

Research on the Design of Ceramic Cultural and Creative Products under the Background of Digital Technology

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Abstract: The combination of digital technology and traditional culture has been a general trend, and intelligence and cultural creativity are its prominent characteristics. Ceramic cultural and creative product design should also learn from this mainstream trend, combined with new materials and new technologies, to achieve the intelligent and digital inheritance of skills. This paper expounds the connotation of the design of digital technology ceramic cultural and creative products, analyzes the humanistic needs of modern cultural and creative products and the significance of digital technology application, analyzes the development status of ceramic cultural and creative products, and summarizes the application path of digital technology in the design of ceramic cultural and creative products, in order to provide useful reference for the practical research and development of ceramic cultural and creative products.

Keywords: Digital Technology; Ceramic Cultural and Creative Product; Design

1. Introduction

At present, digital technology is widely used in all walks of life. Ceramic cultural and creative products, as a combination of traditional and modern art forms, with the help of digital technology, full of new vitality^[1]. At the same time, with the continuous development of tourism, the research and development of tourism cultural and creative products has been paid more and more attention, and there have been many successful cases of cultural and creative products. In this context, it is of great significance to apply digital technology to the development and design of tourism cultural and creative products. This paper explores the path of their integration.

2. The Connotation of Digital Technology Ceramic Cultural and Creative Product Design

2.1 The Connotation of Digital Technology

Digital technology is based on digital coding, through some hardware and software equipment, such as communication satellites, application computers to process, transmission of a kind of information technology, it includes a number of technologies, such as AR technology, artificial intelligence technology, big data technology, cloud computing technology and other high-tech.

2.2 The Connotation of Ceramic Cultural and Creative Product Design

Ceramic cultural and creative product design is an innovative practice that combines traditional ceramic technology with modern design concept. It aims to give ceramic products unique cultural connotation, aesthetic value and functionality through design, so as to meet the diversified needs of modern consumers. The primary task of ceramic cultural and creative product design is to excavate and inherit the connotation of ceramic culture. Designers will deeply understand the history, skills and cultural background of ceramics, extract representative elements and symbols from them, and integrate them into product design, so that products become cultural carriers and inheritors. The design of ceramic cultural and creative products should also integrate creative elements, carry out functional design, reflect aesthetic value, rationally select materials and processes, effectively analyze market demand, achieve

environmental protection and sustainable development, and shape brand image.

3. The Humanistic Demand of Modern Cultural and Creative Products and the Significance of Digital Technology Application

3.1 The Humanistic Demand of Modern Cultural and Creative Products

3.1.1 Diversified Creative Design of Cultural and Creative Products

In recent years, the design types of cultural and creative products have become more diversified, covering all kinds of supplies in people's lives, and people's aesthetic appreciation of these products has become more diversified. This kind of diversification is the integration of traditional aesthetics and modern aesthetics in tolerance and acceptance, so as to achieve the degree of symbiosis aesthetics, and its customs and aesthetic tastes will be restricted by social concepts. The innovative design of cultural and creative products should not only pay attention to innovation and creativity, but also deeply study the cultural connotation of cultural and creative products. Specifically, in the design, we should not only pay attention to the re-shaping of traditional patterns, but also systematically study the national customs and regional characteristics reflected in ceramic culture, turn these cultures into concrete expressions of visualization, extract aesthetics from them, and meet the needs of people in today's society for ceramic cultural and creative products.

3.1.2 Attach Importance to the User's Sensory Experience Aesthetic

Any product should adhere to the "human-centered" design concept and give full consideration to specific users. Objects can be associated with specific events and objects of people, and their design should contain three dimensions of instinct, behavior and reflection, which should be interwoven. The design of modern cultural and creative products should pay attention to the user's sensory experience, because compared with other products, the use value of cultural and creative products should occupy a dominant position, and have aesthetic value, giving people more emotional sustenance, so that people can get better aesthetic feelings and aesthetic resonance. In the design of cultural and creative products, designers should pay attention to the aesthetic dimension of people's sensory experience, pay attention to color matching and material selection, and meet people's sensory needs.

