

Research on the Digital Communication of Jingdezhen Ceramic Culture from the Perspective of Cultural-Tourism Integration

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Abstract: Against the backdrop of the rapid development of digital technology and the in-depth integration of cultural-tourism, the modes of conservation, inheritance and communication for cultural heritage are accelerating their transformation toward digitization and online operation. It has become a crucial research hotspot drawing widespread attention from academia and industry to realize the activation, utilization and innovative communication of cultural heritage via digital technology. As a time-honored porcelain capital renowned at home and abroad, Jingdezhen boasts abundant tangible and intangible ceramic cultural heritages, which constitute an indispensable part of Chinese civilization. In the context of changing times, Jingdezhen ceramic culture is confronted with challenges in heritage conservation and cultural communication, making it of pivotal significance to explore digital paths for conservation and communication. Focusing on the Digital Communication of Jingdezhen Ceramic Culture from the Perspective of Cultural-Tourism Integration, this paper first sorts out the connotation and characteristics of ceramic culture, analyzes the influence of cultural-tourism integration on the conservation and communication of cultural heritage, and elaborates the innovative functions of digital technology in virtual display, immersive experience, time-space expansion and other dimensions. Furthermore, the research proposes to construct a sound digital communication system by means of digital collection and database establishment, cultural and creative product development, online exhibitions as well as scenario integration. Relying on platforms such as digital museums to break the limitations of time and space, this study aims to facilitate the conservation, inheritance and innovative communication of Jingdezhen ceramic culture in the new era.

1. Introduction

Nowadays, the integration of cultural-tourism has become a new trend in the development of the cultural industry. Culture is not merely displayed as exhibits in museums or fleeting scenes in film and television works; instead, it has evolved into a “living culture” that tourists can personally

experience and perceive. In recent years, the rapid advancement of cultural-tourism integration has not only boosted economic growth but also diversified the forms of cultural communication, making cultural dissemination more vivid and visualized, and turning tourism into a dual feast of vision and tactile experience. To enhance tourists' sense of participation and on-site experience, an increasing number of traditional craftsmen have launched intangible cultural heritage experience programs amid the booming tourism industry. It allows tourists to appreciate the charm of traditional culture and thereby strengthen their cultural identity and cultural confidence. In response to the national strategy for the integrated development of cultural-tourism, Jingdezhen has set its sights on building a national demonstration zone for the integrated development of cultural and tourism industries and creating a world-famous tourist destination featuring ceramic culture, thus embarking on a high-quality development path characterized by shaping tourism with culture and highlighting culture through tourism^[1]. The vigorous development of cultural-tourism integration facilitates the sound progress of the cultural industry. While satisfying people's spiritual and cultural needs, it drives the transformation and upgrading of the cultural-tourism industry, and injects an endless stream of vitality into the inheritance and innovation of fine traditional Chinese culture. Empowering Jingdezhen's ceramic culture with digital technology to draw public attention and enable the public to deeply appreciate its beauty has emerged as a new development direction for the cultural-tourism industry. Digital technology rejuvenates the communication of Jingdezhen's ceramic culture and creates more opportunities for the integrated development of cultural-tourism. It not only reconstructs the channels, contents and modes for the external communication of ceramic culture, but also endows traditional culture with brand-new vitality. Furthermore, digital technology provides a strong driving force for Jingdezhen to tell wonderful stories of Chinese ceramics and enhance its international influence, and also offers significant references for the international communication of fine traditional Chinese culture.

2. Digital Technology Empowering the Integrated Development of Cultural-Tourism in Jingdezhen

Digital technology has become the core driving force for the integration of cultural-tourism in Jingdezhen. With the application of VR/AR, metaverse and other technologies, the millennium-old ceramic culture has achieved a leap from static display to immersive experience. Smart cultural-tourism platforms break the boundaries of time and space and expand the global communication reach. Digital empowerment promotes the restructuring of the industrial ecology of "ceramics + cultural creativity + tourism", realizes the two-way transformation of cultural value and economic value, and enables Jingdezhen build an international benchmark for ceramic cultural-tourism.

