

# Research on the Impact of Data Asset Recognition on Corporate Financial Reporting Quality in the Telecommunications Industry—A Case Study of China Mobile

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**Abstract:** Against the backdrop of a rapidly expanding digital economy and progressively refined regulatory frameworks governing data resources, data assets have assumed an unprecedented strategic prominence as core corporate strategic resources. This study examines the telecommunications industry, with a particular focus on China Mobile as a representative case. Drawing upon the data resource disclosure practices in its 2024 financial report, we systematically investigate the implications of data asset recognition for financial statement presentation and information disclosure. By constructing a financial reporting quality evaluation framework, this research specifically analyzes how the recognition and measurement of data assets influence key qualitative characteristics of financial information, including reliability, relevance, and materiality. Our findings not only contribute to enhanced standardization and transparency in data asset management within the telecommunications sector but also provide a theoretical foundation for firms seeking to optimize financial data governance, unlock data asset value, and strengthen their competitive positioning in the digital economy.

**Keywords:** Data Assets; China Mobile; Financial Reporting Quality; Accounting Recognition; Information Disclosure; Balance Sheet; Intangible Assets; Digital Economy

**Published:** Mar 11, 2026

**DOI:** <https://doi.org/10.62177/apemr.v3i2.1090>

## 1.Introduction

The accelerated development of the digital economy has established data as both a fundamental strategic resource at the governmental level and a core factor of production driving value creation at the enterprise level. To regulate the development of markets for data factors, Chinese authorities have successively promulgated a series of policy documents. In August 2023, the Ministry of Finance issued the “Interim Provisions on Accounting for Enterprise Data Resources” (hereafter “Interim Provisions”), stipulating that from January 1, 2024, enterprises may recognize eligible data resources as assets, classifying them as “inventory,” “intangible assets,” or “development expenditure” within financial statements. This regulatory development marks the formal integration of data as the “fifth factor of production” into corporate accounting systems, representing a milestone in advancing the process of data capitalization<sup>[1]</sup>.

As a quintessential data-intensive sector, the telecommunications industry’s data resources—their scale, quality, and value conversion capacity—directly influence firms’ core competitiveness and sustainable development potential. Within this context, issues concerning the accounting recognition, measurement, and disclosure of data assets not only affect the

transparency of corporate financial information but also exert a profound impact on financial reporting quality. Utilizing China Mobile as a case study, this paper systematically examines the mechanisms through which data asset recognition influences financial reporting quality in telecommunications enterprises, with particular attention to its manifestations across reliability, relevance, and materiality dimensions. Furthermore, we elucidate the pathways through which data assets embody value within financial reporting. Our results offer valuable insights for optimizing data asset management practices in the telecommunications industry, provide theoretical support for relevant policy formulation, and contribute to the industry's pursuit of high-quality development.

## 2.Literature Review

Existing research on data assets primarily revolves around two core issues: conceptual definition and accounting recognition/measurement, forming a relatively systematic theoretical framework.

Regarding conceptual definition, academic understanding of data assets has evolved through a gradual deepening process. Foundational research in information science (Ackoff, 1989) proposed the “Data-Information-Knowledge-Wisdom” (DIKW) hierarchy, defining data as raw records of entities, events, and their interrelationships. With digital economy advancement, scholars have expanded the conception of data assets across multiple dimensions. Innovative research by Zhu Yangyong et al. (2018) transcended traditional classification boundaries, constructing a unified theoretical framework encompassing digital assets, data assets, and information assets based on common characteristics of physical attributes, existential attributes, and information attributes. This perspective finds resonance at the policy level. The Big Data Technology Standards Promotion Committee (CCSA TC601, 2023) explicitly defines data assets as “resources legally controlled by organizations, electronically recorded, measurable, and capable of creating value” across three dimensions: legal attributes, technical characteristics, and economic value. Notably, the “resources-products-assets” three-stage transformation model proposed by Yao Jianguo et al. (2017) reveals the evolutionary pathway of data from raw resources to strategic assets, providing important theoretical foundations for understanding data asset formation mechanisms.

