



# China Mobile's Digital Transformation in the Era of Big Data

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**Abstract.** China Mobile is one of the largest operators in China and has strong dominance in communication. China Mobile is a central enterprise established in 2000 in accordance with the overall deployment of the national telecommunications system reform. China Mobile has a relatively long history and is the earliest to start among the three major operators in China, with vigorous development in recent years. In recent years, China Mobile has been closely related to our usage. But everything has its day of passing. With the development of the times, the dominance of the traditional communication industry in the market has seriously declined and even affected the vitality of enterprises. Therefore, it is necessary to revitalize enterprises. At present, after years of analysis, the enterprise has preliminarily carried out Digital transformation with little success. This article explains the reasons, difficulties and preliminary results of China Mobile's Digital transformation. It is of strategic significance for the study of Digital transformation.

**Keywords:** China Mobile, Digital transformation, fifth-generation, new network, infrastructure

## 1 Introduction

With the rapid development of information technology, digital transformation has become the only way for enterprises to develop. As a leader in the field of mobile communications in China, China Mobile also actively implements the strategy of digital transformation, promoting changes in business model, organizational structure

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and culture through digital means to meet the challenges of the digital era and achieve sustainable development.

The traditional profit model of China Mobile, which focuses on communication, can no longer meet the rhythm of today's big data era, and enterprises need Digital transformation to revitalize enterprises.

China Mobile has accelerated the transformation of service innovation from connectivity to the integration of connectivity, computing power, and capabilities, and achieved good development results in digital transformation. In 2022, China Mobile's digital transformation revenue contributed 79.5% to the incremental contribution of communication service revenue, accounting for 25.6% of communication service revenue, which is the first engine of the company's revenue growth [1].

## 2 Future Development Trend

On the opening day of the 2023 Mobile World Congress, Yang Jie, Chairman of China Mobile, attended the conference and made a keynote speech in the way of "counting wise people". He said that facing the future, the economic and social Digital transformation process continues to accelerate, and the information and communication industry will usher in a broader development space. The background of China Mobile is as follows [2].

One is the integration and innovation of information and energy, which has become the main driving force for the progress of human civilization. Currently, the deep integration of information into the entire process of energy conversion and utilization has triggered the "watt × The fusion of bits has accelerated the development of human society into a new stage dominated by information, where information and energy are deeply integrated. Enterprise needs to further broaden our perspective on the pattern, grasp the laws of the era of information and energy integration innovation, deeply understand the industrial value and historical responsibility, and jointly contribute greater strength to the development of human society.

The second is the integration and innovation of the new generation of information technology, which deeply affects the development direction of the industry. In today's era, the new generation of information technology is undergoing a chain-like transformation with multiple breakthroughs and mutual support. The full application of data perception, transmission, storage, computation and other aspects also puts

forward higher requirements for the integration and innovation of the new generation of information technology. A single traditional communication technology is no longer able to solve large-scale and complex problems. Enterprises need to further broaden the Technology roadmap, strengthen the synergy and mutual promotion of Computed Tomography, Information Technology and Data technologies in theory, standards, architecture, etc., and realize the organic integration of new generation information technologies such as network, cloud, digital, intelligence, security, edge, end, and chain, so as to further release the information potential.

The third is the integration and innovation of information service systems and social operation systems, which nurtures vast blue ocean opportunities. Currently, the acceleration of the integration of the new generation of information technology into various fields throughout the entire process of economic and social development has brought profound changes in production methods, lifestyles, and social governance methods, promoting a new information service system composed of connectivity, computing power, and capabilities, becoming a common demand for technological and application innovation throughout society. Enterprises need to further broaden our service boundaries, shift from focusing on meeting traditional communication needs in the past to leading, creating information service needs in production, life and governance in all fields, strengthen in-depth cooperation and joint innovation with all walks of life, and constantly cultivate new industries, new forms and new models such as industrial Internet, Metaverse, and smart cities.

### **3 The reasons for the transformation of China Mobile**

Today has entered the digital society, and China Mobile's traditional profit method has reached the bottleneck period. It needs to stimulate enterprise vitality through Digital transformation to maintain the leading position of enterprises in the market. In order to adapt to the digital age and seek new profit growth points. Digitalization is driving the sustained and rapid growth of the digital economy of China, with its tangible value and achievements. From “the path of a few people” to “traveling to the depths of water”, more and more Chinese companies are turning their digital strategic blueprint into “construction drawings” and “real-life paintings”.

