Research Article

Analysis of Museum Cultural Creation from the Perspective of Cultural Industry

Zhen Zhao (iD)

Nanjing Mumei Culture and Art Co., Ltd., Nanjing, China

Correspondence should be addressed to Zhen Zhao; wandering@cuc.edu.cn

There is a lack of objective and rapid methods to evaluate and extract design elements in the development of museum cultural creation products. Aiming at this, an analysis method of museum cultural creation from the perspective of cultural industry is proposed. The order relation method and entropy weight method are applied to extract cultural characteristics. The optimality evaluation of the features based on the ordinal relation method aims to make a preliminary judgment on the representation value of the feature. At the same time, the entropy weight method is introduced to make decisions among various categories of cultural features. Combining the two methods makes the feature extraction process both objective and scientific. It also ensures that the selected design elements are distinct in priority and do not conflict with each other. Taking the museum cultural creation product design based on brocade patterns in the Qing Dynasty as an example, it is proved that the proposed method can effectively extract and transform the cultural features of the cultural relics, which provides a reference for the development of cultural and creative products of the museum.

1. Introduction

Cultural creation industry, which flourished in European and American countries in the 1990s, has become a well-deserved sunrise industry in the post industrial era and under the background of knowledge economy [1]. Museum cultural creation refers to the cultural creation and development based on the specific cultural relics, culture, regional style, and spirit in the museum. Museums and their collections carry the unique culture and memory of a country, a city and a place, and become the main body of the development of museum cultural and creative industry [2].

The development and sales of cultural creation products can bring additional income to museums and play a better role in promoting and educating the culture and realizing its social value [1–3]. When designing museum cultural creation product, whether it emphasizes interest or marketing methods, the cultural relics in their collections must be used as a source of inspiration for design and innovation to ensure that cultural creation products have cultural attributes and are closely related to the culture they represent.

2. Related Works

The museum's tens of thousands of collections provide rich materials for cultural creation products. Still, the mix and stack of style elements are insufficient to design excellent cultural creation products. Whether the public can recognize the sales of cultural creation products depends on whether cultural symbols can be matched with specific design carriers in the design. In the research on the design of cultural creation products with museums as the main body, Liu et al. proposed that museum cultural creation products not only have a symbolic role but also bring a sense of public awareness by maintaining consistency with museums based on qualitative interviews and quantitative questionnaires [4]. At the same time, the higher the correlation between cultural creation products and the exhibits in the museum, the more likely it is to be accepted by the audience. Prameswari et al. explored the cognitive process of cultural creation products from the perspective of cultural schema and constructed a framework for cultural identification which contains general mode, plot input, and instantiation model [5]. Gao et al.

pointed out that the collections are systematic and can be serially designed using their associations and combinations [6].

Because of the large number and complexity of a series of cultural relics with the same theme in the collection, the extraction of relevant cultural factors is particularly important. Wang et al. proposed Yantu cultural creation products design idea by which design factors were extracted from representative cultural relics, the aspect was evaluated and screened by combining eye movement experimental correlation and Kansei engineering, and finally a set of tea sets was designed [7]. Li et al. proposed an evaluation method for cultural creation product modeling based on fuzzy set theory by which an evaluation index system for product modeling design was established through AHP. The example of fuzzy evaluation shows that this method can effectively reflect the satisfaction of users, and the analysis and screening of design elements can improve the quality of design results [8]. In addition, multiattribute decision-making [9–14] also provides an idea for museum cultural creation analysis from the perspective of cultural industry.

However, in the above research, there is still a lack of a method for evaluating and extracting design elements for collection resources. As the main body of cultural creation development, museums are ambiguous in using their resources. Therefore, in the design process, we must first excavate the cultural relics in the museum collection around a certain theme, analyze the cultural characteristics that are most consistent with the design proposition or have the most extended value, and assign cultural factors to cultural creation products. This process is usually obtained by visiting and surveying designers, and the opinions are often subjective without considering the entire creative product development process. The selected cultural characteristics, that is, the design elements derived from the connotation and externality of cultural relics, are important factors for expressing regional culture in products and indirectly determine the quality of design results.

Therefore, it is necessary to apply scientific methods to analyze and evaluate them, so as to avoid the strong subjective will of R&D personnel, resulting in the final inability of cultural and creative products to convey basic semantics.

