

Cultural Preservation and Product Design Innovation in the Digital Era: Challenges and Opportunities

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Abstract: The relationship between design and culture has undergone significant transformations over the past century. The digital era presents a fascinating perspective between cultural preservation and product design innovation. This study investigated the interplay between cultural preservation and product design innovation in the digital era. Participants (n=45) were recruited in Shanxi Province, China, with a mix of demographics and varying levels of craftsmanship experience. The study employed a mixed methods approach, combining quantitative and qualitative data collection methods. The findings showed positive sentiment towards traditional cultural elements incorporated into modern products. Participants expressed a desire for products that connect them to their cultural heritage while maintaining a preference for subtle integration and everyday use. Cultural heritage specialists emphasized the importance of balancing tradition and innovation while ensuring respectful modernization and incorporating storytelling. The case study analysis of the "Heaven and People in One" exhibition showcased the potential of collaboration in fostering innovative and successful product design that celebrates cultural heritage. Overall, this study suggests a growing interest in products that bridge the gap between cultural preservation and contemporary design.

Keywords: Digital Era, Cultural Preservation, Shaanxi, Craftmanship, Traditional Culture and Products.

1. INTRODUCTION

The digital era presents a fascinating perspective between cultural preservation and product design innovation. The emergence of the digital age has fundamentally reshaped how information and knowledge are produced, disseminated, utilized, and reused within society. To remain relevant in this evolving "knowledge society," cultural heritage institutions are actively investing in digital preservation methodologies, systems, and technologies (Evens & Hautekeete, 2011; Ross & Hedstrom, 2005). Digital preservation encompasses a comprehensive set of management processes and activities designed to guarantee enduring access to digital information, encompassing both scientific and cultural heritage materials.

These dynamic forces, such as technological obsolescence, necessitate viewing digital preservation as a continuous and evolving endeavour (Pennock, 2023). Interdisciplinary approaches have become the norm in heritage preservation projects. However, a critical dilemma persists: the choice between retaining a heritage site's original functionality or transforming it into a symbolic monument (de Jonge, 2017). To navigate these complexities, novel research and problem-solving methods are needed to identify patterns, relationships, and the attributes that contribute to meaning-making for stakeholders and the local community (Dorst, 2015). This is where design thinking plays a crucial role. Beyond identifying shared themes through research, design thinking offers a framework for conceptualizing innovative tools that address these critical conflicts. In essence, design reasoning becomes an essential tool within the field of preservation. A critical aspect of revitalizing heritage spaces lies in ensuring their economic viability. Financial sustainability safeguards these spaces, maintains their relevance, and positions them within the broader framework of sustainable development (de Jonge, 2017). However, achieving socio-economic revival necessitates a nuanced understanding of current modes of heritage interaction and the associated discourses. The prevailing model, particularly in remote areas, often relies on passive consumption of heritage through complex texts, academic literature, and videos. This approach fails to resonate with audiences in a fast-paced information age, ultimately leading to a decline in cultural value and economic benefits. Here, design thinking offers a vital solution. Design practices can provide innovative tools and technologies that not only enhance the relevance of these spaces for future generations but also contribute to tourism well-being (Dollani et al., 2016). The digital transformation of cultural heritage collections presents a well-recognized challenge in collection management: content selection for digitization (Evens & Hautekeete, 2011; Pennock, 2023). Resource constraints, both financial and organizational, necessitate a selective approach to preservation efforts. The growing reliance on digitization within cultural heritage institutions necessitates a critical re-evaluation of its limitations (Gambell, 2022). The inherent fragility of digital media presents a significant challenge. Firstly, digital carriers possess a finite lifespan, often referred to as a "short shelf life" (Edmondson & Edmonson, 2004). Secondly, the rapid obsolescence of computer hardware and software poses a constant threat to accessibility. As Tzavara and Vassiliadis aptly points out, the notion of permanent digital storage remains elusive (Tzavara & Vassiliadis, 2024). Consequently, a continuous focus on evolving methods, infrastructure, and practices for safeguarding digital

