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# *Opportunities and Challenges of Hikvision's Data Resource Integration into Financial Statements*

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***Abstract:*** With the continuous penetration and integration of digital technologies, various industries are undergoing unprecedented transformations. The digital age has arrived, and enterprises must adapt to this trend, transforming and upgrading their production, organization, and marketing models. In this new era, digital transformation has become a key strategic focus for enterprise development. As a leading company in China's security industry, Hikvision is also facing numerous challenges. Issues such as slower performance growth, reduced operational efficiency, intensified market competition, and long transformation cycles are hindering the company's development. How to respond to these challenges while seizing the opportunities brought by digitalization has become a crucial issue for Hikvision to address.

***Keywords:*** Data Resources, Digital Transformation, Business Transformation

## 1. Introduction

With the arrival of the digital era, Hikvision has progressed alongside, developing technologies such as cloud computing, artificial intelligence (AI), and big data processing as part of its innovation and research capabilities. These new technologies have been applied to traditional core technologies like video processing, analysis, and storage. The company focuses on building a security ecosystem. In addition to comprehensive security products and services, smart industry applications, and big data services, Hikvision is also committed to the development of smart cities, providing impetus for the digital transformation of small and medium-sized enterprises (SMEs) and the intelligent development of industries.

### 1.1. Introduction to Hikvision

Hikvision, founded in 2001 in Hangzhou, has now developed into a publicly listed company controlled by the Zhongdian Hikvision Group. Its stock has been traded on the Shenzhen Stock Exchange since 2010. Initially, Hikvision's main business was the development and production of video capture cards. After twenty years of business expansion and development, the company has formed a new business model based on video image technology, providing security video surveillance products and services, while also developing smart IoT solutions and big data services. By the end of 2020, Hikvision's market value had exceeded 570 billion yuan, with more than 40,000 employees. The company's total assets had reached nearly 80 billion yuan. The company's business scale has not

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only extended to major provincial capitals and large cities, but also expanded into small and medium-sized cities, where it has established branches. In addition, the company has entered more than fifty overseas countries and regions, stepping into the era of internationalization as a large global company [1]

## 2. Hikvision's Development Status

### 2.1. Business Performance

Upon observing the overall revenue situation of Hikvision, it is clear that in recent years, the company's total revenue and net profit growth rates have been continuously declining. In 2018, the company's revenue grew by 18.9% compared to the previous year, but this figure dropped to 15.7% in 2019. Similarly, the year-on-year growth rate of net profit also decreased from 20.6% in 2018 to 9.4%[2]. The slowdown in revenue and profit growth is mainly due to the overall sluggish growth of the traditional security industry, as well as the fact that the company has transitioned from a rapid growth phase to a mature phase. Therefore, Hikvision urgently needs to find new sources of profit growth.

### 2.2. Revenue Composition

In recent years, Hikvision's development in new business areas has been relatively good, particularly the performance of the Ezviz Network Company. In 2023, Ezviz's total revenue reached 2.59 billion yuan, with a gross profit margin of 39.3%, marking a 58.4% increase in revenue compared to the previous year. In addition, Hikrobot's total revenue was 810 million yuan, with a gross profit margin of 53.3%, reflecting a year-on-year increase of 23.9%. The total revenue of other innovative companies or business segments reached 1.03 billion yuan, a year-on-year growth of 102%[3].

## 3. Hikvision's New Business Direction

### 3.1. Transformation Path

#### 3.1.1. Data-Driven Product Layout

Between 2018 and 2023, Hikvision launched eight innovative businesses: Ezviz Network, Hikrobot, Hikvision Automotive, Electronic Hikvision, Smart Storage, Hikvision Vision, Hikvision Fire Safety, Ruian Technology, and Hikvision Microvision. These span multiple areas, including smart ecosystem systems, industrial robots, high-end in-vehicle video sensors, AI vision services, security and inspection, among others. This expansion effectively penetrated the market, integrating with the company's traditional video surveillance business, thereby constructing a multi-layered, multidimensional product structure. This allowed the company to shift its development direction from traditional security to providing "security solutions" and ultimately toward "integrated security solutions." At the same time, Hikvision also places significant emphasis on the data utilization of users. By transmitting user data, the company is able to provide more accurate and customized products for users with specific needs. Ultimately, Hikvision redefined its organizational structure by categorizing its product structure and domestic user industry classifications, establishing three major business groups: PBG (Public Services), EBG (Enterprises and Institutions), and SMBG (Small and Medium-Sized Businesses), comprehensively covering the video surveillance security market.

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### 3.1.2. Cloud Computing and Edge Computing

Hikvision has actively promoted the application of edge computing technology. The company developed a series of edge intelligent devices, including smart cameras and smart NVRs. These devices enable edge computing capabilities, such as facial recognition, license plate recognition, and behavior analysis.

Through open APIs and SDKs, other manufacturers can integrate their devices and systems with the IoT platform to enable interoperability among various IoT devices. This provides more innovation possibilities for application scenarios across different industries and promotes technological innovation and cooperative win-win results in the security field. Hikvision can utilize cloud computing and edge computing technologies to enable real-time processing and storage of surveillance data. By storing data in the cloud, Hikvision can better manage and share data, offering customers more flexible and customizable solutions.

