Compliance Issues in the Recognition of Enterprise Data Assets on Financial Statements

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ABSTRACT

This paper focuses on the compliance challenges faced during the process of recognizing data assets on financial statements. It investigates the existing difficulties by combining the current landscape and analyzing case studies, such as Kweichow Moutai's attempts to incorporate consumer data, supply chain data, and process data into its assets. The analysis indicates that although enterprises may have a preliminary framework for data recognition, the process remains hindered by singular valuation methods and the lack of a compliance review mechanism. Furthermore, the study identifies the key factors truly impeding the recognition of data assets: firstly, the unclear delineation of data ownership, and secondly, the misalignment between legal norms and accounting standards.

KEYWORDS: Data Assets; Compliance Risks; Unclear Ownership; Accounting Recognition; Information Disclosure.

I. INTRODUCTION

With the in-depth development of the digital economy, data is no longer merely an information carrier but has become a key element driving value creation. The transformation of data into quantifiable assets has become an important direction for enterprise financial management. The advancement of the "data resource recognition on statements" policy marks a breakthrough institutional development, signifying data's formal transition from a resource attribute to an asset attribute.

The "Interim Accounting Treatment Provisions for Enterprise Data Resources" promulgated by the Ministry of Finance in 2023 provide preliminary regulations. However, enterprises still encounter numerous compliance challenges during practical implementation. Although Article 127 of the Civil Code provides for the protection of data, it does not explicitly define the meanings of rights such as data ownership and usage rights. This leads enterprises, amidst diverse data sources, prone to ownership disputes and even potential violations of user privacy. The "Data Twenty Articles" propose a "separation of three rights" approach intending to resolve the aforementioned ownership issues. However, they still lack detailed rules and fail to address the boundary issues concerning subsequent data recognition. Simultaneously, current accounting standards do not account for the unique characteristics of data as an asset. Due to its non-exclusive nature, low-cost replicability, and multi-source characteristics, data cannot readily apply existing traditional asset recognition criteria. Value assessments based on the cost approach, income approach, or market approach all face specific application obstacles, resulting in distorted recorded values and leaving room for window dressing.

Therefore, this study aims to comprehensively comb compliance risks associated with the recognition of data assets on financial statements and propose a path for constructing a governance framework based on the synergy between law and accounting. It seeks to provide certain theoretical and practical reference value for improving the data asset management system.

II. The Evolution and Classification of Data Assets

A. Conceptual Definition and Evolutionary Logic of Data Elements, Resources, and Assets

It is essential to clarify what data assets are and what kind of data can become assets. First, the concepts of data elements and data resources are briefly explained. Data elements are the original units participating in value creation; when they meet the conditions of being utilizable, controllable, and reproducible, they transform into data resources.

Currently, domestic and international scholars have conducted extensive research on the concept of data assets, resulting in numerous definitions from both theoretical and practical circles. Scholars like Xu Xianchun believe that data assets refer to collections of data that can be digitized and, through data mining, can bring future economic benefits to enterprise operations [1]. Presently, according to the latest "Explanation of Common Terms in the Data Field (First Batch)" released by the National Data Administration, data assets are defined as "data resources legally owned or controlled by a specific entity, capable of monetary measurement, and able to generate economic or social benefits" [2].

The recognition of data resources as data assets requires meeting two conditions: firstly, the enterprise possesses some type of data right over the data resource; secondly, there is the potential to generate economic benefits, and these benefits are based on the lawful exercise of data rights. This necessitates first clarifying the types of data rights an enterprise holds. According to the "Data Twenty Articles," the data rights an enterprise can hold include the right to hold, the right to process/use, and the right to operate products. As long as an enterprise clearly possesses one or several of these rights and exercises them to create economic benefits, it can recognize such data resources as data assets. Secondly, judgment regarding potential economic benefits should consider both internal use and external transactions. Internal use focuses on internal efficiency optimization leading to performance improvement. External transactions can involve direct transactions of data resources or using data resources to develop corresponding data products for external transactions. Due to the uncertainty in realizing the value of data resources, which tends to be long-term, it is appropriate to lower the threshold for value judgment [3]. Typically, as long as the data resource has not completely lost its value, it is considered capable of bringing potential economic benefits [4].

