

Analysis and Development Countermeasures of Game Industry PEST from the Perspective of Metauniverse

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Abstract: Over the past two decades, the concept of the meta-universe has gained widespread popularity and has emerged as a leading development direction for the gaming industry. This has led to significant interest from social capital investors. In light of this, this paper examines the development environment of the gaming industry using a PEST analysis approach, with a focus on the political, economic, social, and technological factors that are relevant to the meta-universe. The aim of this analysis is to provide recommendations and strategic guidance for game companies that seek to enter the metaverse industry.

Keywords: PEST analysis, meta-universe, video games, integrated development

1. Introduction

With Facebook's recent announcement to rebrand itself as "Meta," the year 2021 marked the birth of the meta-universe. This new digital landscape, made possible by advanced internet technologies, has captured the attention and interest of investors across various industries. The emergence of the meta-universe has given rise to new sectors and has spurred the transformation of existing ones. Among these, online gaming stands out as a field that shares similarities with the meta-universe in terms of its richness, capacity for immersion, and potential for building elaborate worlds. The virtual realms created by games are well-suited for the meta-universe, making the gaming industry a crucial player in this new digital arena.

To break free from their existing market constraints and pursue further growth, game companies must seize the opportunity presented by the meta-universe. This paper aims to analyze the development environment and risks of the game industry in the context of the meta-universe. Using the PEST analysis method, we will examine the political, economic, social, and technological factors affecting the game industry and offer recommendations and guidance to game companies seeking to participate in the rapidly-growing meta-universe industry.

By exploring the relationship between the meta-universe and the gaming industry, this paper proposes countermeasures and suggestions for integrating the two fields. Through a comprehensive analysis of the game industry's environment and risks, we seek to provide practical and theoretical background information for our recommendations. Ultimately, our goal is to help game companies develop effective strategies for navigating the meta-universe and capitalizing on its potential.

2. Institutional background

Since 2021, the meta-universe has gained significant attention from scholars who have explored the integration and development of the meta-universe with the existing culture. Chen and Wu argue that games offer the first glimpse into the meta-universe as they not only belong to the content industry but also offer a unique perspective on exploring the meta-universe through various factors, such as technological maturity, user compatibility, and content suitability [1]. Liu suggests that meta-universe games can break the traditional top-down game mode and create a flat ecological relationship. By linking games developed on different platforms, the meta-universe provides opportunities for the healthy growth of the gaming industry [2].

Guo notes that cloud games serve as the prototype for the meta-universe. Cloud gaming, based on cloud computing, has lower requirements for user gaming equipment, while strong virtual-reality technology, which is the foundation of the meta-universe, is required for cloud gaming. Thus, games serve as the prototype and the best vehicle for the meta-universe [3].

Yang and Zhao explain the relationship between metacosms and MMORPGs online games. Users can not only entertain but also create content settings to participate in the virtual world, own digital goods and assets, and exchange digital goods and services between users in the metacosms. In this virtual world ecosystem, users can help the system grow, convert their own traffic and assets, and create value throughout the participation process [4].

Li and Zhang emphasize that during the integration and development of the meta-universe and the cultural industry, the meta-universe connects the physical world with the virtual world, accelerating the online trend of production, consumption, and business models [5]. Zhao analyzes the development prospects of the game industry by considering the bottleneck problems of the online game industry, comprehensive measures, and timely legal systems. He believes that online games will expand beyond cultural entertainment and transform life in broader and deeper fields [6].

Qi and Li suggest that games, through the combination of digital technology, real-time performance of new technologies, reality-virtual connectivity, and increasingly mature artificial intelligence technology, have revolutionized the way audiences acquire information. The meta-universe, as an emerging medium, offers endless possibilities for game development due to its almost real construction of the virtual world [7].

