

# Research on Advertising Creative Design Based on Digital Media Technology

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**Abstract:** *Background:* With the progress of science and technology, as well as the development and rise of the digital era, there is an increased opportunity for creative advertising design. The development, of these designs is no longer limited to traditional methods, but use digital technology to create more advertisements. *Objective:* The purpose of this study is to analyze which technical methods and creative strategies are used to enhance the attraction, interactivity and communication impact of advertisements, therefore promoting the development of advertising creative design. *Methods:* This study examine the use of digital media technology in advertising creative design, conduct an in-depth analysis of the meaning of digital media technology, and explore the examples of the application of digital technology in creative advertising. *Results:* Virtual reality, artificial intelligence and augmented reality have introduce a variety of creativity and expressive forms to the field of advertising design. The utilization of digital media technology in advertising creative design brings significant advantages in terms of interactivity, personality, data analysis and optimization. *Conclusion:* Advertising design using digital technology is becoming widespread in terms of storage, transmission and promotion; The integration of digital media technology and new media gives advertising a boost in visibility. It plays an important role in promoting the progress of the advertising industry; The advertisements designed using digital technology is more in line with the development of the times and are well-received by the public; The rise of digital intelligence demands designers to study digital technology and continuously update it in line with the development of new technologies.

**Keywords:** Digital media technology, Advertising creativity, Virtual reality, Design

## 1. Introduction

### 1.1 Research Background

The continuous acceleration of global information technology marks the beginning of a new era of comprehensive information digitization. The historical background of this era is like an unstoppable trend that greatly accelerates the technological advancements of digital media. Being at the forefront of the information technology revolution, digital media technology has already surpassed its initial boundaries and is no longer limited to the field of news communication, bringing about profound changes in the field of advertising and media. This kind of change encompasses not only a repetitive and progressive improvement at the technical level but also a fundamental transformation in thinking patterns, creative strategies, and communication modes.

In this process, cutting-edge digital technologies such as cloud computing, big data, artificial intelligence, and the Internet of Things have matured and popularized at an unprecedented speed, injecting unprecedented innovative vitality and practical possibilities into the design industry. Designers are able to utilize these highly developed technological tools to break the boundaries of traditional design, explore new paths such as multimedia integration, interactive experience upgrading, data-driven

creativity, and push advertising design into a comprehensive artistic expression form that integrates visual impact, information depth, and emotional resonance.

The digital age of information has brought disruptive changes to the field of advertising and media. It has liberated advertising creative design from a single, static form to a diversified communication method that integrates multiple sensory experiences, emphasizes interactive participation, and can adapt to market changes in real-time. This not only drives continuous innovation in advertising content but also requires designers to constantly learn new skills, embrace new technologies, integrate and optimize traditional design elements with a more open and innovative mindset, explore the infinite possibilities of advertising creative design, and maintain leadership and competitiveness in this rapidly changing digital age.

### **1.2 Research Purpose**

The primary objective of this study is to conduct a thorough analysis of digital media technologies, such as virtual reality (VR), augmented reality (AR), artificial intelligence (AI), and large data analysis, as they apply to the field of advertising creative design. The aim is to reveal how these technological innovations optimize interactive advertising, personalized experience, and user engagement. We are committed to refining a set of advertising creative design guidelines and best practices based on digital media technology, and further exploring the profound impact of digital media technology on advertising creative design through a detailed analysis of those advertising cases that have achieved significant success in the market.

On this basis, we will focus on a broader perspective and comprehensively consider the all-round impact of digital media technology on the entire advertising industry, including changes in production modes, communication modes, audience acceptance, and other aspects. We will also predict the potential trend of its future development. At the same time, this study will actively explore how emerging technologies can push the Xinjiang boundaries of advertising creative design, explore unprecedented opportunities, and inject new vitality and innovation drive into the advertising industry.

### **1.3 Research Content**

The core topic of this study focuses on exploring the deep integration and innovative application of digital media technology in the field of advertising creative design. For a comprehensive and systematic understanding of this topic, our research path is carefully planned into three stages, each designed to reveal how digital media technologies can reshape the face of creative advertising design.

In the first phase of the study, we will provide a detailed concept of digital media technology. Then will explore its practical implementation in advertising creative design. Specifically, we will analyze case studies of virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) technology. This analysis will show how to assign creative technology and promote the advertising industry to digital, intelligent transformation. This part of the research not only covers the theoretical basis of technology but also goes deep into its specific application in advertising design, therefore establishing a solid foundation for subsequent discussions.

