

Research on Accounting Recognition of Enterprise Data Assets—Taking A Group as an Example

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Abstract: In the digital economy era, data has emerged as a new production factor with significant economic value. However, current accounting standards lack systematic alignment in data asset recognition, making it difficult for enterprises to objectively reflect core data resources in financial statements and weakening the decision-usefulness of accounting information. Taking A Group, a leading domestic e-commerce platform, as a case study, this paper analyzes practical obstacles in accounting recognition of data assets through three dimensions: asset ownership definition, cost measurement, and assessment of future economic benefits. Drawing on its public financial reports, ESG reports, and data business practices, the study proposes solutions based on the “Interim Provisions on Accounting Treatment of Enterprise Data Resources” (Caihui [2023] No.11), providing practical references for corporate data asset accounting recognition and standard improvement.

Keywords: Data Assets; Accounting Recognition; Intangible Assets; Cost Measurement

Published: Oct 25, 2025

DOI: <https://doi.org/10.62177/apemr.v2i5.801>

1.Introduction

1.1 Research background: the contradiction between the release of data factor value and the adaptability of accounting system

Data, as a new factor of production explicitly defined in the “14th Five-Year Plan for Digital Economy Development”, has become the core engine driving economic growth. The “China Digital Economy Development Report (2024)” released by the China Academy of Information and Communications Technology shows that in 2024, China’s digital economy reached 53.9 trillion yuan, accounting for 42.8% of GDP, with data elements contributing over 15% to economic growth. This development trend aligns closely with the strategic positioning of the “Opinions on Building a Data Foundation System to Better Leverage the Role of Data Elements” (“Data Twenty Articles”), while also driving enterprises’ data asset value creation capabilities to gradually stand out: JD.com’s 2022 annual report disclosed that its supply chain data modeling improved inventory turnover rate by approximately 30%, directly reducing operational costs by 8%; Ant Group’s 2020 prospectus revealed that data technology service revenue accounted for 39% of total revenue, with risk control services based on user credit data contributing 62% of profits in this sector; IDC’s “Global Data Value White Paper (2023)” research indicates that among global listed companies, the value contribution of off-balance-sheet data assets exceeds 30% of market capitalization, reaching as high as 45% in the internet industry.

However, the non-exclusivity, scenario-dependent nature, and dynamic value characteristics of data assets present significant

conflicts with existing accounting frameworks. According to Accounting Standard for Business Enterprises No.6——Intangible Assets (issued in 2006), data asset recognition faces three core contradictions: First, the non-exclusive nature of data ownership conflicts with the accounting standard’s “controlling” requirement; Second, data value depends on specific application scenarios, which clashes with the recognition criterion of “likely economic benefits flowing in”; Third, the initial cost of data assets often deviates from their ultimate value, contradicting traditional historical cost measurement principles. PwC’s 2024 Shanghai-Shenzhen 300 Enterprise Data Asset Survey reveals that 90% of enterprises hold off-balance-sheet data assets, averaging 20% of their book value. This situation severely undermines the integrity of financial information.

The Interim Provisions on Accounting Treatment of Enterprise Data Resources (hereinafter referred to as the “Interim Provisions”), effective January 1, 2024, for the first time explicitly state that data resources may be accounted for under the intangible assets or inventory standards. However, enterprises still face operational challenges such as ambiguous ownership recognition criteria, lack of cost allocation methods, and incomplete valuation systems in practice. To address these issues, this paper selects Group A, a company with data operations spanning retail, cloud computing, and logistics sectors, as a case study. By analyzing its publicly disclosed financial data and data asset practices, the study systematically examines specific obstacles in accounting recognition, providing practical references for implementing the Interim Provisions.

1.2 Research significance: the dual value of theoretical complementation and practical guidance

Theoretically, this paper reconstructs the evolutionary trajectory of intangible asset accounting standards (from the 2006 edition to the 2023 Interim Provisions) while examining data assets’ unique attributes. By establishing a three-dimensional analytical framework for data asset recognition, it addresses the adaptation gap between traditional accounting theories and the digital economy era. Furthermore, the study introduces a data asset lifecycle theory that divides data assets into five phases: collection, cleansing, storage, application, and iteration. Through analyzing the distinctive accounting recognition characteristics at each stage, the research provides a theoretical foundation for subsequent studies.

In practical terms, this study examines Group A as a case study to thoroughly analyze the specific obstacles in data asset recognition. By aligning with China’s Interim Provisions on Data Asset Recognition, it proposes actionable solutions. For instance, addressing cost allocation challenges, the research developed a “Data Asset Cost Allocation Matrix” that clarifies cost allocation methods for externally purchased/internally generated and structured/unstructured data. To resolve ambiguous ownership issues, the study references legal requirements from China’s Data Security Law and Personal Information Protection Law to propose a “Hierarchical Ownership Confirmation Model for Data”. These findings provide direct guidance for enterprises to ensure compliant data asset accounting, while offering practical evidence for regulators to refine accounting standards.