3. Overview of the Development of the Game Industry

3.1. The Relationship between the Game Industry and the Meta-Universe

The meta-universe is not just a game; it represents a new way of experiencing and interacting with the digital world. However, games are one of the most effective ways to represent the meta-universe and make it accessible to users. Games are easily embedded in economic models, and the quality of a project's economic model will directly affect its user experience and sustainable development. Furthermore, the game industry can drive the development of other industries, particularly those related to virtual reality, such as AR and VR. With the application of software and sensors from various scene developers in games, the meta-universe has the potential to create a massive market in the future.

3.2. The Monopoly Status Quo of the Game Industry and the Bottlenecks It Faces

China's game industry has experienced explosive growth over the past two decades, with a complete industrial chain and a market size that has surpassed the rest of the world. However, despite the promising market numbers, industry practitioners and casual gamers alike perceive that the industry is in decline. The statistics are telling: in 2019, 2,504 new game companies were created, while a

staggering 18,710 game companies went bankrupt. Players also feel the decline in vitality in the game market, with a lack of world-class products and repetitive game routines. Although the industry has improved and technology has advanced, the overall competitiveness of China's game industry has not improved equally, and the satisfaction of domestic game players has declined. In 2019, Tencent alone generated more than 110 billion yuan in game revenue, accounting for half of the total revenue. The next closest competitor, NetEase, had a quarter of Tencent's gaming revenue, and together they accounted for 75% of the domestic gaming market. This monopoly situation has created bottlenecks for the development of the game industry, as well as challenges for promoting innovation and improving user experience. Therefore, it is crucial for the game industry to seize the opportunity of the meta-universe and find new ways to break the monopoly and stimulate growth.

4. PEST Analysis of the Meta-universe Game Industry

4.1. Political Environment

The meta-universe is considered a new growth point and a strategic field of competition for the industry, which will lead to a reshuffle of the global science and technology industry. Once the meta-universe becomes the mainstream mode of the future digital ecology, a new international division of labor system may emerge, putting countries lacking corresponding chips and competitiveness at a disadvantage. To avoid missing out on strategic opportunities and security risks, it is necessary to pay attention to potential risks and challenges in the meta-universe, including industrial hegemony, technological security, social change, and mass psychological challenges.

4.2. Economic Environment

As the application closest to the meta-universe, games focus on quality content and platform value in iterative development. Driven by the meta-universe, games are expected to reach the next stage of development, where they become the basic platform supporting the activities of the meta-universe. Technological innovation promotes the migration of game forms to new hardware platforms. The game industry is currently dominated by mobile terminals, but with the advent of the meta-universe, it may enter the era of wearable devices based on VR/AR and other technologies. With the assistance of AI, the meta-universe game community may realize cost-effective expansion of creators, overlay social enhancement, and further highlight the value of fine content and unique services. Blockchain and NFT-related technologies may support the improvement of the economic system in the meta-universe game and help construct and develop the digital economy[8].

Since the birth of the first video game "Brown Box" in 1967, the game industry has undergone significant transformation from arcade to mobile games. Console games declined with the development of computer hardware, and terminal games on computers began to rise gradually. By 2005, browser-related technology had matured enough to give birth to web-based games, and mobile game development technology keeps innovating, which gradually takes over the game market. In 2021, the global game market scale reached \$175.8 billion, with mobile games contributing \$80.7 billion. The meta-universe may enable the game industry, and terminal devices carrying games will also be iterated. The industry may enter the era of wearable devices with VR/AR and other technologies as the core. The value of quality game content is expected to increase further in the future with the further popularization of VR/AR and other devices and the advancement of the meta-universe.

4.3. Social Environment

4.3.1. More Technology Companies Participate in the Game Industry

With the listing of Roblox and the name change of Facebook to Meta in 2021, the concept of the meta-universe has gained widespread attention and recognition worldwide[9]. Global technology giants have successively laid out metacosem-related industries, and the research and development of its underlying core technologies has entered a rapid development stage. Exploring technological breakthroughs and business models based on game application scenarios will become the long-term strategy of some game enterprises, and the game industry is expected to witness historic opportunities. For example, on January 18, 2022, Microsoft announced that it would acquire Activision Blizzard for nearly \$70 billion in cash to boost Microsoft's metacomuniverse strategy.

