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Bottlenecks and Countermeasures for the Inclusion of Enterprise Data Assets in the Financial Statements in China

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Abstract: ***In August 2023, China issued the "Interim Provisions on Accounting Treatment Related to Enterprise Data Resources", which clarified the scope of recognition of data resources and accounting treatment standards, fundamentally promoting the process of data assetization in China and enabling the value of data assets to be presented and disclosed in financial statements. Judging from the theoretical development in the past two years and the practical operations of a few enterprises, the inclusion of enterprise data assets in the financial statements is still in the trial stage. Starting with clarifying the significance of data asset inclusion, this article further presents and analyzes the eight main bottlenecks of data asset inclusion, and then provides corresponding countermeasures one by one, hoping to give some help to the relevant enterprises.***

Keywords: Enterprises, Data assets, Inclusion in the financial statements, Balance sheet, Bottleneck, Countermeasures**.**

1. Introduction

Data assets as defined in the Accounting Standards for Business Enterprises refer to assets formed from past transactions or events, owned or controlled by the enterprise and expected to generate benefits for the enterprise. This definition is almost a perfect copy of the definition of an asset, suggesting that data owned by an enterprise must first meet the definition of an asset in order to be an asset. In the context of the current digital transformation of enterprises and the high integration of AI into business operations, the recognition and accounting treatment of data assets have become an irreversible trend in the marketization of social factors and the optimization of resource allocation, and the presentation and disclosure of digital assets as development expenses, intangible assets or inventories in financial statements have become the most popular and inevitable choice for relevant enterprises.

2. The Significance of Data Assets being Included in the Financial Statement

2.1 The Inclusion of Data Assets on the Balance Sheet is a Trend in the Digital Transformation of Enterprises

In a sense, the degree of AI in an enterprise is the degree of modernization of the enterprise. Enterprises with a higher level of AI tend to generate more digital resources. Some of these digital resources may be processed into data assets that bring future earnings and growth capabilities to the enterprise.

2.2 The Inclusion of Data Assets in the Financial Statements is a Driving Force for Improving Data Quality and Promoting Data Innovation

Under the spring breeze of the update of international accounting standards for enterprises and national policies, enterprises can integrate and sort out existing data, process, integrate and package potential data, and through continuous innovation, form intangible assets such as software and launch various data products.

2.3 The Inclusion of Data Assets in the Balance Sheet Enhances the Quality and Completeness of Financial Statement Disclosures

Putting data assets on the balance sheet is the same trend and progress as putting operating leases on the balance sheet. As the digital transformation of enterprises continues to upgrade, data assets, as objectively existing things in reality, are bound to be universally reflected in the financial statements of enterprises in the future. At the same time, in the process of listing related asset items on the statement, the related disclosures will involve both mandatory and voluntary disclosures by the enterprise, thereby enhancing the transparency of the statement and facilitating the decision-making of the statement users.

2.4 The Inclusion of Data Assets in the Balance Sheet Speeds Up the Flow of Data as a Production Factor and Optimizes the Allocation of Resources

The inclusion of data assets on the balance sheet will draw the attention of the enterprise's investors and stakeholders to the enterprise's data resources and digital capabilities. Once data assets are on the balance sheet, a portion of the expenses will be capitalized, increasing profits. At the same time, the increase in assets lowers the debt-to-asset ratio, which is beneficial for corporate financing. Therefore, the inclusion of data assets on the balance sheet optimizes resource allocation from a macro perspective of the entire society.

3. Main Bottlenecks in the Inclusion of Data Assets in the Balance Sheet

3.1 Legal and Policy, Accounting Standards Obstacles

In December 2022, The State Council of China issued the "Opinions on Building a Data Foundation System to Better Play the Role of Data Elements". In August 2023, the Ministry of Finance of China issued the "Interim Provisions on Accounting Treatment related to Enterprise Data Resources". In December 2023, the Ministry of Finance

issued the "Notice on Issuing the 'Guiding Opinions on Strengthening Data Asset Management'". These successive documents, which have been issued and implemented, serve as guidelines for enterprises to include their data assets on the balance sheet. However, due to a lack of practical experience, these documents need to be refined and revised.

