



# Research on the Innovation of Intangible Cultural Heritage Inheritance Based on Digital Technology

## The Hakka Kirin is an Example

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**Abstract.** Pearson correlation analysis and regression of cultural and creative satisfaction are used to examine the need for innovation of intangible cultural assets on the basis of research on the existing state of Hakka Kirin. Digital technology is used to explore digital conservation and creative conservation in the context of heritage innovation. It will unavoidably result in the creation of diverse content and multi-platform cross-border dissemination thanks to digital technologies.

**Keywords:** digital technology · intangible cultural heritage · Hakka Kirin · heritage innovation

## 1 Introduction

The wisdom of all ethnic groups is embodied in China's rich cultural history, which is a treasure of human civilization and represents the vigor and inventiveness of the Chinese people. The preservation of cultural legacy is essential for maintaining social cohesion, strengthening national bonds, and fostering emotional relationships between nations. It is also necessary for preserving the creativity and cultural diversity of the entire world and advancing common human growth. A creeping extinction of intangible cultural assets as a result of modernity puts its preservation in jeopardy. In the era of digital technology, how can intangible cultural legacy be revived and passed down? [1] In the era of digital technology, how can intangible cultural legacy be revived and passed down?

Based on research into the current state of the Hakka Kirin, this essay examines a novel manner of passing down intangible cultural heritage using digital technology to provide a contemporary means of survival.

## 2 Current Situation Research

Intangible cultural heritage resources are abundant in Dongguan. The Hakka Kirin culture is distinctively local, a "living museum" of Dongguan's past, the source of Hakka people's spiritual uplift, and the public face of Hakka culture.

Presently, Dongguan has a number of provincial and national qilin projects as well as qilin inheritors. Both the Zhangmutou qilin dance and the colorful tie (qilin creation) of Qingxi Town were classified as national non-heritage projects in the area of traditional art in 2014 and 2011, respectively. 2018 saw the designation of Huang Summing of Qingxi Town as a national non-hereditary inheritor.

## 2.1 Online Investigation

To ascertain the public's perception of, and market value for, Intangible Cultural Heritage as well as to forecast the market future, a questionnaire was employed.

The electronic questionnaire was sent at random through online forums and friends' circles of the biggest online shopping platforms, and 193 questionnaires were collected in total. The survey was primarily done for online shoppers over the age of 18 in Dongguan City (Table 1).

- 1) **Basic information**
- 2) **Data analysis**

**Table 1.** Basic information table

Basic information	Options	Count	Percentage
Gender	Male	60	31.10%
	Female	133	68.90%
Age	Under 20	23	11.90%
	21–40	138	71.50%
	41–60	28	14.50%
	Over 60	4	2.10%
Occupation	Student	26	13.50%
	Enterprise workers	7	3.60%
	Employees in government departments, enterprises and institutions	4	2.10%
	Service industry workers	1	0.50%
	Freelancers	2	1.00%
	Other	2	1.00%
	Educators	151	78.20%
Education	Below junior high school	0	0.00%
	High school	1	0.50%
	College	11	5.70%
	Bachelor's degree	46	23.80%
	Master and above	135	69.90%
Familiarity with intangible cultural heritage	very knowledgeable, can name numerous	10	5.20%
	a few, I am aware of them	80	41.50%
	Don't know much about it, but occasionally hear about it	99	51.30%
	Have no idea at all	4	2.10%

**Table 2.** Reliability test

Item	Cronbach's Alpha	Number
Short video satisfaction	0.85	2
Short video creation	0.907	5
Short video distribution	0.934	4
Short video satisfaction	0.715	2
Cultural and creative design	0.899	3
Practicality of cultural and creative products	0.848	2
Price of cultural and creative products	0.724	3

**Table 3.** KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.919
Bartlett's Test of Sphericity	Approx Chi-Square	1991.072
	df	0.55
	Sig	0.000

First, reliability analysis.

The reliability of the research questionnaire was tested using the Cronbach's alpha coefficient; its value ranged from 0.00 to 1.00; the higher the value, the higher the reliability of the research questionnaire; the lower the value, the opposite. When the scale's Cronbach's alpha coefficient is greater than 0.80, it indicates that the data's reliability is extremely high; when it is between 0.70 and 0.80, it indicates that the data's reliability is acceptable; and when it is lower than 0.70, it indicates that the questionnaire needs to be improved and revised. The survey results demonstrate that each questionnaire dimension is relatively reliable, and the total reliability and internal consistency of the survey are both rather high. It suggests that both the measurement findings and the questionnaire have high levels of dependability. Table 2 displays the findings of the reliability test performed on the study questionnaire.

Second, validity analysis.