In the realm of recognition and measurement, establishing ownership represents a critical prerequisite for asset recognition, necessitating clarity regarding data attribution and usage rights. The “Opinions on Building a Data Foundation System to Better Leverage the Role of Data Elements” (“Data Twenty Articles”) issued by the Central Committee of the Communist Party of China and the State Council in December 2022 introduced a tripartite rights separation model—data resource holding rights, data processing and use rights, and data product operation rights—de-emphasizing ownership while stressing use rights to facilitate data circulation<sup>[2]</sup>. However, practical implementation of this framework continues to face challenges such as ambiguous delineation of rights and prominent compliance risks (Xiong Qiaoqin and Tang Ke, 2021; Chen Gang et al., 2024)<sup>[3]</sup>. Research on measurement methodologies exhibits diversification: traditional approaches, including the cost, income, and market methods, each possess distinct advantages yet suffer from significant limitations<sup>[4]</sup>. The cost method offers operational simplicity but ignores timeliness and fails to reflect future benefits; the income method aligns with the nature of assets' future economic benefits but relies excessively on subjective forecasts; the market method depends on fair value in trading markets, but data non-standardization results in a scarcity of comparable cases (MIIT, 2023)<sup>[5]</sup>. With technological progress, measurement techniques leveraging big data, machine learning, and deep learning are gaining traction. Innovative valuation technologies, exemplified by Shangshu Net's “Golden True Valuation,” integrate deep learning algorithms (e.g., the DeepSeek model) to enable dynamic assessment of data's immediate, strategic, and risk values, offering technical solutions to valuation dilemmas.

In summary, academic consensus has largely coalesced around the connotation and essential characteristics of data assets. They are widely regarded as non-monetary strategic resources, electronically recorded, legally controlled by organizations, transformed through a three-stage “resource-product-asset” process, and possessing measurability and value-creating capacity. Nevertheless, significant divergence persists in critical areas such as measurement standards and recognition methods, highlighted by three major practical challenges: first, the design of rights confirmation systems requires urgent refinement, as the existing “tripartite rights separation” framework lacks detailed operational specifications; second, a valuation standard system remains underdeveloped, with traditional measurement methods struggling to accommodate

data assets' unique attributes<sup>[6]</sup>; third, a balancing mechanism between security and development is absent, creating tension between data circulation efficiency and compliance requirements. These challenges constitute important directions for future research.

### 3.Data Asset Profile of China Mobile

As a leading enterprise in China's telecommunications sector, China Mobile's business scope encompasses mobile communication services, digital services, value-added services, and other areas. Leveraging its vast user base and extensive communication network infrastructure, the company has accumulated substantial data resources. These primarily comprise core data types such as user consumption behavior data, location trajectory data, and network usage data, providing a critical foundation for supporting digital economic development and fostering social service innovation.

In accordance with the Ministry of Finance's Interim Provisions, China Mobile incorporates data resources meeting the asset definition into its financial statements. Initial measurement primarily employs the cost method, specifically encompassing cost aggregation from data collection, cleansing and processing, storage and maintenance, and related platform construction. For internal development expenditures satisfying capitalization criteria, the company records them under the "Development Expenditure - Data Resources" account, transferring their costs to the "Intangible Assets - Data Resources" account upon formation of identifiable data assets. For subsequent measurement, the cost model is applied: data resources recognized as intangible assets are amortized over their expected benefit periods using a systematic and rational method, with impairment testing conducted regularly per accounting standard requirements.

By compiling statements from 2021-2024, China Mobile's relevant data resource presentations are as follows:

*Table 1. Overview of China Mobile's Data Resource Incorporation (Unit: CNY Million)*

age	2021	2022	2023	2024
floating assets				
total of current assets	595371	456371	498104	568559
non-liquid asset				
intangible assets	44319	46509	47597	50804
Among them: data resources	0	0	0	560
development expenditure	919	1334	2279	2157
Among them: data resources	0	0	0	56
Other non-current assets	1165418	1396024	1409377	1451307
Total non-current assets	1210656	1443867	1459253	1504268
Total assets	1806027	1900238	1957357	2072827

Data source: based on China Mobile's 2021-2024 annual report.

During the process of data asset incorporation, China Mobile has progressively established an accounting framework adapted to the characteristics of new production factors. This not only reflects the transformation of data assets from resources to assets but also provides a reference sample for the industry in exploring the market-oriented allocation of data elements.

