

Research On the Accounting Recognition and Measurement Problems of Enterprise Data Assets

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ABSTRACT

The leap from data resource recovery to data asset is not only an important node for the development of digital economy but also an opportunity for the development of new quality productivity. Data assets into data circulation broaden the channel, and optimize the market allocation of data elements by clarifying the boundary of data property rights and reducing data transaction costs. Data assets have not only the universality of assets, but also the particularity of data elements. Clarifying the definition of enterprise data assets is the proper meaning of realizing data value. The three dimensions of "creation-control and transaction" respectively refer to the creation of data property rights through data registration, data intellectual property registration and other ways, the reduction of enterprise data transaction costs through policy formulation and "dynamic control", and the positive circulation of enterprise data circulation by optimizing the data income distribution system. The three dimensions bridge the gap between data rules in different fields, ensure the consistency of data policies, and then break the shackles of data transaction, and give full play to the multiplier effect of data elements.

KEYWORDS

Data assets; New quality productivity; Property theory; Co-vote

1. INTRODUCTION

The Overall Layout Plan of Digital China Construction issued by the CPC Central Committee and The State Council points out: "Release the value potential of commercial data, accelerate the establishment of data property rights system, carry out research on data asset valuation, and establish the distribution mechanism of data elements according to the value contribution." Data assets cannot be separated from the organic unity of market role and government role. On the one hand, it is necessary to play the decisive role of data trading market in resource allocation; on the other hand, it should emphasize the optimization of government functions, further promote the modernization of governance system and governance capacity, and constantly strengthen the normative role and market supervision role of data trading market order. Please keep the second copy of your manuscript in your office. When receiving the paper, we assume that the corresponding authors grant us the copyright to use the paper for the book or journal in question. Should authors use tables or figures from other Publications, they must ask the corresponding publishers to grant them the right to publish this material in their paper.

Data can generate value. Data is the carrier of information, a computable record [1]. Data is characterized by large total amount, high accuracy, fast production and many types [2], which helps to accelerate the cultivation and formation of new quality productivity. New quality productive forces represent the evolution direction of advanced productive forces and contribute to the high-quality development of the digital economy. At the subjective level, judging whether the data is valuable is

determined by the data trading price in the data trading market. The subject of data assets is the enterprise. The enterprise evaluates the value of the data according to the actual production and operation needs, and only the valuable data must be protected. Data is what economists call an "experience product", and buyers must try the product every time to evaluate it [3]. From an objective level, data value comes from labor. The value of data is determined by the socially necessary labor time of production and reproduction. Under the average production level of society determined by the level of productivity development and intelligence, an average socially necessary labor time is formed [4]. Enterprises have invested a lot of manpower, resources and capital in the data collection activities. As a major contributor to data, if enterprises do not actively manage data, then these data lose their meaning [5].

Not all valuable data can be asset. The Interim Provisions on Accounting Treatment of Enterprise Data Resources (hereinafter referred to as the Interim Provisions) provides corresponding guidelines for the transformation of data assets, and responds to the needs of enterprise data assets. Its internal value orientation is to reflect the real situation of data assets and avoid the formation of asset bubbles. This paper first starts from the characteristics of data and combined with the relevant theory of asset definition to improve the enterprise data asset definition, Enterprise data assets are those legally controlled by a particular enterprise, Formed by past transactions or matters, Data property rights that are expected to bring economic benefits to enterprises; Secondly, it is clear that the actual exclusive control data is not enough to meet the requirements of data assets, A "dynamic control" needs to be developed at the policy level to reduce data transaction costs; Finally, from the perspective of data trading, With the data revenue distribution as the dominant factor, Summarize several ways to reduce data transaction costs, Promote the market-based allocation of data elements, Enabling the development of new-quality productivity."Confirmation" triple dimension is not parallel horizontal distribution, but a kind of longitudinal distribution based on the fifth scientific paradigm: first create enterprise data assets, and then realize the enterprise to the "dynamic control" of the data assets, eventually to reduce the way of the transaction costs, promote the development of data trading market, realize the value based on "data elements".