Validity and validity are terms used to describe how correctly a measurement tool or instrument can measure the object being measured. In this study, structural validity was used to conduct validity tests.

The KMO test and Bartlett sphere test were employed in this research article to assess structural validity. When the KMO test coefficient is larger than 0.50 and the Bartlett sphere test  $X^2$  statistic has a probability of significance less than 0.05, the research questionnaire has some structural validity, as demonstrated in Table 3.

It can be concluded that there is a significant difference between the correlation coefficient and unit matrix, indicating that there is a certain correlation between all survey data, as indicated by the KMO test values of this research questionnaire for video

**Table 4.** Pearson association between short video enjoyment and the usual format

	Standard	Deviation	Short-video satisfaction	Short-video content	Short-video distribution
Short-video satisfaction	3.609	0.955	1		
Short-video content	3.705	0.882	0.774**	1	
Short-video distribution	3.720	0.941	0.641**	0.748**	1

\* p < 0.05 \*\* p < 0.01

**Table 5.** Cultural and creative satisfaction Pearson correlation-standard format

	Standard	Deviation	Cultural and creative satisfaction	Price	Design	Practicality
Short-video satisfaction	3.609	0.955	1			
Short-video content	3.705	0.882	0.774**	1		
Short-video distribution	3.720	0.941	0.641**	0.748**		1

\* p < 0.05 \*\* p < 0.01

and cultural and creative products, which are 0.919 and 0.911, which are greater than 0.70. The survey performance is very suitable for factor analysis.

Third, short video pleasure Pearson correlation analysis.

Table 4 demonstrates how correlation analysis was used to examine the relationship between satisfaction with short videos, short video content, and short video distribution. The Pearson correlation coefficient was used to highlight how strong the relationship was. Indicating a significant positive association between the contentment of short video and short video content, the correlation coefficient between satisfaction of short video and short video content is 0.774 and exhibits a 0.01 level of significance. Short video distribution and short video satisfaction showed a 0.641 correlation coefficient with a 0.01 level of significance. As a result, it suggests that there is a strong positive relationship between short video distribution and viewer satisfaction.

Table 5 shows that the correlation analysis was used to investigate the relationships between price, design, and practical experience and satisfaction with the cultural and creative industries. The Pearson correlation coefficient was used to determine the strength of the relationships. The correlation coefficients were all greater than zero and were 0.762, 0.677, and 0.659 respectively.

**Table 6.** Analysis of cultural and creative pleasure using linear regression

Results of linear regression analysis (n = 193)									
	Non-Qualification Factor		Standardization Factors	t	p	VIF	R <sup>2</sup>	Adjust R <sup>2</sup>	F
	B	Standard error	Beta						
Constant	0.434	0.179	-	2.424	0.016*	-	0.639	0.633	F(3,189) = 111.552, p = 0.000
Price	0.521	0.064	0.513	8.195	0.000**	2.055			
Design	0.192	0.066	0.207	2.930	0.004**	2.625			
Practicality	0.144	0.062	0.163	2.345	0.020*	2.535			
Dependent variable: Cultural and creative satisfaction									
D-W value: 2.022									
* p < 0.05 ** p < 0.01									

It implies that there is a positive relationship between price, design, and practical experience and enjoyment with cultural creation.

Fourth, a regression study of the happiness with culture and creativity.

Price, design, and utility experience are employed as independent variables in Table 6's linear regression analysis, while satisfaction with cultural innovation is used as the dependent variable. As can be observed from the above table, the model's R-squared value is 0.639, which suggests that 63.9 percent of the causes for the variation in satisfaction with cultural originality can be attributed to pricing, design, and utility experience. The model passed the F-test, indicating that at least one of price, design, and utility experience would have a bearing on how satisfied one is with cultural creativity. The model's equation for satisfaction with cultural creativity is: satisfaction with cultural creativity = 0.434 + 0.521\*price + 0.192\*design + 0.144\*utility experience. Additionally, the model's multiple covariance was tested, and it was discovered that all of the VIF values were less than 5, indicating that there was no covariance issue, and that the D-W value was close to 2, indicating that the model had no autocorrelation and that there was no correlation between the sample data and the model's performance. The results of the final analysis reveal that: the price has a substantial positive influence on the satisfaction with cultural originality, with a regression coefficient value of 0.521 (t = 8.195, p = 0.0000.01). Design has a considerable beneficial influence on the pleasure of cultural creativity, according to the regression coefficient value of 0.192 (t = 2.930, p = 0.0040.01). Utility experience has a considerable positive influence on the satisfaction with cultural originality, according to the regression coefficient value of 0.144 (t = 2.345, p = 0.020–0.05).

According to the investigation, the satisfaction with cultural innovation is significantly positively influenced by pricing, design, and practical experience.

