Digital Innovation in Jingdezhen Ceramic Sculpture: Balancing Tradition and Modernity

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ABSTRACT

This research examines the intricate interplay between traditional craftsmanship and digital innovation in the contemporary practice of Jingdezhen ceramic sculpture. As a globally significant center for ceramic art with a profound history, Jingdezhen is at a critical juncture where its cultural heritage confronts the transformative potential of digital technologies. This transformation lies in a core conflict between the preservation of intangible cultural heritage and the drive for technological advancement. Employing a qualitative methodology grounded in in-depth interviews with master artisans and ethnographic case studies, this research examines how digital tools, such as 3D printing and computer-aided design, are being integrated into creative processes. The findings reveal that the primary barriers to integration are not technical but are deeply rooted in cultural and ideological frameworks. This situation reflects a

significant dilemma in value perception, whereby labor-intensive, process-oriented practices such as mold making are often margnialised in favor of decorative artistry, thus fostering resistance to the adoption of technological innovations. The research argues that successful integration hinges on more than mere technological adoption; it requires a fundamental recalibration of existing value systems. It proposes a framework for a symbiotic innovation strategic approach that reaffirms the cultural and artistic value of traditional craftsmanship while leveraging digital technologies to enhance precision, explore novel forms, and augment artistic expression. This study contributes a critical analysis of the challenges and opportunities facing a heritage craft in the digital age, offering implications for cultural policy, arts pedagogy, and the sustainable future of traditional craftsmanship worldwide.

Keywords: *Artistic innovation, Digital technology, Jingdezhen ceramic sculpture, Traditional craftsmanship, 3D printing*

INTRODUCTION

Digital technology has developed at an unprecedented pace, profoundly influencing artistic creation practices. Digital technology has disrupted many traditional art forms and reshaped conventional methods of creation. Routinely, artmakers or artisans incorporate 3D modeling and computer-aided design (CAD). Hence, the implementation of augmented reality (AR) or virtual reality (VR) in their works expands the possibilities for artistic expression and culture heritage preservation (Skublewska-Paszkowska, et al. 2022). These technological innovations have expanded the possibilities of art through precision and forms of expression. Art makers and artisans have also introduced entirely new creative concepts and methods that were almost unimaginable a decade ago, fundamentally reshaping the way art is conceived and produced (Zhigang & Hu, 2023).

In the field of ceramic sculpture, these digital tools have opened transformative new avenues of creation. Advanced 3D printing techniques, for instance, now allow ceramic forms to be prototyped and realized with extraordinary complexity and efficiency. Researchers have demonstrated that ceramic 3D printing can produce intricate shapes from computer-generated models, enabling rapid prototyping of one-off or small-batch pieces at lower cost. Likewise, CAD software and digital simulation platforms enable artisans to virtually refine a design with precision before any clay is shaped, reducing costly trial and error in material. Fabrication efficiency, digital design tools were used by ceramic artisans to reinterpret heritage forms in unique ways. In China's ceramic art circles, for example, designers are increasingly blending porcelain craftsmanship with computational modeling. By leveraging CAD and 3D sculpting software, they can preserve the medium's celebrated aesthetic warmth while exploring complex forms previously achieved through manual work, effectively merging the warm and simple beauty of traditional ceramic art with the limitless formal possibilities afforded by a computer (Yang, 2023). Digital fabrication tools from CNC carving machines to laser cutters thus serve as extensions of the artisan's hand, expanding creative capacity without discarding the tactile qualities of the craft.

In the digital revolution sweeping the field of ceramic sculpture craftsmanship, a critical question has emerged: how can time-honoured traditions coexist with cutting-edge innovation and even benefit from it? On one hand, custodians of Jingdezhen's century-old ceramic heritage fear that overreliance on digital processes may erode the cultural and aesthetic essence of the craft. In fact, there is a clear tension between the humanistic care inherent in traditional techniques and the machine precision brought by new tools. In the current global context, some studies warn that rapid changes in conventional ceramic practices risk disappearing if not (Fujiaqi et al.. 2025). On the other hand, technology offers the possibility of synergistic development for the revitalisation and preservation of these traditions. Chinese scholars believe that modern digital technology does not need to replace traditional craftsmanship but can

instead complement it, providing artisans with new means to express cultural narratives and complex designs without sacrificing authenticity (Shao, 2023). In short, the interaction between innovation and traditional heritage can enrich each other, but this requires a careful balance and this study is dedicated to understanding and articulating that balance.

