

Research on Lanzhou Taiping Drum Digital Non-Genetic Inheritance and Cultural Ecological Reconstruction Path Based on Computational Approach

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ABSTRACT

This paper adopts research methods such as literature method and questionnaire survey method to take the cultural inheritance and development of Lanzhou Taiping Drum as the research object, and conducts in-depth discussion on the characteristics, social background and development of Lanzhou Taiping Drum. The research and analysis of the influence of the inheritance of Lanzhou Taiping Drum was also carried out by using principal component analysis and stepwise regression method in combination with the actual situation. It is found that many factors of Lanzhou Taiping Drum itself and government factors have significant influence on its inheritance. On the basis of the results of this study, we explore the ways and contents of the protection and inheritance of Lanzhou Tai Ping Drum, and put forward the digital inheritance of Lanzhou Tai Ping Drum and the path of cultural ecological reconstruction in terms of the influencing factors.

Keywords: Principal Component Analysis, Stepwise Regression, Lanzhou Tai Ping Drum, Digital Inheritance, Cultural Ecology

1. Introduction

As a kind of folk local art in Lanzhou, Gansu Province, Lanzhou Taiping Drum, as an intangible cultural heritage, has been damaged and affected to a certain extent. Lanzhou Taiping Drum is the ancient people will be pottery drum and capricorn drum fusion transformation, after the propaganda for the military, the annual festival celebrations, rituals and prayers, social fire performances and other activities [1-4]. In the three counties and five districts of Lanzhou, as long as there is a social fire team, there are drums. Lanzhou Taiping Drums have unique performance forms, such as hanging drums, carrying drums, hanging drums, handing drums, holding drums, etc., and playing techniques such as hitting, knocking, banging, pushing, hanging, etc. The traditional Chinese art elements, such as colors, patterns, decorations, etc., are also integrated into the production of Taiping Drums, so that they

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Received 03 February 2024; Revised 12 April 2024; Accepted 10 November 2024; Published Online 15 April 2025.

DOI: [10.61091/jcmcc127a-349](https://doi.org/10.61091/jcmcc127a-349)

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express China's unique aesthetic culture to the fullest extent [5-8]. However, due to the drastic impact of modern urban culture, Lanzhou Taiping Drums and other folk art forms are more or less facing significant changes unprecedented in their history, and some are even facing extinction [9-11].

With the rapid development of China's economy, many people have neglected the inheritance and development of traditional culture in the process of pursuing a higher quality of life. With the increasingly frequent exchanges between countries around the world, various foreign cultures have flooded into the country, bringing a considerable impact on the development and inheritance of traditional Chinese culture [12-15], especially a large number of overseas film and television dramas as well as entertainment programs into the domestic market, which have a considerable impact on the values of the young groups, and the traditional Chinese aesthetics have been challenged [16-17], and the development of digitalization has provided a powerful technical support for the development of traditional Chinese culture. The development of digitalization provides strong technical support to cope with this challenge. Digital inheritance through the application of digital technology can preserve the non-heritage projects, so that more people can understand and learn the non-heritage culture, and also can protect the non-heritage projects from being forgotten [18-21].

This study firstly summarizes the history, inheritance mode and development background of Lanzhou Tai Ping Drum through literature, and deeply understands the characteristics and cultural connotation of Lanzhou Tai Ping Drum's non-heritage culture. Considering the actual situation of the inheritance of Lanzhou Tai Ping Drum, the study selects the groups of Tai Ping Drum performers and the general public to carry out the actual investigation. Using principal component analysis and stepwise regression, the influencing factors of the inheritance of Lanzhou Tai Ping Drum were explored in depth. Finally, the study provides practical strategies for the digital inheritance and cultural ecological reconstruction of the Lanzhou Tai Ping Drum, taking into account the influencing factors of the inheritance.

2. Non-genetic inheritance of the Lanzhou Tai Ping Drums

2.1. Overview of Lanzhou Tai Ping Drum

Taiping Drum is one of the representative drums in Gansu Province and even in Northwest China, known as "the first drum in the world". As a Chinese folk dance music, Lanzhou Taiping Drum is popular among the people like other folk music. It is a folk dance and music art with strong local characteristics of Lanzhou, which is created and performed by Lanzhou people to express the traditional culture of Lanzhou and reflect the spirit of Lanzhou working people.

In the environment of increasingly frequent cultural exchanges in different parts of the world, the inheritance and development of Lanzhou Taipinggu has become a major problem faced by cultural workers. On the one hand, the economic benefits created by the Lanzhou Tai Ping Drum are limited, and the income of the participants is low. On the other hand, the group of Lanzhou Tai Ping Drum participants is shrinking, and the number of young Tai Ping Drummers is also decreasing. Protectors and inheritors of the intangible cultural heritage need to take action to strengthen the protection, inheritance, and development of Lanzhou Tai Ping Drums, in order to inherit and enrich the Chinese drum culture.

