

# Investigation and Research on Public Cognition and Attitude Towards “Metaverse” in Digital Age

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**Abstract:** In the digital era, the metaverse has become a hot topic. The public's perception and attitude toward the metaverse will determine its future development. This paper surveys the form of online electronic questionnaires in order to understand the public's cognition and attitude towards the metaverse in China. It is found that the public's understanding of the metaverse is not deep enough, and access to relevant information is not formal enough. The public's understanding of the concept, technology, and application of the metaverse is relatively shallow. People are eager to bring convenience to social life in the metaverse, but there are also some doubts and concerns. The public generally maintains a rational view of the metaverse and has a relatively good degree of acceptance and expectation of the metaverse. The public's cognition and attitude towards the metaverse have essential reference value for the future development of the metaverse.

**Keywords:** Digital era, the public, metaverse, cognitive status, attitude

## 1. Introduction

With the rapid development of science and technology, people gradually enter the digital age. In recent years, China has strengthened the digital economy, digital security, and digital governance from a strategic perspective while building a digital Silk Road and enhancing global digital economy cooperation in the context of the pandemic. However, due to the rapid iteration of the digital era, national strategic innovation is lagging. The global explosive metaverse is a significant problem affecting human development and national strategic competition. The metaverse is a virtual world linked and created through science and technology, mapping and interacting with the real world, and a digital living space with a new social system. The year 2021 has been called the “first year of the metaverse” by many media. The metaverse depicts a “digital twin” world where the virtual and the real are deeply integrated with emerging technologies[1]. In March 2021, sandbox gaming platform Roblox first wrote the concept of “metaverse” into its prospectus and successfully registered on the New York Stock Exchange. The metaverse quickly became the global focus of social attention. In October 2021, Facebook announced that it would change its name to Meta and build it into an all-encompassing metaverse company. In November 2021, Microsoft released Mesh for

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Microsoft Teams, which allows users to participate in meetings and experience immersive virtual workspaces through avatars. The metaverse describes a “digital twin” world that integrates emerging technologies and deeply integrates virtual and reality[2]. The metaverse is not a new concept. With the rapid development of new-generation information technologies such as big data, artificial intelligence, 5G, blockchain, and virtual reality, the metaverse may reshape the industrial ecology and form a virtual world corresponding to the real world, a vital force for future social change. In the digital era the metaverse has now become a symbol of the digital era.

Most discussions and studies on the metaverse at home and abroad focus on the concept, technology, economy, and philosophy. The researchers are mainly from the perspectives of scholars, entrepreneurs, and R&D personnel. However, as the leading force participating in social governance and economic development, the public's cognition and attitude towards the metaverse are also fundamental. The metaverse has been controversial ever since it exploded. The concept, technology, and application in science and technology circle, business circle used widely, and the concept of the social public to metaverse cognitive situation in our country is fuzzy, understand public perceptions and attitudes for the metaverse, to eliminate the digital divide, enterprise business activities, and the metaverse has essential significance for the development of the metaverse in our country. Therefore, this paper surveyed domestic social citizens based on the electronic network questionnaire to understand the public's cognition and attitude toward the metaverse.

## **2. Literature Review**

Originally from the 1992 science fiction *Snow Crash*, the metaverse is a virtual space parallel to and independent of the natural world, essentially an online virtual world that maps the real world[3]. Most foreign studies on the metaverse focus on its ontology, covering the concept definition, model construction, correlation technology analysis, and other contents of the metaverse[4][5]. It also involves the study of the metaverse in education and learning, including teaching methods, educational concepts, multilingual teaching, and other aspects. The application fields of the metaverse include the game, social communication, business, and other fields[6]. The research on the domestic metaverse is later than that of foreign countries. In 2021, it became a hot topic in the cultural, industrial, and venture capital circles. Domestic studies mainly focus on the conceptual connotation, philosophical basis, moral ethics, media practice, technological construction, application scenarios, and other aspects involved in the metaverse[7]-[8]. It can be seen that the application fields of foreign metaverse research institutes have been extensive, while domestic research is still in the preliminary stage, and the research attention is quite different from that of foreign metaverse research. In December 2021, Newzoo and Gamma Data, two well-known market research companies, jointly released the *Metaverse Global Development Report*, which conducted an in-depth analysis of the metaverse development in the global and Chinese markets, and conducted a large number of user surveys globally and in China. Users are the main subjects that affect the development prospects of the metaverse. Some scholars have paid attention to users' information behaviors from the perspective of the metaverse and expanded from the three dimensions of users, information, and technology to achieve more effective information resource management and user behavior understanding[9]. However, at present, few scholars have conducted research on the public's cognition and attitude towards the

metaverse to make an in-depth analysis of the public's influence on the future development of the metaverse, which has important reference significance for the enterprises, industries, and industries involved in the metaverse.