In this context, this study focuses on Jingdezhen, China's historic 'porcelain capital,' to explore how digital innovation and traditional craftsmanship can achieve an effective balance in contemporary ceramic sculpture. We aim to assess how Jingdezhen artists and craftsmen integrate digital tools into their creative processes and how these integrations influence artistic outcomes and cultural heritage preservation. To this end, this study combines qualitative analysis: we conducted interviews with local master sculptors and emerging practitioners who utilise digital technologies such as 3D printing and CAD modelling, and analysed a series of recent ceramic sculpture works that exemplify the fusion of digital manufacturing and traditional craftsmanship. Through this mixed-methods approach, this study reveals how the Jingdezhen ceramic sculpture community seeks balance and synergy between tradition and modernity. In doing so, we aim to establish a framework for the symbiotic evolution of craftsmanship and technology—ensuring that modern digital innovations enrich rather than undermine the enduring value of Jingdezhen ceramic art in the 21st century.

PROBLEM STATEMENT

In Jingdezhen, a global center for ceramic art, traditional craftsmanship confronts the impact of digital innovation. While digital technologies like 3D printing and AI, AI offer new creative possibilities, their integration is met with significant resistance. The central problem this research addresses is why the primary barriers to digital integration in Jingdezhen ceramic sculpture are not technical, but are deeply rooted in cultural and ideological frameworks. Specifically, this dissertation investigates a 'value perception dilemma' wherein the prevailing value system, which prioritizes decorative artistry over process-based labor, systematically devalues new technologies, framing them as a threat to authenticity rather than a medium for creative expansion. This dilemma hinders the sustainable evolution of this intangible cultural heritage.

LITERATURE REVIEW

Jingdezhen City of China is very well known as the "Porcelain Capital." The city acts as the essential center for ceramic art due to its high position in over a thousand years of history. This place has continuously preserved and passed on the strong cultural heritage, especially in traditional pottery techniques and craftsmanship generation after generation. Although this was once the case, in the last few decades digital technologies have gradually been absorbed within Jingdezhen's ceramic art world. Innovations such as 3D printing, Computer Aided Design and Virtual and Augmented Reality are increasingly accessible in their economies and are thus beginning to revolutionize the foundations of ceramic production. The paper is going to explore how the advent of digital innovations in Jingdezhen has affected changes in the artistic processes, preservation of cultural traditions, and emerging forms of artistic expression within this specific form of ceramic sculpture. Additionally, it will investigate how these digital tools have subverted the traditional paradigms of craftsmanship in opening fresh avenues for artistic investigation beyond the boundaries of tradition.

The Incorporation of Digital Technologies in Ceramic Art

The use of digital technologies in ceramic art has gained tremendous momentum since the introduction of 3D printing, Computer-Aided Design (CAD), Virtual Reality (AI), and Augmented Reality (AR) have greatly expanded the possibilities of artistic expression. Improved precision and artistic versatility accorded by such technologies have changed the whole process of creativity. 3D printing allows ceramic artists to produce complex shapes that are challenging or unfeasible using conventional handcraft methods, hence providing exceptional design precision and artistic liberty (Liu et.al., 2021). CAD tools enable artists to participate in iterative design processes, allowing them to digitally revise their ideas before physical production, hence offering a risk-free setting for creative discovery (Bakker & Klijn, 2020).

Furthermore, AI and AR technologies have gained significant prominence in the design and visualization phases of ceramic production. Virtual reality enables artists to navigate their designs, evaluating spatial arrangements and proportions, which is especially beneficial for large-scale project conceptualization. Augmented Reality (AR) facilitates the accurate positioning of intricate designs on ceramic surfaces, addressing the measurement difficulties associated with conventional techniques (Wang & Liu, 2024). These technologies provide a unique combination of precision and creative possibilities that are inaccessible to traditional methods in isolation.

However, despite the allure of these benefits, there is a developing apprehension that an excessive reliance on digital tools may result in the deterioration of manual skills, which in turn threatens the cultural significance and integrity of ceramics. For instance, the works of Steinberg illustrate the extent to which digital tools, while they do enhance efficiency and precision in task completion, may deprive an artist of physical materials, thereby depleting a skill that is crucial to traditional ceramic art. This dual nature of digital technologies, which act as both a catalyst for innovation and a potential threat to tradition, necessitates a meticulous examination in future research.