Data elements, data resources, and data assets are three core concepts formed around data value mining in the digital economy era. They are progressively layered yet interconnected, collectively constituting the complete chain of data from raw existence to value release.

B. Classification of Data Assets

Based on the "Opinions of the CPC Central Committee and the State Council on Building a Foundational Data System to Better Leverage the Role of Data Elements" ("Data Twenty Articles") and practical application, this paper classifies data assets into three categories based on the dimension of property rights attribution: public data assets, enterprise data assets, and personal data assets. Personal data is characterized by identifiability, containing information that can identify specific natural persons, carrying citizens' privacy rights and personal rights interests. Its collection must adhere to the principles of legality, legitimacy, and necessity for protection. Unless collected, processed, and refined by enterprises, it is difficult to form commercial value. Government data possesses public and inclusive characteristics, covering four major areas: governance admini[5].
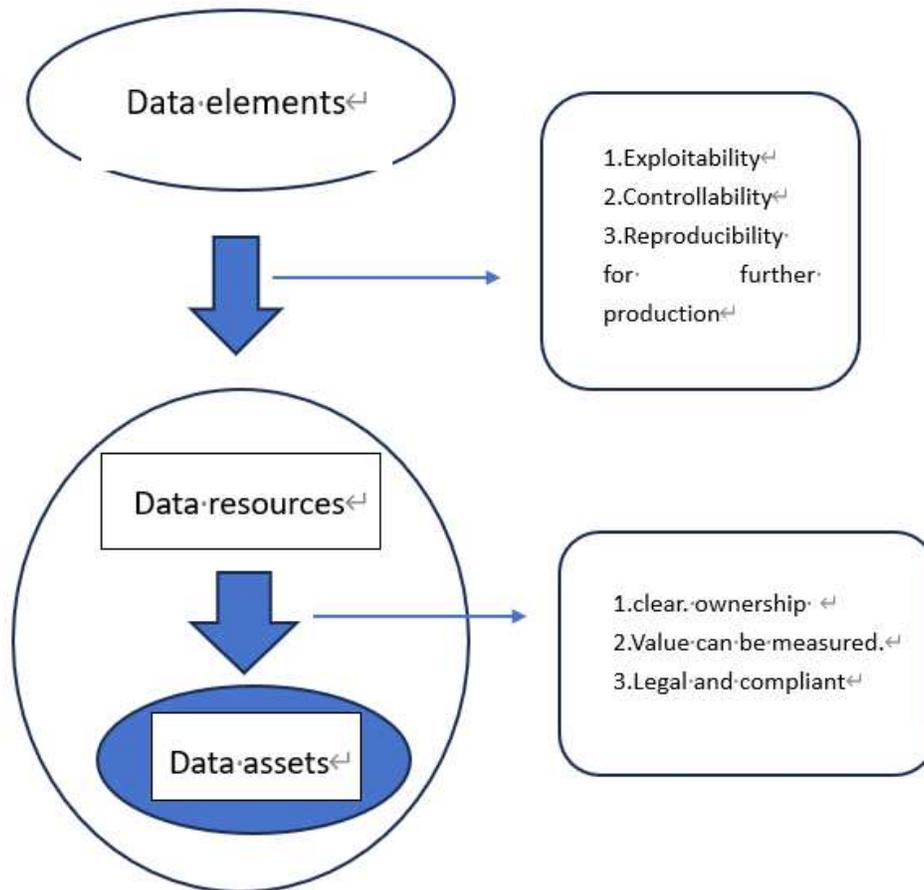
Fig. 1 Data Asset Evolution Logic

III. Compliance Risks Arising from Unclear Data Ownership

A. Current State of Data Ownership

Although Article 127 of the "Civil Code of the People's Republic of China" explicitly proposes the protection of data and online virtual property, stating: "Where the law provides for the protection of data and online virtual property, such provisions shall apply," the article does not specify the concrete attributes of these rights. This ambiguity in rights attribution has become a significant cause of frequent disputes over data asset ownership in practice.

