

Metaverse Games as the Portal of Metaverse Economy: Characteristics and Prospects

Sijie Xia¹, Zhi Fang², Ronghui Kang^{2,3}, Henghan Chen^{2*}

¹ Beijing-Dublin International College, Beijing University of Technology, China

² College of Foreign Languages, Huaqiao University, Quanzhou, Fujian, China

³ Bozhou Hongxue Middle School, Anhui, China

Email Address

johnchen@hqu.edu.cn (Henghan Chen)

*Correspondence: johnchen@hqu.edu.cn

Received: 10 April 2023; Accepted: 15 July 2023; Published: 10 August 2023

Abstract:

With the rise of digitalization in society, Metaverse games have emerged as a novel form of virtual reality, sweeping the world and continuously enhancing artificial intelligence and virtual reality accomplishments. This trend is significantly reshaping the structure of traditional economic paradigms. The objective of this paper is to focus on Metaverse games and explore the novel economic mechanisms and developmental pathways they introduce. It aims to elucidate the distinguishing characteristics of Metaverse games and present future development scenarios, with a particular emphasis on analyzing the economic effects brought about by these games. Moreover, we delve into the extensive new opportunities for economic growth and the expanded realm of activities that Metaverse games offer, transcending the limitations of physical space.

Keywords:

Metaverse, Metaverse Games, Economic Change

1. Introduction

In 2021, the Metaverse gained significant traction with notable events. In March, Roblox became the first Metaverse concept company to go public, while in April, chip manufacturer Nvidia launched Omniverse, a virtual work platform for the Metaverse. Another significant development took place in October when Facebook rebranded itself as Meta. Since then, major Internet companies like Microsoft, Apple, Tencent, and ByteDance have actively pursued the Metaverse concept. Additionally, government agencies have also shown interest in Metaverse. For instance, Shanghai's 14th Five-Year Plan explicitly states the city's intention to enhance forward-looking research and development in core Metaverse technologies, promote the development of advanced perception and interaction terminals, and construct comprehensive virtual content systems. In Korea, the Ministry of Science and ICT initiated the formation of the "Metaverse Alliance", which includes more than 500 companies and institutions such as Samsung, Hyundai Motor, and Korea Telecom. Japan also released the Survey

on the Future Potential and Challenges of the Virtual Space Industry to navigate the changes in the Metaverse industry.

2. Overview of the Metaverse

Domestic research on metaverse has the following characteristics: “In terms of the time dimension, both domestic and foreign metaverse research is in the primary stage, with foreign research being earlier than domestic research, and the continuity is better than domestic research, but the recent enthusiasm is lower than domestic research. In terms of authorship, metaverse research at home and abroad lacks highly productive authors and stable collaborative teams, and no core group of authors has been formed, but the state of collaboration is better abroad than at home; China is not in the leading position in global metaverse research, but the attention and output of metaverse research in developed countries such as the United States, the United Kingdom, and Japan are significantly higher than those in China” [1]. There is no universally accepted and comprehensive definition of the Metaverse. Generally, the Metaverse is understood as a virtual space. According to the Research Report on the Development of the Metaverse: 2020–2021, the Metaverse is “a novel internet application and social form that integrates multiple emerging technologies, blending the virtual and the real. It provides an immersive experience based on augmented reality technology, generates a mirror image of the real world through digital twin technology, establishes an economic system using blockchain technology, tightly integrates the virtual and real worlds in terms of economic systems, social systems, and identity systems, and allows every user to engage in content production and world editing” [2] include Social & Space, Technology Tension, Artificial, Machine & AI, Reality & Reflection, and Trade & Transaction, which are also commonly referred to as “START”. In Roblox’s prospectus, the Metaverse is said to encompass at least eight essential elements: identity, social connections, immersion, low latency, diversity, accessibility from anywhere, economy, and civilization. Based on the above information, we can conclude that the Metaverse has three common characteristics. Firstly, it is built upon a social network that operates on blockchain rules and algorithms. Secondly, it has an economic system that is built upon a foundation of blockchain-based digital currency. Thirdly, it is a content platform where knowledge is produced by users and is built upon blockchain technology.

The Metaverse economy is an economic form that emerges from the application of Metaverse technology, fundamentally driven by data and information. Metaverse games, as a result of the intertwining and interaction between the virtual and real worlds, represent a unique economic entity that tightly connects the digital virtual space with real society. Serving as the gateway to the Metaverse economy, Metaverse games play a pivotal and active role within the Metaverse ecosystem. They are a significant component of the Metaverse economy and currently stand as the most prevalent Metaverse application. Metaverse games possess three distinctive features: user-driven nature, social functionality, and economic functionality.

