perspectives, advocating that data property rights belong to data owners[25], Some also advocate that individuals have personal rights over data[26].Some scholars believe that the property rights of enterprise data are based on the right to use data obtained through contracts or authorizations[27], On the contrary, scholars suggest that the ownership of data rights should be enjoyed by data collectors and miners, rather than data producers[28].Of course, from a global perspective, data ownership must first confirm the personal information rights enjoyed by the data subject, and then determine the property rights of the data processor. Otherwise, the infringement of personal information and privacy rights directly deviates from the original intention of the development of data elements[29].From different perspectives of research, the dispute over data ownership has not yet been resolved. In the face of ownership disputes, the "Twenty Articles of Data" innovatively proposed a structural system of "three rights separation" of data property rights based on personal data, enterprise data, and public data. However, the rights subject, content, and other rights of the data subject were not clearly defined and left blank in the opinion, It is inevitable to encounter confusion in specific applications, which is not only detrimental to the clear ownership of data property rights, but also to the normal circulation and utilization of data, affecting the stable operation of the digital economy. Therefore, clarifying the rights content of the structural division of data property rights is an important part of addressing legal issues in the process of accelerating the development of the digital economy.

5.1. The "Three Rights Separation" System of Data Property Rights

The three rights of data resource ownership, data processing and usage rights, and data product management rights proposed in the "Twenty Articles of Data" are defined based on the source and generation characteristics of data, in the process of data production, circulation, and use. The proposed structural division of data property rights is referred to as the "three rights division" of data property rights in both theoretical and practical circles. The term "separation of three rights" was first proposed for the reform of the land system, which refers to the separation of collective land ownership, land contracting and management rights, and land management rights. From the expression of the three rights division of data property rights and the three rights division of agricultural land, it seems that both have the existence of ownership and benefits. However, as data is a production factor with the same status as land, the three rights division of agricultural land and the three rights division of data property rights have similarities and unique connotations of their own. Therefore, taking the division of agricultural land rights as a reference, in the process of analyzing similarities and differences between the two, the ownership rights of data resources, data processing and use rights, and data product management rights of the structural division of data property rights are clearly defined and analyzed, in order to activate the value of data elements.

The similarities between the "three rights separation" of agricultural land and the "three rights separation" of data property rights lie in that, firstly, both are products of social and economic development. The "three rights separation" of agricultural land is based on the original rural land collective contracting responsibility system, and the reason for institutional reform is because in the face of the increasing phenomenon of land management rights transfer due to the flow of rural population and idle agricultural land, in order to adapt to the changes and development of rural economy, The Opinions of the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council on Improving the Separation of Rural Land Ownership Contract Rights and Management Rights clarify the "Three

Rights Separation” of agricultural land[30]. Similarly, the structural “three rights separation” of data property rights is a product of the development of the digital economy in the digital era. As a new type of production factor, data faces the diversification of data subjects and data content. Under the concept of rights first, clarifying the ownership of rights is a trend and inevitable choice. Secondly, both involve different subjects. Under the “three rights separation” of agricultural land, there are collective land owners, land contracting rights holders, and land management rights holders. The contracting rights holders contract out the land through leasing and other means, and a third party carries out land management. Under the premise of ensuring the contracting rights, the land management rights have undergone subject changes. In the process of data collection, circulation, and utilization, there are also different entities based on different classifications, including data generators, data collectors, data processors, etc., which in turn generate data classification for personal data, enterprise data, and public data. For the rights of different data subjects, the holders of data resources essentially have ownership rights. Data subjects such as enterprises have the right to process and use personal data collected according to contracts or authorization agreements, and even conduct in-depth research and development on the collected or authorized data through data analysis, desensitization, cleaning, and other processes, forming data products with industrial value. To carry out market circulation, the “three rights” of data are reflected in the utilization of data circulation.

