

The Digital Protection of the Jingdezhen Ceramic

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Abstract. The Jingdezhen ceramic is an important symbol of the historical and cultural achievements of the Chinese nation, and an important part of excellent traditional culture. This paper summary the development history and cultural characteristics of Jingdezhen ceramic, and proposes the use of digital technology to empower the development of the Jingdezhen ceramic industry and the protection of intangible cultural heritage, so as to solve the problems faced in the development and protection of Jingdezhen's intangible cultural heritage, such as the aging of inheritors, the loss of traditional porcelain-making techniques, the lack of innovative products and weak brand influence, and to promote the development of Jingdezhen's cultural and creative industry by creating Jingdezhen cultural IP and carrying out cross-border cooperation.

Keywords: Ceramic; Digital Protection; Intangible Cultural Heritage.

1. Introduction

Chinese ceramic has a long history and carries Chinese culture and is renowned for its technical mastery. A large number of potteries excavated in the Yellow River basin and the Yangtze River basin confirm that the earliest known pottery in China was produced during the Neolithic period. People discovered that clay fused with water was viscous and malleable and that when heated to a high temperature the clay embryo would harden and could be used for cooking, holding water and storing other objects, thus giving rise to pottery. By the time of the Eastern Han period (23-220 AD), kilning techniques for pottery had developed, with the discovery of late Eastern Han porcelain kiln sites and celadon in Shangyu County, Shaoxing, Zhejiang. The celadon has a fine texture and a lustrous glaze, and at this time the pottery has been freed from the characteristics of primitive celadon. According to *The Notes on Nan Yao*: "Jingdezhen, located in the south of the Changjiang River, and the history of firing ceramic began in the Han Dynasty." [1] Jingdezhen ceramic was also recorded in the state of Chen during the Six Dynasties, so it is clear that the manufacture of ceramic in Jingdezhen dates back to the Han Dynasty, but unfortunately, no ancient kiln sites or fragments of porcelain belonging to this period have been found in Jingdezhen [2]. The Tang dynasty was a period of development in ceramic production, with ceramics from Tao kilns and the Huo kilns in Jingdezhen to the extent of 'fake jade' and for royal use. The earliest ceramics and kiln sites excavated in Jingdezhen date from the Five Dynasties period. According to *The Jingdezhen Ceramic Record*, after the State of Chen, the artisans who made ceramics gathered in Jingdezhen, which became famous from the State of Chen onwards. [3] As can be seen, Jingdezhen ceramics were well known during the Tang and Five Dynasties, and the ceramic industry was divided between folk and official kilns. However, the level of firing and popularity of Jingdezhen ceramic could not be compared to that of celadon and white porcelain. Until the Song Dynasty, Bluish-white Ceramic from Jingdezhen opened up a new realm of ceramics. It is between celadon and white porcelain, the glaze of which was a mixture of white and green [4]. In *The Jiangxi General Records*, it is written: "During the Song dynasty, the imperial ceramics were made and, at the request of the government, made during the dynasty of 'Jingde' was written on the bottom of the ceramics, giving Jingdezhen its name". (Jingdezhen was named after the year of Emperor Zhenzong of the Song Dynasty.) It is clear that Jingdezhen ceramic enjoyed a brilliant development during the Song dynasty [5]. In 1278, the Fuliang Porcelain Bureau was established in Jingdezhen during the Yuan dynasty for the firing of official porcelain, court ceremonial vessels and official trade ceramics. During this period, ceramic modeling and decorative patterns, firing technology has achieved innovative development. Jingdezhen producing blue and white porcelain and underglaze-red. Blue and white porcelain is an underglaze colour porcelain with blue patterns and made by painting with a brush on a white porcelain body