The second phase of the research will focus on the analysis of the impact of digital media technology on creative advertising design, with a particular emphasis on the three key dimensions of personalized customization, interactive experience, and multimedia integration. We will investigate the utilization of digital media technology to achieve personalized advertising content to meet the specific needs of different consumer groups. Examine the impact of an enhanced interactive experience on advertising and user engagement. Explore how multimedia integration can enrich the form of advertising to create a more immersive advertising experience. This part aims to

demonstrate the transformative impact of digital media technology on the concept and method of advertising creative design, bringing unprecedented opportunities for innovation in the advertising industry.

The third phase of the research will comprehensively examine the challenges and opportunities of digital media technology in creative advertising design, focusing on four important aspects: technology innovation, content creativity, user experience, and data security and privacy protection. We will analyze how to ensure the quality and originality of advertising content while pursuing creative and technological breakthroughs; how to balance the advancement and feasibility of technology in the process of technological innovation; how to balance the personalized needs and universal applicability while improving user experience; and how to protect user privacy and data security in the data-driven era. This part of the research provides a comprehensive and practical guide to the advertising industry to help practitioners make well-informed decisions, utilize opportunities, and overcome challenges in response to the changes brought about by digital media technology.

A panorama of the application of digital media technology in the field of advertising creative design is shown in this paper through three stages of in-depth discussion. It shows how technology profoundly affects the process and the outcomes of advertising creative design.

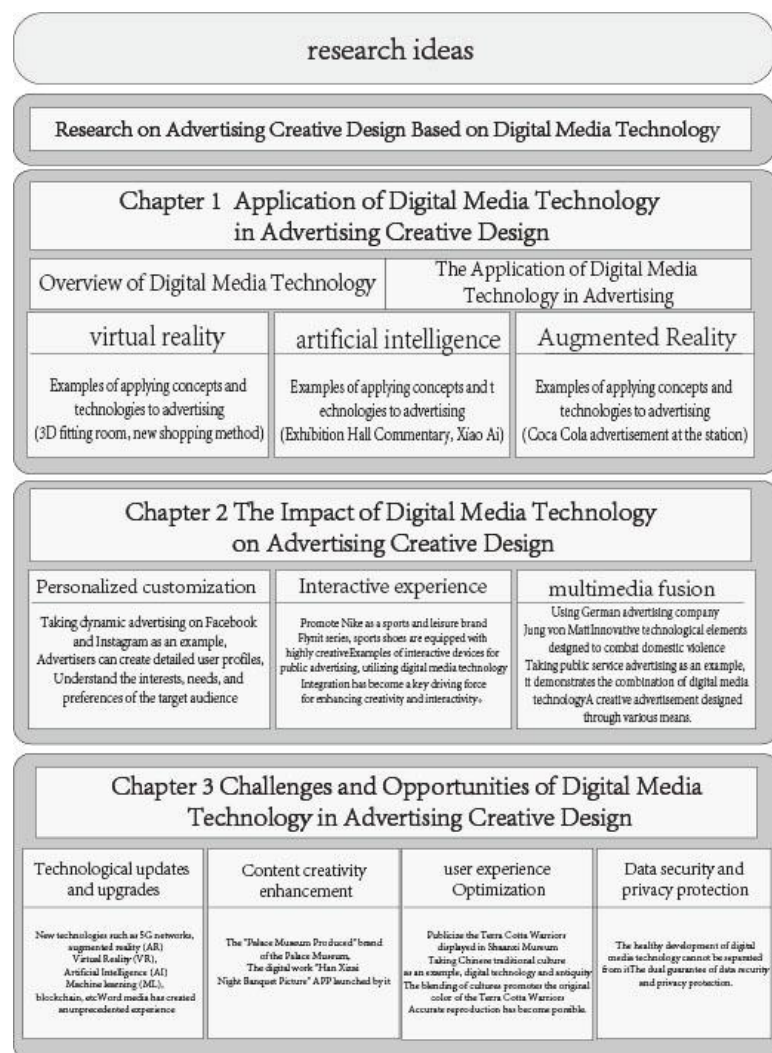


Figure 1: Framework diagram

#### 1.4 Research Methods

In order to comprehensively and deeply explore the future of advertising creative design based on digital media technology, we systematically collect and carefully review published academic articles, the latest industry research reports, authoritative books, and diverse online resources. This process aims to build a solid knowledge foundation that covers various application scenarios of digital media technology in the advertising field and its impact mechanism on creative design.

