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Artificial Intelligence Empowering the Gaming Industry in the Era of Digital Revolution

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Abstract:

In recent years, the breakneck advancement of artificial intelligence (AI) has ignited awe globally. More industries are trying to utilize artificial intelligence to alter their status quo. Just like the gaming industry, AI has become an important force in promoting the development and progress of this field. This study aims to explore the innovative integration of AI and the gaming industry. It analyzes three aspects, including the digital revolution's status quo, plight, and future optimized path in the gaming field. The study illustrates many well-known game companies, such as Tencent, have already put AI into content production, and are now turning to more creative interactive experience functions. Additionally, to some extent, these findings also show that the integration of AI and games will help gaming companies increase the number of users and consumption. Therefore, the study provides insights into the promotion of AI to the gaming industry, which may contribute to companies' future research and practice. At the same time, it proves that AI empowers games, which help players get more diversified game experiences and enrich people's entertainment life.

Keywords: Artificial intelligence; Tencent; Gaming Industry; Digital Revolution.

1. Introduction

1.1 Research Background

From the viewpoint of culture and social environment, the game is an important cultural carrier, showing people a new virtual world. With the development of pan-entertainment, game branching is constantly expanding. Specifically, the game belongs to a relaxation product at first, which means giving users a way to while away the hours for combat tedium. Nowadays, society is already pursuing a noble spiritual life and requires a higher quality of game-making. Moreover, the relentless advance of artificial intelligence (AI), artificial intelligence-generated content (AIGC), has incrementally emerged as an impetus to facilitate innovation in the gaming industry. From using AIGC technology to realize lower

cost and higher efficiency, or making games fit in relevant technology to break through the traditional mechanism. All show that the importance of blending games with AI is gaining momentum.

Tencent, as one of the most prominent companies in China, it also reached a milestone in gaming and has consistently demonstrated excellence gaming market by independent research and development, agency cooperation, joint operation, and other business models. In recent years, Tencent has had a significant advantage in diversified business layout, technological innovation, and a large number of users. What's more, as a research-representative company in the AI field, Tencent has established a complete chain in the AI product matrix. This chain includes foundational computing power, basic large models, model development platforms, and intelligent applications. In order to provide one-stop services for the rapid deployment of large models. Eventually, help Tencent create more user-friendly and accessible AI.

1.2 Literature Review

Presently, research at home and abroad on AI empowers the gaming industry to fix the effect on game content production and design, as well as the interactivity of AI in the game. Yu et al have investigated the deep gamification that embeds gaming features into the construction and rules of digital society. The study shows deep gamification on how to build the metaverse in the future and discusses the logic of realizing digital civilization [1]. A new landscape of gaming social interaction has been explored by users exhibiting gaming behavior, human-machine interaction, and symbolic characteristics based on their digital avatars in virtual social environments [2]. Hong et.al also analyzed Tencent Games' competitive advantages and summarized valuable reference experiences for the future development of other online game companies [3].

Although both the metaverse and AI are popular concepts in the gaming domain, the studies about further integration of them are sparse. Metaverse emphasizes immersion, interactivity, and the sustainability of the virtual world. And AI possesses powerful content generation, intelligent decision-making, and scenario adaptation capabilities. Thus, their combination is enough to create a revolutionary gaming experience, as well as becoming the future development goal of the gaming industry in recent years.

In addition, research on the ethical risks of AI-generated content also has shortcomings. Some players develop overdependent problems from virtual characters, even cause social disorder and excessive fantasy in real life. However, scholars' studies at home and abroad carry out long-term tracking of potential risks in the AI field, which account for a minority. And there is also a lack of different ages and cultural backgrounds. So it is difficult for the gaming industry to formulate effective risk prevention and control strategies in the process of AI application.