2. DEFINITION, CONNOTATION AND TYPE ANALYSIS OF DATA ASSETS

2.1. Data and Data Resource Analysis

Data assets come from data resources and data. To analyze the definition and connotation of data assets, we should first start the analysis from the definition of data and data resources.

Data is defined in the Data Security Act as any record of information in an electronic manner, etc. Some studies believe that to discuss the nature of data, it involves the philosophy of science, and it needs to explain the level of the relationship between data and information, but it does not give a clear answer. Data is a computer term, which can be formed by logical induction of objective things, the results and observation of certain facts. It can be analog data or digital data. Image, sound and other data with continuity are analog data, and symbols and words with discrete nature are digital data. Both simulated and digital data are expressed in two binary units of 0 and 1 in the computer and network system. Data resources are divided into both a narrow sense and a broad sense. In the narrow sense, data resources refer to the data accumulated in enterprise operation, such as customer behavior; besides data itself, broad data also includes computer and communication technology, involving the whole process of data generation, processing, dissemination and exchange.

It can be seen that data resources have a wider range than data, and data resources contain data. Since the development of informatization, data resources can be generated both internally and externally. The data resources generated within the enterprise must include the data itself and the whole process of data generation; the data resources purchased by the enterprise can only include the data itself or

computer and communication technology. Data resources are not necessarily just data, but data must belong to data resources, that is, data is a subset of data resources. To become an asset in accounting, the data resources must also meet the relevant definitions and recognition conditions of the asset.

2.2. Definition and Connotation of Data Assets

The definition of data assets is gradually formed in various development stages such as digitalization, networking and intelligence. The American scholar Richard Petersen was quoted in 1974 Data assets (Date Assets) are defined as securitized financial products held by enterprises. Although the definition is quite narrow due to the limitations of The Times, the concept of data assets is introduced for the first time. With the development of the information age, the research on the definition and connotation of data assets is also expanding and deepening. In his 2009 book Data Assets: managing Data on Business Success, Tony Fisher gave an in-depth analysis of the drivers of economic growth outside the real economy, Recognizing the contribution of data resources to economic growth, Early recognition that data resources can form corporate profits and increase shareholder value, But the accounting relationship has not been clarified, Proposed that the data assets should be raised to the level of enterprise accounting recognition, Think that companies should treat data as some kind of asset in accounting, Make the contribution of data assets to corporate profits and shareholder value reflected in the financial reports, But the book does not offer specific accounting advice. The research on data assets in China started late. In 2017, Tang Li and Li Provincial Sisi [6] defined data assets as "data resources owned or controlled by enterprises that can bring economic benefits to enterprises". This definition tends to combine the connotation of data resources and assets, but does not reflect the specific characteristics of data resources. Wang-wang zhang [7] research that data resources after transformation and processing can get data assets, think data assets is a subset of data resources, the subset of "subset", no doubt, but "after transformation and processing can get data assets" is ignored, data accounting assets, such as enterprise outsourcing "without processing", according to the resources can also meet the definition of assets and confirmation conditions, "whether after transformation processing" does not constitute a necessary condition for the confirmation of assets. China Academy of Information and Communications Technology [8] defines data assets as data resources that are recorded in electronic or physical ways, owned and controlled by enterprises, and can bring economic benefits to enterprises in the future. This definition adds the recording characteristics of data resources, and is the improvement of the definition of data assets. Sun Yongyao and Yang Jiayu [9] believe that the key to the transformation of data into assets in accounting lies in its utility, that is, it can meet the operational needs of enterprises and serve the future business objectives of enterprises. This view reveals the root of the future value brought by data resources to enterprises.