International intangible cultural heritage keepers have found that the intangible cultural heritage of each region is a key influencing factor in determining the cultural identity of the region, inheriting and developing the regional culture, and plays an irreplaceable role in the exchange and integration of various cultures. In order to protect national intangible cultural heritage more systematically and perfectly, the State Council issued the "Notice on Strengthening the Protection of Cultural Heritage", which issued clear instructions for governments at all levels on the protection of cultural heritage, and formulated a ladder protection mechanism of "national + provincial + city + county", and at the same time issued instructions to local governments and cultural work departments to "protection first,

rescue first, rational utilization, inheritance and development". Local governments and departments are strictly required to respond effectively to the protection and development of intangible cultural heritage. In accordance with the "national + provincial + city + county" tiered protection system promulgated by the State Council, governments at all levels have also successively published local intangible cultural heritage protection lists, and gradually developed to cities/counties. On May 20, 2006, with the approval of the State Council, the Ministry of Culture of the People's Republic of China determined and released the first batch of selected national intangible cultural heritage lists, and Lanzhou Taiping Drum became one of them.

2.2. Analysis of Lanzhou Taiping Drum Inheritance Mode

The traditional Lanzhou Taiping Drums and other folk music are passed on orally and by heart. Oral teaching means that the teacher plays and the learner listens and remembers, instead of using written music scores as the main method of transmission. This is mainly due to the fact that Lanzhou Tai Ping Drum's music and movements are closely combined without a perfect notation method. Before the founding of the People's Republic of China, the Lanzhou Tai Ping Drums were mostly inherited by blood, and after the founding of the People's Republic of China, they were mostly inherited by geography.

Bloodline inheritance, i.e. inheritance within the family, from father to son, such as "father to son" and "male to female" are typical bloodline inheritance. This kind of inheritance by blood lineage can easily lead to the formation of unique skills and different schools. This also led to the early division of the Lanzhou Tai Ping Drum into three genres, one is the low drum genre which is mainly circulated in the Xigu District, Yongdeng County and Honggu District of Lanzhou. The second is the middle drum school, which was mainly circulated in Anning, Qilihe and some towns in Chengguan District of Lanzhou City. The third is the drum school that mainly circulates in Yantan Township, Qingbaishi Township and some townships of Gaolan County in Chengguan District of Lanzhou City. With the rapid development of society, geo-inheritance is no longer the main inheritance method of Lanzhou Taiping Drum. Geo-inheritance is inherited in a certain specific area similar to "master and apprentice inheritance", "social inheritance", etc. Lanzhou Tai Ping Drum is mainly inherited by master and apprentice. Most of the inheritors of Lanzhou Tai Ping Drums are farmers in the villages around Lanzhou City, and most of them are rough Northwesterners who grew up by the Yellow River, but they also harbor delicate emotions. It is because of the inheritance method of Lanzhou Tai Ping Drum that a large number of outstanding inheritors are able to give full play to their talents in the process of inheritance. At the same time, this way of passing on from mouth to ear also increases the uncertainty and volatility of Lanzhou Tai Ping Drum, but creates conditions for the collectivity of creation, in which every drummer, flag bearer, gong and cymbal player can participate. This is why the Lanzhou Tai Ping Drum now combines the playing styles of all three genres. These participating people have perfected this art form day by day. This change did not happen overnight, but only after a great deal of time settling in and accumulation by generations of ancestors did the Lanzhou Taiping Drum slowly take shape as we see it today.

2.3. Inheritance and Development of Lanzhou Taiping Drum Culture

In more than six hundred years of inheritance and development, Lanzhou Taiping Drums have been passed down from generation to generation, and through generations of craftsmen's careful innovation and improvement, and through the baptism of the times, it has developed into a folk art that is suitable for young and old, and both men and women can learn. Lanzhou Taiping Drums have been improved by the ingenuity of several generations of inheritors, and have been equipped with the ornamental and entertaining features that were not available before. It has become a kind of folk art in line with the development of the times. Lanzhou Taiping Drum's original playing action is relatively single, lack of ornamental, and the traditional drum body is heavy, not suitable for women and children to play. After the finishing digging and innovation of the Tai Ping Drum enthusiasts, they have adapted

the playing movements on the basis of the original, and have made more rich arrangements for the performance formation, and have reformed the structure of the drum body, and transformed the two drums suitable for women and the three drums suitable for children. The Taiping Drum inheritors in Gaolan County have created a series of movements such as Ten Thousand Horses Running, Yellow River Warriors, and Eagles Spreading Their Wings, and have improved the articulation between the movements to become more rhythmic, rhythmic, and reasonable. Although this change makes the movements of the drums more difficult, the fluency is better and the playing style is more varied, making the drums more ornamental. In terms of performance formations, some new formations have been developed, such as the camel bells of the desert, the children of the Yellow River, and the heroes among women. In daily performances, the Taiping Drums have added a musical background to their performances, making them more rhythmic and rhythmic. Taiping Drum was originally used in the first month of the ritual activities of the ceremony, in ancient times the idea of male superiority makes Taiping Drum pass male not female, Taiping Drum is also considered the earliest war drums, so there has been only men can play, but in recent years Gaolan County set up its own women's Taiping Drum team. With the progress of society, the backward ideological concepts are gradually abandoned, Lanzhou Taipinggu has gradually developed into a national folk art activities, in some places of the company's opening, cutting ceremony, Taipinggu has also become a unique performance program for the development of the company to add good luck.

