



# Inheritance and Innovation of Chinese Traditional Furniture Culture in Contemporary Design Styles: A Case Study of Ming Dynasty Chairs

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Aesthetic Attribute;  
Humanization Attribute.

## Abstract

Being important in our daily lives, furniture reflects our cultural traditions and personal memories. As a valued part of Chinese culture, traditional furniture holds a place in understanding cultural heritage and creativity. This research uses historical research methods, literature review, and questionnaire surveys to gain a strong understanding of the cultural foundations of Chinese traditional furniture. While exploring the stylistic trajectory of Chinese furniture culture, this study particularly emphasizes integrating ecological cultural concepts throughout the entire lifecycle of furniture. Having incorporated the inheritance and innovation of traditional furniture culture into contemporary furniture design, this study thus highlights the integration of sustainable ecological culture with advanced materials, technologies, and design features. This aims to establish a comprehensive framework for contemporary green ecological furniture design. Mixing old furniture styles into modern design keeps these cultural heritages alive. The result is sustainable, eco-friendly furniture that showcases traditional elements with a new, modern feel. Also, this combined design approach encourages the furniture industry towards environmental protection, supporting innovation, while promoting sustainable growth.

**Discipline:** Heritage & Conservation Study (Furniture Culture)

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## 1 Introduction

Over millennia, the Chinese nation has developed distinctive spiritual concepts, a value system, and behaviors, shaping a uniquely Chinese way of thinking. This mentality, characterized by fluidity, stability, and robust inheritance, influences societal creative endeavors, including furniture design. Through their wisdom and talent, the Chinese have crafted a unique oriental furniture system. (Zhenhan, 2011) French scholar Odilan Roche noted in Chinese Furniture that "the latest discovery in the field of art is the furniture of ancient China."

Furniture culture, forming part of the material and spiritual culture of society, reflects the political, economic, and cultural evolution of human civilization and is a physical manifestation of cultural and artistic heritage. It mirrors the cultural traditions and artistic styles of various countries and peoples across specific historical periods. (Minxiu, 2003)

The Chinese nation has cultivated a distinct cultural, aesthetic, and artistic viewpoint over thousands of years. Based on these viewpoints, the essence of Chinese aesthetics greatly sets Chinese civilization apart from others and is at the heart of amazing traditional Chinese culture (Xiujian, 2019). Five thousand years of rich heritage have nurtured a traditional Chinese furniture culture. That represents the national spirit and mirrors the national perspective. Traditional furniture culture is a vital component of China's cultural heritage. (Tao, 2003; Yunjie, 1996)

Such exploration and practice will aid in developing a modern furniture system imbued with unique national cultural characteristics. The amalgamation of artistic innovation, modular design, and the whole life cycle theory of green eco-cultural integration will not only cultivate a modern furniture system reflecting national cultural traits but also foster the advancement of modern and traditional Chinese furniture design characteristics (Cha et al. 2010; Yang, 2017). This comprehensive exploration & practice introduce new creativity & possibilities to the furniture design field, significantly contributing to the sustainable development of our society, environment, & culture.

## 2 Literature Review

### 2.1 Culture and Furniture Culture

The term "culture" has existed in early vocabularies worldwide. In cultural anthropology, the term "culture" was first defined by British anthropologist Edward Burnett Tylor in 1871. He stated: "Culture or civilisation, taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, custom, and any other capabilities and habits acquired by man as a member of society." (Marett, 1936)

Analysing the human-furniture-society-nature (environment) system, the relationship between furniture and nature is examined from the horizontal spatial axis, analysing the material and aesthetic relationship between furniture and the natural environment. On the other hand, the relationship between furniture and society is discussed along the vertical time axis, considering the impact and influence of traditional culture and contemporary attributes on furniture style and aesthetics (Jifeng, 2009).