In this study, we systematically analyze the latest developments in digital media technology and its application strategies in advertising creative design. We explore how these technologies can continuously promote innovation in advertising form and content by enhancing interactivity, providing immersive experiences, and achieving precise positioning. At the same time, it is important to focus on the development trends of these technologies and predict how they will further promote the transformation and upgrading of the advertising industry. This includes cutting-edge directions such as big data analysis, customized content for artificial intelligence, and the integration of virtual reality and augmented reality applications.

We deeply analyzed the innovative digital media technologies used in representative creative advertising cases, such as dynamic data visualization, programmatic creative generation, emotional recognition interaction, etc., to reveal how these technologies are cleverly integrated into advertising design, creating refreshing visual and emotional experiences. Furthermore, we carefully analyze the creative design process of these cases, including the incubation of creative concepts, selection of technical tools, and implementation of multi-platform integration strategies. This analysis aims to extract design ideas and methodologies that can be used for reliable references.

A comprehensive evaluation was carried out to verify the effectiveness and influence of digital media technology applications by examining the actual effects of these creative advertising cases, such as market responses, audience participation, brand influence enhancement, and other dimensions. Additionally, these applications provide empirical support and strategic guidance for future advertising creative design practice and promote the entire industry to move towards a more intelligent, personalized, and efficient direction.

#### 2. Literature Review

Most of the papers and journals listed by CNKI focus on advertising design, advertising creativity, and film and television advertising using digital media technology. However, there are only a few scholars who study the combination of digital media technology and creative advertising design. The mainstream of the current social media is based on the development of digital media technology and the acceleration of the reform of advertising design. Incorporating different types of electronic equipment and Internet communication technology, digital media technology into the modern advertising design, a fully organic combination with advertising design, can make advertising diverse and personalized that effectively meets the demands of social residents. Under the background of comprehensive and high-quality social development, the organic integration of digital media art and modern advertising design is bound to become one of the most important leading forces in advertising design. (Wang, 2024)

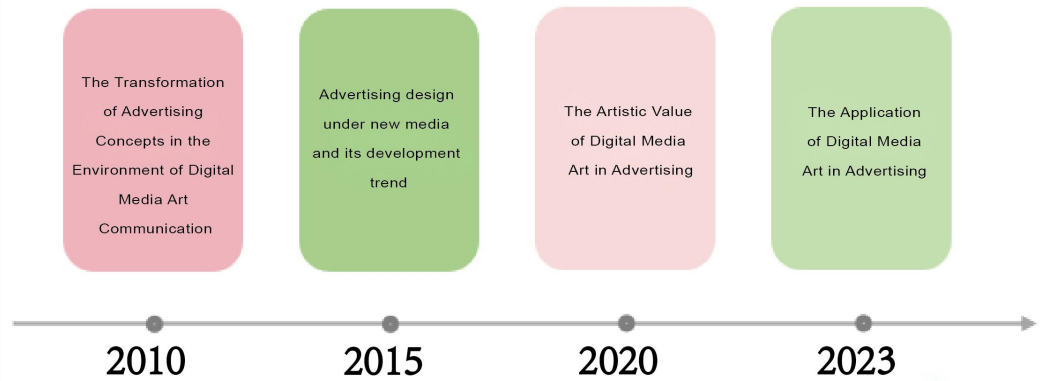


Figure 2: Stage changes in the research direction of advertising creative design based on digital media technology

Based on the inevitable development of digital media technology, Gao Xiaofang pointed out that the rapid and nonlinear evolution of computer tool hardware and software has led to a more fascinating convergence of science and art. Consequently, digital media professionals have emerged at a significant historic moment, naturally leading at the forefront of both science and art (Gao, 2015). Lee said that the combination of the current Internet technology and information technology to achieve innovation in advertising design is of vital significance to open new opportunities for the development of advertising design in digital media art (Lee, 2018).

Table 1: Summary of literature characteristics

Research Area	Reference Material	Feature
Digital media technology film and television advertising	Design of film and television advertising based on digital media technology The application of digital media in film and television advertising design	Explore the communication mode of film and television advertising design.
Digital media technology dynamic advertising	The Application Value of Digital Media Art in Dynamic Advertising Design The Application of Digital Media Art in Dynamic Advertising Design	Explore dynamic advertising In the digital media technology Value and application.
Innovation and application of advertising	On the Innovative Application of Digital Media Technology in Modern Advertising Media Design The innovative application of Digital Media Art in Food Advertising design	This paper discusses the innovation and application of advertising based on digital media technology.
Advertisement project	Virtual aesthetics of digital media era is viewed from H5 advertising design Design class	Explore the design of the virtual aesthetics.