2. Case Background: A Group’s data business and financial status

2.1 Ecological layout of A Group’s data business

As China’s leading e-commerce enterprise, Group A operates across four core business segments: online retail (65% of total revenue in 2023), cloud computing (18%), digital media and entertainment (10%), and logistics services (7%). The company achieved 1.12 trillion yuan in revenue for 2023, with R&D investment accounting for 3.52% of total revenue. Notably, data-related R&D expenditures (including data collection, algorithm development, and data security) constituted 42.3% of this investment. According to its 2023 annual report and ESG report, the group has accumulated three categories of core data resources, establishing a self-reinforcing ecosystem where “data drives business operations while business data feeds back into data utilization.”

2.1.1 User Data: The Group analyzes massive data from over 1 billion users across browsing, search, purchasing decisions, and transactions on its platform to build precise user profiles for personalized recommendations. Behavioral data covering over 800 million active users—including click-through rates, browsing patterns, and purchase preferences—along with transactional data such as order values and payment methods, collectively reveal users’ interests in different product categories. This approach not only enhances shopping experiences and conversion rates but also provides insights into consumption habits and regional characteristics, thereby driving sustained business growth.

2.1.2 Merchant Data: The Group has accumulated comprehensive operational data for platform merchants, covering store

traffic, conversion rates, average order value (AOV), product sales volume, inventory levels, and merchant credit metrics based on fulfillment performance and after-sales service. This data not only helps merchants optimize their operations but also provides critical support for the platform to screen high-quality merchants, deliver differentiated services, and facilitate financial institutions' credit offerings (such as MYbank's unsecured loans). Additionally, the platform offers targeted operational guidance and training through data analysis, empowering merchants to enhance their capabilities and thereby boosting the platform's commercial vitality and competitiveness.

2.1.3 Logistics Data: As the logistics backbone of the group, Cainiao Network has accumulated extensive data in logistics and supply chain management. Real-time tracking of parcel trajectories enhances consumer experience; warehouse data optimizes inventory allocation and reduces costs; while supply chain collaboration data integrates operational information across merchants, logistics providers, and suppliers. Through analyzing these datasets, Cainiao achieves visualized and intelligent supply chain management. This includes predicting logistics peaks, reallocating resources to ensure stable promotions, and mitigating bullwhip effect through information sharing – all of which boost the entire supply chain's responsiveness and competitiveness^[1].

According to the financial statements, Group A's 2023 annual report shows intangible assets totaling 18.6 billion yuan, primarily comprising software copyrights and trademark rights, with no separate disclosure of "data assets". R&D expenses amounted to 38.5 billion yuan, where data-related expenditures such as data cleansing and algorithm development accounted for approximately 40% and were fully recognized in current period profits. In "other business income", data service revenue reached 6.2 billion yuan, representing 5.6% of total revenue, though the underlying data resources were not recognized as assets.

2.2 The current situation of financial accounting of A Group's data assets

According to the 2023 financial statements, the accounting of data assets of Group A has obvious off-balance sheet characteristics, which are as follows^[2]:

2.2.1 Asset side: Data assets are not separately recognized and presented

The balance of the "Intangible Assets" account stood at 18.62 billion yuan, primarily comprising software copyrights (8.53 billion yuan), trademark rights (6.21 billion yuan), and externally purchased technology licenses (3.88 billion yuan). Notably, the "Data Assets" item was not separately listed. In the "Fixed Assets" category, data storage-related servers and storage devices totaled 12.45 billion yuan. These assets were depreciated using the straight-line method over a five-year period, with full depreciation expenses recognized in current period income statements, without being linked to specific data asset projects^[3].

Cost side: All data-related expenses are expensed

In 2023, the total R&D expenditure reached 38.56 billion yuan, with data-related expenses (including 2.83 billion yuan for data collection, 3.21 billion yuan for manual data cleaning, 6.52 billion yuan for algorithm development, and 2.84 billion yuan for data security) totaling 15.4 billion yuan, accounting for 40% of the total R&D expenditure. All these expenditures were fully recognized in the current period's profit and loss in accordance with the "Research Stage Expenditure" requirements under Accounting Standard for Business Enterprises No.6 — -Intangible Assets.

Revenue side: data service revenue does not match asset side recognition

In the "Other Business Revenue" segment, data service income reached 6.23 billion yuan, accounting for 5.6% of total revenue. This primarily included user profiling services provided to third-party merchants (3.21 billion yuan), merchant credit data services offered to financial institutions (2.12 billion yuan), and supply chain data services delivered to logistics companies (900 million yuan). However, the underlying data resources were not recognized as assets, rendering the "revenue-cost" matching principle ineffective — In 2023, the gross margin of the data service sector hit 68%, significantly higher than the group's overall 25% gross margin. This abnormal disparity essentially stems from cost underestimation caused by unrecorded data assets.