As evidenced in Table 1, the absence of uniform accounting standards for data resources from 2021 to 2023 meant that data resources were not separately presented in China Mobile's financial reports. This situation changed significantly with the implementation of the Interim Provisions effective January 1, 2024. The 2024 annual financial report indicates that China Mobile has conducted standardized accounting recognition and presentation of data resources in accordance with the new regulations: the amount recognized as intangible assets reached CNY 560 million, while data resources included in development expenditure amounted to CNY 56 million, yielding a total recognized value of CNY 616 million. This accounting practice signifies the formal representation of data elements as a new asset class within financial statements.

## 4. Impact of China Mobile's Data Asset Recognition on Financial Reporting Quality

### 4.1 Impact on Statement Presentation

#### (1) Optimization of Balance Sheet Structure

According to disclosures in China Mobile's 2024 annual report, incorporated data assets totaled CNY 616 million, with CNY 560 million classified under "Intangible Assets" as "data resources" and CNY 56 million included in "Development Expenditure" as "data resources." Following legal rights confirmation and value assessment, these data assets were formally incorporated into the balance sheet, significantly increasing the book value of intangible assets. This not only optimizes the asset structure of the balance sheet to better reflect the firm's core resource composition in the digital economy era but also elevates total asset scale. Post-incorporation, China Mobile's total assets increased, while total liabilities remained relatively stable or increased less proportionally than assets. The debt-to-asset ratio declined from 33% on January 1, 2024, to 32% on June 30, 2024. This change indicates that data asset recognition improves the firm's capital structure, reduces financial leverage, and a lower debt-to-asset ratio signifies enhanced long-term solvency and financial stability, potentially boosting creditor confidence and reducing future financing costs<sup>[9]</sup>.

#### (2) Periodic Smoothing of the Income Statement and Improved Cost Matching

Prior to data asset incorporation, expenditures related to data resource acquisition and development—such as data collection, cleansing, platform construction, and algorithm R&D—were typically expensed fully in the income statement during the current period. This accounting treatment not only understated current-period profits but also failed to accurately reflect the long-term economic value of data resource investments. Following incorporation, relevant costs meeting capitalization criteria are no longer fully expensed immediately but are recognized as assets, classified as "development expenditure" or "intangible assets" based on their nature, and systematically amortized over their expected benefit periods. This new accounting approach more reasonably matches costs with anticipated future revenues, avoiding the concentrated burden of upfront expenses. Particularly during the initial phase of large-scale data asset capitalization, this treatment demonstrably optimizes the income statement.

The incorporation of data assets not only enhances financial statement presentation but, more importantly, promotes operational efficiency in core business activities. By formally recognizing data resources as assets, enterprises can develop and utilize their latent value more systematically. Specific manifestations include: customer profiling analysis based on data assets significantly improves marketing precision; network optimization applications reduce operating costs; risk control models enhance business security; and new product development accelerates innovation. These applications directly drive growth in main business revenue and improvements in profitability. China Mobile's H1 2024 financial data substantiates this point; the synchronous improvement in its operating revenue margin and net sales profit margin is largely attributable to operational efficiency gains stemming from data asset applications.

From a long-term development perspective, data asset incorporation enables the income statement to present a more comprehensive and truthful reflection of the complete value creation process of data resources—from initial input to final output—thereby highlighting the core value of data as a new factor of production in financial performance. This accounting reform not only optimizes current financial metrics but also lays a solid foundation for the firm's future digital transformation.

#### (3) Significant Expansion in Information Disclosure Depth and Breadth

China Mobile is required to elaborate on the key accounting policies and significant judgments underpinning its recognition and measurement, including the specific application of data asset recognition conditions, cost components of initial measurement, the chosen subsequent measurement model, the amortization method employed and the basis for estimating its useful life, as well as criteria and testing methods for identifying impairment indicators. Links involving significant accounting estimates—such as determining whether development phase expenditures meet capitalization criteria, the basis for establishing the economic useful lives of data assets, and key assumptions underlying future cash flow projections in impairment testing—require adequate disclosure.