3. Museum Cultural Creativity Process Analysis

Based on a specific cultural and creative product development theme, the cultural features are divided according to explicit and recessive factors through interviews, surveys, and collection of relevant cultural relic information, that is, the interpretation of cultural features. Secondly, taking the target user as the object of analysis, the process of using and feeling the product is explored and the perceptual vocabulary is obtained. The key to the development of museum cultural creation products is to extract cultural characteristics from the collection resources, so the early design stage needs to extract many cultural features comprehensively [15–17].

The process includes combining perceptual vocabulary and other index factors, superiority assessment of cultural characteristics, and obtaining the representative

characteristics of each category and using the entropy weight method to obtain the most valuable cultural characteristics, that is, the key dominant characteristics. Based on the feature extraction results, the transformation process of designers' design cultural features is guided. Finally, the effectiveness of the method is verified by taking a representative cultural creation product design as an example. The process of cultural feature extraction and application is shown in Figure 1.

3.1. Cultural Feature Extraction. In the extraction of design elements of museum cultural relics, it is necessary to comprehensively consider the influence of the various attributes of the cultural relics evaluated on the design results of creative products, such as the dominant features of the beauty of the product's external form and the recessive features of the cultural properties of the cultural relics themselves.

The explicit appearance of cultural relics collections carries people's intuitive experience of the past culture, such as shape, color, material, texture, pattern, and graphic decoration. The dominant characteristics of four dimensions, including shape, color, material and texture, have been established through relevant literature and field research. Recessive features provide the significant cultural value of museum cultural and creative products, which have traditional cultural connotations that general commodities do not have. Recessive features include two dimensions: semantic layer and connotation layer. They are shown in Figure 2.

The semantic level of cultural relics reflects its essential meaning and spiritual outlook, and it is a particular emotion integrated into the creation. The audience can experience it by appreciating and browsing the cultural relics; the connotative level refers to the context and allusions hidden behind the cultural relics: history and other deeper cultural information. The stories behind these cultural relics reflect the spiritual core of the times, so they need to be embodied in the design of cultural and creative products.

The evaluation indicator is very important for the implementation of this study. Evaluation indicator system refers to an organic whole with internal structure composed of multiple indexes representing the characteristics of all aspects of the evaluation object and their interrelations. Cultural feature extraction needs to establish evaluation indicators and consider the following factors:

(1) The matching degree between users' attitudes and emotional preferences in the process of using cultural creation products and the perceptual images of cultural characteristics: a higher matching degree can avoid the problem of unclear semantics of cultural creation products, and users can feel the connotation and temperament of the collection.