The most important viewpoint of Chinese scholars on the definition of “culture” is that “culture is a complex of different forms of traits created by human beings”. (Yunjie, 1996)

"In Chinese culture, furniture holds significant importance. Chinese-style furniture, as a typical form of craftsmanship, exhibits distinctive characteristics in terms of materials, craftsmanship, techniques, and aesthetics." (Jifeng, 2009)

There are significant differences between traditional and modern furniture cultures in terms of style, design concepts, use of materials, & manufacturing methods, and each culture has its unique characteristics & values. In a sense, Chinese furniture history is a thematic cultural history (Renke 2019). On one side, it testifies to the whole history of China. (S.R. Association, 2022)

The Ming dynasty round-backed armchair epitomizes the integration of functionality and artistic sophistication in traditional Chinese furniture. It features a gracefully curved crest rail that forms a circle, symbolizing completeness and unity, central themes in Chinese philosophy (Yuewen et al., 2023). This design not only conforms to the human body for comfort but also embodies Taoist principles of harmony between human creations and nature.

Crafted from high-quality woods like huanghuali or zitan, the chair highlights the natural wood grain, adhering to Ming aesthetic ideals that favor simplicity and natural beauty over excessive ornamentation. The construction utilizes complex joinery techniques, eschewing nails and glue, showcasing the era's advanced craftsmanship and engineering.

This armchair is more than a functional item; it is a cultural symbol of status and refined taste, reflecting the philosophical depth of Confucian order and propriety alongside Taoist harmony and simplicity.

## 2.2 Contemporary Furniture Design

Contemporary furniture shows its unique beauty and value with its exquisite craftsmanship and innovative design. This furniture is not only the real things of life, but also the crystallization of art and craft, highlighting the essence of contemporary furniture design (Haibo, 2023). “Since the mid-1990s, a definable movement in contemporary Chinese furniture design has been growing and evolving, and has now reached such creative critical mass that it is possible to speak of it enjoying a 'moment'. The exceptional quality and innovation of the furniture associated with what has already become known as 'New Chinese Design' will undoubtedly set in motion a significant reappraisal of contemporary Chinese design in general.” (Fiell et al. 2019)The design of Contemporary furniture encompasses all environmental products, urban facilities, household spaces, public spaces, and industrial products. Due to the progress of civilization and technology, the connotation of contemporary furniture design is endless. Furniture has evolved from the wooden era to the metal era, the plastic era, and the ecological era. From architecture to the environment, from indoors to outdoors, from households to cities, the design and manufacturing of contemporary furniture aim to meet people's ever-changing functional needs, creating a better, more comfortable, and healthier way of life, work, entertainment, and leisure. With continuous

changes in human society and lifestyles, new forms of furniture will continue to emerge, and furniture design is endowed with unlimited vitality. (Renyi, 2018)

## 2.3 Chinese Traditional Furniture vs Contemporary Furniture

The development of Chinese contemporary furniture design, with the development of modern industry, furniture production materials and techniques have changed a lot (Baoguang, 2018; Xiaoxue, 2022). Modern furniture pays more attention to practicality and functionality, and the design style is more diversified. Nowadays, with more and more emphasis on historical culture and traditional craftsmanship, traditional Chinese furniture culture has also been inherited and developed in modern furniture design.

**Table 1:** Chinese Traditional Furniture vs Contemporary Furniture

Furniture Type Compare Categories	Traditional Chinese Furniture	Contemporary Furniture
Functional	Greater emphasis on ornamentation and symbolism	Practicality, designing furniture to meet the demands of modern life
Furniture Functions	Traditional Furniture Functions	New furniture types and functions (computer tables, computer chairs)
Aesthetic Concepts	Emphasis on ornate, delicate and romantic aesthetic beauty	Emphasis on simple, clean and stylish aesthetics, compatible with the fast-paced and practical needs of modern society
Cultural difference	traditional culture	modern culture
Cultural influence (Weihwa, 2005)	Often influenced by cultural factors such as history, religion, ethnicity, etc., representing the expression of a particular culture.	Crossing cultural boundaries with a focus on globalisation and universality
Design	Reflective of history, culture and region, it may emphasise intricate carvings, curves and intricate details.	Focus on clean lines and clear shapes, with an emphasis on practicality and modern technology.
Production process	Traditional handmade carpentry	Machining-based
Production method	Single-piece production, with a focus on the artisan's skills	Batch standardisation, often with the help of industrialisation and digitalisation, for more efficient production and the advantage of scale
Production process	Handcrafting skills with a focus on artisanship and traditional craftsmanship	Industrialised production techniques for efficiency and mass manufacturing
Painting process	Traditional lacquer	synthetic paint
Furniture construction	mortise and tenon joint construction (slot and tab construction)	hardware connection
Material variations	Natural hardwood, solid wood	Man-made panels are predominantly used with diverse materials, including metal, plastic, glass, etc.
Sustainability	Use of scarce natural resources, but sustainability can also be demonstrated in local traditional crafts and sustainable practices (Yu et al. 2023).	Material selection and manufacturing processes may be more environmentally friendly and sustainable.