This multi-tiered, systematic information disclosure mechanism effectively mitigates information asymmetry inherent to data assets as a new factor of production. The intangible nature, value volatility, and technical complexity of data assets

often make it challenging for external stakeholders to accurately assess their true value. By establishing a robust information disclosure framework, China Mobile enables investors, creditors, and other stakeholders to comprehend—through financial statement data—the scale characteristics, quality levels, management efficiency, and actual contribution to value creation of the firm’s core data resources, thereby enhancing the credibility of financial reports and their decision-usefulness.

## 4.2 Impact on Financial Reporting Quality

### 4.2.1 Positive Impacts

#### (1) Enhancement of Completeness

In the digital economy era, data pertaining to user behavior, location, and online activities have become core strategic resources underpinning China Mobile’s 5G services, digital services, and computing power network, yet remained off-balance-sheet for an extended period due to the absence of accounting standards. With the standardization of data asset accounting, this situation has improved markedly. According to the 2024 annual report, China Mobile recognized data assets valued at CNY 560 million as intangible assets (primarily comprising user identity data and communication service data), while incorporating CNY 56 million of data resources into the development expenditure account (mainly involving network operation data and platform interaction data). The on-balance-sheet presentation of these data assets expands the coverage of intangible assets in traditional financial reporting, offering a more comprehensive reflection of the firm’s new resource value in the digital age. For instance, user location data supports base station optimization and smart transportation services; its incorporation allows investors to more clearly identify the asset base underlying China Mobile’s “connectivity + computing power + capability” integration strategy, significantly improving financial reporting completeness and better aligning with the “substance over form” principle (Zhang Anling, 2025)<sup>[7]</sup>. At a deeper level, the on-balance-sheet presentation of data assets provides a crucial practical pathway for addressing the insufficient relevance of accounting information in the digital economy era.

#### (2) Strengthening of Relevance

Data asset incorporation has significantly enhanced the information relevance of China Mobile’s financial reporting, enabling it to better meet the decision-making needs of various stakeholders (Huang Can et al., 2024)<sup>[7]</sup>. From an external stakeholder perspective, China Mobile’s data assets are directly linked to its core competitive advantages: user behavior data supports precision marketing to increase average revenue per user, while network operation data aids in optimizing base station resource allocation to reduce operating costs. Once the value of these data assets is manifested through the financial reporting system, investors can more accurately assess the firm’s value creation capacity within the digital economic environment. Taking the CNY 560 million in intangible assets recognized in 2024 as an example, user data assets related to the “Smart Family” business accounted for 30% of the total—a key piece of information providing investors with an important basis for forecasting this business segment’s future growth potential.

From an internal management standpoint, the accounting information generated post-incorporation holds significant decision-support value. Specifically, the capitalization of data asset development costs enables the amortized cost over the asset’s useful life to form a matching relationship with the value-added service revenue generated by corresponding business activities. By analyzing the dynamic matching between amortized costs and multi-period business revenues, management can more scientifically optimize the allocation direction of data resources, thereby establishing a virtuous feedback mechanism of “data input-business output.” This accounting approach not only enhances the scientific rigor of management decisions but also strengthens the guiding role of financial information in corporate strategy implementation.

#### (3) Reflection of Materiality

Data asset incorporation underscores the materiality of data resources within China Mobile’s value creation system. In traditional financial reporting, data-related resources were often broadly categorized under “intangible assets” or expensed, failing to reflect their strategic value. With the formal establishment of data as the “fifth factor of production,” China Mobile’s data assets have become deeply embedded within its “connectivity + computing power + capability” strategic framework: a base station layout optimization system based on user location data reduces annual network operating costs by approximately CNY 200 million; value-added business revenue generated by content recommendation services relying on online behavior

data analysis exceeded CNY 5 billion in 2024. By recognizing such strategic data resources as CNY 560 million in intangible assets and CNY 56 million in development expenditure, China Mobile clearly conveys a critical signal to the capital market: “data resources constitute core corporate competitiveness.” This not only prevents investors from undervaluing its digital business potential but also enables financial reports to more accurately reflect the composition of the firm’s core economic resources, highlighting the materiality of data assets for long-term development.