4.3.2. Meta-universe Helps Change the Monopoly of the Game Industry

The international game market has been monopolized by a few major companies for a long time. The concept of the meta-universe challenges this status quo, as it requires the collaboration of different companies to build a unified metaverse. Game companies can no longer operate in isolation, and cooperation between companies becomes necessary. The meta-universe will enable smaller game companies to gain a foothold in the market by reducing the barriers to entry and allowing.

4.4. Technological environment

4.4.1. AI and the Meta-universe game industry

Artificial intelligence (AI) technology has played an essential role in the game industry. For instance, AI has been used to improve game graphics, physics engines, and player behavior prediction. The metaverse could further leverage AI technology to enhance the gaming experience in several ways[10]. For instance, AI algorithms could be used to personalize game content based on the player's preferences, behavior, and skill level. AI could also be used to develop more realistic virtual characters, enabling more immersive gameplay.

4.4.2. Blockchain technology and the Meta-universe game industry

Blockchain technology has also attracted considerable attention in the game industry in recent years. Blockchain provides a decentralized platform for trading in-game items, reducing the need for intermediaries, such as gaming companies, and providing a more secure and transparent trading environment. The metaverse could provide new opportunities for blockchain technology, enabling players to create, trade, and own virtual assets that exist outside of individual game environments. This would provide a new source of revenue for game.

5. Development Strategies of the Game Industry in the Metaverse Era

5.1. Integration of the Metaverse for Technological Innovation

In the metaverse era, the game industry must leverage the technical advancements offered by the metaverse to drive innovation and enhance the user experience. This requires game enterprises to possess a keen market insight and an in-depth understanding of user needs. By leveraging digital technology to create three-dimensional and diversified game scenes, game enterprises can improve the experience of game users through concepts such as online and offline tandem, real NPC interaction, and digital experiences.

5.2. Accelerating the Development of Underlying Technology in the Metaverse

Game production demands advanced technologies such as highly detailed 3D images, various computing engines, rendering, artificial intelligence, projection, motion capture, and translation. These advanced technologies require substantial financial investment and cutting-edge technical support. To promote fair competition and healthy development in the metaverse market, game enterprises must accelerate the construction of metaverse infrastructure, integrate metaverse technology to build game creation platforms, and invest in lower operating costs to achieve "motion-bag" experiences. These efforts can help the majority of enterprises lay out their metaverse strategies, seize new market opportunities, and improve the comprehensive market competitiveness of game enterprises.

5.3. Promoting the "Metaverse Plus Industries" Initiative to Expand the Real Economy

As the metaverse era unfolds, many leading gaming companies are facing the challenges of an "innovation dilemma" and wave of layoffs in 2023. To help ensure the sustainable operation of game enterprises, the game industry must integrate with the real economy and promote the development of "metaverse + industries." Through innovative marketing strategies that leverage online and offline linkages, game enterprises can invest in the layout of non-game industries and enhance the influence of their game brands. The development of this new real economy can also provide additional financial assistance when game business experiences downturns, promoting the multi-directional and diversified development of the game industry and creating a new sustainable development ecology.

6. Conclusion

In conclusion, the metaverse is still in its early stage of development, but the original virtual properties of games create a natural connection with it, making gaming the foundation and breakthrough for the development of the metaverse. The "meta-universe" era offers new opportunities to address the monopoly and innovation bottleneck problems faced by the online gaming industry over the past decade. With its accompanying policy preferences, new economic application forms, fairer market opportunities, and six major technologies, the metaverse era can help the game industry change its passive industry status quo. The deep integration of the metaverse and the game industry is an inevitable trend for industry development, promoting the multi-directional and diversified development of the game industry and helping it seize the opportunities of the times for rapid development.

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