In the book "Contemporary Furniture Design Theory" (Wenjin & Lihua, 2007), the authors propose that a comprehensive study of the modernization of traditional Chinese furniture should

encompass two aspects: Firstly, it involves studying traditional furniture products, examining changes in their design through the lens of modern aesthetic perspectives, and exploring modern production methods based on current manufacturing conditions. Secondly, it focuses on incorporating the essence of traditional furniture culture into modern furniture products that exhibit Chinese traditional characteristics, grounded in modern design theories and production conditions. By analysing "Contemporary Furniture Design Theory," it becomes apparent that the cultural significance of furniture extends beyond the products themselves, encompassing social, artistic, technological, and economic factors. Aesthetic culture in this context combines beauty with high standards to reflect the collective spirit of a nation. (Wenjin & Lihua, 2007 )analyze the differences between traditional Chinese and modern furniture in terms of functionality, design, production methods, and cultural impacts, as shown in Table 1

## **2.4 The Embodiment of Ecological Culture in the Furniture of the Ming Dynasty -- Taking the Armchair as an Example**

Ming dynasty furniture is renowned for its elegant simplicity and intrinsic sustainability, which resonate with contemporary green design principles (o. encyclopedia, 2022). Here is an overview of green design and environmental sustainability in Ming dynasty furniture-making:

**Durability and Longevity:** Ming dynasty furniture is famed for its durability (Hao 2017). The designs are not only aesthetically pleasing but also structurally sound, meaning they can be used for generations. This approach aligns with sustainable practices by minimizing waste and reducing the need for replacement furniture.

**Efficient Use of Materials:** Craftsmen during the Ming dynasty were adept at maximizing the utility of wood. They employed fine carpentry techniques that minimized waste and enhanced the furniture's structural integrity without relying on adhesives or metal fasteners, which could be harmful to the environment.

**Mortise and Tenon Joints:** An integral part of this efficiency in the use of materials is the mastery of mortise and tenon joinery. This ancient carpentry technique involves fitting together pieces of wood using interlocking joints that require no nails or glue. This not only adds to the durability and structural integrity of the furniture but also contributes to its environmental sustainability by eliminating the need for potentially toxic adhesives and non-biodegradable hardware.

**Environmental Aspect:** As a natural material, raw lacquer is more environmentally friendly compared to synthetic finishes. It is biodegradable and does not emit harmful VOCs (volatile organic compounds), making it a sustainable choice for furniture finishing.

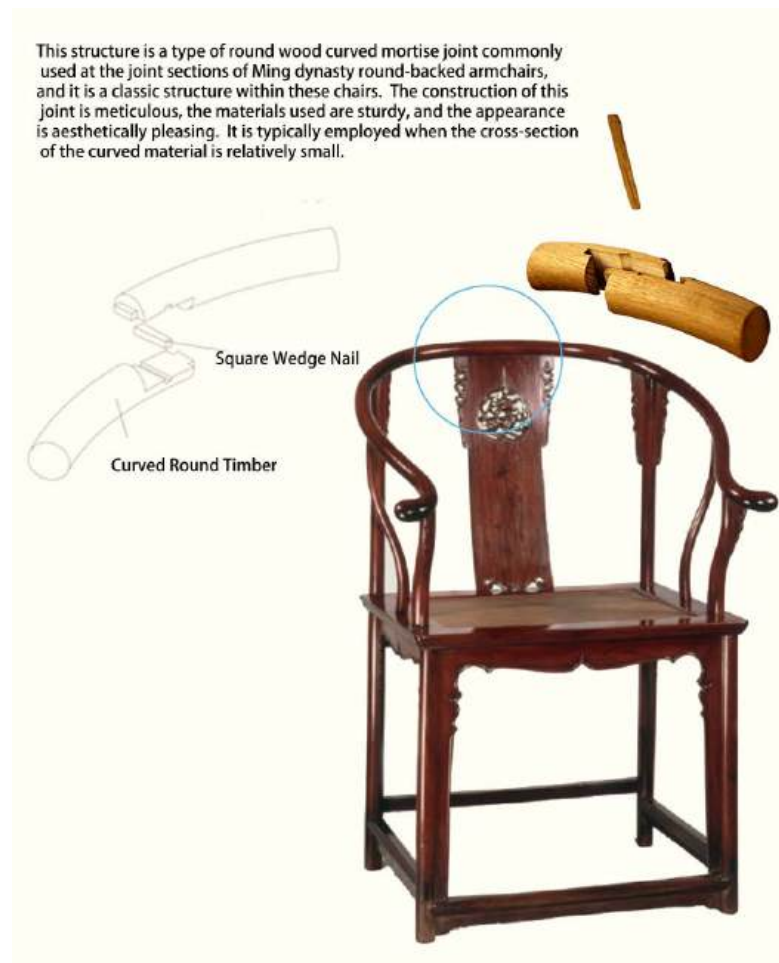
**Recyclability and Reusability:** The purity of the materials used—mainly natural wood and the absence of synthetic binders—means that Ming dynasty furniture is more recyclable and easier to restore and reuse compared to furniture made with mixed materials.