#### 4.2.2 Negative Impacts

##### (1) Impact on Reliability

The inherent characteristics of data assets render their valuation challenging, thereby posing threats to financial reporting reliability. Measurement difficulties are primarily manifested in several aspects: First, the initial cost aggregation for data assets is complex, particularly for self-developed assets, where the capitalization judgment for R&D expenditures involves a degree of subjectivity. Second, subsequent measurement of data assets also faces numerous issues; for instance, fair value measurement relies on complex valuation models and parameter assumptions, while the lack of market transaction data impairs the reliability of valuation outcomes (Yao Shuo, 2024)<sup>[10]</sup>. Furthermore, the value of data assets is susceptible to factors like technological iteration and shifts in market demand, exhibiting high dynamism and uncertainty. These factors may lead to discrepancies between the book value and actual value of data assets, potentially impairing financial reporting reliability.

##### (2) Impact on Comparability

Data asset incorporation presents a dual challenge to financial reporting comparability. Horizontally, significant disparities in accounting treatment exist within the industry. For example, China Unicom (2024) included 80% of its data assets in the development expenditure account, whereas China Mobile recognized 91% of similar assets as intangible assets. Regarding measurement methods, China Telecom’s adoption of the income method contrasts sharply with China Mobile’s cost method, resulting in a lack of comparable basis for asset values among peers. Vertically, the data asset information generated by China Mobile’s initial implementation of the Interim Provisions in 2024 cannot be linked to historical periods and may become disjointed from subsequent periods due to future standard revisions or measurement method improvements (e.g., introduction of fair value). More notably, its disclosure framework fails to distinguish between the value of raw data and value-added data products. This inadequate disclosure further undermines the comparability of financial information across firms.

#### 4.3 Impact on Corporate Valuation

As a pivotal institutional innovation in the digital economy era, data asset incorporation is systematically reshaping the corporate valuation framework. Its internal financial optimization effects operate through a dual pathway: On one hand, data resources meeting recognition criteria are incorporated into the balance sheet, directly expanding total assets. For instance, the disclosed scale for 92 A-share listed firms that incorporated data assets in 2024 reached CNY 2.495 billion, a thirty-fold increase from the beginning of the year. On the other hand, capitalization replaces expensing, significantly reducing current-period expenses in the income statement; for example, manufacturing firms optimize profit structures through data asset amortization. Research by Xu Pan and Li Jieyi (2024)<sup>[11]</sup> demonstrates that this dual-statement linkage effect not only improves the debt-to-asset ratio and increases the return on equity (ROE) but also effectively mitigates the “hollowing out” problem of asset-light firms’ balance sheets, steering valuation toward greater accuracy and rationality.

Regarding external valuation, data asset incorporation enhances external valuation accuracy by optimizing financial representation and strengthening market expectations<sup>[12]</sup>. At the capital structure level, recognizing data resources as assets directly lowers the debt-to-asset ratio, boosting creditor confidence and broadening financing channels; optimization of solvency indicators further strengthens credit ratings and reduces debt costs. In terms of profitability, ROE improves through dual pathways—expansion of net asset scale and optimization of profit structure. Operationally, data asset-driven refined operations reduce inventory turnover days and accounts receivable cycles, with improvements in total asset turnover signaling enhanced operational efficiency to the market. At the development capacity level, the scale and value-added potential of data assets are incorporated into growth expectations. In summary, the incorporation system, through increased transparency of financial indicators and quantifiability of future earnings, enables capital markets to price data elements more accurately.

## 5. Conclusion

Focusing on the telecommunications industry and employing China Mobile as a Typical case, this paper systematically reveals the dual impact mechanism of data asset recognition on financial reporting quality. The study finds that the capitalization of data assets significantly optimizes the balance sheet structure and achieves periodic smoothening of the income statement through a deferred amortization mechanism. The impact of data asset incorporation on financial reporting quality is twofold: it markedly enhances completeness, relevance, and materiality, yet, due to disparities in accounting policies, may also negatively affect reliability and comparability. This research not only deepens the theoretical understanding of data asset recognition but also provides practical guidance for the telecommunications industry to optimize data asset management and improve the quality of financial information disclosure<sup>[13]</sup>.

## Funding

Thanks to the Regular Project Fund of Zhejiang Provincial Philosophy and Social Sciences Planning (No.25NDJC081YB), the Statistical Research Project of Zhejiang Province (No.25TJYX29) and the Special Project Fund of Jiaying University's Humanities and Social Sciences "Young and Outstanding Talent" Cultivation Program (No.007JKY155AW) for their support of this research.

## Conflict of Interests

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

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