

**A STUDY OF SHANXI TRADITIONAL CULTURE FOR
EASY CHAIR DESIGN**



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Title A STUDY OF SHANXI TRADITIONAL
CULTURE FOR
EASY CHAIR DESIGN

Student LANHAO LYU
Student ID 67036005
Degree Master of Science in Industrial Education Program in
Technology of Industrial Design
Academic Year 2024
Advisor Professor ATTAMA SARIBUTR
Co-Advisor Associate Professor CHATURONG LOUHAPENSANG

ABSTRACT

The objective of this research are : 1) To Study traditional culture elements in Shanxi for furniture design. 2) To design Chinese furniture from Shanxi traditional culture elements. 3) To evaluate consumer satisfaction from new Chinese furniture design from Shanxi traditional culture elements. The sample consists of 120 residents from Taiyuan City, Shanxi Province, divided into four age groups. The research tool is a questionnaire survey, which collects preference data related to design style, craftsmanship, and material selection. We use descriptive statistics and analysis of variance to analyze the results. The results sort from this : 1. The respondents showed a strong interest in incorporating traditional elements such as Yongle Palace murals, mortise and tenon craftsmanship, walnut wood, elm wood, etc. into furniture design; 2. Furniture prototypes developed based on these elements are particularly favored by young people, with high satisfaction scores ($\bar{X}=4.32$, $S.D=0.98$); 3. 76% of respondents expressed satisfaction or very satisfaction, and the analysis of variance confirmed statistically significant differences between different age groups, indicating that culturally integrated furniture design can effectively improve user satisfaction and promote cultural preservation. The recommendations given based on the results are: 1. Establish a systematic digital database of traditional cultural elements, such as patterns, carvings, mortise and tenon joints, and traditional colors, which can provide long-term design resources. 2. Encouraging interdisciplinary collaboration between designers, historians, engineers, and cultural experts can enhance creativity and deepen cultural reinterpretation. 3. Integrating modern technologies such as 3D modeling, AR/VR, and 3D printing can help present traditional elements more vividly and enhance product value. 4. Emphasize user engagement through research, feedback, and iterative improvement to ensure that the design meets modern needs. 5. Strengthening cultural education and brand building through exhibitions, media, and cooperation can enhance public awareness and strengthen the influence of traditional Shanxi furniture in the modern market.

Keywords: regional culture, Jin style, new Chinese style, furniture design

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CHAPTER 1

Introduction

1.1 Background

Furniture stands as an indispensable facet of human existence, serving not only practical functions but also symbolizing the culmination of creative prowess and the progression of civilizations. In the extensive evolution of Chinese furniture, distinct periods have surfaced, delineating three significant stages of development.

The first era has its origins in the primitive era of feudalism. It stood at the peak of furniture craftsmanship reflecting the famous Ming style. However, over time, innovation began to decline. This results in a gradual decline in progress.

The second phase, which was seen during the Republic of China period. Witness the pervasive influence of Western culture, which is appropriately called "The west wind blows east" This era has seen profound changes in furniture's aesthetics, materials, and functional features under the influence of Western civilization.

The contemporary landscape ushers in the third stage, characterized by the modern and innovative new Chinese style. Here, furniture design embodies a synthesis of traditional cultural heritage and contemporary sensibilities. Presently situated in this stage, the market showcases a diverse array of new Chinese style furniture products, reflecting varying levels of quality. (Huang Shengyou, &Ye Xi.2013)

However, it is imperative to recognize that the essence of new Chinese style furniture lies in its seamless integration and development of traditional furniture. Consequently, its evolution must transcend mere surface-level alterations and technological enhancements, emphasizing instead a profound commitment to cultural inheritance through innovative design approaches. (Xu Hengchun.2006)

Culture, inherently rooted in environmental adaptation, manifests in diverse forms across different ethnicities and regions, underscoring the rich tapestry of human civilization. Notably, the Shanxi region, renowned as the "National Cultural Relics Province," boasts a treasure trove of architectural marvels spanning various dynasties. These architectural marvels, adorned with intricate murals, sculptures, and preserved furniture, serve as invaluable repositories of Shanxi's regional culture, offering indispensable insights for the innovative design of new Chinese style furniture.

China is the country with the largest population in the world, so the demand for

furniture is also very considerable. However, since traditional furniture reached its glory in the Ming Dynasty, neither the furniture of the Republic of China period nor modern furniture has formed a complete research theory and design system. The main reason for this dilemma is that furniture products in the market generally lack originality and cultural value. Therefore, this article proposes a furniture design theory and method based on regional cultural expression by studying and exploring the regional culture of Shanxi region, which has theoretical significance. Moreover, the creative practice of this project is based on the preliminary research foundation.

Therefore, from the background and importance of the problem, we interested in studying the Shanxi cultural characteristics to develop new elements of Chinese culture and use them to design furniture in a new way.

1.2 Research Objective

1.2.1 To Study and analyze traditional culture elements in Shanxi for furniture design.

1.2.2 To design Chinese furniture from Shanxi traditional culture elements.

1.2.3 To study consumer satisfaction from new Chinese furniture design from Shanxi traditional culture elements.

1.3 Hypothesis Of Research

The New Design of Chinese furniture from Shanxi traditional culture elements can integrate traditional elements Shanxi culture into the new design and it can present the memories and values of Shanxi culture to the younger generation, raising awareness of the significance of its unique cultural beliefs, traditions, spaces, and people through innovative furniture designs, it can capture people's attention and interest in the culture, ultimately increasing its market value.

1.4 Conceptual Framework

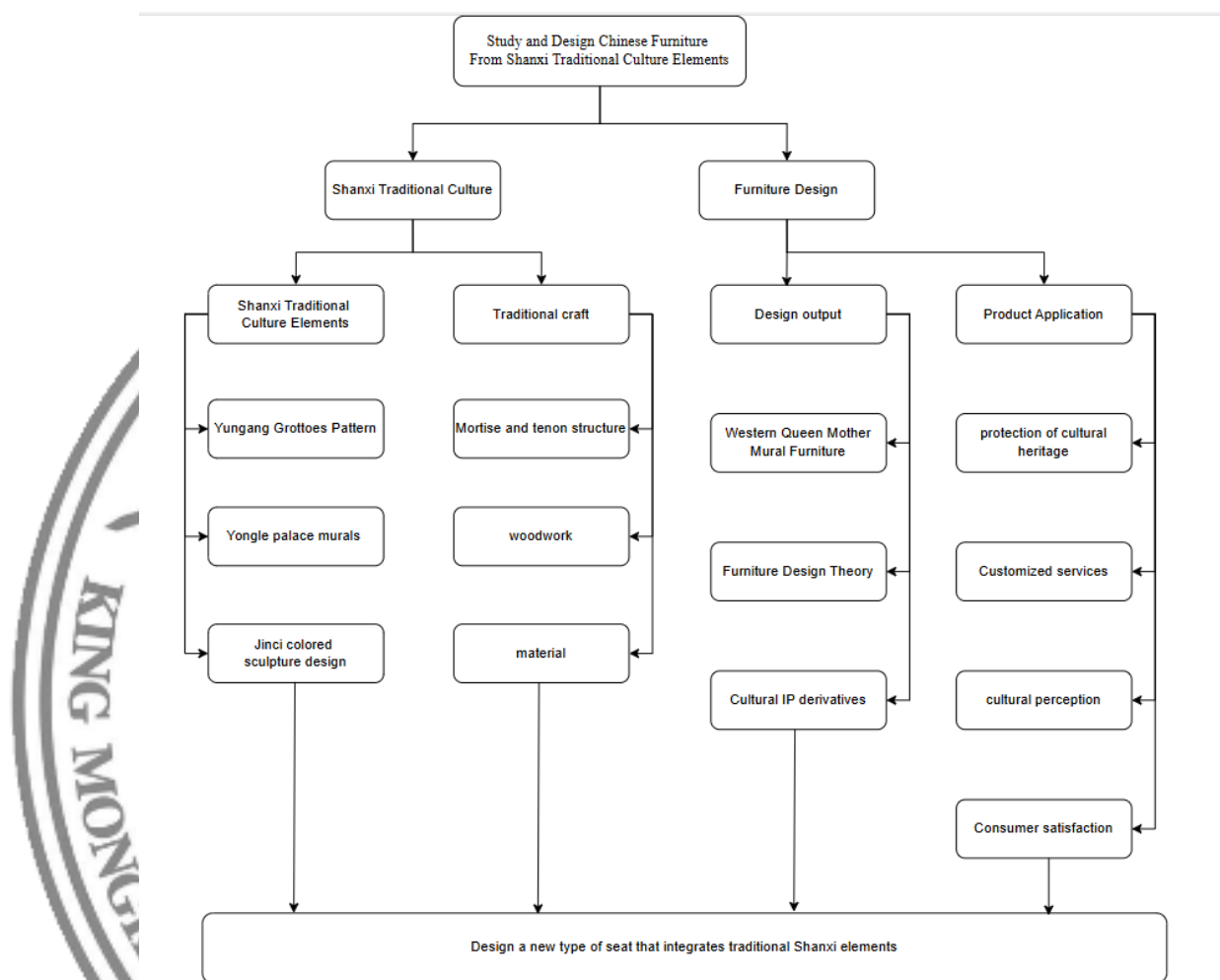


Figure 1.1 Conceptual Framework
Source: Draw by Researcher

1.5 Research Scope

1.5.1 Content Scope

- 1) Shanxi traditional culture
- 2) Furniture style from consumer needs
- 3) Furniture design theory
- 4) The theory of applying Shanxi's cultural identity to design.

1.5.2 Population and Samples

1) Population: This study collected questionnaire data on the satisfaction of 120 people living in Taiyuan with newly designed products, divided into four groups: 18-25 years old, 26-35 years old, 36-45 years old, and 46-55 years old.

2) The economic independence of young people is relatively stable, and they have certain requirements for life and family. Most young people yearn for learning and exploration, they are the most active, active, and lively force in society. Therefore, researchers can better cope with the rich data in this age group and develop practical and effective policy support.

3) The scope of this study is to investigate the popularity of Shanxi historical furniture among young people aged 25-50 for the integration of modern furniture with traditional elements.

1.5.3 Research Tools

A questionnaire on the integration of Shanxi traditional cultural elements into Chinese furniture design was conducted to collect attitudes and opinions of Taiyuan consumers towards the integration of Shanxi traditional elements into Chinese furniture design.

1.5.4 Data Collection Method

Through the method of questionnaire survey, we can understand the attitudes and perspectives of the respondents towards integrating traditional Shanxi elements into Chinese furniture. Through the questionnaire survey, we can optimize and improve the products in a targeted manner based on the opinions and suggestions of the respondents.

1.5.5 Data Analysis

Data analysis will use multiple methods to comprehensively present the characteristics and trends of survey results.

Firstly, the mean: calculate the concentration level of each data item; Secondly, median: Sort the data to find the median, suitable for situations with uneven distribution. Frequency distribution: Count the frequency of occurrence of each data item, bar chart: visually display its distribution status. Pie chart: used to present the proportion relationship of various types of data in the whole, making it easy to observe the proportion of different categories. Finally, stacked bar chart: displays the cumulative percentages of each section, facilitating horizontal comparison and analysis of multiple data groups.

1.6 Hypothesis

1.6.1 Main assumptions:

Integrating traditional cultural elements from Shanxi, such as mural patterns, mortise and tenon structures, and regional materials, into modern chair design will significantly improve user satisfaction, cultural identity, and consumer aesthetic taste.

1.6.2 Sub hypothesis:

- 1) Users will consider chairs designed with traditional Shanxi elements to have more cultural significance than chairs designed with ordinary modern elements.
- 2) The use of Shanxi specific patterns (such as Yongle Palace murals) and materials (such as walnut trees and elm trees) will have a positive impact on users' emotional connection and perceived authenticity.
- 3) Compared to older age groups, young consumers (aged 18-35) will show a higher preference for culturally integrated modern chairs.
- 4) Incorporating traditional fine woodworking products (such as mortise and tenon joints) into the design will improve the quality of craftsmanship and durability.
- 5) Users who participate in feedback based iterative design processes will report higher satisfaction than those who only come into contact with the final product.

1.7 Term Definition

1.7.1 Shanxi traditional culture

Shanxi traditional culture provides a rich source of inspiration for modern furniture design. By extracting regional cultural elements from murals, sculptures, and other forms, combined with contemporary aesthetic concepts, a new type of Chinese style chair with Shanxi cultural charm is designed. Retaining cultural genes while meeting contemporary living needs through technological innovation. As shown in the empirical research in the article, furniture incorporating traditional elements can significantly improve user satisfaction (75%) and open up new paths for the revitalization of cultural heritage.

1.7.2 Easy Chairs type

Easy chairs are widely used in modern furniture design, with diverse types and clear functions, emphasizing practicality and minimalist aesthetics in design. According to different usage scenarios and functions, simple chairs can be roughly divided into dining chairs, leisure chairs, office chairs, stools, folding chairs, bench chairs, and lounge chairs. Dining chairs usually adopt a four legged structure and a simple backrest

design, emphasizing sitting comfort and suitable for family dining spaces; Leisure chairs are mostly made of curved wood structures and fabric soft cushions, emphasizing visual aesthetics and comfort, and are suitable for use in living rooms, balconies, and other spaces; Simplified office chairs prioritize functionality and are often equipped with adjustable structures and highly supportive backrests, suitable for home workspaces or modern offices; Stools are characterized by their lack of backrest and lightweight structure, making them easy to move and store, and suitable for entrances or temporary seating; Folding chairs are mainly made of metal structure and can be folded for storage, suitable for outdoor activities or temporary use; The long chairs have a unified design and large capacity, and are often used in public waiting areas or restaurants; The simple lounge chair is designed with a tiltable backrest and foot extension to meet the needs of casual rest.

1.7.3 Shanxi Traditional Furniture Inheritance and Innovation

For the Shanxi region, traditional Shanxi furniture should be reasonably protected and utilized, and in-depth research and analysis should be conducted on Shanxi furniture culture and Shanxi furniture craftsmanship; We should protect and inherit the cultural heritage of Shanxi region, and conduct in-depth research and learning on the regional culture of Shanxi region; We should design new Chinese style furniture with Shanxi cultural connotations, injecting vitality into the design of new Chinese style furniture.

CHAPTER 2

Literature Review

By integrating concepts, articles, books, journals, and related research, study the research on traditional furniture in Shanxi. In order to make research easier for people to understand and learn, researchers collect information. The following are relevant documents on research information.

- 2.1 Overview of Shanxi Regional Culture
- 2.2 The Regional Cultural Characteristics of Shanxi Traditional Chairs
- 2.3 The relationship between traditional chairs and modern chairs
- 2.4 Design principles of Shanxi characteristic element chairs
- 2.5 The current research status of new Chinese chairs
- 2.6 Design scheme for Shanxi traditional element chairs
- 2.7 Relevant Research in the Field

2.1 Overview of Shanxi Regional Culture

Regional culture refers to the culture jointly created by various ethnic groups in a specific regional environment, which has uniqueness and relative stability. Regional culture includes the long-term production methods, lifestyles, and corresponding customs, customs, values, religious beliefs, cultural arts, etc (Yang Zerong,2014) formed by people living in specific regions for generations. Shanxi is one of the birthplaces of the Chinese nation, known as the "cradle of Chinese civilization" and "museum of ancient Chinese culture", with many preserved relics Cultural heritage such as ancient architecture, murals, sculptures, and Jin opera.

2.1.1 Historical and Cultural

Shanxi, abbreviated as Jin, originated from the vassal state of Jin, which was enfeoffed during the Zhou Dynasty. The initial name of the state of Jin was Tang, derived from the fiefdom of Tang Shu yu, the son of King Wu of Zhou, Ji fa. Later, due to the relocation of Shu yu son Xie to the banks of the Jin shui River, the name of the state was changed to Jin. To this day, "Jin" is still used to refer to the Shanxi region, so furniture in the Shanxi region is abbreviated as Jin Zuo, merchants in the Shanxi region are abbreviated as Jin Shang, and dramas in the Shanxi region are abbreviated as Jin

Opera. The Shanxi region has long been under the jurisdiction of ethnic minorities and has been deeply influenced by ethnic minority cultures, forming a brilliant and diverse regional culture.

In Figure 2.1, We can clearly see that whether it is the Northern Wei established by the Xianbei ethnic group, the Liao established by the Khitan ethnic group, the Jin established by the Jurchen ethnic group, the Yuan established by the Mongolian ethnic group, or the Qing established by the Manchu ethnic group, their territories all include the Shanxi region. The Xianbei, Khitan, Jurchen, Mongolian, and Manchu ethnic groups all belong to the northern nomadic tribes. They have lived on vast grasslands for generations and have been accompanied by animals such as cows, sheep, horses, rabbits, and deer for a long time. Therefore, their decorative patterns are usually based on animals living on the grasslands. This explains why existing Jin Dynasty furniture often features decorative patterns with themes such as figures, galloping horses, peacocks, mermaids, running rabbits, and deer, instead of the common decorative patterns found in Ming and Qing Dynasty furniture such as rolled grass, lotus patterns, cloud patterns, ruyi, lingzhi, flowers and birds, dragon patterns, chi patterns, qilin, lions, and elephants. (Guo Zongping, 2018)

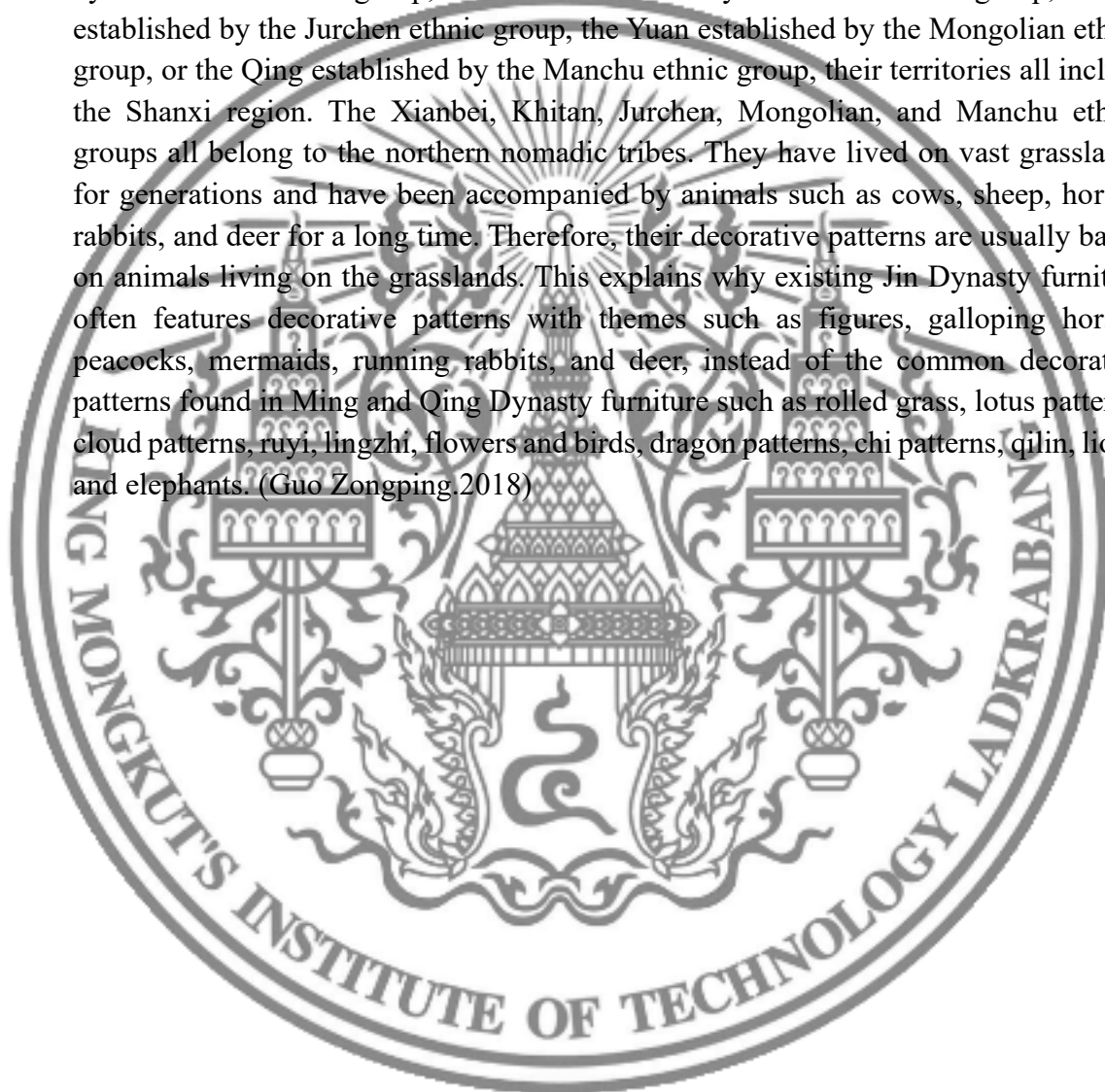




Figure 2.1 Historical map
Source: www.baidu.com

Table 2.1 Pattern of types


Pattern	Introduce
	<p>Elephants are regarded as symbols of auspiciousness and strength, and are referred to as the virtuous among beasts by people</p>

Table 2.2(continue)







Pattern	Introduce
	<p>The dragon first appeared as a totem worship, capable of providing good weather and abundant food and clothing.</p>
	<p>Magpies are birds with good luck and auspiciousness, symbolizing happiness and auspiciousness. Magpies are often paired with plum blossoms</p>
	<p>Crane, introduced into the mythological world by Taoism, is a symbol of nobility and elegance. At the same time, it also carries the meaning of longevity</p>
	<p>The ribbon bird symbolizes good official luck</p>

Table 2.3 (continue)

Pattern	Introduce
	<p>Lotus flowers are often synonymous with sanctity, elegance, and integrity</p>
	<p>Orchids are regarded as symbols of nobility, elegance, patriotism, and strength</p>
	<p>Peony is known as a rich and precious flower, and people regard it as a symbol of prosperity and wealth</p>
	<p>Ruyi implies that everything will go smoothly in the future, and everything will go smoothly</p>

Table 2.4 (continue)

Pattern	Introduce
	<p>Qilin pattern is one of the widely used and influential animal patterns. This pattern is derived from the ancient Chinese legend of the auspicious beast Qilin, symbolizing good fortune</p>
	<p>Ruyi pattern symbolizes smoothness, completeness, and happiness. It is often used to express good wishes, such as smooth career, prosperous life, and harmonious family.</p>

2.1.3 Religious culture

Religion is a cultural phenomenon that emerged at a certain historical stage of human society and belongs to a special social ideology. Wang Zuoan, Director of the State Administration for Religious Affairs, believes that "religion is not only a belief system, but also a cultural phenomenon. It has evolved continuously with the development of human society, gradually forming a religious cultural tradition centered on faith. Religious beliefs interact and influence other ideologies, producing religious philosophy, religious ethics, religious literature, religious music, religious art, religious architecture, etc., some of which have become valuable assets of human culture. (Wang Zuoan.2011)

In the Shanxi region, the prevalent religious types mainly include Confucianism, Buddhism, and Taoism, which have continuously developed and grown in the process of dissemination, forming a rich religious culture and serving as important cultural resources for the design of new Chinese style furniture. Confucianism is based on the five religions and rituals of Xia, Shang, and Zhou dynasties, with the emperor as its religious leader, Confucius as its teacher, and the Shintoism of poetry, books, rituals, music, and the Spring and Autumn Annals. It believes in rituals and emphasizes the importance of "not being worshipped". According to the Confucian sacrificial system, the Son of Heaven can offer sacrifices to heaven, famous mountains and rivers in the world, all gods, princes can offer sacrifices to famous mountains and rivers in their own

territory, ordinary people can offer sacrifices to kitchen gods and ancestors, and only Confucians can offer sacrifices to Confucius. Due to the underdeveloped science at that time, the people could only rely on "gods" to solve all problems. Therefore, the number of Confucian believers continued to grow, and sacrificial activities gradually became popular. Correspondingly, buildings, utensils, rituals, and doctrines gradually improved, becoming an important part of Confucian culture. The preserved buildings such as Jin Ci, Confucian Temple, and Tu Di Temple in Shanxi Province, as well as the utensils such as offering tables, offering tables, shrines, and plaques, all contain rich Confucian culture.

