

# **Research on meta universe NFT artwork design method based on artificial intelligence for enterprise development strategy**

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## **Abstract:**

At this stage, the foundation of the meta universe technology has been preliminary completed, in which the artificial intelligence technology carries the communication between the subject and object of the meta universe, and the most important technical support for its economic system to build a credible cooperation mechanism is the blockchain technology, which includes non homogeneous digital assets (NFT), This research constructs an analysis of the design of meta universe NFT artworks based on artificial intelligence design methods under the background of enterprise development strategy. Through the analysis and comparison of data on the generation logic, technical attributes, technical and legal risk assessment and legal protection status of meta universe NFT artworks under different design methods, the research results show that, The meta universe NFT artworks under the artificial intelligence design method are more suitable for the current audience's preferences and can meet their needs. Artificial intelligence meta universe NFT art design, the development of digital industry has entered a new stage, it can change the traditional virtual commodity trading mode, so that users can trade freely, greatly enhancing the efficiency of data asset trading.

**Keywords:** Artificial intelligence; Enterprise development strategy; Metacosmic NFT artwork; Art design method;

## **INTRODUCTION**

In the development of modern enterprises, many large enterprises and developers develop innovative strategies on the basis of saturated market economy; From the real world to the virtual world, from VR and AR technology to the emergence of the concept of meta universe. In the process of digital transformation, enterprises need to re formulate new enterprise development strategies and marketing plans. For the new virtual market of the meta universe, games and NFT (Non Fungible Token) artworks are popular. Xu Qijin (2022) studied the digital economy development of the meta universe for modern enterprises and cities. As the carrier of the integration of the real world and the virtual world, the meta universe contains the capabilities of manufacturing production, market consumption, driving economic development and digital technology innovation [1]. Song Fangbin (2022)'s NFT artworks developed on the basis of blockchain technology provide more possibilities for the diversified development of the digital economy market, but there are still some legal risks. NFT, as a digital collection of asset attributes, is artistic and non replicable. The unique

two-dimensional code logo produced by intelligent technology in the meta universe will have better security and technical safeguards [2]. Song Xiaoling (2022) and others found that blockchain technology can not only provide a decentralized environment for free development of the universe, but also provide a fair and reasonable digital asset allocation mechanism [3]. Wang Yiting (2022) The NFT art in the meta universe is the product of the combination of blockchain technology and art. Encryption technology plays a unique role in protecting artistic creation. Smart contract technology improves the openness of artistic creation, and the principle of decentralized technology provides a new concept for artistic creation [4]. Cheng Qiaoming (2022), as the human conception and design of the future society, uses the current AI technology to provide an important technical basis, and enhances the social operation efficiency and the market development mode of enterprises. The meta universe originates from literary and artistic works, develops and plays artistic activities, sums up and pursues the beauty of art; Metacosmic artwork is a composite art with both digital and physical attributes [5]. Luo Binrui (2022)'s social and economic development includes offline market, online market and virtual trading market; The application of NFT encryption art in art design and manufacturing through blockchain encryption in the commercial market also brings new changes to the digital transformation of enterprises [6]. Zhang Chuyao (2021) In recent years, NFT art was born, In 2021, the sales of NFT artworks will reach 25 billion dollars, indicating that the industry is one of the most popular markets in the encryption field, brilliant in blockchain and digital art; With the application of artificial intelligence, as an aid to the creation of NFT artworks, the safety problems faced by NFT have been improved while optimizing the creation; The hidden trouble in the development of the enterprise has been solved [7]. Li Yongjian (2022) The development of the meta universe not only connects the physical world with the virtual world, but also makes a breakthrough in the economic field, has been applied in the field of games, and has also made a new marketing model in the field of digital art, which has a positive impact on the development of enterprises in the meta universe [8]. At present, the development of the universe is still limited to many large enterprises: Facebook, Microsoft and other technology companies, Tencent, ByteDance internet giants continue to join the meta universe, exploring digital collections, VR games, digital virtual humans, industrial meta universe and other application scenarios. By constantly developing the application of the meta universe, we can promote the sound development of enterprises and promote the development of the social digital economy.