(2) Feature scalability: it refers to the elements that can provide scalability in terms of line, outline, color, and so on. The more complex and changeable the external form of cultural relics, the more evidence-based the design of cultural and creative products, and the more ornamental the final result.
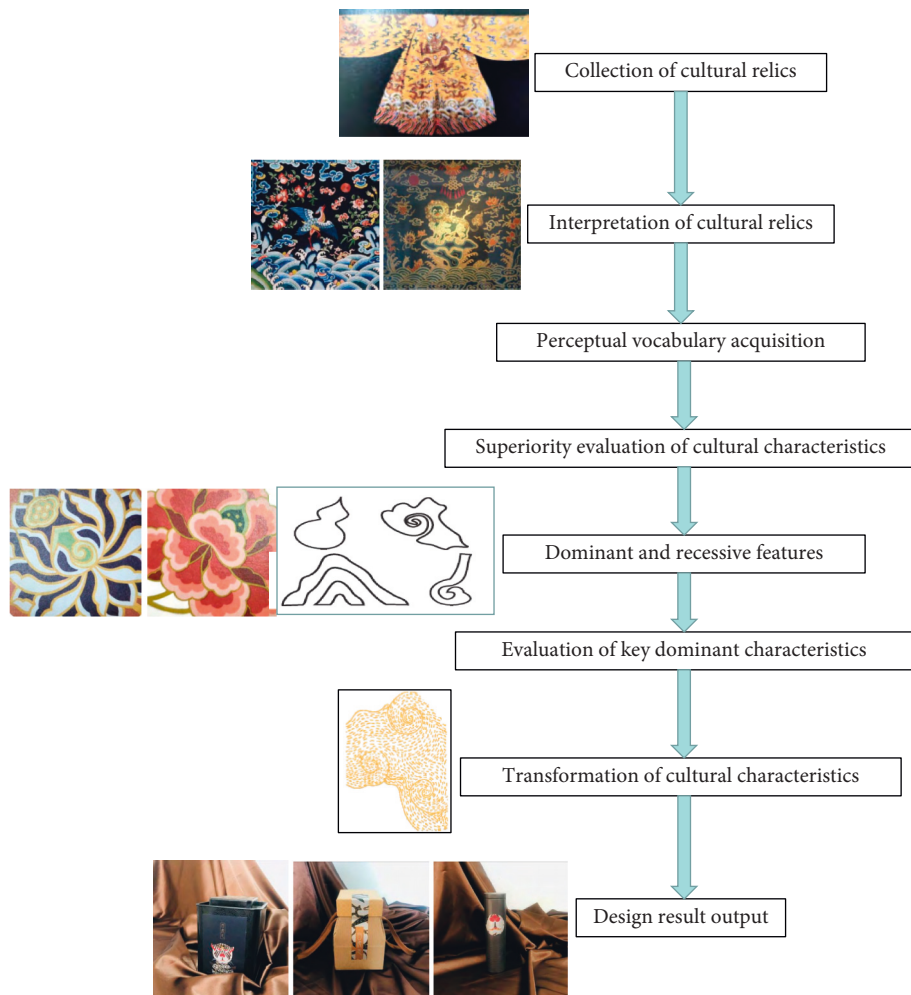
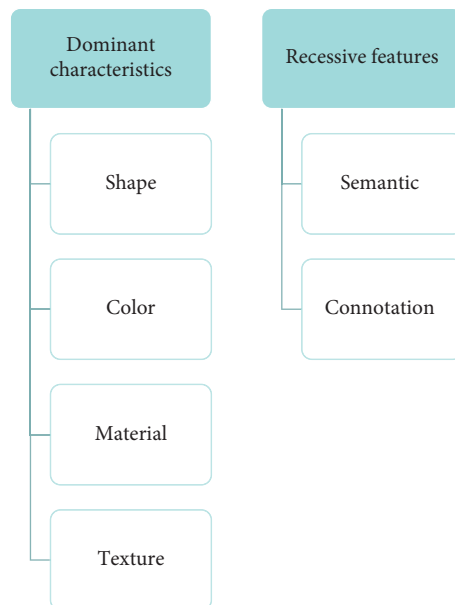FIGURE 1: Museum cultural creativity process analysis.

FIGURE 2: Dominant and recessive features.

(3) Feature identifiability: it refers to whether cultural features are specific, intuitive, and easily understood by the public. The higher the identifiability, the more representative and salient the feature it is easier to reflect in creative product design and stimulate users' cultural identity.

Since the recognition and extensibility of recessive features do not have an external form, they are abstract connotations. Therefore, the evaluation of the two implicit features only considers the relevance of perceptual semantics, so scalability and identifiability will not be included in the evaluation indicators.

Finally, the explicit and implicit cultural characteristics of the cultural relics in the collection are explained, and the legend and text description of each characteristic are listed. At the same time, designers with experience in product modeling and design are invited to score the preliminarily selected series of cultural relics and cultural characteristics. They use four groups of perceptual word to score the recognizability and scalability. Scores are all measured using the Likert seven-level scale.

3.2. Cultural Feature Evaluation.

Analyzing and evaluating the indicators of cultural feature can achieve the extraction of cultural feature of cultural relics in the collection. Extracting cultural features that are highly recognizable, highly scalable, and fit with the emotional preferences of cultural creation product users can ensure the rationality of cultural creation design results. The weight coefficient is determined by the subjective weighting method. Then, the overall evaluation value of each type of cultural feature is obtained, and they are sorted separately to get the ranking of the features.

Subjective weighting methods include set-valued statistical iteration method, AHP, G1 method (order relation method), and G2 method, among which AHP and order relation method are the most commonly used. The ordinal relation method improves some of the defects of the AHP. It can achieve that there is no need to construct a judgment matrix and no need to carry out a consistency check, thereby significantly reducing the amount of calculation, and the method is highly operable. The evaluation steps of order relation method [18, 19] are shown in Figure 3.