On the other hand, from a legal perspective, personal privacy information, such as personal information obtained by logistics information platform enterprises. For such information, the law only stipulates the confidentiality obligations of the relevant enterprises, but does not determine the ownership of the data, nor does it clarify the ownership and distribution of its use and benefits. If logistics companies use the information directly, or process it as "data assets" and lend or sell it for economic benefit. Then there is a high possibility of legal risks such as infringement. In addition, multinational companies may also face compliance risks and even international legal conflicts when selling or purchasing data assets externally.

From the perspective of accounting standards, China has not issued separate standards for data assets or provided specific chapters and provisions in the standards to regulate the practical operation of data assets being included in the balance sheet. In fact, enterprises that have initially attempted to include data assets on the balance sheet operate the recognition of data assets by analogy with the recognition conditions of assets.

3.2 Data Assets are Difficult to Identify and Classify

3.2.1 The four characteristics of data assets make them difficult to identify

1) Uncertainty

The uncertainty of a data asset is reflected in the uncertainty of its ownership, the uncertainty of future income, and the uncertainty of the scenarios on which its use is based, such as sales behavior, etc. Specifically, it is a question in itself whether enterprises have obtained the right to use and ownership of the data they have downloaded and copied after obtaining data from different sources. The ambiguity of this issue, that is, the lack of clear property rights, is bound to pose legal risks such as infringement for enterprises' subsequent actions of confirming data assets and renting and selling them for profit. On the other hand, data assets are accounted for and disclosed in financial statements after being packaged or integrated by the enterprise, but this does not necessarily lead to future gains. The uncertainty of future earnings is due to the uncertainty of future customer demand and market demand. Since the future earnings of data assets are highly dependent on the timeliness of the data assets themselves. So even if this uncertainty itself does not pose a risk in the case of the probability is uncertain, it creates difficulties in the recognition and subsequent measurement of data assets. Finally, the use and value of data assets depend on the scenarios and occasions in which they can be used by transferees and users, so they have poor versatility. Once such scenarios disappear due to market changes, the value of the data assets formed by the enterprise will instantly vanish and become invalid due to the loss of the attributes of the assets.

2) Replicability

Data assets can be replicated conveniently both offline and online through different media storage tools and network cloud platforms, email, servers, etc., and can be replicated multiple times and used in relevant scenarios. It is precisely because of this easy-to-copy and store nature that data assets can continuously increase business revenue with the number of times they are used, but at the same time, their lifespan is shortened and their value is reduced because being easily copied by others reduces the number of times they are served and sold. At the same time, this comes with corresponding legal risks.

3) Non-substance

This can also be called intangibility, which means that data assets break free from physical constraints and can be freely stored and shared in the digital world. Under this non-materiality, a new property can be derived, which is non-consumability. The data asset itself that has been copied and read will not be reduced in size or trimmed, that is, it can be used an unlimited number of times, unlike a fixed asset that depreciates in value due to wear and tear.

4) Dependency

Detached from market and customer demands and business activities, data assets cannot be applied to various economic fields and business scenarios, losing their usefulness and value. At the same time, it is highly dependent on software, hardware, networks, professionals, technical systems, and specific customer groups or individuals that enable it to function properly.

3.2.2 Difficulty in identification and classification

Data assets recognition is lack of standards, so it is impossible to establish corresponding directories and classification lists. In practice, data assets/products have not developed a quality standard system for data products in line with the quality standard system for general commodities/products. Such standards should cover various types of data, and also stipulate the key specifications that each data asset/product must have, such as fields and formats.

3.3 The Cost of Forming the Data Asset is Difficult to Aggregate and Confirm

First, if Chinese enterprise downloaded public data on public networks, is there any costs? Should the cost be recognized? Are there any associated legal risks involved? These questions themselves remain to be discussed.

Second, which costs should be aggregated and then capitalized is an important question. When new costs are constantly emerging, it is also a question at what timepoint to interrupt expensing and incorporate costs that should be capitalized into the value of the asset. Which costs are sunk costs and which expenses are period expenses that can only be expensed. This issue also needs to be addressed clearly.

Thirdly, due to the particularity of data assets, their costs and

future revenues are basically impossible to match, further increasing the difficulty of cost accounting.

3.4 It is Difficult to Value Data Assets, and the Revenue They Generate is Hard to Determine and Measure

3.4.1 The value of data assets is difficult to quantify

First, it is difficult to determine the timing of the value assessment of data assets. There has always been controversy over what event should be taken as the starting point of capitalization and the beginning of data asset assessment.

