

# Research on the Design of Red Cultural and Creative Products in Hongyuan County Based on Regional Characteristics

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**Abstract. Purpose** Combining regional and red cultural and creative products, product innovation design exploration from the perspective of design, breaking through the shackles of the homogenization of existing red cultural and creative products. **Method** Taking Hongyuan County as an example, the existing regional language and red cultural elements were collected, analyzed, summarized and refined. The hierarchical analysis method was used to make hierarchical comparison of the design elements, and the importance of the design elements was ranked through scientific score calculation and weight evaluation, so as to determine the design requirements and target direction. **Conclusion** Scientific analysis and evaluation of demand red cultural elements through analytic hierarchy process can effectively improve design efficiency, further avoid the interference of subjective factors on design, form diversified design concepts, and provide reference value for the same type of design needs.

**Keywords.** Analytic hierarchy process; Red culture; Cultural and creative design; Hongyuan county

## 1. Introduction

Red culture is a precious spiritual wealth in the great historical process of the Chinese nation. Red culture contains rich cultural connotation and profound philosophical significance. The Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and Vision 2035 of the People's Republic of China, it is pointed out that revolutionary culture should be carried forward and the red gene should be inherited [1]. Red culture should focus on promoting the protection of revolutionary cultural relics and red sites, and promote the development of mutual integration of culture and tourism in red tourism. China's vast territory, the formation of various places have significant regional characteristics. Reasonable integration of regional characteristics into red culture will break through the current situation of uniformity of cultural and creative products and form distinctive red cultural elements.

Because the country attaches great importance to red culture and users' demand for product styles, the market of red cultural creative products has developed rapidly. At the same time, red cultural creative products also show problems. First, there is a convergence of product design styles. Red cultural products in different regions appear similar in style and content. Secondly, there is the problem of aesthetic fatigue among consumer users. This problem weakens the advantage of red cultural value with

regional characteristics. Therefore, in the design of red culture with regional characteristics, it is necessary to innovate red cultural and creative products to meet the needs of consumers and start the popularity of regional red cultural characteristics. This is a major challenge. To sum up, this paper will take Hongyuan County as an example to study the red cultural creative products with regional characteristics based on the perspective of design. At the same time, the paper will use the analytic hierarchy process to analyze the data information of red culture in Hongyuan County. Using the method of scientific calculation, this paper analyzes the design requirements of red culture in Hongyuan County. This method will help to explore the design path of red cultural creative products with regional characteristics.

## **2. Regional Characteristics and Red Cultural and Creative Products**

### *2.1. Regional identity*

Regional characteristics are mainly reflected in regional location, terrain, folk culture, economic conditions, historical background and other factors. These factors will affect the local people's way of life and cultural identity as well as their values. Such influence will enable the region to form a cultural symbol with regional characteristics. For Chinese red culture, regional characteristics can bring personalized and differentiated content to red revolutionary old base areas. Red cultural products with regional characteristics can promote the development of red tourism and help stimulate local economic growth[2].

### *2.2. Red cultural creative products*

Red cultural creative products are based on Chinese revolutionary history and culture. Products take design creativity as the core demand, tangible or intangible presentation form as the carrier. The purpose of red cultural creative products is to shape IP with Chinese revolutionary history and culture, and carry forward the spirit of red culture. Red culture can give creative products high cultural added value. The resources of red Revolution history are designed into creative derivatives of red culture through creative innovation[3]. Such products have outstanding cultural communication significance and social and economic value.

### *2.3. Connection between regionalism and red cultural and creative design*

The development of red culture is characterized by distinct regional features. The occurrence of major events in Chinese revolutionary history and the development of characters are closely associated with specific regions. These regional characteristics reveal the personalized and diverse content of red culture in each region. By integrating regional elements into the design of red cultural creative products, we can create unique and diverse items that possess greater vitality and charm. The differentiation brought about by regional characteristics plays a vital role in avoiding market product homogenization. Paying significant attention to the application of regional characteristics in the creative design of red culture can render our design decisions more forward-looking[2].