In 2016, China Mobile's difficult days continued. In 2016, China Mobile's revenue reached 708.4 billion yuan, a year-on-year increase of 6.0%; Earnings Before Interest, Taxes, Depreciation and Amortization were 256.7 billion yuan, a year-on-year

increase of 6.9%; The net profit was 108.7 billion yuan, a slight increase of 0.2% year-on-year. It looks peaceful and peaceful, but there are indeed dangers lurking in the dark - the net profit of 108.7 billion yuan, it includes over 10 billion yuan from the sale of the iron tower. If this one-time profit factor is excluded, the net profit in 2016 plummeted by 10.5%. A traditional monopolistic central enterprise with a profit scale of hundreds of billions and a leading position in the communication industry, its net profit suddenly plummeted by 10.5%, China Mobile is at the moment of enterprise crisis, and only the Digital transformation of the enterprise can revitalize the enterprise [3,4].

## **4 The technical difficulties of China Mobile's Transformation**

### **4.1 Traditional Organizations Struggle to Adapt to Digital Transformation**

China Mobile is one of the largest mobile communication operators in China, and digital transformation is crucial for its future development. However, China Mobile still faces many difficulties and challenges in digital transformation:

Traditional organizational structures struggle to adapt to digital transformation.

China Mobile has long been a traditional organizational structure based on hierarchical management, which focuses on power distribution, control and management, rather than innovation, flexibility and adaptability. In the digital age, a more open, egalitarian and flexible organizational culture is needed for rapid decision-making, agile development and innovation.

The degree of informatization construction is insufficient.

Compared with many Western companies, China Mobile still has a big gap in the degree of informatization construction. While the company has begun to drive digital transformation, there is still a lot of room for improvement in its information technology (IT) infrastructure and data management capabilities. This means that digital transformation requires more technical investment and Information Technology talent support, as well as a lot of training and education to adapt employees to the new digital way of working.

## **4.2 Lack of Digital Culture**

In addition to the issues of organizational structure and information technology, another key factor in digital transformation is corporate culture. China Mobile management can promote digital culture internally, such as innovation, openness, cultural diversity and learning, and emphasize the value and importance of digital technology in the enterprise. This will help all employees to be receptive and understanding of digital transformation.

## **4.3 Market Pressure and Competition**

China Mobile's market share is still very large, but it also faces fierce market competition in the digital era. Since digital transformation has become a trend throughout the telecom industry, and many other companies are actively engaged in digital transformation and have success in this regard, China Mobile must maintain a competitive edge in digital transformation to maintain its competitiveness and market position.

# **5 The Transformation of China Mobile' s Suggestions**

Upgrade the "new network" and promote the expansion of network functions from "connection" to "connection+computing power+capability" one-stop services. China Mobile will give full play to the advantages of wide coverage, fast transmission and high security of the existing network, jointly build a new type of Information infrastructure, carry out architecture research and forward-looking layout of Next-generation network, and constantly reduce the threshold of information technology application in the whole society.

Promote "new operations", promoting the driving force of operations from focusing on "people" to expanding into the collaborative development of multiple elements of "people+numbers+intelligence". In the future, China Mobile will jointly accelerate the cloud, virtualization and intelligent transformation of the network, deepen the innovative practice of information technology in the whole process of production, operation and management, explore new modes, tools and paths of enterprise operation, and build the information and communication industry into a global model of Digital transformation. Enhance customer experience, China Mobile should focus on improving customer experience. This can be achieved by providing a

better user interface, self-service, and responding quickly to customer issues. China Mobile can also increase its focus on customer needs and opinions, and conduct targeted marketing activities on the platform.

Forge "new technology" and promote innovation focus from focusing on "business" to expanding the full chain innovation of "business+technology+theory". Technology is an essential nutrient for the prosperity and development of digitalization, and it is also a commonwealth of human society. In the future, China Mobile will work with all sectors to accelerate theoretical research on communication and information intersection, promote original and leading innovation, explore cutting-edge applications of information technology, and inject strong impetus into economic and social development.

To enhance digital culture, China Mobile should strive to change its corporate culture to make it more digital. This includes training employees, establishing digital workflows and strategies, and increasing the digital work environment [3].

