

Research on the Impact of Data Asset Recognition and Bookkeeping on Corporate Profitability: An Empirical Analysis Based on Listed Technology Enterprises

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Abstract: With the rapid advancement of digital and artificial intelligence technologies in the digital economy era, the capitalization of data into assets has gradually become a core driver for enterprises to enhance competitiveness and achieve high-quality development. This paper adopts the data of 16 listed technology enterprises from 2023 to 2025 as the research sample. Taking gross profit margin, operating profit margin, and return on equity as the evaluation indicators of corporate profitability, this study applies trend analysis and horizontal comparison methods to explore the impact of recognizing and recording data assets in financial statements on enterprise profitability. The research results indicate that the influences of data asset bookkeeping vary across different enterprises, and generally present a U-shaped trend of decline followed by growth. With the improvement of data product development capabilities, enterprises are able to build digital business service models, cut operational costs, and boost overall profitability. Based on the research findings, this paper puts forward targeted suggestions, so as to provide references for the development of the digital economy and the improvement of the institutional rules for data asset recognition and bookkeeping.

Keywords: Data asset recognition and bookkeeping; Enterprise; Profitability; Data capitalization; Accounting treatment

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1. Introduction

The *Interim Provisions on the Accounting Treatment of Enterprise Data Resources* (Cai Kuai [2023] No. 11) issued by the Ministry of Finance clearly stipulates that data resources shall be incorporated into the accounting system starting from January 1, 2024, which provides policy guidance for the accounting treatment of enterprise data assets^[1]. In the same year, the *Three-Year Action Plan for “Data Factor +” Integration (2024–2026)* was released, proposing to foster more than 300 typical application scenarios by the end of 2026 and realize an

average annual growth rate of over 20% for the data industry^[2]. The *Notice on Strictly Implementing Accounting Standards and Properly Completing the 2025 Annual Financial Reports of Enterprises* (Cai Kuai [2025] No. 3) further defines the cost-based accounting principle for data resource costing^[3]. Against such a policy background, a large number of domestic enterprises have included data assets in their financial statements, improved the transparency of information disclosure, and enabled the market to form a more comprehensive understanding of corporate value. According to the research data of Grant Thornton, technology companies listed on the A-share market accounted for more than 60% of the total scale of data asset bookkeeping in 2024, and the total amount of data assets recorded by China Mobile, China Unicom, and China Telecom exceeded 13 billion yuan^[4]. At present, domestic academic circles have conducted abundant theoretical research on data asset bookkeeping, while empirical studies on its impact on corporate profitability are relatively insufficient. This paper collects and analyzes the data of 16 listed technology companies in recent years to explore the influencing mechanism of data asset recognition on profitability, so as to provide empirical evidence for the implementation of data asset bookkeeping in technology enterprises and the improvement of relevant systems.

2. Overview of data asset bookkeeping of listed technology enterprises

2.1. Sample selection and industrial distribution

Technology enterprises have taken an active attitude towards data asset bookkeeping. Enterprises engaged in computer, artificial intelligence, communication, and technology services industries have a large number of data assets with considerable recorded amounts, which are highly representative for research^[5]. This paper selects the data asset bookkeeping data of 16 typical listed technology enterprises from 2024 to 2025 for analysis (see **Table 1**).

Table 1. Overview of data asset bookkeeping of listed technology enterprises

Industrial category	Enterprise	Bookkeeping situation & core performance
Communication & Information Transmission	China Mobile	Data assets recorded in 2024 totaled 616 million yuan, and rose to 774 million yuan in 2025, including intangible assets of 560 million yuan and development expenditure of 56 million yuan. A total of 152 data products were launched. Government and enterprise services drove a 3.12% year-on-year increase in operating revenue. The combined bookkeeping amount of the three major operators accounted for 61% of the total industrial volume in 2024.
	China Telecom	All data assets were recorded as development expenditure, ranking first among the three major operators in scale. The bookkeeping amount was 371 million yuan in 2024 and 433 million yuan in 2025, supporting the development of high-margin businesses.
	China Unicom	Bookkeeping volume reached 379 million yuan in 2024 and 395 million yuan in 2025, enriching the enterprise's profit sources.
Artificial Intelligence & Related Industries	iFlytek	Purchased data worth 67.45 million yuan for large model training; the total bookkeeping amount was 61.7409 million yuan in 2024, helping the implementation of AI solutions and reducing operating costs.
	Hehe Information	Intangible assets stood at 45.5139 million yuan in 2024, with a year-on-year increase of 39.73% in 2025. Business costs dropped by 47.11% while operating revenue grew by 22.519%. Its core data asset is the Qixinbao database.
	Hithink RoyalFlush Audio	Self-developed data sets of 14.1295 million yuan were recorded in 2024 and classified as inventory in 2025. Amortization is linked to product gross profit margin.
Computer Technology	Tsinghua Tongfang	Relevant assets were not listed in the main financial statements but disclosed in notes. The disclosed amount was 93.4371 million yuan in 2024, and the disclosure standards were further standardized in 2025. Included in the 2025 Q2 bookkeeping list.