Its details are as follows:

(1) Determine the order relationship. Under a certain evaluation criterion (or objective), the evaluation indicators $x_1, x_2, \ldots, x_m$ of cultural characteristics of cultural relics are arranged according to the importance, that is, $x_1^* > x_2^* > \cdots > x_m^*$; it is considered that $x_1, x_2, \ldots, x_m$ has established an order relationship according to ">." Here, x_j^* is the i-th evaluation index $(i, j = 1, 2, \ldots, m)$ after $\{x_i\}$ is sorted according to the order relation ">". To avoid losing generality, the order relation is written as $x_1 > x_2 > \cdots > x_m$.

(2) Determine the degree of importance. Let the expert's rational judgment on the importance ratio w_{k-1}/wk between the evaluation indexes x_{k-1} and x_k of cultural characteristics of cultural relics be
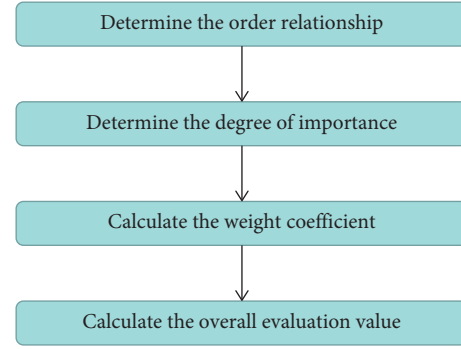

FIGURE 3: Order relation method for cultural feature evaluation.

$$r_k = \frac{w_{k-1}}{wk}, \quad k = m, m-1, \ldots, 3, 2. \tag{1}$$

For two indicators x_{k-1} and x_k, the assignment of r_k is as follows:

(i) When x_{k-1} and x_k are equally important, $r_k = 1$
(ii) When x_k is slightly more important than x_{k-1}, $r_k = 1.2$
(iii) When x_k is obviously more important than x_{k-1}, $r_k = 1.4$
(iv) When x_k is strongly more important than x_{k-1}, $r_k = 1.6$
(v) When x_k is extremely more important than x_{k-1}, $r_k = 1.8$
(vi) 1.1, 1.3, 1.5, and 1.7 correspond to the middle of two adjacent judgments

(3) Calculate the weight coefficient, that is,

$$w_k = \left[1 + \sum_{k=2}^{m} \prod_{i=k}^{m} r_i \right]^{-1},$$
$$w_{k-1} = r_k w_k, \quad k = m, m-1, \ldots, 3, 2. \tag{2}$$

(4) Calculate the overall evaluation value of each feature as follows:

$$y_i = \sum_{j=1}^{n} b_{ij} w_j \, (i = 1, 2, \ldots, m). \tag{3}$$

Among them, b_{ij} is the value of each evaluation index of cultural characteristics of cultural relics.

3.3. Key Dominant Features Determination.

There is no absolute relationship between the optimal evaluation results of different types of cultural characteristics. If they are directly applied in a superimposed manner, the design will be unreasonable and even the elements will conflict with each other. Therefore, it is also necessary to conduct an overall evaluation of dominant features (shape, color, texture, and material), clarify which features have the most representative value, regard them as key dominant features, and focus on them in the process of cultural feature transformation.

Considering that the subjective weight calculation method inevitably has the risk of being affected by subjective factors, the weighting method is based on the difference-driven principle; that is, the objective weighting method is used to evaluate the representative value of each dominant feature. Objective weighting methods commonly include meaning square error, range, open grade, and entropy weight. This paper uses the entropy weight method [11, 12] to determine the corresponding weight coefficient according to the amount of index information, avoiding the influence of experts' subjective factors on the index weight.

Let X_{ij} be the j-th indicator for the i-th cultural feature ($i = 1,2,3, \ldots, m$; $j = 1,2,3, \ldots, n$). For a given index j, the greater the difference of X_{ij}, the more information it contains and transmits, and the greater the impact on the entire system. The steps of using the entropy weight method to evaluate the dominant feature are shown in Figure 4.

Its details are as follows:

(1) Normalize the decision matrix as $X = (x_{ij})mn$.

(2) Calculate the entropy weight. Let the entropy weight of the j-th index be e_j, then

$$p_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}},$$

$$e_j = \frac{-1}{\ln(m) \sum_{i=1}^{m} p_{ij} \ln(p_{ij})}, \tag{4}$$

where p_{ij} is the feature proportion of the i-th evaluation object of the j-th indicator.