2.1 Practical Experience and Development Trend of Cultural-Tourism Integration in Jingdezhen

In recent years, relying on Taoyangli and Sanbao Ceramic Valley as core carriers, Jingdezhen has formed a development path characterized by "Conservation as the foundation, business format empowerment, digital support, and cultural-tourism symbiosis". Adhering to the principle of original site and original appearance conservation, Taoyangli preserves the heritage context of the Imperial Kiln and the texture of ancient buildings, launches characteristic cultural activities and diversified consumption business formats, and upgrades the tourism experience by equipping AR and VR digital systems. Relying on ecological resources, Sanbao Ceramic Valley gathers creative talents, develops business forms such as ceramic art workshops and art-themed homestays, and deploys digital infrastructure including live streaming bases and ceramic metaverse, realizing the

integrated development of traditional crafts and digital technologies, as well as rural cultural-tourism and creative industries^[2].

As the application of digital technology advances, Jingdezhen's cultural and tourism industry presents a remarkable trend of in-depth transformation from the traditional resource-dependent mode to the cultural experience-driven mode. Its core development direction is reflected in the coordinated advancement of three integrated paths. In terms of cultural expression, ceramic heritage is no longer limited to static conservation. Instead, through scene reconstruction and daily life embedding, it achieves Living Inheritance, allowing the historical cultural context to integrate naturally into the urban texture and tourist experience. In terms of experience modes, supported by digital technologies such as VR/AR, metaverse and smart cultural-tourism, it breaks through physical and temporal limitations, constructs an immersive and interactive perception space, and greatly expands the breadth and depth of cultural communication. In terms of industrial ecology, taking ceramics as the core IP, it promotes the in-depth integration of cultural creativity, tourism, digital content and other diverse business formats, forms a composite development model of "ceramics +", and facilitates the two-way transformation between cultural value and economic value. Looking ahead, Jingdezhen will continue to deepen all-region cultural-tourism integration, strengthen the innovative application of digital technologies, strive to build an internationally influential benchmark for ceramic cultural-tourism, and ultimately realize the coordinated progress of heritage conservation, industrial upgrading and urban renewal.

2.2 Enlightenment of Digital Technology on the Integrated Development of Cultural-Tourism in Jingdezhen

In the current phase, China's cultural and tourism market is currently thriving, accompanied by steady growth in travel demand. New business forms such as immersive experience, cultural heritage research and study tours, and digital cultural-tourism have sprung up rapidly, and have become an important engine driving consumption and boosting local economic development. Relying on cutting-edge technologies such as 5G, big data and artificial intelligence, many regions have promoted the construction of smart cultural-tourism and established intelligent management and service systems. Among them, benchmark projects including Digital Dunhuang and Smart Mount Tai reconstruct historical and cultural scenes through digital restoration, break through the temporal and spatial communication constraints, and realize the innovative activation of cultural resources by virtue of immersive experiences, providing mature reference experience for the development of the whole industry.

The wide application of digital technology also brings important enlightenment and practical development directions for the upgrading of ceramic cultural-tourism integration in Jingdezhen. Jingdezhen can adopt technical means such as three-dimensional digital scanning, VR/AR virtual exhibition and online digital galleries to conduct digital archiving and permanent preservation of the Imperial Kiln Ruins, traditional ceramic manufacturing procedures and ceramic intangible cultural heritage crafts, promoting the transformation of cultural heritage from static collection and preservation to Living Inheritance. Meanwhile, by building a smart scenic area management platform and applying functions such as intelligent navigation and big data passenger flow monitoring, it is able to optimize the tour service process, and improve the refined operation level of scenic spots as well as tourists' experience quality^[3]. In addition, with the development of digital cultural and creative products, short-video communication and live-streaming e-commerce marketing, Jingdezhen can extend the industrial chain of cultural and tourism consumption and continuously expand the brand influence of the Porcelain Capital.