## 2.2 Findings from Research

It was discovered during the research that:

The market is not very aware about Intangible Cultural Heritage. In order to increase Intangible Cultural Heritage's influence and exposure, it is necessary to raise awareness of the practice throughout society through a variety of avenues.

Intangible Cultural Heritage is disseminated simply, in a single form, and through a single channel. In order to spread Intangible Cultural Heritage culture, it is important to look into many channels and display formats in addition to traditional media.

The market satisfaction level for Intangible Cultural Heritage products is now poor. Although the public may accept Intangible Cultural Heritage cultural productions and short movies, and the Intangible Cultural Heritage market has a wide range of development potential, the development process should focus on the blending of aesthetics with viability and marketability. In order to support and integrate resources for innovative methods, more sophisticated technology is required.

The findings of the study show that the innovative transmission of intangible cultural assets is inevitable!

## 3 Traditional Innovation

### 3.1 Innovative Preservation of the Past: Digital

With the accelerated advancement of information technology in the 5G era, digital media offers media platforms and communication channels for the creative transmission of intangible cultural assets.

#### 1) Digital preservation – what is it?.

In order to achieve the scenario and interaction of ICH, so that it can be seen, felt, and touched, 3D animation, virtual reality, and virtual imitation technologies are used. Network technology is also used to spread ICH culture. Together, these methods are referred to as “digital conservation.”

Intangible Cultural Heritage digitization has the following benefits.

**Time-travelling nature.** Intangible cultural heritage can span centuries and display craftsmanship that has been handed down for a very long time. For instance, national treasures can be moved over great distances, and historical locations can display physical cultural heritage. But because historical sites are immobile in space, crossing it is more challenging. To preserve priceless archives and advance digital technology, digitalization may traverse time and space and can alter history, space, and both at will. The state and related institutions govern the distance of time and space digitally away from the borders of society due to the variables of time and space development brought about by the transformation of modern society.[2].

**Virtual Reality.** By using cutting-edge digital technology, digital technology refers to creating 3D models of historical Intangible Cultural Heritage locations and the surrounding area and displaying the resulting virtual scenes with the models. Through the approach of human-computer interaction, digital technology may be used to mimic non-heritage settings, allowing the general public to delve deeply into the non-heritage and

create interaction to produce the effect of simulated reality. The display effect, which is the actual emotion caused by the psychological response, is the focus of attention.

Electronic communication. The time-consuming and unsuccessful classic simulation approach of information reproduction. Networked transmission can enable worldwide resource sharing as 5G technology develops.

Digital technology gives the potential for salvaging Intangible Cultural Heritage protection and offers technical assistance for inventive inheritance. A win-win situation for many parties can be achieved by applying digital media thinking, producing digital content works, actively promoting cultural and creative industries, and building cross-border integration products of business, tourism, and culture.

The Intangible Cultural Heritage's innovative legacy is carried on through digital preservation, which is also a future development trend.

## 2) **How do I digitally save?.**

Cultural symbolization is a step in the process of digitalization and digital preservation of intangible cultural property. The process of digital conservation involves interdepartmental collaboration and resource sharing. The process of digitization involves non-genetic inheritors and platform designers working together to summarize, develop, and realize system architecture. The digitalization process makes use of a variety of expressive methods. The construction of diverse artifacts and the usage of animation, cartoons, and other intangible cultural heritage forms are favorable to the diverse presentation of intangible heritage, which is ultimately distributed via the audience's preferred techniques. The audience can completely comprehend history and culture, traditional ways of life, traditional arts, and folklore, take an active role in conservation, and take use of digitization's conveniences.

The Guangzhou Academy of Fine Arts' graduation design show serves as a benchmark for domestic universities studying non-heritage. The graduation design work of Guangzhou Academy of Fine Arts "Awake Lion" selects the representative image of the lion in Chinese traditional culture and reinterprets and creates the cultural symbols through innovative ways, giving the lion a warm, lovely and lively image and continuing the inherent cultural attributes of the lion's mass base. The work not only revolutionizes the visual image of the lion in two-dimensional design but also integrates it into animation, games, derivatives, and non-traditional works to form an IP brand. Chen Ruiqiang's "Yongqingfang AR Public Art Experiment" work features three cute little pets, the dragon boat, the cockatoo, and the lion, which became a breakout hit during the graduation season. The work combines cultural connotations to carry forward and inherit traditional and Lingnan culture.

The Hakka people's traditional way of life can be better revealed through its preservation and transmission utilizing digital technology, and it can also successfully conserve the Hakka people's regional cultural traits.