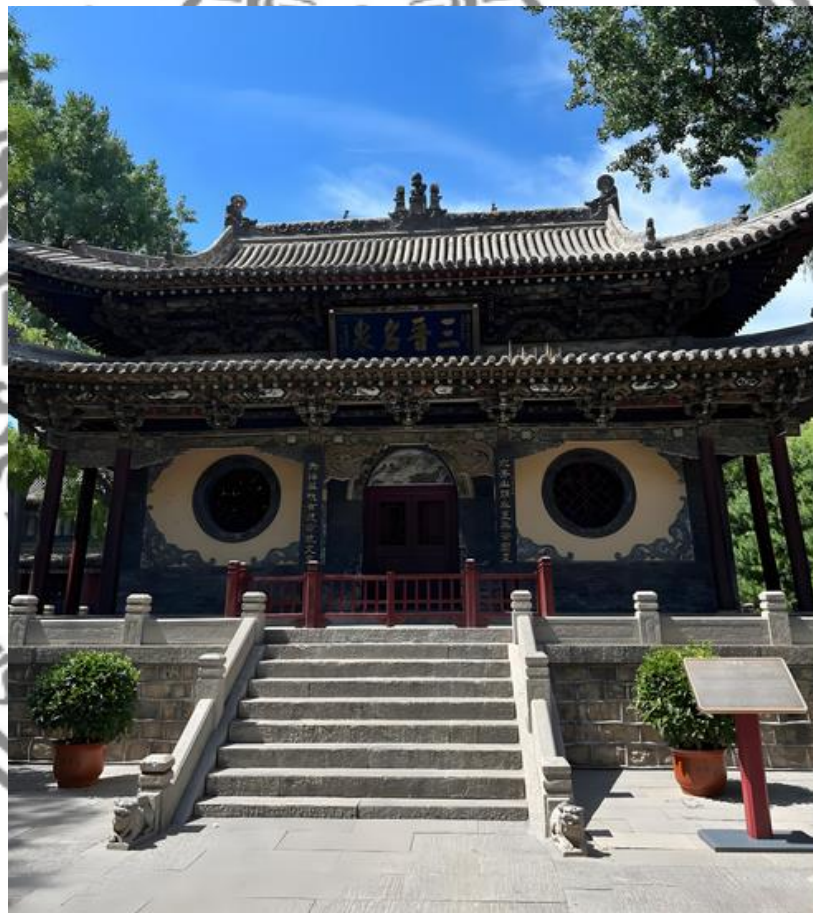


Figure 2.2 Shanxi Jinci Temple

Source: www.baidu.com

Buddhism was introduced to the Shanxi region during the Sixteen Kingdoms period and reached its peak during the Sui and Tang dynasties. It lasted for over a hundred years, and its ideas on the cycle of life and death, as well as the cause and effect of good and evil, provided comfort to the suffering people. As a result, it gradually gained acceptance among the general public. Therefore, buildings, murals, sculptures, utensils, music, rituals, and other elements closely related to Buddhist activities have

developed one after another, collectively constituting a rich Buddhist culture. The Buddhist buildings that have survived to this day in Shanxi include Huayan Temple, Hanging Temple, Shanhua Temple, Guangsheng Temple, etc; Buddhist murals, represented by Mount Wutai murals, are all over the temples; The Buddhist grottoes are represented by the Yungang Grottoes in Datong; Buddhist furniture mainly consists of various types of Buddha seats, niches, scripture cabinets, and offerings; Buddhist statues, mainly featuring Buddhist figures, are scattered throughout temples and contain rich Buddhist culture.

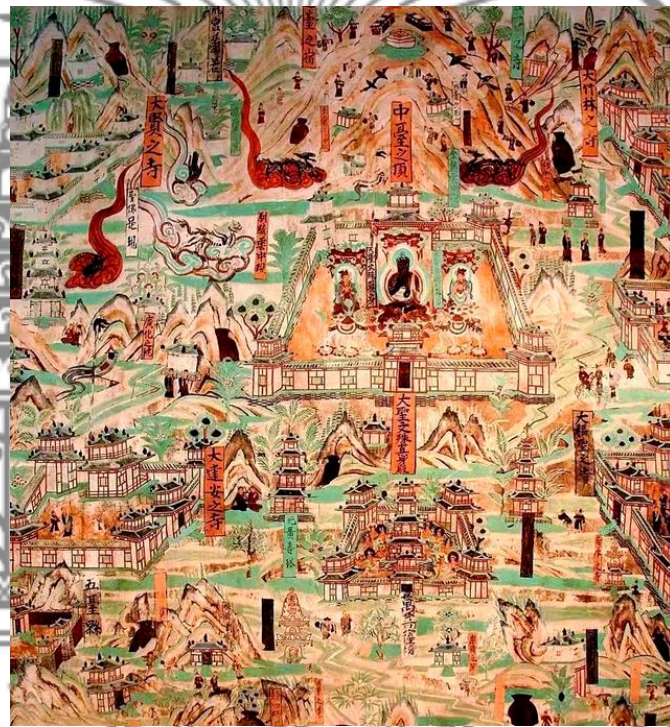


Figure 2.3 Mount Wutai murals
Source:www.baidu.com

The formation of Taoist culture is based on the Huang Lao School of Taoism, integrating various folk techniques, numerology, immortals, ghosts, myths, and other contents, and incorporating various theories such as Confucianism, Mohism, Yin Yang, health preservation, and immortals. Through methods such as clearing and cultivating nature, accumulating essence and refining qi, taking golden pills, and teaching talismans, it pursues longevity and immortality.(Chen Yalan.2013) Buildings, sculptures, murals, music, instruments, doctrines, rituals, and other related to Taoist activities all contain rich Taoist culture and have become important components of Taoist culture. The Taoist temples in Shanxi region are represented by Yongle Palace. The walls of the four main halls in the palace are covered with murals, with a total area of 960 square meters, among which the mural "Chao Yuan Tu" in Sanqing Hall is the

most. (Yu Juanjuan.2010) From a painting perspective, Chaoyuan painting belongs to Taoist painting art, and its composition, techniques, character images, lines, colors, story content, aesthetic ideas, etc. all contain excellent traditional culture.



Figure 2.4 Sanqing Hall Mural Painting
Source:www.baidu.com

In the Shanxi region, there is no clear boundary between the religious beliefs of the people, and they have never been purely followers of a certain sect. People believe in religion solely for the purpose of pragmatism, and they believe in whoever can help them solve their current confusion. Subsequently, with the accumulation of long-term life experience, the people not only worship Buddha and gods, but also offer sacrifices to their ancestors, in order to pray for the blessings of various deities and ancestors to help them overcome difficulties. So, in daily life, religious activities are very common, resulting in countless furniture used for religious activities such as altar tables, altars, shrines, and Buddhist shrines that have been preserved to this day.

2.1.4 Business Culture

Shanxi's commercial industry originated in the southwest of the mountain, relying on agriculture and salt industry to accumulate initial wealth. Subsequently, it seized policy opportunities and continuously grew with geographical advantages. By

the Qing Dynasty, it had become a strong commercial group, mainly engaged in the salt and iron industry and the ticket trading industry, with the ticket trading industry being the most famous.

2.1.5 folk culture

Folk culture is a folk culture formed by the people in their long-term social life, including living habits, living styles, dietary customs, festival ceremonies, spiritual beliefs, music and dance, artistic performances, and other aspects of life, carrying the people's longing and longing for a better life. (Wu Qingju.2018) As far as Shanxi region is concerned, its unique cultural environment has nurtured a rich and colorful folk culture, mainly reflected in residential architecture, dough sculpture, Jin opera, folk songs, social fire, shadow puppetry, etc. It is one of the important cultural resources in furniture design.



Figure 2.5 Shanxi Ruyi Pattern Official Hat Chair

Source:www.baidu.com



Figure 2.6 Shanxi sunflower patterned official hat chair
Source: www.baidu.com

In the research of traditional Jin Dynasty furniture, the author found that craftsmen placed the people's longing for a better life on the decoration of parts such as the connecting sticks, tassels, and distracting flowers on the veneers of the furniture. For example, the Lianbang stick of the official hat chair is often made in the shape of bottle bamboo or bottle bamboo lotus, taking its homophonic meaning of peace, longevity, and peace; The ribbon ring plate is often carved with decorative patterns such as dragon patterns, ball patterns, step brocade patterns, and zigzag patterns, implying good luck; The distracting flowers on the dental plaque are often decorated with pomegranate patterns, sunflower patterns, etc., symbolizing having many children and grandchildren, and a prosperous population.

2.2 The Regional Cultural Characteristics of Shanxi Traditional Chairs

2.2.1 Ancient charm

In the Shanxi region, regardless of birth, aging, illness, death, marriage, funeral, and other matters, people have specific rules, and any slight non-compliance is

considered to violate ancestral traditions or be unlucky. These phenomena precisely reflect that the people have inherited the lifestyle and ideological concepts of their ancestors, or can be called "conservative" concepts. This kind of thinking among Shanxi people is reflected in the traditional furniture of Jin Dynasty, which is characterized by following the ancestral system and advocating for ancient style. Therefore, the industry calls Jin writers "ancient charm".

Figure. 2.7: Black lacquer four-pointed official hat chairs in the southern region of Shanxi, dating back to the 15th to 16th centuries, measuring 68 centimeters in length, 48 centimeters in width, and 103 centimeters in height. This chair is made of thick materials, has a large volume, a simple style, and is stable and generous, fully displaying a majestic aura. (Liu Chuansheng,2018) Compared to the official hat chairs of the same period, this chair highlights the ancient style in terms of form.

The shape of the chair is designed to arch upwards in the middle while also curling upwards at the end. The backrest of this chair is a three-section structure with grooved boards, and the column section is circular. It is worth noting that according to Mr. Chen Zengbi research, circular columns were more common in furniture from the Song Dynasty, while they were very rare in furniture from the Ming Dynasty.



Figure 2.7 Black paint Armchair with four protruding ends
Source:www.baidu.com

As shown in Figure 2.8 2.9 2.10, the patterned structure of the railing bed. Picture A was taken in the 16th to 17th centuries at the San Duo Hall in Taigu. It has a square structure with fences on all four sides but an entrance on the front. The inner side of the three bent legs is decorated with a digging pot door, and the foot is supported by wooden mud pads. The desk shaped structure refers to the placement of four legs at

a horizontal offset of about 30 centimeters from the four corners of the tatami mat, which is different from the table shaped structure of tatami mats in the Ming and Qing dynasties, where four legs were placed at the four corners of the tatami mat. Figure b shows the fence type Arhat bed collected by Mr. Makelele. It was about the 17th and 18th centuries. It is a case type structure. The legs are connected to the couch with shoulder tenons. The cross braces between the front and rear legs play a role in strengthening the structure. The top of the couch is equipped with step brocade railings. Although it was made late, the shape and structure of the furniture show a high ancient style. (Curtis, & Ma Kele.2012) In addition, according to Figure c, the wooden couch unearthed from the tomb of Deyuan in Jinyan, Datong, the couch unearthed from the tomb of Ziliao in Jiefangying, Inner Mongolia, the Arhat couch unearthed from the tomb of Ming Dynasty in Xiangfen, and the couch with the existing physical inference structure are unique to Shanxi. (Jie Tingqi.1978) In addition, according to the "Construction Method" by Song Lijie, Song style railings often have cloud arches decorated between the search rod and the basin lip, with Shu pillars and large flower boards placed under the basin lip. The railings of the tatami collected by Sanduotang also have components such as search rods, cloud arches, basin lips, Shu pillars, and flower boards, which are very similar to Song style railings and belong to the ancient style.



Figure 2.8 Fence type Arhat bed
Source:www.baidu.com



Figure 2.9 Yan Deyuan Tomb Golden Wooden Bed
Source:www.baidu.com



Figure 2.10 Pattern structure railing bed
Source:www.baidu.com

From the existing physical objects, it can be inferred that most of the Shanxi chairs with a high ancient style are from the southwestern region of the mountains. From a regional cultural perspective, the underlying causes are:

1. The geographical environment of Shanxi region presents the characteristics of many mountains, few plains, and overlapping mountains, with the mountain range trending horizontally and rising in a stepped manner from south to north. The elevation difference of the terrain has a great impact on the communication between the north and south of Shanxi region. The Shanxi region has gradually formed a relatively closed environment due to the lack of communication with the outside world in the four directions of southeast, northwest, and northwest due to mountain ranges. It is precisely because of the lack of communication with the outside world that the aesthetic concepts and production techniques passed down in Shanxi region have not undergone significant changes, thus achieving the ancient style of Shanxi chairs.

2. The migration of the economic center led by Shanxi's commerce is one of the important reasons for the formation of ancient styles of Shanxi chairs. Before the Ming Dynasty, Shanxi's commerce relied on the salt industry and agriculture in the southern region to accumulate wealth. At this time, the economic center of Shanxi was in the

southern region, and its strong economic strength promoted the social development of the region, improved people's living standards, and promoted the prosperity of architecture and furniture. In the late Ming and early Qing dynasties, Shanxi's commerce migrated to the more favorable central region, and the economic center also moved accordingly. The departure of commerce left the furniture industry in the southern region in a conservative state due to a lack of financial and material resources, as well as communication with the outside world, thus forming the ancient style of Shanxi chairs. (Guo Zongping.2018)

3. While accumulating wealth, Jin merchants gradually formed a character of respecting teachers and valuing education. According to statistics, there were 29747 literati in the southern region of Jin during the Song, Yuan, Ming, and Qing dynasties, while a total of 19022 people lived in the central and northern parts of Jin. (Wang Shangyi, & Xu Hongping.1988)The aesthetic view dominated by literati to a certain extent inherited and continued the high ancient style of Jin made furniture, (Guo Zongping.2018)while also making the aesthetic value of Jin made furniture higher than other furniture styles such as Su made and Guang made.

2.2.2 Exotic aura

During the research process, it was found that decorative patterns such as galloping horses, running rabbits, reindeer, and peacocks are commonly found in existing traditional Jin style furniture, which are clearly different from the common decorative patterns such as rolling grass, lotus patterns, Ruyi, flower and bird patterns, and dragon patterns in the Central Plains region. These unusual decorative themes further prove that the Shanxi region is deeply influenced by ethnic minority culture, resulting in Jin made furniture having a strong exotic atmosphere.

Figure. 2.11: The Southern Official Hat Chair, produced in the central region of Shanxi, is 59 centimeters long, 53 centimeters wide, and 113.9 centimeters high, with a clear Ming and Qing significance. Deer has always been regarded as a divine beast by the Xianbei people, especially the "red deer" which is regarded as a totem of the Xianbei people. The decorative patterns of deer in Jin furniture decoration further prove that Shanxi region is deeply influenced by ethnic minority culture.



Figure 2.11 Southern official's hat armchair

Source:www.baidu.com

Figure 2.12: Translucent carved screen with loop board seat, produced in the southern Shanxi region, measuring 49.6 cm in length, 45.0 cm in width, and 56.5 cm in height. The screen has three loop boards on each side and two on each side, with a total of ten loop boards decorated. The top three pieces are carved with carved patterns of running rabbits, running horses, and galloping deer, which are typical decorative patterns of nomadic ethnic groups. The bottom three pieces are carved with carved patterns of single flowers, and the left and right pieces are carved with carved patterns of maidservants. The clothing and hair styles are typical of the Song style, (Guo Zongping.2018)indicating the continuous exchange and integration of ethnic minority culture and Han culture, and further demonstrating the diversity of regional culture in Shanxi region.



Figure 2.12 Screen set in a stand with openwork carving ornamental panel

Source:www.baidu.com

Figure 2.13, Mr. Markle's collection of shelves and tables dates back to the 13th to 15th centuries, measuring 284 centimeters in length, 39 centimeters in width, and

85.6 centimeters in height. The front and sides of the table are respectively carved with decorative themes of children riding auspicious birds or beasts such as lions, tigers, deer, and peacocks, wearing bellybands. They hold mascots such as lingzhi, lotus flowers, and embroidered balls in their hands, carrying people's beautiful visions and having a typical ethnic minority decorative style. (Curtis, & Ma Kele.2012) It should be noted that peacocks are not grassland animals, but were first introduced to ethnic minority areas along the ancient Silk Road with Buddhism. The peacock decoration in Jin Dynasty furniture further indicates that Shanxi region is deeply influenced by ethnic minority cultures. (Curtis, & Ma Kele.2012)



Figure 2.13 Han Xizai Evening banquet Chart
Source:www.baidu.com

2.2.3 Folk customs and traditions

The people in Shanxi region have the characteristics of honesty, kindness, enthusiasm, and positivity. Their faces are always filled with a simple smile, and they always approach life with a positive attitude and express good wishes. Through long-term life and production practice, they have formed a simple folk custom. This simple folk style is particularly reflected in the decoration of traditional Jin furniture.

Figure. 2.14: The official hat chair in its early forties, dating back to the 18th century, features a relief design with the Chinese character "Shou" on the upper end of the C-shaped backrest, expressing the people's beautiful wish for longevity and blessings. (Curtis, & Ma Kele.2012)



Figure 2.14 Armchair with four protruding ends
Source:www.baidu.com

Figure 2.15 shows the four headed official hat chairs, with the connected bamboo sticks of the three chairs in the shapes of bottle bamboo lotus and bottle bamboo, which are very different from the connected bamboo sticks of Ming and Qing furniture. The homophone of "bottle" is "ping", which means peace; 'Bamboo' symbolizes longevity and prosperity; Lotus, also known as lotus, symbolizes peace and beauty, representing the people's beautiful wishes. (Curtis, & Ma Kele.2012)



Figure 2.15 Armchair with four protruding ends
Source:www.baidu.com

Figure 2.16: The backrest of the chair is decorated with auspicious patterns at the open light, symbolizing longevity, immortality, good luck, and carrying the people's beautiful hopes. (Curtis, & Ma Kele.2012)



Figure 2.16 Back of chair
Source:www.baidu.com

Figure. 2.17: Three legged Zen bench, dating back to the 17th and 18th centuries, with four legs rolled outward and ending with a Ru yi pattern. As one of the Eight Treasures of Buddhism, Ru yi was first introduced to China from India and later combined with patterns such as auspicious clouds and Ling zhi to form various Ru yi patterns that symbolize auspiciousness and beauty. (Curtis, & Ma Kele.2012)



Figure 2.17 Cabriole leg bench
Source:www.baidu.com

2.3 The relationship between traditional chairs and modern chairs

2.3.1 The Relationship between New Chinese Chairs and Traditional Chairs

The paper collection of the International Symposium on Furniture Design and Manufacturing in the 21st Century includes Professor Liu Wenjin's article "Exploring the 'New Chinese Style' Furniture Design Style" from Central South University of Forestry and Technology. The article comprehensively proposes the concept of new Chinese style furniture for the first time, which means that new Chinese style furniture

must have the following two basic characteristics: first, the interpretation of the cultural significance of traditional Chinese furniture in the current era (the modernization of tradition); The second is contemporary design based on a full understanding of traditional Chinese culture. (Liu Wenjin.2003)The proposal of this concept further clarifies that the relationship between new Chinese style furniture and Chinese style furniture is one of inheritance and innovation.