using cobalt oxide as the pigment, then applying a transparent glaze and firing at high temperatures [6]. Underglaze-red is made using copper oxide as the colouring agent and must be fired in a single firing in an atmosphere of reducing flame under high temperature [7]. The imperial porcelain mill established during the Ming dynasty contributed to the overall development of Jingdezhen ceramic, and blue and white porcelain became the mainstream of the Chinese porcelain industry. The blue and white porcelain produced at different times during the Ming dynasty had different characteristics, There were overglaze red of the Hongwu period, underglaze blue with red colours of the Xuande period, the doucai of the Chenghua period, the wucai porcelains of the Jiajing and Wanli periods, the copper-red glaze and the blue glaze of the Yongle and Xuande periods, the malachite green glaze of the Chenghua period, yellow glaze during the Hongzhi period and other coloured glazes [8], it can be seen that during the Ming dynasty, the shape, colour of the glaze and process of Jingdezhen ceramic developed rapidly. In the early Qing dynasty, Jingdezhen ceramic became more diverse and colourful. The blue and white porcelain and underglaze-red were further improved. During the Kangxi period, blue and white porcelain were characterized by their vivid and layered colour. In contrast, the underglaze-red is more vivid and the presentation of colour is more stable. The innovations of the Kangxi wucai, colour enamel and Yongzheng famille rose pushed Jingdezhen ceramic to its peak. The Kangxi wucai is characterized by the use of green, yellow, purple, overglazed blue, black and gold colour, improving the effect of colour painting, with its bright colors, lustrous translucency, lively patterns and strong lines. The colour enamel is a technique of overglazed colours that painting enamel techniques have been transferred to ceramic, and was a highly prized form of imperial ware at the court of the Kangxi, Yongzheng and Qianlong Dynasties. The famille rose decoration was overglazed colours based on Kangxi wucai that was created under the influence of enamel color technology. During the Yongzheng period, famille rose decoration was characterized by the use of arsenic-containing glass to fill in the base of the designs, which were rendered using the boneless painting method of traditional Chinese painting, forming a three-dimensional sense of colour intensity and shade [9]. As can be seen, Jingdezhen ceramic reached its heyday in the early Qing dynasty in terms of colour glazes. By the middle of the Qing dynasty, under the influence of the industrial revolution and the rapid development of modern European science and technology, ceramics adopted scientific temperature control and material analysis techniques to produce ceramics with chic shapes, distinctive decoration and beautiful packaging and European cultural characteristics. The Jingdezhen ceramics was no longer scarce and the amount of foreign trade in Jingdezhen ceramics was gradually reduced. The introduction of western culture led the Chinese to purchase low-priced porcelain ceramics produced in Europe. As a result, Jingdezhen ceramic gradually went into decline along with the disintegration of the feudal economy and culture. From the mid-Qing dynasty to the 1980s, the development of Jingdezhen ceramic industry was difficult, and in September 2013, Xi Jinping first proposed the strategic idea of building a ‘Belt and Road Initiative’ between Europe and Asia, and Jiangxi, once a major supplier of goods along the Maritime Silk Road, opened up the Pacific - Indian Ocean route and established a China-centred trade zone in Southeast Asia and Northeast Asia and Jingdezhen porcelain became a global commodity. The Maritime Silk Road led to the export of Jingdezhen blue and white porcelain to the Middle East, which influenced Middle Eastern culture. After the opening of the Maritime Silk Road, Jingdezhen porcelain was exported to Europe, influencing the way of life of European society and forming a ceramic cultural circle with Jingdezhen at its core, and Chinese ceramic became a symbol of Chinese ware civilization in the 16th-18th centuries. Therefore, Jingdezhen, with its rich historical and cultural resources, should seize the Belt and Road construction to revive Jingdezhen’s ceramic industry and culture.

On May 20, 2006, Jingdezhen’s hand-made porcelain-making art was inscribed on the first list of national intangible cultural heritage by the State Council. Liu Xiaochun said, “Intangible cultural heritage is a culture, the life experiences, historical traditions, collective memories and social practices of a specific group of people, as well as a cultural heritage.” Therefore, Jingdezhen ceramic not only has commodity attributes, the porcelain-making process also has cultural attributes, and how

to develop and protect the Jingdezhen porcelain-making process has become a hot topic in the academic community.