content is paramount. The development of tools to address heritage preservation conflicts necessitates a deep understanding of visual culture. Watson and Waterton explore the power of visual elements and their significance in cultural heritage (Watson & Waterton, 2010). They argue that the materiality of heritage is embodied in the selection, beautification, and representation of objects and artifacts that come to symbolize a collective identity. This process underscores the importance of curators viewing participants as "active subjects" rather than "passive onlookers" (Ginzarly & Srouf, 2021; Watson & Waterton, 2010). According to Xi, authenticity in craftsmanship remains a core value for new products drawing inspiration from traditional cultural heritage or historical masterpieces (Xi, 2024). However, a concern exists within China's design education system. There appears to be a tendency to view the original works of artisans and craftspeople solely as a broad source of design inspiration (Xue, 2019). This approach overlooks the potential benefits of in-depth study that could strengthen these works by integrating the artisans' knowledge with new design technologies. According to Hui and Wang research and development focused on specific aspects of traditional culture can inform the design of cultural and creative products (Hui, 2021; Wang, 2023). By incorporating traditional elements in form, colour, and material selection, designers can achieve novel visual effects imbued with strong cultural character. Cultural and creative product design inherently reflects multiculturalism, serving as a tangible expression of human knowledge, wisdom, contemporary aesthetics, and the interplay of various cultures within a specific industry. The integration of traditional cultural elements offers a twofold benefit: it fosters the growth of the cultural and creative product design industry, and enriches the cultural significance of the products themselves, ultimately driving design innovation. As society continues its rapid development, the cultural and creative product design industry has matured significantly. China's creative cultural industries are experiencing a period of rapid growth, emerging as a key driver of the nation's economic and environmental sustainability in the 21st century (Flew et al., 2019). Shaanxi Province, a cradle of Chinese civilization, boasts a rich cultural heritage with folk arts and crafts flourishing for over 4,000 years. The enduring strength of Shaanxi's folk artists, craftspeople, and designers lies in their unwavering commitment to innovation, as evidenced by their continuous stream of creative endeavours. This intergenerational cycle of creativity reflects the collective human experience across time and space. As individual artists revisit, reinterpret, and build upon centuries-old cultural themes, they infuse their creations with a unique sense of wonder and joy, transcending the mere functional aspects of their work. Over time,

established aesthetic principles and a shared understanding of beauty create a framework that provides individuals with a sense of perspective and meaning in their lives.

1.1 Rationale and Objective

The digital era presents both challenges and opportunities for cultural preservation efforts. While traditional cultural elements can be effectively disseminated through innovative product design, concerns exist regarding homogenization and the dilution of cultural essence. This study investigates this dynamic interplay between cultural preservation and product design innovation. Our main objective is to explore how cultural heritage can be authentically integrated into contemporary product design, fostering appreciation for tradition while simultaneously propelling the cultural and creative industries forward.

2. METHODS

2.1 Research Design and Participants

Our study was conducted in Shaanxi Province, China and adopted a mixed methods approach to investigate the interplay between cultural preservation and product design innovation in the digital era. This approach combined qualitative and quantitative data collection methods to gain a well-rounded understanding of the challenges and opportunities at hand. Our study recruited participants in Shanxi Province, China. A random sample of 50 participants was selected to ensure representativeness. Interestingly, some participants had prior experience engaging with cultural innovation in product design. Notably, a portion of this group participated in the "*Heaven and People in One, Generation by Generation – Shaanxi Culture and Design Innovation*" exhibition held in Hong Kong in May 2015. This shared experience, focused on the very themes explored in our study, offered a valuable foundation for discussion.

2.2 Qualitative and Quantitative Data Collection Techniques

In the first phase of our study, we administered a quantitative survey to gather data from participants in Shanxi Province, China. The survey consisted of 14 questions, employing a combination of Likert scale (1-5) and multiple-choice response formats. To ensure informed participation, an information sheet detailing the study's objectives and participant rights was provided to all participants before they began the survey. The online survey, hosted on a secure platform, took approximately 15 minutes to

complete. Out of the 50 surveys distributed, we received a response rate of 45, yielding a valuable data set for analysis. Following survey completion, participants were debriefed on the study's purpose and received a thank you note acknowledging their contribution. It is important to note that participation was entirely voluntary, and individuals had the right to withdraw at any point. To calculate overall participant sentiment on each survey item, we employed the average or mean score of the responses received. In the second phase of our study, we held individual interviews with a select group of 10-15 participants, each lasting approximately 20-30 minutes. The interviews followed a semi-structured format with a core set of 10 questions designed to explore participants' perspectives on integrating traditional cultural elements into contemporary product design. These interviews were conducted with three distinct groups: cultural heritage specialists, product designers, and local consumers. This approach allowed us to capture a diverse range of perspectives on the interplay between cultural preservation and product design innovation. To further understand consumer preferences, we facilitated focus groups with local residents. These interactive sessions provided a platform for participants to discuss existing designs that incorporate Shanxi's cultural heritage and offer feedback on potential design elements that would resonate with them. The focus groups fostered lively discussions and yielded valuable information about consumer preferences and the perceived effectiveness of various design approaches.

We examined the *"Heaven and People in One, Generation by Generation – Shaanxi Culture and Design Innovation"* exhibition held in Hong Kong in May 2015 to enrich our understanding of collaboration and exchange within the cultural and creative industries. This exhibition served as a microcosm of the potential benefits of such collaborations. Its objective was to promote the development of Chinese culture and design education that resonated with our own research focus. By showcasing spectacular works from Shanxi's design industries, design education sectors, and the art world, the exhibition aimed to elevate the value of these often-underestimated cultural endeavours. By analysing the exhibition's strengths and the collaborative works it presented, we were able to develop a robust framework to guide future research on fostering stronger collaboration and exchange within these creative fields.