3. Analysis of factors affecting the digital heritage of the Lanzhou Tai Ping Drums

3.1. Current Situation of Digital Inheritance of Lanzhou Tai Ping Drums

Inheritance is an important concept widely used in the field of cultural disciplines, and its literal meaning can be understood as transmission and continuation. For the inheritance of Lanzhou Tai Ping Drum, because it is relatively difficult to investigate its inheritance group, considering the feasibility of the project and its own research ability and other factors, this paper representatively selects the performing group and the general public to carry out the investigation. A total of 65 Taiheidu artists and 480 members of the general public were surveyed. The survey was conducted mainly in the dimensions of cognition (Z1), preference (Z2), cultural significance attitude (Z3), influence (Z4), artistic taste (Z5) and viewing willingness (Z6) of the current situation of the Taiping Drums, using the degree of goodness of the 1~5 points, the higher the score the better. In order to ensure the validity of the questionnaire, the expert survey method was applied, and relevant experts and scholars were asked to evaluate the validity of the questionnaire and make corresponding comments for modification. A total of eight experts surveyed basically recognized the validity of the questionnaire. The reliability coefficients of the scale as a whole and the indicators of each dimension are at a high level (above 0.8), so the reliability of the scale data is high and the internal consistency is good.

The scores of the survey results of the current situation of the pacific drum are shown in Figure 1. For the cognitive understanding of the non-heritage of the pacific drum in Lanzhou, its average score is 3.15, indicating that most people have a certain degree of cognition of the non-heritage of the pacific drum in Lanzhou, and they can realize the importance of the non-genetic inheritance of the pacific drum in Lanzhou to a certain extent. In terms of preference (Z2) and willingness to watch (Z6), the scores are higher than 3, reflecting that most people recognize the performing art of Lanzhou Tai Ping Drums, are more receptive to them, and are willing to appreciate and watch related performances. The scores of Attitude of Cultural Significance (Z3), Degree of Influence (Z4) and Artistic Taste (Z5) are all lower than 3, with scores of 2.95, 2.64 and 2.39, respectively, of which Artistic Taste (Z5) scores the lowest. This shows that people do not know the cultural significance of the Lanzhou Tai Ping Drum's heritage deeply, and the dissemination of the Lanzhou Tai Ping Drum has a low utility and has no influence on most people. Meanwhile, the artistic taste of Lanzhou Taiping Drum needs to be further improved. On the whole, the comprehensive average score of the inheritance status of Lanzhou Taiping

Drum is 2.905, which is low and the inheritance status is not optimistic.