Aerospace Remote Sensing & Featured Technology Services	Weide Information	Data assets were included in statistics in 2024 and explicitly disclosed in 2025. Total assets increased by 12.10%, matching the enterprise's positioning of technical services and facilitating profit recovery.
	Tianyima	Completed data asset bookkeeping in 2024. Operating revenue hit 146 million yuan in 2025, and the enterprise turned losses into profits with the support of data resources for strategic transformation.
	HHT (Aerospace Hongtu)	Focused on remote sensing data processing. The bookkeeping amount was 44.9102 million yuan in 2024 and 59.8745 million yuan in 2025, a year-on-year increase of 33.32%. Catering to the digitalization demands of natural resources and ecological environment industries.
	Dayu Interactive	Adopted the five-year accelerated amortization method for intangible assets of 43.691 million yuan recorded in 2024. More than 5 billion pieces of data have been accumulated, and data business accounts for over 70% of total revenue. The bookkeeping volume rose to 58.2866 million yuan in 2025, up 33.41% from the beginning of the year.
	ZuoChuang Information	Data assets accounted for 3.42% of total assets in 2024. Net profit increased by 7.4% in 2025. The enterprise owns 65,318 data items and over 800 paying clients, supporting the development of bulk commodity data analysis business.
	Glodon	Recorded data assets of tens of millions of yuan in 2024 to iterate on digital construction products and improve profit stability. The bookkeeping amount was 22.6913 million yuan in 2025, a year-on-year increase of 35.91%, optimizing product iteration and subscription renewal rate.
	Digital Government	Accumulated government affairs data with tens of millions of data assets recorded in 2024. Added data resources worth 8.7777 million yuan in 2025, undertaking government affairs projects based on large models and reserving strength for long-term profitability.
	Wondershare Technology	Recorded purchased audio and video data of 17.46 million yuan for AI training in 2024. The ending balance of data assets was 15.6451 million yuan in 2025, supporting the optimization of creative products.
	CapCloud	Relevant items were recorded as development expenditure in 2024 and transferred to intangible assets of 29.4749 million yuan in 2025. Net profit surged by 20.1622 million yuan, with the AI business achieving vigorous growth.

2.2. Selection of indicators and research methods

2.2.1. Research indicators

To evaluate the impact of data asset bookkeeping on corporate operating performance, this paper selects gross profit margin, operating profit margin, and return on equity (ROE) as the core indicators for measuring corporate profitability. The research period covers 2023 to 2025, following the timeline from policy issuance to full implementation, so as to accurately track the policy implementation effects.

2.2.2. Research methods

Multiple research methods are adopted to ensure the authenticity and comprehensiveness of research conclusions:

Trend analysis: Analyze the dynamic changes of profitability indicators of sample enterprises within three years and identify the variation rules before and after data asset bookkeeping.

Horizontal comparison method: Compare profitability differences among computer, communication, and technology service industries, and explore the heterogeneous characteristics of data asset application across sectors.

Case analysis: Compare the impacts of bookkeeping scale, amortization methods, and operation modes on corporate profits via typical cases, and identify major influencing factors.

Descriptive statistics: Analyze the standard deviation and homogeneity of indicators to summarize the

distribution characteristics of profitability data and provide data support for empirical research.

3. Analysis of the impact of data asset bookkeeping on corporate profitability

3.1. Analysis of core profitability indicators

3.1.1. Gross profit margin

Gross profit margin reflects an enterprise's capacity for cost control and the added value of its products ^[6]. As shown in **Table 2**, the gross profit margins of sample enterprises present a divergent trend. Enterprises with a gross profit margin above 50% boast mature data product development capabilities and low operating costs. By contrast, enterprises with a gross profit margin below 50% fail to fully tap the value of data resources and bear a high proportion of amortization costs. It indicates that data asset bookkeeping does not generate a simple positive impact on profitability. Instead, corporate profitability is closely correlated with data product development capabilities. Enterprises with strong data development and application advantages can effectively control operating costs by virtue of data asset bookkeeping ^[7].