**Cultural Sustainability:** By creating pieces with significant cultural value, Ming dynasty furniture makers ensured these items were cherished and preserved across centuries. This



promotes cultural sustainability by maintaining craftsmanship and artistic expression.

Incorporating these historical practices can inspire contemporary furniture designers to embrace sustainable practices, reflecting an ecological consciousness that aligns with traditional values while meeting modern environmental standards (Lihua et al. 2019; Taiyuan & Hongyu, 2022).



**Figure 1:** A schematic diagram of a Ming dynasty Huanghuali wood round-backed armchair featuring wedge and mortise-and-tenon joint structures

## 2.5 Heritage and Development of Furniture Culture

Contemporary Chinese furniture designers draw from millennia of tradition, using it not just as inspiration but as a foundation for addressing modern design challenges. According to Yuan Yuanzai, traditional furniture is a vital 'source of creativity,' offering more than just templates for imitation. The goal is twofold: 'Integration' utilizes the strengths of traditional designs to solve current issues, while 'innovation' rejuvenates these principles, adapting them to the dynamics of the modern era. This approach ensures that traditional furniture design continues to evolve, remaining relevant and vibrant in contemporary settings.

In general, traditional furniture culture and contemporary furniture culture exhibit significant differences in style, design philosophy, material application, manufacturing methods, and more. Each culture has its unique characteristics and values." (Nan, 2015) The genetically ingrained Chinese perspective on creation design constructs a cultural blueprint for traditional

creation design, which also holds practical and enlightening value today. Some modern design concepts often celebrated in the design world, such as 'sustainable design,' 'green design,' 'human-centric design,' etc., along with the associated design methods and techniques, exhibit formal differences from ancient designs but reveal a response that transcends time and space in design philosophy.

### **3 Methodology**

#### **3.1 Historical Documentation Research Method**

The historical method is a method that takes documented factual statements as known statements, then uses "interpretive" techniques to derive relevant explanatory statements, and draws conclusions by eliminating false explanatory statements from the statements through the process of "falsification". In this case, the documented factual statements are used as the antecedent or antecedent of the known premise statements, and then various logical methods are used for the argumentation process to obtain the desired results of the study. (Weihwa, 2005)

For example, The Thesis of Yuan Jindong on "Research on Ming-Style Furniture System" (2018). A large number of relevant historical documents at home and abroad are systematically analyzed and commented on, and the specific situation in the current research field of Ming-style furniture is analyzed. Relies on factual accounts recorded in documents as known statements, using these accounts as either antecedents or consequents in logical argumentation to obtain the necessary research results (Jindong, 2018).