As the saying goes, there are no two identical leaves in the world, and there is also a fundamental difference between the two. The “three rights separation” of agricultural land is a clear division of ownership, and the contractor and the management right holder have a natural collective ownership and personal binding relationship based on their collective nature. Whether it is an individual who serves as a data source, or a company or government management department that collects, summarizes, and analyzes data, there is no obvious connection in their identity. Government management departments may also collect information based on public management authority, but there is a relative equality between individuals and enterprises, and there is a balance between individual access to services and enterprise data collection. Therefore, for the ownership of data resources, the premise of ownership is that the data resources should exist as usable resources, and the resources should be valuable in order to have the possibility of ownership. This is consistent with the provisions on resource ownership in Chapter 5 of the Property Code of the Civil Code. The personal information itself is only used as a basis for identifying specific objects. Personal data is in one's own hands and has no value, so it cannot be called a resource. Based on this analysis, individuals do not have the right to hold data resources. Correspondingly, the status of the data producer and ownership of the original data still exist, and they enjoy corresponding personal information protection and privacy protection in accordance with the law. This is also the reason why personal information protection should be prioritized in data circulation and utilization, which is the foundation of personal personality in the data world[31]. For the right to use data processing, the premise for the ownership of the right to use it is the existence of data processing behavior. Regarding the source of data being collected by oneself or obtained through contracts or authorized licenses, we will not discuss it temporarily. The focus is that unprocessed data is in the hands of enterprises, governments, etc., and cannot play the role of market operation and public affairs management by government management departments. Unprocessed data has the same valuelessness as data held by individuals themselves, so processed data, whether it is data cleaning, desensitization, or data analysis, already has the purpose of enterprise operation or public management in application. Therefore, the right of data processing and use enjoyed by data subjects lies in their qualification to process data. On the other hand, the data subject enjoys the right to use the processed data on the basis of data processing, which is the inherent meaning of the right to use data processing. As a typical result

of data circulation and utilization, the generation of data products can be said to be a key content in the development process of the data economy. It represents the original intention and results of data utilization, and is a direct reflection of the labor of data subjects. Therefore, the enjoyment of data product management rights is based on the research and development and output of data products. As a product with market value, data products, like ordinary commercial goods, can circulate in the market and bring benefits to the data product output entities. This is the process of enjoying data product management rights. Of course, due to the circulation of products, data subjects can not only obtain data profits through their own operations, but also carry out a series of legal actions such as transfer, rental, authorization, licensing, etc. to maximize the value of data products within the legal scope and enjoy the property benefits they bring.

5.2. Extension of Data Property Rights

After the release of the “Twenty Data Articles”, scholars on data property rights, whether from the perspective of data holders[32],Propose configuration plans for enterprise and public data property rights[33],The research on the legal implementation of the “separation of three powers” is constantly deepening. However, explicitly stating the above three rights does not mean that the data subject only enjoys that right. While listing the ownership rights of data resources, data processing and usage rights, and data product management rights, the “Twenty Articles of Data” also adds the word “etc.” after it, meaning that as the process of data development accelerates, data property rights should not only include three property rights. The concept of 'wait for words' is not only a basic design for the development of data, but also a forward-looking configuration for the future development of data. Based on different forms and contents of data flow, targeted and practical property rights that reflect the value of data are configured, which is the best embodiment of the structural division of data property rights. The “Twenty Articles of Data”in the “Exploring the Structural Separation System of Data Property Rights” section corresponds to the “Establishing and Improving the Legal Rights and Interests Protection System of All Participants in Data Elements”below. This section explicitly respects or protects the rights and interests of data sources, data processors' independent control rights, and data processors' rights to use data and obtain profits, Correspondingly, regarding the right to operate data products, the emphasis is placed on the data rights brought about by licensing behavior, which is consistent with the connotation of the data product profit rights mentioned earlier. These rights affirm a series of data behaviors of data sources and data processors from a legal perspective and a high degree of rights granting, forming a strong complementarity with the “three rights separation”data property structure. Therefore, the diversification of data usage forms and the complexity of data participants have led to varying rights and interests enjoyed by data subjects in different stages of data circulation and utilization during the constantly changing and developing process of data property rights. Only in this way can the deep significance of the structural separation system of data property rights be reflected.