3. Case Analysis: Practical obstacles to accounting recognition of data assets in Group A

3.1 Ambiguous definition of asset attributes: the definition of "intangible assets" is not suitable

According to Accounting Standard for Business Enterprises No.6 —— -Intangible Assets, an asset must meet four criteria: “identifiability,” “ownership or control,” “probable future economic benefits,” and “reliable cost measurement.” The data resources of Group A exhibit three layers of ambiguity in their attribute definition:

3.1.1 Legal level: Ownership stratification leads to difficulties in the identification of “control rights”

According to the Data Security Law and Personal Information Protection Law, data ownership can be divided into four tiers: “ownership, usage rights, income rights, and disposal rights.” In Group A’s data resources, externally purchased data has clear ownership with complete usage and income rights, which can be recognized as intangible assets acquired through external purchases^[4]. However, the ownership of internally generated data remains significantly contentious:

User Data: Under the User Service Agreement, Group obtains “limited usage rights” that must meet three conditions: desensitization processing (compliant with GB/T 35273-2020 “Information Security Technology-Personal Information Security Specification”), purpose limitations, and user revocability. For example, when users disable personalized recommendation permissions, companies can no longer access their historical behavioral data, resulting in a lack of “long-term control rights”.

Business Data: As data providers, merchants retain partial ownership of their operational data. Group A only holds “collaborative usage rights” —— According to the Platform Service Agreement, merchants may request Group A to delete their historical sales data, with data service revenue to be proportionally shared between merchants and Group A. This conflicts with the core requirement of intangible assets that “enterprises have the right to control asset usage and exclusively enjoy economic benefits.”

3.1.2 Accounting level: “discernability” standard adaptation conflict

The Accounting Standards for Business Enterprises No.6 ——: Intangible Assets stipulates that “discernability” must be satisfied by either “separability” or “originating from contractual rights.” A Group’s structured data can be independently separated and sold, meeting the discernability requirement. However, unstructured data (such as user clickstream data and logistics trajectory video data) cannot be isolated and requires algorithmic models to generate value —— . For instance, user clickstream data must be processed through “recommendation algorithms” to transform into personalized recommendation services, as standalone click data lacks economic value. This strong binding relationship between “data and algorithms” makes it difficult for unstructured data to meet the “discernability” standard, thus failing to qualify as intangible assets.

3.1.3 Practical level: The blurred boundary between “asset-service” makes classification difficult

The Interim Provisions specify that data resources may be classified as either “intangible assets” or “inventory”. However, Group A’s data operations face ambiguity in defining the “asset-service” boundary. For instance, their “consumer profiling service” involves both user data and algorithmic analysis with report outputs—— If recognized as intangible assets, separate accounting for data costs and value becomes necessary; if treated as service revenue, it risks overlooking the long-term value of data assets, leading to inconsistent accounting treatments for identical services.

3.2 Cost reliable measurement dilemma: operational difficulties in initial measurement

“Cost can be measured reliably” is the core condition of asset recognition. The cost composition of A Group’s data assets is complex, and there are three problems in practice: “difficult to collect, difficult to allocate and difficult to trace”.

3.2.1 Cost pooling: the boundary between direct cost and indirect cost is vague

The cost of data assets in Group A can be divided into direct costs and indirect costs, but the boundary between them is difficult to be clearly divided:

Direct cost: including data collection fee, data purchase fee, data cleaning and annotation labor cost, and amortization of special software. These costs can be directly attributed to specific data asset projects^[5];

Indirect costs: including server depreciation, cloud computing resource consumption, database R&D expenditure, data security investment, etc. These costs are shared by multiple data services —— For example, the server simultaneously stores user data, merchant data and logistics data, which cannot be directly attributed to a single data asset project, resulting in incomplete cost collection.

3.2.2 Cost allocation: Shared cost allocation lacks standards

For the allocation of indirect costs, Group A currently adopts the “data storage ratio method”, which allocates shared costs such as server depreciation and cloud computing resource consumption according to the proportion of various data storage. However, this method has obvious defects:

The resource consumption does not match the storage capacity: the storage capacity of user data accounts for 60% of the total storage capacity, and 60% of the server depreciation is allocated according to this proportion. However, the average daily call times of user data are much higher than that of merchant data, and the actual resource consumption and storage capacity are significantly different, resulting in distorted cost allocation results;

Value and storage volume are not correlated: The value of 1TB user portrait data is far more than that of 10TB ordinary transaction data. Cost allocation based on storage volume will further amplify the deviation between cost and value, which does not conform to the principle of “cost and value ratio”.