### 3.The Application of Digital Media Technology in Advertising Creative Design

In the era of digital media, advertising mainly reflects creativity, providing consumers with a range of choices and valuable information to captivate their interest. Utilize the full potential and effectiveness of digital media visual art to enhance consumers' sense of immersion, and stimulate consumers' immersive feelings (Feng, 2024). Advertising creativity should be applied to create artistic beauty through digital technology and showcase the personalization of product brands. In digital media

communication, the creativity of advertising has direct impact on the transmission of advertising information. This is achieved through digital special effects, virtual scenes, artificial intelligence, and other ways to create an artistic conception of beauty. Consequently, this improves the overall effectiveness of the communication effect of the brand (Pei, 2022).

### 3.1 Overview of Digital Media Technology

Digital media technology uses computer communication, audio and video processing, text and image, animation processing, and other technologies to convert abstract information into visual, impactful, and interactive information content (Meng, 2024). This field integrates computer science, information technology, graphics multimedia technology, and other disciplines using mathematics and algorithms to create digital representations and process all kinds of media content (Yuan, 2023). The application of digital technology in advertising content creation and editing, including image processing, video editing, audio editing, etc., makes advertising more attractive and expressive. The essential characteristics of this system mainly include high efficiency, interaction, diversity, editability, and traceability (Li, 2023). This technology also enables the digital storage and transmission of advertising, facilitating easy release and dissemination on various media platforms, such as the Internet and other social media. Transforms advertising by greatly expanding the coverage of advertising, and improves the communication efficiency of advertising. Creative advertising using digital media technology is also a brand-new form of advertising produced by combining the sensibility of art with the rationality of science and technology (Ginger, 2022).

### 3.2 Application of Digital Media Technology in Advertising

With the advent of the digital intelligent media era, the formerly popular traditional advertising model is becoming increasingly inadequate in the current market environment, making it difficult to engage the increasingly picky nerves of modern consumers, and its inherent advantages are gradually diminishing. Under these circumstances, many advertisers are unwilling to be left behind and are actively exploring and upgrading the technical means of advertising communication, striving for significant breakthroughs. New media technologies such as virtual reality (VR), artificial intelligence (AI), and augmented reality (AR) have emerged as a powerful transformative force in the advertising industry. Their immersive nature and high interactivity are reshaping the future mainstream direction of the advertising industry.

Technological iteration is not only the core engine driving the rapid development of the advertising industry but also the key to unlocking new levels of advertising creativity and effectiveness. The clever integration of advertising and new media technology not only breaks the boundaries of traditional expression and opens up unprecedented new paths for the transmission of advertising information, but also deeply activates the audience's sense of participation, injects fresh vitality into the entire advertising industry, and opens up a more personalized and intelligent advertising era.

#### 3.2.1 Virtual Reality Applications

Virtual reality (VR) technology is an experience that simulates a real or imaginary world through a computer-generated digital environment (Xiang, 2023). VR technology itself will not make users truly experience a certain scene or segment, but it does use information technology to create a virtual environment that closely resembles the real environment. This allows users to have the same experience and perception in the virtual environment as they would in the real environment (Wei, 2023). With the development of the times, VR is no longer limited to the game field. With the help of VR technology, designers create advertising content according to the needs of users,

enabling them to interact with advertisements, and at the same time, adjust the content according to the different interests and hobbies of different users. VR technology allows the presentation of advertising in a virtual environment to the users. For example, in 2015, Ningbo Peaceful Bird Company launched a women's 3D fitting room. This system automatically generates three-dimensional images of consumers, through the system screen interactive menu, users can choose their favorite clothes to perform a "try on" operation. The following year, Alibaba company also launched a new "Buy +" shopping method, to create a strong sense of immersive shopping experience. This VR immersive shopping method brings consumers a new VR interactive shopping experience and also provides a new way of advertising and marketing.

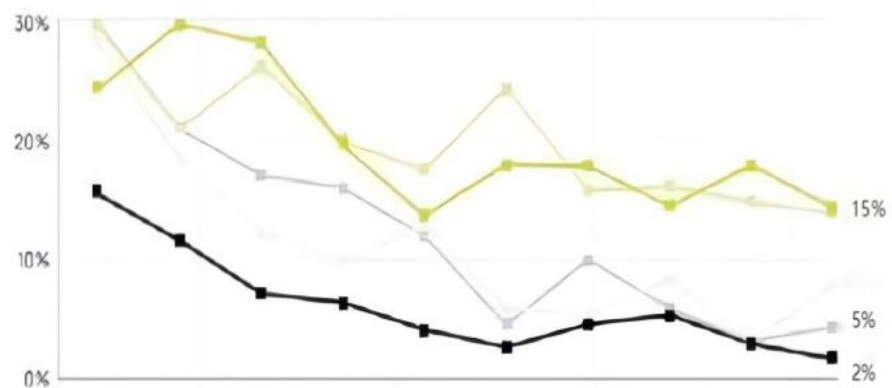


Figure 3: Young consumers aged 18-24 and shopping recommendation technology development, especially for 3D