Generally speaking, the basic and applied research on the metaverse has been involved at home and abroad. However, there is a lack of relevant research on embedding the metaverse into social life. Some enterprises have started to formulate long-term promotion strategies by the characteristics of creation stories, digital virtual people, digital avatars, digital rights, and interests based on blockchain presented in the metaverse, combined with their brand positioning and characteristics of target groups, such as virtual idols of Huaxizi and digital collections of Coca Cola. These new concepts and interactions enhance the engagement between the masses and brands. It can be seen that the concept and application of the metaverse have gradually penetrated the vision of the public. The application of the metaverse in various industries and fields plays a non-negligible role in the digitalization of the digital age.

### 3. Study Design

#### 3.1. Survey Objective

The primary purpose of the public survey in this paper is four aspects: First, to understand the public's understanding degree of the metaverse and how to obtain relevant information; Second, to understand the public's understanding of the technology and application of the metaverse; Third, to understand the public's understanding of the existence of problems in the metaverse; Fourth, to understand the public's attitude towards the metaverse, including the degree of acceptance, interest, and expectation.

#### 3.2. Questionnaire design and recovery

This study adopts the method of random network sampling, uses the software platform of sojump to compile the questionnaire, and finally issues the questionnaire through WeChat, QQ, and other social platforms. The questionnaire involves 18 questions, including 14 multiple-choice questions, two matrix scale questions, and two fill-in-the-blank questions. The multiple-choice questions included six multiple-choice questions and eight single-choice questions. The questionnaire questions are mainly divided into these four aspects: ① Basic information; ② Technology and application cognition of the metaverse; ③ The degree of understanding of the problems existing in the metaverse; ④ Attitude towards the metaverse. The questionnaire design adopts the Likert scale, which reflects the public's attitude from three dimensions (interest, acceptance, and expectation). SPSS is used to analyze the reliability and validity of the scale. It is found that Cronbach's Alpha coefficient is 0.890, which is highly reliable; Principal component analysis showed that the KMO value was 0.741, indicating that the construct validity was excellent and suitable for investigation. One hundred fifty-one respondents from all over the country participated in the online questionnaire. After excluding the questionnaires that took less than 60 seconds to complete, 146 valid questionnaires were recovered, with a recovery rate of 96.7%.

3.3. Survey Sample Basic Information

The basic information of the survey sample is as follows: 64.38% of the respondents are female, 35.62% are male, and the age distribution is from 18 to 50 years old (Figure 1). Among the respondents, young people aged 18-25 years accounted for the most significant proportion, up to 71.34%, 26-35 years old people accounted for 13.01%, 36-50 years old people accounted for 6.16%, the total number of young and middle-aged people accounted for 94.51%. In addition, 2.74 percent were under 18 years old, and 2.74 percent were over 50. Among the respondents, the youngest had the essential ability to understand words and distinguish right from wrong, so they could complete the questionnaire filling activities smoothly.

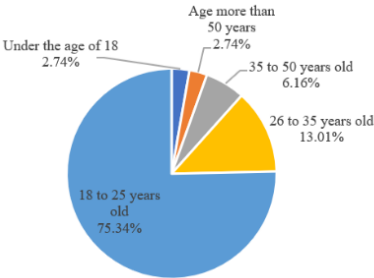


Figure 1. The age distribution of respondents.

Most participants in the survey were undergraduates, postgraduates, or doctoral students, accounting for 84.25% of the total number, and 15.75% had college degrees or below (Figure 2). Among them, students are the leading group, accounting for 65.75%, employees of enterprises account for 19.86%, and other groups occupy a small proportion (Figure 3).

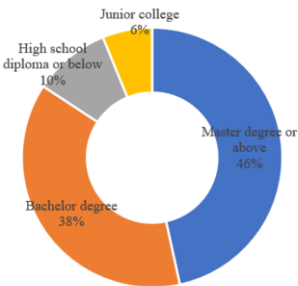


Figure 2. The educational background of the respondents.