Firstly, this paper describes the development history of Jingdezhen ceramics. Secondly, it elaborates on the technique of hand-made Jingdezhen ceramic and the problems faced by Jingdezhen ceramics in the process of conservation and development, such as shortage of inheritors, lack of innovation, and low brand influence. In response to these problems, it proposes a digital protection strategy for Jingdezhen ceramics and discusses the necessity and feasibility of digital protection. Proposing a digital protection path for the establishment of a digital museum, App, and Mini App. This paper proposes the development strategy of using new media, carrying out cross-border cooperation, creating ceramic cultural IP and enabling digitalization for Jingdezhen's ceramic cultural and creative industry

2. Problems in the Protection and Development of Jingdezhen Ceramic

The technique of hand-made Jingdezhen porcelain is very complex, and the Seventy-two Processes of Jingdezhen ceramic production are summarized in *T'ien-kung k'ai-wu: Chinese Technology in the Seventeenth Century*, which includes: extracting ceramic raw material, forming ceramic, decorating ceramic, and firing ceramic [10]. Raw material extraction refers to the burning of the ore mountain, the ore is heated and cracked, then the glaze stone is chiseled. The slope of the mountain and the impact of the river are used to transport the glaze stone down the mountain, the kaolin is poured into the ravine, the water is connected to the ditch, so the kaolin is washed, and the impact of the water is used to wash the melted mud into the kiln. The powdered glaze stone is made into bricks and transported to the workshop after washing, precipitation, deslagging and so on. Forming ceramic, decorating ceramic, and firing ceramic involve different technical aspects: throwing is the process of throwing the clay onto the center of the turntable and pulling it out by hand while pressing is the process of placing the clay body after drying in shade on a grinder and pressing it by hand to make it upright. Porcelain mending: placing the clay body on the barrel of a jolley, turning the disc and using it to turn the clay Body so that the surface of the clay body is smooth. Porcelain painting: using bamboo, bone, or iron knives to carve patterns into the clay body. Glazing application of glaze is divided into glazing the inside and outside of the body, glazing the inside of the clay body is done by injecting glaze slip into the clay body and shaking it before porcelain painting, so that the inside of the clay body is glazed, and then the excess glaze is quickly poured off, glazing the outside of the clay body is done by placing the clay body in the glazing basin, and when the mouth of the embryo is at the same level as the glaze, the clay body is raised and then the bottom foot is dug and the put it in the kiln and fired. The porcelain-making processes described above were inherited, but the process aspects of glaze preparation, kaolin mining, and glaze stone preparation have been lost. With the development of society, the famous kiln sites and folk workshops in Jingdezhen have been damaged to varying degrees. It is clear that the craft of Jingdezhen porcelain-making is in urgent need of protection. Ma Yue used the archival protection level evaluation model to evaluate the archival protection level of intangible cultural heritage in Jingdezhen [11]. Zhan Jia proposed that Jingdezhen ceramic has institutional characteristics, reflecting the institutional culture of kingship, that the regulations of the civil kilns reflect the socio-economic and clan system, that it has living characteristics and shows the wisdom of people using natural resources, as well as the process of making Jingdezhen ceramic is rigorous and scientific. Therefore, in the process of protection and development of Jingdezhen ceramics, the characteristics of the living should be considered, and static protection should not be used only. [12]. Other scholars have proposed the productive protection of Jingdezhen ceramic, but this has resulted in copycatting, counterfeiting, and theft. Although industrialization has increased production efficiency, some of the hand-made porcelain-making processes have been lost or eliminated, making it difficult to meet the active protection requirements of traditional ceramic craftsmanship. Some researchers have also proposed the concept of 'visual protection', collecting historical images of Jingdezhen ceramic and establishing museums, but

although traditional museum displays can meet people’s needs for understanding traditional ceramic culture, they only stay at a static level, making it difficult to meet the living heritage of ceramic culture. Jingdezhen porcelain craft is faced with a shortage of inheritors, lack of innovation in products, brand influence and other status quo.