2.3 Research on the Interaction Mechanism between Cultural-Tourism Integration and Digital Communication

At present, the cultural-tourism boom has become a crucial pillar for stimulating consumption, boosting the economy, and demonstrating cultural confidence. The scale of domestic travels during holidays continues to expand, and the cultural-tourism market maintains a prosperous development momentum with robust supply and booming demand. Taking Jingdezhen as an example, the number of domestic tourists in 2025 achieved a year-on-year increase of 15.43%. New business forms such as immersive experience, intangible cultural heritage folk custom activities, museum research and study tours, and digital technology tourism have emerged rapidly. Scenic areas have enhanced their attractiveness through smart management, business form innovation and cultural empowerment. While meeting the diverse cultural-tourism needs of the public, they drive the coordinated development of catering, accommodation, cultural and creative products and other related industries, serving as an important driving force for the high-quality economic development of local regions.

Cultural-tourism integration and digital communication are not a mere summation; instead, they form a collaborative mechanism featuring mutual empowerment and two-way driving. Cultural-tourism integration lays a cultural foundation and provides high-quality content for digital communication. Relying on profound historical context, intangible cultural heritage techniques and regional characteristics, it endows digital communication with distinctive recognition and profound cultural connotations, avoiding the emptiness of online content. In turn, digital communication offers technical support and expanded dissemination channels for cultural-tourism integration. By virtue of VR/AR experience, online cloud tourism, smart operation, big data marketing and other approaches, it breaks the limitations of time and space, improves operational efficiency and tourist experience, and amplifies the brand influence of cultural-tourism. The two sectors achieve in-depth linkage in content creation, operational management, marketing promotion and other dimensions, realizing the development logic of shaping the soul with culture, empowering the industry with digital technology, and improving efficiency through communication. Jointly, they promote the sustainable development of the cultural-tourism industry toward intelligence and high quality.

3. New Modes of Digital Technology Empowering the Communication of Jingdezhen Ceramic Culture

Digital technology is reshaping the traditional communication paradigm of Jingdezhen ceramic culture. By virtue of VR/AR technologies, immersive scene experiences of kiln firing are constructed; with the help of the metaverse, a digital porcelain capital integrating virtual and real elements is established. In addition, intelligent cultural and tourism platforms realize global coverage and interactive participation of audiences. These innovative communication modes break through the limitations of physical time and space, promote the transformation of Jingdezhen ceramic culture from a regional cultural heritage to a digital intellectual property (IP), and significantly enhance the international communication efficiency and cross-cultural influence of ceramic culture.

3.1 Connotation and Characteristics of Jingdezhen Ceramic Culture

Jingdezhen ceramic culture possesses both material and spiritual connotations, serving as a vital carrier of traditional Chinese culture. On the material level, it embodies the craftsmanship wisdom of “the Integration of the Five Elements”. Produced from local raw materials through firing in high-temperature kilns, porcelain making involves intricate and elaborate procedures. Its techniques absorb the strengths of northern and southern kilns while integrating exotic elements, and

decorative patterns integrate folk customs, literature and painting with rich cultural implications. On the spiritual level, it reflects the urban ethos of “Great Wares Form the Town’s Glory, Virtue Establishes Its Foundation” and the meticulous craftsmanship spirit of artisans. The evolution of porcelain styles across dynasties mirrors the humanistic features of different eras. The official kiln regulations and folk kiln systems have formed a unique industrial order, accumulating profound historical heritage. Overall, Jingdezhen ceramic culture features four attributes: material techniques combined with spiritual connotations, inheritance continuity integrated with openness and inclusiveness, regional endowments blended with contemporary marks, and practical functions unified with artistic aesthetics. It constitutes a distinctive regional cultural system with prominent recognition and profound value deposits.

3.2 Digital Development of Jingdezhen Ceramic Culture

The traditional ceramic industry in Jingdezhen has encountered multiple practical dilemmas in the process of contemporary transformation. First of all, the problem of inheritance fault of craftsmanship is prominent. Most senior local artisans are elderly, and the loss of young practitioners is serious. The traditional inheritance mode of master-apprentice teaching, which relies on oral instruction and tacit understanding, requires a lengthy training cycle and exhibits poor adaptability, bringing the seventy-two porcelain-making procedures at risk of extinction. Secondly, chaotic phenomena have emerged in market development: low-end imitated porcelain products flood the industry, the supply of original designs is insufficient, product homogeneity is severe, and brand recognition is low, which fails to meet the aesthetic demands of the new generation of consumers. Meanwhile, the traditional manual production mode features cumbersome procedures, high costs and limited production capacity, lacking competitive advantages in the large-scale and standardized market competition and restricting the quality upgrading and industrial development of the ceramic sector^[4].