In the process of transformation from data resources to data assets, the core is the value formation process of "from cannot bring economic benefits to can bring economic benefits", and the key is to reflect the usefulness of data resources. Highway vehicle traffic data, for example, highway toll system of vehicle traffic data is data resources, but there are different types, different brands, different payment methods, different service life of trucks, cars, buses, belong to the original data, disorder, redundant defects, application value is limited, does not belong to the data assets. After the data processing department of the highway enterprise handles the data by technical means according to the established standards, high-quality vehicle traffic data can be formed for external sale or providing services. For example, the data collation and packaging and sale of non-ETC payment trucks to ECT issuing units can realize the accurate issuance of ETC equipment, thus bringing economic benefits to highway enterprises. It has realized the transformation from "can not bring economic benefits to can bring economic benefits", which makes the vehicle traffic data reflect the usefulness, and has the basis of recognition as an asset in accounting.

Specifically, there are two levels to judge whether data resources such as highway vehicle traffic data belong to assets in the accounting sense. One is to judge from the accounting definition of assets, and

the other is to judge from the accounting confirmation conditions of assets. From the perspective of the accounting definition of assets, the Accounting Standards for Business Enterprises- Basic Standards stipulates that assets "refer to the resources formed by the past transactions or matters of the enterprise, owned or controlled by the enterprise, and expected to bring economic benefits to the enterprise". That is, the data resources must first meet the definition conditions: first, the past transactions or events, it can be external generation of enterprise outsourcing, or can be enterprise internal resources transformation; second, the enterprise should control, the enterprise should control the data resources, and emphasize the legitimacy of the control; third, it has "usefulness", that is, the expected can bring economic benefits to the enterprise, usefulness is the basis of confirmation as an asset. However, in order to be recognized as assets in the enterprise accounting book, in addition to meeting the three conditions of asset definition, it also needs to meet the two conditions of accounting confirmation. First, the expected economic benefits generated by the data asset are more likely to flow into the enterprise, which is generally considered to be above 50%; second, the data asset can be reliably measured, involving the problem of measurement attribute.

Combined with the existing research results, the author believes that data assets can be defined as: the data resources legally controlled or owned by the enterprise, recorded electronically or physically, formed by past transactions or events, and can bring future economic benefits to the enterprise. Data assets have the connotation of the general assets of enterprises, and also have the characteristics that are different from the general assets. One is the characteristics of replicability. Data assets is the data resources, including data and dependent computer and computer technology, computing, machine and computer technology is the carrier of data assets, due to the existence of the carrier of data assets with replicable, such as YouTube, tencent, alibaba and other Internet companies using the data assets "replicable" characteristics, the rapid expansion of business, and the expansion of marginal cost is close to zero, easy to form industry monopoly [10]. Replicability also easy to lead to data assets are malicious circulation copy, even malicious tampering so that the data assets value reduced, such as amazon for data privacy in the European Union in 2021 was fined 746 million euros, TikTok 2021 was citing "invasion of children's privacy" by Dutch parents claim \$1.4 billion, etc., from the accounting, the overall value of the data leakage will be reduced. Second, the characteristics of uncertainty. Data assets contain uncertainty in both ownership and value. Replicability leads to the repeated sale and use of a data asset, and a data asset may be used by multiple market entities, which will cause the ownership of the data asset cannot be clarified [11], and it is difficult to define the corresponding income and legal liability.

The Ouhai District People's Court of Wenzhou city officially established the country's first data resource court on May 18, 2022, specially designed to hear cases involving disputes over the ownership of data resources. For income method of data assets more mature and evaluation results more accurate, in different application scenarios and business model, data assets of price, value is not the same, so that its value is difficult through the fair value accurate measurement, number, according to the assets in the process of creating benefits for the enterprise, the value of uncertainty is the most obvious characteristics of data assets. For example, the possibility of the same future value generated by the development of wechat users for financial business and the future revenue generated by the development of the game business is very small. It is difficult to judge the fair value of wechat user data assets unless sufficient assumptions are set.