Second, there is a lack of scientific and reasonable tools, methods, indicator systems, and data science models for the valuation of data assets. From the current practice, it is not clear what data models and analytical tools are universally accepted around the world.

Third, the value chain of data assets remains to be discovered and utilized. Data assets, like general assets, are applicable to value chain analysis theories and methods. Businesses that own data assets must figure out where their data assets stand in the entire value chain. Otherwise, it will be impossible to accurately assess the economic value of its data assets without seeing the entire value chain.

3.4.2 The assessment of the value of a data asset begins by comparing it to the value assessment of intangible assets

Therefore, the cost approach, the market approach, and the income approach are the most frequently used. But each of the three methods has its own limitations: First, the types of costs to be considered in the cost method are not defined, such as the break-even point method and the target cost method are not very suitable. As a result, enterprises are more casual in their operations. Moreover, there is a problem with the division between costs and expenses. Secondly, the use of the market approach relies on the existence of a highly active trading market within the country. At present, such markets have not been established, so fair measurement of data assets is not possible. Finally, the income approach also has uncertainties about the cash flow of future earnings and its timing, as well as the excessive subjectivity of customer demand due to the lack of contracts, which is mainly predicted.

3.4.3 The determination of income

If the use of the data asset is billed: for example, an annual fee, or a per-use fee, the amount varies depending on the version (function) of the data product. While this revenue model makes it easier to calculate revenue estimates, estimating the number of customers and the lifespan of data products becomes a challenge. If the revenue comes from a contract with a clear quantity and amount, then estimating the revenue becomes easy, but if the contract lasts for many years, the opportunity cost and the time value of the money should be taken into account.

3.5 Difficulties in Initial Recognition, Accounting Treatment for Classification, and Disclosure

3.5.1 Professional judgment is needed on whether the enterprise has control over the data assets

Whether to control or not should still be judged by whether the enterprise can lead or participate in business activities, thereby sharing variable returns, and has the ability to use this power to influence the amount of the variable returns. Unlike general assets, the recognition of data assets should have at least two implied conditions: one is that the enterprise has processed the original data; Second, the enterprise can ensure in its possession and control that other enterprises or entities, or individuals cannot copy the data asset at will and rent or sell it.

3.5.2 Difficulty in obtaining rights

There are three main rights involved here: the right to hold resources; the right to process and use data; and the right to operate data products. At present, a few provinces of China have successively launched data asset registration certificates to clarify ownership, but there is no uniform certificate nationwide.

3.5.3 Classification

Classification here means dividing data products that meet the definition of assets into intangible assets or inventories. In principle, data products classified as intangible assets should not be exclusive or monopolistic; Data assets classified as inventory are usually custom-made by customers and transfer ownership when sold.

3.5.4 Accounting treatment

The difficulty in accounting treatment lies not in how to make accounting entries, but in determining at what point in time to recognize the capitalized and expensed parts of all expenses in the form of accounting entries, and at what point of time to transfer the capitalized expenses in research and development expenditures to the original cost of data assets.

3.5.5 Presentation and disclosure of financial statements

Some scholars argue that presenting data assets separately may weaken the intrinsic value connection with other data. For example, data assets may be added value attached to the profits of the corresponding products.

Another example is that data assets may be hidden in goodwill formed by business combinations. Or, before the data asset is written on the balance sheet, its value is hidden in the company's share price, etc. However, more scholars support the presentation and disclosure of data assets in accordance with the requirements of relevant guidelines, as opposed to other assets.

3.6 Difficulties and Problems in Subsequent Measurement

First, it is not appropriate to use the fair value model for the subsequent measurement of data assets if there is no corresponding active data asset trading market.

Secondly, data assets appear to have no wear and tear after one or more uses, but they are also amortized based on supply and demand or timeliness (There must be a change after the demand changed).

Again, there is controversy over whether the amortization period should be the conservative 2-5 years or the maximum amortization period of 10 years for intangible assets.

Finally, after recognizing the data assets, the company will increase its profit level in the current year because of the increase in total assets and create more finance opportunities. In the following years, profits will decrease and the capital structure will change. Recently, several Chinese companies have been reported by the media to have "removed" data assets from their financial statements the year after they recognized and disclosed them. So, in the subsequent measurement process, it is also necessary to prevent accounting fraud and increase early warning and supervision.