Digital technology provides a new path and practical support for breaking through the development bottlenecks of Jingdezhen ceramic culture. Relying on 3D digital filing, VR/AR panoramic recording and virtual teaching platforms, the core technological processes of porcelain making can be systematically preserved, making up for the shortcomings of traditional inheritance and alleviating the discontinuity crisis of intangible cultural heritage craftsmanship. With the help of digital modeling and intelligent design methods, ceramic creation styles can be enriched, independent research and development capacity of original designs can be strengthened, and the predicament of product homogeneity can be broken. Combined with intelligent firing and digital production lines, the production process can also be optimized, manufacturing costs reduced, and the mass production capacity of the industry improved. Digital empowerment effectively connects traditional cultural veins with the modern market, promoting the Living Inheritance and long-term industrial development of Jingdezhen ceramic culture.

3.3 Digital Technology Empowering the International Communication of Jingdezhen Ceramic Culture

Digital technology has become the core driving force for the cross-regional and cross-lingual global communication of Jingdezhen ceramic culture. Locally, relying on the ancient ceramic gene bank and three-dimensional digital collection repository platform, high-precision archiving and preservation of ceramic cultural relics have been completed. Combined with practical applications such as VR immersive theatrical performances, MR reconstruction experience of kiln sites and high-definition video production, the millennia-old porcelain-making craftsmanship procedures and ceramic artistic aesthetics are transformed into visualized digital resources, effectively breaking

geographical barriers and cultural cognitive obstacles. Meanwhile, by adopting overseas short video distribution, cross-border live streaming promotion, blockchain traceability authentication and cross-border e-commerce linkage modes, Jingdezhen reaches global audiences with youthful and interactive communication forms and expands the international coverage of ceramic culture^[5].

Digital empowerment not only achieves the permanent preservation and Living Inheritance of ceramic relics and intangible cultural heritage crafts, but also lowers the cross-cultural comprehension threshold for overseas audiences through diverse forms including online cloud exhibitions, the R&D of international digital cultural and creative products, and cross-cultural narrative creation by foreign Jingdezhen drifters, as well as enhancing audiences' interactive experience and cultural identity. With the upgrading of digital communication, Jingdezhen ceramics have gradually shifted from the static display of single craft artifacts to in-depth immersive cultural exchanges, and upgraded from the export of physical goods to the coordinated export of cultural values and urban brands, continuously improving the international communication appeal and comprehensive influence of Chinese ceramic culture worldwide.

4. Construction of Digital Communication Paths for Jingdezhen Ceramic Culture under the Background of Cultural-Tourism Integration

Against the background of cultural-tourism integration, the digital communication of Jingdezhen ceramic culture needs to construct a four-dimensional collaborative path system featuring digitalized content, interactive scenarios, matrix-based communication and industrial ecology. By promoting the transformation of ceramic cultural resources into digital assets, building immersive experience spaces relying on VR/AR and other technologies, integrating multiple platforms to form an all-round communication network, and connecting the value chain of digital content and cultural and creative development, it can realize the organic unity of cultural protection, communication efficiency and economic benefits, and help ceramic culture upgrade from a regional cultural heritage to a global digital IP.

4.1 Content Digitization

Content digitization is the foundational project for digital technology to empower the international communication of Jingdezhen ceramic culture, as well as a crucial approach for the systematic conservation of ceramic cultural resources. Through high-definition scanning and collection, three-dimensional solid modeling, and digital archiving and storage of ancient kiln relics, ceramic artifacts, traditional decorative patterns, the seventy-two handmade porcelain-making procedures, and historical documents of ceramics across dynasties in Jingdezhen, physical cultural resources can be digitally transformed, thereby constructing a large-capacity and cloud-sharable digital resource database of ceramic culture.