(3) Calculate the objective weight of each indicator element as

$$w'_j = \frac{(1 - e_j)}{\sum_{j=1}^{n} (1 - e_j)}, \quad j = 1, 2, \ldots, n. \tag{5}$$

(4) Calculate the overall evaluation value of each dominant feature as

$$y'_j = \sum_{j=1}^{n} b_{ij} w'_j, \quad i = 1, 2, \ldots, m. \tag{6}$$

3.4. Cultural Feature Transformation. The reason why cultural relics can continue and spread cultural values is that it has a symbolic function for its characteristics, which together constitute the cultural symbols of cultural relics. Cultural feature extraction for cultural relics in museum collections is to reconstruct the symbols representing the semantics of cultural relics and apply them to the development of cultural and creative products.

Step 1. Obtain the optimal results of key dominant features by the entropy weight method and use them as the core elements of cultural and creative product modeling. After feature variation, extension, and other operations, and at the same time, cross and combined experiments with different
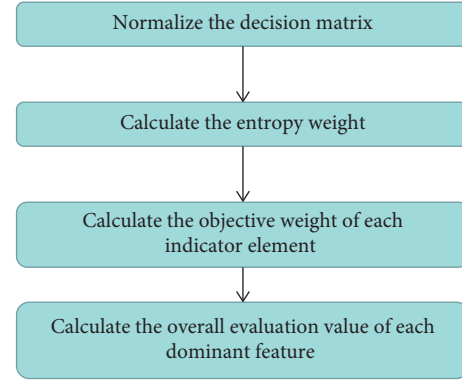

Figure 4: Entropy weight method to evaluate the dominant feature.

dominant feature optimization results are carried out to form product design schemes.

Step 2. Use the methods of metaphor, symbolism, and exaggeration to combine invisible features with the use and interaction of products and integrate them into the design elements of cultural and creative products as an added value.

4. Case Study

Based on the above processes and methods, we apply the proposed method to actual design cases for verification. Buzi pattern of Nanjing Yunjin in the Qing Dynasty is taken as the development object of cultural creation products and used to design daily necessities. After on-site visits and investigations, six cultural relics in the collection are selected, as shown in Figure 5. The cultural features of cultural relics are interpreted according to the meaning of explicit and implicit characteristics. For example, the cultural features of the sample cultural relics can be split and named as the shape feature F_{11}, the color feature F_{12}, the texture feature F_{13}, the material feature F_{14}, the implicit semantic feature F_{15}, and the connotation feature F_{16}. A table of interpretations of cultural characteristics of cultural relics in the collection is established for subsequent evaluation, which is shown in Figure 5.

In the early design stage, it is necessary to analyze the attitudes and perceptual images in the target population (such as history lovers, tourists, collectors) towards cultural creation products to provide a reasonable basis for evaluating and extracting cultural characteristics. By consulting books and literatures, we collected 346 words from user comments on the online platform that could express target population's perceptual attitudes toward cultural creation products, remove similar and repeated words, and preliminarily select 80 effective words, including positive and negative attitudes.

K-means cluster analysis method [20, 21] is used to divide the perceptual vocabulary into four categories, and the samples with the closest Euclidean distance to the center are selected according to their classification. The four groups of word pairs are obtained, respectively, as shown in Table 1.