Source: <http://xhslink.com/POHyEv/>

### 3.2.2 Augmented Reality Applications

Augmented reality (AR) is a technological innovation that combines virtual information with a real scene (Guo, 2023). AR technology can superposition the real environment and virtual objects into the same picture or space in real-time. As a technology of augmented reality sense, it now presents a rapid development trend (Zhang, 2022). AR interaction uses advanced technology to simulate various tactile and visual information that is difficult to experience in real life. This approach involved overlaying virtual information onto real-life settings to create a rich and interactive mixed-reality experience technology (Shen, 2022). AR technology expands the user's perception ability enabling immersive perception and natural interaction in a virtual environment. AR technology has changed the traditional way advertising is presented. While traditional advertisements are usually presented in the form of a plane or video, AR advertisements incorporate virtual elements into the real environment of users, such as Pepsi's bus stop ads. The process of "Unbelievable" waiting for a bus was often long and boring, so Pepsi modified the billboards on the bus platform to enjoy and add fun while waiting. This billboard is composed of an LCD screen that, when connected enables real-time imaging, simulation transparency camera, and use of AR technology. It also includes 3D virtual elements with special effects. The car at the station's multimedia display can only be seen in the movie depicting an unidentified flying object (UFO) in the sky and the city through the giant robot. The UFO suddenly jumped out of the Bengal tiger, falling meteorite, and captive stranger sound fish monster. This virtual and real outdoor advertising is both adventurous and innovative and gains a positive response.

## 4. The Influence of Digital Media Technology on Advertising Creative Design



The rapid development of information technology has led to the emergence of digital media art, as a new art form that is redefining the boundaries and content of advertising creative design with its unique interactivity, multi-media, and virtual nature (Wang, 2024). The development of digital media technology makes advertising break through the limitations of traditional media and realize richer forms of expression. The utilization of big data analysis and machine algorithms enables an in-depth analysis of user preferences. This in turn facilitates the personalized positioning and push of advertising content, which is conducive to the accurate dissemination of advertising and corresponding users, and improves the effectiveness of advertising.

The field of advertising design is increasingly characterized by diversity and innovation, enhancing user interaction and experience. The reason is precisely attributed to the addition of digital media technology. Advertising combines images, video, audio, and other multimedia forms, plus animation, virtual reality, augmented reality, and other technologies to make advertising more vivid.

Timely feedback and optimization are also the advantages of the combination of digital media technology and advertising. Advertising providers may receive data feedback at any time and immediately assess the impact of their advertisement enabling them to adjust the advertising strategy and content according to the feedback data. Therefore, digital media technology makes the monitoring of advertising effects more real-time and accurate.

In short, the integration of digital media technology not only innovates the design concept of creative advertising, but also influences the relationship between users and advertising, and promotes the integration of virtual reality (VR), augmented reality (AR), and other technologies, bringing unprecedented possibilities for artistic creation (Zeng, 2023). This integration is not only the integration at the technical level but also the exploration of a new artistic language. The traditional one-way information transmission into dynamic, creative, and deeply interactive two-way communication opens a new chapter of advertising communication.

#### **4.1 Personalized**

Digital media technology makes it possible to collect and analyze large amounts of user data, including their browsing habits, buying history, social media activities, etc. Using this data, advertisers are able to create detailed user profiles that understand the interests, needs, and preferences of their target audience, therefore enabling the creation of advertisements that are more tailored to the individual. In addition, using algorithms and automated tools, digital media technology can generate dynamic advertising content, This implies that advertisements can be adjusted in real-time according to each user's specific attributes.

Using Facebook and Instagram, for example, these social media platforms use users' behavioral data, interests, and search history to generate highly personalized ads. For example, if you recently searched online for sneakers, you can see ads for the brands in your own social media stream, or even specific styles that users have previously viewed.

Regarding the incorporation of digital media technology in the logo design, it serves to enhance the visual effect of the logo and highlights its specific content, to get more people's attention (Du, 2024).

#### **4.2 Interactive Experience**

Interactive experience refers to the deep interaction of users with the advertising content through various human-computer interactions (such as clicking, touching, sliding screens, or shaking mobile devices) when watching advertisements. This interaction crosses the boundary of time and space and realizes the real two-way



communication. This core concept gives users the dominant right to watch advertisements, which means that users are no longer just bystanders, but an advertising experience that can directly affect the form, content, and even the final presentation effect of advertising through their own interactive operations.