2.1 Shortage of Inheritors

Modern mechanized production has gradually replaced some aspects of Jingdezhen’s hand-made porcelain, and as a result, there are fewer and fewer hand-made porcelain makers, and the inheritors of excellent porcelain-making techniques are showing an aging trend. In 2005, Jingdezhen established a database of inheritors of intangible cultural heritage protection, as shown in Figure 1, there are 11 national level inheritors of intangible cultural heritage in Jingdezhen, but they are all over 65 years old, 57 provincial level inheritors of intangible heritage, and 806 city level inheritors of intangible cultural heritage. These inheritors rely on oral transmission, master and apprentice transmission of the porcelain craft of living heritage, but by the influence of traditional inheritance ideas, some inheritors cannot pass on the experience and core technology of the porcelain craft, resulting in the loss of the porcelain craft. After 2010, Jingdezhen also passed on the porcelain craft through colleges and enterprises. The college heritage is the formal education system in colleges to train students in porcelain-making techniques. Enterprise inheritance means that enterprises train their employees in porcelain-making techniques, offer workshops on ceramic techniques and appraisal, and expand the scope of inheritance through research institutes. However, according to the research results, more than 80% of the inheritance of “Intangible Cultural Heritage” in Jingdezhen is in the mode of master and apprentice [13]. Therefore, it is necessary to improve the protection mechanism and talent cultivation mechanism of the inheritors. In addition, the uneven distribution of porcelain-making skills among inheritors also has an impact on its development. In terms of ceramic production, the traditional manual mining technology cannot compete with mechanized mining technology, resulting in fewer inheritors of mining ceramic raw material and making ceramic auxiliary tools and more inheritors of ceramic decoration, but the lack of porcelain-making processes will mean that there is no complete traditional hand-made porcelain craft, and the living inheritance of intangible cultural heritage in Jingdezhen will come to a standstill. In addition, the traditional porcelain-making process is complex, the learning period of the porcelain-making process is long and employment opportunities are few, therefore, young people rarely choose to inherit the porcelain-making process, making Jingdezhen ceramic face an inheritance crisis.

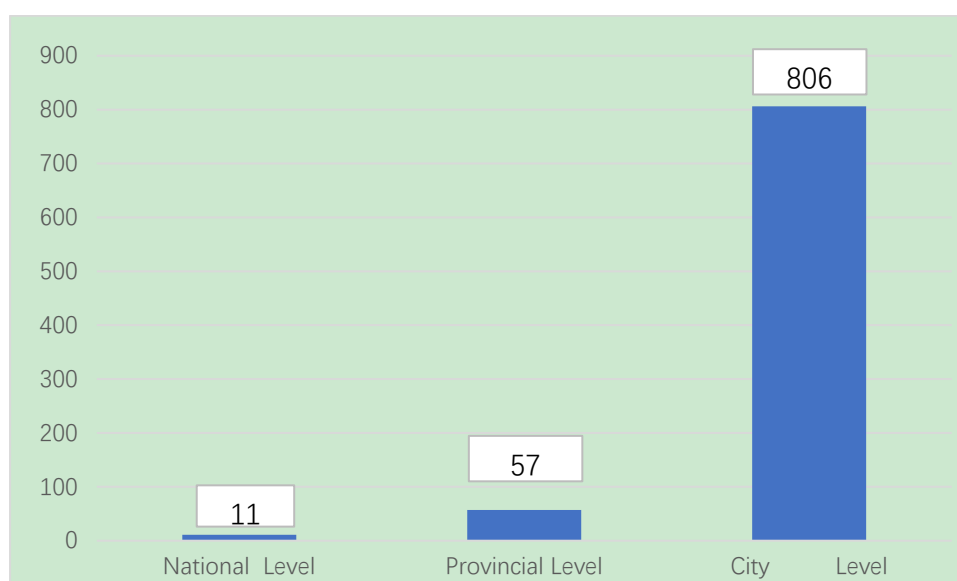


Figure 1. Distribution of the number of inheritors of Jingdezhen porcelain-making techniques (source:Jingdezhen Daily: Shape the orderly inheritance of Chinese traditional hand-made porcelain Jingdezhen)

2.2 Lack of Innovation in Ceramic Products

With the decline of the ruling class, the end of capitalism, and the development of science and technology, alternatives to ceramics emerged on the market and the development of Jingdezhen ceramic was impacted. In terms of functionality, ceramic is less practical in current society, and in terms of the decoration, traditional Jingdezhen ceramic patterns are dominated by geometric, animal, plant, floral, and character patterns. However, for the contemporary consumer who seeks simplicity and diversity in design, Jingdezhen ceramic decoration lacks innovation and does not meet contemporary aesthetic needs, and the traditional Jingdezhen ceramic design restricts the innovation of modern ceramics. The lack of innovation has led to a serious homogenization of ceramics, so Jingdezhen Ceramics need to combine traditional elements with modernity to make its design meet consumer needs and enable ceramics to highlight people's taste in life.

