DOI 10.46320/2077-7639-2025-8-141-34-41

Анализ перспектив развития индустрии онлайн-игр в Китае

Чжэн Чэнцзе

В условиях стремительного развития цифровых технологий индустрия онлайн-игр стала неотъемлемым и динамичным компонентом цифровой экономики Китая. В данной статье проводится системный анализ политической, экономической, социальной и технологической среды китайской индустрии онлайн-игр с использованием аналитической модели PEST. Исследование демонстрирует, что ужесточающееся и совершенствующееся государственное регулирование, устойчивый экономический рост в сочетании со значительным повышением потребительских стандартов, растущее влияние молодой и разнообразной пользовательской базы, а также широкое применение преобразующих технологий, таких как 5G, облачные игры и искусственный интеллект, в совокупности способствовали диверсификации и быстрому развитию отрасли. Эти факторы формируют рынок, который эволюционирует в сторону более сложных и устойчивых моделей.

ДЛЯ ЦИТИРОВАНИЯ ГОСТ 7.1–2003

Чжэн Чэнцзе. Анализ перспектив развития индустрии онлайн-игр в Китае // Дискуссия. — 2025. — № 8(141). — С. 34–41.

КЛЮЧЕВЫЕ СЛОВА

Китайская индустрия онлайн-игр; PEST-модель; анализ текущей ситуации.

DOI 10.46320/2077-7639-2025-8-141-34-41

The analysis of the development prospects of China's online gaming industry

Zheng Chengjie

With the rapid advancement of digital technologies, the online gaming industry has become an integral and dynamic component of China's digital economy. This paper conducts a systematic analysis of the political, economic, social, and technological environments of China's online gaming industry using the PEST analytical model. The study demonstrates that increasingly stringent and refined government regulations, sustained economic growth coupled with significant consumption upgrades, the expanding influence of a young and diverse user base, and the widespread application of transformative technologies such as 5G, cloud gaming, and artificial intelligence have collectively driven the diversification and rapid development of the industry. These factors are shaping a market that is evolving towards more sophisticated and sustainable models.

FOR CITATION APA

Zheng Chengjie. The analysis of the development prospects of China's online gaming industry. *Diskussiya [Discussion]*, 8(141), 34–41.

KEYWORDS

China's online gaming industry; PEST model; analysis of the current situation.

INTRODUCTION

With the rapid development of digital technologies, the online gaming industry has become one of the fastest-growing sectors in the global digital entertainment market. In China, in particular, the industry has risen rapidly, driven by a large user base, rich cultural resources, and government policy support, becoming a significant force in promoting the domestic digital economy. Online gaming is not merely a form of entertainment; it also involves technological innovation, cultural export, and social interaction. As market competition intensifies, a comprehensive analysis of the competitive landscape in the online gaming industry is crucial for companies to formulate strategies and enhance their market competitiveness. The PEST model, as a classic analytical tool, can systematically analyze the industry environment and uncover key factors influencing industry development.

China's online gaming industry began in the early 2000s and, after more than 20 years of development, has grown into one of the world's largest online gaming markets. In recent years, with the widespread adoption of mobile internet and advancements in smartphone technology, mobile gaming has become a key growth driver in China's online gaming industry. The rise of new forms of gaming, such as esports and cloud gaming, has further diversified the industry. However, as the market matures, internal competition has intensified, particularly against the backdrop of increasingly stringent regulatory policies, diverse user demands, and rapid technological advancement, leading to profound changes in the industry's competitive landscape.

OVERVIEW OF CHINA'S ONLINE GAMING INDUSTRY

Columb (2022) defines online games as interactive video games played over the Internet that allow players to interact in real time with other online players or characters in a virtual world. While online gaming has evolved in form and content, at its core, it remains a networked connection that enables players to participate together in gaming activities [1]. Zhang (2024), on the other hand, emphasizes online gaming as a virtual economic activity in which players participate in a globalized digital marketplace through trading, upgrading, and socializing with in-game items, and that online gaming is not only leisure and entertainment, but also a place where virtual goods and economic value are created [2].