In the field of chairs, many scholars define the new Chinese style chair as the combination of modern chairs and traditional chairs, which undoubtedly deviates from the direction conceptually. It is worth noting that the meaning of combination refers to the combination or connection of two different objects to form a complete individual. However, we understand the new Chinese style chairs were not created out of thin air, nor were they a product of the grafting of modern and traditional chairs. Instead, traditional chairs have developed a new appearance that adapts to the requirements of the times, conforms to aesthetic concepts, and meets functional needs in the process of advancing. So, the relationship with traditional chairs should be understood as a continuous line.

2.3.2 The Relationship between New Chinese Chairs and Modern Chairs

With the progress of society and the awakening of Chinese consciousness, people are increasingly valuing the originality and cultural value of chairs. However, many new Chinese style chairs in the current market are influenced by industrial production and exhibit characteristics of modern chairs such as batch production, formalization, and formalism. They lack the craftsmanship, aesthetic charm, and cultural connotations that traditional chairs possess, making it difficult to meet people's growing spiritual and cultural needs. Therefore, based on the characteristics of the current era, aesthetic needs, and reflection on modern design, contemporary design concepts have emerged. Although it has the commonality built by industrial civilization, the people-oriented design philosophy emphasizes the differences of human civilization. (Yang Chunhong.2006)

2.4 Design principles of Shanxi characteristic element chairs

From a design perspective, as an essential tool in human life, chairs must prioritize practical functionality, that is, the principle of reasonable functionality.

1. To meet certain usage requirements in people's daily lives, the structure should be determined to adapt to the usage requirements. Based on this, the design should be considered as perfect as possible. On the premise of meeting the principle of reasonable functionality, attention should be paid to ergonomic research, which can bring users a comfortable and comfortable experience.

2. The principle of structural science is that the chair structure should comprehensively consider aspects such as function, material, shape, firmness, and aesthetics, and should not compromise functionality or firmness for the sake of aesthetics.

3. The principle of beautiful appearance is to design chairs that serve contemporary people and must meet their aesthetic concepts and needs. Emphasis should be placed on the principles of formal beauty, such as proportion, rhythm, variation, unity, etc.

4. The principle of cultural experience, With the development and progress of the times, people are paying more and more attention to cultural cultivation. Therefore, chair design is designed to meet the growing needs of people. Cultural needs should not only inherit excellent traditional culture, but also innovate and develop.

2.5 The current research status of new Chinese chairs

2.5.1 Domestic research status

In the market of new Chinese chairs, many excellent new Chinese chair brands have emerged, which have made beneficial explorations of new Chinese chairs from a cultural perspective. As shown in Figure 2.18, the Huizhou Circle Chair developed by Banmu Furniture Company in 2011 has a full and round overall shape, balancing the solemn ceremony of ancient circle chairs with the comfort of modern seats. Traditional manual wedge and tenon technology and modern mechanical structure complement each other. As shown in Figure 2.19, the Suzhou chair developed by Banmu Company draws inspiration from the perfect form of traditional circular chairs in its design, incorporating the artistic conception of window frames, small bridges, flowing water, and bright moon in Suzhou gardens, thus possessing the characteristics of lightness and elegance.

In addition, many excellent designers such as Hou Zhengguang, Tan Yuxiang, and Zhu Xiaojie are committed to exploring innovative designs for new Chinese chairs. As shown in Figure 2.20, the design work of famous designers such as Zhu Xiaojie - the Money Chair is inspired by ancient copper coins. Its shape is round on the outside and square on the inside, reflecting the designer's attitude towards life.



Figure 2.18 Huizhou Arm Chair
Source: www.baidu.com



Figure 2.19 Suzhou Chair
Source: www.baidu.com



Figure 2.20 Coin Chair
Source: www.baidu.com

2.5.2 Abroad Research Status

The exploration of new Chinese furniture design in foreign countries is much earlier than in China. Since Gustav Aick in Germany wrote "A Study of Chinese Flower and Pear Furniture", it has pioneered the study of Chinese Ming style furniture and attracted the attention of many foreign enthusiasts and scholars, thus triggering a craze for Chinese furniture. There are also many excellent designers who are also influenced by traditional Chinese furniture culture, such as Danish designer Hans Wagner and Finnish designer Jolio Kukapolo.

Wagner was commissioned in 1944 to design an armchair with a curved effect.

He came up with various plans for this, but was never satisfied until he saw the circular chairs in China, where he gained design inspiration and created furniture such as Chinese chairs (Figure 2.21) and Y-chairs (Figure 2.22). He even spent decades exploring the design of Chinese chairs. (Yu Forest,& Chen Qianyue.2019)



Figure 2.21 Y Chair
Source:www.baidu.com



Figure 2.22 Chinese Chair
Source:www.baidu.com

2.5.3 Problems with Traditional Shanxi Chairs

With the prevalence of "Chinese style", the demand for new Chinese style furniture is gradually increasing. However, in order to meet the growing consumer demand, the market is filled with a large number of "lifeless" new Chinese style furniture. The reason why they are described as lifeless is because compared to traditional furniture, they lack vitality, attractiveness, and infectiousness, and have fallen into the misconception of producing only for profit. This is mainly reflected in the following aspects: firstly, the rigid integration of traditional furniture and modern furniture. This type of new Chinese style furniture combines traditional and modern furniture to varying degrees, leading to the misconception of label based design or element collage in furniture. Secondly, one-sided innovation focuses only on the form, materials, structure, skills, and other aspects of furniture, neglecting the cultural inheritance of furniture, resulting in innovative furniture design forms rather than the perfect unity of content and form. Thirdly, the lack of a corresponding systematic design methodology has led to confusion and unclear ideas in the development direction of furniture. (Huang Shengyou, &Ye Xi.2013)

As shown in Figure 2.23, the living room furniture is a furniture product from a furniture design company in Shanxi. This set of living room furniture is full of modern atmosphere and has obvious industrial and mass production characteristics. Its structure is only a simple assembly, not a sophisticated mortise and tenon structure, especially the tabletop and stool surface are completely dependent on machine batch processing; On the appearance, it imitates the traditional furniture slotting and board installation, as well as the falling hall stepping drum method, but fails to capture its essence; Falsifying narrow slits at the connection between furniture panels and frames to mimic the contraction joints in traditional furniture; The furniture lines appear somewhat monotonous due to a lack of variation. As shown in Figure 2.24, the new Chinese style sofa was photographed by the author in a furniture market in Shanxi. The lines of this piece of furniture are relatively stiff, with obvious characteristics of mechanization, batch production, and other machine production; The lower end of the sofa is designed with a clay support to imitate traditional furniture, but it is too close to the ground. If the ground is uneven, it cannot be used, and it is also inconvenient for hygiene and cleaning; In terms of structure, appearance, details, and cultural inheritance, it gives people a rigid and cold feeling of machine processing, lacking high aesthetic value, cultural value, vitality, and infectiousness.



Figure 2.23 Furniture of living room

Source: www.baidu.com



Figure 2.24 Sofa with new Chinese style
Source:www.baidu.com

These phenomena reflect the emergence of radical, blind, frivolous, and hollow design explorations in the current field of new Chinese furniture design that only focus on market demand, resulting in a large number of design works lacking profound cultural accumulation flooding the market. Therefore, designers should deeply reflect on: Where is the path of innovation for new Chinese style furniture with regional culture? Based on extensive research and analysis, the author proposes several insights for designers to refer to and learn from. The innovation of new Chinese style furniture with regional culture must first meet people's functional needs, and secondly meet people's aesthetic and cultural needs in the current era. That is to say, the innovative design of new Chinese style furniture with Shanxi regional culture is not only a one-sided innovation in design concepts, materials, technology, and appearance forms, but should also start from the cultural level. Based on in-depth research on traditional Jin style furniture and Shanxi regional culture, it should inherit excellent culture, improve and innovate shortcomings, better meet the aesthetic and spiritual cultural needs of contemporary people, and bring them more sense of belonging, identity, comfort, fulfillment, and satisfaction.

2.5.4 Design and Improvement of Traditional Shanxi Chairs

As is well known, Mr. Liu Chuansheng is a master of collecting classical Chinese furniture, and his personal collection hall is called "Wanqian Hall", especially for lacquer furniture. On the basis of studying classical furniture, Mr. Liu wrote the book "Da Qi Furniture", in which more than 90% of the furniture in the book comes from Shanxi region, indicating his deep research on Jin Dynasty furniture. At the same time, Mr. Liu Chuansheng is also a master of contemporary new Chinese furniture design. When asked about the reasons why he shifted from collecting antique furniture to designing contemporary furniture, he said, "Nowadays, no one dares to boast that

their designs can represent contemporary Chinese furniture. I am just imitating the past, in order to preserve the good traditions and improve the bad ones. This is the essence of contemporary Chinese furniture." (Wang Linjiao, & Liu Chuansheng, 2012) Over the years, based on his research on traditional furniture, he has designed many classic works. As shown in Figure 2.25, Mr. Liu created the Ruyi official hat chair in 2014, which is 60.5 centimeters long, 47.5 centimeters wide, and 95.5 centimeters high. The material used is old golden nanmu material, and the upper end of the backrest is decorated with Ruyi patterns. The overall shape is very similar to the black Daqi Nanguan hat chair in Jinnan, Shanxi Province included in "Daqi Furniture". The black lacquered southern official hat chair, as shown in Figure 2.26, dates back to the 17th century. It is 60 centimeters long, 48 centimeters wide, and 92 centimeters high, made of elm wood material, with four legs and eight legs. The S-shaped backrest conforms to the physiological characteristics of the human back, and the lines are simple, smooth, and varied. Both the shape and craftsmanship are of the highest quality. Compared to the other, the Ruyi chair is closer to people's aesthetic and usage needs in terms of proportion, scale, and material. As Mr. Liu said, contemporary design is a practical and rigorous academic research attitude that involves making slight improvements on the basis of excellent traditional furniture to better meet the needs of the current era. (Liu Chuansheng, 2018)



Figure 2.25 Official's hat armchair with Ru-Yi Pattern
Source: www.baidu.com



Figure 2.26 Black paint southern official's hat armchair
Source:www.baidu.com

2.5.5 Design and Innovation of Traditional Shanxi Element Furniture

Local furniture design companies in Shanxi are emerging forces in the inheritance and innovation of Jinzuo furniture. For example, Tang Renju Classical Home Culture Co., Ltd., known as the "Jin Pai Ming style Home Furnishing Technology Research Institute" and the "Shanxi Cultural Industry Demonstration Base", actively designs new Chinese style furniture with Shanxi regional cultural elements while collecting, protecting, and restoring traditional Jin style furniture. As shown in Figure 2.27, the design of the tea table and chair utilizes modern scientific technology to treat the surface of the material, making it warm, comfortable, and glossy, achieving innovation in craftsmanship; Applying different colors of wood to different parts of furniture and innovating in color matching; Refine the desktop partition and improve its functionality to better meet the modern needs and tea drinking habits of people, achieving innovation in functionality; Continuously improving the structure of traditional Jin style furniture, the design of Luo Guo Cheng combined with short and old elements makes the furniture more sturdy and stable.

In addition, brothers Zhang Jian and Zhang Jianming from Jinzhong region, as well as some teachers and students from higher education institutions, are also committed to the research, inheritance, and innovation of Jinzuo furniture. Through continuous learning, they have achieved certain achievements. As shown in Figure 2.28, the innovative design of string Arhat couch is inspired by the roof form of Shanxi's traditional folk houses. After simplifying it, design elements are refined and applied to the design of furniture backrests and handrails. The short and old design elements above the cross braces are extracted from the rafters purlins in the building. The well arranged backrests make people feel at the scene, as if they are in the courtyard of Shanxi merchants, feel the charm of Shanxi courtyard, and taste the architectural culture of Shanxi. Of course, the path of exploration is not smooth sailing, and there are also failures and setbacks. Designers need to constantly overcome difficulties, learn from

lessons, and forge ahead. As shown in Figure 2.29, the kiln chair, the designer wants to inherit Shanxi architectural culture by drawing on the form of cave dwellings, but lacks simplification and refinement of design elements, careful consideration of proportion and scale, and unified changes in furniture lines. Directly applying the form of the kiln face to furniture design inevitably has the suspicion of blindly copying.

It is worth noting that due to the influence of social, cultural, economic, political and other factors, the regional cultural characteristics of traditional furniture in Shanxi are difficult to continue. We can only trace back to more other regional cultural carriers in Shanxi to find regional cultural characteristics for innovative design of regional furniture, such as architecture, sculpture, murals, drama, shadow play, Paper Cuttings, etc. in Shanxi. Therefore, design innovation based on the study of Shanxi regional culture is an active, proactive, and conscious exploration process aimed at inheriting Shanxi regional culture, creating a highly recognizable Shanxi furniture brand, forming a unique regional style in new Chinese furniture design, and meeting the spiritual and cultural needs of more people.



Figure 2.27 Table and chair for drinking tea
Source: www.baidu.com



Figure 2.28 Luo Han bed
Source:www.baidu.com



Figure 2.29 Cave dwelling style Chair
Source:www.baidu.com

2.6 Design scheme for Shanxi traditional element chairs

The process of scheme design includes three parts: early stage, middle stage, and late stage. The early stage mainly involves design analysis, element extraction, brainstorming, and sketching. In the mid-term, refine the sketch plan through hand drawing or computer software, combine ergonomics to determine the furniture scale and proportion, continuously refine the details, and improve the plan. In the later stage, the main improvement plan is insufficient, with a focus on the plan table.

Material research:

The use of local wood

Walnut wood: the core material of Jin Dynasty furniture, with delicate texture,

smooth texture, moderate softness and hardness, suitable for carving complex patterns (such as rolled grass pattern, Ruyi cloud head pattern). Its color is light and soft, and after being polished and waxed, it presents a texture similar to that of a yellow pear, known as the 'North Walnut'.



Figure 2.30 Walnut wood furniture
Source: www.baidu.com

Elm and locust wood: with a hard texture, they are commonly used for load-bearing structures such as chair legs and armrests. The texture of elm wood is rough, while locust wood has strong corrosion resistance. It is often reduced by the "one wood continuous construction" process to enhance overall integrity.



Figure 2.31 Yumu Furniture
Source:www.baidu.com



Figure 2.32 Huaimu Furniture
Source:www.baidu.com

Willow wood and Chinese toon wood: lightweight in texture, often used for small furniture or decorative components, such as chair back grilles and carved decorative panels.



Figure 2.33 willow furniture
Source:www.baidu.com



Figure 2.34 Xiangchun wood furniture
Source:www.baidu.com

Substitution and fusion of valuable foreign wood

Jin merchants introduced southern hardwoods such as rosewood, sourwood, and camphor wood through trade, which were used to make high-end furniture. For example, rosewood is used for carving intricate patterns on chair backs, while camphor wood is often used for storage furniture due to its insect resistant properties.

Alternative strategy: When there is a shortage of scarce hardwood, similar woods such as "jube wood" are used to reduce costs by optimizing ingredients (such as "hardwood framing, cork filling") while maintaining the level of craftsmanship.

Technical research:

Innovative application of mortise and tenon structure

Frame structure: Shanxi chairs and stools are centered around mortise and tenon joints to ensure stability. The movable parts (such as the connection between the chair legs and the seat surface) are designed with mortise and tenon joints, and the load-bearing capacity is enhanced through staggered threading.

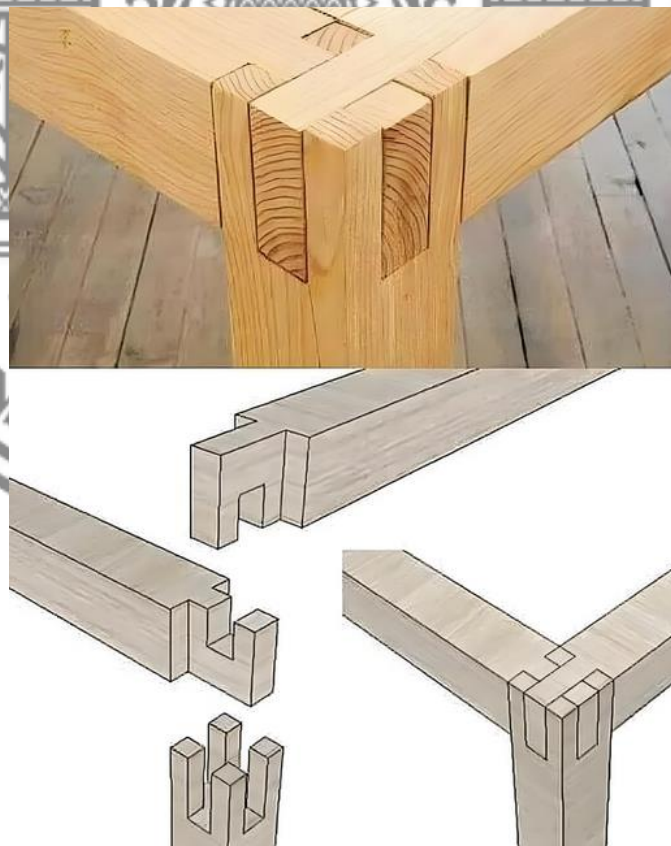


Figure 2.35 Mortise and tenon structure
Source:www.baidu.com

Carving and Decorative Craftsmanship

Carving techniques:

Relief: The back of the chair is often adorned with "Ruyi" and "Lotus" patterns, which highlight the sense of hierarchy through shallow relief.



Figure 2.36 Ruyi pattern carving
Source:www.baidu.com

The combination of intangible cultural heritage techniques, such as bamboo weaving for chair surface weaving, rattan weaving, lacquerware gilding and other techniques to enhance regional characteristics.



Figure 2.37 Xiangfen hexagonal bamboo woven chair
Source:www.baidu.com

Modern technology empowers traditional craftsmanship

Digital design: using 3D modeling to restore traditional patterns, usually using Sketchup and 3Dmax, and optimizing mortise and tenon structural parameters.

Environmental protection technology: using water-based paint instead of traditional paint to reduce pollution; Laser engraving achieves precise replication of complex patterns

2.7 Relevant Research in the Field

In Chen Liwei's article "Research on the Regional Style and Contemporary Inheritance and Innovation of Ning style Furniture", the author conducted in-depth research on Ning style furniture and concluded the feasibility of its inheritance and innovation in contemporary times, and carried out creative practice, providing valuable practical cases for the inheritance and innovation of Ning style furniture, as shown in Figure 3.38. The article "Re design of Chu State Furniture" by Lu Jingwen extracts furniture elements through in-depth analysis of Chu State furniture and carries out design practice, (Chen Liwei.2004) as shown in Figure 2.39. For example, Gong Mei's article "Research on New Chinese Furniture Design Based on Shanxi Culture" delves into the regional culture of Shanxi region and further explores how new Chinese furniture design can inherit Shanxi culture, making certain contributions to the development of regional furniture. (Lu Jingwen.2018)

Faridah Sahari and Musdi Shanat (2021) do the research Cultural Concept in Furniture Design: Perceptions, Issues and Challenges. Sarawak Borneo has long been known for its diverse culture and multi-ethnicity, which is reflected in its arts and crafts. Pua Kumbu and Orang Ulu are famous visual motifs that can be seen on many products from Sarawak, including textiles and paintings, which could potentially be integrated into furniture design as cultural elements. The purpose of this study was to identify the perception, issues and challenges of cultural concepts embedded in furniture design from the perspective of manufacturers, designers and the public. In-depth interviews, surveys and observation were the three qualitative research methods applied in this study at MIFF 2018 and MIFF 2019. In general, the findings from the surveys done in 2018 and 2019 show that manufacturers, designers and consumers agree that cultural elements can be a unique feature and a competitive advantage for furniture design. A range of furniture designs that feature different cultural elements, such as local materials, colors, stories and history, are discussed in this article, which is expected to inspire designers and manufacturers to experiment and explore this approach in furniture. However, to achieve this, manufacturers and designers have to have their own views and strategies on how they interpret cultural-related elements in furniture, based

on their consumers' interests and global market needs.

Yu QIAN (2017) do the research on the Relationship between Regional Culture and Street Furniture Design. The research is to clarify the interaction between regional culture and street furniture and introduce cultural symbols to furniture design. First, this paper analyzed the status quo of street furniture and focused on the two problems in its design- being unsystematic and lacking regional cultural characteristics. Then, it identified the theoretical significance and practical application of this research. By analyzing the influence of regional culture upon the concept of street furniture design and the effect of street furniture on the inheritance and innovation of regional culture, this paper concluded the methods of street furniture innovation--decomposition, isomorphism, and variation. The results of this paper can provide theoretical guidance for the realization of the national, artistic, creative, and cultural value of street furniture.