Figure 1 Ceramic sculpture created by 3D printing technology - mimic the effect of stone cutting
(Source: Photographed in WEICI studio, 2023)

Challenges and Implications of Digital Innovation to Traditional Craftsmanship

Jingdezhen ceramics, with their quintessential representation of traditional Chinese ceramic artistry, face significant challenges in preserving the historical craftsmanship, given the rapidly developing digital technologies. Traditional ceramic production is by nature tied to the haptic and intuitive interaction of the artist with the material, where skills are passed down through generations (Zhu & Li, 2021). The application of digital methodologies in the creative process, such as 3D scanning and AI design, has raised many concerns about the loss of traditional skills. While 3D scanning offers the reproduction and preservation of traditional forms with great accuracy, it may replace the artisan's hands-on interaction with the material and therefore compromise the integrity of the craft inadvertently (Sun & Zhang, 2020).

Furthermore, it has also been identified by scholars such as that digital advances threaten to make Jingdezhen ceramics inauthentic. While digital technologies create the ability to mass-produce designs with great accuracy, this can also promote a loss of the distinctive features of craftsmanship that are embedded in ceramics. At issue is how to balance the need for innovation against the retention of the handmade qualities that have given Jingdezhen ceramics their cultural value.

With these issues in mind, some scholars have suggested a hybrid method in which one integrates digital technology as supporting tools rather than replacing the older methods. In these methods, artists will be able to utilize digital technologies for form generation, texturing, and scale, while maintaining all the essential qualities of traditional craftsmanship in the haptic dimensions of ceramic manufacturing (Huang & Tan, 2024). This hybrid model of innovation tends to enhance precision while preserving the artisanal process, enabling coexistence between tradition and modernity for ceramic art.

Digitalization for the Preservation of Cultural Heritage

The digitization of cultural assets has become a key issue in the study of modern art and heritage, especially regarding traditional craftsmanship. Digital technologies have proven to be extraordinarily useful for documenting, preserving, and disseminating traditional forms of art, such as ceramics. Jingdezhen ceramics, a significant cultural resource, are especially vulnerable to the influences of industrialization and commercialization, necessitating urgent preservation efforts.The emergence of digital archiving technologies, including 3D scanning and digital imaging, has facilitated the accurate documentation of traditional ceramic designs and shapes, ensuring their preservation for future generations .

However, while digital technologies do offer powerful tools for heritage preservation, they also raise significant challenges regarding the commercialization and commodification of cultural artifacts. The widespread dissemination of digital surrogates of traditional ceramic artifacts through online sales and digital galleries would have resulted in diminishing their cultural and artistic worth, transforming them from venerated cultural artifacts into mass-manufactured products (Ugiebeme et.al., 2025). This prompts significant inquiries about the veracity of digital reproductions and the risk of cultural appropriation within a globalized art market .

Consequently, while digital technologies are necessary for the preservation of cultural heritage, their use needs to be highly controlled in order to prevent the dissolution of the original cultural context and creative quality. Scholars argue that digital technologies should be seen as complementary tools in heritage preservation and not as alternatives to the tangible and intangible attributes of cultural expression.

Hybrid Innovation: Digital Integrate with Traditional Crafts

In addressing the challenges introduced by digital innovation, various scholars have embraced the concept of hybrid innovation, integrating digital technologies into the vanguard of modern creativity to expand creative liberty and cultural preservation. This hybrid practice would therefore merge the benefits of both worlds: embracing the precision and flexibility of digital technologies while maintaining the human, hands-on elements of traditional craftsmanship. Digital tools, such as 3D scanning and CAD, are applied during the preliminary stages of design and prototyping, while traditional techniques of hand carving and glazing are reserved for the final stages of production to preserve the artisanal nature of ceramic manufacturing (Zhang & Yuan,2024).

The integration between the digital and traditional methods has proven to be very effective in many contemporary ceramic studios where artisans use digital tools to create complex forms or explore new stylistic paths while keeping the essence of the workmanship alive . The application of Augmented Reality allows for securing intricate patterns in specific locations on irregularly-shaped ceramic pieces without sacrificing precision and physical skill on the part of the artisan .