2.3. Type of Analysis of the Data Assets

There are many categories of data assets. In practice, they are generally divided by stage, divided by application field and application scenario, and divided by source. One is to divide it by stages. Data assets can be divided into rough processing data assets, fine processing data assets and commercial data assets, etc., which are applicable to the process management of enterprise data assets production, and facilitate all kinds of cost allocation and cost management. The final data assets should be selected according to whether the enterprise belongs to the enterprise "specializing in data cleaning, sorting

and sales", so as to facilitate the daily management of data assets. The second is to divide by the application field and the application scenario. Data assets according to the application field and application scenarios can be divided into traffic data assets, medical data, financial data, teaching, education data, electricity data assets, real estate data, social data assets data assets, the data assets categories can be divided into several categories, subcategories can be listed several instances [12]. For enterprises engaged in data cleaning, sorting and sales, due to the data assets involved in multiple fields, they have great performance. In order to facilitate accounting treatment and operation management, it is reasonable to carry out classification and management of data assets according to application fields and application scenarios. The third is to divide it by source. Data assets can be divided into internal production data assets and external source data assets by source. For non-professional is engaged in data cleaning, sorting and sales enterprises, due to the data assets for the main business, generally involves only a single or, a few field data assets, to facilitate accounting treatment and management, can be on the basis of application field and application scenario classification according to the source of further classification management, divided into internal production data assets, outsourcing data assets, if receive and other external source channels can be further subdivided.

3. CONTROL DIMENSION: THE PREMISE OF THE DATA ASSET TRANSACTION

3.1. The Enterprise Cannot "Either Own or Control" the Ownership of the Data

The background of data ownership is to emphasize personal data protection. Current data ownership theories are all from the perspective of personal data, emphasizing that personal data ownership can help alleviate some of the adverse effects of the digital economy [13]. With the help of the theory of "ownership-use right", the data rights after the transaction can be better explained, that is, the user enjoys the ownership of data and the enterprise enjoys the right of data benefit [14]. For an unspecified third party, the owner enjoys the right to realize his property right, which is a kind of exclusive dominant right of ownership within the scope permitted by law. Property right is the right of control and use of specific property [15]. Based on the non-competitive characteristics of the data, we can get the following inference: if the data can be copied without cost, the same data can be "owned" by two subjects at the same time, and it is difficult to explain the relationship between the subject and the data with ownership. Exclusion rights remain even in the sharing economy. For example, when using a shared bike, although the user does not have the ownership of the bike, the right to use the bike is exclusive to a certain extent (at least others can exclude the use of the bike). The right has a time limit, and when the user finishes the use, the right will be terminated.

The idea that companies have ownership of data is theoretically untenable. "Enterprise all said" may cause "the tragedy", in ignore or even deny the civil rights of natural persons for personal information, just discuss the public interest or public order, is likely to lead to personal information protection and data ownership legislation eventually become the stakeholders around personal information wrestling field, thus damage the overall well-being of society [16]. Acdding that the monopoly of data is not economically reasonable, but also has many drawbacks. Especially in the context of emphasizing the anti-monopoly regulation of the digital economy, personal privacy protection and data security, it is even more difficult to realize enterprise data ownership. For example, the refusal of data access by enterprises may interfere with the freedom of operation and competition, and the formation of new market advantage through data may lead to the increase of entry barriers in relevant markets and have an adverse impact on the downstream digital market, which is not conducive to the formation of new quality productivity led by innovation.

One of the sources of "control" in the field of law is the exclusive control of the right holder in the field of property right. In fact, digital space is a field where multiple subjects overlap, and enterprises

require data control that is completely consistent with the real space, which is neither necessary nor possible. Everything in the digital space is stored in the computer in the form of data, and the valuable virtual goods in the digital space exist in the form of data in the real space. If the isolated data is separated from the network space that presents its value, these data will lose its value. Although the exclusive control of individuals to enjoy their personal data has been generally accepted and established, often known as "information self-determination" (Informational Self-determination) or "information autonomy" (Informational Autonomy), but the enterprise's complete control over data is controversial. Thus it can be seen that the relations of production based on the power paradigm are difficult to adapt to the internal requirements of the development of new quality productive forces.