#### **3.2 Analytic Hierarchy Process (AHP)**

The Analytic Hierarchy Process (AHP) is a method for organizing and analyzing complex decisions, using math and psychology. It was developed by Thomas L. Saaty in the 1970s and has been refined since then. (Saaty, 1988) The AHP method has been widely used in the areas of timber, furniture, sales, and online shopping (Yu et al., 2023) by the United States operations researchers. Tomasetti (TL.Saaty) formally proposed. A hierarchical structure is used to represent the relationship between elements, and then the relative importance of the elements between the same levels is represented in the form of a matrix, and the relative weights of the elements in this matrix are obtained by calculating the eigenvectors corresponding to the eigenroots of the matrix, and finally a comprehensive ranking is performed. (Saaty, 1988)

Considering the richness and complexity of furniture culture, a hierarchical analysis of furniture culture is carried out here:(1) Furniture Functional Aspect, with 3 subcategories: A1 Practicality, A2 Functionality, A3 Durability; (2) Furniture Material Culture (Berger, 2016), with 3 subcategories: B1 Furniture Material, B2 Manufacturing Techniques, B3 Technology; (3) Furniture Spiritual Culture, with 4 subcategories: C1 Values, C2 Symbolism, C3 Emotional Experience, C4 Cultural Exchange; (4) Furniture Historical Culture, with 3 subcategories: D1 Furniture Style, D2 Design Concept, D3 Aesthetic Appeal;(5) Modern Aesthetics, with 3 subcategories: E1 Simplicity, E2 Material Innovation, E3 Color Matching; (6) Developmental Needs, with 3 subcategories: F1 Sustainable Design, F2 Personalized Service, F3 Technology Intelligence, as shown in Table 2

**Table 2:**Preliminary construction of cultural indicator system in modern furniture design

Level 1 indicators	Evaluating attributes	Level 2 indicators	Level 3 indicators
Cultural Inheritance and Innovation Factors in Contemporary Furniture Design	Functional Attributes	Use Function	Practicality
			Functionality
			Durability
	Cultural Attribute	Furniture Material Culture	Furniture Material
			Manufacturing Techniques
			Technology
		Furniture Spiritual Culture	Values
			Symbolism
			Emotional Experience
			Cultural Exchange
	Aesthetic Attribute	Furniture Historical Culture	Furniture Style
			Design Concept
			Aesthetic Appeal
		Modern Aesthetic	Simplicity
			Material Innovation
	Humanization Attribute	Development Demand	Color Matching
			Sustainable Design
			Personalized Service
			Technological Intelligence

This survey aims to explore the cultural significance and influence of traditional furniture culture on contemporary design in today's society, with a focus on how these influences are perceived and valued. It seeks to understand how cultural elements can be inherited and innovated in contemporary furniture design (Haiyan 2020).

### 3.3 Questionnaire Design: Method, Question Type, and Design

Quantitative data was collected by distributing an online questionnaire using the online survey tool Questionnaire Star. To collect first-hand data, this study gathered user evaluation data through a questionnaire survey. The target respondents were experts from institutions related to the furniture industry, professionals in product design, and postgraduate and undergraduate students from design-related disciplines. These respondents are well-versed in the furniture design process and can comprehensively understand traditional furniture culture, contemporary furniture, and cultural evaluations.

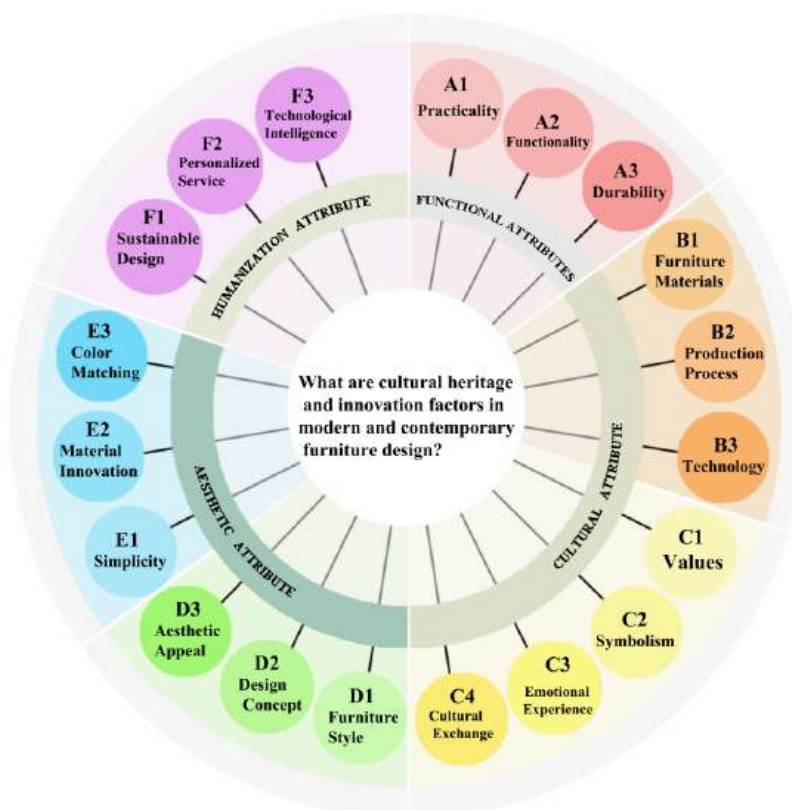
The three main groups identified were: Arts and Design/Creative; Education/Academic/Research; Arts/Design Students. By analysing stratified data from these three groups, we aimed to understand the perspectives and views of experts in Chinese art research, educational and scientific research, and furniture design students on the presentation levels and cultural factors of traditional Chinese furniture.