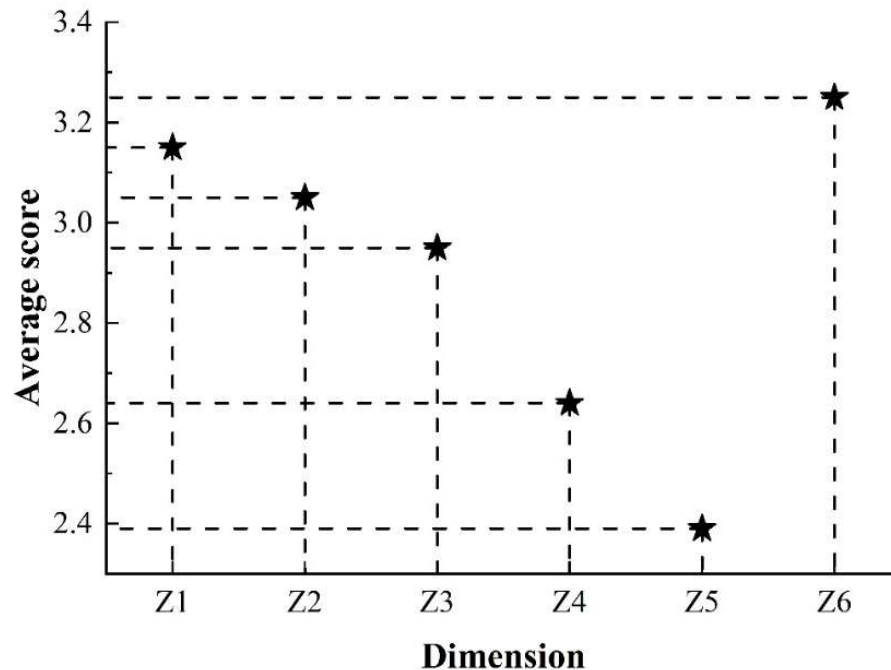


Fig. 1. The survey results of the situation of the fire test

3.2. Selection of analytical calculation methods

3.2.1. Principal Component Analysis. Principal Component Analysis (PCA) is a dimensionality reduction analysis method aimed at extracting a few less summed variables from multiple influencing factors to reflect as much information as possible about the original variables. The basic idea is: assuming that there is a certain correlation between the original multiple indicators (such as P indicator), in order to avoid the emergence of serious multicollinearity, the name of the indicators will be re-combined to become a new set of uncorrelated composite indicators, with the new composite indicators to replace the original multiple indicators. A common method is to reflect the degree of concentration of information through the variance of the first linear combination, which is called the first composite indicator, i.e., F_1 . The size of the variance $VAR(F_1)$ directly reflects the amount of information contained in F_1 , and the larger the variance is, the richer the information content is. Therefore, when selecting linear combinations, the one with the largest variance, i.e., F_1 , will be prioritized and called the first principal component. If the first principal component is not sufficient to adequately represent the information of the original P indicators, further consideration is given to the selection of the second linear combination, i.e., F_2 . In order to ensure that F_2 effectively reflects the original information and does not duplicate F_1 , it is necessary to ensure that the covariance $Cov(F_1, F_2)$ between F_1 and F_2 is zero. The F_2 that satisfies this condition is referred to as the second principal component. By analogy, one can continue to construct the third, fourth up to the P th principal component. The general model is as follows:

Assuming that there is P original variable of $X_1, X_2, X_3, \dots, X_p$, which is normalized and transformed to obtain a new P -dimensional random vector, and then linearly transformed, a completely new indicator can be obtained: $F_1, F_2, F_3, \dots, F_p$. The new indicator can be represented by a linear combination of the previous original indicators, then there is:

$$F_1 = b_{11}X_1 + b_{12}X_2 + b_{13}X_3 + \dots + b_{1p}X_p \quad (1)$$

$$F_2 = b_{21}X_1 + b_{22}X_2 + b_{23}X_3 + \dots + b_{2p}X_p \quad (2)$$

$$F_p = b_{p1}X_1 + b_{p2}X_2 + b_{p3}X_3 + \cdots + b_{pp}X_p \quad (3)$$

The above equation satisfies the conditions: $b_k^2 + b_{k2}^2 + \cdots + b_{kp}^2 = 1, k = 1, 2, \dots, p$. And F_1 and F_2 are uncorrelated, F_1 is the largest variance among all linear functions about $X_1, X_2, \dots, X_p$, F_2 is the second largest, and so on.

The new composite indicator $F_1, F_2, \dots, F_p$ is obtained, and they are called the first, second, ... P th principal components of the original indicator, and the first few principal components with the largest variance are generally selected for analysis in the actual analysis.

Conducting factor analysis mainly includes the following steps:

- 1) Construct an indicator evaluation system based on relevant standards.
- 2) Based on the established index system, collect and organize the raw data, which can form a $n \times p$ -dimensional matrix:

$$(X_{ij})_{n \times p} = \begin{bmatrix} X_{11} & X_{12} & \cdots & X_{1p} \\ X_{21} & X_{22} & \cdots & X_{2p} \\ \cdots & \cdots & \cdots & \cdots \\ X_{n1} & X_{n2} & \cdots & X_{np} \end{bmatrix} = (X_{i1}, X_{i2}, \dots, X_{ip}), i = 1, 2, \dots, n \quad (4)$$

- 3) Standardized processing of raw data. In order to eliminate the error caused by the difference in the scale or the difference in the order of magnitude, the standardized conversion can be carried out according to a certain formula, which is processed as follows:

$$X_{ij}^* = \frac{X_{ij} - \bar{X}_j}{\sqrt{\text{Var}(X_j)}} (i = 1, 2, \dots, n; j = 1, 2, \dots, p) \quad (5)$$

Among them:

$$\bar{X}_j = \frac{1}{n} \sum_{i=1}^n X_{ij}; \text{Var}(X_j) = \frac{1}{n} \sum_{i=1}^n (X_{ij} - \bar{X}_j)^2 \quad (6)$$

and get the normalized matrix:

$$(X_{ij}^*)_{n \times p} = \begin{bmatrix} X_{11}^* & X_{12}^* & \cdots & X_{1p}^* \\ X_{21}^* & X_{22}^* & \cdots & X_{2p}^* \\ \cdots & \cdots & \cdots & \cdots \\ X_{n1}^* & X_{n2}^* & \cdots & X_{np}^* \end{bmatrix} = (X_{i1}^*, X_{i2}^*, \dots, X_{ip}^*), i = 1, 2, \dots, \quad (7)$$

- 4) Calculation of the correlation coefficient matrix R. The samples were standardized to create a matrix of correlation coefficients between the data and denoted by R:

$$R = \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1p} \\ r_{21} & r_{22} & \cdots & r_{2p} \\ \cdots & \cdots & \cdots & \cdots \\ r_{n1} & r_{n2} & \cdots & r_{np} \end{bmatrix} \quad (8)$$

- 5) Calculate the eigenvalues, variance contribution ratio and cumulative contribution ratio of the correlation coefficient matrix. The eigenvalue λ_i of the correlation coefficient matrix is actually the variance of the principal component F_i , and the first m ($m < p$) principal components $F_1, F_2, \dots, F_m$ with eigenroots greater than 1 are generally selected.