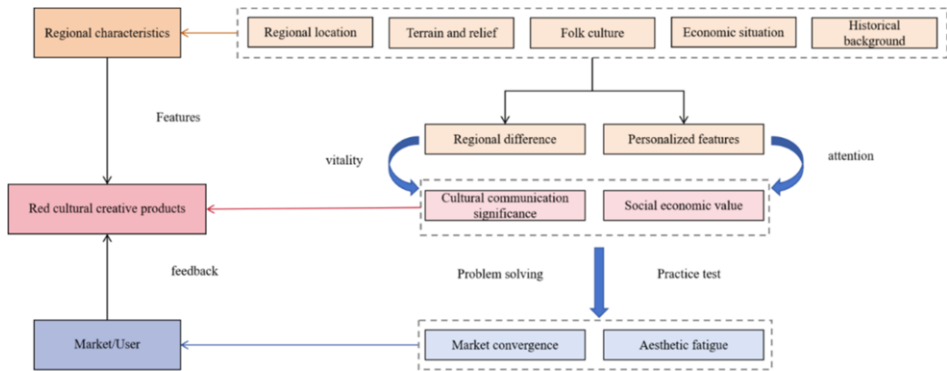


Figure 1. The relationship between regional characteristics and red cultural creative product design.

### 3. Research Methods and Path Analysis

This paper analyzes the design path of red culture with regional characteristics. From the perspective of user demand analysis, we should pay attention to the user's demand experience and market value. It requires clear design tendency and cultural focus to give full play to the advantages of regional characteristics. In order to better complete the design path analysis, this paper takes Hongyuan County, Sichuan Province, China as an example, and uses the analytic hierarchy process to conduct target screening and weight analysis on the red cultural design elements in Hongyuan County. It is hoped that scientific computing can be used to clarify the needs of users and clear the direction of design.

#### 3.1. Analytic hierarchy process

The Analytic hierarchy Process (AHP), proposed by the American operations research scientist, is a hierarchical weight decision analysis method using the network system theory and the multi-objective comprehensive evaluation method.[5].

The systematic and modular analysis method can effectively reduce the subjectivity and one-sidedness of complex problem analysis.

#### 3.2. Design path analysis

This paper takes Hongyuan area as the carrier of red culture, analyzes its design needs and cultural needs. First of all, the user market to conduct a variety of forms of research activities. User demand samples can be obtained through user research. Secondly, the samples are screened and integrated. Through the analytic hierarchy process, we scientifically construct the layered model of sample elements. Finally, the weight of all elements is calculated and analyzed. Analyze users' needs according to factor weight, infer design demand trend, and locate cultural focus. This method can improve the design efficiency and enhance the enabling effect of regional red culture. The detailed design path analysis diagram is shown in Figure 2.

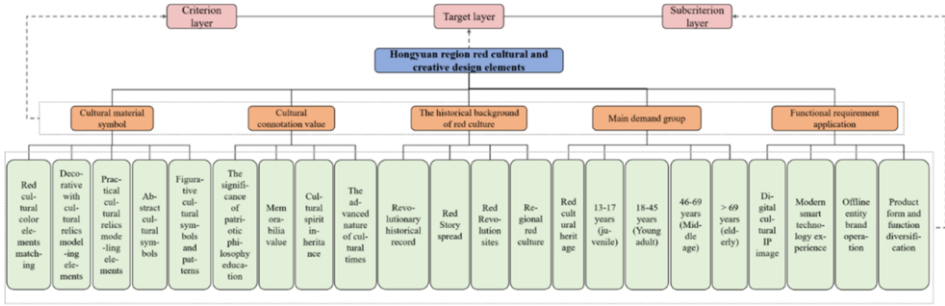


Figure 2. Design research methods and paths.

#### 4. Practice of red cultural and creative design process in Hongyuan region

Through the research and analysis of the design of red cultural creative products with regional characteristics in Hongyuan County. From the demand point of view to the actual research of users. The analytic hierarchy process was used to analyze and evaluate the survey data. The corresponding factor weights are calculated and compared to avoid the interference of subjective consciousness to the design, improve the design efficiency and innovate the design content. So as to complete the design practice of regional red cultural creativity.