3.7 Lack of Online Professional Platforms for Rights Confirmation and Integration of Packaged Data Assets

The country lacks a management system and mechanism for data assets. There is no national uniform data source and quality rating agency, nor a national uniform standard and format of data asset ownership certificate. Without a unified, authoritative and appropriate trading platform across the country, the valuation of data assets can only rely on the assessment of experts in various countries and regions. As a result, subjectivity is inevitable, which is detrimental to the formation, transfer and flow of data assets.

3.8 Lack of Securitization and Listing Pathways

The research "report on Data Assetization from the perspective of data elements", jointly released by the Shanghai Data Exchange and Pricewaterhousecoopers (PwC) Management Consulting of China, points out that problems such as poor communication between supply and demand sides, ambiguous product pricing, unclear revenue distribution and difficult data security guarantee in data trading are concrete manifestations of the immaturity of the data trading market.

Insufficient securitization of data assets. Data assets, which are separate in form from fixed assets and intangible assets, can be fully securitized. Therefore, the securitization should be supported by financial institutions through the issuance of bonds or stocks, thereby increasing the financing channels of enterprises.

4. Countermeasures for Enterprises to Break Through Bottlenecks and Promote the Inclusion of Data Assets on the Balance Sheet

4.1 Introduce Separate Laws, Regulations, Accounting Standards and Auditing Standards

First, it should be clearly stipulated by law that personal privacy data, data that infringes upon others' intellectual property rights, etc. shall not be used. Enterprises must assert the rights of their data assets.

Secondly, because of the high legal and compliance risks, companies that own data resources and assets must establish risk assessment and related internal control systems.

Finally, the "Interim Provisions on Accounting Treatment related to Enterprise Data Resources" is not a standard that truly serves the entry of data assets into the balance sheet. It is hoped that international or domestic authorities will introduce relevant, separate, and clearly defined standards and application guidelines as soon as possible.

4.2 The Government Should Enhance Guidance to Improve the Accuracy of the Identification and Classification of Data Assets

First, clarify the sources of the data. Since the source of the data directly determines its credibility. For example, public data published by the state is generally unquestionable. If there is a data rating agency, it should also be rated as the most credible level. Businesses should start from the source to ensure that data sources are well-grounded, thereby guaranteeing data quality.

Secondly, determine the content of the data. The content of the data is mainly fields, format, logical and mathematical relationships, interrelationships of financial data, etc.

Finally, in terms of classification, there are at least: customer group data, marketing channel data, logistics data, product design data, etc. At the same time, it should be determined whether the data asset/product is used only to provide services or sold for profit (transfer of ownership) after its formation. The state should conduct extensive research in this regard and solidify the guidance on the identification and classification of data assets into a directory or list of data assets to facilitate business operations.

4.3 Define the Cost Range Correctly to Ensure the Relevance of Costs

4.3.1 The initial cost should include the following sub-costs:

1) Acquisition cost (purchase cost of data assets or commission development cost);

2) Sorting costs (costs for data processing, integration, cleaning, transformation, etc.);

3) Storage costs (purchase price of storage medium, service fee for renting cloud platform storage, etc.);

4) Security protection costs (encryption, antivirus software and network firewalls).

4.3.2 Establish an accounting system for research and development hours

The total cost of R&D expenditure should first be converted into working hours and then multiplied by the number of people and wages to be monerized. Then, allocate and pool

the costs and expenses of R&D inputs reasonably. Given that the above costs are incurred from internal activities of the enterprise, the evidence to prove the correctness of the above accounting measures is still internally generated in enterprises and lacks objectivity. Therefore, only the enterprise itself can make up for it by doing the relevant internal control work well.

The so-called "relevance", an accounting principle, it means that the types of costs are delineated neither too much nor too little, while meeting the requirements of another accounting principle—completeness. Sunk costs such as market research and period expenses must not be included in the cost of assets.

4.4 Estimate the Value and Earnings of Data Assets Based on Market Demand

Relevant enterprises can use the Data Asset Framework (DAF) in the UK to make estimates of valuation and returns. The framework is a comprehensive data asset management framework that covers the entire process of data assets from mining, evaluation, management to protection. It provides guidance and support for these efforts.