### 3.2 Creative Conservation of Innovative Heritage

#### 1) Creative conservation: what is it?.

Salvage conservation, in its most general sense, refers to the practice of imaginative conservation design, publicity, and promotion. Using creation, circulation, and sales, so-called creative conservation converts Intangible Cultural Heritages into cultural products. It is mostly utilized for Intangible Cultural Heritage projects involving traditional arts and skills.

Countries all over the world are currently pursuing inventive conservation methods for traditional culture. Numerous pioneers are already experimenting with innovative conservation techniques. For instance, the British Museum in the United Kingdom aggressively collaborates with Chinese brands to create a number of cultural and innovative product designs in addition to integrating publicity across several channels and media in the United Kingdom. The cultural and artistic goods produced by the British Museum have elevated them to the top of many enthusiasts' wish lists.

#### 2) How to creatively protect.

Intellectual property, or IP, includes things like innovations, designs, literary and artistic creations, etc. IP development is more than just simple picture design; it involves a keen eye for detail and represents the search for the divine in humanity.

The meaning of "cultural IP" was redefined at the 2018 China Cultural IP Development Summit Forum; it now denotes the linking and integrating of cultural products as well as a cultural symbol with high recognition, self-contained traffic, strong real estate penetration ability, and a lengthy real estate cycle. Consumers' strong recognition of cultural intellectual property (CIP) might pique their attention and lead to purchasing decisions.

In terms of its ability to alter, the Forbidden City is among China's most powerful and well-known cultural and creative brands. The items cover a wide spectrum from travel and cultural souvenirs to lifestyle creative goods, toys, and houses by integrating resources from several disciplines such as cultural and creative products, cultural and creative tourism, and cultural and creative publishing. [3] Its success is attributable to the balanced performance of a number of variables, including cultural, functional, youthful, price, and lifestyle of the items.

A close connection exists between the cultural and creative industries, material cultural heritage, and creative preservation. The promotion of intangible cultural heritage into contemporary society and public life is made possible by the cultural and creative industries, which also provide vital creative resources and materials for the development of intangible cultural heritage. Creative conservation is a method of passing down knowledge that is based on the natural fusion of intangible cultural heritage resources and creative industries, as well as integration into modern society. It supports both the living propagation of Intangible Cultural Heritage and the modern transformation and productivity shift of Intangible Cultural Heritage. [1] To conduct study on the innovative legacy of Intangible Cultural Heritage in order to lay the groundwork for the living legacy of Dongguan Kirin culture. To balance the link between traditional culture and





Fig. 1. Kirin Dance and Kirin Elements Landscape Design

commercial promotion and avoid commercialization and one-sidedness in the innovative Hakka Kirin cultural inheritance (Fig. 1).

## 4 Conclusions

The cutting-edge method of passing down intangible cultural heritage based on digital technology enables the creation of a variety of content and multi-platform international dissemination. All facets of producing cultural content will be linked together by digital technology to create a seamless industrial chain model, ultimately achieving the goal of improving the “experience” and “expression” of traditional cultural products and art performance items. [4].

Digital technology is used throughout the creation and production of content in convergent content. It comprises digital acquisition, the development of original IP, and the expansion of ancillary exhibitions. It uses the various “intangible cultural heritage +” terms to spread traditional culture. In terms of multi-platform cross-border communication, mainstream media is employed to propagate mainstream values; new media platforms are utilised to create a new media promotion matrix; and content is pushed by category depending on the platform’s audience characteristics and big data analysis.

Establishing a multi-party synergistic mechanism of government policies and money, cultural museums to develop public service platforms, inheritance by the inheritors, market allocation, and social engagement is important to innovate the inheritance of intangible cultural assets.

**Acknowledgement.** Ministry of Education Industry-University Cooperation Collaborative Education Project 202102192007 “Dual-Teacher Teacher Training” for Art and Design Professional Group; Dongguan Sci-tech Commissioner Program Application of Light-Storing Self-Luminous New Materials in Rural Cultural Construction (No.20211800500781).

## References

1. DanDan Yu, Limin Wang, XiaoWei Feng, ShuHao Wang, Bin Liang. “Chapter 50 Service Design in the Preservation of Intangible Cultural Heritage: A Case Study in the Legend of the Kitchen God”, Springer Science and Business Media LLC, 2020
2. Chang Ling Chong, Digital protection and transmission of Tibetan intangible cultural assets in the context of new media, Southwest University for Nationalities’ Journal [J]., 2010 (11)

3. Xin Feng, Lei Yu, Weixin Kong, Jingya Wang. “Frontier hotspots and trend evolution of cultural and creative design in China—an empirical research on CNKI-based bibliometrics”, Library Hi Tech, 2022
4. Xiaoying Zhou, Wei Dawei A Study on the Inheritance and Promotion Model of Excellent Traditional Culture, Diversity, Integration, Cross-Border, and Innovation [M], June 2020, 56

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