1.3 Objection

This study focuses on the aspect of "AI+Game" in the context of the era of AI, taking Tencent Interactive Entertainment Group (IEG) as an example. Explore how this company uses AI to maintain industrial development in innovative ways. Furthermore, by analyzing four aspects, Tencent Games' new business models, the implementation of AI applications, innovations in virtual reality research and development, as well as the challenges and prospects of AI development. And based on its long-standing leadership in China's gaming market, the study provides references for the future AI empowerment direction of the Chinese gaming industry.

2. The Advent of AIGC and Virtual Socialization in the Internet Era

In today's rapidly evolving world, digital development has brought about transformative changes that are shaping societies in unprecedented ways. In the virtual digital world, Virtual data information and spatial extension as new core resources, remodel the traditional resource system. Many game companies use AI to produce content more frequently, to explore broader innovative gaming fields, and construct potential virtual spaces.

2.1 AI Technology

AIGC is utilizing an Algorithm to produce new content, including text, images, audio, and video. The appearance of AIGC makes creation simpler and efficient. From 2024, China's system of establishing high-value products with AI technology has achieved fundamental reforms. Many excellent products use AI to stand out in many aspects, such as visual scale design, content framework construction, and revenue. Gradually, the number of AI users has also reached tens of millions.

In recent years, many companies have used AI deeply in some areas such as information gathering, writing, drawing, audio design, etc. And they pay more attention to the

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exploration of strengthening AIGC's application scenarios. Analyzing many popular games in China, the application scenario is transformed from a single intelligent replication into a refined scenario including Business-to-Business (B2B) and Business-to-Customer (B2C). In addition, an AI assistant becomes a personalized companion system through algorithm technology after collecting players' information. From the current situation of increasing investment in the AI field through many Internet game moguls, AIGC is gradually becoming the new engine for the game business and is also an important way to overcome industry development bottlenecks at present.

2.2 Virtual Socialization

With the rapid development of technology, socialization has been revolutionized at high speed. Virtual socialization has become a popular social trend in recent years. This is reflected in the fact that people can extend and supplement real interpersonal relationships through QQ, WeChat, Weibo, and other social platforms, as well as communicate online. What's more, with the development of the metaverse, it is also creating a new virtual social model now. That means people will have virtual identity carriers in the digital world.

But from a technical point of view, at present, most virtual reality (VR) and augmented reality (AR) companies are facing a difficult problem is that there is a significant gap between the actual effect of virtual social products and users' expectations. Because of the lack of immersion and sense of presence, users' sensory experience is inferior. Therefore, this has become a goal for many companies to pursue.

3. New Forms of Game Changes with the Support of AI

3.1 The Fusion of Game and Metaverse

The widespread application of AI and Metaverse technology is remodeling society's vision for the future digital life in a revolutionary way. It creates a new digital era through cutting-edge technology like integrating virtual reality, augmented reality, blockchain, and artificial intelligence. And the integration of the metaverse and the game industry is developing at an unprecedented speed because of its highly explorative nature.

By now, Games have already possessed the rudimentary form of the metaverse. Early game space design tried to satisfy people's imagination of the metaverse. Epic Games utilized Unreal Engine to develop games, for example, making the visual effects of modelling, materials, environmental effects, physical collisions, and other aspects more realistic. In order to improve players' immersion in the game world with realistic visual effects and high interactivity. Developing to the present, players' creative demands continue to expand with the development of AIGC. Tencent's Dream Star added the map creation function in December 2013, so players can design game scenes and levels using the editor and combine with QQ Music and Tencent Video resources to enhance the social and life attributes of digital space. A 'metaverse' with user co-creation is entering the public vision. The Dream Star is considered one of the most promising platforms in China in the metaverse.

When AIGC technology is involved in game production, it uses the metaverse to break through the limitations of two-dimensional and three-dimensional space. And in the future, the metaverse has superb potential in the field of games, and everyone can create their own metaverse world by using AIGC technology.

3.2 AIGC Empowers Games to Promote Chinese Traditional Culture Abroad

The development of the game industry has gone far beyond the entertainment industry, and its influence is also increasing day by day. All over the world, places place a premium on the value of the gaming industry, so games have become an important carrier of culture when going abroad. For Chinese games, the gaming industry is not only of immense economic value, but also takes on the responsibility of passing down excellent traditional Chinese culture. Therefore, games need to use the Chinese cultural stories to resonate with overseas players.