An online survey was conducted to explore perceptions of furniture culture among three distinct groups: furniture design professionals, academic researchers, and design students. The study involved a comparative analysis of traditional and modern furniture images, utilizing questionnaires and in-depth interviews to gather data. Structural equation modeling helped identify the relationships among variables, focusing on how different cultural backgrounds influence perceptions and values regarding traditional Chinese furniture. The findings will guide furniture designers and manufacturers in integrating traditional elements into modern designs and provide empirical support for cultural policymakers aimed at preserving traditional craftsmanship.

## 4 Conceptual Model Development

The conceptual model was developed to identify and classify why furniture culture is reflected in furniture design and to verify the role of furniture culture in modern furniture design. Figure 2 shows the furniture culture model.

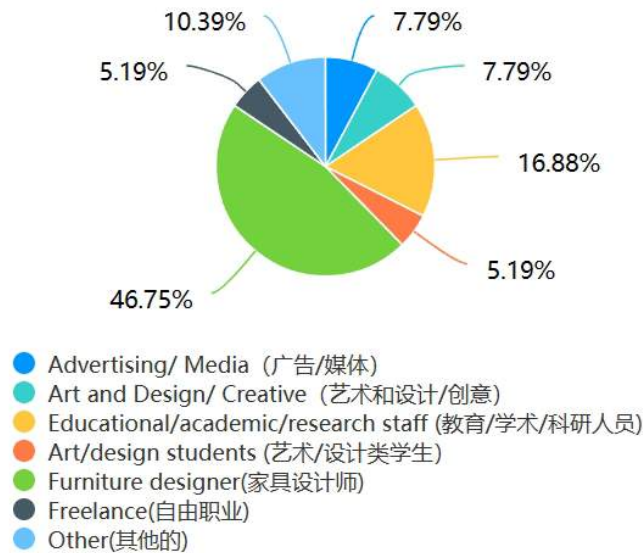


**Figure 2:** Furniture culture conceptual model

Finally, 166 furniture designers/creatives, 164 furniture design educators/academics/researchers, and 160 Chinese furniture design students were selected to fill in a questionnaire to set and summarize the characteristics of traditional furniture and contemporary furniture.

## 5 Data Analysis

Figure 3 shows the proportion of respondents classified according to their professional background. Meanwhile, in the questionnaires recovered in the same period, the proportion of female users who meet the sample conditions is smaller than that of male users, but the percentage value of both of them is above and below 5%, so the difference in the gender structure has no reference value and has little influence on the other results of the research, see Table 3.



**Figure 3:** The professional background of the investigators involved

**Table 3:** Basic information of the survey group sample

Variable	Category	Percentage
Gender	Male	41.02
	Female	58.98
Age	Under 20 years old	37.21
	21-30 years old	18.69
	31-40 years old	24.31
	41-50 years old	11.72
	51 years old and above	8.07
(Buying, designing, working) experience	Ever	89.03
	No	10.97

Through the use of SPSS 26 for calculation and testing, the reliability of the questionnaire of this study in each panel of the Cronbach's  $\alpha$  coefficient was 0.879, 0.928, and 0.950, as shown in Table 4. When the  $\alpha$  coefficient is less than 0.7, the questionnaire reliability is considered unreliable; when the  $\alpha$  coefficient is between 0.7 and 0.8, the questionnaire has a certain degree of reliability; and when the  $\alpha$  coefficient is greater than or equal to 0.8, the questionnaire reliability is very good. Therefore, this questionnaire has high internal consistency and can be used for further research.