Data assets originate from diverse sources. They may stem from an enterprise's internal daily operations, such as production records, sales data, and customer feedback information; they might also be acquired through external purchases or obtained via user authorization. Theoretically, enterprises naturally possess control over data generated internally. However, as data elements become increasingly complex, even internal data may involve multiple rights and interests, such as employee personal information or data resources shared with partners, making ownership definition difficult [6]. The problem of determining rights is even more pronounced for externally purchased data. In the data trading market, data is easily replicated and derived, potentially used simultaneously by multiple entities. Once disputes arise, it is challenging to clarify liability attribution, leading to overlapping ownership claims and continuous controversy [7]. User-authorized data also carries potential risks – if an enterprise collects information without adequate notification or through coercive authorization, its legality is often questioned.

B. Compliance Dilemmas Triggered by Unclear Data Ownership

Establishing clear data ownership is a crucial prerequisite for the "recognition of data assets on financial statements." Vague data ownership will directly lead enterprises to face severe compliance risks during this process. According to the "Interim Accounting Treatment Provisions for Enterprise Data Resources," recognizing data assets on statements requires meeting asset recognition criteria, namely, the enterprise must own or control them. However, due to the uncertainty of data ownership, enterprises cannot be entirely certain that the data assets incorporated possess legitimate ownership. If issues occur, besides potentially triggering legal disputes, the accuracy of the financial statements might also be called into question. For instance, if an enterprise includes personal data without users' explicit authorization within its asset scope, it may face legal action for violating user privacy rights, contravening

the "Personal Information Protection Law" and the "Cybersecurity Law," thereby impacting the enterprise's financial stability and diminishing its market reputation [8]. Furthermore, unclear data ownership also affects the subsequent correct valuation and disclosure of data assets, escalating compliance risks. It would be an undesirable situation if some enterprises overvalued their data assets using the inability to accurately define ownership as a pretext, triggering risks of financial statement window dressing and violating relevant accounting standards. Therefore, resolving the issue of data ownership is urgent. It not only hinders the compliant recognition of data assets but also represents a core challenge for enterprises regarding compliance management.

C. Strategies for Addressing Unclear Data Ownership

Accelerate the establishment and refinement of relevant laws and regulations to clearly define data ownership, usage rights, and other related rights. Enterprises should establish internal data compliance management measures to legally obtain and use data assets [8]. Furthermore, it is recommended that enterprises enter into data usage agreements with clear terms with relevant parties; both parties can make reasonable agreements based on the data's purpose, scope, and validity period to circumvent legal risks arising from unclear data ownership. Enhanced protection should be applied to sensitive personal information, ensuring relevant actions strictly adhere to all legal and regulatory requirements, thereby reducing the enterprise's risk probability of encountering legal issues [8]. Simultaneously, industries should formulate data ownership and data transaction norms to guide enterprises in consciously complying with regulations and foster a sound industry environment. Most importantly, the concept of "separation of three rights" proposed in the "Data Twenty Articles" points the way forward for ownership determination practices [6].

IV. Compliance Challenges in Accounting Recognition and Measurement

A. Compliance Challenges in Accounting Recognition

Protection of personal data rights imposes recognition limitations. On one hand, personal data carries the privacy rights and personal rights interests of natural persons. This means that while personal data can bring commercial value to enterprises, its commercial utilization is subject to strict legal regulations. When recognizing personal data resources as assets, it is essential to carefully assess the legal basis for their

processing, ensuring compliance with principles such as "legality, legitimacy, and necessity." Failure to properly handle the relationship between personal data rights and enterprise data rights can easily trigger compliance risks related to infringement of personal privacy, making the recognition process for such data assets more complex and restricted.