3.2. The "Dynamic Control" of the Data by the Proposed Enterprise

In fact, "control" data is not enough to form property rights with clear boundaries. Although premature establishment of legal "control" can help reduce data transaction costs and promote data transaction, it may trigger the monopoly of data property rights of large digital platforms, which is not conducive to the development of new quality productivity. In most cases, the de facto "control" is consistent with the legal "control", and the law will protect the de facto "control" and the legal "control". However, in the face of the new object of data, the difference between these two types of control is because of the different protection paths of data property rights: is it behavior regulation or data ownership legislation? First, the scene is different. The source of enterprise data "control" can also be interpreted as a state of fact, not necessarily requiring the addition of new legal rights [17]. For example, the de facto "control" is used in article 18, paragraph 2, of the Anti-Unfair Competition Act (draft amendment) to define commercial data. Data based on the "control" of the factual state is difficult to enter the market circulation, and cannot serve the data transaction scenario. Take trade secrets as an example. Although trade secrets can be evaluated as asset targets, the protection of trade secrets does not involve transactions involving trade secrets. In the scenario of data assets, enterprises bear a higher obligation of proof and information disclosure for the attribution of assets. In this case, legal "control" is often needed to confirm the attribution of data costs and benefits.

Second, the protection mode is different. In fact, the "control" data is in the state of unclear ownership of the rights and interests, and its protection mode is limited to the "defensive claim right", while the legal "control" data is the introduction of property rules to protect the data rights and interests, and its protection mode is not limited to the "defensive claim right". Under the framework of analytical law, the actual "control" data and the legal "control" data include the right element of "claim" (Claim), and the claim corresponds to the right of claim in the mainland law system [18]. In fact, "control" forms a kind of "possession" protection similar to property law, which is a defensive claim that can stop the ongoing infringement; the legal "control" data includes this defensive claim and return of ownership, which can obtain the benefits, which some scholars call "offensive claim" [19].

Third, the legal consequences are different. In fact, "control" data is likely to not survive the original exclusive "control" status due to technological breakthroughs, which will bring disputes over data ownership. For example, in the Epic case, Epic broke through the apple's (Apple) technology blockade to obtain user data, Apple restricted Epic's in-app payment method (In-app Payment) through the "traffic blockade" (Anti-steering) clause, and Epic sued Apple for unfair competition. According to the California Supreme Court (California Supreme Court), Apple used a "traffic blockade" clause to prohibit Epic from having direct access to user data. User data can be used for two of the three "most effective marketing campaigns": push notifications and email promotion. ③ Because Epic lacks direct access to consumer information and related data through electronic payment methods, Apple gains hypercompetitive benefits and reduces innovation in the digital market. In fact, "control" is not enough to describe the dynamic, non-competitive and non-exclusive nature of enterprise data. The case protection of the data of the "factual control" of the data enterprise through the anti-unfair competition litigation has a high uncertainty. However, the consequences of the data protected by the property rules are relatively certain, and the purpose is to prevent the state of the

"possession" data from being changed without the consent of the right holder, which means that the property right of the data needs to be proved to further guarantee the state [20]. In the transaction scenario, if the legal consequences of the property rights dispute are uncertain, it may lead to a significant increase in the transaction costs, which will reduce the motivation of the market entities to participate in the data transactions.