2.3 Data Analysis

In statistical analysis of quantitative data, we used the GraphPad Prism version 9.5.1 to obtain descriptive statistics and inferential statistics. All analyses were conducted at a statistical significance of 5% ($p < 0.05$).

Descriptive statistics involved means, standard deviations, frequencies and percentages. Qualitative analysis involved coding and thematic analysis to identify the dominant and recurring themes associated with cultural preservation and digital design of cultural products.

3. RESULTS

The study recruited a total of 45 participants. In terms of age distribution, the largest group fell within the 25–34-year-old category (33.3%), followed by 18–24-year-olds (17.8%), 35–44-year-olds (26.7%), 45–54-year-olds (13.3%), and those 55 and over (8.9%). Gender distribution was nearly equal with 65% male and 35% female participants (See Figure 1).

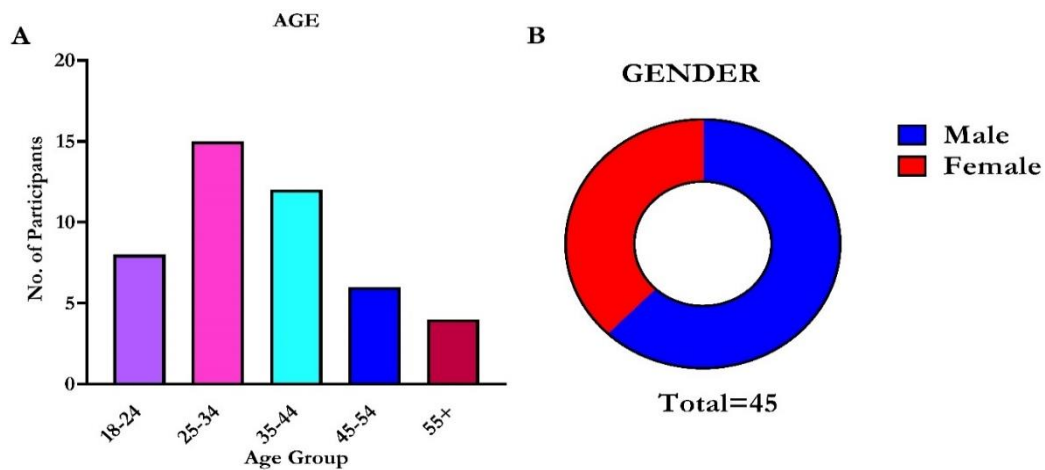


Figure 1: Analysis of the Demographic Profile of Participants Selected on Age Categories and Gender

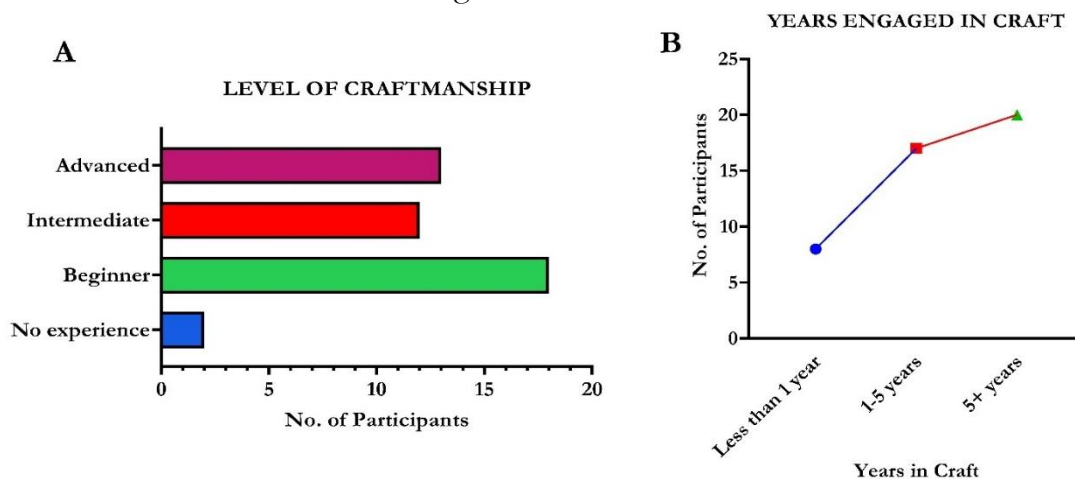


Figure 2: Column Charts distribution (A) and a Line Chart Distribution (B) of the Participants Based on Level of Craftsmanship and Years Engaged in Craft.

In reference to experience level in craftsmanship, 40% were beginners,

followed by 26.7% intermediate, 11.1% advanced, and 22.2% with no experience. When considering years engaged in craft (applicable to beginners and intermediate crafters only), the largest group (37.8%) had 1-5 years of experience, followed by those with less than a year (17.8%) and those with 5+ years (44.4%) (see Figure 2).