3.2.3 Cost traceability: It is difficult to confirm the historical cost of endogenous data

The endogenous data of Group A is mostly accumulated through daily business, and its historical cost is difficult to trace:

Initial costs were not separately accounted for: User behavior data prior to 2021 was generated during the platform’s normal operations, with collection costs (such as server depreciation and labor expenses) not separately calculated. To recognize these data assets now, we need to retroactively trace costs since 2021. However, some original documents (e.g., server operation records) have been destroyed in accordance with regulations, making cost measurement unreliable.

Unclear capitalization standards for subsequent expenditures: Ongoing costs such as data cleansing and algorithm optimization continue to occur. For instance, in 2023, 1.23 billion yuan was invested in algorithmic iterations using user data from 2021. Current accounting standards fail to clarify whether such expenditures should be capitalized or expensed, leading to arbitrary practices in actual operations.

3.3 The problem of future economic benefit assessment: uncertainty and relevance are prominent

The value of data assets is heavily dependent on their application scenarios and timeliness. A Group’s user behavior data experiences rapid value decay, with its economic benefits being highly uncertain. For instance, a user preference model built for a promotional campaign may see its value plummet immediately after the event concludes. While precision marketing and similar operations can generate measurable cash flows, technically challenging to directly and reliably link these to the economic benefits flowing from specific underlying datasets. This high uncertainty in future economic returns makes it difficult for accountants to conclude during professional judgment that “economic benefits are likely to flow into the enterprise.”

4. Discussion and Implications

Through the case analysis of Group A, it can be found that the problem of accounting recognition of enterprise data assets is essentially a conflict between the current historical cost accounting model and the unique value creation model of data assets.

4.1 Implications for the development of the Standards: Refining guidance on the identification of “control rights” and cost allocation

The Ministry of Finance is advised to refine the criteria for determining “control rights” over data assets in conjunction with the Data Security Law. —For user data, merchant data, and other “limited-use” data that meets the conditions of “authorization period ≥ 1 year, clear purpose, and non-revocable,” it should be recognized as “having substantive control rights.” For instance, Group A’s “long-term authorization agreement” with users (authorization period 2 years) and desensitized data can be confirmed as intangible assets. Regarding cost allocation, following the logic of Accounting Standard for Business Enterprises No.17 —Borrowing Costs, it is recommended to adopt the “data storage ratio method” for shared indirect costs (e.g., server depreciation). If a data asset accounts for 20% of total storage volume, 20% of server depreciation should be allocated, enhancing the objectivity of cost measurement.

4.2 Implications for enterprises: building a whole-process management system of data assets

Group A may establish a data asset ledger in accordance with the Interim Provisions, categorizing and documenting data resources’ sources (external procurement/internal generation), ownership agreements, cost components, and application scenarios. For instance, regarding “credit data from external merchants,” it should separately record procurement costs, authorization periods, and usage scopes to provide a basis for cost aggregation;

For major data projects such as the “Smart Logistics Data Platform”, a project-based approach is adopted to aggregate costs. Costs are separately accounted for by project, with direct costs directly allocated and indirect costs proportionally allocated based on “project usage duration”. For example, in 2023, Group A’s “Smart Logistics Data Platform” utilized servers for 15% of total operating hours, resulting in a 15% allocation of server depreciation to meet cost objectification requirements.

4.3 Implications for regulation and evaluation: Promoting standardization of data value assessment

It is recommended that the China Appraisal Society for Assets issue the “Guidelines for Data Asset Valuation” to establish a framework for data asset valuation and clarify the application scenarios of the income approach and market approach. For example, Group A’s “user profile data” could adopt the income approach to assess value based on the present value of data service revenue over the next three years;

Referring to the “data asset on-balance sheet guidance mechanism” of Shenzhen Data Exchange, strengthen the coordination between data exchange and enterprises. Group A can list the compliant data products such as desensitized merchant credit data on the exchange, verify their value through market transaction prices, and provide reference for accounting recognition.

5. Conclusions

This study examines Group A as a case to reveal practical challenges in accounting recognition of data assets across three dimensions: asset ownership determination, cost measurement reliability, and future economic benefit valuation. These issues stem from the intangible nature and dynamic value characteristics of data assets, representing common challenges faced by traditional accounting frameworks when addressing new digital economy elements. The implementation of the Interim Provisions provides a policy foundation for data asset recognition, but practical application requires enterprises to establish comprehensive data asset management systems tailored to their business scenarios. Regulatory bodies need to refine operational guidelines on “control rights” identification and cost allocation, while evaluation agencies should develop standardized data valuation criteria. As the data market matures and accounting systems improve, data assets will progressively achieve “confirmable, measurable, and reportable” status, offering more precise financial support for enterprise valuation and digital economic development.

Funding

No

Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Reference

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