Different from the two ways of "behavior regulation" and "property rights legislation", enterprises' "control" data through data-related policies not only have strong flexibility and low cost, but also can form rich experience in data asset trading through the implementation of pilot mode. The above created enterprise data assets provide proof for the "control" of the data of the proposed enterprise. The main contents of data property rights include: utilization (processing) power, income power, control (holding) power and disposal power [21]. By creating enterprise data assets to achieve the control power as one of the four powers of data property rights, it is clear that the subject and object of data assets are the way of formulating "control". According to the transaction cost theory, when the two parties are allowed to negotiate, the reduction of the transaction cost helps to realize the market-oriented allocation of factors, and the purpose of reducing the transaction cost can be achieved by clearly defining the property rights. Based on this, the cost of data transaction can be reduced by clarifying the data property rights, and then promote the Pareto improvement of the data factor market. At the subject level, the enterprises acquire the data assets through legal transactions or matters, and become the right holders of the data assets. At the same time, listed enterprises with investment and financing needs can reduce the asset-liability ratio through data asset, and form a positive incentive mechanism of "data income guide data supply". At the object level, according to the DIKW (system of data, information, knowledge and wisdom) model [22], the data and knowledge are related to a certain extent, and the property rights with unclear boundaries will significantly increase the transaction cost. "Data 20" creatively puts forward the data property rights system framework of "separation of three rights", innovates the concept of data property rights, weakens ownership, emphasizes the right to use rights, and focuses on the circulation of data use rights. The transaction mode in the digital era has gradually changed from the transfer of ownership to the transfer of the right of use. Deconstructing data ownership can enable the people to share the dividends of the data era [22], and effectively promote the formation of new quality productivity.

The "control" of policy formulation is a dynamic classification and scene "control". In the scenario of data competition, we should still insist not to create data exclusive rights. Although unfair competition is an infringement in a broad sense [22], it does not mean that only the creation of exclusive rights can protect enterprise data. In fact, the object of the anti-unfair competition law is the commercial relationship, which includes not only the competitive relationship between enterprises, but also the service relationship between operators and consumers [23]. In this scenario, the protection of the actual "control" data of enterprises should refine the identification criteria from the judgment of legitimate competition behavior. It is neither necessary to create exclusive data rights, nor to form legal "control". If only through the general provisions of the anti-unfair competition law are protected, it is difficult to adapt to the large-scale and continuous protection needs of data rights and interests in the digital economy era [24]. Data unfair competition among enterprises can optimize competition regulation through typing, and take improper data acquisition behavior and data obstruction behavior as two major types to gradually refine the identification criteria [25]. Create static data competition protection system not only with the actual data competition between enterprises, but also adjust the relationship of unfair competition, in fact "control" huge amounts of data digital platform will become more "aggressive" leviathan, destroy the data market competition order, hinder the development of new quality productivity.

The posed enterprise data "control" does not support or deny data property rights legislation. Too advanced legislation will not only limit the subjective initiative of market subjects, but also may cause substantial obstacles to technological progress. Established data assets can still receive a certain degree of legal protection. According to institutional economics, property right is a kind of possession

in the legal sense and a right that can exclude others. Only when the standard of control is formulated first can the control of material things (including tangible and intangible things) be obtained [26]. If we only focus on one aspect of data property rights, there are likely to be differences in the ownership of property rights [27]. Some scholars believe that a more effective theory of data property ownership is that platform enterprises replace consumers as right holders with data property rights [28]. Given the data substitutability and "privacy paradox", this kind of property rights allocation is unlikely to cause serious privacy problems and data monopoly. On the contrary, some scholars believe that if data property rights are granted to manufacturers, competitors can obtain data, contrary to the requirement of full utilization of non-competitive data, so data property rights should not be allocated to manufacturers [29]. Combined with the cyclical characteristics of data elements, the "dynamic compliance" mode of data trading proposed by Shenzhen Data Exchange is helpful to promote the legalization process of data elements market. This model combines the benefit paradigm and constantly innovates with the development of new quality productive forces, injecting new momentum into the high-quality development of the digital economy.

4. ACCOUNTING MEASUREMENT AND ANALYSIS OF DATA ASSETS

The historical cost method, replacement cost method, income present value method, fair value method and realizable net value method are five kinds of accounting measurement attributes stipulated in the Accounting Standards for Business Enterprises- -Basic Standards in China. The historical cost method is a measurement method used by enterprises. If other methods are used, it should ensure that the asset can be measured reliably and the determined amount of accounting elements can be obtained. At present, the selection of data assets mainly includes cost method, income present value method and comprehensive method.