3.2 The Significance of Using Digital Technology in the Design of Ceramic Cultural and Creative Products

First, digital technology can greatly improve the creative efficiency and output of ceramic artists and designers. By using tools such as digital modeling software and 3D printing technology, designers are able to prototype ceramic products more quickly and accurately, significantly reducing the time from design to finished product^[2]. This not only reduces the creative pressure of designers, but also improves their creative enthusiasm and production efficiency. Secondly, digital technology can achieve more delicate and accurate creation, as well as complex graphics, colors, textures and other effects, thus enriching the expression of ceramic art and artistic means. Designers can precisely control the shape, color and texture of ceramics through digital technology, so that the visual effects of ceramic works are more diverse and meet the individual needs of consumers. Finally, the application of digital technology can promote the innovation and development of ceramic art, promote the integration of traditional ceramic technology and modern digital technology, thus opening up new art fields and market space. Through digital technology, designers can combine traditional ceramic craft with modern design concepts to create ceramic cultural products with unique artistic style and market competitiveness.

4. Development Status of Ceramic Cultural and Creative Products

As a modern interpretation of traditional culture, ceramic cultural and creative products have been favored by more and more consumers in recent years. With the vigorous development of the creative industry, the development of ceramic cultural and creative products is also increasingly active. This article will explore the development status of ceramic cultural and creative products from the following aspects:

First, combine online and offline operations. With the popularization of Internet technology, the combination of online and offline sales model has become an important means of promotion of ceramic cultural and creative products. Online platforms such as e-commerce platforms and social media provide

a broad space for the display and sales of ceramic cultural and creative products, while offline physical stores provide consumers with an opportunity to intuitively feel the texture of products. This online and offline complementary model effectively promotes the marketing of ceramic cultural and creative products.

Second, the creative achievements are remarkable and the market is broad. Ceramic cultural and creative products with its unique creative design and cultural connotation, won the favor of the market. From tea sets and tableware to ornaments and works of art, the variety of ceramic cultural and creative products is increasingly rich to meet the needs of different consumers. At the same time, with the upgrading of the domestic consumer market and the expansion of overseas markets, the market prospect of ceramic cultural and creative products is very broad.

Third, industrial demonstration base construction in order to promote the healthy development of ceramic cultural and creative industry, many places have established ceramic cultural and creative industry demonstration bases. These bases not only provide a good environment and resource support for the development of ceramic cultural and creative products, but also drive the development of related industrial chains through the industrial agglomeration effect.

Fourth, the combination of artistic creativity and market. Successful ceramic cultural and creative products are often able to skillfully combine artistic creativity with market demand. On the basis of maintaining the traditional charm of ceramics, designers add modern design elements to make the products both artistic and practical. At the same time, they also pay attention to market dynamics and timely adjust the direction of product design to meet the needs of consumers.

Fifth, opportunities for the development of new business forms. With the continuous emergence of new business forms, ceramic cultural and creative products have also ushered in new development opportunities. For example, by combining with the tourism industry, developing ceramic cultural and creative products with regional characteristics; By integrating with the education industry, carry out experiential courses and research activities on ceramic cultural and creative products; By combining with the technology industry, explore the intelligent and digital development direction of ceramic cultural and creative products. These new formats provide a broader development space and innovative ideas for ceramic cultural and creative products.

Sixth, the scope of consumption is limited, and the price is high. The ceramic cultural and creative products are loved by some consumers, but their consumption scope is still relatively limited. On the one hand, the price of ceramic cultural and creative products is generally high, which makes some consumers discouraged; On the other hand, the market lacks the popularization and promotion of ceramic cultural and creative products, resulting in low consumer awareness. Therefore, how to expand consumer groups, reduce production costs, improve the cost performance is an important issue facing ceramic cultural and creative products.

Seventh, the material is special and the integration is insufficient. Ceramic as a special material, its production process and technical requirements are high. This limits the integration of ceramic cultural and creative products with other materials to a certain extent. Therefore, how to innovate the use of ceramic materials, improve the integration with other materials, and explore new production processes and technologies is another important direction for the development of ceramic cultural and creative products.