Zhan et al. (2024) define online games as part of the digital creative industry, whose distribution through Internet platforms breaks the limitations of geographic location, enabling developers around the globe to produce, distribute and sell games across physical space. Online games are not only a form of entertainment consumption, but also a manifestation of global knowledge flows and labor distribution, which is highly transnational and global in nature [3]. This technological foundation allows online games to rapidly adapt to shifting market demands while continuously innovating in terms of user experience.

In this paper, the term «online gaming industry» refers to economic activities based on information technology innovation that provide users with virtual interactive entertainment services. It covers the entire industry chain, from game design, development, and publishing to operation and marketing. This industry is not only a significant part of the global entertainment economy but also possesses unique characteristics in terms of technological innovation, market strategy, and socio-cultural impact. Through highly interactive virtual environments and the continuous update of creative content, the online gaming industry not only meets the diverse entertainment needs of global users but also promotes cross-cultural communication and enhances user engagement.

PEST ANALYSIS OF CHINA'S GAMING INDUSTRY

Political environment

During China's 13th Five-Year Plan (2016 – 2020), the government emphasized accelerating the development of emerging cultural sectors – including animation and gaming – and promoting their integration with technology, tourism, sports, and finance. This provided strong policy support for online gaming as a core segment of digital entertainment, enabling its rapid growth and making it a key driver of the digital economy [11].

Under the 14th Five-Year Plan (2021 – 2025), China further prioritized the digitalization of cultural industries, with clear goals to expand digital creative sectors including online gaming. The plan advocates for high-quality cultural products, deeper culture-technology integration, and enhanced global presence for Chinese cultural exports such as games.

However, the industry's expansion has also raised concerns over youth gaming addiction and content compliance. In response, the government introduced stricter regulations, including anti-addiction systems limiting minors' play time and spending. These measures are reinforced by the Regulations on the Protection of Minors in Online Networks, which clarify the legal responsibilities of game companies. Initiatives such as the Online Game Quality Publishing Project have also raised industry standards, requiring higher-quality and compliant content [4]. These policies aim to ensure regulated and sustainable growth of China's online gaming industry, while also facilitating its international expansion and branding.

Economic environment

China's online gaming market is vast, and with the rise of the middle class and increasing disposable income, there is a growing demand for high-quality, personalized gaming content, creating new market opportunities for gaming companies. In terms of economic conditions, China's continued economic growth provides a stable market foundation for the online gaming industry. As household incomes rise, demand for entertainment consumption is increasing, particularly among younger demographics who favor digital entertainment products, further driving the rapid expansion of the online gaming market. In 2023, China's GDP reached 126,058.21 billion RMB [5], reflecting a stable economic environment that has created favorable conditions for the gaming industry (see Figure 1). However, global economic uncertainty, especially the disruptions in international supply chains caused by the pandemic, may affect the supply and prices of gaming hardware. The rise in global inflation has also increased operational costs, requiring companies to focus more on cost control and market expansion to navigate the challenges posed by economic volatility. While China's online gaming industry retains strong growth potential, companies must flexibly respond to external economic uncertainties and seize domestic consumption upgrade opportunities to ensure sustained industry development.

According to the 2023 China Game Industry Social Responsibility Report, the direct contribution of China's game industry to the national GDP reached 0.8% in 2023. This highlights the sector's increasingly important role within the digital economy, especially against the broader backdrop where core digital economy industries collectively accounted for 10% of GDP that same year [7].