Point 1: Adopt or adopt cost method. Both the data assets collected and integrated and purchased within the enterprise should be measured by the historical cost method, and the equipment depreciation and daily expenses in the process of collection and integration should be collected as the cost of the data assets. Sun Yongyao (2022) believes that the intangible assets formed by outsourcing and internal research and development should be prioritized for historical cost measurement. If the historical cost is difficult to obtain or is not reliable, other measurement methods can be selected. Zhang Ying and Han Yanling [30] believe that if the data resources are directly related to the economic benefits realized, the data asset can be measured at the historical cost. The main reason for scholars holding the view of cost measurement is that it is difficult to reasonably predict the future returns of data assets, and it is more prudent to adopt the cost measurement. However, this view ignores that the book value of data assets may be seriously deviated from their actual value, and the financial reports of enterprises cannot truly reflect the value of data assets they hold.

Point two: adopt the present value method of income measurement. After analyzing the characteristics of data assets, Tang Li and Li Si Province [31] believed that data assets should be initially measured by the present value of income method, and should not be measured by the historical cost method. Zhang Xue et al. (2022), starting from the stability of data asset management system and the sustainability and stability of cash flow, analyzed that the income present value method can make the book value of data assets more close to the actual value. With earnings present value method view of scholars mainly think that cost measurement only data collection, cleaning cost capitalization, will make the data assets book value and market value difference, big, if the initial measurement using cost method, subsequent measurement with the present value law, to "measurement mode transformation point rationality and increase the possibility of profit manipulation" two, a problem, and "data market and data valuation system is not yet mature, market, ring chain has not been through" so that fair value is difficult to obtain, the initial measurement and subsequent measurement adopt the income present value method is more feasible and reasonable. In fact, the present value method of

income is also limited in its application in reality, mainly because the uncertainty of the economic life of data assets will cause the uncertainty of future income.

Point 3: The measurement mode combining fair value measurement and cost measurement can be called comprehensive method. Zhang Junrui et al. [32] believe that "self-use data" should be recorded at the historical cost in the stages of collection, processing and application, while "transactional data assets" should be initially measured through the fair value method. Liang Fang and Li Yongheng [33] believe that in most cases, the data products of the enterprise should be initially measured according to the cost method and the fair value method, and further analyze: for the data products derived from the use value, the use value, the current value of the data products shall be included in other comprehensive income; for the data products derived from the exchange value, the fair value shall be measured, and the current value of the data products shall be included in the change of fair value. Compared with the income measurement and cost measurement, the measurement mode that combines fair value measurement with cost measurement can avoid the disadvantages of simply adopting a certain measurement mode.

Analysis, no matter what kind of measurement has certain defects, the author thinks that choose data assets measurement method should consider data asset management practice and theoretical stage of development, from the point of the current development situation, is unfavorable to the pursuit of valuation, value cost, high degree of specialization, program relatively cumbersome valuation way, should choose to operate in accounting practice.

Combined with the current theoretical research and accounting practice, the author thinks that: first, no matter what the channels obtained data assets, the initial measurement should adopt the cost method. If the enterprise uses the acquired data assets for self-use, the subsequent measurement continues to adopt the cost method and amortize during the service life; if the enterprise uses the acquired data assets for providing external services, the enterprise shall choose the income present value method or the subsequent measurement method according to the difficulty of future income, giving the accountant the space for professional judgment. Second, the service life of data assets can be reasonably estimated by accountants through professional judgment. If an enterprise takes data assets as intangible assets, it should analyze and judge the service life when acquiring intangible assets. If it cannot judge the period of economic benefits, the service period of the intangible assets is uncertain. At present, most studies believe that the service life of data assets is difficult to estimate, but in fact, the study on the service life of all kinds of data assets is not comprehensive and in-depth enough. For example, the service life of vehicle related data assets should be combined with the vehicle scrap period, and the service life of population related data assets should be compared with the social average life, etc. Therefore, the practical work also needs to strengthen the research of the economic life, fair value and income calculation of all kinds of data assets so as to form theoretical support.