SURVEY RESPONSES ON TRADITIONAL CULTURAL ELEMENTS IN PRODUCTS

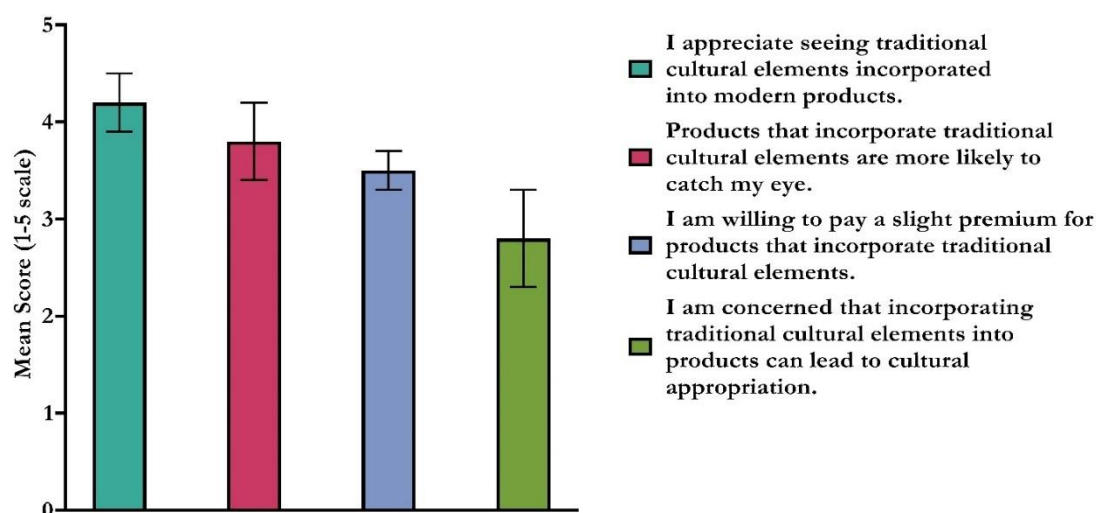


Figure 3: Survey Responses on Traditional Cultural Elements in Products. responses were Measured on a Likert scale of 1 (Strongly Disagree) to 5 (Strongly agree). SD Refers to Standard Deviation.

In Figure 3, respondents expressed a positive sentiment towards traditional cultural elements in modern products ($M = 4.2$, $SD = 0.3$ for appreciating such elements and $M = 3.8$, $SD = 0.4$ for being attracted to them). They were also willing to pay a slight premium for these products ($M = 3.5$, $SD = 0.2$). However, there was a moderate concern regarding potential cultural appropriation ($M = 2.8$, $SD = 0.5$) when incorporating these elements.

Frequency of Purchasing Cultural Products

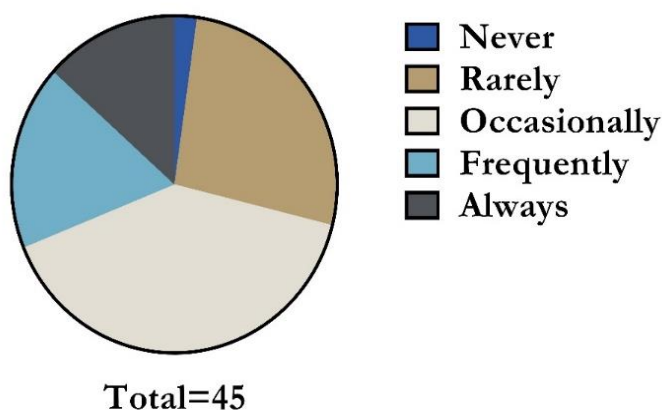


Figure 4: Participants Self-Reported Frequencies of Purchasing Cultural Products.

In Figure 4, the survey results (n=45) revealed a range of purchasing habits regarding cultural products. Nearly half of the participants (40%) indicated occasional purchases, while a quarter (26.7%) rarely bought them. Less frequent purchases were reported with 11.1% never buying and 17.8% buying occasionally. Notably, a small segment (4.4%) reported always purchasing cultural products.

Table 1: Correlation Between Purchasing Habits and Attitudes (n=45)

Variable	Correlation (r) with "Preference for Cultural Products"
Frequency of Purchasing Cultural Products	0.56*
Willingness to Pay Premium for Cultural Products	0.42**
Importance of Authenticity	0.68**

Note: * $p < .05$. ** $p < .01$

In Table 1, examining the relationship between participants' cultural product preferences and their purchasing habits revealed a positive correlation (n=45). Those who indicated a stronger preference for cultural products (as measured by the survey) also tended to purchase them more frequently ($r = 0.56$, $p < .05$). Similarly, a positive correlation emerged between a willingness to pay a premium for cultural products and a preference for them ($r = 0.42$, $p < .01$). The strongest correlation, however, was observed between the importance of authenticity in cultural products and a preference for them ($r = 0.68$, $p < .01$).