**Table 4:** Reliability statistics of the questionnaire for each population group

Target population	Cronbach Alpha	Number of items
Students	0.879	47
Designer	0.928	47
Teachers	0.950	47

In addition, this study used SPSS 26 to calculate the validity of the questionnaire, which resulted in a KMO value of 0.941, as shown in Table 5. The closer the KMO value is to 1, the stronger the correlation between the variables. The KMO test is a sampling suitability test proposed

by Kaiser, Meyer, and Olkin. According to Kaiser's criterion, a KMO value greater than 0.9 means very suitable; between 0.8 and 0.9 means suitable; between 0.7 and 0.8 means average. Therefore, this questionnaire has high validity. Table 6 gives convergence validity test analysis.

**Table 5:** Tests of validity of the questionnaire

KMO and Bartlett's test		
KMO Sampling Suitability Measure		0.941
Bartlett's test of sphericity	Approximate chi-square	3608.298
	Degree of freedom	270
	Significance	0.000

**Table 6:** Convergence validity test analysis.

	Path		First Convergence	Second Convergence	CR value	AVE value
A1Practicality	←	A use function	0.827	0.827		
A2Functionality	←	A use function	0.690	0.690	0.9013	0.5863
A3Durability	←	A use function	0.672	0.672		
B1Furniture material	←	B Furniture material culture	0.691	0.724		
B2Craftsmanship	←	B Furniture material culture	0.852	0.852	0.9273	0.7814
B3Technical means	←	B Furniture Material Culture	0.741	0.741		
C1Values	←	C Furniture Spiritual Culture	0.614	0.652		
C2Symbolism	←	C Furniture Spiritual Culture	0.901	0.915	0.9051	0.6907
C3Emotional experience	←	C Furniture Spiritual Culture	0.819	0.832		
C4Cultural exchange	←	C Furniture Spiritual Culture	0.671	0.701		
D1Furniture styles	←	D Furniture Historical Aesthetics	0.805	0.805		
D2Design concepts	←	Furniture Historical Aesthetics	0.761	0.761	0.8121	0.5427
D3Aesthetic Interest	←	D Furniture historical aesthetics	0.672	0.672		
E1Simplicity	←	E Modern Aesthetic	0.858	0.858		
E2Material Innovation	←	Modern aesthetics	0.793	0.793	0.9315	0.8090
E3Color Matching	←	E Modern Aesthetic	0.904	0.904		
F1Sustainable Design	←	F Developmental Needs	0.712	0.753		
F2Personalized Service	←	F Development Needs	0.789	0.803	0.7914	0.5226
F3Technological Intelligence	←	F Development needs	0.570	0.573		

## 6 Conclusion

This research explores the cultural importance and symbolic meaning of traditional Chinese furniture, especially how these elements are reinvented and used in contemporary design. Data is gathered from literature reviews and surveys. Then, data is analyzed using descriptive statistics and inferential analysis, based on structural equation modeling as to ensure the consistency of indicators across dimensions. The sample includes representative furniture from the Ming and Qing dynasties, highlighting craftsmanship and cultural depth (Kewang 2017). Also, this study takes into account regional differences across China. The research process involves an analysis of the cultural characteristics of the furniture samples and explores their modern applications through surveys and interviews. An initial pilot study helps to refine the survey design.

The study establishes a comprehensive evaluation system that covers material, spiritual, historical, and aesthetic cultures, forming a detailed evaluation model. Data collection includes designers, educators, researchers, and students. This ensures a broad and representative result. The survey's credibility is confirmed by reliability and validity analyses.

This study highlights that traditional furniture is functional and reflects culture and art. Combining traditional features with modern design is seen as a creative way to show appreciation for history and encourage sustainable cultural growth. Culture acts as a way to share and spread human ideas, with the beauty and artistic values of each period influencing the distinct appearance of human-made artifacts.

To further enrich the cultural context, this study incorporates the concept of ecological culture from the Ming dynasty, examining the impact of contemporary environmental factors on furniture design. This integration deepens our understanding of how traditional principles can help in sustainable modern practices. This research provides a better comprehensive perspective on the interaction between traditional craftsmanship and contemporary ecological awareness.

## 7 Availability of Data and Materials

All data is included in this article.

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