Uncertainty regarding the inflow of economic benefits further increases the difficulty of data asset recognition. For a data resource to be recognized as an asset, it needs to meet the criterion of being expected to bring future economic benefits to the enterprise. On one hand, accounting recognition, measurement, and reporting follow the principle of prudence, setting a relatively high threshold for judging "expected future economic benefits." In the current early stage of data element marketization, with the data transaction market still underdeveloped and the paths and methods for value realization unclear, the value realization of data assets involves significant uncertainty and tends to be more long-term [9]. This may lead the recognition process to exclude assets with substantial future value potential. On the other hand, the economic value of data itself is uncertain, influenced by factors such as data market demand, application scenarios, and technological development. For example, large amounts of data collected by an enterprise might experience significant deviations in expected economic benefits due to technological updates or shifts in market demand.

B. Compliance Challenges in Accounting Measurement

Difficulty in the compliant cost measurement of data assets. On one hand, the cost composition of data assets is complex, including data collection costs, processing costs, storage costs, etc. These costs are dispersed across different business processes, making it difficult to form a unified method for cost accumulation and measurement. On the other hand, it is challenging to measure the actual costs incurred in acquiring or forming the data asset. For instance, customer data collected by an enterprise during daily operations involves collection costs embedded in various accounts like marketing expenses and system maintenance, making it difficult to separate these costs individually.

The value of data assets is characterized by scenario dependency, timeliness, and non-physical nature. The traditional asset valuation methods (cost approach, income approach, market approach) identified in the "Expert Guidance No. 9" issued by the China Appraisal Society provide theoretical guidance for data asset valuation, holding significant theoretical

and practical importance. However, from a practical application perspective, due to the complex value characteristics of data assets, the three valuation methods are difficult to apply directly, making value assessment a core difficulty in determining data assets [4].

The cost approach is a relatively simple valuation method. However, as the value of data assets is influenced by multiple dimensions like market and technology, leading to large fluctuations, cost-based valuation often struggles to reflect the true data value and may contain significant deviations.

Regarding the income approach, firstly, income separation is difficult. Data assets typically need to function synergistically with algorithm models and other data. The division of their embedded contribution lacks objective and fair measurement methods, making it hard to determine the excess income brought by the data alone. Secondly, data value is highly uncertain. Its susceptibility to decay and the difficulty in measuring performance make revenue forecasting challenging. Finally, determining the income period is difficult. The economic life of a data asset is constrained by multiple factors, such as its technical life, commercial life, and legal/regulatory lifespan.

Concerning the market approach, on one hand, the data element market is immature, application scenarios are not rich, and value realization paths are unclear, leading to significant uncertainty. On the other hand, there is a lack of reference transaction cases, and the parties involved in transactions have differences in resources, capabilities, business, and market conditions, leading to different value expectations for the same data asset.

Difficulty in fair value measurement. The marketization of data elements is still in its early stages, and the foundation for data asset application and transaction is not yet mature. Firstly, although data resources have huge value potential, an open and efficient data element market has not yet been established, leading to numerous uncertainties regarding the path and extent of value realization for data resources. Secondly, data elements are characterized by cross-border integration; their value is often realized in synergy with other production factors, making it difficult to measure their value in isolation. Thirdly, differences in business sectors, profit models, target customers, etc., among enterprises lead to different utilization methods for the same data asset, resulting in value asymmetry. Different enterprises have different value expectations for the same data asset, making it difficult to form a unified measurement standard.

In subsequent measurement, due to the uncertainty surrounding the useful life and value changes of data assets, it is challenging to determine appropriate amortization methods and periods. Data assets may depreciate rapidly over time and with technological development, or they may have a long useful life and stable value. Additionally, impairment testing for data assets must consider factors such as market changes and technological iteration, increasing the difficulty of subsequent measurement.