Table 2: Cultural Heritage Specialists - Integration of Traditional Elements

Theme	Description	Quotes
Balancing Tradition and Innovation	Specialists emphasized the importance of maintaining the essence of cultural elements while adapting them for contemporary audiences.	"The challenge is to find a balance. We can't simply copy the past, but the core cultural value should be preserved."
Authenticity and Storytelling:	Specialists highlighted the importance of using traditional elements authentically and incorporating storytelling to connect with consumers.	"People don't just want products; they want stories. Cultural elements can be a powerful way to tell the story behind the product."
Respectful Modernization	Specialists emphasized the need for respectful modernization, ensuring the adaptation aligns with the original cultural meaning.	"We need to be thoughtful about how we modernize. We don't want to disrespect the tradition or lose its cultural significance."

In Table 2, cultural heritage specialists stressed balancing tradition with innovation (e.g., "*find a balance*"). They advocated for maintaining the core

cultural value while adapting elements for modern audiences. Authenticity and storytelling were seen as crucial, with one specialist noting, "*People don't just want products; they want stories.*" Respectful modernization was emphasized to ensure adaptations align with the original cultural meaning.

Table 3: Product Designers - Challenges and Opportunities in Design Integration

Theme	Description	Quotes
Technical Challenges	Designers discussed the technical challenges of incorporating some traditional elements into modern product design.	"Some traditional techniques are complex and time-consuming. We need to find ways to translate them into a mass-produced setting."
Aesthetics and User Experience	Designers emphasized the need to consider user experience and ensure the cultural elements enhance the overall aesthetics of the product.	"Cultural elements shouldn't overwhelm the design. They should complement it and create a positive user experience."
Market Research and Consumer Preferences	Designers highlighted the importance of market research to understand consumer preferences for cultural elements in product design.	"Not all cultural elements resonate with everyone. We need to do our research to understand what appeals to the target audience."

In Table 3, product designers acknowledged challenges in incorporating traditional elements, citing technical complexities (e.g., "*complex and time-consuming techniques*"). They stressed the importance of aesthetics and user experience, ensuring cultural elements complement the design (e.g., "*not overwhelm the design*"). Market research was seen as vital to understand consumer preferences for such elements in product design.

Table 4: Local Consumers - Preferences and Desires for Cultural Products

Theme	Description	Quotes
Cultural Connection and Identity	Consumers expressed a desire for products that connect them to their cultural heritage and foster a sense of identity.	"I want products that remind me of my roots and where I come from. Cultural elements can be a powerful way to achieve that."
Subtlety and Everyday Use	Consumers expressed a preference for products that subtly incorporate cultural elements and are suitable for everyday use.	"I don't want something that looks like a costume. The cultural elements should be integrated seamlessly into the design."
Quality and Fair Production	Consumers emphasized the importance of product quality and ensuring fair production practices when purchasing culturally-inspired products.	"I'm willing to pay more for cultural products, but they need to be well-made and ethically produced."

In Table 4, Local consumers desired products that subtly referenced their cultural heritage (e.g., "*not look like a costume*"), fostering a connection to their identity (e.g., "*remind me of my roots*"). Everyday use was important, with quality and fair production practices influencing purchase decisions (e.g., "*well-made and ethically produced*").

Table 5: Case Study Analysis - "Heaven and People in One" Exhibition

Theme	Description	Analysis
Collaboration and Exchange	The exhibition brought together various stakeholders (designers, artists, cultural institutions) fostering collaboration and exchange of ideas.	This collaborative approach led to innovative and successful product designs that celebrated cultural heritage.
Education and Public Engagement	The exhibition served as an educational platform, showcasing traditional cultural elements and sparking public interest in cultural preservation efforts.	Increased public appreciation for cultural heritage can lead to greater support for its preservation and continuation.
Highlighting Design Potential	The exhibition showcased the potential of cultural heritage to inspire contemporary design and elevate the value of cultural products.	By demonstrating the economic viability of culturally-inspired design, the exhibition encouraged further exploration in this area.
Challenges and Considerations	While the exhibition highlighted the benefits of collaboration, challenges like intellectual property rights and ensuring fair compensation for cultural knowledge holders might need to be addressed in future endeavours.	Addressing these challenges is crucial for ensuring the sustainability and ethical practices within such collaborative design initiatives.

In Table 5, the "*Heaven and People in One*" exhibition exemplified the power of collaboration (designers, artists, institutions) in fostering creative exchange. This approach yielded innovative, heritage-celebrating product designs. The exhibition also served as a public education platform, showcasing cultural elements and igniting interest in preservation efforts. By highlighting the design potential of cultural heritage and the economic viability of culturally-inspired products, the exhibition encouraged further exploration in this area. However, future endeavours may need to address challenges like intellectual property rights and fair compensation for cultural knowledge holders to ensure the sustainability and ethical practices

within such collaborations.