## **1. THE ORIGIN AND VALUE OF THE METAUNIVERSE**

### **1.1 The meaning of the meta universe**

The development of human society with the progress of Internet technology and digital technology, from the development of the real world to the virtual world, with the development of the Internet to the modern, the concept of the meta universe was born. The meta universe is a virtual world constructed by human using digital technology, which maps or transcends the real world, and can interact with the real world. It is a digital living space with a new social system. The term "meta universe" was first born in the 1992 science fiction *Avalanche*, The novel depicts a huge virtual reality world, where people use digital avatars to control and compete with each other to improve their status; It is an advanced story of future world development. The meta universe itself has no new technology, just a commercial symbol. It integrates existing intelligent technologies, such as 5G, cloud computing, artificial intelligence, virtual

reality, blockchain, digital currency, Internet of Things, human-computer interaction and other technologies. The three core technologies of the universe itself are: extended display technology, including VR and AR technology to enhance immersive experience. Digital twins: mirror the real world into the virtual world to form their own virtual avatars. Building an economic system with blockchain: in the future development of the meta universe, economic trade can be carried out to form a virtual world economic system. At present, major science and technology enterprises in the world use their advantages to layout and develop the meta universe strategy. For example, domestic digital technology giants, Tencent and Alibaba, both said they would accelerate the research on the meta universe in the fields of games, art and social networking.

### **1.2 The influence of the universe on enterprise development strategy**

The development of the universe has driven the integrated development of the real economy and the digital economy. By integrating productivity and imagination, it has promoted the development of enterprises to digital and intelligent development. The impact of NFT art design in the meta universe also leads to the impact faced by the traditional design industry. For design enterprises, digital and intelligent design is the direction of development, and skill transformation and thinking transformation drive business transformation. Skill transformation is the transformation from traditional two-dimensional design to three-dimensional design skills. Thinking transformation: Different from the development of traditional industries, the meta universe is a digital and intelligent world. It needs rich imagination to create works of art, and it needs to meet the needs of customers from the perspective of customer groups. Business transformation: In the process of promoting the development of the meta universe, a lot of stock market model construction work is involved, which will bring considerable time and capacity in the short term. However, in the long run, the stock market model construction is limited, and it is a mutually reinforcing way to provide reference and reference for incremental model construction through stock model construction. With the long-term development of model construction, it will also drive the social and economic development and construction design reference in reality.

## **2. ENTERPRISE STRATEGY DEVELOPMENT BASED ON ARTIFICIAL INTELLIGENCE TECHNOLOGY METAUNIVERSE NFT ARTWORK DESIGN**

### **2.1 Development status of NFT artworks**

Liu Da (2022) NFT encrypted digital art is a new thing in the art market. Influenced by the impact of the Internet and the development of the meta universe, online art auction and meta universe NFT art are loved by collectors [9]. Ding Yunyang (2022) NFT artworks rely on new products of blockchain technology and are also related to copyright. In the distribution and circulation cycle, the authorization, ownership, division of rights and restrictions on the use of copyright will affect the development and risks of enterprises [10]. Since the concept of meta universe exploded in 2021, NFT has also entered the public's view. As a non homogeneous token issued by ERC721 standard/protocol, NFT has unique and irreplaceable characteristics, and is endowed with strong financial attributes overseas through public chain issuance. It includes games, artworks, virtual land and other commodities. It can be used for trading. As a carrier of capital circulation, the total trading volume of OpenSea, the leading overseas NFT trading platform, will be up to

\$23.5 billion by 2022. In the early stage of NFT development, it has strong market potential. Global enterprises such as Alibaba, JD and NetEase have started to build their own NFT platforms, issue corresponding NFT products, and design and create NFT artworks. The domestic financial implementation of NFT products has been weakened, and more works of art have been digitally created, which is called "digital collection". However, NFT still has some hidden problems. For example, the composition of the blockchain is controlled by multiple nodes, and each node also has potential defense problems, resulting in property loss if it is broken or replaced. The digital distribution of NFT artworks will cause intellectual property risk. The transfer record of blockchain technology intelligent recording products cannot prove the ownership of intellectual property rights of artworks. Therefore, when enterprises develop the meta universe NFT art design, they not only need to rely on the development of science and technology and artificial intelligence technology, but also need the joint efforts of society, market, regulatory authorities, NFT platform and art collectors.