5. Effective Application Path of Digital Technology in Ceramic Cultural and Creative Products

5.1 Apply Digital Technology to Optimize Ceramic Product Design

In the digital age, various kinds of software emerge in an endless stream, such as 3D model making software, graphic design software, etc. Applying it to the design of ceramic cultural and creative products can not only give the audience an intuitive visual experience, but also carry out parametric processing to improve the quality of ceramic cultural and creative products^[3]. In the design of ceramic cultural and creative products, Rhino software can be used. This software has a powerful surface modeling, which can skillfully use surface combination, rendering, interspersing work, etc., to create more novel and changeable shapes, so that ceramic cultural and creative products can be more creative and imaginative. Secondly, the use of dynamic and static digital model, with the rapid development of information technology, the application of virtual technology, three-dimensional printing technology in ceramic cultural design is of great significance. 3D can fully display the design drawings of ceramic cultural and

creative products, or watch ceramic cultural and creative products through VR glasses, which are convenient for designers to review and proofread, and also allows personnel to optimize and adjust the pattern, size, shape, color, etc., of ceramic cultural and creative products. Third, the use of digital color adjustment technology. When applying digital technology to the design of ceramic cultural and creative products, we should not only consider the shape, but also effectively present the color and texture of the product. To achieve this goal, digital color adjustment technology can be used to adjust specific color numbers, which can enrich ceramic cultural products, but also improve the accuracy^[4].

5.2 Use Digital Technology to Innovate Product Manufacturing

First, digitization is applied to ceramic material modeling. Traditional ceramic material molding is mostly slurry molding, plastic molding, dry molding, with low efficiency, production cycle and other characteristics, the final display of ceramics in the form and performance there are great limitations. The use of digital technology, innovative product manufacturing, can better complete the structure manufacturing and complex modeling. At present, 3D printing technology has become a hot spot, is the combination of a variety of technologies, such as information processing technology, digital modeling technology, material technology, so not only to facilitate the creation of ceramic cultural and creative products, but also to add personalized vitality^[5]. Second, the digital application of ceramic creative products firing. The firing of ceramic products is mostly completed manually, which is not only low efficiency, but also easy to be affected by various factors. The use of digital technology can be applied to the digital autonomous system in the firing of ceramic cultural and creative products, but also give full play to the automatic temperature cone and other device functions, in order to improve the intelligence level of cultural and creative products, reduce personnel work intensity, improve production efficiency^[6].

5.3 Use Digital Technology to Broaden Communication Channels

In the digital era, ceramic cultural and creative products need to keep pace with The Times, make full use of digital technology to broaden their communication channels and enhance market competitiveness. Digital technology provides a new way to display, publicize and sell ceramic cultural and creative products, making these traditional works of art can reach a wider audience^[7]. The application of digital technology to broaden the dissemination of ceramic cultural and creative products can be through the following ways: first, online exhibitions and virtual museums. Through online exhibitions and virtual museums, ceramic cultural and creative products can get a wider display space on the Internet. Using 3D scanning and virtual reality technology, ceramic artworks can be digitally reproduced and displayed in a virtual space. Visitors can visit online and interact with each other through interactive functions to gain an in-depth understanding of the artistic value and cultural connotation of ceramic cultural and creative products. Second, social media promotion. Social media platforms have the characteristics of large user base and fast transmission speed, and have become an important channel for the promotion of ceramic cultural and creative products. Through the release of beautiful pictures, short videos and live broadcasts, ceramic cultural and creative products can attract more users' attention and increase exposure. At the same time, the interactive function on social media can also enhance the user and brand stickiness, promote sales and brand communication. Third, augmented reality (AR) technology. Augmented reality technology can integrate virtual information with the real world, providing a new way to display ceramic cultural and creative products. Consumers can watch the AR display of ceramic products through their mobile phones or other devices to learn about its details and production process. This innovative display method can not only attract the interest of consumers, but also provide more rich and vivid product information.