Table 2. Gross profit margin of sample enterprises (2023–2025)

Enterprise	2023	2024	2025 (Half-year report)
Glodon	95.70%	97.30%	87.79%
Hithink RoyalFlush Audio	56.01%	66.46%	50.17%
HHT (Aerospace Hongtu)	35.92%	22.48%	20.54%
Hehe Information	86.29%	84.25%	84.36%
CapCloud	42.80%	37.53%	41.07%
iFlytek	42.67%	42.59%	40.23%
Dayu Interactive	68.57%	73.37%	60.44%
Digital Government	40.04%	16.03%	34.37%
Tianyima	20.24%	13.18%	30.32%
Tsinghua Tongfang	17.74%	24.31%	29.41%
Wondershare Technology	94.77%	93.29%	92.42%
Weide Information	35.57%	39.78%	42.12%
China Telecom	28.80%	28.66%	30.69%
China Unicom	24.50%	23.42%	27.05%
China Mobile	28.19%	29.02%	31.62%
ZuoChuang Information	60.00%	65.64%	64.35%

3.1.2. Operating profit margin

Operating profit margin represents the profit-generating capacity of an enterprise's core business ^[8]. According to **Table 3**, the operating profit margins of many sample enterprises declined in 2024 compared with 2023, and some even suffered losses. It proves that the large upfront investment in the initial stage of data asset bookkeeping exerted a negative impact on corporate profits. In 2025, the indicators showed further differentiation: Hehe Information achieved a remarkable profit growth, while HHT still recorded negative profits. This phenomenon reveals that enterprises with strong capabilities in exploring data value can realize a turnaround from losses to gains.

Table 3. Operating profit margin of sample enterprises (2023–2025)

Enterprise	2023	2024	2025 (Half-year report)
Glodon	2.59%	5.10%	9.79%
Hithink RoyalFlush Audio	-25.16%	4.48%	0.60%
HHT (Aerospace Hongtu)	-23.37%	-98.73%	-93.10%
Hehe Information	27.21%	29.41%	29.74%
CapCloud	8.40%	2.73%	-2.31%
iFlytek	2.19%	1.21%	-3.69%
Dayu Interactive	-12.66%	3.31%	-17.80%
Digital Government	10.92%	-62.29%	-8.84%
Tianyima	4.28%	0.62%	-28.03%
Tsinghua Tongfang	-2.37%	1.30%	-4.67%
Wondershare Technology	7.19%	-10.61%	-6.60%
Weide Information	17.16%	13.37%	11.64%
China Telecom	8.38%	8.14%	11.23%
China Unicom	6.13%	5.83%	8.49%
China Mobile	16.66%	16.94%	19.55%
ZuoChuang Information	20.32%	27.03%	23.66%

3.1.3. Return on equity (ROE)

Return on equity is a core indicator measuring the return level of shareholders' investment ^[9]. In 2024, 8 sample enterprises saw their ROE rise, while the rest experienced a decline. In 2025, Tianyima's ROE turned from negative to positive; iFlytek and Tsinghua Tongfang shifted from positive to negative; HHT continued to maintain a negative ROE ^[10,11]. It is demonstrated that the operational efficiency of data assets has a direct bearing on capital returns, and higher operational efficiency brings higher return on net assets.

3.2. Overall changes of profitability indicators

From 2023 to 2024, the average gross profit margin of sample enterprises dropped from 48.59% to 47.24%, the average operating profit margin decreased from 4.01% to -5.05%, and the average ROE fell from 2.73% to -3.29%. During the period of 2024 to 2025, the average gross profit margin rebounded to 48.06%, the average operating profit margin recovered to -1.13%, and the average ROE rose to -0.41%. On the whole, the average profitability indicators of all samples present an obvious U-shaped trend of decline followed by growth. In the initial stage of data asset bookkeeping, enterprises made massive upfront investments, which compressed profit margins. With the adjustment of business models, corporate return on capital gradually picked up. See **Figure 1**.