- 6) Calculate the principal component loadings (principal component coefficient matrix). The relationship equation between the principal component loading value l_{ij} and the eigenvector h_{ij} is:

$$l_{ij} = \frac{h_{ij}}{\sqrt{\lambda_i}} (i = 1, 2, \dots, n; j = 1, 2, \dots, p) \quad (9)$$

7) Calculate each principal component F_i expression. That is, the principal component loading value l_{ij} is multiplied by the corresponding standardized indicator value X_{np}^* . The calculation formula is:

$$F_i = l_{1j} * X_1^* + l_{2j} * X_2^* + \dots + l_{ij} * X_p^* (j = 1, 2, \dots, m < p) \quad (10)$$

3.2.2. Stepwise regression. The stepwise regression method is one of the more commonly used methods of linear regression analysis in multivariate statistics. It introduces the independent variables into the regression equation one by one by considering the role of the independent variables on the dependent variable, the degree of significance and the size of the contribution rate, etc. By eliminating one variable from each regression equation and testing the chi-square test at each time, thus making the regression equation contain only the variables that have a significant impact on the dependent variable before the introduction of the new variables, and the non-significant variables have been eliminated, in order to achieve the effect of improving the fit of the regression model. Purpose. The optimal linear regression equation is not established until there are no new variables to be introduced and no old variables to be excluded.

The basic operation steps of stepwise regression are shown in Figure 2. In essence, stepwise regression can be said to be a form of optimization of linear regression. This approach ensures that only those variables with significant explanatory power are retained in the final model by consistently introducing independent variables and testing the sum of squares of partial regressions for each variable. Most importantly, these retained explanatory variables should be free from serious problems of multicollinearity among them, thus ensuring the stability and accuracy of the regression model.

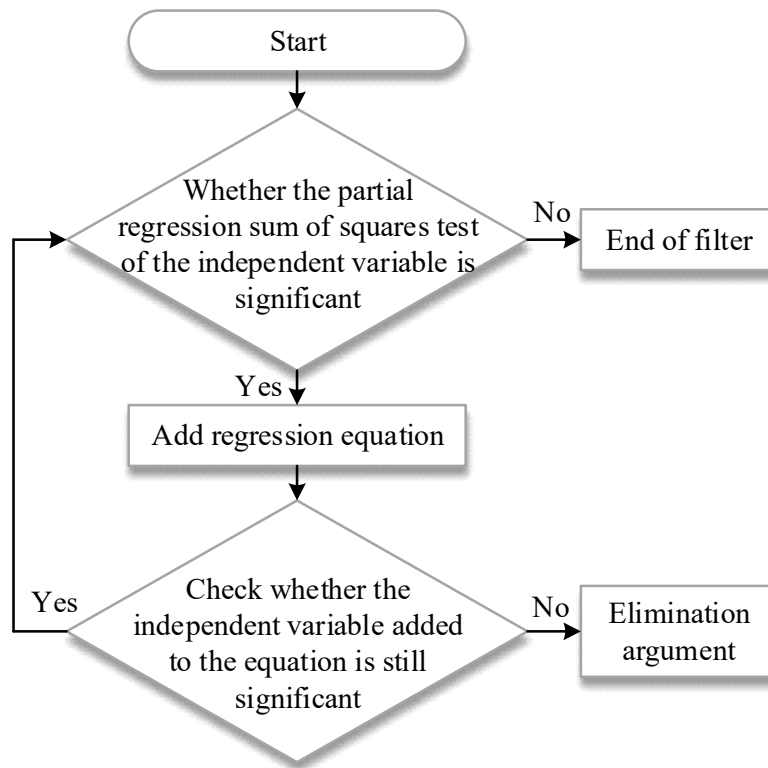


Fig. 2. Basic step diagram of stepwise regression

3.3. Empirical Analysis of Influencing Factors of Taihei Drum Inheritance

3.3.1. Calculation of the combined heritage status score. In this paper, based on the results of the questionnaire survey of the inheritance status quo, the indicators of cognitive situation (Z1), preference degree (Z2), cultural significance attitude (Z3), influence degree (Z4), artistic taste (Z5) and viewing willingness (Z6) in the questionnaire are selected, and the idea of dimensionality reduction is applied to derive the matrix of inheritance status quo scoring coefficients through the method of principal component analysis.

The inheritance status score correlation coefficient matrix is shown in Table 1, most of the inheritance status correlation coefficient matrix has a correlation coefficient greater than 0.3, and the KMO value is 0.725, which meets the requirements and is suitable for principal component analysis.