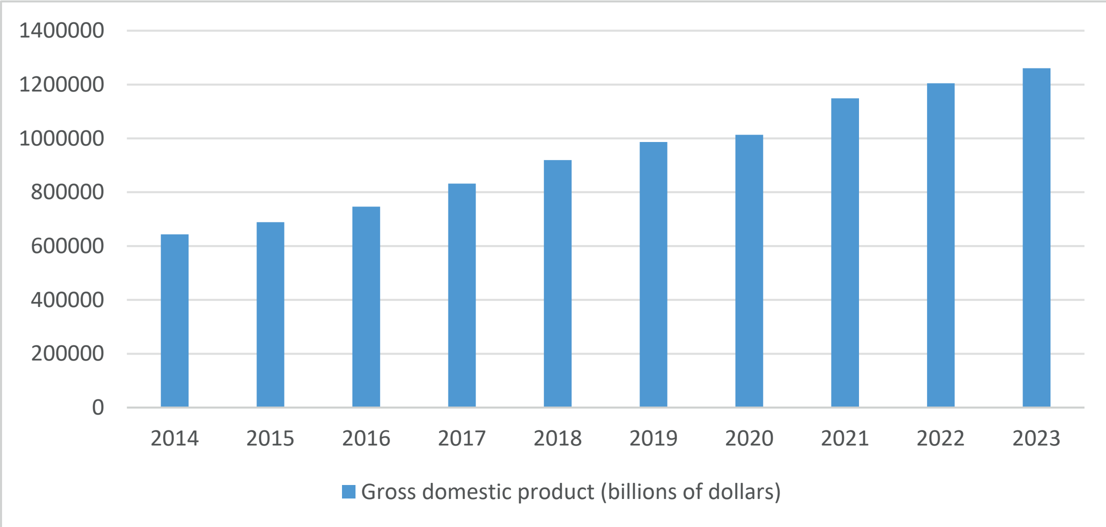

Figure 1: China's GDP Growth Over the Last Decade (Billion RMB)

Source: National Bureau of Statistics of China.

Meanwhile, the paying user rate among Chinese gamers rose to 68.5% in 2023. Average revenue per user (ARPU) also saw substantial growth, increasing to ¥356 per person – a jump of 129.7% compared to the 2016 figure of ¥155 [12]. These trends signal a notable shift in user consumption behavior: from being primarily driven by demographic dividends toward a stronger emphasis on quality content and greater willingness to pay for premium experiences [7]. This trend is driven by the continued evolution of mobile games to heavy, social and in-app optimization.

Social environment

China's social environment significantly influences the development of its online gaming industry. A large and young user base, including Gen Z, regards gaming not only as entertainment but also as a social platform, fueling the growth of social games, esports, and cloud gaming. With increasing urbanization and income, gaming has gained broader acceptance as a mainstream leisure activity and is increasingly valued for its cultural and educational roles.

However, concerns around youth gaming addiction have prompted strict government policies limiting playtime and spending for minors. There are also growing societal expectations for healthier content and greater cultural value, pushing companies to balance commercial goals with social responsibility.

The user structure within China's game industry has undergone significant transformation. Gen

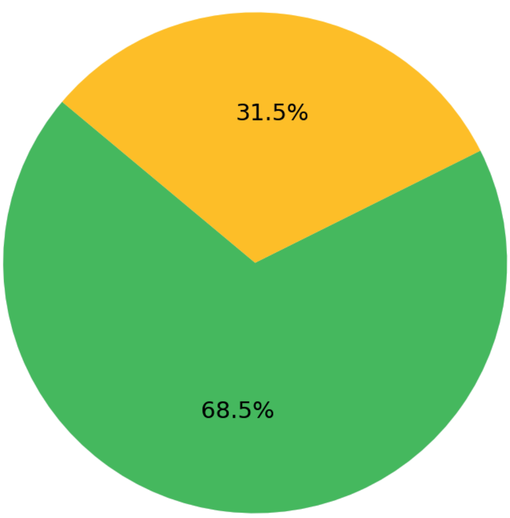

Figure 2: Payment rate of Chinese game users in 2023

Source: 2023 China Game Industry Report.

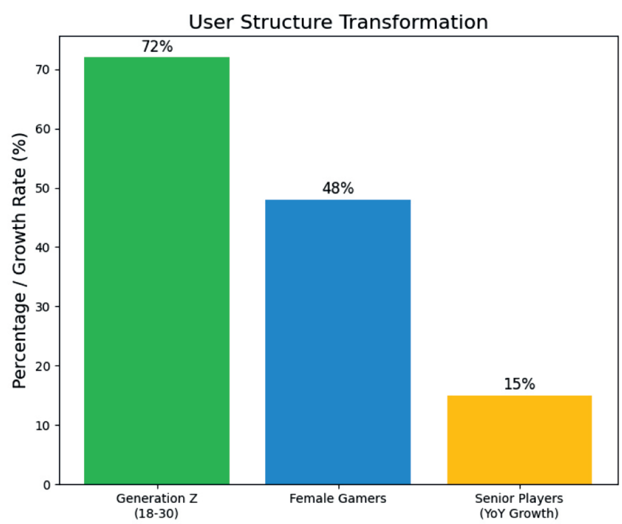

Figure 3: Bar chart of user structure change

Source: Demographic Shifts in China's Gaming Population.