5. CONCLUSION AND SUGGESTION

Today, with big data, cloud computing, "Internet +" and blockchain the digital economy era with network information technology as the core is booming. Data assets based on data resources are the core assets in today's digital economy era Production, is also a considerable part of the traditional industry enterprises to carry out digital transformation and even an important asset for its survival. How do enterprises materialize through data assets now its own high-quality development, is the company's internal and external governance, tax and audit supervision Key issues to be solved in management, academic and scientific research. In this process, with the continuous improvement and maturity of the data factor market, various industry subjects and objects have synergistic effects on the cognition of the value and management of data assets and the data factor market, and are expected to unify the value evaluation model system of data assets. In order to better face the risks and

challenges, and better coordinate the current and long-term, this paper puts forward targeted suggestions from the following aspects.

5.1. Refine the Data Asset Value Evaluation Indicators

Refine the data asset value evaluation index is one of the key links to standardize the value evaluation system. Relevant government departments and data asset management departments shall refer to the national strategic indicators and policy standards, Make reasonable data asset value evaluation model, in the specific value evaluation model can establish a variety of dimension index system standards, such as from the data asset quality dimension and quantity dimension, data assets, yield and utilization dimension, data asset security and risk dimension, data asset stability and liquidity dimension, standardize the use of data asset value evaluation index, clear index selection way and basis, to ensure the standardization of data asset value and accuracy.

On this basis, the importance and influence of data assets in business decision-making and operation should be considered, and the availability of value indicators of data assets should be used qualitatively and quantitatively evaluated through data availability survey or user satisfaction survey Sex, further establish and improve the data asset value index supervision system, regularly Index selection and standard of the traditional and non-traditional value evaluation methods of data assets Make diagnostic improvement and optimize the supervision rules to ensure the data asset value evaluation Appraisal of the authority and frontier of the index system.

5.2. Introduce a New Data Asset Value Evaluation Model

At present, the industry and academia still do not have a complete set of suitable numbers According to the asset value evaluation method, therefore, first should judge the traditional data Production value evaluation model, considering the cost, benefit and return of data asset investment Cycle and other factors, in order to evaluate the economic benefits of the data on the enterprise. At the same time introduce new Type of data asset value evaluation model, based on the characteristics and value of data assets Attribute, the data assets as the investment of enterprises, introduce non-financial evaluation body Department, to establish a special model combining fuzzy comprehensive evaluation method and hierarchical analysis method Type, or use the risk assessment method, benefit analysis method, cost-benefit analysis method Assess the value of the data assets.

Secondly, the governance framework of data assets should be established, and the governance of data assets should be established The goal and principle of the principle, and establish the corresponding organizational structure and process, clear number According to the owner, responsible person and access rights of the asset, to ensure that the data asset Compliance and credibility.

Finally, the quality standard and specification of data asset value should be formulated and established Data cleaning, error correction and verification according to the asset quality measurement and monitoring mechanism in as to improve the accuracy and completeness of data asset value evaluation. At the same time, the enterprise data assets are classified and standardized, and a unified data, asset model and semantic specification are established, so as to facilitate the sharing and integration of data assets, and improve the availability and analyzability of data assets in enterprises.

5.3. Application of Advanced Data Asset Analysis and Processing Technology

In the context of digital economy, data has become the key factor resource for high-quality economic development, and the focus on data assets is the basic direction of the future national development strategy. It is suggested to deepen machine learning and data mining, use machine learning algorithms and data mining technologies to analyze and mine large-scale data, and discover the potential value of data assets, such as hidden patterns, trends and association rules. At the same time, natural language processing technology is applied to analyze and process unstructured data (such as text, speech, image,

etc.) to extract valuable information and knowledge. Based on the data asset value evaluation results, develop the use of data assets strategy and planning, clear the purpose of data assets, ensure the effective use of data assets and maximize the value, establish the value of data assets realization mechanism and data driven decision-making mechanism, combining data asset value evaluation and the decision-making process, to ensure the scientific and accurate decisions.

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