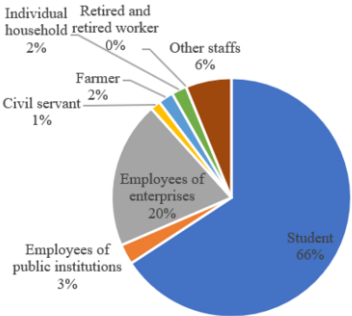


Figure 3. The occupations of respondents.

## 4. Survey Results and Analysis

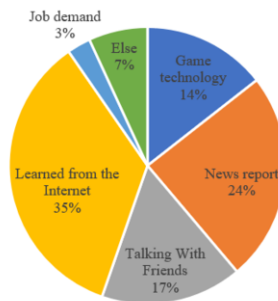
### 4.1. Public knowledge of the metaverse and access to relevant information

As seen from Figure 4, the proportion of people who “know but do not know” about the metaverse is the highest among the respondents, up to 69.18%. “Better understanding” people accounted for the second proportion, 17.81%; The number of people who chose “never heard of it before” was 12.33 percent, while the number of people who knew it very well was only 0.68 percent. This questionnaire survey mainly aims at the public, that is, non-professionals. Therefore, very few people are professionally involved in the metaverse in this survey, which is in line with the expectation of the survey subjects. It can be seen that about 70% of the public have only heard about the metaverse and know about this hot concept but have no in-depth understanding of it. Nearly one-fifth of the public has never heard of the metaverse before, and only a small number of people know the metaverse very well. The data show that the public's understanding of the metaverse is relatively low.



**Figure 4.** The public's knowledge of the metaverse.

As can be seen from Figure 5, in “How did you learn about the metaverse?” In the first question, the most significant number of people chose “learning from the Internet” (69.86%), followed by “news report” (48.63%), “chatting with friends” (32.88%), “game technology” (28.77%), and “work needs” (5.48%). It can be seen that most people learn about the metaverse through online media.



**Figure 5.** The public's access to information about the metaverse.

As seen in Figure 6, the public believes that the most crucial reason for the explosion of the metaverse is “the development of virtual technology”, followed by “the needs of the development of The Times.” Some believe it is “people's practical needs and aspirations for the metaverse” and “the speculation of the capital behind it to make money.”

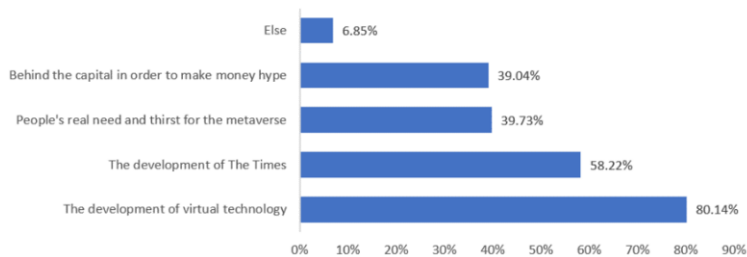


Figure 6. What drives the explosion of the Metaverse.

4.2. Public perception of the technological and applied domains of the metaverse

It can be seen from Figure 7 that there is a deviation in the public's cognition of the technology maturity of the metaverse application. Moreover, it turns out 3D technology and big data have the highest score, followed by 5G and VR (virtual reality), cloud computing, and AR (augmented reality) with a score below 6.2, and AI and Blockchain (blockchain) with a score below 6. It can be seen that the public believes that the technology of the metaverse is not quite mature at present, and the metaverse scene still needs to achieve technological breakthroughs from concept to actual implementation.