Hikvision can use cloud computing and edge computing technologies to achieve real-time processing and storage of surveillance data. Storing data in the cloud enables the company to manage and share data more effectively and provide customers with more flexible and customizable solutions.

### 3.1.3. Data Security and Privacy Protection

During its digital transformation, Hikvision needs to prioritize data security and privacy protection. By adopting measures such as data encryption, secure transmission, and access control, Hikvision ensures the security and privacy of surveillance data.

### 3.1.4. IoT and Sensor Technology

Hikvision utilizes technologies such as big data, AI, and IoT to build intelligent production bases, including smart warehouses, intelligent production lines, automated sorting systems, and digital platforms. These initiatives make Hikvision a model for digital industrialization and smart factories.

By combining IoT and sensor technology, Hikvision enables the interoperability of monitoring devices. By connecting surveillance devices to IoT platforms, Hikvision can achieve remote monitoring and management, improving the efficiency and stability of the devices. Hikvision's collaboration with SAP in developing robots allows for precise identification of workpiece locations and determination of optimal pick-up positions, replacing manual labor. Warehouse managers can control robots using specific algorithms. The robots also use laser SLAM navigation technology to deliver goods, ensuring they reach designated locations while taking the most optimal route. This technology enables fully automated management of raw material picking, automated delivery, and finished product warehousing, greatly improving Hikvision's warehouse operational efficiency.

### 3.1.5. Open Platforms and Ecological Cooperation

Hikvision has established open platforms to cooperate with enterprises from other related industries. The company has set up digital platforms such as Hikvision Cloud Intelligent Application Platform, Ezviz Open Platform, and AI Open Platform. These platforms help businesses innovate, connect users and distributors, and diversify innovation stakeholders. The main stakeholders are divided into two categories: partners and user groups.

First, partners join in the innovation process. On the AI Open Platform, device manufacturers and technology service companies collaborate through the platform, each fulfilling their needs and jointly developing applications and services that meet user demands. The construction of these digital platforms fosters diversified innovation, allowing any enterprise's ideas and needs to be realized on

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the digital innovation platform. Through collaboration with software developers, system integrators, and others, Hikvision accelerates innovation and offers richer, more integrated solutions.

## 3.2. Digital Transformation and Financial Performance

### 3.2.1. Debt Repayment Capacity Analysis

From 2019 to 2023, Hikvision's current ratio remained above 2 and showed a continuous upward trend, indicating that the company's operations are healthy, with fast capital turnover. Hikvision has sufficient cash and other liquid assets to repay short-term debts and respond to emergency capital needs or business risks. The quick ratio also improved from 1.94 to 2.30, demonstrating excellent short-term debt repayment ability, which is gradually improving[4].

### 3.2.2. Profitability Analysis

Table 1: Profitability Analysis of Hikvision from 2018 to 2022

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| Return on Assets (%) | 19.73 | 17.88 | 16.32 | 17.45 | 11.51 |
| Gross Profit Margin (%) | 24.75 | 23.77 | 23.93 | 22.69 | 17.77 |
| Return on Equity (%) | 33.99 | 30.53 | 27.72 | 28.99 | 19.62 |

The return on assets has fluctuated significantly over the past five years, showing a downward trend. It decreased from 19.73% in 2019 to 11.51% in 2023. Although there was a slight rebound in 2022, the overall trend remains weak. Similarly, the gross profit margin has declined annually from 24.75% in 2019 to 17.77% in 2023[5]. This indicates that the company's gross profit as a percentage of revenue from product sales or services is gradually decreasing. From 2018 to 2022, the current ratio has shown a continuous upward trend, indicating that Hikvision's business operations are sound, with rapid capital turnover. The company has sufficient cash and other liquid assets to repay short-term debts and address unexpected capital needs or operational risks. The quick ratio also increased from 1.94 to 2.30, showing a positive trend in short-term debt repayment ability, which is also gradually improving. Although the debt-to-asset ratio slightly decreased over the past five years, it has remained around 40%, reflecting a relatively low level of debt and maintaining a stable capital structure for the company.

### 3.2.3. Operating Efficiency Analysis

Table 2: Operating Efficiency Analysis of Hikvision from 2018 to 2022

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| Inventory Turnover (times) | 5.15 | 3.67 | 2.99 | 3.08 | 2.60 |
| Accounts Receivable Turnover (times) | 3.18 | 3.04 | 2.93 | 2.28 | 2.97 |
| Total Asset Turnover (times) | 0.87 | 0.83 | 0.77 | 0.85 | 0.75 |

Hikvision's inventory turnover has steadily decreased from 5.15 times in 2018 to 2.60 times in 2022. The change in accounts receivable turnover has been relatively minor, fluctuating around 3 times[6]. The total asset turnover has also experienced slight fluctuations. However, the manufacturing process in the video surveillance security industry is complex and requires high technological standards, and the pandemic has led to decreased demand for security products. Although overall operating efficiency has declined, it remains relatively normal within the industry. The return on assets has fluctuated significantly over the past five years, showing a downward trend. From 19.73% in 2018,