2.3 Insufficient Brand Influence

Jingdezhen ceramic cannot play the advantage of industrial clusters, and it lacks modern ceramic enterprises with strong influence, international ceramic brands, and iconic symbols. Although artistic ceramic has a high reputation, the production is scarce and expensive, so it cannot carry the task of building a world-renowned ceramic brand in Jingdezhen, while cases of counterfeiting and misappropriation of Jingdezhen ceramic designs, famous trademarks, and celebrity masterpieces often occur in the market. For example, the famous trademark "Longzhuge" held by the Jiangxi Ceramic Industry Company is often stolen by other manufacturers, these speculative actions damage the Jingdezhen ceramic brand. As can be seen, the development of the Jingdezhen ceramic industry cannot be considered solely from the perspective of the market and industry. The development of the porcelain-making process is based on traditional skills and the production techniques of the auxiliary tools needed for porcelain-making. It is impossible to talk about traditional porcelain-making without traditional techniques, and Jingdezhen ceramics that have lost their traditional skills and characteristics cannot form unique product characteristics in the market. Although the market has changed in terms of selection and swing, people's aesthetic orientation, and political orientation, the preservation of the production process of Jingdezhen ceramic is conducive to the formation of the cultural connotations, brand influence and brand characteristics of Jingdezhen ceramic, and is an important symbol of Jingdezhen ceramic that distinguishes it from other ceramics, and will also have a positive impact on the innovation and development of Jingdezhen ceramic technology and products.

3. Research on the Digital Protection of Jingdezhen Ceramic

3.1 Feasibility Analysis of Digital Protection of Jingdezhen Ceramic

Many scholars believe that the way to facilitate the reproduction, sharing and dissemination of Jingdezhen ceramic technology is through digital protection. Digital protection of intangible cultural heritage is the use of digital acquisition, digital storage, digital processing, digital display, digital dissemination and other technologies to convert, reproduce and restore intangible cultural heritage into a shareable and renewable digital form, and to interpret it from a new perspective, preserve it in a new way and use it for new needs [14]. Digital acquisition includes digital text, digital photography, holographic photography, digital remote sensing, digital surveying, graphic scanning, stereo scanning, etc. Digital acquisition technology can save data to USB, computer, cloud and other network space. Digital processing technology refers to the application of digital processing of information, the use of computer graphics, three-dimensional modeling, virtual reality and other technologies to simulate the production process of handicrafts. Digital dissemination is the editing, storage, and screening of information based on new media and networks [15].

Digital protection is extensive, vivid, interactive, cheap to reproduce and easy to store, and can solve the problem of storing paper versions of materials without blurring them over time. For this reason, China has promoted digital protection in the preservation of intangible cultural heritage such

as embroidery, cloud brocade and paper-cutting. Digital protection includes virtual reality technology, augmented reality technology, and interactive technology [16]. Virtual reality (VR) technology relies on the development of several technologies such as 3D real-time graphic display, 3D positioning tracking, haptic and olfactory sensing technology, artificial intelligence technology, and high-speed computing [16]. People wear stereoscopic glasses, data gloves, and other sensing devices, and through human skills and corresponding facilities can achieve information interaction with the virtual environment. Augmented reality (AR) is a technology that cleverly integrates virtual information with the real world, using a variety of technical means such as multimedia, 3D modeling, real-time tracking and registration, intelligent interaction, sensing, etc., to apply computer-generated text, images, 3D models, music, video and other virtual information to the real world after simulation and emulation [17]. Multimedia interactive technology refers to the addition of interactive features to traditional media, bringing multiple sensory experiences through the act of interaction [18]. Digital technology can be used to create a digital museum of Jingdezhen ceramic, restore the traditional porcelain-making process, and create a game for making virtual ceramics inspired by the process of making ceramics so that users can experience the process and stimulate their participation.