##### 4.1. Element positioning and system construction

Firstly, the paper analyzes the demand elements of Hongyuan County in the aspect of red cultural creative design. The team adopted field investigation, literature review, actual interview, case evaluation, shadow follow-up and other research methods. A sample of the requirement elements is obtained through these methods. Secondly, from the perspective of design, the different requirements are transformed into a unified design model language. This process requires the summary, induction and classification of the design elements. Finally, the hierarchical model of design elements is constructed and analyzed[8]. It is necessary to conduct a qualitative analysis of the design elements and establish a multi-level evaluation index system of red cultural creative products with Hongyuan regional characteristics.

According to the needs of users in the early stage, a total of 155 samples of questionnaire information were collected. Using the hierarchical construction method of analytic hierarchy process, the index framework of the creative design elements of red culture in Hongyuan region is established. The evaluation system is divided into three parts: target layer, standard layer and sub-standard layer. According to the previous research, the standard layer mainly includes five aspects: cultural material symbol, cultural connotation value, red historical background, main demand groups and functional demand application. From the 5 criterion layers, 22 scheme layers are derived. As shown in Figure 3.

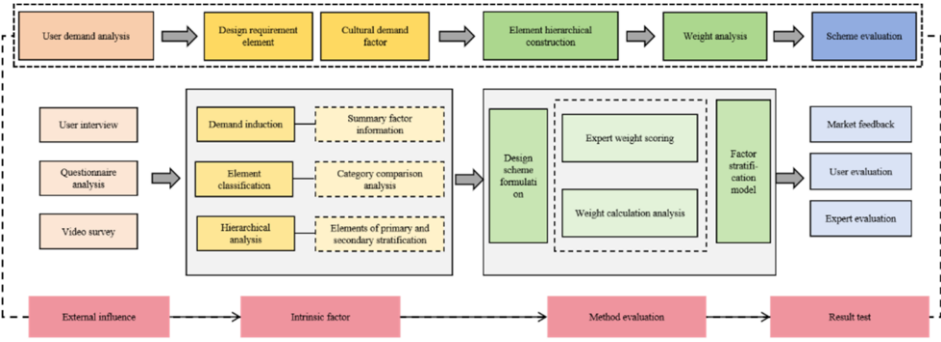


Figure 3. Hongyuan region red cultural and creative design elements.

4.2. Factor index and weight calculation test

The discriminant matrix of criterion layer and scheme layer is established according to analytic hierarchy process. It is stipulated that the index set of the evaluation system is:  $U = \{u_1, u_2, u_3 \dots u_n\}$ , Experts use 1-9 scoring scale method to complete the scoring, and determine the corresponding weight coefficient. The set of factor weights is obtained:  $A = \{a_1, a_2, a_3 \dots a_n\}$ . By assigning weights to the importance of different evaluation indicators, the pairwise discrimination matrix of the criterion layer is established through pairwise comparison, as shown in Table 1.

Table 1. Pairwise discriminant matrix.

Z	A1Cultural material symbol	A2Functional requirement application	A3The historical background of red culture	A4Main demand group	A5Cultural connotation value
A1Cultural material symbol	1	1/2	2	5	1/6
A2Functional requirement application	2	1	3	7	1/5
A3The historical background of red culture	1/2	1/3	1	3	1/7
A4The historical background of red culture	1/5	1/7	1/3	1	1/9
A5Cultural connotation value	6	5	7	9	1