Table 1. The correlation coefficient matrix of the status of the status quo

	Z1	Z2	Z3	Z4	Z5	Z6
Z1	1	0.385	0.547	0.538	-0.008	0.350
Z2	0.385	1	0.371	0.588	0.446	0.398
Z3	0.547	0.371	1	0.525	0.677	0.656
Z4	0.538	0.588	0.525	1	0.587	0.652
Z5	-0.008	0.446	0.677	0.587	1	0.383
Z6	0.350	0.398	0.656	0.652	0.383	1

The cumulative contribution rate of variance is shown in Table 2, and the maximum variance of the common factor is between 0.60 and 0.95, indicating that most of the information in the variables can be extracted by the factors, which shows the validity of the results of factor analysis. The cumulative contribution rate of variance reaches 70.949%, which can explain most of the original variables, so the first three principal components can be extracted to replace the original six variables.

Table 2. The cumulative contribution rate of variance

Module	Initial eigenvalue			Extracting the load of the load		
	Total	Percentage of variance	Cumulative percentage %	Total	Percentage of variance	Cumulative percentage %
1	2.352	41.263	41.263	2.352	41.263	41.263
2	1.310	15.674	56.937	1.310	15.674	56.937
3	1.005	14.012	70.949	1.005	14.012	70.949
4	0.853	13.011	83.96			
5	0.715	10.954	94.914			
6	0.387	5.086	100			

The comprehensive score matrix of the current status of transmission is shown in Table 3, and the three principal components are noted as F1~F3. According to the formula F1 is mainly determined by the degree of preference, influence, and the willingness to watch, so it can be interpreted as an indicator of the effect of the audience. F2 can be interpreted as an indicator of crisis perception. F3 can be interpreted as an indicator reflecting the treatment attitude. Since the composite score is $\sum$ (the score of each principal component $\times$ the corresponding variance contribution rate of each principal component), the composite score of the current status of inheritance is Y, and the composite score of the current status of inheritance is 3.27. The composite score of the current status of inheritance, Y, can be used as a new variable in the subsequent regression analysis of the current status of inheritance and the influencing factors.

Table 3. The integrated scoring matrix of the status quo

	Module		
	1	2	3
Crisis cognition Z1	0.047	0.978	0.095
Preference Z2	0.355	0.046	-0.338
Cultural attitude Z3	0.254	-0.025	0.606
Degree of influence Z4	0.304	-0.015	-0.705
Art space Z5	0.268	-0.195	0.375
Watch will Z6	0.272	0.003	0.279

3.3.2. Results of stepwise regression analysis. The influencing factors of the inheritance of Taiping Drum mainly include its own influence, market factors, government factors and social factors. The same use of principal component analysis to derive the results of the influence factor score, the inheritance status and the influence factors to do principal component analysis, the comprehensive score of each variable, the comprehensive score of each variable as quantitative data for subsequent regression analysis. This paper adopts the linear regression method, and establishes the regression equation model of the influencing factors of the inheritance of Lanzhou Tai Ping Drum through step-by-step regression method, and further analyzes the influence of each factor on the current situation of inheritance. The influencing factors are labeled as inheritance status (Y) and own factors (X1), market factors (X2), government factors (X3) and social factors (X4). The correlation coefficient test indicates that there is a linear correlation between the dependent and independent variables, which satisfies the prerequisites for linear regression analysis.

The results of the regression model are shown in Table 4, X2 and X4 did not pass the significance test were discarded when modeling the regression equation. The coefficient test of model I and model II is good, and model II established by stepwise method indicates that the current status of inheritance is significantly affected by its own factors and governmental factors. And the results of covariance diagnosis indicate that there is no multicollinearity between the respective variables, and the residuals meet the requirements of the linear regression model. Comprehensive linear regression results, it can be concluded that the linear regression model equation for the inheritance of Lanzhou Taiping Drum is $Y = 0.165 (X1) + 0.269 (X3)$, and the goodness of fit of the model is 0.475, which is generally effective. It can be seen that many factors of Lanzhou Pacific Drum itself as well as governmental factors have a significant effect on its inheritance. In addition, the regression equation model may have deficiencies due to the limitations of the ability level of the members of the investigation team. Therefore, the influence of market and social factors on the inheritance should not be ignored when investigating and analyzing the factors.

Table 4. Regression model results

Model		1		2		
		Constants	X3	Constants	X3	X1
Nonnormalized coefficient	B	-4.121	0.353	-1.075	0.063	0.165
	Standard error	0.057	0.057	0.054	0.063	0.063
Normalization factor	Beta		0.355		0.273	0.163
t		0.000	0.6555	0.000	4.313	2.642
Sig		0.858	0.001	0.859	0.000	0.010
Correlation	Zero order		0.353		0.356	0.303
	Deviation		0.357		0.241	0.153
	Portion		0.353		0.230	0.142
Common linear	Tolerance		1.00		0.736	0.736

statistics	VIF		1.00		1.359	1.359
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4. Digital non-genetic inheritance and cultural ecological reconstruction paths

4.1. Lanzhou Tai Ping Drum Digitalization Inheritance Path

Like many non-heritage dances, Lanzhou Tai Ping Drum has generally encountered the dilemma of limited audience groups and the problem of artistic taste. In view of this, there is an urgent need to broaden the audience group of Lanzhou Tai Ping Drum and enhance its influence in the cultural field. In terms of concrete implementation, the following strategies can be adopted to promote Lanzhou Tai Ping Drum.