3. Characteristics of Metaverse Games

3.1. User-Driven Nature of Metaverse Games

In the Web 1.0 era, the game platform was centered on several giants such as Tencent, NetEase, and Shanda, and users mainly served as passive consumers. Despite continuous improvements in user experience on game platforms, users were

unable to directly control their game characters even if they possessed private keys and wallets. In the era of Web 2.0, players could experience new content by joining new roles in communities, but this approach was primarily targeted at active players and content creators, leaving ordinary players with limited opportunities. However, in the era of the Metaverse, users can enjoy a high degree of creative freedom, access to abundant and low-cost information resources, easy-to-use creative tools and technologies, and collaborative communities for assistance and communication. Users are not just recipients of content; they are also creators, with User-Generated Content (UGC) becoming an important commodity in Metaverse games. For example, *Roblox*, a game platform, does not provide games to users directly; instead, users can create games online for free and even collaborate with others to produce new creations. Also, in the new blockchain engine, all game clients are independent, i.e. players can manage their game state, thus eliminating the need to implement multiplayer games through a central server. “In *Roblox*, blockchain is more than just a piece of code. Simply put, every new blockchain represents a new universe, where each star can be a game and each player represents a world. It can be deconstructed, reassembled, created, and connected to any point in the Metaverse” [4].

3.2. Social Functionality of Metaverse Games

Social interaction is the core functionality of Metaverse games, serving as the link between users and platforms. “Every individual entering a Metaverse game will have a digital identity, which serves as not only a representation of their external appearance but also a unique social identifier. Through their digital avatars, people establish new virtual interpersonal networks and social relationships, engaging in diverse and vibrant activities of information exchange and social practices within the game platform” [5]. Metaverse games transfer real-world interpersonal relationships into the digital virtual space, leveraging blockchain technology to record and track social behaviors within the digital realm. This establishes organized and efficient virtual collaborative relationships, creating diverse virtual communities. These purely digital relationships not only help eliminate biases and limitations based on geography, race, nationality, and culture but also enable individual users to explore new developmental states within the Metaverse society. They enhance a sense of self-identity that differs from the real world. Metaverse games also serve as a connection between platforms and users, offering users a wider range of services. In Metaverse games, players can acquire services by purchasing virtual in-game items. For example, in *Roblox*, players can purchase various types of weapons and equipment to enhance their combat abilities. In *Decentraland*, players can enhance their virtual identities by purchasing character accessories and weapons. In *Pokémon Go*, users can strengthen their social attributes by purchasing virtual pets.

3.3. The Economic Functionality of Metaverse Games

The economic functionality of Metaverse games refers to the value they provide to users and how the platform offers value to users. Currently, the economic functionality of Metaverse games primarily manifests in providing value to users. On traditional social platforms, users can obtain the value provided by the platform through purchasing virtual items or becoming platform members. In the Metaverse, however, users can obtain the platform’s value by providing content, services, and other forms of contribution. “Different Metaverse projects, due to their unique characteristics, have evolved various economic incentive schemes for UGC products”

[6]. The first approach allows direct trading of UGC products, wherein a marketplace is established for UGC product transactions. Users can purchase UGC products created by other users, and the currency used for payment can often be directly or indirectly exchanged with real-world wealth. For example, *Second Life* adopts this approach, where users can trade using the in-game currency called “Linden Dollars”, which can be exchanged with US dollars at a floating exchange rate. The second approach provides a showcase platform for UGC products, allowing creators to earn rewards through alternative channels. This functions as an indirect trading and profit model, with *Minecraft* being a typical example. The third approach is the platform model, represented by *Roblox*. In this model, players purchase and consume “Robux”, while developers earn “Robux” by building games. “Robux” can be reinvested in the game, exchanged for real-world currency, or used for further investments. The fourth approach is monetization through NFTs (Non-Fungible Tokens). In blockchain-based Metaverse platforms, users can turn their UGC products into NFTs for trading. This type of transaction can even take place across platforms. *Decentraland* is an example of this model, where the NFT market is a significant component of the *Decentraland* economy. Players can own virtual land, artwork, clothing, and other non-fungible tokens, which can be sold to other players on the platform. The decentralized nature of blockchain technology facilitates efficient transactions.