The various cultural characteristics of cultural relics are evaluated by the order relation method. The four groups of perceptual word pairs and the degree of feature recognition
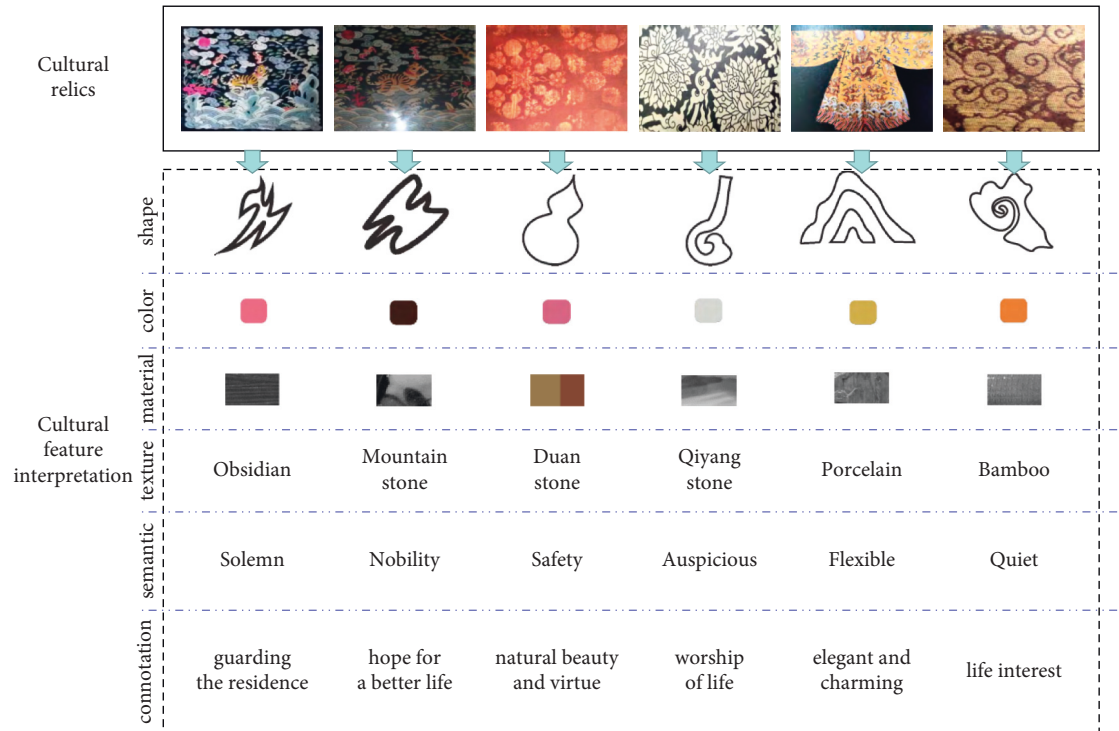
FIGURE 5: Cultural relics and their cultural feature interpretation.

and the degree of feature expandability are recorded as $X_1, \ldots, X_6$ in turn. As mentioned above, 20 designers with experience in cultural and creative product design were invited to score each characteristic element in the cultural characteristic definition table according to 6 indicators.

For example, the experts' scores on the morphological and cultural characteristics of 6 cultural relics were calculated by the average and variance. The ranking of the evaluation indicators by experts is as follows: mild/incisive > feature recognition > feature expandability > flamboyant/steady > masculine/feminine > delicate/dignified, establishing an order relationship: $X_2 > X_5 > X_6 > X_1 > X_4 > X_3$; the ratio is $r_2 = 1.4$, $r_3 = 1.0$, $r_4 = 1.5$, $r_5 = 1.2$, and $r_6 = 1.2$. Therefore, the weight coefficients $w_1 = 0.1312$, $w_2 = 0.2751$, $w_3 = 0.0913$, $w_4 = 0.1093$, $w_5 = 0.1971$, and $w_6 = 0.1972$ are obtained.

Based on the screened scoring results, the overall evaluation value of the morphological characteristics of each cultural relic is obtained as $y_1 = 4.8955$, $y_2 = 4.1889$, $y_3 = 4.3645$, $y_4 = 3.9322$, $y_5 = 3.1666$, and $y_6 = 3.5731$. The optimality ranking is $F_{11} > F_{31} > F_{21} > F_{41} > F_{61} > F_{51}$, indicating that the cultural relics of the brocade tiger pattern in Qing Dynasty have the best evaluation results of morphological characteristics and are most suitable for use in the design of cultural creation products.

In the same way, the rest of the dominant cultural characteristics (color, texture, and material) are evaluated and processed using the ordinal relation method. When evaluating the implicit features, the two indicators of recognition and scalability are omitted. Only the matching degree between the semantics and connotation of cultural relics and the four sets of perceptual word pairs is considered. The assessment results for all cultural features are shown in Table 2.

The entropy weight method is used to evaluate the four dominant features and analyze their importance. First, the expert scoring results of the six sample cultural relics are averaged according to each feature, and the overall evaluation scores of the features shown are obtained by rearrangement as shown in Table 3.

The weights of the six evaluation indicators can be obtained as follows: $w_1' = 0.1072$, $w_2' = 0.1471$, $w_3' = 0.1263$, $w_4' = 0.1204$, $w_5' = 0.1002$, and $w_6' = 0.3962$. Then, the overall evaluation value of each dominant feature can be obtained: $y_1' = 3.9234$, $y_2' = 3.7228$, $y_3' = 3.6808$, and $y_4' = 3.8664$. The order of dominant features is obtained: shape > material > texture > color. Therefore, shape and material are the key dominant features, and the corresponding features F_{11} and F_{54} are the most worthy of application in the design of cultural creation products.