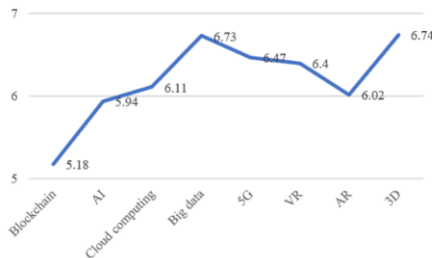
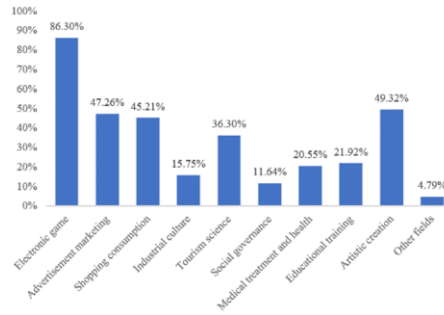
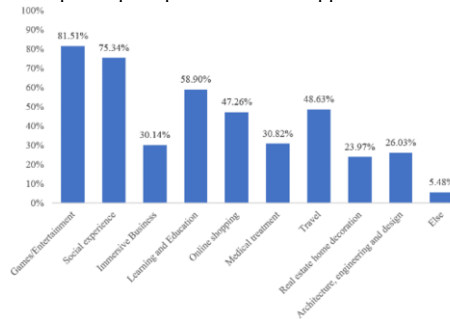


Figure 7. The public's cognition of the technological maturity of the metaverse application.

As can be seen from Figure 8, the public believes that the metaverse will first be applied in the “electronic game” industry, then in “artistic creation”, “advertising and marketing”, “shopping consumption”, and finally in tourism, education, medical treatment, social governance, and other fields. It can be seen that the public generally believes that the metaverse will be applied to people's recreation and consumption practices at the earliest. To the question, “What experience would you like to have in the metaverse?” As can be seen from Figure 9, the top three items are “game/entertainment”, “social experience,” and “learning and education”, with more than 50% support. “Tourism” and “online shopping” are next, followed by healthcare, commerce, and real estate. It can be seen that the first application areas of the metaverse are basically consistent with the experience expected by the public, and the application of the metaverse is basically to meet users' needs from the enterprises' perspective.



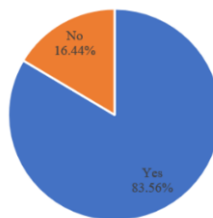
**Figure 8.** The public perception of the first applications of the metaverse.



**Figure 9.** The experience that the public desires to obtain in the metaverse.

#### 4.3. The level of public knowledge about the existence of problems in the metaverse

It can be seen from Figure 10 that 83.56% of the public would consider consumption in the metaverse, while 16.44% would choose not to consume. Most of the public who choose not to consume the metaverse think that it is relatively low in security, stability, and maturity. Some consumers also think that the metaverse is too “virtual”, and far from reality and prefer real and tangible consumption experiences.



**Figure 10.** The public's willingness to spend in the metaverse.

Further digging into the reasons behind it, it can be seen from Table 1 that more than 60% of people believe that the metaverse is too virtual and lacks honest emotional communication, which leads to a lower sense of trust. People prefer honest face-to-face communication and can feel real emotional communication, and virtual world experience can not meet people's emotional needs. Table 2 shows that it is widely believed that the metaverse also exists in the future development of a series of obstacles. More than 100 people think that the metaverse exists and that technology, ethical, and policy issues to be solved. Social governance is not only a problem of the natural world. However, it will also be associated with human consciousness to the migration of the metaverse and then

become governance problems of the metaverse[8]. In addition, many people who chose the “other” option also believed that the metaverse would affect people's physical health and harm their mental health.

**Table 1.** Problems of the living metaverse.

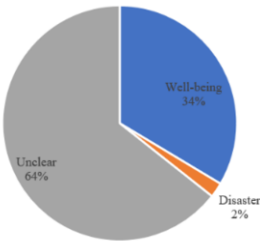
Option	Subtotal	Proportion
Identity is too virtual, and communication lacks emotion	99	65.56%
There is less social interaction	83	54.97%
Lack of authenticity, lack of trust	104	68.87%
Not conducive to face-to-face communication	77	50.99%
It makes people addicted to the virtual world	96	63.58%
Else	11	7.28%

**Table 2.** Problems in the future development of the metaverse.

Option	Subtotal	Proportion
Technical issue	110	72.85%
Policy issue	100	66.23%
Economic issue	69	45.7%
Ethical issue	101	66.89%
Other issue	9	5.96%

4.4. The public attitudes toward the metaverse

As can be seen from Figure 11, for the question “Is the metaverse a blessing or a curse for mankind?” For this question, 64.38% of people are not clear, 33.56% think that the metaverse is a blessing for human beings, and only 2.05% think that the metaverse is a disaster for human beings. It can be seen that more than half of the public is not clear about the impact of the metaverse on people's lives due to a lack of understanding and cognition. However, most people still maintain an optimistic attitude, believing that the metaverse is a concept that can enrich life and bring convenience and infinite possibilities to life.