4. DISCUSSION

Our findings revealed a generally positive sentiment towards traditional cultural elements incorporated into modern products. Participants expressed a desire for products that connect them to their cultural heritage while maintaining a preference for subtle integration and everyday use. Interestingly, a positive correlation emerged between a preference for cultural products and both the frequency of purchasing them and a willingness to pay a premium for them. Our study proposes that cultural and creative products have a unique capacity to champion and promote China's rich traditional culture. These products serve as cultural carriers, seamlessly integrating heritage, creativity, and functionality. Through interaction with these products, users can cultivate a subtle yet profound sense of cultural identity. The design of cultural and creative products leverages Chinese traditional culture as a foundation. Designers organically combine traditional elements with innovative thinking, cutting-edge techniques, and holistic design principles that consider both the cultural connotation and inherent characteristics of the tradition. This approach ensures that the form, pattern, and colour palettes of these products resonate with the public's aesthetic sensibilities and cater to their spiritual needs. Ultimately, cultural and creative products achieve a high degree of unification between practicality, artistry, and cultural significance. Our thematic analysis of the interviews and focus groups yielded valuable insights from each participant group. Cultural heritage specialists emphasized the importance of balancing tradition and innovation while ensuring respectful modernization and incorporating storytelling. Product designers acknowledged technical challenges but highlighted the importance of aesthetics, user experience, and market research to understand consumer preferences. Local consumers desired products that subtly referenced their cultural heritage and fostered a sense of identity, with quality, fair production practices, and everyday use being important considerations. Previous studies have suggested that Cultural and creative products play a vital role in promoting the inheritance and dissemination of traditional culture. These products often incorporate diverse cultural elements, effectively popularizing and spreading cultural knowledge among broader audiences (An, 2021; Park, 2022). In the context of Chinese culture, the application of traditional elements within cultural and creative

products holds particular significance. This approach not only fosters the innovative development of these traditions but also enriches the cultural meaning embedded within the products themselves. China's millennia-long history serves as a treasure trove of inspiration for the nation's cultural and creative industries. Leveraging traditional cultural elements within product design fosters innovation and breathes new life into these time-honoured traditions (Chen et al., 2021; Ng et al., 2022). Effectively integrating traditional culture necessitates a design approach imbued with cultural awareness and a sense of national identity. Furthermore, incorporating aesthetic principles ensures the products' visual appeal, ultimately enhancing their potential to compete in the global marketplace.

Chinese traditional graphic patterns boast a rich and enduring history, encompassing a diverse range of forms. These patterns reveal a fascinating evolution, from the pure and simple geometric patterns of primitive societies, to the bold and imposing animal motifs of slave societies, and culminating in the flourishing plant patterns that emerged during feudal societies. These patterns serve not only as a visual testament to the lifestyles of the Chinese nation across various historical periods but also as a reflection of the shifting aesthetic sensibilities and interests of the people throughout time. The application of this rich graphic culture in the design of cultural products presents a unique opportunity. By drawing inspiration from the vast array of traditional patterns, designers can tailor their creations to express the specific themes and contemporary significance associated with different products and their diverse uses. Product modelling in the realm of cultural and creative products necessitates a thoughtful approach to traditional cultural elements. Designers must engage in a process of distillation, meticulously extracting and refining these elements to ensure their effective integration within the product. This process involves drawing inspiration from the forms and functionalities of traditional utensils. By adapting these time-tested designs to the practical realities of modern life, designers can ensure the continued relevance of these cultural touchstones. Furthermore, incorporating traditional decorative techniques alongside contemporary design principles allows for the creation of truly unique and culturally resonant product models. A critical aspect of design practice involves acknowledging users as cultural beings and integrating cultural factors into the design process (Gupta et al., 2024). Design is inherently intertwined with the user's cultural context; it does not exist in a void devoid of cultural influence. Users are not merely physical and biological entities, but rather socio-cultural beings shaped by their cultural background (De Souza & Dejean, 1999). However,