Z users (aged 18 – 30) now account for 72% of the total, establishing themselves as the core consumer demographic. This group shows a strong preference for highly immersive open-world games and competitive titles (such as Genshin Impact and Honor of Kings), driving revenue from role-playing and multiplayer online battle arena (MOBA) games to exceed 45% of the market total [8].

Meanwhile, the proportion of female gamers has risen to 48%. Their interest in casual, socially interactive, and narrative-driven games (such as Mr. Love: Queen's Choice) has encouraged developers to increase female-oriented content offerings.

Additionally, the number of silver-haired players (aged 55 and above) grew by 15% year-on-year. Their preference for puzzle and light casual games has spurred the emergence of "age-friendly" game design trends. In terms of social governance, the protection of minors has achieved remarkable results: 59.04% of minor users do not recharge, 75.09% of minor users meet the anti-addiction standards, and parents actively control more than 90%. The policy side further standardizes the market through the normalization of the plate number (1281 games in 2023 were reviewed) and the Guide for the Construction of Mobile Internet Minors Model, highlighting the important role of the game industry in continuously promoting economic growth in the digital economy [4].

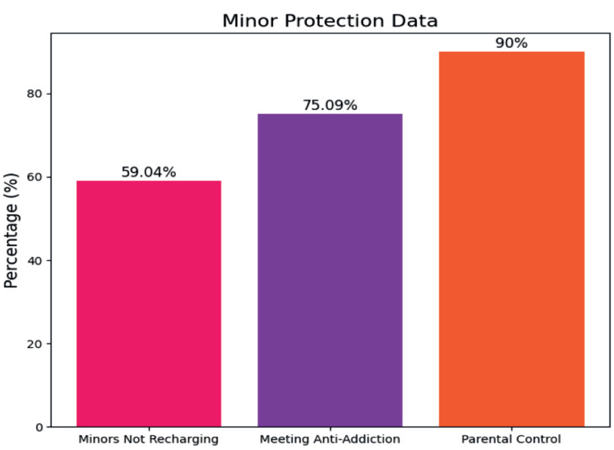

Figure 4: Bar chart of juvenile protection data

Source: Creative production in the digital age: A network analysis of the digital game industry in China.

Technological environment

China's online gaming industry has experienced rapid development due to innovations in information technology and improvements in infrastructure. As of 2024, the number of patent applications in the Chinese gaming industry continues to grow. According to the latest statistics, in the first half of 2024, there were approximately 4,000 patent applications in the gaming industry, with invention patents accounting for 45.2%, design patents for 35%, and utility model patents for 19.9% [6].

The integration of 5G technology has significantly advanced the online gaming industry through high-speed, low-latency connectivity, enabling smoother real-time interaction and high-definition cloud gaming experiences. This reduces hardware barriers and expands the user base. Additionally, AI enhances gameplay with smarter NPCs and personalized content, while big data analytics supports operational and marketing decisions. Together, these technologies foster the diversified and quality growth of China's online gaming sector.

In 2023, the application of AIGC (Artificial Intelligence Generated Content) technology has profoundly empowered game development and user experience. For example, NetEase's «Nishuihan» integrates an AI-driven NPC dialogue system that supports natural language interaction and dynamic storyline generation, significantly boosting player immersion. Additionally, AI painting tools such as Sohu Simple AI allow players to customize character appearances, thereby fueling the flourishing of a UGC (User Generated Content) ecosystem. Meanwhile, cloud gaming penetration has reached 12% with a user base exceeding 80 million, thanks to widespread 5G adoption and mature multi-platform connectivity. Leading companies like Tencent and NetEase have cloudified flagship titles such as «Genshin Impact» and «Peacekeeper Elite,» reducing hardware barriers and expanding usage scenarios to cars and smart TVs. Furthermore, technological advancements have driven market segmentation: while PC and console segments see revenue growth of 5.2% and 1.9% respectively – propelled by AAA titles like «Baldur's Gate 3» – the mobile segment, enhanced by cloud gaming and cross-platform connectivity, has cemented a 49% share of the global market [4].