Intangible cultural heritage is a 'living' culture, the cultural content of which is expressed through human activity. The Jingdezhen ceramic industry was organized into a meticulous division of labor, consisting of porcelain firms and merchants that are divided into 'gangs' by region and 'businesses' by occupation, such as the Duchang gang, which produced round ware, and the Fuzhou gang, which produced jars, bottles, altars, pots, and cups. This structure, based on geography, kinship, blood, and division of labor, constitutes a special clan culture. In addition, Jingdezhen ceramic artisans respect the laws of nature, using water, firewood, kaolin, and glazed stone as raw materials, relying on hilly slopes to build billet workshops and kilns, and transporting by a river into the sales market, forming the ecological and living characteristics of Jingdezhen ceramic and is a cultural creation within a specific region. Digital technology can reproduce the cultural remains, production sites and living relics of Jingdezhen ceramic, making the technology and skills of Jingdezhen ceramics come alive through a specific space and showing the cultural connotations of Jingdezhen ceramic.

3.2 Path Analysis for the Digital Protection of Jingdezhen Ceramic

The objects of Jingdezhen ceramic's digital collection include physical objects, manuscripts, pictures, text, audio, and video records that study traditional Jingdezhen ceramic, describe and record traditional hand-made Jingdezhen porcelain techniques, ceramic culture innovation, and application. Among them, special attention is paid to the collection of near-missing skills. The collected information is then pictorially processed and organized using various digital technologies such as digital input recording, digital photography, laser scanning, modeling, rendering, etc., and the information is entered into a database for preservation, building a Jingdezhen ceramic craft database, protecting the integrity of the traditional porcelain-making process, and realizing the sharing of Jingdezhen ceramic resources. Based on the establishment of the Jingdezhen ceramic craft database, the establishment of digital cloud exhibition hall and the development of the Jingdezhen ceramic APP, and the use of digital media to create Jingdezhen cultural IP, the dissemination of ceramic culture can break the restrictions of time and space, and promote the spread of Jingdezhen ceramic culture popularization.

3.2.1 Optimizing the Design of Digital Ceramic Museums

Digital museums are different from traditional museums, which cannot display ancient buildings, monuments and non-renewable artifacts, but digital museums are free from the constraints of time and space. People can visit digital museums anytime and anywhere via the internet. Therefore, the digital museum is a window to propagandize Jingdezhen ceramic, not only to promote Jingdezhen ceramic culture but also to attract people to travel to Jingdezhen and drive the economic development of Jingdezhen.

The Jingdezhen Ceramic Digital Museum features modules on the history of porcelain-making, fine ceramics through the ages, kiln sites, ceramic architecture, porcelain-making techniques, ceramic

folklore, ceramic stories, and ceramic export. The kiln site module showcases the ruins of the national imperial kiln factory and the Hutian kiln site, using phantom imaging technologies, 3D modeling construction and animation interpretation to restore the process of ancient people producing ceramics. In the ceramics through the Ages module, ceramics can be made into a ‘Rubik’s Cube Wall’, where people can click on a ceramic and learn about it with 3D data photos and related information to satisfy their desire for knowledge. In modules such as Ceramic Stories and Ceramics for Export, games can be set up to increase people’s sense of participation.

3.2.2 Ceramic APP and Mini App Development based on Contextual Experience

A variety of APP software has long been integrated into people’s lives. Jingdezhen can also make ceramic culture into people’s lives by establishing the APP. The APP interface includes a cloud exhibition of Jingdezhen ceramic and creative products for sale, a user DIY creative area, ceramic culture, a Jingdezhen tour, and other functional modules.

The “home page” is a cloud exhibition of Jingdezhen ceramic, setting up exhibitions of Jingdezhen ceramic from different periods. After browsing the cloud exhibition, people can participate in the Jingdezhen ceramic knowledge competition, which enhances the spread of knowledge about Jingdezhen ceramic and also increases interactivity, and gives points or other rewards to users who participate in the knowledge competition, which can be used to purchase ceramic peripherals.