Figure 2.38 Chinese furniture set
Source:www.baidu.com



Figure 2.39 Chinese furniture set
Source:www.baidu.com

CHAPTER 3

Research Methodology

This article proposes a furniture design theory and method based on regional cultural expression by studying and exploring the regional culture of Shanxi region, which has theoretical significance. Moreover, the creative practice of this project is based on previous research and aims to complete a series of furniture designs in response to current market demand, making a demonstrative creative practice for the inheritance of Jinzuo furniture culture, which has practical significance.

3.1 Objective 1: To Study and analyze traditional culture elements in Shanxi for furniture design.

3.1.1 Population and Sample

Population: The population refers to the satisfaction survey questionnaire of 120 residents living in Taiyuan City with the newly designed product, divided into four age groups: 18-25 years old, 26-35 years old, 36-45 years old, and 46-55 years old.

Sample: The sample is based on 120 residents living in Taiyuan, using stratified sampling to ensure representativeness of each age group, covering four main consumer groups: 18-25 years old, emphasizing modern, minimalist, and environmentally friendly design; 26-35 years old pursue both functionality and aesthetics, with a preference for integrating traditional and modern styles; 36-45 years old tend towards practicality and family adaptability; 46-55 years old place greater emphasis on traditional culture and craftsmanship values. Considering that furniture consumption behavior is closely related to economic strength, this study focuses on the middle and high-income groups, and selects some users from cultural, art related majors or those engaged in commercial space design to enhance the professionalism and practical guidance significance of the survey results.

3.1.2 Research Tools

This study uses a questionnaire survey as the main research tool to systematically collect relevant information on traditional cultural furniture in Shanxi. The questionnaire will focus on the following aspects: the historical and cultural background of Shanxi cultural furniture, material selection preferences, design tendencies, functional practicality, environmental protection concepts, and price acceptability. To ensure the comprehensiveness and accuracy of the data, the

questionnaire design will be more detailed and combined with closed and open-ended questions, taking into account both quantitative and qualitative data collection. Meanwhile, the question setting will remain neutral, avoiding the use of directive language to enhance the objectivity of the survey results.

The survey was conducted in Taiyuan, the capital city of Shanxi Province, which is the core area of Shanxi culture. The city has gathered a large number of consumers and related industry practitioners, providing a good research foundation for this study. Considering the representativeness and diversity of the sample, this survey will adopt stratified sampling in Taiyuan City, with a planned sample size of 120 people. Sampling will be stratified based on factors such as age, gender, and income level to fully cover the perspectives and needs of different groups.

In summary, the questionnaire survey as a tool and the research design of Taiyuan City as the survey area can effectively support the analysis and exploration of the influence of Shanxi traditional cultural elements on furniture design.

3.1.3 Creation of research tools

1. This study first collects information related to the historical background, craftsmanship, design elements, material selection, and market development trends of Shanxi cultural furniture, laying the foundation for subsequent design practice and theoretical research. By consulting books, academic journals, museum materials, and historical archives related to Shanxi culture, we aim to gain a deeper understanding of the relationship between traditional Shanxi furniture and cultural furniture from other regions in terms of historical evolution, cultural characteristics, and regional differences.

2. Based on preliminary literature research results, a survey questionnaire was designed for Shanxi cultural furniture, aiming to explore consumers' views and preferences in material selection, process expression, design aesthetics, functional practicality, and price acceptance. The questionnaire covers core areas such as historical and cultural background, design style, and environmental awareness, aiming to comprehensively reflect consumer needs and attitudes.

3. Invite three experts from KMITL with backgrounds in design and cultural research to review and evaluate the questionnaire content. Experts provide revision suggestions from the perspectives of topic logic, accuracy of expression, cultural adaptability, and fit with research objectives. This step ensures that the questionnaire has academic rigor and cross-cultural research reference value.

4. write this IOC criteria in the middle of the page by using tab

+1	mean	satisfied
0	mean	not sure
-1	mean	unsatisfied

3.1.4 Collecting data

The data collection work of this study aims to understand consumers' cognition, attitude, and actual needs towards the application of Shanxi traditional cultural elements in furniture design. By designing the system and implementing it in stages, we ensure the scientific and representative nature of the data, providing effective support for subsequent analysis.

1. The research aims to explore consumers' demand for traditional cultural furniture design in Shanxi, including their identification with cultural elements, aesthetic acceptance, and actual preferences for functionality, style, and materials. This goal provides direction for the setting of questionnaire content and clarifies the main dimensions of data collection.

2. This study surveyed consumers aged 18 and above using stratified random sampling, with a total sample size of 120 people. The survey sample is divided into four groups based on age: 18-25 years old, 26-35 years old, 36-45 years old, and 46-55 years old, to ensure that the data covers the consumption behavior characteristics and cultural acceptance differences of different age groups, and to enhance sample representativeness and analysis depth.

3. In the process of constructing the questionnaire tool, based on the suggestions of three experts from KMITL, the preliminary design of the questionnaire was completed, and the Content Validity Index (IOC) was used for testing to ensure a good correspondence between each question and the research objectives. IOC scoring helps to screen items with strong logic, clear language, and cultural relevance, enhancing the effectiveness of the questionnaire.

4. Based on the IOC evaluation results and expert opinions, further modify and optimize the questionnaire content. The questionnaire covers multiple core variables, including the respondents' level of understanding and aesthetic attitude towards Shanxi traditional cultural furniture, as well as their specific preferences for furniture materials, styles, and functions, aiming to comprehensively reflect consumers' dual considerations in culture and practicality.

5. To improve the convenience and coverage of questionnaire collection, this study chose to use the "Wenjuanxing" online platform for questionnaire design and

publication. Through this platform, the rapid dissemination of questionnaires and automatic data aggregation can be achieved, which facilitates researchers to grasp the progress of the survey in real time and correct possible questions in a timely manner, thereby improving the efficiency and quality of the research.

6. After the data collection is completed, use statistical tools such as SPSS to systematically analyze the data obtained from the questionnaire. The analysis content includes frequency distribution, cross analysis, and group difference testing, aiming to reveal consumers' preference patterns in different dimensions and their correlation with traditional cultural cognition, in order to verify research hypotheses and propose targeted design suggestions.

3.1.5 Data analysis

This study conducted a questionnaire survey to gain a deeper understanding of consumers' preferences for Shanxi traditional cultural furniture in terms of design style, craftsmanship, material use, and decorative elements. Using percentage method to organize, classify and statistically analyze the questionnaire results, in order to reveal the trends of consumers in usage needs, aesthetic orientation and consumption behavior. The research objective is to identify the core concerns in the design of traditional cultural furniture in Shanxi, such as material selection, style positioning, and environmental awareness, in order to provide strong data support for product optimization, market positioning, and improving user satisfaction.

3.2 Objective 2: To design Chinese furniture from Shanxi traditional culture elements.

3.2.1 Population and Sample

Find three experts to submit product questionnaires and modify the product based on their opinions.

1. Dong Xin: Professor of Traditional Culture and Arts, Shijiazhuang Railway Vocational and Technical College.

2. Gao Zehui: Professor of Traditional Furniture Art, Shijiazhuang Railway Vocational and Technical College.

3. Lu Yuzhang: An expert in ancient furniture research in Shanxi and a professor at Shanxi Forestry Vocational and Technical College.

3.2.2 Research Tools

We adopt the method of "Innovative Furniture Design Expert Interview" as the main research tool, focusing on the following aspects: the historical and cultural development of Shanxi furniture, the design and creation process, the challenges and

response strategies faced by the integration of traditional and modern design, changes in market demand, and the direction of innovative design. This provides theoretical support and practical guidance for building a Shanxi furniture design system with cultural depth and market potential.

3.2.3 Creation of research tools

This study focuses on the goal of integrating traditional Shanxi cultural elements into modern furniture design, using a research method that combines expert questionnaires with design practice. The creation of research tools is divided into multiple stages to ensure the scientific validity of data and the effectiveness of design, providing reliable support for the cultural expression and market adaptation of the final product.

1. By reviewing historical documents, craftsmanship materials, and market data of traditional furniture in Shanxi, we can comprehensively understand its cultural connotations, artistic features, and consumption trends. The purpose of this stage is to establish the cultural foundation of the design content, ensure that subsequent creative ideas come from authentic traditional contexts, and at the same time grasp the current market demand direction and consumer preferences for cultural furniture, providing a basis for design strategies.

2. Based on the above research content, a preliminary furniture product prototype with Shanxi traditional cultural elements was designed, and feedback from respondents on styling, functionality, cultural expression, and other aspects was collected through a questionnaire survey. Simultaneously drawing design sketches to visually present creative ideas and enhance the specificity and interactivity of questionnaire content. This step introduces the "user perspective" into the early stages of design, which helps to form a design framework centered on culture and guided by needs.

3. Three experts in design and cultural research from KMITL were invited to evaluate the validity and reliability of the questionnaire and research content using the IOC test method. This method ensures that all questionnaire items are highly consistent with the research objectives, avoiding off topic and subjective errors, and improving the rigor and academic quality of data collection tools.

4. write this IOC criteria in the middle of the page by using tab

+1	mean	satisfied
0	mean	not sure
-1	mean	unsatisfied

3.2.4 Collecting data

On the basis of furniture design practice, this study further collected qualitative data through expert questionnaire survey method to strengthen the professional verification and academic depth of design schemes. During the data collection process, the research team adopted targeted expert selection and scientific questionnaire distribution strategies to ensure that the research results have a high degree of professionalism and practical guidance value.

1. To ensure the authority and representativeness of expert opinions, this study selected three representative experts as survey subjects based on the influence, professional level, and industry experience of Shanxi's traditional furniture design industry. The three experts have rich achievements in traditional furniture craftsmanship, cultural symbol research, and market trend analysis, and are able to comprehensively evaluate design schemes from different professional dimensions, providing high-quality feedback for research. This selection strategy helps ensure the credibility and industry relevance of data sources.

2. During the questionnaire distribution process, the research team used a combination of email and online survey platforms for questionnaire delivery. Sending a detailed explanation letter and questionnaire link via email not only respects the expert's schedule, but also facilitates their response at any time. At the same time, the online questionnaire format is standardized and easy to fill out, which facilitates the research team to unify and analyze the data in the future, improving the efficiency and accuracy of the survey.

3. To ensure the completeness of the recovery rate and expert opinions, the research team conducted moderate follow-up after the questionnaire was distributed. Strengthening communication and contact with experts through email acknowledgements, reminder replies, and Q&A not only improves the questionnaire response rate, but also promotes experts' in-depth understanding of the research purpose and content. The implementation of this step ensures the coherence of the data collection process and the integrity of information.

In summary, this study adopted scientifically rigorous strategies in expert selection, questionnaire distribution, and data follow-up, providing solid professional support and data foundation for the research.

3.2.5 Data analysis

This study used an expert questionnaire survey to collect professional opinions from the following aspects: design aesthetics experts, continuation of traditional craftsmanship, selection of materials for the walnut chair of Empress Dowager Xi, and cultural value enhancement. Through percentage statistical analysis of questionnaire data, our research team classified, summarized, and organized the data, and

systematically organized experts' preference characteristics and judgment tendencies. The main purpose of the analysis is to extract key focus points in the design and cultural inheritance of the Xiwangmu walnut chair, providing data basis and reference for future product optimization and cultural promotion decisions.

3.3 Objective 3: To study consumer satisfaction from new Chinese furniture design from Shanxi traditional culture elements.

3.3.1 Population and Sample

Population: The population selected is 120 residents in Taiyuan City, divided into four age groups: 18-25 years old, 26-35 years old, 36-45 years old, and 46-55 years old.

Sample: The sample consists of 120 respondents from Taiyuan City, Shanxi Province. All participants have learning or practical experience in furniture design, arts and crafts, interior design, and other related fields, and possess certain design cognition and aesthetic judgment abilities. The sample is divided into four groups by age: the young group aged 18-25 focuses on design innovation and personality expression; The age group of 26-35 emphasizes the combination of practicality and visual aesthetics; Consumers aged 36-45 tend to balance family functionality with traditional cultural elements; The 46-55 age group places greater emphasis on craftsmanship quality and cultural value. By using stratified sampling to ensure balanced participation among different age groups, the professionalism and representativeness of the survey data have been enhanced.

3.3.2 Research Tools

We used the questionnaire of "Innovative Furniture Design Consumer Satisfaction Survey" to systematically understand consumers' overall evaluation of Shanxi cultural traditional furniture, especially the Xiwangmu walnut wood chair. The questionnaire covers five dimensions: material quality, craftsmanship level, design aesthetics, functional experience, and basic demographic attributes of consumers, aiming to deeply analyze user satisfaction with the product and its influencing factors.

Questionnaire survey criteria: 5 points very appropriate, 4 points appropriate, 3 points neutral, 2 points less appropriate, 1 point least appropriate.

3.3.3 Creation of research tools

1. This objective uses the "Innovative Furniture Design Consumer Satisfaction Survey" method to conduct a comprehensive evaluation of the Xiwangmu walnut wood chair, covering its functional characteristics, appearance, material selection, and user

experience. Identify the target consumer group for the product and propose survey hypotheses based on their needs and preferences. The core purpose of the survey is to grasp consumers' satisfaction with furniture in terms of functionality, aesthetics, quality, and price. Therefore, the preliminary questionnaire will revolve around these dimensions and design related questions systematically.

2. To enhance the scientific validity and practical application effectiveness of the questionnaire, invite three experts in design and user research from KMITL to conduct a review. Propose modification suggestions in terms of content completeness, relevance of question setting, accuracy of language expression, and rationality of logical structure to ensure that the questionnaire meets professional research standards.

3. write this IOC criteria in the middle of the page by using tab

+1	mean	satisfied
0	mean	not sure
-1	mean	unsatisfied

3.3.4 Collecting data

1. The research team used the "Wenjuanxing" platform as the main data collection tool, supplemented by dissemination methods such as "WeChat" and "email" to widely distribute questionnaire links. This multi platform linkage strategy not only improves the reach rate of the questionnaire, but also increases the participation possibility of respondents from different age groups and occupational backgrounds, which helps to form a survey sample with broad representativeness. At the same time, the online survey method is easy to operate and flexible in filling in time, which is conducive to improving recycling efficiency and response quality.

2. During the questionnaire collection process, the research team established a strict data screening mechanism to filter and clean the collected data to prevent duplicate filling and invalid responses. Specific measures include: restricting multiple submissions of the same IP address, setting up logical detection questions to identify invalid answers, and removing incomplete questionnaires. The key to this stage is to ensure the authenticity and scientificity of the sample data, and to avoid invalid data interfering with the accuracy of research conclusions.

3. After completing preliminary screening and collecting complete and effective data samples, the research team conducted statistical analysis on the data. By categorizing and statistically analyzing satisfaction ratings across various dimensions such as functionality, material, style, price, etc., further comparative research is conducted on consumer preferences across different age groups and backgrounds. This

analysis process not only supports the verification of research hypotheses, but also provides objective basis for the optimization design and market positioning of cultural furniture products.

3.3.5 Data analysis

This study adopts the method of "Innovative Furniture Design Consumer Satisfaction Survey" questionnaire, selecting residents of Taiyuan city as consumers, aiming to explore the key factors that consumers are concerned about in the process of purchasing Xiwangmu walnut wood chairs, and analyze their evaluation of product satisfaction. The survey covers the design aesthetics, material quality, cultural value, and price factors of chairs. The collected questionnaire data has been sorted, classified, and statistically analyzed, using percentages for data analysis to reveal the level of consumer attention in the above dimensions, as well as feedback on overall product satisfaction and environmentally friendly performance.

Taiyuan citizens use the questionnaire, and the scoring criteria are as follows:

4.51-5.00	means	very satisfied
3.51-4.50	means	satisfied
2.51-3.50	means	neutral
1.51-2.50	means	less satisfied
1.00-1.50	means	least satisfied

Statistical data: Use mean and standard deviation for data analysis

CHAPTER 4

Research Results

Starting from three objectives, this article proposes a furniture design theory and method based on regional cultural expression through research and exploration of Shanxi's regional culture, which has theoretical significance. In addition, the creative practice of this project is based on previous research, aiming to complete a series of furniture designs that meet the current market demand, and make exemplary creative practices for the inheritance of Shanxi furniture culture, which has practical significance.

- 4.1 Result of Study of traditional culture element
- 4.2 Result of Design traditional Shanxi element chairs
- 4.3 Result of Shanxi traditional chair consumer satisfaction

4.1 Result of Study of traditional culture element.

4.1.1 Map of Taiyuan City



Figure 4.1 Taiyuan City Map
Source: www.baidu.com

Taiyuan City is the capital of Shanxi Province with a rich historical and cultural heritage. According to the 2024 census, the total population of Taiyuan City is 5.51

million, of which the top three counties (cities, districts) with the largest permanent population are Xiaodian District, Wanbailin District, and Xinghualing District, with 1.45 million, 990000, and 800000 people respectively. The last three counties (cities, districts) with permanent residents are Loufan County, Yangqu County, and Gujiao City.

Taiyuan has a permanent population of 5,510,000 people

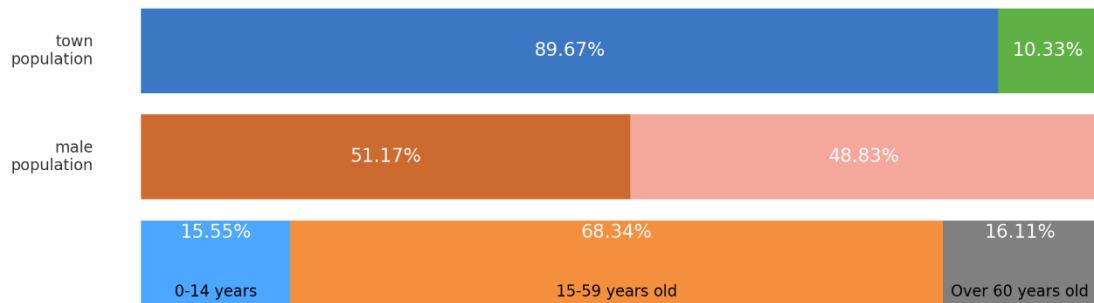


Figure 4.2 Data on the Permanent Resident Population of Taiyuan City

Source: www.baidu.com

Taiyuan City is the capital of Shanxi Province, with a profound historical and cultural heritage. According to the 2024 census, the total population of Taiyuan City is 5.51 million, with an urban population of 4.94 million, accounting for 89.67% of the population, and a rural population of 570000, accounting for 10.33% of the population. The male to female ratio in Taiyuan City is 51.17% for males and 48.83% for females. Age composition: 0-14 years old: 15.55% of the population, 15-59 years old: 68.34% of the population, 60 years old and above: 16.11% of the population.

4.1.1.1 Shanxi Traditional Culture

Shanxi, as one of the important birthplaces of Chinese civilization, has a profound historical and cultural heritage and unique regional cultural characteristics. Its traditional culture covers a wide range of fields such as religious beliefs, folk customs, architectural art, arts and crafts, opera music, etc., and has had a profound impact on the development of northern Chinese culture.

4.1.1.2 Traditional cultural elements of Shanxi

As an important birthplace of Chinese civilization, Shanxi's profound regional culture (covering historical culture, religious culture, Jin merchant culture, folk culture) has deeply influenced traditional furniture design through dimensions such as form, pattern, and craftsmanship, and has been revitalized in contemporary innovation of new Chinese style furniture. Shanxi, as a "treasure trove of ancient Chinese architecture," has infused furniture design with high ancient charm and diverse styles through its historical architectural relics, such as the Northern Wei statues in Yungang Grottoes,

Song Dynasty painted sculptures in Jin Ci, and murals in Yongle Palace. The mortise and tenon structure can achieve structural stability without the need for glue through woodworking techniques.

Table 4.1 Traditional Culture




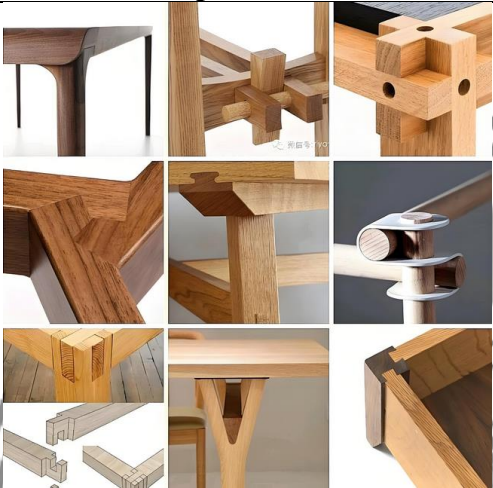
picture	name	introduce
 <p>Northern Wei Dynasty Statues in Yungang Grottoes Source:www.baidu.com</p>	<p>Northern Wei Dynasty Statues in Yungang Grottoes</p>	<p>The Royal Grottoes of Northern Wei, the largest of the five caves in Tanyao, have an open-air Buddha statue in Cave 20 that is 13.7 meters high.</p>
 <p>Jin Temple Song Dynasty Source:www.baidu.com</p>	<p>Jin Temple Song Dynasty</p>	<p>During the Song Dynasty, there were 43 statues of maidservants with various shapes, such as the solemn jade maiden holding the seal, the agile maidservant playing with butterflies, and the realistic folds of clothing.</p>
 <p>Yongle Palace Murals Source:www.baidu.com</p>	<p>Yongle Palace Murals</p>	<p>The Taoist mural of the Yuan Dynasty in Sanqing Hall of Yongle Palace in Ruicheng, Shanxi Province depicts the Queen Mother of the West wearing a dragon and phoenix crown, holding a jade pendant and sitting on a cloud platform, with 28 constellations including the Jade Maiden and Thunder God standing beside her.</p>

Table 4.2(continue)

picture	name	introduce
 <p data-bbox="363 880 722 940">Mortise and tenon structure Source:www.baidu.com</p>	Mortise and tenon structure	The ancient buildings do not need nails. The shoulder is tenoned and the table legs are reinforced with slant support, which is earthquake resistant and durable.