V. Inadequate Information Disclosure and Compliance Requirements

A. Current State of Inadequate Information Disclosure

In reality, while many enterprises have already incorporated data assets into their balance sheets, there is a widespread issue of inadequate information disclosure, failing to meet the information acquisition needs of relevant stakeholders, including investors and regulatory authorities. An analysis of annual reports from numerous listed companies reveals several main problems in information disclosure: Firstly, the forms of disclosure are limited, often merely presenting the monetary amount under the "data asset" line item in the notes to the financial statements. Information regarding the content composition of the data, its provenance and usage, the process of ownership confirmation, business application scenarios, and specific practices throughout the data lifecycle remains relatively obscure.

Secondly, the depth and breadth of the disclosed content are significantly insufficient. Whether it concerns the initial recognition method of the data assets—such as external acquisition, independent R&D, or formation alongside business operations—or the subsequent measurement model adopted, or even core accounting treatment aspects like amortization policies and impairment testing methods along with their key assumptions, corporate disclosures are generally not detailed enough [10]. This makes it difficult for external users of the statements to assess the appropriateness and fairness of the accounting treatments [11]. Finally, there is a severe lack of disclosure regarding the value creation capacity and risk exposure of data assets. How data assets drive business growth, the economic benefits they generate, and associated risks such as data security and privacy compliance are scarcely found in existing reports.

B. Impacts of Inadequate Information Disclosure

Inadequate information disclosure may directly lead to a series of chain reactions. For investors and creditors, information asymmetry increases the difficulty of assessment, making it hard to judge the

profit potential and risk profile of an enterprise reliant on data assets. This can subsequently lead to biased decision-making or demands for higher risk premiums, indirectly increasing the enterprise's financing costs. For the enterprise itself, although it might conceal sensitive issues like data asset valuation uncertainty in the short term, in the long run, it damages its market credibility and transparency image, undermining the trust foundation in the capital markets. From a regulatory compliance perspective, the current level of information disclosure still falls short of the full disclosure principle required by the "Accounting Standards for Business Enterprises" and the securities regulator's requirements for listed company information to be "true, accurate, complete, and timely." Enterprises may consequently face regulatory inquiries or even administrative penalties [12]. More importantly, inadequate information disclosure also hinders the healthy development of the data element market—without comparable, high-quality information as support, the fair pricing and efficient circulation of data assets are difficult to achieve.

C. How to Address Inadequate Information Disclosure

To address this challenge, enterprises need to take concrete action to establish a comprehensive and rigorous information disclosure mechanism. Specifically, breakthroughs can be made in the following areas: First, refine disclosure content to enhance the decision-usefulness of information. It is recommended that enterprises systematically explain the recognition criteria, classification logic, measurement methods, amortization approaches, and key parameters for impairment testing of data assets in the notes to their financial statements. Simultaneously, in the "Management Discussion and Analysis" section of the annual report, they should elaborate on the strategic role of data assets, their business application models, revenue contribution, and related risk management mechanisms, linking these to specific business contexts [13]. Second, promote a combination of mandatory and voluntary disclosure. Regulatory authorities could consider issuing specific guidelines mandating the disclosure of aspects such as the legality of data asset sources, rights ownership, significant transaction terms, and reliance on core technologies. Simultaneously, enterprises should be encouraged to voluntarily disclose information like data asset valuation reports (summaries), data governance maturity, and privacy protection certifications to demonstrate their data management capabilities. Third, introduce third-party verification to enhance credibility. Accounting firms should prioritize the accounting treatment of data

assets in their audits, prudently assessing its compliance, and must perform sufficient audit procedures, especially in areas reliant on professional judgment like fair value and asset useful life. When necessary, independent appraisal institutions can be engaged to issue appraisal reports on the value of data assets, adding an extra "safeguard" to information disclosure and making external parties more confident and willing to rely on it. Only by making information disclosure substantive, dynamic, and thorough can enterprises both uphold the bottom line of compliance and truly unleash the commercial value behind data amidst the wave of data asset "recognition on statements."