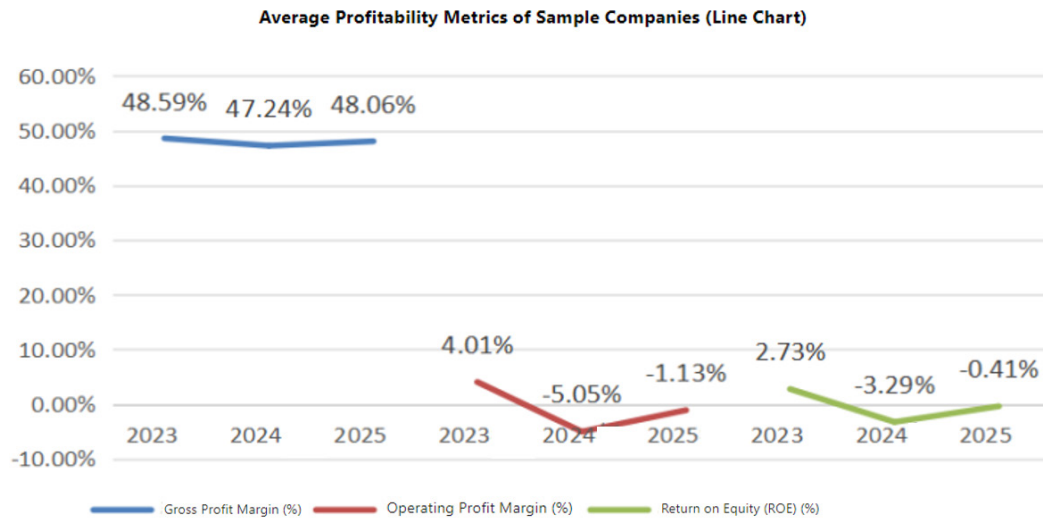


Figure 1. Average profitability metrics of sample enterprises, 2023–2025 (line chart)

4. Analysis of typical cases

4.1. Rise first then decline type

Hithink RoyalFlush Audio and ZuoChuang Information formulated five-year cost amortization plans in 2024 and realized data monetization in the short term. However, the amortization expenses accrued in the previous year were included in operating costs starting from 2025, leading to a general decline in profits. For such enterprises, the upfront investment can quickly realize the transformation of data value. Nevertheless, if they fail to continuously explore incremental data value in the later stage and offset the cost pressure brought by amortization, the overall profitability will go down.

4.2. High-investment under pressure type

HHT and Wondershare Technology both witnessed a continuous drop in gross profit margin, while their operating profit margins experienced a mild rebound after an initial decline. Both enterprises belong to technology R&D-oriented companies. They maintain large capital investments in scientific and technological research and development. Coupled with the continuous amortization of data assets, the total operating expenditure remains high, which restricts the growth of profitability.

4.3. Value transformation type

The gross profit margins and operating profit margins of Hehe Information and China Mobile kept rising steadily. On the basis of realizing initial value output after data asset bookkeeping, the two enterprises further optimized digital operation modes. While consolidating basic data storage services, they adopted big data technologies to dig deep into data value, expand and upgrade business lines. Data resources were converted into intangible assets, driving the expansion of asset scale and revenue volume, and forming a virtuous cycle of data value transformation.

5. Causes for profitability divergence among enterprises

Combined with the above case analysis, the impact of data asset bookkeeping on corporate profitability is affected by multiple factors including cost structure, amortization cycle, enterprise attributes, and operation

modes.

5.1. Cost structure and amortization cycle

Corporate cost structure and amortization policies are core factors influencing profitability. Enterprises with sound cost structures possess stronger market competitiveness and risk resistance. Meanwhile, the selection of amortization methods exerts a prominent impact on short-term profits. Enterprises such as Dayu Interactive, Hithink RoyalFlush Audio, and ZuoChuang Information adopted the five-year amortization policy. Their profits increased in the initial bookkeeping stage, but gradually declined under the pressure of amortization costs starting from the second year ^[12].

5.2. Enterprise attributes

Industrial attributes are another key factor affecting profitability. Technology enterprises are innovation-driven entities. While providing technical services, they need to increase investment in capital and talents for technological R&D according to the business scope ^[13]. Therefore, most technology enterprises face greater capital pressure after data asset bookkeeping. The higher the transformation efficiency of scientific and technological achievements, the stronger the capacity of data assets to generate revenue ^[14].

5.3. Maturity of data productization and business model

Enterprises' attention to digital transformation and the maturity of data product development directly determine profitability. Hehe Information, ZuoChuang Information, and Dayu Interactive applied big data technologies to optimize links of data product development and controlled costs to raise gross profit margins ^[15]. China Mobile built a unified digital management platform and formed a complete business model supported by big data and digital technologies. Its serial data products achieved high-value output.

6. Conclusion and recommendations

6.1. Conclusions

The impact of data asset bookkeeping on corporate profitability shows structural differences, and three typical development patterns are summarized: rise first then decline, high-investment under pressure, and sustainable value transformation, which are subject to amortization schemes, enterprise attributes, and operation modes. From the time dimension, enterprises generally face profit pressure in the initial stage of data asset bookkeeping, and their profitability is improved to varying degrees by optimizing strategic management and business models. Data asset development and monetization capabilities are decisive factors for profit growth. Enterprises like Hehe Information and China Mobile have established a virtuous cycle of data asset exploitation and value realization.

6.2. Recommendations

For technology enterprises: Learn from advanced practical experience, integrate data value exploration and creation into core businesses, and improve data governance and application capabilities. Formulate reasonable amortization plans in combination with corporate development strategies and operational characteristics, enhance risk resilience, and avoid profit fluctuations caused by market changes.

For competent regulatory authorities: Continuously improve the management standards for data asset information disclosure, optimize accounting rules in light of industrial characteristics and enterprise scale, and

provide institutional guarantees for enterprises to implement data asset bookkeeping and boost profitability.

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