4.1.1.3 Traditional architecture in Shanxi

The Yingxian Wooden Pagoda, along with the Leaning Tower of Pisa in Italy and the Eiffel Tower in Paris, is known as one of the "Three Wonders of the World". It is the oldest and tallest pure wooden structure tower style building in existence, built in the second year of Qingning in the Liao Dynasty (1056), nearly a thousand years ago.

The tower is 67.31 meters high, equivalent to more than 20 floors of modern residential buildings. The diameter of the bottom floor is 30.27 meters, and the total weight is about 7400 tons. The entire tower has no nails or rivets, and only relies on mortise and tenon interlocking. It is a representative of world-class mortise and tenon structure architecture.



Figure 4.3 Yingxian Wood Tower
Source: www.baidu.com

4.1.1.4 Folk beliefs

Shanxi's traditional folk activities are rich and varied, such as the festival fire performances, temple fairs, Paper Cuttings window decorations, etc. during the Spring Festival, which imply the awe of nature and gods. In terms of religious beliefs, Buddhist and Taoist cultures are widely spread in Shanxi, not only reflecting religious spirit, but also showcasing superb architectural and carving skills.



Figure 4.4 Traditional Furniture at Shanxi Temple Fair
Source: www.baidu.com

4.1.1.5 Traditional craftsmanship and furniture culture

Shanxi's traditional crafts are particularly famous for wood carving, lacquerware, folk embroidery, pottery, etc. Among them, the traditional furniture's shape design, material selection, and exquisite carving have strong regional characteristics. During the Ming and Qing dynasties, Jin style furniture emphasized symmetry and solemnity, with simple and stable shapes. Local hardwoods such as elm and walnut were often used as the main materials, and auspicious patterns such as Ruyi, Shouzi, Lianhua, and Babao were often used in the patterns, highlighting the aesthetic significance of the integration of Confucianism, Buddhism, and Taoism.



Figure 4.5 Traditional carving and traditional materials
Source: www.baidu.com

4.1.1.6 Traditional Lacquer Art and Splicing Techniques in Shanxi Province

Shanxi's traditional lacquer art and mortise and tenon structure are important representatives of its furniture culture, reflecting a high degree of craftsmanship and cultural connotation. The lacquer art process is complex, using natural lacquer as the main material, integrating techniques such as gold painting, color painting, and lacquer stacking, showcasing a solemn and elegant artistic style and profound folk beliefs; The mortise and tenon structure cleverly connects furniture without the need for glue, making it sturdy, durable, easy to assemble and disassemble, and possessing a high degree of mechanical rationality and aesthetic appeal. The combination of the two not only reflects the exquisite craftsmanship and aesthetic value of traditional Shanxi furniture, but also provides sustainable, environmentally friendly, and culturally distinctive design inspiration for modern furniture design.



Figure 4.6 Shanxi Traditional Lacquer Art and Crafts
Source: www.baidu.com

4.1.2 The Application of Furniture Materials in Shanxi Province

This paper divides the traditional materials used in Jinzuo furniture into two parts: hardwood and cork. Due to its location on the inland Loess Plateau slope, Shanxi clearly had a disadvantaged position in terms of transportation at that time when maritime transportation was relatively developed. Therefore, most of the materials used in Jin Dynasty furniture were locally sourced, including walnut wood, elm wood, and locust wood, which were widely used. There is a common saying among craftsmen about the materials used in Jin Dynasty furniture: "One elm, two locust trees, and three walnuts are commonly used materials for furniture." This shows that Jin Dynasty furniture has strong regional characteristics.

Table 4.3 Wood type

name	Wood like appearance	area
Walnut Wood		Lvliang, Shanxi
Elm		Northern Yellow River
Ash		North

Material summary result

Walnut wood: the core material of Jin Dynasty furniture, with delicate texture, smooth texture, moderate softness and hardness, suitable for carving complex patterns (such as cloud head pattern and lotus pattern). Its color is light and soft, and after being polished and waxed, it presents a texture similar to that of a yellow pear, known as the 'North Walnut'.

Elm and locust wood: with a hard texture, they are commonly used for load-bearing structures such as chair legs and armrests. Elm wood has a rough texture, while locust wood has strong corrosion resistance. It is often reduced in splicing through integrated molding technology to enhance overall integrity.

4.1.3 Shanxi collapse culture

The Shanxi tatami culture can be traced back to the Spring and Autumn Period and the Warring States Period. Initially, it was a narrow and low tool for sitting and lying, with a function between a mat and a bed. In the Han Dynasty, there were such shapes as sitting alone and sitting together. In ancient China, collapse was the division of hierarchy. In terms of social etiquette, collapse was the main furniture for receiving distinguished guests. The couch was not only a place to rest, but also a container of historical memory, which witnessed the wisdom of the Chinese people that "tools carry the way". In contemporary times, the inheritance of tatami culture needs to balance the protection of traditional craftsmanship with the needs of modern life, so as to continue its vitality in innovation.

4.1.3.1 Classification and differences of tatami mats

1) Arhat couch

Features: There are fences on three sides (handrails and backrests), and the structure is similar to a simplified bed.

Function: It is mainly used for reception in the living room, reading and resting, and can also be used as a sleeping bed.

Cultural significance: It embodies the combination of etiquette, reception, and practicality, and is a symbol of identity and status.



Figure 4.7 Arhat couch
Source:www.baidu.com

2) Zen bed

Features: Simple structure, no backrest, small size.

Function: Commonly used in temples, study rooms, for sitting, meditating, burning incense, etc.

Cultural significance: Reflecting the integration of Confucianism, Buddhism, and Taoism, symbolizing self-cultivation and contemplation.



Figure 4.8 Zen bed
Source:www.baidu.com

Kang bed

Features: Designed in combination with kang, placed against the wall.

Function: Mostly used for heating environments in northern winter, sitting against the wall for easy chatting and drinking tea.

Cultural significance: Reflecting the northern way of living and the culture of family sitting around.



Figure 4.9 Kang bed
Source:www.baidu.com

4) Han Xizai's Night Banquet Picture

Features: The tatami in "Han Xizai's Night Banquet Picture" has a low and simple shape, with a structure that is mostly designed without a backrest or short railings, suitable for sitting on the ground.

Function: The tatami serves as both a sitting and sleeping area, serving as the core carrier for social activities such as banquets, music listening, and dance watching.

Cultural significance: The tatami embodies the lifestyle and cultural taste of the Five Dynasties literati class, carrying identity symbols and ceremonial functions.



Figure 4.10 Han Xizai's Night Banquet Picture
Source:www.baidu.com

4.1.4 Survey on Consumer Demand for Traditional Culture Furniture in Shanxi Province

According to the research tool. The survey collected data from three age groups from 120 people: 18-30, 31-50, and 51-60. These age groups represent three consumer segments.

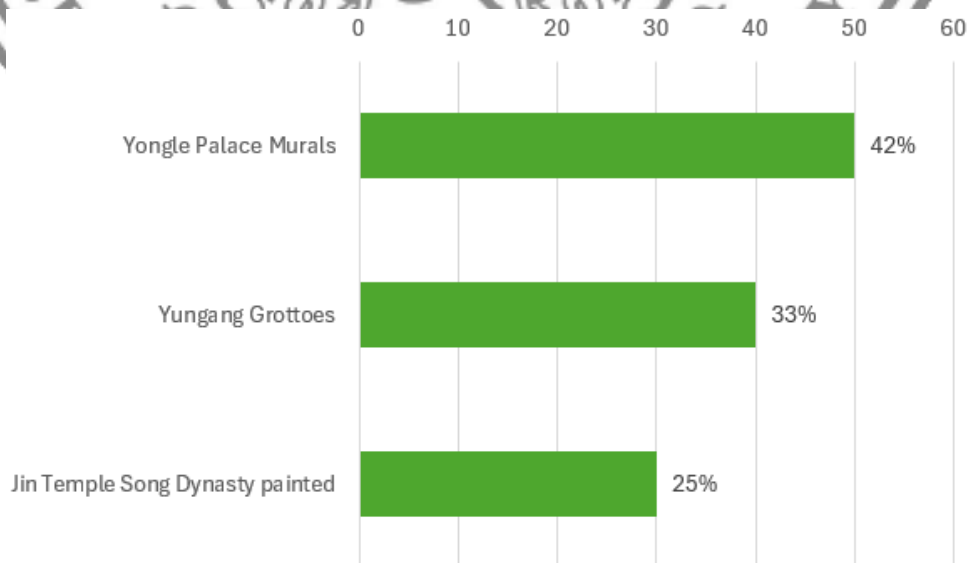


Figure 4.11 Age status of the consumer
Source:Photo by Researcher

What style of Shanxi cultural furniture design do you like. The results show that the murals of Yongle Palace, ranked first, account for 42%. The second ranked Yungang Grottoes account for 33%. The third ranked Jin Temple's Song Dynasty painted sculptures account for 25%.

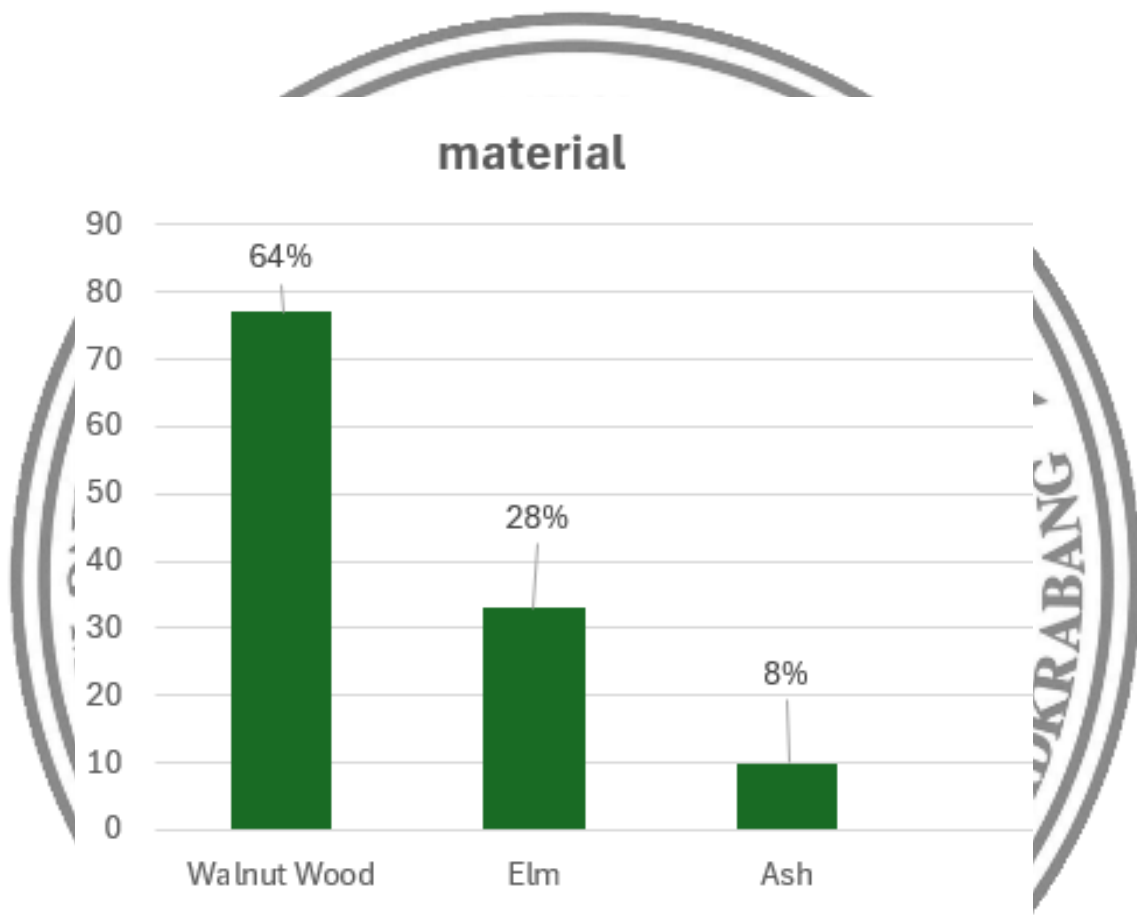


Figure 4.12 Material selection
Source: Photo by Researcher

Through a questionnaire survey, walnut wood dominates with an absolute advantage of 64% and constitutes the main material source, while elm wood accounts for 28%. As a secondary material to supplement the market, white wax wood only accounts for 8% and is a niche material choice. The dominant position of walnut wood may stem from its material characteristics (such as beautiful texture, moderate hardness, etc.) or brand preferences. As a traditional wood, elm wood still maintains a certain market share, but its growth space is limited. The low proportion of white wax wood may reflect its scarcity (such as low production) or limited application scenarios.

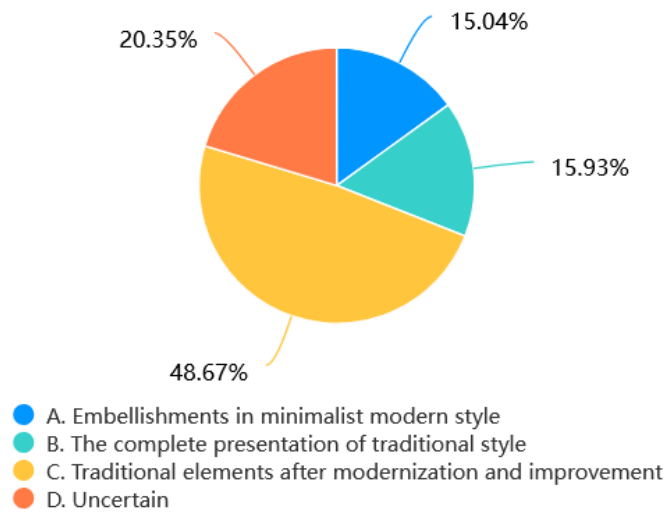


Figure 4.13 Opinions on Integrating Traditional Shanxi Elements into Furniture

Source: Photo by Researcher

Most respondents, 48.67%, prefer traditional elements that have been modernized and improved. 15.93% of respondents support the complete presentation of traditional style, 15.04% are interested in incorporating traditional elements as decoration into minimalist modern style, and 20.35% are unsure.

In summary, the survey results indicate that among people's demand for traditional furniture in Shanxi, respondents expressed a willingness to integrate traditional cultural elements into modern furniture and focus on balancing tradition and innovation. I prefer the design elements of Shanxi murals and lean towards walnut wood material when choosing materials.

4.2 Result of Design traditional Shanxi element chairs.

4.2.1 Expert Survey on Traditional Shanxi Element Furniture Design

The questionnaire survey targets three experts. By summarizing the questionnaire survey of the experts, better new products can be designed more clearly

4.2.1.1 Expert satisfaction analysis of market demand

Table 4.4 Market demand satisfaction analysis

Market demand satisfaction analysis	Frequency	Percentage
Material and Process	7	35%
Aesthetics and Design	6	30%
Cultural Identity	3	15%
Practicality and Comfort	3	15%
Other	1	5%

According to the satisfaction analysis table of market demand, there are significant differences in the performance of current products or services in the following five dimensions: Material and Process, accounting for 35%, has become the most concerned dimension for customers, reflecting the high expectations of the market for product quality and technological content; Aesthetics and Design follows closely behind with 30%, indicating that visual presentation and user experience have become important competitive factors. It is worth noting that cultural identity and practicality and comfort both account for 15%, indicating that although these two dimensions are slightly less valued, they still constitute a significant sub demand that cannot be ignored. Other unclassified demands only account for 5%, and the overall demand distribution shows a clear head concentration feature. This data structure suggests that enterprises should focus on strengthening technology research and development investment and design innovation, while maintaining continuous optimization of cultural element integration and basic functional experience.

Market demand satisfaction

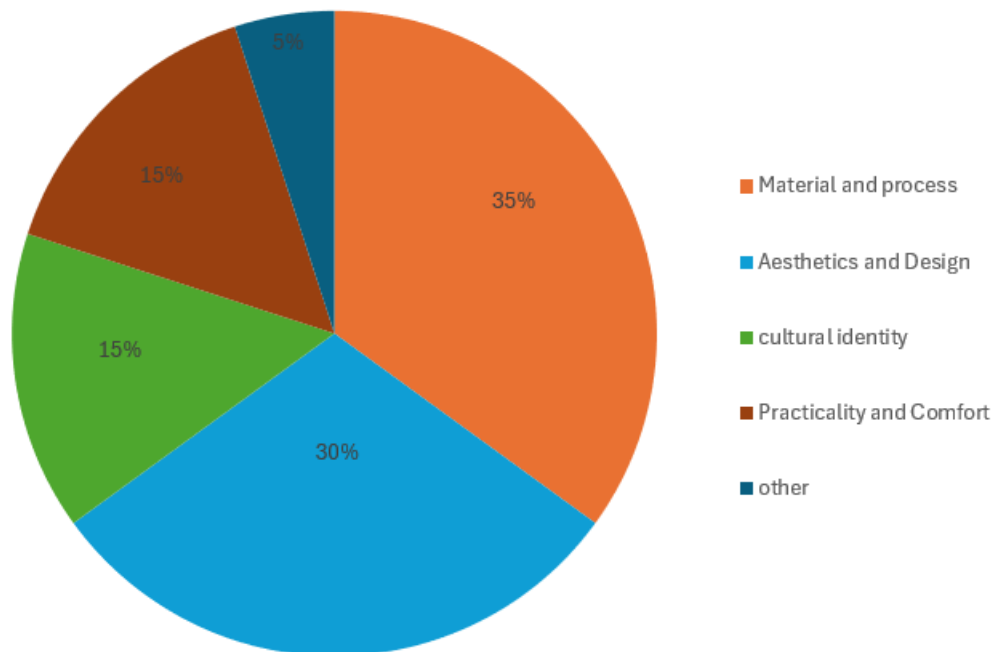


Figure 4.14 Market demand satisfaction analysis

Source: Photo by Researcher

1. Material and craftsmanship are the most critical factors (35%)

Consumers value the quality of materials and craftsmanship of chairs the most, indicating that the texture and durability of the product are the primary sources of market satisfaction.

For traditional cultural chairs in Shanxi, this may be related to wood carving techniques, traditional mortise and tenon structures, and material selection (such as elm and mahogany).

2. Aesthetics and design closely follow (30%)

Modern consumers still pay great attention to product appearance design, especially the integration of cultural elements and modern aesthetics.

If the design of Shanxi cultural chairs is reasonable and innovative, they will be more likely to gain market favor.

3. Cultural identity and practicality are equally important (15% each)

A certain proportion of consumers pay attention to cultural connotations (such as Jin opera, Jin merchant symbols, etc.), reflecting the role of cultural value in product satisfaction.

At the same time, the comfort and practicality of the chair cannot be ignored, especially in home or homestay scenarios.

4. Other factors have a relatively small impact (5%)

Indicating that in the current market, besides the above four items, other factors such as brand and after-sales service have a low impact on satisfaction or low consumer attention.

Suggestion

Strengthen the polishing of materials and traditional craftsmanship, focusing on quality and details; Emphasize design innovation and integrate traditional Shanxi culture with modern aesthetics; Enhance product cultural expression, such as storytelling, symbol application, etc; Optimize the user experience and achieve comfort and practicality within traditional frameworks.

4.2.1.2 Expert analysis of the new design combining the Queen Mother mural with the chair

Table 4.5 Queen Mother Walnut Chair

Queen Mother Walnut Chair	Frequency	Percentage
Linse and Symbols	6	30%
Structure and Process	5	25%
Integration of Elements and Style	5	25%
Material and Selection	3	15%
Other	1	5%

The data shows that symbols and line elements account for 30% of the core design language, while structure and craftsmanship, element integration and style all appear 5 times and are tied for second place, each accounting for 25%. Material selection accounts for 15% to reflect the importance of materials, while other unclassified items only account for 5%.