1) Utilize multiple emerging media to carry out promotional activities. First of all, led by the government, use the network media to popularize the non-heritage dance. The government usually has strong credibility in cultural communication. As of 2024, many regions in China have successfully set up websites dedicated to NHM, which showcase local NHM resources in detail and have become an important way for the younger generation to learn about NHM. However, just setting up a website is not enough; the government also needs to strengthen the promotion of these sites, such as increasing publicity through official public numbers, official websites, and other channels to enhance the sites' visibility.

Secondly, use video platforms to attract more people to participate in the promotion of non-heritage dances. In the digital era, everyone has the opportunity to become content creators and disseminators to jointly promote the inheritance of non-heritage dances. Taking the Lanzhou Taiping Drum as an example, the public can be guided to record the performance video of the Lanzhou Taiping Drum, upload it to video websites after editing and processing, and make use of its huge user group for wide dissemination. The government can also organize short video creation competitions to stimulate the public's creative enthusiasm, as a way to inject new vitality into the dissemination of non-heritage dance. Finally, it is also possible to create a non-heritage digital exhibition hall for the Taiping drum in Lanzhou City. Through the integration of sound, light, electronics and multimedia and other cutting-edge technology, the traditional drum culture and modern digital display methods, aimed at enriching the exhibition dimension of the exhibition hall. Visitors can click on the list on the electronic screen, watch the pictures and video materials of the project, and enjoy the charm of the drum art. At the same time, with the help of headphones to listen to the drum artists to tell the history and performance of the repertoire, to enjoy a set of images, text, sound in one of the all-round three-dimensional sense of the official feast.

2) Cultivation of Inheritors Using Digital Technology. The dissemination and promotion of intangible cultural heritage can not be separated from the core role of the inheritor, therefore, to enhance the cultivation and protection of intangible dance inheritors is a key way to promote the development of this type of dance art. On the one hand, it is necessary to innovate the cultivation method of Lanzhou Taiping Drum inheritors. In addition to the traditional small-scale teaching mode, the new media era provides a platform for online teaching, and such a classroom can be either a classroom on campus or a cyberspace. In view of the limited number of inheritors of Lanzhou Taiping Drum, online teaching has become an effective means of cultivation. Through the network platform, both the online education resources of universities and colleges can be utilized, and the public can also be encouraged to participate in teaching interactions, which not only helps to expand the popularity of Lanzhou Taiping Drums, but also allows the public to re-engage in the dance performances, so that these dance arts can be re-rooted in the soil of folk culture. On the other hand, new media technology should be utilized to strengthen the protection of Lanzhou Tai Ping Drum inheritors. Lanzhou Tai Ping Drum has vividness, and different inheritors will present different artistic styles. Under the new media environment, the information storage methods are increasing, universities can invite the inheritors to carry out online teaching to reduce their economic burden, and the government can also make audio and video

recordings of their live performances, digitize them for preservation, and release them on different video platforms, which not only leaves rich teaching materials for future generations, but also allows future audiences to enjoy more wonderful live performances.

4.2. *Cultural and Ecological Reconstruction Path of Lanzhou Taiping Drums*

Ecology is the theoretical core of the ecological reconstruction of non-heritage culture, which firstly emphasizes the balance and stability among the elements within the non-heritage culture, and also takes into account the harmonious symbiotic relationship between the non-heritage culture and human beings, the natural environment and the social environment. Ecology studies the interactions between biological communities and individuals as well as between them and the environment, and the ecological reconstruction of non-heritage culture is also based on the theoretical foundation of such interactions. The application of ecological theories and methods to the interaction between non-heritage culture and the environment provides theoretical guidance for the realization of the sustainable development of non-heritage culture.

The reconstruction of the cultural ecology of NRH not only puts forward a new research perspective for the protection and inheritance of NRH in theoretical research, but also has important social value. First of all, the reconstruction of non-heritage cultural ecology can enhance cultural self-confidence and sense of identity. Through the protection and inheritance of non-heritage culture, we can better understand and recognize the profound connotation of China's traditional culture, so as to enhance the self-confidence and identity of traditional culture. Secondly, the reconstruction of non-heritage cultural ecology can promote cultural diversity and cultural innovation. As a traditional cultural resource, NLC has unique cultural characteristics and values. Through the reconstruction of NRL cultural ecology, its inner connection and wholeness can be better understood, so as to realize the balance of cultural diversity and cultural innovation. Furthermore, the reconstruction of non-heritage cultural ecology pays attention to the interaction between non-heritage and social environment, implements effective linkage, and vigorously develops the non-heritage culture combined with local industries, so as to promote the development of local economy.