Nike has implemented a highly innovative public advertising interactive device on their commercial street in Tokyo, Japan to promote their Flynit series sports shoes. This device allows users to interact with billboards using mobile phones. By clicking on the phone screen and sliding, users can set the angle of the shoe display, view different shoe color styles, and at the same time provide users with a function key to make a purchase. The highly interactive advertising design device effectively improves the interactive experience of users and enables them to effectively receive commodity information in a relaxed emotional state (Lin, 2022).

In today's advertising design field, the integration of digital media technology has become a key driving force to enhance creativity and interactivity. This integration is mainly reflected in two aspects: first, digital media technology inspires the infinite creativity of advertising design, enabling it to be presented in a unique and attractive way; second, with the help of digital media technology, advertising content can be displayed with more vivid and interesting artistic techniques, so as to deeply attract the attention of the audience. The wide application of digital media technology has created an unprecedented interactive experience for users, which is the embodiment of its strong technical support for these two aspects. With the support of digital media technology, creative advertising design not only focuses on network information technology but also skillfully integrates artistic aesthetics with technological innovation, completely changing the role of users from a passive information receiver to the main body that can actively participate in advertising interaction.

#### **4.3 Multimedia Convergence**

The application of digital media technology has promoted the emergence of new forms of experience, which can expand, magnify, and enrich people's thinking, feelings, and actions. Proper integration of new technologies and materials in advertising design enhances attraction and impact of the advertising promoting audience engagement in an easy and direct form, ensuring a positive experience (Li, 2021). The integration of digital media technology and design has become a trend, injecting new vitality into traditional design. This deep integration is not just a simple superposition of technology and aesthetics but has given rise to a new design language and expression that transcends the boundaries between physical and virtual, blurring the boundaries between art and technology.

The interplay of design thinking and digital media technology not only promotes the widespread application and deep exploration of technology in the field of art and design, but also greatly enriches visual expression and user experience through methods such as 3D modeling, dynamic graphics, and interactive design. It further stimulates the infinite possibilities of cross-media integration. From static images to dynamic videos, from virtual reality to augmented reality, from Internet platforms to Internet of Things applications, design works can have in-depth interaction with the audience on a multi-dimensional and multi-sensory level, creating an unprecedented new era of art and information dissemination.

This integration trend is leading traditional design models towards a more digital and intelligent future. Designers are no longer limited to paper, pens, and physical materials, but can use cutting-edge technologies such as advanced algorithms, artificial intelligence, and big data analysis as design tools to accurately capture user preferences and achieve personalized customization and intelligent optimization design. This technology not only greatly expands the means and creative space of design implementation, but also provides designers with endless sources of inspiration,

encouraging them to break conventions and explore unknown creative territories (Niu, 2024).

Take for example a public service anti-domestic violence advertisement designed by Amnesty International in collaboration with Jung von Matt in Germany. The advertisement cleverly uses a plasma billboard in the shelter, highlighting its core feature of integrated built-in eye-tracking electronic sensor technology. The billboard discreetly shows the cruel reality of domestic violence such as the husband's abuse of his wife when people are not in sight. However, once the audience's eyes touch the screen, the camera immediately senses and responds, and the original violent picture changes instantly, presenting a warm scene of harmonious coexistence. The advertisement, which responds to the viewer's eye contact, is the world's first innovative advertising medium. By introducing the cutting-edge technology of "eye tracking", advertising not only attracts the active participation of the public but also deeply conveys the concept of anti-domestic violence in the interaction: "It happens when nobody is watching (everything happens without anyone watching)". The advertisement won wide attention and praise for the application of innovative technology. It not only highlights the importance of focusing on domestic violence, but more importantly, it shows the creative ads designed with digital media technology.

## **5. Challenges and Opportunities of Digital Media Technology in Advertising Creative Design**

Digital media technology would facilitate the development trend of intelligent, personalized, interactive, and cross-border integration, improve the work efficiency of design and creation, and broaden the boundary of design and creation. At the same time, we also need to constantly think about and explore how to better cope with the challenges (Ma, 2024).

This trend not only greatly promotes the intelligent expression of design creativity, achieving high customization of content through algorithm optimization and data analysis, but also makes the interaction experience between advertising and users more diverse, enhancing the audience's sense of participation and immersion. At the same time, the boundaries between different industries and media have been further broken, providing an infinite and vast space for imagination and a practical stage for design creation.