The specific operation steps: First, the costs are what the enterprise actually incurs and can be calculated, aggregated and packaged more precisely. Then, on this basis, the enterprise can use the income method to calculate the income as the value of the asset based on income sources with obvious grounds such as contracts and customer subscriptions. Finally, using the assessment results of these two or other methods, such as the market approach (if there is a mature trading market), weigh the results of several methods to construct a value range, providing advice for accounting to recognize its value and earnings.

In addition, for the volatility of data asset income, it can be mathematically associated with data models about variance and mean, such as the least square method, Monte Carlo simulation, etc.

4.5 Make the Initial Measurement, Accounting Treatment and Disclosure Scientific and Reasonable

4.5.1 Classification

For example, data subscriptions are not exclusive and are generally treated as intangible assets. Research consulting must be a customer-customized product that transfers ownership when sold and is applicable to inventory classification.

Customer data (information) resources can be included in the development costs under intangible assets during internal research and development; Customer relationship resources are derived from the enterprise's successful customer relationship management, so intangible assets are formed only under non-common control.

If it is entrusted to a third party for research and development, it can be directly recorded under "research and development expenses"; If purchased from outside, "intangible assets" can be directly recognized.

4.5.2 Accounting

When a research and development project is initiated, it serves as the starting point for accounting research and development expenditures. After the project is initiated, debit "R&D expenditure - expensed expenditure". After the feasibility study of the project is approved, it is the time point for capitalization of R&D expenditure. Debit "R&D expenditure - capitalized expenditure". After the project is completed, debit "intangible assets - data resources" and credit "Development expenditure - capitalization expenditure".

4.5.3 Presentation and disclosure

When presenting, first add "Data resources" under "Development expenditures" item in the financial report.

Disclosures may be made in accordance with "Other Disclosure Requirements" under the "Interim Provisions on Accounting Treatment Related to Enterprise Data Resources". The specific disclosure is divided into two parts: the first is the mandatory disclosure part. It includes the way data assets are formed (purchased, self-developed and commissioned development, etc.), relevant accounting policies, accounting estimates, amortization methods, impairment tests and other significant assessment information. The second is the voluntary disclosure section. It may include the company's digital strategy, market layout, data governance, innovation practices, risk assessment, and risk supervision and control.

4.6 Ensuring Sufficient Evidence and Indication for the Accounting Treatment and Subsequent Measurement

4.6.1 Amortization method

The straight-line method and the work volume method can be used.

4.6.2 Time limit for amortization

If the service period of the query product is 10 years, then the amortization period can be set at 10 years.

4.6.3 Residual value

Residual value is generally assumed to be zero if no third party acquires ownership of the data asset at the end of the period.

4.6.4 Impairment

For data assets that initially have an active trading market, when the associated active trading market closes and the fair value cannot be measured, debit "Impairment Loss of Assets" and credit the "Provision for Impairment of Intangible Assets" account.

4.7 Promote the Experience of Local Data Asset Trading Platforms and Coordinate Both Online and Offline Service

First, to protect the privacy, information and rights of individual and corporate customers, the provinces of China

should make it as clear as possible which information can be shared.

Second, the way the government helps enterprises: one is to carry out professional services and provide professional talents. The second is to recommend lawyers and provide legal aid.

Third, local governments should accelerate the improvement of the supporting system construction. These include the property rights registration system, the audit supervision system and the asset evaluation system.

Fourth, accelerate the development of supporting intermediary services, including auditing, taxation, asset evaluation and legal services by certified public accounting firms and law firms, as well as data integration, packaging and auction services by local data exchanges.

Fifth, build a trusted platform across the country and establish a maximum security domain. Promote the experience of a "data product supermarket" in a certain province to instantly integrate and package data products. Implement the data product rights registration system nationwide, on a provincial or municipal basis.

4.8 Promote the Securitization of Data Assets for Satisfying the Listing Needs of Related Enterprises

At present, there are not many companies using data assets to go public, and the state does not have a dedicated market segment to arrange IPO for companies which possess data assets. If a company does not go public, it will not be convenient to raise funds through securitization. In particular, it is difficult for smaller scale companies to obtain loans from commercial banks, let alone issue corporate bonds. As a result, the companies have to rely more on venture capitalists to raise funds. It is believed that the spring of data asset securitization will come when data asset listing becomes the mainstream business model for enterprises across the country.

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