## 2.2 Metauniverse NFT artwork design method based on AI enterprise development strategy

In the meta universe, NFT heterogeneous tokens generated by artificial intelligence are becoming more popular in the art community, and are also welcomed by many enterprises and scientific and technological talents. NFT art based on artificial intelligence creation and synthesis is a relatively new art type. In order to create NFT art, generative adversary network (GAN) is usually used. The computer algorithm is used to train the model with data to generate machine made images similar to art, and this NFT art product is put into the NFT market OpenSea. The NFT generated by AI has gained a huge sales market, and the rise of the meta universe in the future will further increase the market growth of NFT artworks created by AI. This will put forward higher requirements for the development strategy of the enterprise. In order to respond to the market development and changes of the meta universe and promote the design of NFT artworks, it is necessary to combine the technology of artificial intelligence, real artworks and imagination to create and design, and constantly strengthen the security and rights protection of the meta universe NFT artworks design. Cao Yafei (2022) needs to improve the efficiency of AI, cloud computing, big data and other science and technology to develop the meta universe. In the development of related industries in the meta universe, cloud computing AI algorithms will provide enterprises with high security guarantees and immersive experience [11]. Yao Chunbin (2022) The development of the universe is in a hot stage at this stage. With the entry and development of major enterprises, it will have a positive impact on the economic development and scientific and technological progress of various regions and cities, and drive new consumption [12].

## 3 STATISTICAL METHODS

This research adopts the meta universe NFT art design method of enterprise development strategy under artificial intelligence; The arithmetic mean and standard deviation rate methods are used for comparative analysis, such as formula (1):

$$\sigma = \frac{1}{n-1} \sqrt{\sum_{i=1}^n (x_i - \mu)^2}, \mu = \frac{1}{n} \sum_{i=1}^n x_i \quad (1)$$

Among:  $\sigma$  is the calculation result of standard deviation rate of input sequence  $x$ ;  $N$  is the number of elements of the input sequence  $x$ ;  $x_i$  is the  $i$ th input value of input

sequence  $x$ ;  $\mu$  is the arithmetic mean of the input sequence  $x$ ;

The comparison method of the two groups of results is bivariate t-check under spss,  $t$  is as shown in Formula (2):

$$t = \frac{\mu_1 - \mu_2}{\sqrt{\frac{(n_1 - 1)\sigma_1^2 + (n_2 - 1)\sigma_2^2}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \quad (2)$$

Among:,  $\mu_1$ 、 $\mu_2$  is the arithmetic mean of the two comparison series;  $n_1$ 、 $n_2$  is the number of elements of the two sequences to be compared;  $\sigma_1$ 、 $\sigma_2$  is the standard deviation rate of the two series to be compared (see Formula 1 for details);  $T$  is the result of bivariate t check;

## 4 METACOSMIC NFT ARTWORKS UNDER DIFFERENT DESIGN METHODS

### 4.1 Generation logic of meta universe NFT artwork under different design methods

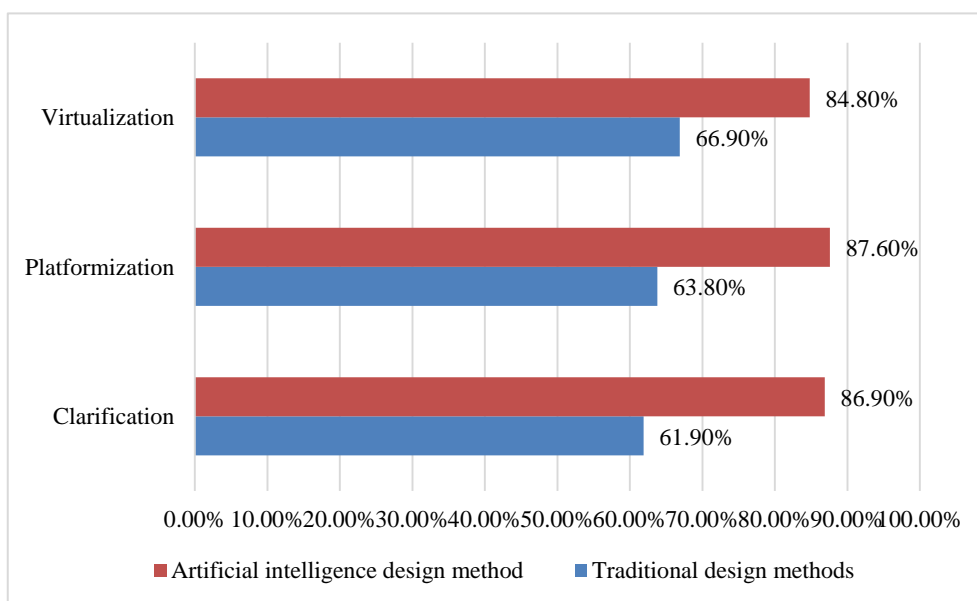
The development strategy of an enterprise is the most important of all kinds of strategies of an enterprise. It carries the theoretical system of how an enterprise develops, and plays an important role in guiding the development direction, development speed, development points and major choices, planning and strategies of the development ability of an enterprise. NFT is the most popular artwork at present, which integrates art and fashion, and is the common focus of investment, the Internet and major enterprises. The integration of NFT and works of art has created higher value for the whole art production chain, and has brought new imagination and creation space to the development strategy of the enterprise. In the context of enterprise development, based on artificial intelligence design methods, research on meta universe NFT art design methods can more effectively expand the diversified development trend of NFT art, reduce the threshold of art, and shorten the distance between NFT art and audience groups. Through research and comparison of the generation logic data of meta universe NFT art under two different design methods, **Table 1** is obtained:

**Table 1** Generation logic data table of meta universe NFT artworks under different design methods

Group	Clarification	Platformization	Virtualization
Traditional design methods	61.90%	63.80%	66.90%
Artificial intelligence design method	86.90%	87.60%	84.80%

In **Table 1**, by comparing the generation logic data of meta universe NFT artworks under two different design methods, it can be clearly seen that AI design methods have significantly improved the logic dimensions of the generation logic of meta universe NFT artworks, such as definiteness, platform and virtualization, compared with traditional design methods, The application of artificial intelligence design method can quickly expand the "access" permission of meta universe NFT artworks in the art world, and can better improve the design of meta universe NFT artworks.

In order to better reflect the comparison results of the generation logic data of meta universe NFT artworks under two different design methods, the data comparison results in Table 1 are visualized, and **Figure 1** is obtained:



**Figure 1** Visualization Diagram of Generation Logic Data of Meta cosmic NFT Artworks under Different Design Methods

**Figure 1** shows the comparison results of the generation logic data of meta universe NFT artworks under two different design methods. Compared with traditional design methods, the application of artificial intelligence design methods has higher logic dimensions such as definiteness, platform and virtualization in the generation logic of meta universe NFT artworks. Metacosmic NFT artworks using artificial intelligence design methods can provide a more convenient way for the value confirmation of artworks, which opens the imagination space for creators to realize artistic value, provides artists with a platform to realize artistic ideals, and makes the path of art from form to trade and circulation more rich and diversified.

#### 4.2 Technical attributes of meta universe NFT artworks under different design methods

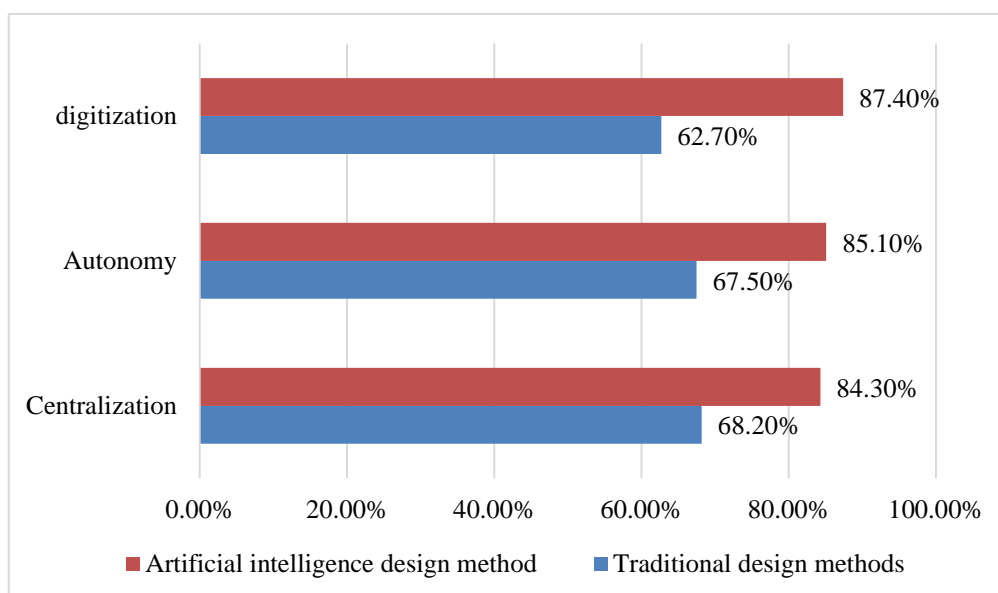
In essence, NFT art is a special way of art digitization, and its technical attribute is its distinctive feature that distinguishes it from other works of art. The technical attributes of NFT artworks show that in the process of digitalization, the use of blockchain encryption has produced a coding authentication feature that can not be tampered with artificially, making the programmability of artworks no longer restricted to form, making them valuable for traditional artworks collection, and also obtaining the copyright protection of encryption technology. To sum up, NFT artworks have both artistic characteristics and technical attributes. By comparing the technical attribute data of meta universe NFT artworks under two different design methods, it can be seen that all aspects of the technical attribute of meta universe NFT artworks under the application of artificial intelligence design methods are better than the application of traditional design methods in the technical attribute of meta universe NFT artworks. By comparing and analyzing the comparative data of technical attributes of meta universe NFT artworks under two different design methods, Table 2 is obtained:

**Table 2** Technical Attribute Data of Metacosmic NFT Artworks under Different Design Methods

Group	Centralization	Autonomy	digitization
Traditional design methods	68.20%	67.50%	62.70%
Artificial intelligence design method	84.30%	85.10%	87.40%

In **Table 2**, we can see from the comparison results of technical attribute data of meta universe NFT artworks under different design methods in the above table that the technical attribute of meta universe NFT artworks using artificial intelligence design methods is better than that of traditional design methods for meta universe NFT artworks. In the analysis and comparison of centralized, autonomous, digital and other related attributes in the technical attribute of meta universe NFT artworks, It is obvious that the application of artificial intelligence design method has more advantages.

According to the data visualization of the technical attributes of meta universe NFT artworks under different design methods in **Table 2**, **Figure 2** is obtained:



**Figure 2** Visualization Diagram of Technical Attribute Data of Metacosmic NFT Artworks under Different Design Methods

**Figure 2** shows the comparison between the application of traditional design methods and artificial intelligence design methods to the technical attribute data of meta universe NFT artworks. It can directly reflect that the application of artificial intelligence design methods to the technical attribute data of meta universe NFT

artworks is better. It also indirectly states that artificial intelligence design methods can increase the centrality of artworks, respect the autonomy of artwork transactions, and focus on the digitalization of artwork carriers, The meta universe NFT art under the artificial intelligence design method expands the artistic creation form, and pays more attention to the display space and circulation mode of the meta universe NFT art.

### 4.3 Technical and legal risk assessment of meta universe NFT artworks under different design methods

NFT artwork is an intellectual achievement that conforms to the characteristics of the work. It has the advantages of clarity, platform and virtualization, and the essential characteristics of centralization, autonomy, and digitalization. While NFT artwork is developing rapidly, it will also show dual risks of technology and law due to its inherent defects in the development process. Therefore, we should improve the technical rules of corresponding meta universe NFT artworks as soon as possible. For the problems related to technology and legal risks, we should also timely formulate countermeasures, improve and perfect relevant laws and regulations, and guarantee the meta universe NFT artworks within the legal framework. In view of the technical and legal risks existing in the meta universe NFT artwork at this stage, this research, based on the artificial intelligence design method, proposes a research and evaluation on the technical and legal risks of meta universe NFT artwork based on the artificial intelligence design method under the background of enterprise development strategy. According to the evaluation and analysis of the comparison results of the technical and legal risk assessment data of meta universe NFT artworks based on traditional design methods and artificial intelligence design methods, the technical and legal risk assessment comparison data of meta universe NFT artworks under two different design methods are obtained, as shown in **Table 3**:

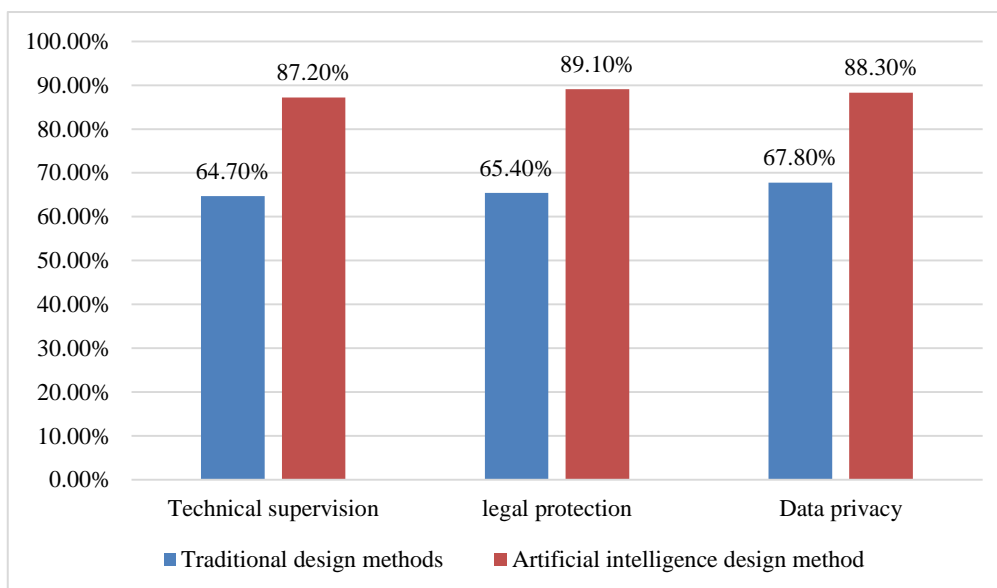
**Table 3** Technical and Legal Risk Assessment Data of Metacosmic NFT Artworks under Different Design Methods

Group	Technical supervision	legal protection	Data privacy
Traditional design methods	64.70%	65.40%	67.80%
Artificial intelligence design method	87.20%	89.10%	88.30%

In **Table 3**, by comparing the technical and legal risk assessment data of the meta universe NFT artworks with traditional design methods and artificial intelligence design methods, the risk aversion degree under the artificial intelligence design method is higher than that under the traditional design method in the technical and legal risk assessment of the meta universe NFT artworks, no matter from the aspects of technical supervision, legal protection and data privacy.

In order to more intuitively analyze and evaluate the technical and legal risk assessment data of meta universe NFT artworks under two different design methods, visualize the application data of public library space guidance system under different guidance system designs, and get **Figure 3**:





**Figure 3** Visualization Chart of Technical and Legal Risk Assessment Data of Metacosmic NFT Artworks under Different Design Methods

**Figure 3** intuitively compares the technical and legal risk assessment data of meta universe NFT artworks under two different design methods, indicating that the artificial intelligence design method has a better effect on the technical and legal risk assessment of meta universe NFT artworks, with more extensive technical supervision, better legal protection and higher data privacy. This shows that under the background of enterprise oriented development strategy, meta universe NFT artworks based on artificial intelligence design methods can accelerate the attribution and recognition of meta universe NFT artworks, further standardize the management of collection, display, creation and other behaviors of meta universe NFT artworks, which can balance the government's technical supervision and exchange the self control of the masses, thus promoting the rational and orderly development of the meta universe NFT artworks exchange platform.

#### **4.4 Legal protection status of meta universe NFT artworks under different design methods**

NFT is known as a non homogeneous token, which is specific, unique and irreplaceable. It is a new application scenario of blockchain technology. The emergence of NFT technology makes the meta universe NFT art obtain "ID card" and become a reliable collection. With the popularity of Metauniverse NFT artworks in major enterprises and trading platforms, a variety of risks and problems have gradually emerged. Metauniverse NFT artworks have technical and legal risks in terms of technical supervision, legal protection and data privacy, which requires timely formulation of countermeasures, improvement and improvement of laws and regulations, so as to establish a legal protection system for Metauniverse NFT artworks and ensure the trading mode of emerging artworks, Maintain the stability and prosperity of the meta universe NFT art. By analyzing and comparing the status quo of legal protection of meta universe NFT artworks under two different design methods, the results show that the status quo of legal protection of meta universe NFT artworks under artificial intelligence design method is more perfect than that under traditional design method in all aspects. Based on the legal protection system of meta universe NFT artworks, the status quo of legal protection of meta universe NFT