In the design and application of cloud brocade patterns in the Qing Dynasty, the first is to carry out design positioning, that is, select reasonable products and analyze the product category, actual function, target population, and so on. Then, the brocade pattern of the Qing Dynasty is organically integrated with the product as a cultural and artistic symbol, so as to increase the cultural added value of the product itself, realize the functional transformation of brocade art in the contemporary era, and realize the inheritance and promotion of Chinese culture. Based on the results of cultural feature extraction, an artistic and creative product of daily necessities and its packaging design is developed for the museum. While reflecting the theme, it expresses the long history of Chinese traditional culture, so it is named "white tiger" series design, and poster design is carried out to promote the design as shown in Figure 6.

TABLE 1: Four groups of word pairs.

Type no.	Word pairs
1	Flamboyant/steady
2	Mild/incisive
3	Delicate/dignified
4	Masculine/feminine

TABLE 2: The assessment results for all cultural features.

Cultural feature	Assessment result
Shape	$F_{11} > F_{31} > F_{21} > F_{41} > F_{61} > F_{51}$
Color	$F_{22} > F_{32} > F_{12} > F_{42} > F_{52} > F_{62}$
Material	$F_{53} > F_{13} > F_{23} > F_{63} > F_{33} > F_{43}$
Texture	$F_{34} > F_{24} > F_{44} > F_{64} > F_{14} > F_{54}$
Semantic	$F_{15} > F_{25} > F_{55} > F_{45} > F_{65} > F_{35}$
Connotation	$F_{26} > F_{16} > F_{66} > F_{36} > F_{56} > F_{46}$

TABLE 3: The overall evaluation scores of dominant features.

	Shape	Color	Texture	Material
X_1	4.0233	3.7622	3.7123	3.9044
X_2	4.1811	3.8901	3.8222	3.9024
X_3	3.5902	3.5111	3.7966	3.6002
X_4	3.5411	3.6677	3.7622	3.6844
X_5	3.7833	3.8541	4.1012	3.8002
X_6	4.022	3.7044	3.4567	4.0002

FIGURE 6: The poster design of "white tiger" series design.

5. Conclusion

Brocade patterns in the Qing Dynasty have high aesthetic value and cultural value and are very valuable Chinese traditional cultural heritage. In the new era, we need to promote and inherit this traditional art by enhancing the spiritual function and artistic modernity. Taking the four grade tiger pattern of military officer as an example, we extract the artistic elements and make secondary artistic innovation and regenerate the design and application of the brocade pattern of the Qing Dynasty in combination with modern design and current aesthetics, so as to better inherit this excellent cultural heritage and make contemporary people better understand the brocade culture. At the same time, the design application of "white tiger" series design also reflects the organic integration of tradition and modernity, provides new ideas for the inheritance of traditional culture and the improvement of the added value of modern products, and can be used as a reference for the design of visual cultural and creative products.

Using museum collection resources to develop and market cultural creation products can present culture and exhibition content vividly to the public, which are the common needs of museums and society. In the designing of cultural creation products for a certain theme, the cultural symbols need to be incorporated into the shape and the emotional preferences of the target group need to be fit. Therefore, it is necessary to integrate perceptual factors into assessing cultural relic features.

The cultural feature application is based on the feature extraction results. Some features are taken as the key content to be expressed in the design, and relying on human-computer interaction, the "lively and flexible" semantic features can be shown by the designed products. The final design example proves that the order relation entropy weight method can effectively extract and transform the cultural features of the cultural relics, which provides a reference for the development of cultural and creative products of the museum. With the continuous development of artificial intelligence and many other technologies, the evolution of its enabling interactive experience from graphical interactive interface to natural interactive interface has become an inevitable trend. Museum cultural creation design research also needs to actively explore new research fields under artificial intelligence, emotional computing, and emotional recognition from the perspective of interaction design and experience design.

Data Availability

The dataset can be accessed upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

References

[1] C. H. Chen and S. C. Lin, "Message delivery of cultural and creative products under cultural industries," in *Proceedings of the 18th International Conference on Human-Computer Interaction (HCI International)*, Toronto, Canada, July 2016.

[2] S. Cerisola and E. Panzera, "Cultural and creative cities and regional economic efficiency: context conditions as catalyzers of cultural vibrancy and creative economy," *Sustainability*, vol. 13, no. 13, 2021.