The mode of content digitization effectively addresses the drawbacks that traditional cultural relics are vulnerable to damage and ancient craftsmanship is difficult to be preserved, realizing the permanent storage and reusable utilization of cultural resources. Meanwhile, abundant digital materials can support the reconstruction of ceramic historical narratives and the exploration and innovation of contemporary cultural values. It provides high-quality content foundation for cross-cultural communication, academic research and textual research, as well as creative cultural and creative product development, and firmly consolidates the core content foundation for the overseas communication of Jingdezhen ceramic culture.

4.2 Scenario Interactivity

Scenario Interactivity is an important form of expression for digital technology to empower the overseas communication of Jingdezhen ceramic culture, breaking the single mode of traditional static exhibition. By constructing scenarios including cloud exhibitions of online digital museums, VR-based virtual hands-on experience of porcelain making, and the digital upgrading of Ceramic Culture-Tourism Smart Scenic Areas, a multi-dimensional immersive experience space can be established. It breaks the temporal and spatial restrictions of communication and enriches the carrier forms of cultural display.

Such interactive experience modes can transform the audience from passive viewing to active participation, effectively narrow the psychological distance between overseas audiences and ceramic culture, and reduce the barriers of cross-cultural cognition. Enhancing cultural appeal and memory depth through immersive interaction can significantly improve the communication efficiency of ceramic culture, and help Jingdezhen ceramic culture move toward international communication in a more vivid and immersive form.

4.3 Matrix-based Communication

Matrix-based communication is a crucial pathway for the digital empowerment of the international dissemination of Jingdezhen ceramic culture. Relying on diverse communication carriers such as social media platforms, cross-border short video channels and metaverse virtual scenarios, it integrates domestic and overseas communication resources to construct a multi-dimensional and three-dimensional collaborative communication system. This approach breaks through the limitations of a single communication channel and expands the international coverage of cultural dissemination.

By adapting to the viewing habits of overseas audiences, producing lightweight, multilingual and interesting narrative content, and combining cross-platform coordinated distribution with interactive communication in virtual spaces, accurate reach and efficient diffusion of cultural content can be realized. The collaborative operation of the multi-platform communication matrix can strengthen the brand symbols of ceramic culture, enhance the penetration of cross-cultural communication, facilitate Jingdezhen ceramic culture to integrate into the global communication pattern, and further boost the international influence of fine traditional Chinese culture.

4.4 Industrial Ecological Development

Industrial ecological development serves as the long-term guarantee for digital technology to empower the international communication of Jingdezhen ceramic culture. Relying on digital creative transformation, it deeply explores the historical cultural context and artistic aesthetic value of ceramics, builds a distinctive cultural IP system, and derives diversified digital cultural and creative products. This promotes the transformation and upgrading of traditional ceramic cultural resources from cultural display forms to market-oriented creative product forms, and extends the cultural industry chain.

Meanwhile, a two-way interactive closed loop is constructed relying on e-commerce platforms and offline cultural-tourism consumption scenarios, which connects the complete links of content dissemination, experience attraction and product consumption, and forms a sustainably operational industrial ecological pattern. Such measures not only realize the long-term release of the communication value of ceramic culture, but also achieve the coordinated growth of cultural value and economic value, thereby consolidating a solid industrial foundation for the international communication and long-term sound development of Jingdezhen ceramic culture.

5. Conclusion

From the perspective of cultural-tourism integration, this paper conducts a research on the digital expression of Jingdezhen ceramic culture, and explores the implementation paths and value significance of digital technologies empowering the inheritance, innovation, dissemination and promotion of ceramic culture. The research findings indicate that cultural-tourism integration and digital communication share an internal mechanism of two-way empowerment and coordinated development: the former provides the core connotation of cultural content, while the latter expands the boundary of communication and operational application. Digital technologies can break through the bottlenecks of traditional communication from four dimensions of content, scenario, communication and industry, and drive the upgrading of ceramic culture from static display to immersive living experience. Combined with the practical cases of Taoyangli and Sanbao, it is verified that the integrated model of digitalization and cultural-tourism integration is practically feasible. In the long term, it is essential to continuously deepen the integration of technology, culture and industry, optimize the digital communication system, promote the inheritance and dissemination of ceramic culture, and enhance the international communication influence of fine traditional Chinese culture.

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