The maximum feature root of the criterion layer matrix is obtained based on the score data:  $\lambda_{max} = \sum_{i=1}^n \frac{[AW]}{nw_i} = 5.226856161$ . To verify the consistency index, RI is the average randomness index of pair-to-pair discriminant matrix, which is brought into the consistency test formula  $CR = CI/RI$ . The weight vector of the index is calculated as follows:

$$RI = 1/12, n = 5$$

$$CI = \frac{\lambda_{max} - n}{n - 1} = (5.22685616 - 5) / (5 - 1) = 0.0567$$

Thus,  $CI = 0.0567$ ;  $CR = CI/RI = 0.050637536 / 1.12 = 0.050637536$  and  $CR = 0.050637536 < 0.1$ , the judgment matrix passed the consistency test. The index weights of the criterion layer are obtained. After the index weights of the criterion layer are determined, the judgment matrix is constructed for the indicators of the scheme

layer respectively, and the consistency test is carried out to calculate the index weights of the scheme layer. For details, see Table 2-6

**Table 2.**Discriminant matrix and weight calculation of cultural material symbol layer

<b>A1Cultural material symbol</b>	<b>Red cultural color elements matching</b>	<b>Decorative with cultural relics modeling elements</b>	<b>Practical cultural relics modeling elements</b>	<b>Figurative cultural symbols and patterns</b>	<b>Abstract cultural symbols</b>	$\omega_i$	$\lambda_{max}$	<b>CR</b>
Red cultural color elements matching	1	1/4	2	1/2	3	0.1412		
Decorative with cultural relics modeling elements	4	1	6	2	6	0.4572		
Practical cultural relics modeling elements	1/2	1/6	1	1/5	1/2	0.0583	5.1250	0.0279
Figurative cultural symbols and patterns	2	1/2	5	1	4	0.2674		
Abstract cultural symbols	1/3	1/6	2	1/4	1	0.0760		

**Table3.**Discriminant matrix and weight calculation of functional requirements application layer

<b>A2Functional requirement application</b>	<b>Digital cultural IP image</b>	<b>Modern smart technology experience</b>	<b>Offline entity brand operation</b>	<b>Product form and function diversification</b>	$\omega_i$	$\lambda_{max}$	<b>CR</b>
Digital cultural IP image	1	3	1/2	5	0.2808		
Modern smart technology experience	1/3	1	1/7	2	0.0951		
Offline entity brand operation	2	7	1	9	0.5686	4.0165	0.0049
Product form and function diversification	1/5	1/2	1/9	1	0.0556		

**Table 4 .** Discrimination matrix and weight calculation of red historical background layer

<b>A3 Historical background in red</b>	<b>Revolutionary historical record</b>	<b>Red story spread</b>	<b>Red Revolution sites</b>	<b>Regional red culture</b>	<b>Red cultural heritage</b>	$\omega_i$	$\lambda_{max}$	<b>CR</b>
Revolutionary historical record	1	5	9	3	7	0.5004		
Red story spread	1/5	1	6	1/3	3	0.1406		
Red Revolution sites	1/9	1/6	1	1/7	1/3	0.0338	5.2656	0.0593
Regional red culture	1/3	3	7	1	5	0.2583		
Red cultural heritage	1/7	1/3	3	1/5	1	0.0669		

**Table5.** Discriminant matrix and weight calculation of the main demand group layer

A4 main demand groups	Age 18 or younger	19 to 39 years	40 to 59 years	Age 60 or above	$\omega_i$	$\lambda_{max}$	CR
Age 18 or younger	1	1/3	1/5	3	0.1216	4.1704	0.0507
19 to 39 years	3	1	2	7	0.4454		
40 to 59 years	5	1/2	1	9	0.3852		
Age 60 or above	1/3	1/7	1/9	1	0.0479		

**Table6.** Discriminant matrix and weight calculation of cultural connotation value layer

A5 Cultural connotation value	The significance of patriotic philosophy education	Memorabilia value	Cultural spirit inheritance	The advanced nature of cultural times	$\omega_i$	$\lambda_{max}$	CR
The significance of patriotic philosophy education	1	7	3	4	0.5538	4.1195	0.0356
Memorabilia value	1/7	1	1/3	1/4	0.0614		
Cultural spirit inheritance	1/3	3	1	1/2	0.1595		
The advanced nature of cultural times	1/4	4	2	1	0.2253		

From the results presented in Table 2-Table 6, it can be seen that the consistency of the judgment matrix in the analysis and evaluation meets  $CR < 0.1$ , that is, it passes the consistency test standard. Based on the accuracy of the result, the comprehensive weight of the elements of the scheme layer is calculated, and the final weight value is obtained. For details, see Table 7.

