Creativity and Innovation
2024, VOL. 8, NO. 6, 43-47
DOI: 10.47297/wspciWSP2516-252708.20240806

# Analysis of the Application of Digital Media Art and Design Technology in the Cultural and Creative Industry

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**ABSTRACT**
With the rapid development of information technology, digital media art and design technology are playing an increasingly important role in the cultural and creative industry. This article explores the application of digital media art and design technology in the cultural and creative industries. Firstly, it analyzes the definition and characteristics of digital media art and design technology. Then, it discusses their wide applications in the cultural and creative industries, including visual art, interaction design, and digital content creation, etc., hoping to provide theoretical support and practical guidance for relevant practitioners.

**KEYWORDS**
digital media art; design technology; cultural and creative industries; application analysis; interaction design

Digital media art, as an emerging art form, integrates elements of science and technology and art, changing the traditional way of artistic expression. Design technology provides the necessary tools and methods for digital media art, enabling it to be widely applied in the cultural and creative industries. According to statistics, the global cultural and creative industries reached a record market size of $2.41 trillion in 2023 and are expected to reach $2.83 trillion by 2025, with a growth rate of 7.3%. This growth not only reflects the increasing demand of consumers for cultural products but also shows the indispensable position of digital media art and design technology in it.

## 1 Overview of Digital Media Art

### 1.1 Definition and Characteristics of Digital Media Art

#### 1.1.1 Definition of Digital Media Art

Digital media art creates works with the aid of various digital means such as computer technology, network technology, and digital communication technology（Zhu, J. X. 2021). For example, designers can use professional painting software like Adobe Photoshop for digital painting creation, or build three-dimensional virtual scenes and characters through 3D modeling software like Blender. These creation processes are based on digital codes and algorithms, rather than the traditional physical materials and manual drawing methods.

#### 1.1.2 Characteristics of Digital Media Art

The characteristics of digital media art are specifically embodied in the following three aspects (Zhang, J. 2024).

(1) Interactivity

It allows the audience or users to interact with the works. For example, in some digital art exhibitions, the audience can change the presentation effect of the art works by touching the screen, moving their bodies, etc. For instance, in some interactive light and shadow installation art, the movements of the audience will trigger different light and shadow changes and sound effects, turning the audience from passive spectators into active participants in the creation process.

(2) Multimedia

It integrates multiple media forms such as images, videos, audio, and animations. Taking a digital game as an example, it not only has beautiful game graphics (images), but also rich background music (audio), character action animations, and plot videos, etc. These multimedia elements cooperate with each other to jointly create an immersive gaming experience.

(3) Virtuality

It can create a virtual art world, making the audience feel as if they were on the scene. The creation of digital media art is inseparable from the virtual platform of the Internet, and the presentation process of its works is also presented to the public through the virtual platform of the Internet. The virtuality of digital media art, on the one hand, can create virtual characters and scenes. For example, in many digitalized movies, the characters created by computer software become the protagonists of the movies, attracting the love and pursuit of the audience. On the other hand, digital media art can also construct realistic virtual scenes that can better render and embody the theme of the movie than the real scenes, attracting the attention of the audience.

### 1.2 Current Development Status

The approximately 15% annual compound growth rate of the global digital art market in the past five years shown in the "2023 Digital Art Market Report" indicates that the digital media art market is in a stage of rapid expansion. This growth is due to multiple factors. For example, the continuous progress of digital technology has made the creation tools more convenient and powerful, lowering the creation threshold and attracting more creators to enter this field. Meanwhile, the popularization of the Internet has enabled the digital art works to have a wider dissemination range and a faster dissemination speed, being able to reach audiences and collectors all over the world.

Especially in the aspect of NFT (Non-Fungible Token) art trading, the turnover increased by more than 400% from 2021 to 2022. NFT provides a unique property right certification method for digital art works, making digital art works possess scarcity and uniqueness, similar to the concept of the original work of traditional art works. This has attracted numerous investors and collectors to enter the digital art market, promoting the explosive growth of NFT art trading and further enhancing the influence and value of digital media art in the commercial field.

## 2 The Role of Design Technology in the Cultural and Creative Industries

### 2.1 Visual Communication Design Technology

Visual communication design technology mainly transmits information through the careful design of visual elements such as graphics, colors, and layout (Yang, G. C. 2023). Firstly, in brand image design, the choice of graphics is crucial. For example, the simple and unique apple graphic of the Apple logo can be quickly recognized and remembered by consumers, becoming an important visual identifier of the brand.

Secondly, the application of colors has a strong ability to convey emotions and information. For example, red is usually used to convey passion, vitality, or warning messages, and is often used in

catering brands to attract customers' attention and stimulate their appetite; while blue is often used in brands in the technology, finance, etc. industries to convey a professional, reliable, and calm image.