6. The Conflict Resolution Path of Data Property Ownership

In the era of digital economy, the property value of data is constantly being explored, and data is playing an increasingly important social value. In the market-oriented configuration of data, the issue of data ownership directly determines the market labor value of social entities and the usefulness of data behind the circulation, use, sharing, and benefits of data. Nowadays, national policies and local legislation in various regions have responded positively to issues such as data property rights, data confirmation, and data ownership. Whether it is the ownership, management, collection, use, and profit rights specified in the Xi'an Municipal Government Data Resource Sharing Management Measures, or the personal and property

rights of data specified in the Shenzhen Special Economic Zone Data Regulations, they are in line with the three rights separation data rights operation mechanism specified in the "Data 20 Articles". According to the guidance of the "Twenty Articles of Data", there are two types of classification situations: data classification and data ownership classification. The resolution of data property ownership should go beyond data classification, combine labor, value, and output cost, and determine the ownership of data property from the perspective of data circulation, rather than simply defining ownership based on different data subjects. Therefore, based on the diversification of data subjects, the diversification of data content, and the ambiguity and overlap in determining data ownership, it will inevitably have an impact on the property rights and interests of data subjects. In response to conflicts between different data types, the introduction of Locke's property rights labor theory and Coase's theorem provides a solution to the problem of data property ownership on the basis of data circulation and utilization.

6.1. The Theory of Labor Empowerment Resolves the Ownership of Data Property Rights

As a production factor that places equal importance on land, labor, technology, and other factors, the property value of data has been determined. The data owned by a single entity has a certain degree of property value, which is beyond doubt. However, data that exists alone does not have high commercial property value. Only after data is processed and integrated can the overall value advantage be realized[34]. Locke explained the theory of labor property rights in "The Theory of Government", believing that labor makes everything have different values[35]. The prerequisite for the emergence of property rights is the use of labor. It should be clarified that the object of labor advocated by Locke is based on natural resources in a "natural state" or "shared state", which is the starting point of Locke's property theory[36]. On the surface, it seems that data property rights cannot be confirmed through Locke's theory of labor property rights. Data property rights fundamentally do not conform to the prerequisite element of natural resources. However, from Locke's list of meat, beverages, and other natural supplies that maintain survival, the only common characteristic they exhibit is that they have property value, based on different times, Property objects have different forms and contents of expression, and in terms of intellectual property rights, scholars have used Locke's labor property rights theory to argue for the legitimacy of rights[37]. As a new type of property object, data can also be applied to the proof of rights empowerment, in order to achieve the unity of labor value and social value. In addition, the complexity of the subjects involved in the process of data circulation and utilization is consistent with the value orientation shown by the "shared state". Therefore, the confirmation of data property rights should be based on Locke's labor property rights theory.

According to Locke's theory of labor property rights, combined with Marxist political and economic views, value lies in the socially necessary labor and usefulness of goods[38]. As a result, data subjects put in labor in data creation, data product output, and other data behaviors, and corresponding data subjects enjoy data property rights for different data behaviors. Specifically, starting from the generation of personal data, enterprise data and public data are disclosed and circulated through procedures such as collection, aggregation, integration, and desensitization. During this process, as the generation of personal data is based on inherent conditions, it is possible to clarify the content of personal data without the need for labor. Therefore, according to the theory of labor property rights, individuals do not enjoy the property rights of the original data during this process. However, they still enjoy the ownership of the original data, as well as data privacy, data modification, deletion, and other data rights. However, if personal data generates profits through circulation and use, This benefit should only be obtained on the premise that it is not desensitized or identifiable, and does not infringe on personal information and privacy rights. Data property rights are not enjoyed at this stage.

Furthermore, due to the labor of data subjects involved in enterprise data and public data, the enjoyment of data property rights is undoubtedly determined. Under the division of data ownership, use rights, and profit rights, data property rights are determined based on data behavior and data products.

6.2. Maximizing Value and Resolving Data Property Ownership

Coase's theorem holds that the transaction cost is zero, and regardless of the arrangement of property rights, resources can be optimally allocated. Once the transaction cost exceeds zero, property rights will have an impact on the efficiency of economic operation. That is to say, for those who use resources efficiently, property rights will be determined by whom[39]. Property rights play a fundamental role in optimizing the allocation of resources and enhancing market efficiency. The original intention and purpose of market economy operation is to maximize benefits and fully utilize resources effectively. There are costs to any output and input, whether it is human, material, or financial resources. The determination of data property ownership depends on the interests of different entities, and the answers are naturally different. This is also why the Coase theorem is introduced into the definition of data property rights. As is well known, transaction costs cannot be zero, especially in the definition of data property rights, it seems that the Coase theorem cannot be applied. However, defining property rights inevitably incurs transaction costs. When the transaction cost is zero, the standard for defining property rights is data usage efficiency. If the natural transaction cost is greater than zero, the transaction cost, i.e. maximizing value, should be used as the defining standard. Combining the two different situations mentioned above, when there are conflicts and intersections in the division of property rights between different data, using maximization of value and utilization efficiency as the criteria for determining property rights can effectively separate the operation of rights, which is a direct reflection of resource allocation.