SWOT analysis of China's gaming industry

This section conducts a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) on China's mobile game industry. By evaluating internal capabilities and external market environment, it identifies strategic elements that influence the global competitiveness and future development of the industry.

The Chinese gaming industry leverages pivotal strengths – including the world's largest user base and a mature mobile payment ecosystem – while capitalizing on opportunities such as Web3.0 integration and the brand elevation offered by esports'

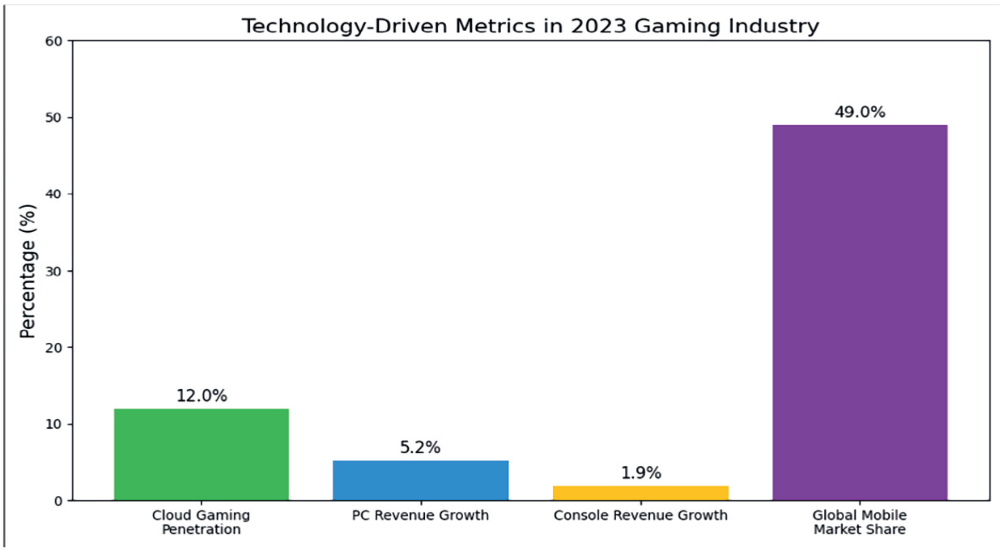

Figure 5: Technology-Driven Metrics in 2023 Gaming Industry

Source: The White Paper on the Development of Cloud Game Technology

Table 1

The SWOT analysis table

Internal Factor	Strengths	Weaknesses
Resource Ability	World's Largest User Base (720 Million Players)	Core Engine Technology Depends On Overseas (85%)
	Perfect Mobile Payment Ecology (Alipay / Wechat Coverage Rate Is 98%)	Content Homogeneity (Mmorpg Accounts for over 40%)
Organization	Tencent / Netease And Other Head Enterprises Global Layout	Small And Medium-Sized Manufacturers Have Weak Risk Resistance Ability (The failure rate of the shutdown period Is 37%) [7]
	The Rise Of Independent Game Incubators (Such As Taptap Platforms)	Overseas Distribution Channels Rely On Third-Party Platforms
External Factor	Opportunities	Threats
Environment	The "Belt And Road" Culture Goes Overseas With Policy Support	The European And American Markets Are Becoming Stricter Censorship (Such As The Us Ira Act Restricts Chinese App)
	Space / Vr Hardware Cost Down (Pico Neo 4 Price Down To 2499)	Global Inflation Drives Marketing Costs Up By 15%
Industry Competition	Web3.0 New Track (210%)	Southeast Asia (Vietnam Sea Group Market Share Reaches 18%)
	The Brand Value Enhancement Brought By e-Sports Into Asia	Apple's Idfa Policy Reduces The Purchase Volume Roi

Source: The 2023 China Game Industry Social Responsibility Report.

inclusion in major sporting events. However, its growth remains constrained by significant weaknesses, such as heavy reliance on foreign core game engine technology and homogeneous content, as well as threats including tightening overseas regulatory scrutiny, rising user acquisition costs due to privacy policy shifts like IDFA, and heightened competition in key regional markets. To ensure sustainable global expansion, the industry must prioritize technological self-sufficiency, deepen localized operations, and foster greater content innovation and diversification.