The hybrid paradigm of innovation represents a promising track that the future of ceramic art may take because it allows for the continuation of cultural heritage and, at the same time, fosters creativity enabled by new technologies. The more digital tools permeate the process of creation, the more freedom artists have to experiment and express themselves, while traditional forms of art also become more relevant and viable in their own right in a globalized environment.

Summarise

The incorporation of digital technologies in Jingdezhen porcelain sculpture represents an energetic convergence of tradition and innovation. In many ways, new digital tools such as 3D printing, CAD, AI, and AR can create unparalleled precision and creative possibilities while raising problems to preserve traditional craftsmanship and the cultural integrity of the art. As technology in the digital world continues to infuse into the domain of ceramic art, one can easily find a hybrid methodology that merges digital innovation with traditional techniques. This is not only a way to preserve the handmade features of Jingdezhen ceramics but also opens up new artistic possibilities and avenues for cultural preservation. This implies that further research is called for on the balance between innovation and tradition, in order not to lose the deep cultural heritage entailed in ceramic artistry.

METHODOLOGY

Study Design

The study employs a qualitative case study design in order to explore the integration and development of advanced digital technologies like 3D scanning, virtual reality design, and augmented reality-assisted creation in the context of traditional ceramic sculpture in Jingdezhen. In doing so, the research focuses on these digital tools to carry out an in-depth investigation of how such technologies affect the reshaping of creative practices by ceramic artists, especially those artists who are in contact with well-established traditional handcrafting techniques (Figure 2). Furthermore, this approach would be rather suitable for capturing, in sensitive detail, the complexity of the way these modern technological developments impinge not only on artistic innovation but also on the preservation of cultural heritage. The qualitative design therefore allows for an in-depth exploration of how digital technologies not only

challenge but also complement traditional artistic methods, thereby setting out a new frontier of opportunities for creative expression while continuing to connect with the historical and cultural significance of ceramic craftsmanship in Jingdezhen. In this case, the study tries to help develop a wider understanding of the relation that constantly shifts between modern digital tools and craft forms on traditional lines as carried out within the artistic domain.

Figure 2. Ceramic sculpture of LIUJIANHUA
(Source:https://www.mplus.org.hk/en/collection/makers/liu-jianhua/)

Case Selection and Sampling

This study employed a purposive sampling strategy in which 10 eminent ceramic artists based in Jingdezhen were selected, each of whom actively integrates one or more of the selected digital technologies into his or her creative practice. The criterion for the sampling included stratification by age group, level of experience, and the intensity of the digital incorporation to map out differential responses effectively. The selection of the artists considered their expertise in traditional ceramic techniques and their disposition to be open to digital experimentation to explore how different levels of technology adoption can influence creative output and artisanal values.

Data Collection Methods

Semi-structured Interviews

In-depth interviews with semi-structure questions to each artist were conducted, which lasted between 60 to 90 minutes. The design of the interview differed in the following aspects: Pros and disadvantages related to the use of 3D Scanning, AI, and AR technologies at work Impact on the artistic style: how did the tools influence the preservation of traditional aesthetics? Jingdezhen Ceramics in the future.

Table 1 Interview Themes and Guiding Questions

Primary Theme	**Sub-Theme**	**Guiding Questions & Probes**
I.Technology-Specific Adoption & Evaluation	Understanding the use of digital technology	● Walk me through your workflow using digital toolsWhat specific advantages (e.g., precision, documentation) does it offer over manual methods? ● What limitations (e.g., material constraints, cost, learning curve) have you encountered?
II. Impact on Artistic Style & Aesthetic Preservation	a)Negotiating Tradition & Innovation	● How do these technologies influence your formal aesthetic choices(e.g., form complexity, surface treatment)? ● To what extent does digital mediation preserve, alter, or subvert traditional visual language (e.g., motifs, glaze effects)?
	b) Authenticity & Craft Values	● How do you reconcile "digital precision" with notions of "handmade" authenticity? ● Does technology dilute or reconfigure the tactile/material sensitivity central to Jingdezhen traditions?
III. Perceived Trajectory for Jingdezhen Ceramics	a)Future of Craft-Technology Integration	● Where do you see the most viable convergence points between digital tools and Jingdezhen's craft legacy? ● Will these technologies become core to local practice or remain niche?
	b) Cultural Sustainability	● How might digital integration impact the *transmission* of traditional skills? ● Does it offer solutions for preserving endangered techniques? ● What risks does it pose to Jingdezhen's cultural identity?
IV. Contextual Factors	Stratification Variables	**(Tailored probes based on sampling criteria)** ● For senior artists: How does your extensive traditional training shape your approach to new tools? ● For high-intensity adopters: What drives your deep technological commitment? ● Age/Experience: Contrast perspectives across generations.