The path of cultural ecological reconstruction of non-heritage of Lanzhou Taipinggu is shown in Fig. 3. In order to realize the sustainable protection, inheritance and development of non-heritage, the research on the practical path of reconstruction is carried out for each element, covering multiple levels from micro to macro.

At the micro level, the ecological genes of Lanzhou Taiping Drum NRL culture are refined to stimulate the vitality of protection and inheritance. This includes in-depth excavation and research on the non-heritage culture, as well as the formulation of specific protection and inheritance measures for different programs.

At the meso level, build an ecological platform for Lanzhou Taiheidu non-heritage culture, and bring into play the linkage effect of various elements. This includes the establishment of a non-heritage culture industry alliance to promote exchanges and cooperation between different industries. Promote the integration of non-heritage culture and modern science and technology, and innovate non-heritage cultural products and services.

At the macro level, it is necessary to develop Lanzhou Taiping Drum non-heritage cultural eco-industry and realize the cultural and economic benefits. This includes building a complete non-heritage cultural industry chain and cultivating non-heritage cultural ecological industry clusters. Promote the marketization and branding of non-heritage cultural products through the way of cultural creative industry, and pay attention to the balanced development of culture and economy to achieve sustainable development while developing non-heritage cultural ecological industry.

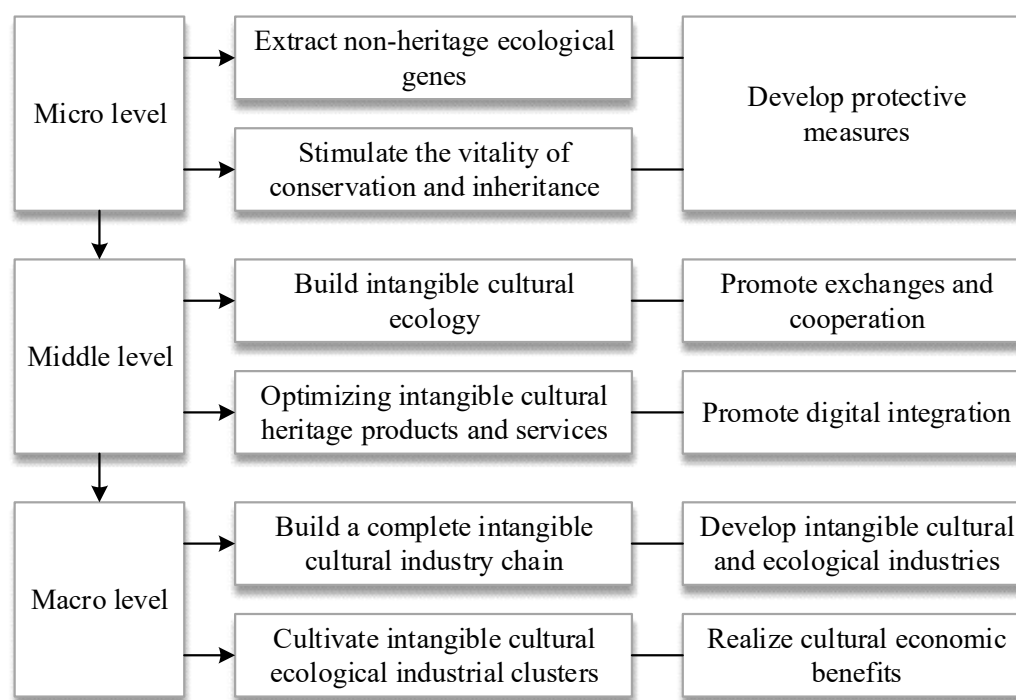


Fig. 3. The path of the non-relic reconstruction path

5. Conclusion

Lanzhou Taiping Drum, as a traditional Chinese folk dance music behind the rich cultural value and musical heritage, and Taiping Drum for the Chinese drum culture and even folk culture has far-reaching influence. This paper explores the effective path of digital non-genetic inheritance of Lanzhou Tai Ping Drum, and conducts a practical investigation on the current situation of Lanzhou Tai Ping Drum. The comprehensive score of the inheritance status of Lanzhou Tai Ping Drum is 2.905, and the inheritance status is not optimistic. And the scores of cultural significance attitude, influence degree and artistic taste are all lower than 3 points. Through principal component analysis and stepwise regression, it is found that the development of Lanzhou Tai Ping Drum itself and the government are the significant influences on its inheritance, and the influence of market and social factors on its inheritance should not be neglected. For this reason, this paper puts forward suggestions for the digital inheritance of Lanzhou Tai Ping Drum from the promotion and inheritance aspects on the basis of the research results, and puts forward the path to realize the reconstruction of Lanzhou Tai Ping Drum's cultural ecology from the micro to macro levels, in order to reach the perfect intermingling of the tradition and the modernity, and to contribute to the digital inheritance and the development of Lanzhou Tai Ping Drum's non-legacy.

Funding

This work was supported by North Minzu University Youth Talent Cultivation Project (2023QNPY14).

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