VI. Adaptability Issues Between Laws, Regulations, and Standards

A. Problems Between Legal and Accounting Standards

The practical process of recognizing enterprise data assets on financial statements faces significant legal risks, and there are considerable difficulties in aligning enterprise data asset laws and regulations with accounting standards. On one hand, relevant laws and regulations, such as the "Interim Accounting Treatment Provisions for Enterprise Data Resources," have not kept pace with the rapid development of the data market, leading to major constraints on the expansion of enterprise data applications [14]. On the other hand, due to the lack of an established mechanism for converting between policy terminology and accounting terminology, enterprises have no means to accomplish their data ownership certification work through existing laws and regulations. Both reasons above indicate certain differences in logical structure and terminology expression between the two, which is one of the causes for the adaptability dilemma in recognizing enterprise data assets. On August 21, 2023, the Ministry of Finance issued the "Interim Accounting Treatment Provisions for Enterprise Data Resources," establishing unified requirements for how enterprises should implement accounting standards normatively, accurately reflect data-related business, and reflect the economic substance of data [15]. The above analysis shows that this provision is an improvement to the existing accounting standards, attempting to solve practical economic problems within the current legal framework. However, as some of its content still fails to resolve the aforementioned contradiction—namely, upholding principle and stability in legal provisions while also accommodating accounting standards as the essentialized expression of economic reality in commercial transaction activities.

B. Constructing a Collaborative Governance Framework and Path for Institutional Integration

The recognition of data assets in China is still in its exploratory stages. There are many challenges to overcome in aligning with this new development trend of the digital economy and fostering the transformation of data resources into assets. From the perspective of implementing data asset compliance and ethical risk, the most urgent improvement is to establish a standardized legal guarantee system for data assets from a jurisprudential perspective [16]. On one hand, it is necessary to improve the data resource value assessment system. Whether this system can be realized and effectively applied is a crucial basis and core element for the recognition of data resources on statements. According to the "Interim Accounting Treatment Provisions for Enterprise Data Resources," enterprise data resources are presented either as inventory or intangible assets; therefore, the value assessment of data resources primarily adopts the valuation models for inventory or intangible assets. However, difficulties persist in practical operations [17]. On the other hand, it is essential to uniformly establish an audit mechanism that integrates the requirements of laws and regulations with accounting treatment requirements, forming a standardized evaluation process covering the entire data lifecycle. Finally, regulatory authorities should take the lead in forming a multi-department coordination mechanism, ensuring relevant regulatory bodies have unified standards. Departments need to collaborate and cooperate to jointly prevent enterprises from facing conflicting requirements ("hitting both ends"), thereby avoiding increased compliance costs for enterprises. Furthermore, accounting standards need improvement, fully integrating national conditions while adhering to international rules as much as possible, and providing corresponding normative guidance in key areas such as data security capitalization and the impact of compliance risks. Only by establishing an institutional connection between law and accounting can the adaptability obstacles in the recognition of data assets be truly eliminated, safeguarding the market-oriented development of data elements.

VII. Industry Practices and Case Analysis
A. Practical Background

Regarding the compliance practices of incorporating data assets into financial statements, the baijiu (white spirit) industry is in a critical period of transition from traditional accounting towards data asset management. Taking Kweichow Moutai as an example, this industry leader with a market capitalization exceeding one trillion yuan is facing unprecedented normative requirements and practical challenges in the recognition, measurement, and disclosure of data assets. According to "Accounting Standards for Business Enterprises No. 6 – Intangible Assets" and related guidance, data resources must simultaneously satisfy three conditions to be recognized as intangible assets and incorporated into the accounts: firstly, possess attributes of an identifiable asset; secondly, the enterprise can exercise effective control over them; and thirdly, possess the potential to generate future economic benefits [18].