On this basis, the application of digital media technology has significantly improved the overall efficiency of design work. From conceptual conceptualization in the front end to implementation and execution in the back end, each step can be accelerated and optimized through technological means. This enables creators to more efficiently convert inspiration into real-life works. As a result, the boundaries of design creation have been greatly expanded, traditional limitations have been broken one by one, and innovative creative concepts and forms of expression continue to emerge, injecting unprecedented vitality and creativity into the industry.

Faced with the opportunities brought about by technological progress, we must also be aware of the challenges that come with it. This requires designers to continuously deepen their understanding and application ability of new technologies, and actively explore how to effectively utilize technology to enhance the influence and dissemination of works while maintaining creative uniqueness. At the same time, maintaining user privacy, ensuring data security, and avoiding technology abuse are also important aspects that cannot be ignored. We need to constantly think and adjust strategies in practice, in order to find the best development path in the rapidly changing digital media era and continuously promote design innovation and industrial upgrading.

### **5.1 Technology Upgrading**

With the continuous progress of science and technology, new technologies emerge in an endless stream, and the speed of renewal is astonishing. For example, VR, AR, AI, and other technologies are the outcomes of the development of the new era. These technologies provide an immersive experience, enrich the entertainment, education, training, and other various forms of advertising, and achieve the perfect realization of vision and hearing. The integration of tactile elements and the design of multi-sensory forms enhance the interactivity of advertising, make consumers immersed in advertising, and promote the innovation and reform of the advertising industry (Zhang, 2023). Designers need to keep pace with the times and constantly learn to adapt to new technologies in order to maintain cutting-edge and innovative design (Niu, 2024).

New technologies such as 5G networks, augmented reality (AR), virtual reality (VR), artificial intelligence (AI), machine learning (ML), blockchain, and others have created unprecedented experiences for digital media, providing more efficient data processing capabilities, and richer ways of interaction. These technological advances allow digital media to reach a wider audience, especially in the context of globalization, which helps companies reach new markets and increase their brand influence. Through data analysis and algorithms obtained by technology, digital media can provide a more personalized user experience and meet the needs and preferences of different users.

## 5.2 Improvement of Content Creativity

Creativity is the essence of advertising design and determines the quality and influence of advertising works. A good advertising creativity can quickly achieve a positive communication impact. Creative thinking with the characteristics of originality and circulation determines the duration of advertising marketing activities and is the core factor of the source of advertising marketing creativity. The advertising creative thinking form is embodied in the following five aspects: innovation, logic, association, humor, and dialectical unity (Guo, 2022). Innovation plays a leading role in the field of advertising creation. In the specific implementation, it shows originality, which means that creativity has unique characteristics, which constitute the core of the vitality and attraction of advertising. The application of logical thinking can enhance the audience's understanding of advertising information, from intuitive feelings to deep thinking, so as to increase the influence of advertising and strengthen its persuasion. Stimulate the memory recall of consumers, thereby extending the duration of the advertising impact in their hearts. The use of humorous techniques to spread advertising content fits the direction of pursuing entertainment, artistic and aesthetic value of today's advertising industry, showing the wisdom, subtle and interesting characteristics. The integration of the principle of dialectical unity ensures the harmony of creative ideas and further enhances the persuasion of creativity.

The digital work namely "Han Xizai Banquet" application (app) produced by the Palace Museum" uses digital technology to adopt a new way of narrative content and fully presents the details of the original work. The application skillfully combines complex and esoteric academic information with intuitive visual elements to achieve easy-to-understand content. At the launch stage of the project, the creative team chose China's intangible cultural heritage, "Nanyin" to re-create the music and dance described in the painting, so that users can experience the artistic enjoyment of audio-visual combination anytime and anywhere. With the help of high-definition cultural relics images, detailed academic data, and diversified digital media materials, this app achieves innovation in interactive design. The approach deeply integrates technical methods with the artistic appeal of museum collections, and technology and art complement each other, promoting the integration of traditional and modern culture. This integration not only provides a comprehensive experience covering aesthetics, knowledge acquisition, entertainment, and art appreciation but also enables the majority

of users to deeply understand the unique charm of ancient Chinese paintings, as well as their cultural value across time and space in a new advertising and creative way.