a challenge remains: effectively encoding cultural phenomena into design solutions may be more complex than incorporating physical and cognitive factors. Cultural considerations in design play a crucial role in leveraging culture itself as a wellspring of innovation beyond ensuring technological appropriateness for a specific social context. We propose that by integrating cultural factors, designers can potentially unlock a wider range of design concepts, thereby fostering product innovation. This innovation, grounded in the user's socio-cultural context, can ultimately lead to greater product acceptance and user satisfaction. These observations highlight a key principle: designers who prioritize user intelligence over technological prowess are more likely to generate impactful innovations. As Szanto argues, innovation stems from human needs, not solely from enabling technologies (Szanto, 2001). The designer's core role lies in mediating between technology and cultural context, while also infusing technology with ethical considerations and aesthetic sensibilities. In this way, designers act as catalysts for cultural change. However, it's important to acknowledge that product innovation can have unintended consequences, potentially leading to disruptions in social values, restructured social frameworks, and the introduction of new socioeconomic constraints. Our case study analysis of the "*Heaven and People in One*" exhibition showcased the potential of collaboration in fostering innovative and successful product design that celebrates cultural heritage. The exhibition also served as an educational platform and highlighted the design potential of cultural heritage. However, challenges like intellectual property rights and fair compensation for cultural knowledge holders need to be addressed in future endeavours to ensure the sustainability and ethical practices within such collaborations. China's ancestors developed a unique colour theory known as the "*Five Colour View*" through centuries of observing natural phenomena, from the vibrant hues of sunrise and sunset to the changing colours of the seasons. This theory posits red, blue, yellow, white, and black as the fundamental colours of the universe. Influenced by this traditional system of colour recognition, a distinct aesthetic emerged. Modern cultural and creative designers can benefit from a nuanced understanding of these traditional colours and their symbolic meanings.

By employing these colours flexibly within a framework of contemporary aesthetics, designers can achieve a harmonious blend of tradition and modernity. This approach allows them to develop a colour language that is not only aesthetically pleasing but also aligns perfectly with the inherent qualities of the cultural and creative products they design. Traditional Chinese culture offers a treasure trove of artistic expressions

that serve as rich source materials for contemporary cultural and creative product design. Calligraphy and painting, for example, represent art forms with a long and distinguished history. Chinese characters themselves hold a unique visual character, embodying the wisdom of the Chinese people both in their structure and the content they convey. Modern designers can leverage the power of Chinese characters by incorporating various patterns and arrangements into their products. This approach not only fosters the inheritance of traditional culture but also injects a distinctive artistic aesthetic, ultimately enriching the cultural significance of the products themselves. Chinese ink painting stands as another unique and potent artistic carrier. By employing ink painting as a foundation and integrating complementary elements such as the subtle hues of rice paper, soft washes of colour, and bold black brushstrokes, designers can imbue cultural and creative products with a distinctly Chinese character. This integration of traditional elements fosters not only innovation within the realm of product design, drawing inspiration from established art forms, but also contributes to the continued development and transmission of these time-honoured artistic traditions. The integration of traditional cultural elements within everyday products fosters a subtle yet pervasive influence on consumers' cultural awareness. The popularity of such products can further propel the development and innovative application of these cultural elements, ultimately enhancing consumer appeal. By incorporating these elements within the design and functionality of modern cultural and creative products, designers can contribute to the growth of the Chinese cultural industry in several ways. This approach not only imbues products with a stronger sense of national identity but also serves as a platform to showcase the richness of traditional Chinese culture on the international stage, ushering in a new era of appreciation and understanding. Scenic area series products exemplify the effective application of these design techniques (Buchanan, 2001; Yang et al., 2018). Design and culture exist in a symbiotic relationship, constantly influencing and informing each other. The meaning ascribed to products emerges from a dynamic dialogue between cultural context, design intent, and user experience (Moalosi et al., 2004; Moalosi & Rapitsenyane, 2024). By fostering this dialogue, designers can create products that resonate with the cultural background of their target users. This integration enables the incorporation of culturally relevant design features, imbuing products not just with utility but also with narratives, stories, and emotional connections that resonate with users. Consequently, culture can be leveraged as a novel dimension of product competitiveness, offering a means to satisfy user needs that transcends

mere functionality. Furthermore, culture can be harnessed as a tool for users to express their identities and potentially act as a counterpoint to the homogenizing forces of neoliberal globalization. Preserving and transmitting China's traditional culture is a collective responsibility. Cultural and creative products hold the potential to serve as a concentrated embodiment and refinement of cultural heritage. Ideally, such products should strike a balance between innovation and the inheritance of tradition. They must cater to public aesthetic preferences while upholding the principle of art transcending everyday life and simultaneously integrating seamlessly into it. Unfortunately, a trend towards homogenization plagues some contemporary cultural and creative products. Others fall short by simply replicating past works, neglecting the essence of the cultural spirit they aim to embody. However, the burgeoning cultural and creative design industry presents a promising opportunity. By thoughtfully embedding traditional elements within product design, these elements can be disseminated to audiences in novel ways. The integration of tradition should not be viewed as mere copying; rather, it should be a process of redesign informed by the contemporary cultural context. The beauty of traditional culture lies in its enduring relevance. Despite the rapid pace of change in the global political and economic landscape, the essence of traditional culture remains timeless. By strategically combining these time-honoured traditions with new art forms, designers can create a unique and vibrant expression of Chinese culture for the future.