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it dropped to 11.51% in 2022. While there was a slight rebound in 2021, the overall trend remains weak. Over the past five years, the company's asset utilization efficiency has gradually decreased. However, the return on assets being between 10% and 20% indicates that the company's investments can generate profits with relatively low risk, and profitability remains at a stable level. The gross profit margin has been gradually declining, from 24.75% in 2018 to 17.77% in 2022. This suggests that the company's gross profit as a percentage of operating revenue is progressively decreasing. The return on equity has also decreased significantly, from 33.99% in 2018 to 19.62% in 2022. This indicates that the net profit per unit of equity is gradually declining. Overall, Hikvision's profitability has shown a fluctuating decline over the past five years. Considering the negative impact of the COVID-19 pandemic on the company, including logistics disruptions and weakened demand in the security industry, the decline in profitability was expected.

## 4. Future Outlook

### 4.1. Hikvision's Experience

Hikvision has achieved excellent results and benefits in data management, which can be summarized as follows:

(1) Data Collection and Storage: Through the self-developed video surveillance equipment, Hikvision has realized large-scale, high-definition video data collection. Additionally, they have established a comprehensive data storage system, including a multi-layered architecture of central storage, edge storage, and cloud storage, ensuring data security and reliability.

(2) Data Cleaning and Labeling: Hikvision has accumulated a vast amount of surveillance video data. Through automated algorithms and artificial intelligence technologies, they clean and label the data, extracting useful information to lay the foundation for subsequent data analysis and applications.

(3) Data Analysis and Mining: Hikvision utilizes big data and artificial intelligence technologies to deeply analyze and mine the massive surveillance video data. They have developed a series of analytical algorithms, including behavior recognition, object detection, and facial recognition, which can monitor abnormal events in real-time, track target objects, and more.

Hikvision's practical experience and achievements in data resource management have high recognition and influence in the smart security field. Through the scientific management and effective application of data resources, they have provided safer and more convenient solutions to society, promoting the development of smart cities and social governance.

### 4.2. Future Outlook for Hikvision

Although good results have been achieved in the previous stages, there are still many difficulties and challenges to face in the future. Therefore, the outlook for the future is as follows:

(1) Intelligent Upgrading: As artificial intelligence and machine learning technologies gradually mature, Hikvision will continue to strengthen the intelligent processing and application of data resources. They will further explore the value and influence of data, and through data-driven intelligent decision-making, optimize product design, service processes, and other areas.

(2) Data Openness and Sharing: In data resource management, Hikvision will further enhance cooperation with all sectors of society to promote the openness and sharing of data resources. They will actively participate in the formulation and implementation of industry standards, establish a more open, fair, and transparent data ecosystem, and promote healthy competition and innovative development within the industry.

(3) Data Privacy and Security: With frequent incidents of data breaches and misuse, data privacy and security have become significant challenges for both Hikvision and the entire industry. Therefore,

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Hikvision will continue to strengthen data protection and security, taking more stringent measures to safeguard user data security and privacy rights.

Hikvision hopes that its development experience can provide certain reference for others in the industry, and offers the following recommendations to other companies:

(1) Define Strategic Goals: When managing data resources, companies need to clarify the contribution and value of data to their strategic goals. Based on the core business and development direction, companies should determine the focus and priorities of data resource management to ensure consistency with corporate strategy.

(2) Establish a Comprehensive Data Lifecycle Management System: This includes data collection, storage, cleaning, analysis, and application at all stages. Through standardized and automated processes, data quality and usability can be ensured, improving the efficiency and effectiveness of data management.

(3) Strengthen Data Governance and Compliance: Companies should focus on data governance and compliance in the data resource management process. They should ensure the legal acquisition, processing, and use of data, and establish data governance mechanisms, including regulations and measures for data security, privacy protection, and risk management to protect data security and privacy rights.

(4) Technological Innovation and Talent Development: Companies should actively introduce advanced technologies such as artificial intelligence and big data analytics to improve the ability and level of data resource management. At the same time, they should focus on talent cultivation, establish teams related to data functions, and nurture professional talents in data management and analysis to support effective data resource management.

(5) Promote Cross-Departmental Cooperation and Sharing: Internal departments within the company should strengthen cooperation and sharing in data resource management. They should build cross-departmental data collaboration platforms to promote data sharing and communication, avoid data silos, and achieve better data integration and utilization.

(6) Focus on User Experience and Value Creation: In managing data resources, companies should pay attention to user experience and value creation. By deeply understanding and gaining insights into user needs, data can be transformed into useful information and insights, providing personalized and customized products and services to users.

## 5. Conclusion

Hikvision's practical experience and achievements in data resource management have gained significant recognition and influence in the smart security field. When managing data resources, companies should focus on user experience and value creation. By deeply understanding and gaining insights into user needs, data can be transformed into useful information, offering personalized and customized products and services to users. Through the scientific management and effective application of data resources, Hikvision has provided safer and more convenient solutions to society, promoting the development of smart cities and social governance.

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