An example of this would be: For instance, the artists were asked how 3D scanning helps capture the minute details of intricate clay models before mass production or changes. AI design questions asked how mock-ups of sculptures in virtual reality allowed the artist to experiment with forms and sizes without

immediate material commitment and therefore, offered a risk-free environment for creative exploration. Artmakers mentioned that in AR-assisted creation, overlays in AR allow for the alignment of complex patterns onto ceramic surfaces far more easily than would be traditionally possible, especially in cases where forms might be irregular.

Studio Observations

Non-participant observations were carried out in the studios of various artists over several days for each artist in order to contextualize and support the data from interviews. Particular attention in such observations was given to:

Stages of creation in which the digital tools were used: Observations noted how 3D scanning was mainly used in the initial creation stages of making the digital replicas of clay prototypes for manipulation on the computer prior to physical execution. The added advantage to this is the ability to maintain a basic design while testing the variations digitally.

Integration of AI design into the conceptual phase: Most of the artists used virtual reality in the creation of immersive representations of big ceramic installations. This way, they could easily walk around the virtual models of their designs, analyzing possible flaws or improvements in the form, and how to spatially arrange them before physically starting the creative process.

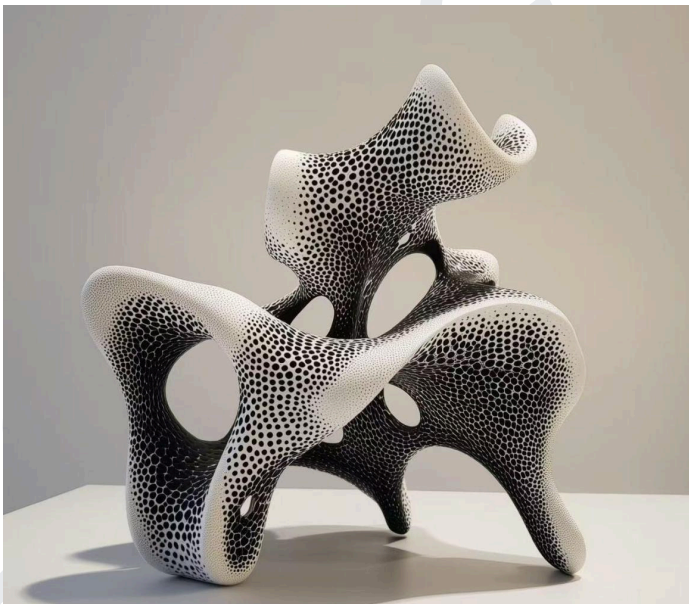

Figure 3. Ceramic sculpture with AI
(Source: FUJIAQI, 2024)

Use of AR-assisted design for precision in pattern placement: Overlays in AR allowed the artists to conceive of, and then utilize, very articulate patterns, placing these exactly on the ceramics. It projects the design directly onto the surface of the ceramic so real-time alignment adjustments can be made with ease, which traditional methods would achieve only by extensive manual measuring and alignment.

During such observations, the field notes pointed out how digital precision through 3D scanning and AR complemented the artisans' manual dexterity, thus creating an even more complex interplay of digital and manual processes that keeps desirable tactility in Jingdezhen ceramics.

Artifact Analysis

A total of 30 ceramic pieces were analyzed for comparatives, 3 from each artist, comparing the digitally enhanced works with purely handmade pieces to see the impact of digital technologies on the following: Complexity and precision of the design: the 3D-scanned designs were very faithful to all the intricate details of the original model, while AR-guided pieces showed an excellent integration of complicated patterns, almost impossible for hand achievement.

Innovation of form: The AI-based designs are very much bolder in form, unconventional forms that artists might not attempt without first visualizing them virtually. Adherence to traditional aesthetics: Indeed, even while digital tools have enabled new forms, artists were found to make a conscious effort towards striking a balance by adhering to traditional color palettes, glazes, and forms representative of Jingdezhen heritage.