[3] L. Qiu, "Design of cultural and creative products of marine cultural tourism," *Journal of Coastal Research*, vol. 112, no. 1, pp. 100-101, 2020.

[4] S.-L. Liu, F.-S. Lin, and C. I. Yang, "On emotional design of culture products and consumption in national museum of prehistory," *International Journal of Affective Engineering*, vol. 12, no. 2, pp. 317–324, 2013.

[5] I. Prameswari, H. Hibino, and S. Koyama, "The role of cultural schema in developing culture-based product design," *Journal of the Science of Design*, vol. 1, no. 1, pp. 57–66, 2017.

[6] C. Gao, L. Y. Bu, and M. L. Sun, "Application of museum collection cultural symbol in serial product design," *Packaging Engineering*, vol. 38, no. 4, pp. 47–50, 2017.

[7] W. W. Wang, Y. Liu, and Y. Wang, "Extraction of saline soil culture design factors based on visual correlation analysis," *Journal of Graphics*, vol. 37, no. 1, pp. 60–65, 2017.

[8] Z. Li and J. F. Wang, "Application of fuzzy evaluation method in cultural and creative product style design," *Modern Electronics Technique*, vol. 42, no. 13, pp. 131–133, 2019.

[9] F. Meng, X. Chen, and Q. Zhang, "Some uncertain generalized Shapley aggregation operators for multi-attribute group decision making," *Journal of Intelligent and Fuzzy Systems*, vol. 29, no. 4, pp. 1251–1263, 2015.

[10] F. Meng, J. Tang, and C. Li, "Uncertain linguistic hesitant fuzzy sets and their application in multi-attribute decision making," *International Journal of Intelligent Systems*, vol. 33, no. 3, pp. 586–614, 2018.

[11] L. Li, B. Lei, and C. Mao, "Digital twin in smart manufacturing," *Journal of Industrial Information Integration*, vol. 26, no. 9, Article ID 100289, 2022.

[12] L. Li, C. Mao, H. Sun, and Y. B. Yuan, "Digital twin driven green performance evaluation methodology of intelligent manufacturing: hybrid model based on fuzzy rough-sets AHP, multistage weight synthesis, and PROMETHEE II," *Complexity*, vol. 2020, no. 6, 24 pages, Article ID 3853925, 2020.

[13] L. Li, J. Hang, H. Sun, and L. Wang, "A conjunctive multiple-criteria decision-making approach for cloud service supplier selection of manufacturing enterprise," *Advances in Mechanical Engineering*, vol. 9, no. 3, Article ID 168781401668626, 2017.

[14] L. H. Li, J. C. Hang, Y. Gao, and C. Y. Mu, Using an integrated group decision method based on SVM, TFN-RS-AHP, and TOPSIS-CD for cloud service supplier selection," *Mathematical Problems in Engineering*, vol. 2017, Article ID 3143502, 14 pages, 2017.

[15] T. Stylianou-Lambert, N. Boukas, and M. Christodoulou-Yerali, "Museums and cultural sustainability: stakeholders, forces, and cultural policies," *International Journal of Cultural Policy*, vol. 20, no. 5, pp. 566–587, 2014.

[16] H. Geoghegan and A. Hess, "Object-love at the Science Museum: cultural geographies of museum storerooms," *Cultural Geographies*, vol. 22, no. 3, pp. 445–465, 2015.

[17] Y. Y. Zhang, "Sustainable design of cultural creative products based on museum cultural derivatives," in *Proceedings of the 7th International Forum on Industrial Design*, Luoyang, China, May 2019.

[18] J. J. Hasenbein, "Order relations for concave interpolation methods," *Operations Research Letters*, vol. 44, no. 6, pp. 823–825, 2016.

[19] X. J. Wang and Y. J. Guo, "Analysis method of ordered relation on consistency in judgment matrix," in *Proceedings of the 2005 Conference of System Dynamics and Management Science*, pp. 874–878, Boston, MA, USA, July 2005.

[20] R. Shang and B. Ara, "Analysis of simple K-mean and parallel K-mean clustering for software products and organizational performance using education sector dataset," *Scientific Programming*, vol. 2021, Article ID 9988318, 2021.

[21] L. X. Wang and J. H. Yang, "Mining network traffic with the k-means clustering algorithm for stepping-stone intrusion detection," *Wireless Communications & Mobile Computing*, vol. 2021, Article ID 6632671, 2021.