4. Prospects for Metaverse Games

4.1. Multi-sensory immersive experience

The development of Metaverse games will gradually move towards anthropomorphism, achieving a deeper sense of realism and immersive experience blending the virtual and real worlds. However, the interactive experience in the Metaverse should not be limited to visual interaction alone; it should encompass multi-sensory and multi-dimensional integration. With the interconnection of all things, Metaverse games will leverage modern technologies to immerse users in virtual spaces and provide comprehensive, three-dimensional, and accessible real-world experiences. The multi-sensory experience in Metaverse games directly influences the overlapping development of the economy. Research has shown that the fusion of social media and gaming platforms alone in the Metaverse can generate a value of approximately 8 trillion USD.

4.1.1. Audio-visual Experience

The help of VR-enabled smart glasses or headphones allows users to enter a virtual space that is simulated by computers and runs parallel to the real world. This enables virtual avatars to fulfill the need for more authentic communication within the Metaverse.

4.1.2. Haptic Experience

Realistic haptic feedback, in the context of Metaverse games, will utilize technological interfaces to simulate different materials, textures, temperatures, or shapes at the fingertips. This will enable experiences such as feeling the sensation of drinking water, brushing teeth, or the touch of the skin being scratched. Users will be able to perceive smoothness, pressure, vibration, or friction, among other tactile sensations.

4.1.3. Taste Sensation Experience

Integrating the sense of taste into the virtual reality of the current Metaverse is challenging. However, with the increasing demand for taste perception from users, technological advancements are likely to emerge that utilize digital taste-driven technology.

Of course, media is an extension of human senses, and Metaverse games strive for a multi-channel fusion and innovative interactive experience. With the iterative advancements in digital technology, our senses such as hearing, vision, and touch will gradually be digitized, leading to more immersive experiences and driving profound economic effects. The integration of the Metaverse into the physical economy will bring astonishing market synergies, linkages, and amplification effects, triggering a transformation and leap in digital technology and the digital industry, unveiling significant business opportunities.

4.2. Immersive Experiences Empowered by New Technologies

Technological empowerment of the Metaverse brings forth more immersive virtual and real-world interactions. Metaverse games achieve higher-dimensional engagements through human-computer interaction technologies, enable multi-context economic interactions through artificial intelligence, and establish the rudiments of a mathematical economy through networking and computing technologies. It closely integrates the virtual and real worlds in identity systems, social systems, and economic systems, empowering users to engage in personalized content creation and diverse world editing, ultimately constructing a blended digital living space.

4.2.1. Interactive Technology

VR, AR, MR, and other technologies utilize computer-generated simulated environments, allowing users to immerse themselves in these environments through devices. This gradually brings human-computer interaction into three-dimensional interactive spaces, providing users with a sense of being present in the virtual environment. Examples include the immersive experience of trying on clothes while shopping or the tactile experience of inspecting products. These technologies will drive the natural development of the digital economy.

4.2.2. Artificial Intelligence Technology

Through the construction of intelligent computing networks and collaborative computing at the cloud-edge, Metaverse games adapt to the needs of real-world development, forming a large data network. Through the utilization of data traffic and big data, they establish an innovative Metaverse industry system that empowers various sectors, driving high-quality development of the digital economy.

Technology empowers the economy, and the 14th Five-Year Plan of the country explicitly proposes 10 digitized real-life scenarios, including smart education, smart healthcare, smart communities, smart tourism, and smart manufacturing. Embedding these simulated scenarios in the Metaverse will amplify the new engine of digital development and create new advantages for the digital economy by providing a completely new space for development. New forms of business, industries, and economic structures derived from modern technology will be nurtured and emerge. The empowerment of new technologies in the Metaverse connects the human neural

world with the external physical space, offering greater possibilities for economic development.

4.3. Constructing an Economic Model Supported by Multiple Dimensions

Due to the highly realistic nature of the virtual world, the Metaverse requires a well-developed and self-sustaining structure and framework. Therefore, the construction of the Metaverse economy, derived from it, becomes of utmost importance. The Metaverse economy also requires goods, as goods have value, and with value comes the need for value-based exchanges. In the Metaverse world, goods are virtual, digital commodities, necessitating the development of an economic system based on the Metaverse [7].

By leveraging digital creation, forming digital assets, and constructing a digital marketplace trading network, the Metaverse meets the market demands of different users. Looking at reality, the thriving digital economy has brought about various types of market expansions, such as e-commerce platforms like Taobao and Douyin for physical exchanges, application stores for mobile apps and digital assets, and pure digital content exchanges like ‘gifting’ for specific video or written material. Sellers can innovate content within the Metaverse, design a conceptual space to ensure brand awareness and loyal customers and overcome current challenges in e-commerce, such as dull content, limited chat communication, and consumers lacking experiential interactions with brands and products. By empowering the e-commerce sector through Metaverse game design, consumers can experience an online atmosphere that resembles offline shopping.