**Table7.**Summary of the comprehensive weights of the elements of the scheme level

First-level indicators	second-level indicators	The weight value of synthesis
A1Cultural material symbol	0.1255 Red cultural color elements matching	0.1412 0.0177
	Decorative with cultural relics modeling elements	0.4572 0.0574
	Practical cultural relics modeling elements	0.0583 0.0073
	Figurative cultural symbols and patterns	0.2674 0.0336
	Abstract cultural symbols	0.0760 0.0095
A2Functional requirement application	0.1956 Digital cultural IP image	0.2808 0.0549
	Modern smart technology experience	0.0951 0.0186
	Offline entity brand operation	0.5686 0.1112
A3The historical background of red culture	Product form and function diversification	0.0556 0.0109
	0.0765 Revolutionary historical record	0.5004 0.0383
	Red story spread	0.1406 0.0108
	Red Revolution sites	0.0338 0.0026
A3The historical background of red culture	Regional red culture	0.2583 0.0051
	0.0349 Age 18 or younger	0.1216 0.0042
	19 to 39 years old	0.4454 0.0156
	40 to 59 years old	0.3852 0.0135
A3The historical background of red culture	Age 60 or above	0.0479 0.0017
	0.5675 The significance of patriotic philosophy education	0.5538 0.3143

A5Cultural connotation value	Memorabilia value	0.0614	0.0348
	Cultural spirit inheritance	0.1595	0.0905
	The advanced nature of cultural times	0.2253	0.1278

The comprehensive weight value of each element of the scheme layer can be obtained from Table 7, and the comprehensive weight value is calculated by consistency test:

$$CI=0.034678281 \tag{1}$$

$$CR=CI/RI =0.03467828/1.12=0.030962751 < 0.1 \tag{2}$$

The obtained result  $CR=0.030962751 < 0.1$  means that the comprehensive index of the matrix model passes the consistency test principle, and the calculated results are scientifically reasonable and meet the design reference requirements.

### 4.3. Weight analysis of demand factors

Based on the analysis of the red cultural design elements of Hongyuan County, the comprehensive weights of each level are sorted and evaluated, as shown in Figure 4. First of all, with the continuous expansion of the cultural and creative market in the field of red culture, the audience of red cultural creative products with regional characteristics shows a younger development trend. Secondly, users' demand for cultural and creative design continues to escalate. Users' demand for cultural products is developing towards more life and visualization. Last but not least, users pay more attention to the unique spiritual and cultural value brought by regional cultural products and the transmission of regional cultural value with The Times. To sum up, the product not only needs to have the representation of red cultural objects, but also needs to have profound cultural deposits as a support to show profound and powerful cultural spiritual values.

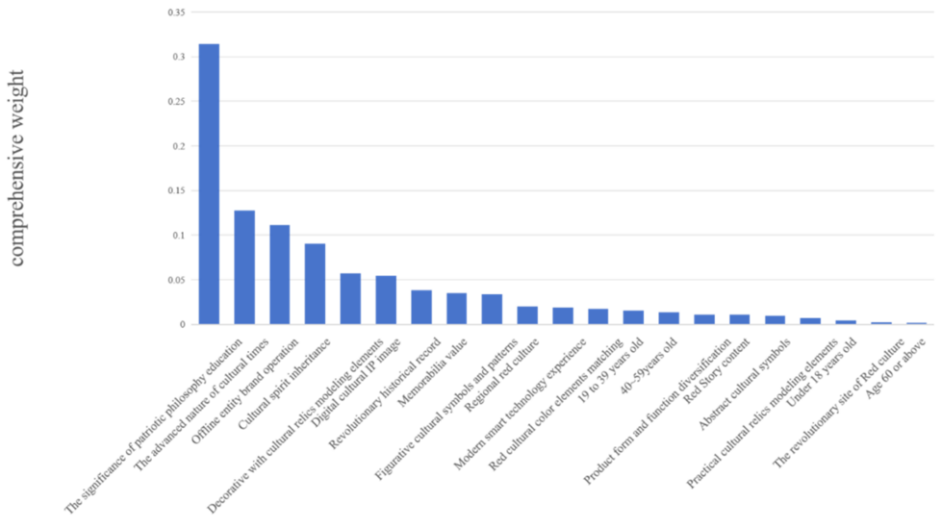


Figure 4. User requirements weight bar chart.