Finally, in terms of layout, the appropriate choice of fonts, font sizes, letter spacing, and line spacing, etc. can affect the readability and visual aesthetics of the information. For example, fashion magazines usually adopt creative and personalized font layouts to match their fashionable and trendy positioning; while news websites focus more on the simplicity and clarity of the layout so that readers can quickly obtain news information.

### 2.2 Interaction Design Technology

Interaction design technology focuses on designing the interaction methods of digital products to improve user experience. In mobile application design, interaction design determines how users interact with interface elements. For example, the interface design of a shopping application needs to consider how users can conveniently search for products, view product details, add them to the shopping cart, and complete the payment process. By simplifying the operation steps, providing clear navigation and feedback mechanisms, such as the color change or animation effect of the button after being clicked to indicate that the operation has been received, the user's operation efficiency can be improved.

For website design, good interaction design can be reflected in the layout of the menu and responsive design. When users visit the website on different devices (such as mobile phones, tablets, computers), the website can adapt to the screen size, and the menu can be conveniently expanded and folded, enabling users to easily find the required information. According to statistics, good interaction design can increase the user retention rate to more than 80%. This is because users feel convenient, comfortable, and interesting during the use process, and are more willing to continue using this digital product instead of switching to other competitors' products. This high user retention rate helps digital products accumulate a user base, thereby realizing the improvement of commercial value.

## 3 Innovative Applications in Digital Content Creation

### 3.1 Virtual Reality and Augmented Reality

Virtual reality (VR) technology creates a completely immersive virtual environment, making users feel as if they are in another world (Cui, Y. S. 2024). In museum applications, for example, some history museums use VR technology to recreate ancient historical scenes. After wearing VR devices, users can visit ancient battlefields, palace buildings, etc. in person. This experience is more vivid and profound than the traditional way of viewing cultural relic exhibitions, enabling users to better understand historical culture.

Augmented reality (AR) technology superimposes virtual information on the basis of the real world. In art exhibitions, AR technology can provide additional information display and interactive experience for exhibits. For example, when the audience scans a painting with their mobile phone, the screen of the mobile phone will pop up information about the creation background of the painting, the life of the painter, the analysis of the artistic style, etc. It can also make the characters or scenes in the painting move through AR technology, increasing the interest and educational value of the exhibition. According to the report of the International Data Corporation (IDC), the global VR/AR market size reached nearly $300 billion in 2023. And with the continuous maturity of the technology and the reduction of costs, its application scenarios will continue to expand. Besides the

above-mentioned museums and art exhibitions, in the field of education and training, AR/VR can be used for virtual laboratories, immersive language learning, etc., bringing new experiences and performance improvements to education and teaching.

### 3.2 The Rise of Online Content Platforms

The popularization of social media and video sharing platforms has completely changed the pattern of digital content creation. These platforms provide convenient creation and release channels for creative workers (Liu, J., & Tian, X. Y. 2021). Taking TikTok as an example, its operation is simple and easy to use. Creators only need to use their mobile phones to shoot short videos, and then they can add music, special effects, subtitles, etc. to their works through the platform's editing tools, and quickly release their works.

The algorithm recommendation mechanism of the platform also provides more opportunities for content creators. According to the users' interests, browsing history, and behavior data, the platform can accurately recommend the works of creators to potential audiences. This enables even new creators without a large fan base to have the opportunity to have their works widely disseminated. Data shows that the income of content creators on TikTok increased by 70% in 2023. On the one hand, this is due to the continuous growth of the platform's user numbers, bringing more traffic and advertising placement opportunities; on the other hand, the platform provides multiple profit-making methods for creators, such as live streaming with goods, brand cooperation, creator funds, etc., inspiring more people to engage in digital content creation, further promoting the prosperous development of online content platforms, and injecting new vitality into the cultural and creative industries, promoting the diverse dissemination and exchange of culture.

## 4 Conclusion

In conclusion, digital media art and design technology have extensive and in-depth applications in all aspects of the cultural and creative industries. And with the continuous development and innovation of technology, their promoting effect on the cultural and creative industries will become more and more significant, and they will continue to shape and change people's cultural consumption and experience modes. The application of digital media art and design technology in the cultural and creative industries not only improves the ways and means of artistic creation but also promotes the innovation and development of the entire industry. In the future, with the progress of technology, the impact on social culture will be even more profound. Therefore, continuously paying attention to and promoting the development of digital media art and design technology will bring more opportunities and challenges to the cultural and creative industries.

## Funding

The Tai'an Social Science Research Project "Research on the Development and Design of Mount Tai Intangible Cultural Heritage Creative Products from the Perspective of 'Cross-Border Innovation' and AIGC" (In Progress), Project Number: 24YB024.

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