artworks under two different design methods is analyzed and compared,

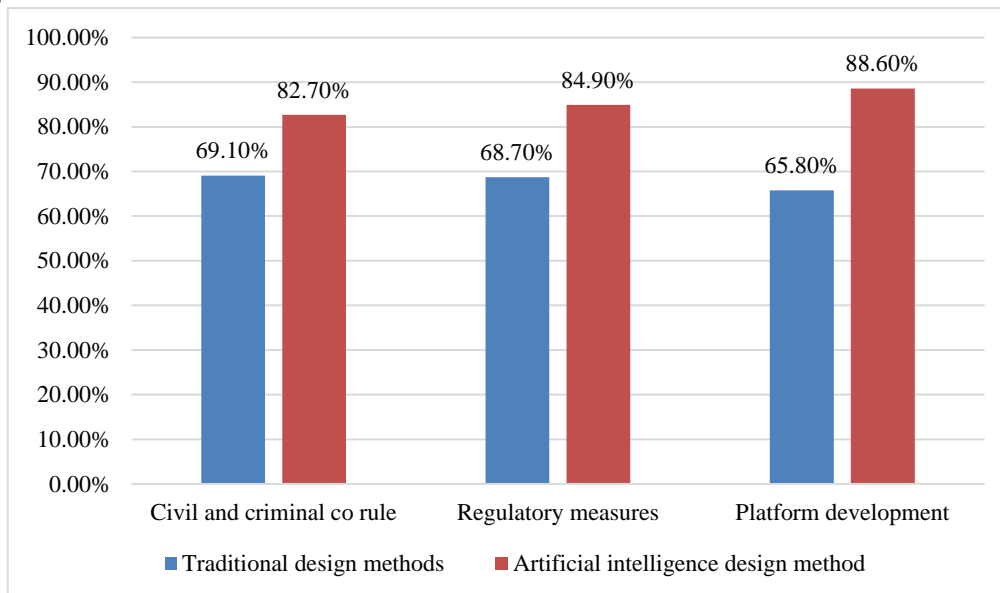
**Table 4** is obtained:

**Table 4** Data Table of Legal Protection Status of Metacosmic NFT Artworks under Different Design Methods

Group	Civil and criminal co rule	Regulatory measures	Platform development
Traditional design methods	69.10%	68.70%	65.80%
Artificial intelligence design method	82.70%	84.90%	88.60%

In **Table 4**, the analysis of various data in the legal protection of meta universe NFT artworks with traditional design methods is below 70%, while the analysis and evaluation of the status quo of legal protection of meta universe NFT artworks with artificial intelligence design methods are above 82%. By analyzing and comparing the legal protection data of meta universe NFT artworks under different design methods, it can be concluded that the legal protection status of meta universe NFT artworks under artificial intelligence design methods is more perfect than the previous system. In order to more clearly reflect the analysis and comparison results of the legal protection status of meta universe NFT artworks under two different design methods, the visual analysis is conducted according to the data obtained in **Table 4**, as shown in

**Figure 4:**



**Figure 4** Data visualization diagram of legal protection status of meta universe NFT artworks under different design methods

It can be clearly seen from **Figure 4** that, with the application of artificial intelligence design methods, all items in the legal protection of meta universe NFT artworks have been improved and optimized to varying degrees, which optimizes civil and criminal co governance, increases regulatory measures, and focuses on the development and improvement of the platform. At this stage, the relevant administrative supervision

institutions have strengthened the guidance of the meta universe NFT artwork on the market order, cracked down on and banned the speculation and speculation in the market, protected the privacy and security of data, and strengthened the popularity and protection of consumer rights and intellectual property rights.

## 5 SUMMARY

The maturity of the Internet and other media devices derived from it, such as VR and AR, form the connection interface between the meta universe and the real world at the technical level. In addition, 5G and cloud computing also provide hardware facilities to support the meta universe. The change of place and economic impact brought by the development of the universe provide a greater stage for the development of enterprises. NFT brings strong changes to the digital economy by virtue of the characteristics of virtual assets on the chain and physical assets off the chain. Through the expansion of the meta universe market driven by the design of meta universe NFT artworks under artificial intelligence, the application scenarios and ecology of NFT in the meta universe are constantly enriched, which shows that a new digital economic system is taking shape. The design of NFT artworks will also drive the development of new industries in the form of NFT such as financial investment, stocks and bonds with the development of the meta universe. For the development of the meta universe in the long run, it is also necessary to establish and improve the corresponding ecosystem, coordinate with the government policies and enterprise strategies, and properly supervise the development of the platform and the meta universe, so as to jointly promote the prosperity and development of Global digital technology.

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