Artifact evaluation was based on a systematic assessment, where qualitative descriptors were assigned to considerations such as form consistency, pattern alignment, and stylistic integrity. Preliminary results show that digital media artists demonstrate higher degrees of innovation while keeping in step with the traditional Jingdezhen aesthetics.

Data Analysis

Interview and observation data were subjected to a thematic analysis using NVivo software. The thematic coding showed a recurrence of patterns occurring in three major domains: More Creative Freedom: Most of the artists considered that AI and 3D scanning provided them with a 'safe ground' for experimenting, even with unusual forms and alterations, without jeopardizing loss of material, and hence acquiring creative confidence.

Conservation of Traditional Techniques vs. Transformation: Indeed, digital tools opened new frontiers, yet this made many artists feel the strong concern that increased reliance on technology overshadows the contact and intuitive elements so important for Jingdezhen ceramic-making; they noted, however, that AR-assisted designs helped to maintain traditional craftsmanship's precision without sacrificing the hands-on approach.

Sustainability of Artistic Legacy: One key point that kept arising was the issue of the sustainability of cultural heritage in the light of technological adoption. The artists said that technologies like AR and 3D scanning had not only increased their productivity but also let them document and preserve the complex patterns and shapes that would be hard to replicate or pass on by conventional means.

Cross-Referencing with Artifact Analysis

The insights of the thematic analysis were cross-validated with observations from the artifact analysis. The results showed that 3D scanning and AI were primarily instrumental in enhancing the complexity of designs and the accuracy of traditional patterns, while AI helped artists conceptualize

large-format projects. The digital twins created with 3D scanning let the artists retain detailed prototypes, while AR allowed them to apply traditional patterns in a consistent manner on complex forms.

Preliminary Results and Implications

Preliminary results show that advanced digital technologies have enhanced artistic flexibility, precision, and the potential for the preservation of Jingdezhen ceramics. This not only promotes creative experimentation with new possibilities but also enables conservation of traditional components within a modern framework. At the same time, the results place in sharp relief the need to manage technology use critically so as not to make it replace rather than complement traditional craftsmanship.

FINDINGS

The next section attempts a close analysis of the interview data, studio observations, and artifact assessments along three thematic domains: extended creative possibility, the interplay between digital innovation and traditional technique, and questions regarding sustainability in artistic heritage. The thematic analysis, cross-checked against the findings from artifact assessment, depicts how digital technology has enabled a greater potential for artistic expression as well as pertinent challenges related to cultural preservation in the Jingdezhen ceramic tradition.

More Freedom of Artistic Expression

The introduction of digital tools like 3D scanning, AI, and VR technologies has significantly facilitated the artistic expression of Jingdezhen ceramic artists. Quite apparently, from responses gathered during interviews, digital technologies create a "sandbox" where the artists can experiment, particularly with unconventional forms and complicated designs. Artists felt that the tools using AI in particular allowed them to conceptualize large-scale installations and play with form, structure, and spatial arrangements well before the beginning of physical creation. This was further borne out in observations from the studio sessions, where artists were using AI to mock up complicated forms as a means to iteratively refine in a low-risk, high-precision environment.

The analysis of the artifacts corroborates the above findings, since the digital-assisted pieces were more varied and complex in form than their handmade counterparts. This level of precision and flexibility would have been difficult without the intervention of digital technologies, according to the artists, and reinforces the view that digital technologies are the keys to surmounting technical limitations set by traditional practices. These tools extend artistic possibility and, at the same time, increase artists' confidence in exploring new forms and scales with clear visions of possible outcomes.

Innovation and Tradition

In many ways, this second theme speaks more about how digital technology affects the preservation of traditional craftsmanship. Interview data on the use of digital tools in the development of traditional aesthetics showed that artists have developed quite different attitudes toward the given potentials of technologies, documenting and reproducing delicate patterns with accuracy. Other responses indicated a different attitude: it is apprehended that technology even overshadows the artisanal skills constituent to Jingdezhen ceramics. In particular, artists highlighted how 3D scanning enables very high-fidelity replicas

of traditional designs, thus creating digital archives that guarantee the continuity of traditional motifs and forms.