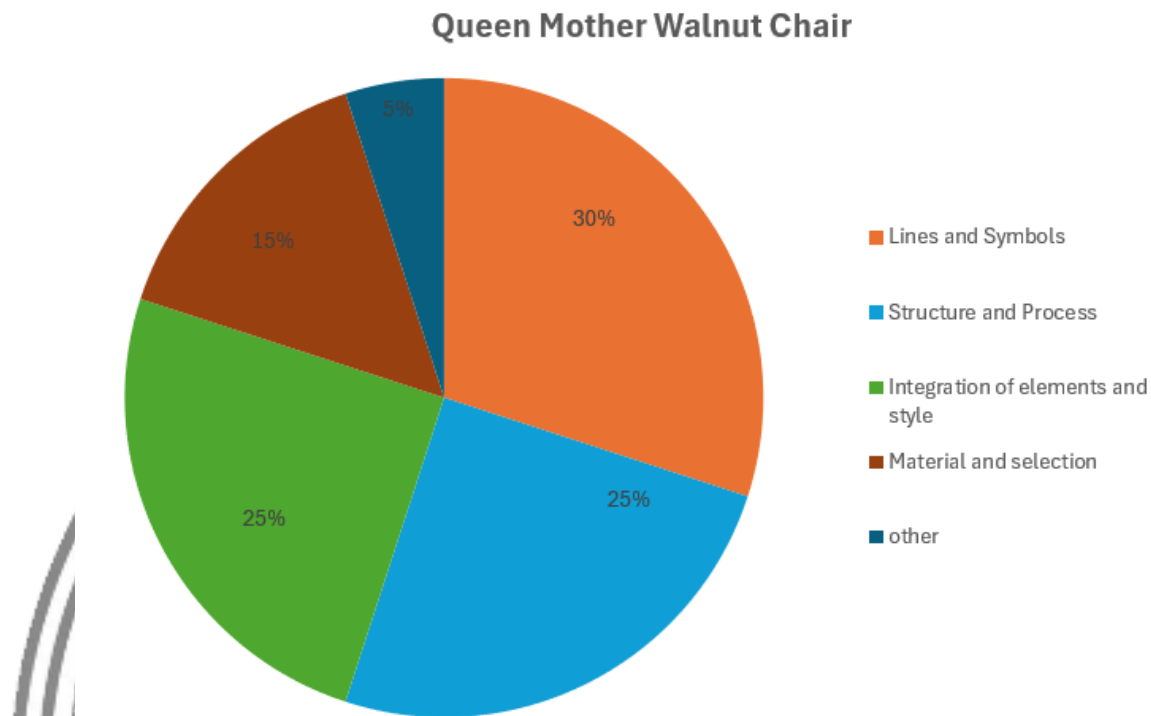


Figure 4.15 Queen Mother Walnut Chair

Source: Photo by Researcher

1. Lines and symbols are most valued (30%)

The most critical visual and cultural elements in the design of this chair are the sense of lines and traditional symbols, which may include auspicious cloud patterns, longevity character patterns, traditional window patterns, etc. in Shanxi culture.

Consumers or designers attach great importance to cultural expression and visual characteristics.

2. Emphasize the integration of structural craftsmanship and style (each accounting for 25%)

The structure and craftsmanship show that the chair emphasizes stability and traditional craftsmanship in manufacturing, such as mortise and tenon structure.

The fusion of elements and styles indicates that it attempts to combine traditional cultural elements with modern aesthetics, pursuing overall coordination and unity.

3. Material selection is relatively minor (15%)

Walnut wood material is already of high quality and may have been seen as the default advantage, therefore it has slightly lower attention in the minds of users.

4. Other factors have a relatively small impact (5%)

Brand awareness, price, and other factors may be secondary considerations.

Conclusion and Suggestions

Cultural totems and line design are the core highlights that need to be further strengthened.

The structural stability and process expression should maintain high standards.

Style fusion is particularly crucial, and a balance should be found between tradition and modernity.

Although material is important, on the basis of high quality, it is even more important to highlight cultural and design values.

4.2.1.3 Analysis of the Relationship between Expert Opinion Data Retention and Innovation

Table 4.6 Tradition and innovation

Tradition and innovation	Frequency	Percentage
Equal emphasis on protection and innovation	9	45%
Innovation and improvement are more important	5	25%
Protecting tradition is more important	5	25%
Other	1	5%

The survey results show that in the perception of the relationship between tradition and innovation, the majority of respondents (45%) believe that "equal consideration should be given to protection and innovation", reflecting the general expectation of society for the coordinated development of the two. It is worth noting that the proportion of people who hold a one-way emphasis is also significant: 25% tend to prioritize "innovation and improvement", while the other 25% believe that "traditional protection is more important", indicating the ideological differentiation of society in choosing development paths. In addition, 5% of the "Other" options reserve space for diverse sounds.

Tradition and innovation

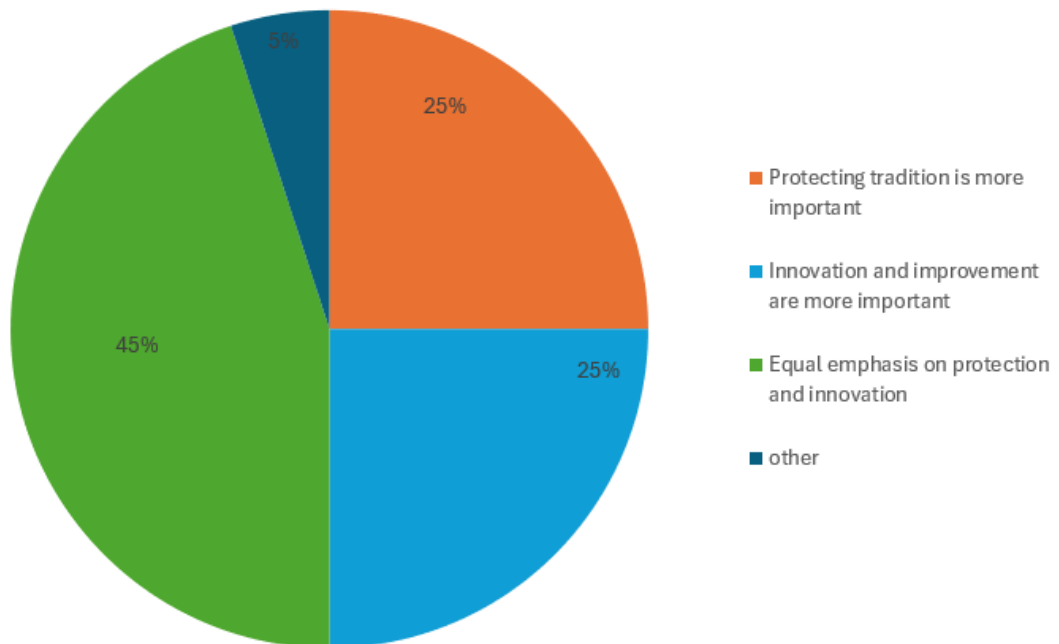


Figure 4.16 Tradition and innovation

Source: Photo by Researcher

1. The proportion of "emphasizing both tradition and innovation" is the highest (45%)

Most people believe that in design, it is necessary to inherit the essence of traditional culture while also incorporating modern aesthetic and functional needs for innovation.

This reflects the public's high recognition of the concept of "cultural inheritance+era integration", which is particularly suitable for the design ideas of Shanxi traditional element chairs.

2. 25% each lean towards protecting tradition and pursuing innovation

Indicating that there is still differentiation in the market:

Some people place greater emphasis on the complete preservation of traditional crafts, symbols, and cultural values;

Another group of people value innovation in functionality, aesthetics, or user experience more.

This prompts designers to clarify the target audience when positioning products.

3. Less other opinions (5%)

A small portion of people may focus on non mainstream elements such as emotional values, sustainability, regional characteristics, etc.

Summary and Suggestions

Design strategy recommendations:

Prioritize solutions that integrate tradition and innovation, such as combining traditional Shanxi carvings with modern lines.

Segmented products can be developed for different markets, such as:

Traditional style: aimed at collectors and cultural spaces;

Innovation: Targeting young consumers and modern home decor;

Fusion style: targeting the mass market or high-end customization.

From the perspective of brand marketing:

Tell the story of the design concept that emphasizes both inheritance and innovation, combining cultural values with modern aesthetics to form a communication advantage.

4.2.2 Products of Design

Design a furniture design that combines traditional Shanxi elements with chairs through questionnaire surveys and expert recommendations.

4.2.2.1 Design concept

The design inspiration comes from the form of the Queen Mother in the murals of the Yongle Palace in China and the West. The depiction of her facial expressions is very rich, giving people a feeling of elegance and elegance. Thus, design elements were extracted from it, and the graceful and elegant charm of the Queen Mother of the West was reflected in the design of the chair, while absorbing the fine tradition of using lines in murals.

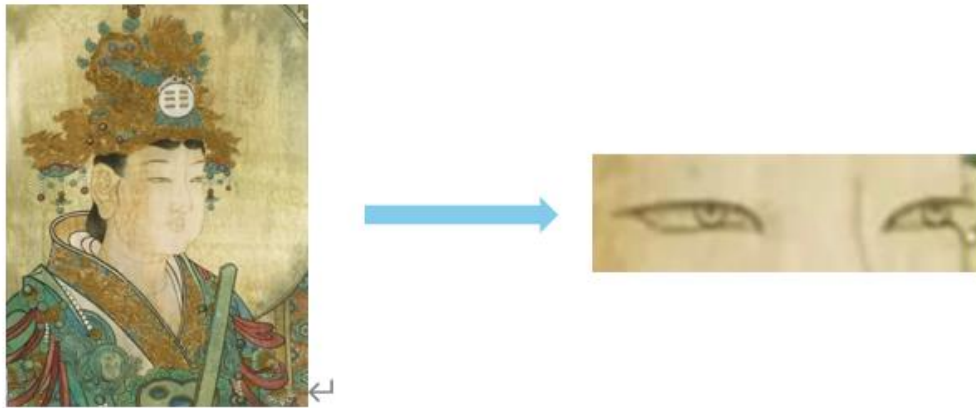


Figure 4.17 source of inspiration
Source: www.baidu.com



Figure 4.18 Han Xizai's Night Banquet Picture
Source: www.baidu.com

In the collapse culture of ancient China, the couch was the core sitting tool for literati and scholars. In the early days, it specifically referred to sitting tools, but later it also served as a sleeping tool. Its panel is rectangular and has no perimeter on all sides, hence it is called a "four sided bed". It is often placed in halls or study rooms, paired with a low table, a mattress, etc., reflecting the concept of leisurely living. Compared with beds, tatami beds emphasize social attributes more, such as the reception scene centered on the tatami bed in "Han Xizai's Night Banquet Picture".

The integration of Yongle Palace murals and collapse culture not only continues the "form" and "spirit" of traditional murals, but also expands their display dimensions and cultural influence through innovative furniture design, achieving sustainable inheritance of cultural heritage.

4.2.2.2 Sketching design

Through a questionnaire survey, it was determined that walnut wood would be the main material and the eye lines of the Queen Mother of the West on the murals of Yongle Palace in Shanxi Province would be the theme design element. As an embellishment element, Ruyi pattern integrates the traditional Chinese chair "tatami" into the main body of the chair, designing a new type of chair with traditional Shanxi

elements.

Based on traditional furniture cushions, exquisite design elements are applied to the shape design of backrests, backrests, armrests, and crossbars. After continuous thinking, modification, adjustment, and refinement, the plan was finally obtained.

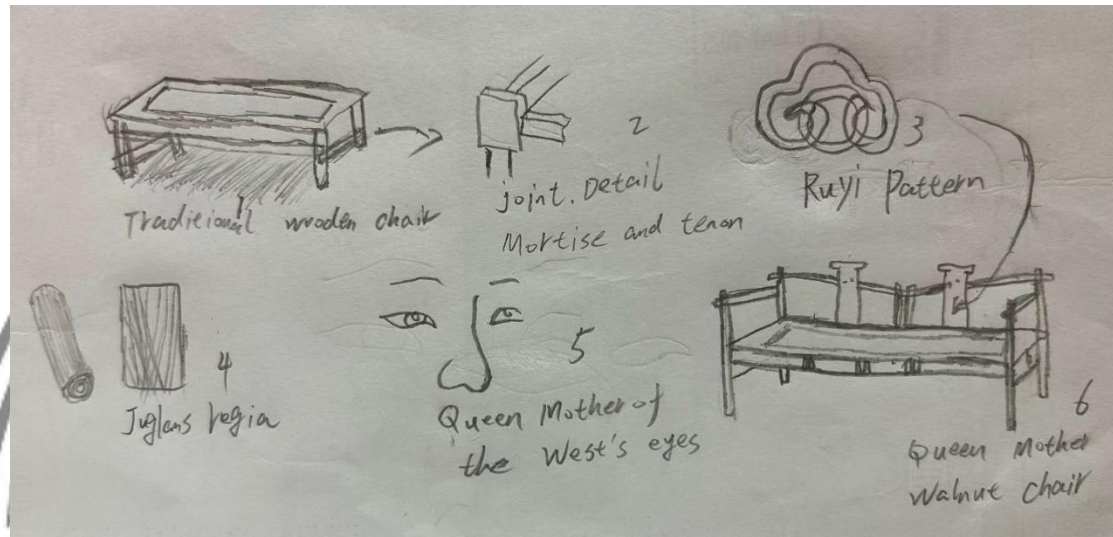


Figure 4.19 Sketch design concept

Source: Draw by Researcher

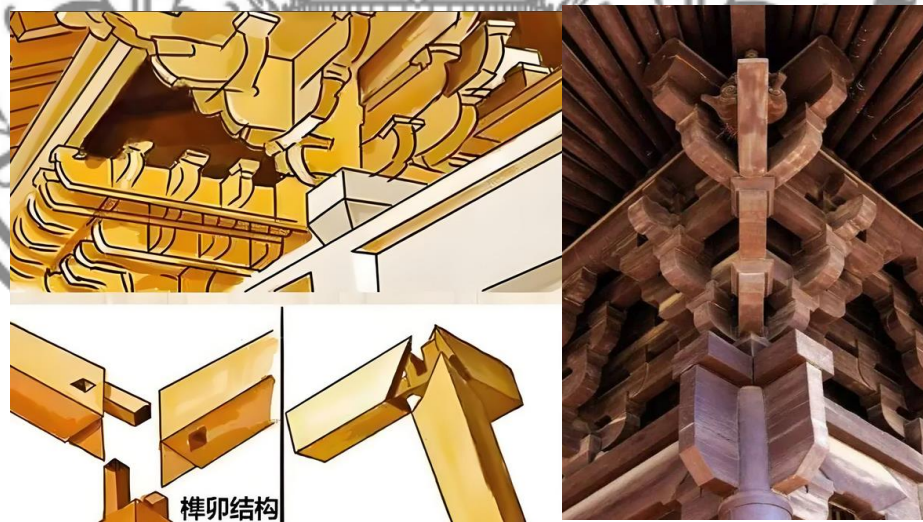


Figure 4.20 Mortise and tenon structure

Source: www.baidu.com

The walnut wood chair of the Queen Mother of the West is designed with the eyes of the Queen Mother of the West as the core element, symbolizing protection and wisdom. The back of the chair is carved with auspicious patterns, symbolizing auspiciousness and completeness. The overall use of Shanxi local walnut wood has the advantages of hard texture, clear texture, warm color, strong durability, and suitability

for carving, balancing aesthetics and practicality. The design integrates traditional mortise and tenon structures with modern forms, combining cultural symbols and aesthetic craftsmanship to showcase the contemporary expression and practical value of traditional culture.

1. Ruyi pattern element



Figure 4.21 Ruyi Pattern Sketch

Source: Draw by Researcher



Figure 4.22 Traditional Ruyi pattern

Source: www.baidu.com

Reason for Integration: Incorporating the Ruyi pattern into the design of the Western Queen Mother Walnut Chair aims to enhance the cultural heritage and spiritual value of the chair through traditional auspicious patterns. The Ruyi pattern symbolizes "everything goes smoothly" and "good luck lasts forever", echoing the auspicious and noble cultural image of the Queen Mother of the West. It can enhance the cultural symbolism and artistic appeal of furniture, while also reflecting the traditional Chinese pursuit of a better life.

Integration method: The backrest is one of the visual focal points of a chair, suitable for carrying cultural expressions. Carving the Ruyi pattern on the backrest not only serves a decorative and aesthetic purpose, but also conveys the meaning of "Ruyi" more intuitively to the owner and visitors during use, enhancing the ceremonial and cultural transmission function of furniture. In addition, the backrest provides support for the user, and placing the Ruyi pattern on it symbolizes good luck and good fortune as a backing.

Cultural significance: The Ruyi pattern originates from ancient "Ruyi" objects, symbolizing satisfaction, auspiciousness, and smoothness. Its lines are smooth and elegant, often appearing as decorative patterns in various objects such as furniture, textiles, and vessels, symbolizing smoothness, longevity, and completeness. Widely used in ancient court and folk life, it is one of the important auspicious patterns in traditional Chinese culture, carrying people's good wishes for life and destiny.

Design details: In the design, the Ruyi pattern can be carved in a symmetrical curve form at the center or sides of the upper part of the chair back, using shallow relief techniques to highlight the line hierarchy while retaining the natural texture of walnut wood. By naturally rising at the end of the curve to form a pleasing head, the overall design echoes the curved surface of the backrest, maintaining the comfort of the backrest without affecting the structural strength. The proportion of the pattern should be coordinated with the height and width of the backrest, reflecting the balance between traditional craftsmanship and modern aesthetics.

2. Mortise and tenon structure



Figure 4.23 Mortise and tenon structure diagram
Source: www.baidu.com



Figure 4.24 Mortise and tenon structure link
Source: www.baidu.com

Reason for integration: The mortise and tenon structure is the core craftsmanship of traditional Chinese architecture and furniture, reflecting the spirit of craftsmanship and structural wisdom. Integrating it into the Western Queen Mother Walnut Chair not only enhances the structural stability and service life of the furniture, but also demonstrates the inheritance and respect for traditional Chinese culture.

Integration method: In the design, common mortise and tenon forms such as straight tenons and hidden tenons are selected for connecting the legs of the chair to the seat surface, as well as fixing the horizontal support structure. This nail free and adhesive free connection method makes the appearance of furniture more concise, while improving the firmness of the structure and the precision of assembly.

Structural innovation: On the basis of inheriting traditional structures, combined with modern design requirements, improvements have been made to the mortise and tenon structure, such as designing hidden embeddings, detachable connections, etc., to make the chair more suitable for modern lifestyles, easy to transport and maintain, while maintaining its physical stability and traditional craftsmanship aesthetics.

Design highlight: By using computer-aided design (CAD) and numerical control machining technology (CNC), the proportion and form of traditional mortise and tenon structures are optimized, achieving a balance between structural aesthetics, detail polishing, and practicality. For example, the cross support between the legs of the chair adopts an innovative mortise and tenon joint that emphasizes both visual and mechanical aspects, showcasing the beauty of the fusion of traditional structure and modern aesthetics.

3. Walnut wood craftsmanship and Western Queen Mother walnut wood chair

Reason for fusion: Walnut wood, as a commonly used high-quality wood in Shanxi region, has the characteristics of hard texture, natural and clear texture, warm color, and strong corrosion resistance, and is highly favored by traditional furniture craftsmen. The use of walnut wood in the design of the West Queen Mother walnut chair not only reflects the utilization of local material resources, but also aligns with the pursuit of nature, environmental protection, and sustainable craftsmanship. At the same time, the mystery and nobility contained in the culture of Queen Mother of the West are highly compatible with the calm and heavy temperament of walnut wood, which helps to express the cultural connotation of the chair.

Integration method: In the production process of the Queen Mother of the West walnut chair, the cultural patterns such as Ruyi patterns and eye totems are presented in relief on the backrest by utilizing the characteristics of walnut wood that are suitable for carving and polishing, enhancing cultural expression. At the same time, the traditional mortise and tenon structure is used to accurately splice the various parts of

the chair, without the need for nails or glue, maintaining the purity and structural integrity of the wood, reflecting the unity of craftsmanship and culture.

Structural innovation: While maintaining the essence of traditional mortise and tenon joints, modern ergonomics have been combined to optimize the angle, proportion, and load-bearing structure of the chair. For example, the connection between the chair legs and the seat surface adopts an improved mortise and tenon design, which makes the structure more sturdy and facilitates mass production and assembly, improving practicality and production efficiency.

Design Highlights: The design incorporates the "Eye of the Queen Mother of the West" as the core visual element, endowing furniture with symbols of protection and divinity; Carving auspicious Ruyi patterns on the backrest enhances the overall cultural recognition. The overall design blends traditional and modern styles, with the surface treatment retaining the natural texture of walnut wood. Through meticulous polishing and environmentally friendly varnish treatment, it highlights its warm texture and high-end aesthetics. It not only retains the handmade craftsmanship of traditional furniture, but also reflects the artistic and cultural expression in modern life.

4. Shanxi characteristic wood carving craftsmanship

Reason for integration: Woodcarving is an important decorative technique for traditional furniture in Shanxi, carrying rich cultural meanings. Integration helps enhance the cultural recognition and artistic appeal of furniture.

Integration method: Utilizing the easy to carve characteristics of walnut wood, partial carving is carried out on the backrest, armrests, and other parts, using relief or through carving techniques, combined with structural modeling to present the overall design.

Cultural symbols: Carving patterns are often selected from traditional patterns such as Ruyi, auspicious clouds, flowers and birds, mythological figures, etc., symbolizing auspiciousness, longevity, and protection, strengthening the spiritual symbolic function of furniture.

Design reminder: Attention should be paid to the coordination between patterns and structures, avoiding excessive decoration that affects practicality. The depth and proportion of carving should be controlled to combine decoration with ergonomics and functional aesthetics, achieving a balance between culture and comfort.

4.2.2.3 Design concept and process

Design concept: The chair design is centered around the rich local culture of Shanxi, using walnut wood with a hard and beautiful texture. It combines traditional mortise and tenon craftsmanship with Shanxi style wood carving, such as the Ruyi

pattern and cultural symbols like the "Eye of the Queen Mother of the West", reflecting the meaning of auspiciousness and protection. The design combines traditional aesthetics with modern ergonomics, aiming to create a furniture piece that combines cultural depth and practical comfort.

Design process: Starting with determining the overall style of the chair, usually based on the symmetry, balance, and minimalist aesthetics of traditional furniture, while also considering practical functionality. Next, refine the design concept into detailed drawings, specifying the proportions, structural details, and decorative patterns of the chair, including the shape and carving details of the seat and legs. In the design phase, we first communicate with experts through WeChat, then use Questionnaire Star to collect feedback from three experts, and finally use SketchUp software to complete the 3D modeling of the design style.