## 5. The design strategy of red cultural creative products in Hongyuan County

### 5.1. Analysis of design elements of red culture in Hongyuan County

Based on the scientific weight analysis conclusion, designers should pay more attention to the expression of regional red culture. In the design process, the local characteristics are integrated into the design of red cultural elements. First, the designer transformed and refined the red historical resources of Hongyuan County in the design process, and transformed the abstract culture and spirit into concrete visual cultural symbols. Second, designers should disassemble and reorganize the design elements of red culture, and extract the red cultural symbols with regional characteristics with unique connotation and high cultural added value. Through the design method of "creative products tell red stories", the design effect of "object and self empathy" can be achieved.

### 5.2. Hongyuan County red cultural creative product design practice

This paper will start from three aspects of creative packaging design, creative product design, and creative IP design. It will combine local red culture content to carry out a design practice for Hongyuan County.

Creative packaging design. Combining Hongyuan County local characteristic products: yak milk, Tibetan sheep, Sichuan traditional Chinese medicine and other three categories as packaging design goals. In the design idea, the selection of Hongyuan County classic red culture stories including: "Golden fishhook", "temple gift of food", "Little Red Army on horseback" and other three as creative cultural heritage support. The spiritual connotation of the red story is refined and presented in a symbolic and symbolic way. Red culture takes characteristic products as the carrier, spreads the spirit of red culture and shows the connotation of red culture through clear and easy to understand visual expression. See Figure 5 for details.



Figure 5. Creative packaging design

Creative product design. The design takes "the Three Great Grasslands of the Red Army" as the red story background. Designed a series of products with the theme of "Hongyuan March". This series of products mainly includes "broad", "flow", "imprint" three sub-themes. The characteristics of the Hongyuan region such as "Hongyuan prairie", "marshland" and "Moon Bay" are combined with the historical spirit of the Red Army's Long March. On the other hand, through the abstract red culture and local scenery, the regional red cultural color is defined, including "travel red", "flow green", "ink yellow". The visual creative design of cultural and creative products is

accomplished through the abstraction and re-empowerment of elements. See Figure 6 for details.



Figure 6. Creative product design

Creative IP design. The purpose of the design is to reflect the profound "civil-military relationship" in Hongyuan area. With "yak revolution" as the red background, the Red Army and Hongyuan County residents as the IP image. Combined with the image features of Tibetan sheep, Tibetan yak and Long March military uniform, it shows the relationship between the military and the people and the historical characteristics of Hongyuan County. Let the design work bear the unique red culture of Hongyuan. See Figure 7 for details.



Figure 7 Creative IP design

## 6. Conclusion

This paper takes the user demand as the starting point and takes the AHP as the scientific method. Explore the design path of red culture combined with regional characteristics in creative design from the perspective of design. Taking Hongyuan County as an example, this paper practices the elements of red culture design demand in Hongyuan region. Starting from the two dimensions of design demand and cultural demand, the user demand is integrated, and the analytic hierarchy process is used to complete the analysis of the factor weight. Finally, using the analysis conclusions, Hongyuan County red cultural creative products to complete the design practice. The practice is carried out from various aspects such as color representation, symbolic image and product modeling. The spiritual and cultural needs are transmitted to People's Daily life in the form of images. To achieve the purpose of cultural communication by meaning and meaning. At the same time, it also has the effect of regional red culture revitalization. Ahp brings design closer to the will of the market. Scientific methods can improve the efficiency of design and increase market satisfaction. It provides reference value for the design and research of red culture helping rural revitalization.

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