Invest in digital technology, China Mobile should invest in digital technology, including artificial intelligence, big data, cloud computing, and blockchain. Technology in these areas can help China Mobile make better use of data and improve the customer experience.

China Mobile should launch many innovative projects in the digital field, including online payment, drone delivery, smart security, and automated transportation. These projects can enable China Mobile to become a leader in digital transformation and maintain a unique competitive advantage in the industry [4].

To strengthen data security, China Mobile should strengthen its data security landscape to ensure that customer data and business data cannot be hacked and leaked. This can be done by improving cybersecurity technology, establishing an information security management system, etc.

## **6 The Achievement of China Mobile's Transformation**

China Mobile's digital transformation has achieved phased results. Communication World Network News (CWW) On March 23, China Mobile released its 2022 annual performance report. The report pointed out that thanks to the rapid expansion of 5G applications, mobile cloud, digital content, smart home and other businesses, China Mobile's digital transformation revenue reached 207.6 billion yuan in 2022, a year-on-year increase of 30.3%. Overall, China Mobile's "second curve" of digital

transformation revenue growth has been effective, with a more balanced and stable revenue structure, increasing sustainable growth momentum, and significantly improving its ability to resist risks.

The report points out that in 2022, China Mobile's digital transformation revenue will contribute 79.6% to the incremental contribution of communication service revenue, accounting for 25.6% of communication service revenue, which is the first engine of the company's revenue growth. Among them, in terms of industry digitalization, Data technology, Information technology and Communication technology revenue increased by 38.8% year-on-year to 86.4 billion yuan, of which big data revenue increased by 96.1% to 3.2 billion yuan, and 5G private network revenue increased by 107.4% to 2.6 billion yuan. In terms of personal and household digitalization, the revenue of smart home value-added businesses increased by 43.4% year-on-year to 29.7 billion yuan. Digital content revenue and fintech revenue increased by 27.2% and 79.9% respectively.

During the reporting period, China Mobile's Customer, Home, Business and New grew across the board, and Home, Business and New revenue accounted for 39.8% of its main business revenue, an increase of 4.1 percentage points year-on-year.

In the personal market, China Mobile accelerated the migration of customers to 5G, strengthened the coordinated expansion of the personal market, the home market, and the government and enterprise market, continued to improve the penetration rate of 5G customers, and promoted the upgrading of personal information and communication consumption. At the same time, it will build a platform economy model around digital consumption needs, strengthen product integration, business integration, and scenario integration, vigorously promote China Mobile Digital Life Supermarket, and continuously improve customers' sense of achievement and satisfaction with a better digital life by providing high-quality products, rich rights and interests, and differentiated brand services.

In 2022, the personal market will rise steadily, with revenue reaching 488.8 billion yuan, a year-on-year increase of 1.1%; There were 975 million mobile customers, a net increase of 18.11 million, a three-year high, of which 614 million 5G package customers, a net increase of 227 million. The number of monthly active customers of mobile cloud disks reached 166 million, a net increase of 30.65 million, ranking second in the industry in terms of customer scale; the number of new 5G call High Definition video users reached 91.9 million, a net increase of 26.82 million; and the value contribution of emerging 5G digital products such as cloud extended reality

cloud gaming and 5G ultra-high-definition video Colour ring back home to the personal market gradually emerged. Thanks to the rapid migration of 5G and the growth of personal digital life consumption, mobile Average Revenue Per User grew steadily to RMB 49.0, a year-on-year increase of 0.4% [5].

In the home market, China Mobile is focusing on expanding the value space of "all-gigabit + cloud life", actively promoting the "three leading" projects of broadband, TV, and smart home, and accelerating the transformation and upgrading of home business to Family information service solution (home information solution).

In 2022, China's mobile home market maintained rapid growth, with revenue reaching 116.6 billion yuan, a year-on-year increase of 16%; Home broadband customers reached 244 million, a net increase of 25.78 million, maintaining an industry-leading position. The popularity of gigabit broadband has accelerated, and the number of gigabit home broadband customers has reached 38.33 million. The scale of mobile HD customers reached 193 million; the contribution of smart home application growth continued to increase, the incremental contribution of smart home value-added business revenue to home market revenue reached 55.9%, intelligent networking customers increased by 67.7% year-on-year, and home security customers increased by 71.2% year-on-year. Bandwidth upgrades and smart home consumption growth drove the comprehensive Average Revenue Per User of household customers to increase by 5.8% year-on-year, reaching 42.1 yuan.

