



УДК 7.012

SUSTAINABLE DESIGN INNOVATION SOLUTIONS FOR MUSEUM CULTURAL AND CREATIVE PRODUCTS

JIANG Yuandi^{1,2}, PASHKEVYCH Kalyna¹

¹Kyiv National University of Technologies and Design, Kyiv, Ukraine

²Shaanxi University of Science & Technology, Xi'an, People's Republic of China

445546875@qq.com, pashkevich.kl@knutd.edu.ua

Influenced by the sustainable design trend, museums are also actively promoting and practicing the principles of environmental protection, ecology, and sustainability in designing and developing museum cultural and creative products. This paper analyzes many cases of sustainable museum creative product design. It then explores the sustainable solutions for museum cultural and creative products and their feasibility. This study is of guiding significance for the design and development of future museum cultural and creative products.

Keywords: museums, cultural heritage, creative products, sustainability.

INTRODUCTION

Museum cultural and creative products refer to creative products designed by utilizing museums' cultural heritage. They are not only one of the primary sources of economic income for museums but also an effective way to spread their cultural knowledge and brand concept. In recent years, influenced by advanced production technology and sustainable design ideas, museums have tried to build a sustainable development framework through museum creative products.

PURPOSE

This paper aims to analyze and summarize sustainable, innovative solutions in the design and development process of museum cultural and creative products and support their future sustainable innovation.

RESULTS AND DISCUSSION

As an important part of the green economy, museum cultural and creative products can convey environmentally friendly and straightforward cultural concepts of traditional cultural heritage to consumers and lead to an environmentally sustainable lifestyle [1].

More scholars recognize that during the development of cultural and creative products in museums, it is important to choose energy-saving, non-polluting, easy-to-dismantle, and reusable materials for product design, low-energy-consuming processing methods, and natural consumables for the production process. For example, the utilization and recycling of paper in the printing process and the use of vegetable inks should be considered. Social collaboration and business model sustainability should also be maintained [2].

The case study shows that the current sustainable solutions for museum cultural and creative products are mainly three: 1) Use of environmentally friendly



and renewable materials to reduce environmental pollution. 2) Zero-waste recycling solutions. 3) Constructing a social-cultural-economic-environmental sustainable development model through social co-creation.

Utilizing environmentally friendly materials. The materials of museum cultural and creative products have a significant impact on consumers' purchasing behavior, which deserves excellent attention from designers and product developers. Huang et al. [3] emphasized that the use of unique materials to design museum cultural and creative products can help to enhance their differentiation, thus breaking consumers' inherent perceptions of such products and their materials. By utilizing renewable materials such as bamboo, straw, and paper to design museum cultural and creative products, design developers of museum cultural and creative products can not only make the products characterized by natural simplicity but also eliminate the single and boringness brought by machine production. At the same time, under the premise of ensuring the reliability of the products, emphasis should be placed on reducing the use of materials and energy and exploring brand-new forms and characteristics of materials through technological innovation. This kind of innovation can not only realize the effective use of resources but also bring an attractive and novel aesthetic experience for users.

Zero-waste recycling solution. On January 16, 2020, the Palace Museum and Vanke Foundation jointly launched the "Palace Museum Zero Waste" project. The project aims to develop "zero-waste" environmentally friendly cultural and creative products. The project uses discarded plastic bottles from the Forbidden City, which are recycled, cleaned, sliced, and transformed into recycled polyester fibers using the "plastic-to-filament" process. Then, the designers, combined with the traditional patterns of the Palace Museum, processed 33 models of "zero-waste cultural and creative products" with unique cultural characteristics, such as environmental protection eye masks, scarves, and environmental protection bags.

The "Pine Blessing" bracelet (Fig. 1) is made from fermented leaves and branches from the Palace Museum. It uses environmentally friendly technology to produce bio-based leather, which is skillfully cut and woven into the pine branch motifs of the Palace Museum's "Yunshouping Flower Album." It is a fashion item with Chinese aesthetics.

The leather for the Dragon Print Eco Phone Bag (Fig. 2) comes from the industrial-scale apple juice production chain. After the apple juice is extracted, a paste-like pulp is left behind. This residue, consisting of cellulose fibers, can be converted into pulp, which is then mixed with organic solvents and polyurethanes and then bonded to fabrics to make leather-like fabrics, which are often also made into vegan leather. Structurally, "apple skin" has many properties as animal skin, with minor advantages not found in other vegetable leathers. However, it is produced in a process that has nothing to do with animals.