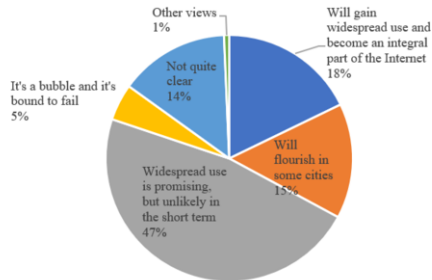


**Figure 11.** The influence of the metaverse on social life.

As for the future development of the metaverse, it can be seen from Figure 12 that 47.26% of the public believes that the metaverse is promising to be widely used, but it is not easy to achieve in the short term. 17.81% believe that the metaverse will gain widespread use and become an integral part of the Internet; Also, 15.07 percent thought



the metaverse would flourish in some cities. At the same time, 14.38 percent of people are not clear about the future development of the metaverse, while only 4.79 percent of people think the metaverse is a bubble and is doomed to fail. It can be seen that the public still holds a positive attitude toward the metaverse. Most people believe that the metaverse will be integrated into all aspects of people's social life in future development. However, as there are still a series of problems without ending, it still needs a long time to improve and develop the metaverse in the future to make up for the deficiencies.



**Figure 12.** The future development of the metaverse.

Taken together, the social public's attitude toward the metaverse from the degree of interest, evaluate the degree of acceptance, looking forward to these three aspects. According to the scale (Table 3), the attitude matrix for the metaverse total public attitude score was 3.41. The degree of interest, acceptance, and expectation was flat, mainly concentrated in 3 ~ 4 between partitions. It can be seen that the public still maintains an open mind towards the metaverse and is tolerant of the digital technology, virtual experience, and immersive functions brought by the metaverse. Although the metaverse is not mature yet, there is a particular space for development in the future, which is worth people's expectations[10].

**Table 3.** Attitude matrix scale.

Item	1	2	3	4	5	Average score
<b>Degree of interest</b>	13(8.61%)	16(10.6%)	47(31.13%)	47(31.13%)	28(18.54%)	3.4
<b>Degree of acceptance</b>	11(7.28%)	11(7.28%)	57(37.75%)	50(33.11%)	22(14.57%)	3.4
<b>Degree of expectation</b>	11(7.28%)	16(10.6%)	54(35.76%)	40(26.49%)	30(19.87%)	3.41
<b>Subtotal</b>	35(7.73%)	43(9.49%)	158(34.88%)	137(30.24%)	80(17.66%)	3.41

## 5. Conclusion and Prospect

### 5.1. Conclusion

In this study, the public's cognition and attitude toward the metaverse were investigated by sending out an online questionnaire. The results show that the following conclusions can be drawn: First, the public's understanding of the metaverse is relatively shallow. The main reason is that people need more channels to understand the information related to the metaverse. At the same time, the research and report on the information related to the metaverse are relatively few, which needs to be more widespread. Second, the public's attention to the metaverse mainly focuses on game entertainment, social

experience, and online consumption. People are eager to feel the immersive experience of virtual metaverse technology. Third, most of the public have a wait-and-see attitude towards the meta-universe and are willing to accept and understand its related knowledge. Although the public has doubts and worries about the problems existing in the metaverse, most people maintain a rational and expectant attitude toward this new digital technology. They do not blindly support or oppose it. To sum up, although the public does not fully understand the relevant information about the metaverse, people can maintain a correct and rational attitude towards it, which is of great significance for the future development of the metaverse.

## 5.2. Prospect

The metaverse is not only virtual reality but also closely related to the life of the public. This study investigates public perceptions and attitudes towards the metaverse, and its conclusions can help enterprises better identify user needs and decide the strategic layout of their products and services. For the metaverse industry, the public holds the right to speak on its future development direction. The survey also helps the metaverse industry better plan its future business model and promote the metaverse's digital development with users' needs. However, due to this study's relatively broad survey content, the survey results can only provide scholars with a general direction at the macro level. In contrast, to conduct the research at the micro level, it is still necessary to carry out further in-depth and detailed exploration of the technology, field, and potential problems of the metaverse and other dimensions. In general, the future development of the metaverse has a broad prospect. The public can see both the good and the wrong side of the metaverse, and the public's cognition and attitude play a crucial role in the development blueprint of the metaverse.

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