5. Conclusions

In summary, as the earliest and fastest applied field of the Metaverse, Metaverse games transcend their original purpose of entertainment and extend their reach into various activities within the physical world. By seamlessly integrating Metaverse games with economic development, a vast spectrum of non-gaming experiences naturally emerges, presenting a tapestry of possibilities. Within this transformative trend, economic interactions, such as socializing with other users, attending virtual concerts featuring renowned artists, and exploring virtual stores brimming with limitless merchandise, are poised to become increasingly common occurrences within the immersive Metaverse games. As the Metaverse continues to evolve, the economic scale within this virtual realm is destined to surpass that of the real world, unfurling boundless prospects for economic advancement, innovation, and societal transformation on a global scale.

Moreover, the expanding influence of the Metaverse transcends individual experiences, touching upon the fabric of industries and economies worldwide. As businesses recognize the immense potential of the Metaverse, they eagerly embrace this new frontier, seeking to establish their virtual presence and tap into the ever-growing market. Virtual companies emerge, offering products and services exclusively within the Metaverse, while established enterprises adapt their strategies to accommodate the shifting landscape. As a result, a thriving Metaverse economy takes shape, generating employment opportunities, driving technological innovation, and reshaping traditional business models. At the same time, Metaverse will continue to promote the transformation of the concept of online education thinking, promote

the construction of new infrastructure for online education, and innovate the mode of online education data governance [8].

Furthermore, governments and policymakers are now actively engaging in discussions surrounding the Metaverse, recognizing its significance and the need for appropriate regulations and frameworks. Collaborative efforts between the public and private sectors aim to establish standards, protect users' rights, and ensure a safe and inclusive environment for all participants.

As we embark on this new era, the Metaverse holds incredible promise for societal advancement, entertainment, and economic prosperity. The journey ahead is filled with endless possibilities, as we witness the Metaverse seamlessly integrate with our physical world, shaping the way we live, work, and interact. With each passing day, the boundaries between the virtual and real become more blurred, and the Metaverse takes its place as a transformative force, shaping the future of humanity.

Conflicts of Interest

The author Zhi Fang and the author Ronghui Kang are co-first authors of this article. The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

This article is sponsored by the research project “Digital Finance: Big Data and Artificial Intelligence in FinTech Applications” of the Chinese University of Hong Kong, and the Special Projects on Discipline Research and Development of FLTRP and the College of Foreign Languages, Huaqiao University.

References

- [1] Zhang, X.H. Comparative Analysis of Domestic and International Metaverse Research. *West Forum on Economy and Management*, 2023, 3, 86-96.
- [2] Wang, R.X.; Xiang, A.L. Research Report on the Development of the Metaverse: 2020–2021. New Media Research Center, Tsinghua University, 2021.
- [3] Chen, G.; Dong, H.Y. Metaverse Characteristics and Properties of START Mapping.
Available online: https://view.inews.qq.com/wxn/20211119A02CIJ00?refer=wx_hot&originPath=w2 (accessed on 1 August 2023).
- [4] Hu, L.Z.; Xiang, Y.S.; Pan, J.N. Research on Blockchain and Digital Economy Innovation in Metaverse Industry. *Shangye Jingji*, 2022, 6, 36-38.
- [5] Yu, G.M.; Qin, Z.C. ‘Singularity Moment’ of Metaverse Development: The Evolution of the Relationship between Video Games and Reality - Three Advanced Steps of Development: Extension, Convergence and Integration”, *Media Economics and Management Research*, 2022, 3, 3-20.
- [6] Chen, Y.W.; Cheng, H. Metaverse Economy: A Comparison with the Real Economy. *Research on Financial and Economic Issues*, 2022, 5, 3-16.
- [7] Zheng, L.; Zheng, Y.Y. The Non-consensus of Metaverse economy. *Review of Industrial Economies*, 2022, 1, 28-37.

- [8] Ran, Y.Q.; Xu, X.F. Virtual and Real Integration: Metaverse Reshapes the New Ecology of Online Education. *Media*, 2023, 9, 81-83+85.



© 2023 by the author(s); licensee International Technology and Science Publications (ITS), this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (<http://creativecommons.org/licenses/by/4.0/>)