The product is inspired by the aluminum red of the Palace Museum, depicting a golden vase with a straight neck of clouded dragons. The vase is an innovation of the Kangxi dynasty, with a long neck and rounded belly decorated with delicate and refined ornamentation, especially the dragon's exquisitely portrayed poise. It is also one of the finished products that combines Chinese characteristic cultural symbols with cutting-edge low-carbon and environmental protection



concepts, cutting-edge environmental protection technology, and the characteristics of the Forbidden City with Chinese cultural elements.

Through social co-creation, the sustainable development model of society-culture-economy-environment is constructed. In addition to the use of environmentally friendly materials and processes, museum cultural and creative products, from the perspective of sustainable development, can also adopt the opinions of stakeholders through user participation and social co-creation to realize the sustainable development of society. Therefore, when designing cultural and creative products for museums, designers should consider the economy, society, culture, and the environment as an organic whole for comprehensive consideration.



Fig. 1. "Pine Blessing" bracelet, Palace Museum, China, 2020



Fig. 2. Dragon Printed Eco-friendly Cell Phone Pouch, Palace Museum, China, 2023

For example, Suzhou, China, is famous for its silk and embroidery. With its elegant colors and lively stitches, Suzhou embroidery is an excellent way to experience the water town style south of the Yangtze River. Two embroidered bookmarks from the Suzhou Museum Shop are popular with consumers (Fig. 3). Two embroidered works inspired this piece in the museum's collection: a cicada-shaped incense pouch and a gold and jade money pouch, which are skillfully conceived and meticulously embroidered, rare pieces of Suzhou embroidery that signify good fortune. The designer simplified the themes of these two pieces to create the motif of this bookmark and then utilized the embroidery technique to embody the delicately entwined flowers. This attempt not only introduces the museum's cultural heritage but also allows visitors to experience the material properties of silk and traditional embroidery techniques.

Museums often partner with sustainable crafts funding organizations, promoting cultural and social sustainability. As shown in Fig. 4, a piece designed by award-winning Dutch designer Pepe Heykoop. This paper vase is made using origami techniques. It transforms an empty bottle or jar into a modern vase. In terms of packaging design, the product is flat and easy to carry. The design of this paper vase is inspired by one of the most enormous paintings in the Dutch National Maritime Museum: 'Zeeslag BIJ-Gibraltar' (Battle of Gibraltar). Painted in 1622 by



Cornelius van Wieringen, the painting tells a historical story. Most importantly, it was made by women from the community in Mumbai, India, in collaboration with the “Tiny Miracles” Foundation. “Tiny Miracles aims to empower Mumbai’s slum communities by creating jobs and providing education and healthcare.



Fig. 3. Embroidered bookmark, Suzhou Museum, China, 2024



Fig. 4. Origami vase sleeve, National Maritime Museum of the Netherlands, the Netherlands, 2024

CONCLUSIONS

Analyzes three sustainable solutions in the development process of museum cultural and creative products design and verifies their feasibility. In the future, through sustainable solutions, museum cultural and creative products can combine traditional culture's green and environmentally friendly creation philosophy with modern recycling technology to build an innovative model of social-cultural-environmental-economic sustainable development.

REFERENCES

1. Xu Ke. Interaction Design and Consumption Intention of Cultural and Creative Products. *Journal of Shanxi University of Finance and Economics*. 2024. Vol. 46, №S1. P. 148-150.
2. Zhang Y. Sustainable Design of Cultural Creative Products Based on Museum Cultural Derivatives. In *IOP Conference Series: Materials Science and Engineering*. IOP Publishing. 2019. Vol. 573, No. 1. P. 012035. <https://doi.org/10.1088/1757-899X/573/1/012035>
3. Huang H., Chen H., Zhan Y. A Study on Consumers' Perceptions of Museum Cultural and Creative Products through Online Textual Reviews: An Example from Palace Museum's Cultural and Creative Flagship Store. *Behavioral Sciences* (Basel, Switzerland). 2023. Vol. 13, №4. 318. <https://doi.org/10.3390/bs13040318>