Artifact analysis only reinforced these interpretations. Products produced through AR-driven template placement showed an unusual clarity and consistency, particularly in complex patterns on uneven ware. Studio workspaces reported that the AR overlay assisted in real-time adjustments that were previously impossible to achieve using any other methods. This demonstrated a subtle balance in which technology complements rather than replaces traditional craftsmanship (Siliutina, 2024). Here, the accuracy was improved but the creative process still maintained the human touch. The hybrid approaches seem to be supporting the balanced integration of digital precision and artisanal tactility.

In these regards, however, artists commented on a developing trend in which an increasing reliance on digital tools might, in fact, slowly erode the very tactile skills historically entailed in Jingdezhen ceramics. The interviews indicated a shared understanding that technology could make traditional art forms commodified and perhaps water down its cultural and manual value. This is the theme: the artists' painful balancing between using digital innovation to augment and not replace their more traditional methods.

Sustainability and the Heritage of Jingdezhen Ceramics

The third thematic domain gives importance to sustainability, both environmental and cultural aspects-becoming a major component in the integration process of digital technologies with Jingdezhen ceramics. From interviews, artists expressed that with digital tools, material waste and impacts on the environment when prototyping in digital form are reduced before making the actual object of work. This allows designers to test different versions virtually, thus optimizing their use of resources and thus lessening their carbon footprint in the art-making process. Artifact analysis helped confirm this; artefacts made through iterative digital prototyping showed undoubtedly lesser material wastage than those works traditionally crafted (Li, 2025).

Besides, digital technology formed a way to enable cultural sustainability because it provided the possibility of creating a digital repository for traditional patterns, forms, and techniques. Such digital repositories assure not only the preservation of heritage for future generations but also quick trans-generational transmission of skills. The voices of the artists themselves, found in the interviews, have brought out a common sense of this digital repository ensuring the continuation of the legacy of Jingdezhen ceramics amidst rapidly digitized lives.

On the one hand, while digital dissemination gives work higher visibility and access to a larger audience, artists voiced concerns about the commodification and even possible misappropriation of their works. The observations suggest that although digital platforms allow a wider diffusion of artists' voices, they also require proper management of intellectual property to safeguard the cultural integrity of Jingdezhen ceramics.

CONCLUSION

This research outlines the transformative potential of digital technologies in the reordering of the ceramic sculpture domain in Jingdezhen, while paying particular attention to the interplaying dynamics of tradition and modernity. By including 3D scanning, virtual, and augmented reality in their contemporary

practice, Jingdezhen's artists are expanding their creative fields of action into new dimensions. These technologies not only push the boundaries of artistic expression but also contribute to the reimagining of key processes involved in both the preservation and innovation of this ancient art form

These conclusions expose a dual reality in this study: digital technologies, on one hand, allow greater precision in artistic execution, reduction in material waste, and new creative venues; on the other hand, they pose serious challenges to preserving the traditional, tacky skills and cultural authenticity that have long been constitutive of Jingdezhen ceramics' identity. While digital tools increase technical capabilities, their integration threatens to overwhelm traditional craftsmanship that has defined the region's ceramics for centuries.

Maiden against such challenges, the study proposes a hybrid approach as perhaps the most promising direction in prospect. It is a vision where digital technologies are integrated with traditional techniques in a balanced and harmonious way, ensuring that the precision and efficiency of the digital tools enhance but do not replace the artisanal qualities of the manual craftsmanship. Such a balance is necessary for maintaining the cultural significance of Jingdezhen ceramics while simultaneously allowing the art form to evolve in response to a globalized, technology-driven audience's needs and expectations.

Furthermore, the study emphasizes that one of the most important means of securing this heritage's future is by creating digital archives of traditional ceramic patterns and forms. The elements can be digitally archived to preserve and share the wide repository of knowledge embedded in Jingdezhen's ceramic traditions for the generations.

In conclusion, the research underlines the careful and critical attitude towards digital technologies' inclusion in the artistic field of ceramics. While allowing broad scope for novelty with the help of digital tools, their use should be carefully regulated to protect the cultural identity of Jingdezhen ceramics. By positioning technology as complementary, rather than a replacement for tradition, Jingdezhen ceramics can continue to thrive and serve as a bridge between the rich cultural legacy of the past and the dynamic possibilities of the future within the ever-changing field of contemporary art.

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