5.4 Develop Ceramic Cultural and Creative Products

In order to achieve improvement and innovation, comprehensive technologies such as computer-aided design, creative design, and artistic creation can be utilized to extract cultural resources from ceramics. It can also reduce costs and improve product quality by expanding functions and optimizing processes, so as to achieve the goal of improving the design ability of ceramic products, and then develop unique intangible cultural and creative ceramic products to form a series of cultural and creative products such as home beauty series and red inheritance series. Taking the research and development of Jingdezhen ceramic cultural and creative products as an example, the use of digital technology to make Jingdezhen ceramic cultural and creative products into creative ceramics, Jingdezhen related subject elements, such as regional characteristics, traditional stories, natural scenery into the design of ceramic

cultural and creative products, so that it has ornamental and unique. Specifically, when designing ceramic cultural and creative products, designers should comprehensively analyze the internal elements, such as emotion, folklore, culture, region, etc., and carry out holistic design. Jingdezhen, as the capital of porcelain for thousands of years, has irreplaceable historical value and cultural characteristics. To this end, designers can use digital means to visually express emotional communication, cultural identity, user needs, etc., and show the firing method of Jingdezhen through the multimedia client, and create an interactive platform so that the public can automatically choose the glaze, color and shape of the ceramics they want to fire. In this way, personalized customization is carried out to meet the individual needs of users. The production process is shown in Figure 1.

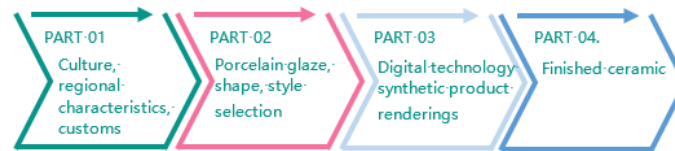


Figure 1. Production process

5.5 Create a Database of Ceramic Cultural and Creative Products

We should excavate the iconic cultural foundation of ceramic cultural and creative products, showcase the characteristics of ceramic craftsmanship, and promote and inherit ceramic culture. In the digital era, the manual drawing of ceramic cultural and creative products can be developed into computer drawing and software aided design through a variety of ways, such as digital exploration, literature research, etc., so as to achieve digital color separation. The database of ceramic cultural and creative products is sorted out, and a variety of digital models of ceramic cultural and creative products are developed.

6. Conclusion

The application of digital technology in the design of ceramic cultural and creative products not only improves the design efficiency and production accuracy, but also brings richer creative expression and personalized user experience to the products. In the future, with the continuous progress and innovation of digital technology, we have reason to believe that ceramic cultural and creative products will shine more brightly in the design field.

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References

- [1] Zhou Xiaoying. *Research on the Development Strategy of Ceramic Cultural and Creative Industry Empowered by Digital Technology* [J]. *Foshan Ceramics*, 2024, 34 (03): 84-86.
- [2] Wu Xiaohua, Huang Yong. *The Path of Strategic Transformation of Jingdezhen Ceramic Cultural and Creative Industry from the Perspective of Digital Economy* [J]. *China Ceramic Industry*, 2024, 31 (01): 67-70.
- [3] Huang Liuzhe, Long Xipan, Jiang Lu, et al. *Research on the Road of Digital Collection of Ceramic Cultural and Creative Enterprises under the Background of Digitalization* [J]. *Jiangsu Ceramics*, 2023, 56 (05): 5-7.
- [4] Dai Liang, Liu Xiaoming. *Application Research of New Digital Technology of Ceramic Art* [J]. *Jiangsu Ceramics*, 2023, 56 (04): 24-26.
- [5] Chen Qiting. *Research on Digital Design, Manufacturing and Dissemination of Ceramic Products* [J]. *Foshan Ceramics*, 2023, 33 (07): 71-73.
- [6] Zhou Yong, Fu Zhigang. *Application of Digital Technology in Ceramic Product Design* [J]. *Ceramic Science and Art*, 2023, 57 (01): 62.
- [7] Wang Yan. *Research on the Integration of Digital Art in Ceramic Product Design* [J]. *Grand View*, 2022, (08): 85-87.