QUANTITATIVE ANALYSIS OF THE MODEL

Regression analysis model

A multiple linear regression model is established according to the Cobb-Douglas production function to analyze the influence of GDP growth rate and residents 'disposable income on the sales revenue of China's game industry. The model expression is as follows:

$$Y=\beta_0+\beta_1*GDPgrowth\ rate+\beta_2*Title\ growth\ rate+\epsilon$$

Y indicates the actual sales revenue of the annual game market (unit: 100 million yuan); β_0 As a constant term; β_1 and β_2 represents the marginal impact of GDP growth rate and resident income growth rate on game revenue, respectively ϵ is given as the random error term.

According to the latest 2024 data [13], the actual sales revenue of China's game market reached 325.783 billion CNY [14], with a year-on-year growth of 7.53% [15]. Based on regression analysis of data from 2015 – 2024, the following results are obtained:

β_0=1550
β_1=0.72
β_2=1.18
R^2=0.97

The analysis indicates that: for every 1% increase in GDP growth rate, game market sales revenue increases by 0.72%; for every 1% increase in household income growth rate, game market sales revenue increases by 1.18%. The R^2=0.97 indicates that the model explains 97% of the variation in sales revenue, demonstrating a high goodness-of-fit.

Based on the above model, assuming a GDP growth rate of 5.2% and a household income growth rate of 5.5% in the coming years, the predicted sales revenue of the game market is:

$$Y=1567.4$$

Cobb-Douglas production function model

By adopting the Cobb-Douglas production function model, the influence of capital input and labor input on the output of the game industry is analyzed. The model expression is as follows:

$$Y=A*K^{\alpha}*L^{1-\alpha}$$

Among them, YYY is game industry output (annual sales revenue); KKK is capital input (R & D expenses); LLL is labor input (number of R & D personnel); AAA is total factor productivity; α is capital output elasticity, $1-\alpha$ is labor output elasticity.

According to the actual situation of a large game company in 2024, its R&D expenses were 5.5 billion CNY, the number of R&D personnel was 5,500, and sales revenue reached 22 billion CNY. The following results are obtained:

A=1.15
α=0.38
1-α=0.62

If the R&D expenses increase to 6.5 billion CNY in 2025, and the number of R&D personnel is expanded to 6,500 people, the forecast sales revenue is:

$$Y=1.15*6.5^{0.38}*6500^{0.62}\approx752.8$$

This study identifies a structural shift in China's online gaming industry from macro-driven growth to efficiency-led development. Quantitative results show that household spending (elasticity: 1.18) boosts revenue more than GDP growth (elasticity: 0.72), while human capital (elasticity: 0.62) contributes far more than capital investment (elasticity: 0.38), highlighting talent and innovation as key competitive advantages.

These findings empirically support the industry's transition toward sustainable, quality-oriented growth—driven by consumer demand and human capital efficiency—reinforcing its resilience and evolution within China's digital economy.

CONCLUSION

This study employs a PEST-SWOT framework to analyze China's online gaming industry. It finds that diversified, high-quality growth is driven by supportive policies, rising incomes, a young user base, and advancing technology (e.g., 5G, AI, cloud gaming). SWOT analysis highlights strengths like a large user base and mature payments, but also weaknesses such as dependence on foreign technology and content homogenization.

Quantitative analysis reveals that household income growth (elasticity: 1.18) impacts industry revenue more significantly than GDP growth (elasticity: 0.72). Human capital efficiency (elasticity: 0.62) contributes more to output than capital investment (elasticity: 0.38), indicating a shift from scale-driven to innovation-led growth. Future priorities include boosting technological autonomy, enhancing content innovation, and improving operational efficiency for global competitiveness.

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