5. CONCLUSION

Our study explored the promising intersection of cultural preservation and contemporary product design. The findings suggest a positive consumer response towards products that integrate traditional cultural elements, with a preference for subtle design and everyday functionality. The importance of collaboration among cultural heritage specialists, product designers, and consumers was underscored. However, limitations include the relatively small sample size and the focus on a single geographic location. Future research could benefit from a larger, more geographically diverse sample to explore potential cultural variations in preferences. Additionally, investigating the long-term impact of such design integration on cultural preservation efforts and the economic sustainability of these products would provide valuable insights. By addressing these limitations and pursuing further research, we can gain a deeper understanding of how

to successfully bridge the gap between cultural heritage and modern design, fostering innovation while safeguarding traditions for future generations.

References

- An, Y. (2021). Research on Cultural and Creative Product Design under the Background of Chinese Traditional Culture Communication.
- Buchanan, R. (2001). Design research and the new learning. *Design issues*, 17(4), 3-23.
- Chen, Z., Ren, X., & Zhang, Z. (2021). Cultural heritage as rural economic development: Batik production amongst China's Miao population. *Journal of Rural Studies*, 81, 182-193.
- de Jonge, W. (2017). Sleeping Beauty: Heritage & Architecture. In *Delft Lectures on Architectural Design 2017/2018* (pp. 316-335). TU Delft OPEN Publishing.
- De Souza, M., & Dejean, P.-H. (1999). Interculturality and design: Is culture a block or encouragement to innovation. Proceedings of the international conference of design research: Design Cultures [online]. Sheffield, Sheffield Hallam Univeristy. Available from: <http://www.shu.ac.uk/schools/cs/ead/work/desouz.pdf>
- Dollani, A., Lerario, A., & Maiellaro, N. (2016). Sustaining cultural and natural heritage in Albania. *Sustainability*, 8(8), 792.
- Dorst, K. (2015). *Frame innovation: Create new thinking by design*. MIT press.
- Edmondson, R., & Edmonson, R. (2004). *Audiovisual archiving: philosophy and principles*. Unesco Paris.
- Evens, T., & Hautekeete, L. (2011). Challenges of digital preservation for cultural heritage institutions. *Journal of Librarianship and Information Science*, 43(3), 157-165.
- Flew, T., Ren, X., & Wang, Y. (2019). Chapter 10: Creative industries in China: the digital turn. In (pp. 164–178).
- Gambell, S. E. (2022). *A sustainable approach to threatened digital cultural heritage* [University of Glasgow].
- Ginzarly, M., & Srouf, F. J. (2021). Unveiling children's perceptions of World Heritage Sites: A visual and qualitative approach. *International Journal of Heritage Studies*, 27(12), 1324-1342.
- Gupta, A., Liu, Y., Lin, T.-C., Zhong, Q., & Suzuki, T. (2024). Listening to diverse voices: inclusive pedagogy and culturally responsive teaching for library interactions. *Reference Services Review*, 52(1), 66-85.
- Hui, C. (2021). Research of user-centered intelligent technology in China's cultural and creative product design. E3S Web of Conferences,
- Moalosi, R., Popovic, V., & Hudson, A. (2004). Socio-Cultural Factors That Impact Upon Human-Centred Design in Botswana.
- Moalosi, R., & Rapitsenyane, Y. (2024). African Industrial Design Practice.
- Ng, W.-K., Hsu, F.-T., & Chen, C.-L. (2022). The Impacts of Digital Technology on Service Design and Experience Innovation: Case Study of Taiwan's Cultural Heritage under the COVID-19 Pandemic. *Systems*, 10(5), 184.
- Park, J. (2022). Art-Historical Fiction or Fictional Art History? Zhang Taijie, Dong Qichang, and the Literary Making of the Past in Early Modern China. *Archives of Asian Art*, 72(2), 181-219.

- Pennock, M. (2023). Disentangling Digital Preservation Risk: An Interdisciplinary Exploration and Solution.
- Ross, S., & Hedstrom, M. (2005). Preservation research and sustainable digital libraries. *International Journal on Digital Libraries*, 5, 317-324.
- Szanto, B. (2001). The paradigm of globalism. *Technovation*, 21(10), 673-687.
- Tzavara, V., & Vassiliadis, S. (2024). Tracing the evolution of cyber resilience: a historical and conceptual review. *International Journal of Information Security*, 1-25.
- Wang, M.-F. (2023). *Creative Product Design with Cultural Codes*. Springer Nature.
- Watson, S., & Waterton, E. (2010). Reading the visual: Representation and narrative in the construction of heritage. *Material Culture Review*, 71, 84-97.
- Xi, T. M. (2024). Deriving design and innovation strategies from cultural heritages for design research, practice and education.
- Xue, B. (2019). A framework of culture-based innovation for the protection and development of intangible cultural heritages for design with focus on with Yanchuan patchwork.
- Yang, Y., Shafi, M., Song, X., & Yang, R. (2018). Preservation of cultural heritage embodied in traditional crafts in the developing countries. A case study of Pakistani handicraft industry. *Sustainability*, 10(5), 1336.