At the Game Developers Conference (GDC) 2025, Black Myth: WuKong won the Best Visual Design Art Award. Its success not only highlights the technological innovation ability of China's game industry, but also shows the key reasons why Chinese games go to the world.

On the one hand, it enhances players' virtual visual experience through using AIGC technology and utilizing AI models to automatically optimize the generation and detail of 3D materials. As a result, it has significantly improved the art design efficiency in games. In addition, using cutting-edge visible technology like VR and AR to enhance the immersive experience of interactions and emotional resonance in the game world. Black Myth: WuKong deeply integrates traditional Chinese cultural elements and innovatively combines cutting-edge technology to make its visual effects have Chinese characteristics, which is one of the strong competitiveness of its success in overseas markets [4]. The immersive experience makes players transform from passively receiving information to active

explorers and resonate with audiences worldwide.

On the other hand, utilize AI for the collection and analysis of large-scale player data to improve the efficiency of accurate delivery. When Honour of King was released overseas, Tencent used AI intelligently to provide targeted services to the public. From using an algorithm to analyze people's preferences, to finding the right target group. Finally, potentially contacting users, so as to achieve the purpose of launching with good results. Additionally, Tencent loves utilizing AI big data to analyze capabilities to accurately obtain player experiences and feedback. In order to deliver Chinese culture more appropriately, based on the cognitive differences across various global regions. This shows that the highly anthropomorphised and intelligent marketing of AI technology implements the marketing model of multi-accounts in the digital age [5].

In the future, games will be an entertainment product that combines culture and technology, and AI will help game has more vitality. A literature review proposed a perspective that the improvement of the visual effect brought by AI to Chinese games is conducive to the construction of Chinese national cultural image symbols that they disseminate to the outside world [6]. Nowadays, more game companies pay more attention to the innovation of the experience parts of generating diversified game content in a short time, such as gameplay and plot interaction. There's no doubt that lower cost and higher efficiency have caused AIGC to become the strongest tool in the gaming industry.

4. Developing Path of Game Companies in the AI Era: A Case Study of Tencent

4.1 Tencent's Application of AI in the Gaming Sector

The progress of AI not only represents the upgrading of tools, but also plays a unique role in data analysis, involved in reconstructing the creative logic, interaction modes, and industrial ecosystem of games. As early as years ago, Tencent began to attach importance to the integration of AI and its industry. In prophase, Tencent often used AIGC in art creation during the production of the game. Leveraging the efficiency advantages of AIGC, complete the refinement of scenes, characters, models, illustrations, etc, in games and develop into an AI model with an automatic learning system.

Recently, in the application of content production by AI, Tencent Games created an AI end-to-end chain solution system, which is called VISVISE. It can help designers address visual smoothness issues of character attire details such as skirts and capes, as well as the logical interplay between clothing and the human body during character design. Moreover, Tencent also introduced a no-code programming tool, which means developers don't need to write code, just easily plan and design game levels, props, and mechanisms through using it. So it can reduce costs.

The analysis shows that during the exchange of information between users and between users and the media, interactivity is an indispensable factor in helping users control content and constitute communication [7]. That means interaction requires participation between the subject and object, which is the indispensable art language in games. Developers consider players' emotional needs during the research and development process to design suitable AI logic models. In 2024, Tencent launched the first 'Hybrid Game Visual Generation Platform' within the gaming industry. Then it appeared in the popular domestic mobile game 'Honor of Kings'. The application can be seen both in the game waiting interface and in-game interface. Players called it LingBao. LingBao can generate personalized reminders based on different players' game session information and engage in real-time interactive communication with players. At the same time, when returning to the waiting interface, players can interact and communicate with the divine treasure by feeding it, touching it, or playing mini-games. LingBao is an AI assistant for domestic games that breaks through preset scripts. Many people perceive LingBao as a successful attempt that enhances player experience and retention time by driving Non-Player characters (NPCs) with real-time generative AI.