Data as an important resource known as "oil and diamond mines of the 21st century"[40], In the arrangement of property rights, it is necessary to follow the guidance of Coase theorem. Taking the operation of data property rights for enterprise data and public data as an example, the ownership of property rights is determined based on different data scenarios. If enterprise data is submitted and reported in accordance with government administrative management requirements, the national government will use and process the above-mentioned platform enterprise data for the public interest. From the perspective of transaction costs, the output of this data by the enterprise platform will inevitably incur transaction costs, but based on the value of public interest, Therefore, the government and the state should be granted corresponding data rights, that is, while enterprise platforms enjoy the right to hold or own data, the government and the state also have the right to use the data. The overlapping rights between multiple entities regarding certain data content will not lead to infringement of the rights of data entities, but rather based on the optimization of resource allocation to maximize value and efficiency.

6.3. Data circulation and utilization as the key to data empowerment

Only by activating data can it effectively leverage the positive role of production factors. Practice is the only criterion for testing truth, and similarly, the circulation and utilization of data are a key link in data behavior. Only during the circulation and utilization process can data be discovered by the data subject for its value, and the property characteristics of data can be fully tested. Data subjects, whether targeting raw data or derived data products, will never be able to exert data value in their own hands. On the contrary, through the circulation and use of data, different data subjects have different data tendencies, and the channels and directions of data circulation and utilization will also be different, resulting in different stages and processes of data subjects' ownership of current data. Otherwise, The data subject only enjoys the ownership or ownership of the data, which cannot be converted into the maximum benefit of

data revenue and realize the right to data revenue. As analyzed above, defining property rights requires attention to the efficiency of data usage, and only the circulation and use of data can determine the level of usage efficiency. Correspondingly, the higher the efficiency of data usage, the more fully the value of data is utilized, and the clearer the definition of property rights.

The circulation and utilization of data, as the key to data empowerment, is consistent with the connotation and direction of the operational mechanism of data ownership, data usage rights, and data product management rights in the "Twenty Data Articles". Simply put, data resources are in the hands of the data subject, and pure data ownership is determined. Data use is limited to the internal part of the data subject, and closed data circulation cannot meet the requirements of rapid development of the digital economy. Without circulation and use, data products cannot flow to the market, and the right to operate data products loses the prerequisite for their existence. Therefore, circulation connects the data subjects in various stages and achieves data property benefits through data utilization based on authorization, contracts, or public functions. Similarly, in terms of data product management rights, data caters to market development changes and needs, and has targeted research and development and promotion of data products. Based on labor property rights theory and Coase theorem, data subjects enjoy product management rights. It should be clarified that although the property rights operation mechanism of the "three rights separation" of data property rights has been confirmed, the transfer rights, income rights, etc. based on data property rights still run through it. Only in this way can a data property rights system with Chinese characteristics be constructed while clarifying the ownership of data property rights.

7. Conclusions

As data of production factors, the ownership of data property rights is a fundamental issue in the development of the digital economy. Based on different entities, personal data, enterprise data, and public data are classified. The intersection between data contents determines that conflicts of rights may arise while determining the data rights of different data entities. Therefore, it is necessary to find an effective path to determine the ownership of data property rights. Based on labor property theory and Coase theorem, connect the data rights of different data subjects in data circulation and utilization. Due to the fluidity of data, there is varying degrees of convergence of data property rights between data subjects, which does not affect the confirmation of data property ownership. On the contrary, it can provide a more comprehensive and three-dimensional analysis of the true meaning of data property rights. At present, the digital economy is booming, and the legal issues that exist in the development of the digital economy cannot be resolved by resolving the conflicts of data property ownership. Only by integrating data ownership, data processing, data utilization, data sharing, etc., can the content of data property rights be clearly defined under the guidance of the construction of a structural division system of data property rights, in order to achieve the synergy between data development and data rights protection.

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