Figure 4.25 Software Icon
Source: Photo by Researcher

4.2.2.4 Design Ideas

The walnut chair of the Queen Mother of the West: In terms of design, the "Eye of the Queen Mother of the West" is the core visual element, giving furniture a symbol of protection and divinity; Carving auspicious Ruyi patterns and golden patterns on the backrest to increase its wealth and enhance the overall cultural recognition. The overall design blends traditional and modern styles, with the surface treatment retaining the natural texture of walnut wood. Through meticulous polishing and environmentally friendly varnish treatment, it highlights its warm texture and high-end aesthetics. It not only retains the handmade craftsmanship of traditional furniture, but also reflects the artistic and cultural expression in modern life.

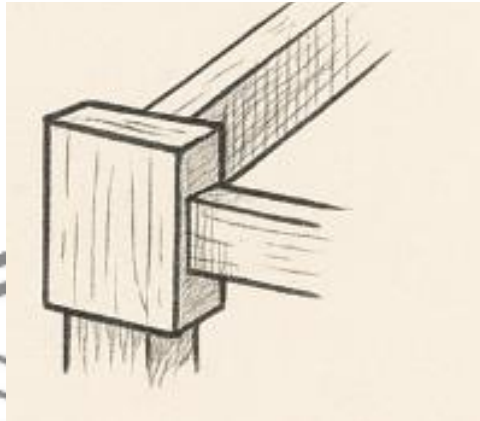


Figure 4.26 Mortise and tenon structure

Source: Photo by Researcher

Mortise and tenon structure: In the design, common mortise and tenon forms such as straight tenons and hidden tenons are used to connect the legs of the chair to the seat surface, as well as to fix the horizontal support structure. This nail free and adhesive free connection method makes the appearance of furniture more concise, while improving the firmness of the structure and the precision of assembly.



Figure 4.27 walnut

Source: Photo by Researcher

Walnut wood: This chair is mainly made of walnut wood, which is tough, has beautiful texture, warm color, and has a high-end texture of traditional furniture. Walnut wood has a certain representativeness in the local culture of Shanxi, with regional and cultural significance. This material also conforms to the concept of sustainable design, has strong durability, and is suitable for carving and long-term use.



Figure 4.28 Ruyi pattern
Source:Photo by Researcher

Carving a Ruyi pattern on the back of the chair: In order to further enhance the auspicious meaning and traditional beauty, a smooth and symmetrical Ruyi pattern is carved on the back of the chair. The golden pattern symbolizes wealth and prosperity, while the auspicious pattern symbolizes "everything goes smoothly and perfectly", forming an intertextual relationship with the cultural identity of the Queen Mother of the West, symbolizing the user's blessings and enjoyment of health. The carving technique adopts shallow relief technology, preserving the texture of wood and combining traditional craftsmanship with contemporary aesthetics to improve the overall quality of details.



Figure 4.29 West Queen Mother's Eye Design Subject
Source:Photo by Researcher

The eyes of Queen Mother of the West are visual elements: In traditional Chinese mythology, Queen Mother of the West is the goddess of the immortal realm, representing authority, auspiciousness, and longevity. Extracting its eye shape in the design, using an elliptical curve structure, and expressing it through contour deformation in the center of the backrest or through hollow or line carving, to enhance the spiritual symbolism of the chair. The eyes symbolize the gaze and protection of divinity, enabling furniture to transcend its function and imbue it with sacredness and cultural depth.

4.2.2.5 Sketch design

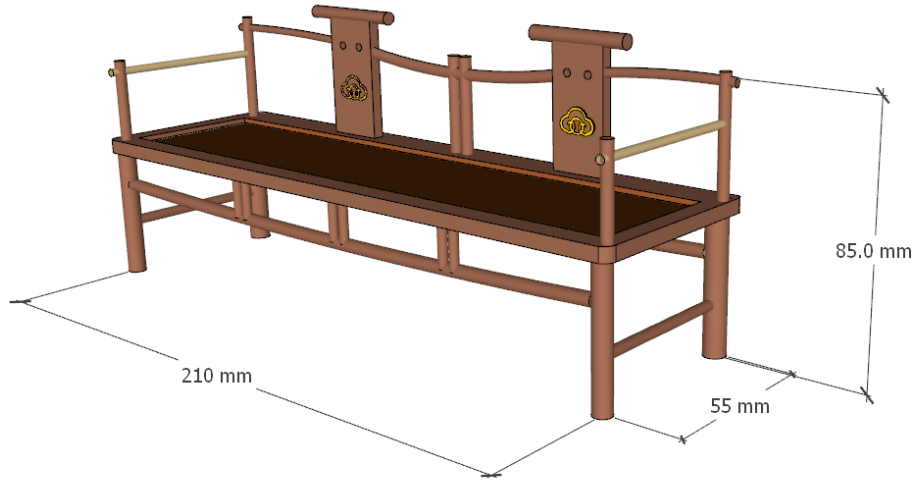


Figure 4.30 Queen Mother of the West Walnut Chair
Source: Draw by Researcher

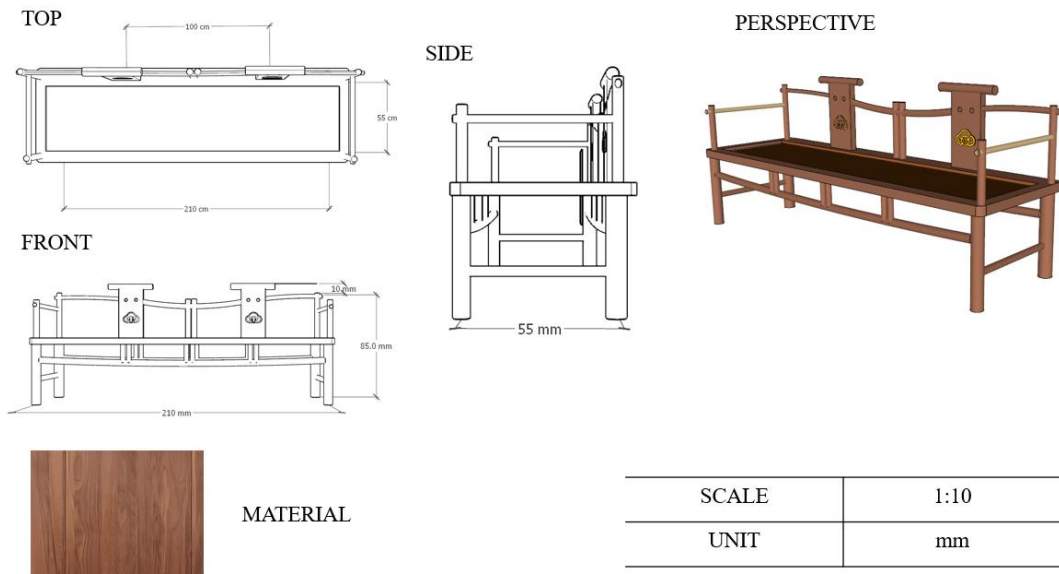


Figure 4.31 Queen Mother of the West Walnut Chair
Source: Draw by Researcher



Figure 4.32 Chair model
Source: Photo by Researcher

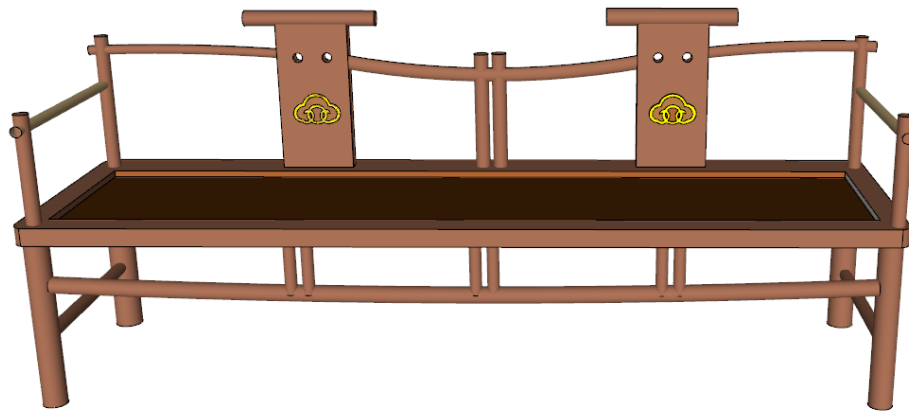


Figure 4.33 Chair model
Source: Photo by Researcher

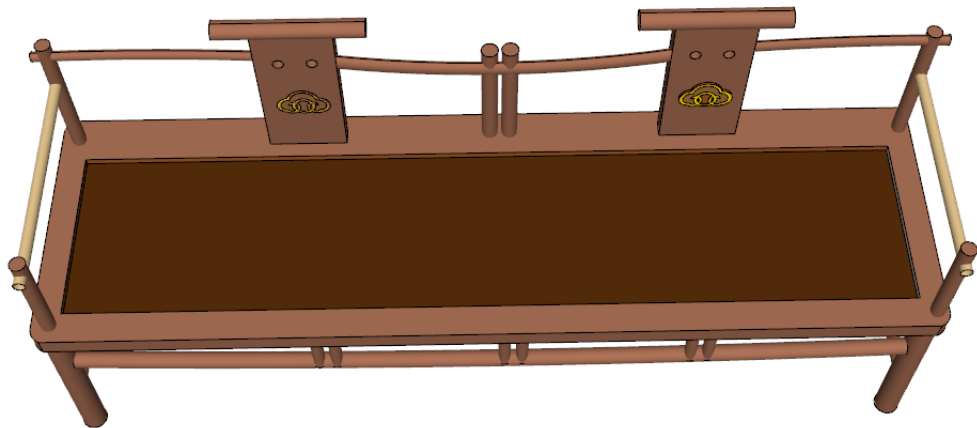


Figure 4.34 Chair model
Source:Photo by Researcher

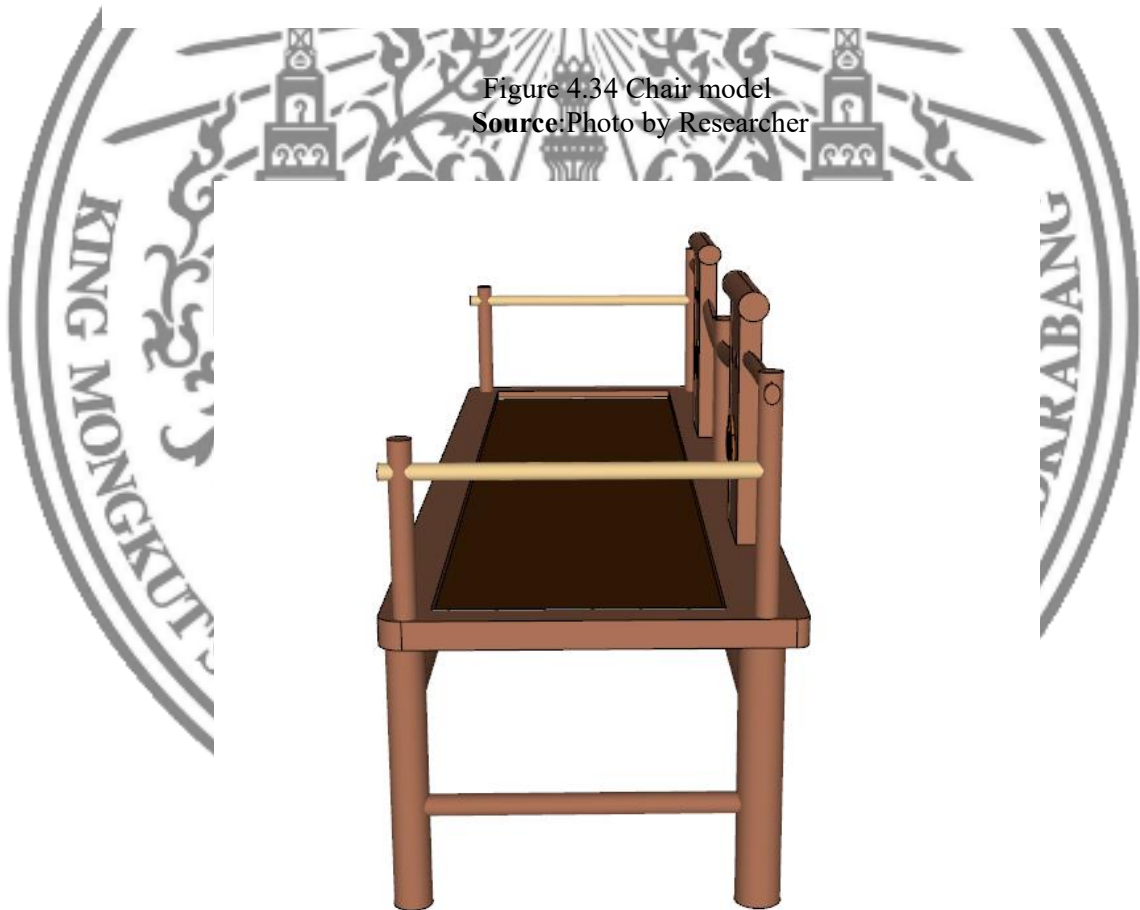


Figure 4.35 Chair model
Source:Photo by Researcher

4.3 Result of Shanxi traditional chair consumer satisfaction.

4.3.1 Furniture Design Consumer Survey Satisfaction Design Analysis

The sample of the questionnaire is 120 citizens from Taiyuan, Shanxi. The consumer satisfaction survey is conducted using random sampling method. Customers rate their satisfaction with the product after viewing it.

4.3.2 Basic information of respondents

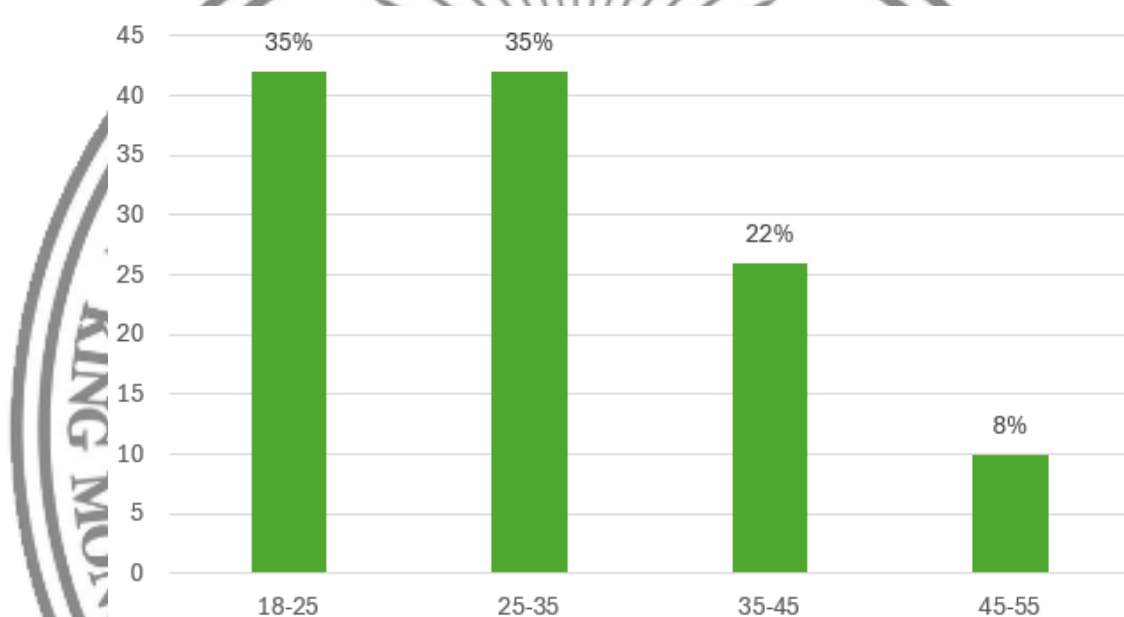


Figure 4.36 Age structure
Source: Photo by Researcher

The results showed that the top ranked respondents were people aged 18-25 and 25-35, accounting for 35%. The second ranked respondents are aged between 35-45, accounting for 22%, while the third ranked respondents are aged between 45-55, accounting for 8%. This indicates a strong representation of young people in the survey, which may be related to the pursuit of quality of life and the emphasis on home decoration.

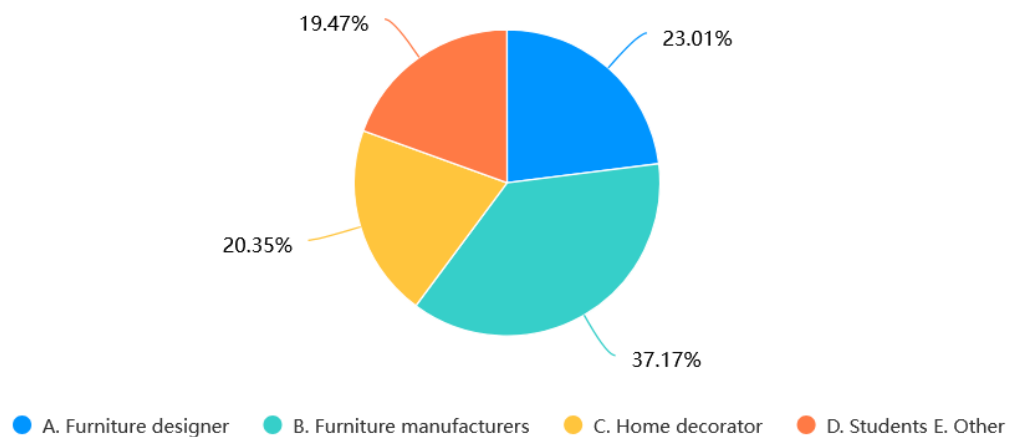


Figure 4.37 Career
Source: Photo by Researcher

The results showed that furniture manufacturers accounted for 37.17%, which was the largest participating group, reflecting the level of attention paid to their products at the production end of the industry chain. Furniture designers account for 23.01%, demonstrating the recognition of product aesthetics and functionality in the professional design field. The proportion of home decoration practitioners is 20.35%, reflecting the potential application of products in spatial matching and decoration engineering. Students and others account for 19.47%, including potential young consumer groups and participants who are not clearly classified. This data distribution validates the professional recognition of Wangmu walnut seats in the home industry, while revealing opportunities for expanding into the young consumer market. Subsequent operations may consider establishing a promotion strategy that links B-end and C-end, integrating designer resources to enhance product added value, and strengthening campus channel construction to cultivate a new generation of user groups.

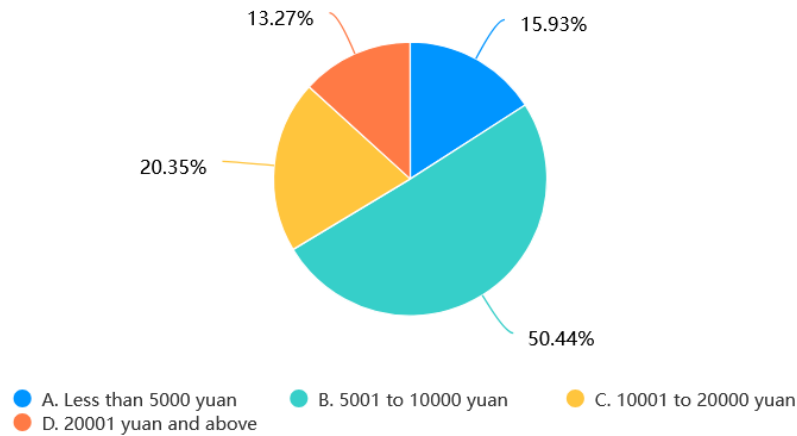


Figure 4.38 Income
Source: Photo by Researcher

The proportion of users in the range of 5001-10000 yuan is the highest, reaching 50.44%, accounting for almost half of the total users. The proportion of users in the range of 10001-20000 yuan is 20.35%, while high-income users with 20001 yuan or more account for 13.27%. Low income users with 5000 yuan or less account for the lowest proportion, at 15.93%. The main target consumer group for Wangmu Walnut Seat is the middle-income group, especially those with a monthly salary of 5000-10000 yuan, which reflects the product's market positioning strategy. Enterprises may continue to consolidate this core market, while also exploring growth opportunities in the high-end market.