Users' demand for interactivity emphasises that game developers need to find a balance between interaction and narrative coherence while using AIGC to provide players with a new interactive experience [8]. Until early month in 2025, Tencent made its first attempt to integrate DeepSeek into the mobile game Game for Peace, in order to create a hot trend for 'cyber game friends'. At this time, the interactive capabilities of AI NPCs have fundamentally changed compared to Lingbao. Their interactions with players are more akin to chatbot dialogue logic, which means players can receive immediate interaction by entering information. Even NPCs can directly chat with players within the game. Provide players with more intuitive, more interactive experiences in deep gameplay.

The implementation of both has been strongly supported and positively reviewed by players. So, even Tencent has introduced a feature for paid outfits that has made the game successfully top the monthly bestseller chart. Tencent Games has mastered cutting-edge technologies and used them to improve game research and development capabilities, achieving the goal of long-term development of the industry [9]. Obviously, Tencent's emphasis on AI

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applications provided new impetus for the continuous growth of its gaming industry.

4.2 Tencent Games Faces Challenges in the Field of AI

4.2.1 Increased cost of AI training

When designing more complex game scenes and interactive scenarios, the training costs of generative AI will also grow proportionally. Taking the generation of 3D models as an example, the relevant team collected over one million high-quality 3D renderings to improve model accuracy, and just this part already cost more than 100 million.

In addition, compared with traditional production models, the recruitment of AI talent, the optimization cost of multi-device adaptation, the operational and maintenance costs of real-time feedback, and the cost of security review for content generation, all of these are expensive expenses. Therefore, Tencent needs to find higher points of commercial returns based on high expenditure.

4.2.2 Players' terminal compatibility issues

For some models with large operating memory, the adaptability of player terminals is a difficult problem that game companies cannot avoid when using AI. Until today, some AI dialogue scenarios are still prone to many problems, such as the response time of the game program being too long, players' devices overheating, making the computer stutter and freeze, which brings a negative experience to players, causing players to uninstall the game due to mismatched problems.

4.2.3 The issue of AI infringement

When creating content, AI will learn a lot of existing content and materials on the Internet, and then randomly generate content. Therefore, there is a possibility of infringement and plagiarism in the content generated by AI. These AI models, whether Tencent Yuanbao, game NPCs, or LingBao, which possess generative and interactive capabilities, aim to achieve precise interaction. They frequently collect player usage data, but the collection of such information often lacks clear restricted regulations. This leads to the risk of information leakage in its function.

Large companies represented by Tencent usually have more sensitive public opinion pressure and public opinion risks. A study analyzes the impact of public opinion on large companies, and it shows that many enterprises have been criticized by public opinion because of their sudden problems. In the face of the impact of the public opinion crisis, the risk of bankruptcy of the company is very high [10]. Therefore, when using AI for content creation, Tencent should exercise greater caution in reviewing its output.

4.3 Tencent's Future Optimization Strategy

4.3.1 Increase funding and research efforts in the AI area

From 2025, game companies are clearly accelerating their layout in the AI direction. The gaming industry is at a turning point from 'tools empowerment' to 'innovation in gameplay'. Many head game companies have increased their investment in AI technology and models, in order to integrate AI more seamlessly into the game mechanics themselves.8 years ago, NetEase established an AI lab focused on gaming to build an AIUGC map system. Subsequently, Subsequently, it introduced an innovative model combining AIGC and UGC in competition with Tencent's Dream Star. This player's metaverse feature, which has a personalized assembly mechanism, has gained more popularity among the masses. Although Tencent Games has been relatively late in exploring the 'AI+Games' field, it relies on its strong talent pool, financial support, and technological backing. Tencent has already established an AI product matrix covering the entire value chain to enhance the accuracy, precision, and stability of generated content and achieve more technological breakthroughs.