In the government and enterprise market, China Mobile has strengthened the integrated expansion of "network + cloud + Data Technology", and made every effort to promote the leap in market capabilities, product capabilities, and support capabilities. In 2022, the revenue of the government and enterprise market will maintain rapid growth, reaching 168.2 billion yuan, a year-on-year increase of 22.6%. The number of government and enterprise customers reached 23.2 million, a net increase of 4.37 million [6].

Cloud and 5G dual engines have achieved new results. Mobile cloud revenue reached 50.3 billion yuan, a year-on-year increase of 108.1%, and its comprehensive strength entered the first camp of the domestic industry. As of the end of December 2022, more than 6,200 large cloud orders have been signed, driving revenue of more than 22.5 billion yuan, and more than 3,700 cloud projects of central enterprises and state-owned enterprises, successfully creating demonstration benchmarks such as government cloud and medical cloud. As of the end of December 2022, more than 18,000 commercial cases in the 5G industry have been signed, driving the signed



amount of Digital Image Compression projects to 36.5 billion yuan, and the revenue of 5G private networks reaching 2.55 billion yuan, a year-on-year increase of 107.4%, achieving industry leadership in multiple industry segments such as smart mines, smart factories, smart power, smart hospitals, smart cities, and autonomous driving [7].

Temporary Overvoltage new tracks bring new space. The Temporary Overvoltage market seized the opportunity of rapid growth in the Internet of Vehicles market, integrated the superior resource capabilities of "network, cloud, and graph", and comprehensively carried out the layout, and as of the end of December 2022, the number of connected Internet of Vehicles exceeded 200 million, and the share of new energy vehicle connections was leading the industry [8]. The market actively empowers government management, social governance and people's livelihood services, and the cumulative signing amount of digital government projects in 2022 will reach Renminbi 20 billion, marking remarkable results in digital government projects.

Mobile cloud is at the forefront of various segmented markets, with edge cloud market share ranking first, government cloud and exclusive cloud ranking in the top three, and public cloud market share ranking in the top five of the industry and growth rate first. By deeply cultivating various industries and empowering industrial upgrading, Mobile Cloud has created a rapid development and market-leading industrial miracle in just three years [9].

As the world's leading mobile Internet company, China Mobile's mobile cloud company will share its outstanding achievements and experience in Digital transformation at the 2023 Mobile Cloud Conference, and release a new strategic plan, self-developed core technology achievements and key future development initiatives [10].

## **7 Conclusion**

Currently, a new round of technological revolution and industrial transformation is deepening, and the new generation of information technology is accelerating integration and innovation, deeply integrating into various fields and processes of the economy, society, and people's livelihood. The digital economy, with information networks as the key foundation, data resources as the core elements, information technology as the main driving force, and integration and innovation as the important

lever, has developed at an unprecedented speed, with a wide range of radiation, and a profound impact. Information has become the leading factor driving the progress of human civilization and economic and social development. In this process, information services have ushered in a vast market space. It is expected that by 2025, the proportion of China's digital economy in Gross Domestic Product will increase from 39.8% in 2021 to over 50%. The size of China's information service market will increase from RMB 12.5 trillion in 2021 to Renminbi 22.8 trillion, providing valuable development opportunities for the digital transformation of companies. At the same time, the company's transformation and development also face some uncertain factors. The COVID-19 and geopolitical conflicts are intertwined, and the fluctuation of commodity prices and the blocked supply chain cycle of the industrial chain has an impact on enterprise operations to some extent; The information service market pattern is becoming more complex and ever-changing, posing higher requirements for the operation of the company's digital intelligence platform and product supply.

China Mobile has done a lot of work in its own data analysis and management. With the help of independently developed big data platforms, China Mobile can conduct more accurate analysis and positioning of users, thereby providing better services and support for users. At the same time, China Mobile has also utilized data analysis technology to achieve significant cost savings, thereby improving its profitability.

Secondly, China Mobile actively promotes the application of Internet of Things technology. The company has developed a series of Internet of Things devices with independent intellectual property rights, such as smart home devices, smart medical devices, etc. These devices can provide users with precise services and support, and help China Mobile further expand its business areas.

In short, China Mobile has achieved success in digital transformation by improving user experience, technological innovation and corporate culture construction. Its experience and practices provide a reference for the digital transformation of other enterprises.

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