B. Data Asset Composition System

Based on Kweichow Moutai's 2024 annual report, the company is systematically constructing its data asset framework, primarily covering three main segments: first, consumer data assets—formed through its core digital marketing platform "i Moutai," comprising a dynamic and comprehensive database of user profiles and consumption behaviors [19]; second, supply chain data assets, covering a full-link traceability system and achieving the structured integration of data from various segments; and finally, production process data assets, relying on digital workshops to systematically collect and store process parameters and quality control data from key stages. In terms of accounting treatment, the company adopts a prudent principle, capitalizing expenditures related to data collection, cleansing, processing, and associated system development, and initially measuring them at historical cost.

C. Practical Handling

However, in practice, Kweichow Moutai also faces compliance issues related to data assets, such as the valuation problem. Due to the lack of an active market for reference, it is impossible to make an objective and reasonable judgment on their fair value. Consequently, they can currently only be accounted for using the cost method, which fails to accurately reflect their substantial value and benefits. Furthermore, from a compliance perspective, it is necessary to meet the requirements of relevant laws and regulations such as the "Cybersecurity Law," "Personal Information Protection Law," and "Data Security Law," implementing classified and graded management for all consumer data, and thoroughly implementing the requirements of relevant laws and regulations. Simultaneously, it is necessary to clarify that different categories have different regulations concerning the subsequent measurement of data assets involving the consumer end.

D. Data Asset Refinement

It is worth noting that Kweichow Moutai has established a specialized digital transformation task

force and has already formed a full-process compliance workflow from data collection and governance to application. Moreover, allocating part of the R&D investment related to data assets to the R&D expenditure account provides a new dimension for consideration—how data assets can be diversifically represented within finance [20]. Furthermore, this kind of practical activity can also play a positive role for other manufacturing enterprises, indicating that the recognition and assessment related to data assets under China's current relevant accounting standards for business enterprises still require further refinement and improvement.

E. Future Prospects and Implications

Overall, traditional manufacturing enterprises represented by Kweichow Moutai are facing a tension between technological innovation and compliance prudence in the process of promoting the "recognition" of data assets, and still need to establish a dynamic yet robust balancing mechanism [4]. Looking ahead, with the increasing maturity of the domestic data element market and the continuous improvement of relevant standards, it is anticipated that enterprises will gradually form more unified, transparent, and comparable practical standards in the recognition, measurement, and reporting of data assets, driving overall operations towards standardization and systematization.

Conclusion

In summary, the recognition of data assets on financial statements is a crucial component of the market-based allocation of data elements and an important part of enterprises' digital transformation and the construction of a modern financial reporting system. However, prominent issues such as unclear data ownership, the misalignment between legal and accounting standards, and the lack of established sound methods for determining and measuring value still persist. Even in industries that have preliminarily established data management systems, numerous practical difficulties remain in the compliant utilization of user data, clarifying the ownership of various types of business data, and accurately measuring the value of core data. The essence of these problems lies in the conflict between the unique attributes of data assets and traditional accounting recognition principles.

The key to resolving the aforementioned issues is to further improve the data property rights system under the "Data Twenty Articles," clarifying the boundaries of rights and the rules for circulation. On this basis, it becomes possible to promote the integration of multiple systems—legal, accounting, and regulatory—to co-create a unified compliance review system and jointly build a governance system covering the entire data lifecycle.

We can foresee that in the future, with the gradual improvement of the data element market and the further optimization of accounting standards, more data assets will undoubtedly be recognized on financial statements. However, to fully leverage the value of data elements and contribute to the high-quality development of the digital economy, it is still necessary to continue leveraging the role of institutional innovation, promote the application of new technological means, and strengthen collaborative industry governance. An ecosystem for data assetization needs to be formed, characterized by government guidance, enterprise participation, academic cooperation, and regulatory synergy.

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