4.3.2 Participate in formulating industry standards

Tencent, as a leading company in the gaming industry, should actively participate in discussions of meetings such as the formulation of industry standards in the future. Collaborating with organizations such as the China Audio-Video and Digital Publishing Association and the Game Industry Association makes standardized policies, such as 'AI Game Technology Application Guidelines', to provide clear behavioral standards for the industry. Include the infringement problems generated by AI to avoid copyright disputes. Only by defining the legal scope of AI's application in the gaming industry can, gaming industry continue to develop healthily and orderly under the empowerment of AI.

The gaming industry is a highly competitive and innovative field. To continuously attract players, Tencent should also continue to explore new technologies and applications in the future. Leveraging the powerful potential of generative AI to develop game content with shorter cycles and lower costs.

5. Conclusion

The rapid rise of AI-powered games cannot be separated from the investments made by various companies in the AI development ecosystem. Their development of AI goes

beyond mere tool upgrades; it also involves reshaping the creative logic, interaction models, and industrial ecosystem of games. To accelerate the advancement of the gaming industry towards more intelligent, personalized, and high-capacity directions. From auxiliary tools to the core driving force, AI technology has been widely applied to all aspects of game development. Most game companies are also placing greater emphasis on the application of AI technology in key creative areas such as gameplay design, narrative structure, and intelligent NPCs. Moreover, they will collect player behavior data through big data models, automatically generating innovative gameplay and level mechanisms, thereby infusing new vitality into the gaming industry. Research shows that within Tencent Games' extensive business system, the figure of AI can be seen in most products. Whether helping developers improve efficiency or enhancing personalized experiences for players, both of them prove that Tencent Games has consistently been at the forefront of exploring AI technology within the industry. This has also been Tencent's main strategy in recent years: AI in ALL.

But this research lacks relevant data to prove the views more scientifically. In the future, players' attitudes and influences on the direction of AI+ games can be more accurately studied through questionnaire research.

References

[1] Yu Guoming, Su Jianwei, Li Fan. Deep Gamefication: The Logical Reconstruction and Value Elevation of Social Practices Driven by Game Media. Journal of Xinjiang Normal University (Philosophical and Social Sciences Edition), 1-8. [2025-06-27].

[2] Yu Guoming, Liang Yuchen, Li Yuanyuan. The New Upgrade of Games as Media: Scene Embedding and Game Social Interaction Empowered by AIGC. News Enthusiast, 2024, (09): 26-32.

[3] Hong Yuanfan, Jiang Yuelan, Peng Yunhao. Tencent Game Competitive Advantage Analysis[C]//Department of Economics, King's Business School, King's College London, Cardiff Business School, Business School. Proceedings of the 2023 International Conference on Management Research and Economic Development (part 2). North China Institute of Science and Technology; International Department of Linyi No.4 High School; Jiangxi University of Finance and Economics, 2023: 89-99.

[4] Gao Wei. Narrative research on local 3A games under the national trend cultural vision. Shanghai Normal University, 2025.

[5] Cao Shule, Wang Xinlu. How AIGC, as a creative infrastructure, can reshape the game industry, based on the research and analysis of 66 game enterprises. News and Writing, 2025, (05): 101-112.

[6] Yi Linyin.Research on the construction of national cultural image in the external dissemination of domestic games. Guangdong University of Foreign Studies and Foreign Trade, 2024.

[7] Liu Xiyu. Research on Game Design Strategies Driven by Asynchronous Interaction. Guangzhou Academy of Fine Arts, 2024(04).

[8] Mi Qian, Huang Xinyao. Opportunities and challenges of AIGC-driven game interactive narrative. Toy World, 2025, (04): 84-86.

[9] Zeng Yan. Analysis of the international development path of Chinese digital entertainment enterprises under the background of the double cycle. Guangxi Nationalities University, 2024.

[10] Wang Qi. The impact of corporate social responsibility on corporate performance under negative public opinion. Inner Mongolia University of Finance and Economics, 2020.