“Talking ceramic” is about the history and stories of Jingdezhen ceramics. This section can be designed as a scroll with different periods on it, and people can click on a period to learn about the ceramic craftsmanship and stories of that period.

“Jingdezhen tour” provides information on tourism, food, and folklore in Jingdezhen and the surrounding areas.

“Painting ceramics” is a ceramic creativity center in Jingdezhen, where users create ceramics online based on the elements or templates provided, and can post their ceramic works to the community and participate in ceramic creativity competitions.

The “community” is a space for users to share their thoughts, post ceramic topics and participate in related matches.

The “ceramic market” sells Jingdezhen ceramic products, and people can choose from a selection of related products.

The “mine” has modules for works, collections, settings, customer service and orders, providing online purchasing services for Jingdezhen ceramic.

In addition, Mini App with the same functionality as the app can be developed for ease of use.

3.3 Strategies for the Development of Jingdezhen Ceramic Digital Cultural and Creative Industry

3.3.1 Using New Media to Create Ceramic Cultural IP

The development of Jingdezhen ceramic requires the creation of Jingdezhen cultural IP, for example, developing mini-games in which people can choose different types of work and experience the production and transportation of ceramic by completing different tasks. In addition, the anthropomorphic treatment of Jingdezhen blue and white porcelain through animation design, the design of Jingdezhen ceramic as dolls holding blue and white porcelain, with the dolls leading people back to the prosperous period of Jingdezhen. And creating different scenes by using VR technology, for example, Jingdezhen ceramic raw material mining scenes, and ceramic production scenes, to create a maritime ceramic road under the virtual environment, so that people understand the Jingdezhen ceramics exported to overseas scenes during 16th -18th century, and into the maritime ceramic road along the countries of folk culture, so that dolls become a cultural purveyor for people to tell the impact of Jingdezhen ceramic on the world and open Jingdezhen ceramic cultural revival road. Jingdezhen ceramic will be symbolized to become closer to consumers’ lives, enhancing consumer stickiness and loyalty and spreading the brand image of Jingdezhen ceramic.

3.3.2 Cross-border Cooperation to Empower Jingdezhen Ceramic Industry and Intangible Cultural Heritage through Digitalization

The development of the Jingdezhen ceramic industry not only needs government support but also needs to build Jingdezhen ceramic industry chain through ceramic + technology, ceramic + creative design, ceramic + new life, ceramic + research, ceramic + culture, to promote the cross-border integration of ceramics and to create “ceramic life 4.0” development model featured “ceramic culture + experience + tourism + personalized customization”. We should restore historical and cultural monuments such as ancient workshops, kilns, and docks, excavate new historical and cultural symbols, create ceramic cultural landmarks in Jingdezhen, develop eco-experience tourism, combine Jingdezhen’s natural landscape and ceramic culture, as well as porcelain-making techniques and other culture, forming a ceramic journey with cultural connotations. Jingdezhen ceramics can be co-branded with Glory of Kings for a game skin. It is possible to incorporate features such as ceramic glazes and patterns into the visual representation of the skin, and ceramic catchphrases into the voice pack. We also can create well-known ceramic brands, develop leading enterprises and achieve promotion from independent brands to well-known and international brands. Relying on the internet and digital technology to promote the spread of ceramic culture. The development of digital technologies such as the internet, big data, and virtual reality has shortened the time and distance of information dissemination, and people from all countries can appreciate and buy cultural and creative products of Jingdezhen ceramic. Ceramic companies are expanding their brand influence and raising the profile of the Jingdezhen ceramic industry through live streaming and KOLs. With innovative ceramic design as the core, combining digital technology drawing, modeling and intelligent production capacity with personalized cultural and creative inspiration and profound cultural connotation, the design, research and development, and production efficiency and quality of ceramic cultural and creative products will be improved, the variety of ceramic cultural and creative products will be enriched and Jingdezhen ceramic design innovation capacity will be promoted. By organizing international and national ceramic design competitions, we will build a platform for international and domestic ceramic design exchanges, promote the integration of traditional ceramic culture with modern design, build a global ceramic creative design center, research, and development center, and turn Jingdezhen into a new landmark for global ceramic creative culture.

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