### 5.3 User Experience Optimization

With the development of the times, advertising design has expanded beyond print and advertising creativity and now encompasses the ability to understand the psychological ideas of consumers, just like the early literary narrative display, through writing words to tell stories, narratives, common novels, poems, etc. With the advent of the industrial age, the narrative media has also changed. Technological innovation has led to the emergence of broadcast audio, film, and television. The narrative is conveyed in the form of sound, image, performance, and editing means, with more emphasis on audio-visual experience. Late with the rapid development of 5G, artificial intelligence digital media applications, through hyperlinks and multimedia elements of social media, digital news, web information transfer, virtual reality (VR), and augmented reality (AR), enhance the superposition of digital elements in the real world, create a narrative experience interaction with reality. The narrative design in the context of digital media makes more use of multimedia elements, such as text, images, audio, video, etc., to interact with users, so as to enrich the expression of the design (Guo, 2024).

With the innovative application of digital media technology, users can interact with the design content, establish emotional connections, and then have a more precise insight into the psychological state. This in turn, promotes the progress and evolution of the design field. Taking for example the terracotta warriors displayed at the Shaanxi Museum to promote traditional Chinese culture, the museum has launched a cultural and creative campaign to restore the original colors of the terracotta warriors. In this project, the integration of digital technology and ancient culture makes it possible to accurately reproduce the original color of the terracotta warriors. Specifically, the plan uses a series of digital tools such as three-dimensional scanning, color analysis, and multimedia projection in digital media technology to successfully reproduce the original colors of the terracotta warriors and reveal the true appearance of these ancient sculptures to the world. When the light and shadow colors are gradually projected on the terracotta warriors, a visual feast integrating the strong historical charm and artistic beauty is presented to the audience. Through the digital media narrative, the advertising of this cultural and creative activity is highly interactive, making the public appreciate the gorgeous colors of the terracotta warriors in close range, and understand the charm of Chinese traditional culture. At the same time, it shows the degree of continuous optimization of advertising creative design using digital media technology to enhance the user experience.

The experience brought by digital media technology will bring great changes to the exhibition, break through the obstacles of communication and acceptance, and bring "people" into the exhibition process (Chen, 2024).

### 5.4 Data Security and Privacy Protection

The development of the big data era has changed the mode of information transmission. The development of cultural communication oriented by big data must rely on digital media and information media platforms to carry out cultural penetration (Shi, 2024). Digital media technology is increasingly and widely used in contemporary society, from personal entertainment to commercial operation, and then to public service, which almost covers all areas of life. With the surge of data volume and the acceleration of information exchange, the problems of data security and privacy protection have become increasingly prominent. Therefore, it is important to address this issue immediately.

Data security is the basis of the application of digital media technology. It involves the storage, transmission, and other interconnected process to prevent unauthorized access, tampering, or loss of data. This requires strong encryption technology and security protocols, such as the use of SSL / TLS to secure data transmission, the adoption of advanced data backup and recovery mechanisms to prevent data loss, and the implementation of strict authentication measures to prevent unauthorized access.

Privacy protection is the fundamental ethical principle for the use of digital media technology applications. In the era of big data, the collection and analysis of personal information has become extremely convenient, but it also brings a serious risk of privacy invasion. Therefore, it is necessary to establish a solid system of laws and regulations, clearly define the scope of authority for data collection, use, and sharing, and prohibit the illegal acquisition and abuse of personal information. At the same time, transparent data use policies should be advocated to give users a clear understanding of how their data is collected and used, and they should be given the right to control their information.

Ensuring data security and privacy protection is an essential prerequisite for the successful development of digital media technology. Technologies such as deep learning and transfer learning can be used to design and optimize algorithms (Li, 2023). Only by building a solid technical defensive system and a perfect legal framework can digital media technology truly serve the progress of human society.

## 6. Conclusion

In the context of continuous progress in the era of intelligent media, the penetration and influence of digital media technology in the advertising field are intensifying, and it has become an indispensable force in shaping the modern advertising landscape. In this process, creative advertising design is no longer limited to traditional methods, but actively integrates the latest achievements of digital media technology, thereby promoting the rapid evolution of advertising expression towards diversification, networking, digitization, and intelligence.

Faced with this trend of transformation, the responsibility placed upon advertising designers in the new era is even more crucial. Not only must they need to be proficient in existing digital media technology tools, but also should have a forward-looking perspective, constantly paying attention to and anticipating the future development trends of new media technology. Designers must continuously learn and self-innovate, closely integrate emerging technologies with design concepts, confidently surpass existing creative boundaries, stimulate innovation, and constantly explore new possibilities in advertising design.

Utilizing digital media technology to achieve more precise target positioning, personalized content delivery, and optimized interactive experience, thereby enhancing the appeal and influence of advertising. Advertising designers must be able to stay updated on technological development, and constantly enrich and upgrade their design thinking and creative strategies to design creative advertising works that truly lead the trend and touch people's hearts in this rapidly changing era of intelligent media and then promote the entire advertising industry to a higher stage of development.

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