4.3.2 Preferences and expectations for new products

Table 4.7 Satisfaction data

Question	Mean	S.D	Meaning
Are you satisfied with the overall design of the Western Queen Mother Walnut Chair?	4.54	0.88	very satisfied
Are you satisfied with the comfort of the walnut wood chair made of Queen Mother of the West?	4.63	1.04	very satisfied
Are you satisfied with the durability of the Queen Mother of the West walnut chair?	4.61	1.13	very satisfied

Table 4.8 (continue)

Question	Mean	S.D	Meaning
Are you satisfied with the quality of the Western Queen Mother walnut chair?	4.68	0.97	very satisfied
Do you think the design of the Queen Mother of the West walnut chair meets your aesthetic needs?	4.51	0.81	very satisfied
Are you satisfied with the cost-effectiveness of the Western Queen Mother walnut chair?	4.53	0.96	very satisfied
How do you think the walnut chair made of Queen Mother of the West performs in daily use?	4.16	0.88	satisfied
How satisfied are you with the difficulty of repairing the walnut chair of Queen Mother of the West?	4.22	0.82	satisfied
How satisfied are you with the environmental and sustainable performance of the West Queen Mother Walnut Chair?	4.43	1.12	satisfied
Do you want to recommend the Queen Mother of the West walnut chair to others?	4.32	0.93	satisfied
Do you think the walnut chair of Queen Mother of the West has collectible value?	3.56	0.84	satisfied
Do you think the design of the Queen Mother of the West walnut chair needs improvement?	3.63	0.94	satisfied
What is your overall satisfaction with the walnut wood chair of Queen Mother of the West?	4.36	0.87	satisfied

We sort the satisfaction follow this:

1 .Satisfaction with cost-effectiveness is at a high level (Mean = 4.39, S.D. = 0.87)

2. Satisfaction with the difficulty of maintenance is at a high level (Mean = 4.29, S.D. = 0.94)

3. Satisfaction with quality is at a high level (Mean = 4.28, S.D. = 0.92)
4. Meeting aesthetic needs is at a high level (Mean = 4.26, S.D. = 0.86)
5. Willingness to recommend is at a high level (Mean = 4.26, S.D. = 0.84)
6. Satisfaction with the overall design is at a high level (Mean = 4.24, S.D. = 0.84)
7. Satisfaction with environmental and sustainable performance is at a high level (Mean = 4.20, S.D. = 1.00)
8. Daily use performance is at a high level (Mean = 4.15, S.D. = 0.91)
9. Overall satisfaction with design incorporating Shanxi culture is at a high level (Mean = 4.12, S.D. = 1.13)
10. Satisfaction with durability is at a high level (Mean = 4.06, S.D. = 1.02)
11. Satisfaction with comfort is at a high level (Mean = 3.98, S.D. = 1.11)
12. Perceived collectible value is at a moderate level (Mean = 3.47, S.D. = 0.76)
13. Perception of design needing improvement is at a moderate level (Mean = 3.32, S.D. = 0.84)

Result: The survey results show that consumers' overall satisfaction with the "Queen Mother of the West Walnut Chair" is at a high level. The most recognized aspects are cost-effectiveness (4.39), ease of maintenance (4.29), and product quality (4.28), indicating that the product performs excellently in terms of practicality and economy, meeting consumers' expectations for the modernization transformation of traditional furniture. Aesthetic satisfaction (4.26) and recommendation intention (4.26) are also at a high level, reflecting the chair's good market appeal in terms of cultural expression and exterior design. The high scores of environmental protection and sustainability (4.20) and daily use performance (4.15) indicate that the product not only has visual aesthetics, but also meets the needs of modern users for environmental protection and durability. However, it is worth noting that the comfort rating (3.98) is low, and the collection value (3.47) and the necessity of improving the design (3.32) are at a medium to low level, indicating that there is still room for further optimization of the product.

CHAPTER 5

Conclusions and Discussions

This study focuses on the integration and innovation of traditional culture and modern furniture design in Shanxi. Through historical tracing, process deconstruction, and market research, a three-dimensional research framework of "cultural protection design transformation consumption verification" is constructed. This study has three objectives: 1) to investigate and analyze the influence of traditional cultural elements from Shanxi on furniture design. 2) Design Chinese furniture from traditional cultural elements in Shanxi. 3) Research on Consumer Satisfaction with Chinese New Furniture Design from Traditional Cultural Elements in Shanxi Province. Through questionnaire survey analysis, it was found that consumer preferences exhibit a "dual track parallel of tradition and innovation" feature, with 48% favoring modern and improved design, 64% adhering to the traditional walnut wood material base, and 40% recognizing the value orientation of balancing tradition and innovation; Product performance (45%) and design innovation (45%) together constitute the core driving force of purchasing decisions, reflecting the market's demand for a balance between "functional practicality and cultural expression"; Consumers' expectations for traditional furniture focus on the symbiosis of traditional genes and modern vocabulary (45%), emphasizing that innovation should not sever cultural roots. Research has confirmed that the "local innovation" strategy based on mortise and tenon technology and walnut wood material can not only inherit the essence of Shanxi's traditional furniture craftsmanship (such as layered timber structure and folk pattern translation), but also meet the modern market's demand for personalization and functionalization, providing a design path and market basis for "upholding integrity and innovation" for the industrial transformation of cultural heritage.

5.1 Conclusion

According to the survey results of objective 1, respondents in Shanxi expressed a willingness to integrate traditional cultural elements into modern furniture and emphasize the balance between tradition and innovation in their demand for traditional furniture. I prefer the design elements of Shanxi murals and tend to choose walnut wood materials when selecting materials.

According to the survey results of objective 2, experts are most concerned about the craftsmanship quality and cultural connotation of Shanxi traditional cultural chairs when choosing them. At the same time, they also have high expectations for the integration of aesthetic design and modern style. The visual expression of traditional symbols and lines has been widely recognized, while the stability and craftsmanship of the structure reflect the important value of traditional craftsmanship. Usually, there is a

tendency to integrate modern elements while protecting cultural heritage, achieving a balance between tradition and innovation. Although materials are still valuable, cultural value and design expression are more effective in enhancing the market appeal of products. In design, it is necessary to clarify the target audience and enhance the uniqueness and awareness of the product through style fusion and cultural refinement.

According to the survey results of objective 3, the people of Shanxi Province have a high preference, consideration, and expectation for traditional furniture design. The respondents expressed a willingness to integrate traditional cultural elements into modern furniture, emphasizing the balance between tradition and innovation. Suggestions for future innovation in traditional furniture design include functional enhancement and modernization, while protecting cultural heritage.

5.2 Discussion

1. The profound influence of Shanxi culture on furniture design

Shanxi, as one of the important birthplaces of Chinese civilization, has rich historical and cultural heritage, including Jin merchant culture, Buddhist architecture, traditional woodworking techniques, and lacquer art technology, which provide valuable cultural symbols and sources of inspiration for furniture design. Traditional courtyards, hanging temples and other iconic buildings, as well as the common brick and wood carving and painted art in Shanxi residential buildings, can all be transformed into modeling elements or decorative language in modern furniture, enhancing the cultural recognition and aesthetic value of furniture (Wang Linjiao, & Liu Chuansheng, 2012). For example, the structural form of the Hanging Temple can inspire the mechanical layout design of furniture, and the colorful colors of Shanxi lacquer art can also be integrated into the surface craftsmanship of furniture, achieving the fusion of tradition and visual aesthetics.

2. Balance traditional craftsmanship with modern design requirements

Consumers seeking a balance between cultural heritage and modern functionality has become a key issue in Shanxi furniture design. Young consumers tend to prefer simple, practical, and combinable design styles, while middle-aged and elderly users value craftsmanship quality and cultural connotations more (Chen Liwei, 2004). Therefore, the design strategy should preserve the traditional mortise and tenon structure and wood carving elements, and enhance the practicality and modernity of furniture through modular design, ergonomics, and other techniques, making it suitable for contemporary home life.

3. Application of environmentally friendly and sustainable materials

Shanxi is rich in high-quality wood such as walnut, cypress, elm, etc. These materials have a hard texture, natural texture, good processability and durability, and are suitable for high-end traditional furniture manufacturing. In contemporary design, advocating environmental protection and sustainable development has become an important consideration for designers. By using local natural wood, non chemical coating, and traditional mortise and tenon techniques, environmental damage is reduced. This not only continues the tradition of green handicrafts, but also meets the demands of modern consumers for environmentally friendly furniture (Lu Jingwen. 2018).

4. Integration of Personalization and Cultural Creative Design

With the increasing demand for customized products in the market, Shanxi furniture design should also actively respond to consumers' dual needs for cultural experience and personalized expression. By incorporating elements of Shanxi mythology (such as Queen Mother of the West), folk totems (such as Ruyi patterns and auspicious clouds), and architectural patterns into furniture patterns and shapes, the cultural narrative function is enhanced. Meanwhile, with the help of digital modeling and new material technology, more flexible personalized customization services can be achieved, endowing furniture with higher cultural added value and market competitiveness.

5.3 Suggestions

In order to better integrate Shanxi's traditional culture into modern furniture design and promote the integration of local cultural inheritance and innovation, the following suggestions are proposed:

1. Establish a systematic database for the design of traditional cultural elements

Integrate cultural resources such as patterns, carvings, mortise and tenon structures, and traditional colors with local characteristics in Shanxi, establish a digital material library, and provide sustainable design support resources for designers.

2. Strengthen interdisciplinary cooperation and enhance design innovation capabilities

Encourage cross disciplinary collaboration between furniture designers, folklorists, historical researchers, material engineers, and others to promote the deep exploration and redesign of traditional culture in the modern context.

3. Promote the integration of "culture+technology"

By utilizing modern manufacturing techniques such as 3D modeling, AR/VR, 3D printing, etc., traditional elements are presented in a more refined and efficient manner, while enhancing user interaction experience and increasing product added

value.

4. Emphasize market feedback mechanism and conduct user participatory design

In the design process, communication with the target user group should be strengthened, and mechanisms such as user research, trial feedback, and iterative optimization should be carried out to achieve truly user centered innovation in traditional cultural products.

5. Strengthen cultural education and brand building

Promote local furniture brands to make cultural heritage the core of their brand, deepen public awareness and recognition of Shanxi's traditional furniture culture through exhibitions, museum collaborations, new media dissemination, and other means, and enhance brand value and cultural influence.



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APPENDIX



APPENDIX A
Questionnaire

Questionnaire 1

打印问卷

<https://www.wjx.cn/wjx/design/printq.aspx?activity=320157327>

Ask about Customers opinion that can make you use data for new design

1.What is your gender? *

- A. Male
- B. Female
- C. LGBTQAI+
- D. Not specific

2.Your age? *

- A. 18-25 years old
- B. 26-35 years old
- C. 36-45 years old
- D. 46-55 years old

3. What is your occupation: *

- A. Furniture design
- B. Furniture manufacturer
- C. Home decorator
- D. Student
- E. Other (please specify)

4. Please choose the option that describes your personal monthly income level to help us better understand the preferences and needs of different income groups for Shanxi traditional furniture design. *

- A. Less than 5000 yuan
- B. 5001 to 10000 yuan
- C. 10001 to 20000 yuan
- D. 20001 yuan and above

5. Do you know about the traditional cultural elements in Shanxi furniture design well? *

- A. Know very well understood
- B. Know something about it
- C. Know a little about it
- D. I don't know about it
- E. No comment

6. What is your opinion on the use of traditional Shanxi furniture in modern residential buildings? *

- A. Coexistence of tradition and modernity, creating a unique atmosphere
- B. The combination of modern home functionality and traditional furniture aesthetics
- C. Integrating smart homes to adapt to modern technological lifestyles
- D. Sustainable Design and Environmental Protection Concept
- E. As a carrier of cultural inheritance and education
- F. Provide high-end customized services to showcase personalized taste

7. what do you value the most about furniture design in your daily life? *

- A. Emphasizes practical functions
- B. Emphasizes aesthetics and artistic design
- C. A balance of practical function and aesthetics
- D. Influenced by other factors, such as brand or uniqueness
- E. Other (please specify)

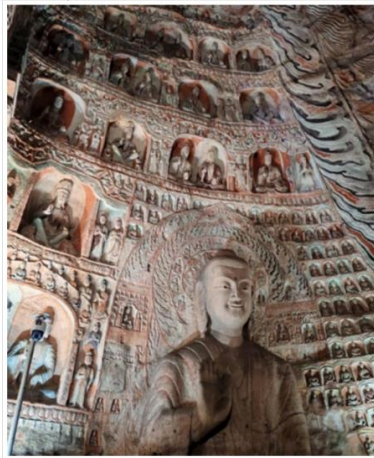
8. when you choosing furniture, do you consider about furniture design that integrated shanxi cultural elements? *

- A. Yes, I will consider
- B. Sometimes I consider
- C. Not considering
- D. I'm not sure.
- E. Other (please specify)

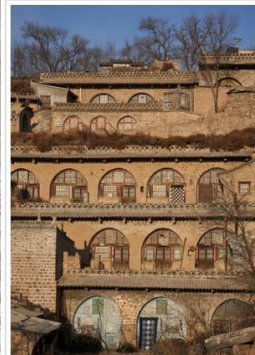
9. Do you think of integration shanxi traditional cultural elements into furniture will add value to the product? How? Please add your opinion. *

- A. Yes, it will increase the value
- B. No, it will not increase the value
- C. I'm not sure
- D. Please add your opinion

10. What specific elements of traditional culture in Shanxi are you most interested in? (Multiple Choice) *



A. Buddhist cultural elements (such as Hanging Temple and Yungang Grottoes)



B. Cave dwelling architectural elements



C. The architectural style of Shanxi (Jin Ci, courtyard culture)



D. Folk crafts (wood carving, Paper Cuttings)



E. Shanxi lacquerware, painted(Yongle Palace murals)



F. Shanxi Opera Culture

Figure A 5.2 wenjuanxing
SourcePhoto by wenjuanxing



G. Shanxi cultural patterns

11. What innovations do you hope to see in furniture design that integral traditional cultural elements? *

- A. Focus on creative and innovative design
- B. Focus on material and process innovation
- C. Focus on functional
- D. Focus on aesthetic design
- E. I'm not sure
- F. Other (please specify)

12. What are your expectations for integrating Shanxi traditional cultural elements into furniture design? (multiple choice) *

- A. Decoration in a minimalist modern style
- B. The complete presentation of traditional style
- C. Designed by combining traditional and modern cultures.
- D. I'm not sure
- E. Other (please specify)

13. Do you think integrating Shanxi traditional cultural elements into furniture design can respond for the aesthetics to people? How? Please add your opinion. *

- A. Yes.
- B. No
- C. I'm not sure
- D. Please add your opinion

14. What do you expected for the future of traditional furniture design in *

- A. Shanxi, considering the integration of cultural heritage and innovation?
- A. Preserving traditional cultural forms
- B. Promote innovation and design.
- C. Achieve a balance between heritage and innovation
- D. Focus on price and branding, and then culture and innovation.
- E. Use environmentally friendly materials
- F. Customized services available
- G. The combination of historical and cultural stories with furniture design
- H. Other (please specify)

15. What services or support do you hope to receive when purchasing traditional Shanxi furniture? *

- A. Customized services
- B. Express delivery
- C. Cash on delivery
- D. good maintenance
- E. Other (please specify)

16. Do you willing to use Shanxi traditional element furniture at home? Why? *

- A. Yes, because I like its style
- B. Yes, because I believe they have cultural value



- C. No, because I prefer modern furniture
 D. No, because I don't think it's practical
 E. Other (please specify)
17. How do you think Shanxi traditional furniture compares to other furniture in today's market? Would you suggest it to your friends or family? *
- A. Shanxi traditional furniture is very competitive, and I would recommend it to friends or family.
 B. Shanxi traditional furniture is somewhat competitive, and I might recommend it depending on the situation.
 C. Shanxi traditional furniture is not very competitive compared to other options, and I would not recommend it.
 D. I'm not familiar enough with Shanxi traditional furniture to assess its competitiveness or recommend it.
 E. I'm not sure
 F. Other, please specify
18. Can traditional cultural elements be included in modern furniture design? *
- A. Combining traditional patterns with modern minimalist design
 B. The combination of traditional craftsmanship and modern materials
 C. The combination of cultural symbols and modern functions
 D. Cultural innovation in traditional color matching.
 E. Drawing inspiration from traditional architectural structural design
 F. Transforming cultural stories into design inspiration Traditional Culture and Sustainability
 G. Other, please specify
19. Which furniture design do you interested for from integrating of traditional cultural elements? *
- A. furniture in living room (such as sofa, coffee table, etc.)
 B. Furniture in dining room (such as table, chair, etc.)
 C. Furniture in bedroom (such as bed, side table, cupboard, etc.)
 D. Furniture for decoration (such as shelf, partition, etc.)
 E. Other, please specify
20. Do you expect for the future of traditional cultural elements in Shanxi furniture design? *
- A. I think traditional cultural elements will blend well with modern designs to create unique and new furniture.
 B. I expect traditional craftsmanship and techniques to come back, focusing on keeping cultural heritage in furniture.
 C. I see traditional elements being used only a little, mainly as decorations in modern furniture.
 D. I hope there will be more focus on teaching people about the cultural importance of traditional elements in furniture.
 E. Other, please specify
21. What are your expectations for the future design of traditional cultural furniture in Shanxi? *
- A. More innovative designs
 B. Retain more traditional elements.
 C. Add modern features
 D. Reduce prices
 E. Improve quality
22. How do you think we can improve the current design of traditional cultural furniture in Shanxi? *
- A. Strengthen the expression of cultural elements
 B. Add modern features
 C. Improve materials and processes
 D. Enhance cost-effectiveness
 E. Add more design styles

23. What do you think is the most important aspect of incorporating Shanxi cultural elements into design? *

- A. Accurate expression of cultural symbols
- B. Color and material selection
- C. Innovation in Form and Structure
- D. The combination of practicality and modern functionality
- E. Other (please specify)

24. What do you think are the most effective ways to promote furniture with traditional cultural elements from Shanxi? (Multiple Choice) *

- A. Social media advertising
- B. Furniture Exhibition
- C. E-commerce platform
- D. Offline physical stores
- E. Cultural themed exhibition
- F. Other (please specify)

25. What is your opinion on the design of incorporating environmentally friendly materials into the new chair? *

- A. Very supportive, environmentally friendly materials are the trend of future design
- B. Support, but the comfort and durability of environmentally friendly materials need to be improved
- C. It doesn't matter, the material type doesn't have much impact on me
- D. Not very supportive, traditional materials have more texture and cultural heritage
- E. Completely unsupported, the texture and aesthetics of environmentally friendly materials do not meet my needs

Questionnaire 2

打印问卷

<https://www.wjx.cn/wjx/design/printq.aspx?activity=320146128>

Ask experts for how to design or the new design is suitable

1. What is your gender? *

2. Your age? *

3. What is your occupation? *

4. Do you know about the traditional cultural elements in Shanxi furniture design well? *

- A. Know very well understood
- B. Know something about it
- C. Know a little about it
- D. I don't know about it
- E. No comment

5. How to choose Shanxi traditional cultural elements that are suitable for integration into furniture design? *

- A. Choose by studying the history, architecture, and folk culture of Shanxi
- B. Extract representative cultural elements such as J in Shang culture and Buddhist culture
- C. Choose visually appealing cultural symbols according to market demand
- D. Combining furniture functions and selecting elements that conform to modern aesthetics
- E. Other (please specify)

6. Which function that should be in traditional cultural element furniture? *

- A. Storage function
- B. Decorative function
- C. Multipurpose function
- D. Easy to move
- E. Other (please specify)

7. How to balance cultural heritage and modern aesthetics in furniture design? *

- A. Prioritize maintaining the integrity of traditional culture and simplify design appropriately
- B. Incorporating a minimalist and fashionable design style while preserving cultural symbols
- C. Complete innovation, reinterpreting cultural elements in a modern way
- D. By innovating in color matching, materials, and forms, reconcile the differences between the two
- E. Other (please specify)

8. How to ensure the practicality of Shanxi traditional cultural elements in furniture design? *

- A. Modernizing the structure of traditional furniture
- B. Introducing multifunctional design to improve the utilization rate of furniture
- C. While retaining the traditional appearance, optimize the storage and comfort functions of furniture
- D. Improve durability through modern technological improvements to traditional craftsmanship
- E. Other (please specify)

9. How to reflect Shanxi traditional culture through materials in furniture design? *

- A. Use materials from traditional Shanxi architecture, such as elm, rosewood, etc
- B. Combining modern environmentally friendly materials to maintain traditional cultural temperament while enhancing environmental friendliness
- C. Using materials with historical significance to reflect the continuity of culture



- D. Using composite materials to combine traditional elements with modern technology
- E. Other (please specify)

10. What do you expect about the combination of traditional cultural elements and modern design in Shanxi? *

- A. Fully embody the essence of traditional culture
- B. Maintain a minimalist and modern feel
- C. The balanced combination of the two
- D. Other (please specify)

11. Do you think that the cultural elements should be presented in furniture design? *

- A. Clearly display cultural symbols
- B. Low profile integration
- C. Combining modern style with traditional elements
- D. Other (please specify)

12. which channels do you usually use to gather information when choosing furniture? (multiple choice) *

- A. Physical store
- B. Furniture Exhibition
- C. Internet/social media
- D. Recommended by friends or family
- E. Designer recommendation
- F Other (please specify)

13. What cultural sensitivity issues do you think need to be considered when using traditional cultural elements? *

- A. Ensure that the use of cultural elements does not deviate from their original historical and cultural background
- B. Respect the local culture and customs of Shanxi, and avoid the misuse of cultural symbols
- C. Considering the cultural understanding of consumers in different regions and adjusting the expression of cultural elements
- D. Maintain cultural integrity in the commercialization process and avoid over simplification
- E. Other (please specify)

14. What do you think should be the focus of product improvement after integrate traditional cultural elements into furniture design? *

- A. Innovative function
- B. Appearance design
- C. Cultural expressiveness
- D. Environmentally friendly materials
- E. Production process
- F. Other (please specify)

15. Which cultural elements do you think best reflect the regional characteristics of Shanxi? *

- A. The architectural symbols and structure of Ji n Shang Yuan
- B. Shanxi opera, Paper Cuttings and other folk cultural elements
- C. Religious and cultural representatives such as Hanging Temple and Yungang Grottoes
- D. Details of ancient architectural designs such as Jin Ci and Pingyao Ancient City

16. Which traditional element do you think the most clearly communicates the mood of a design? *

- A. Family cultural symbol.
- B. Regional cultural elements.
- C. Classical Literature and Historical Stories
- D. Religion and Philosophical Thought
- E. Other (please specify)

17. What do you think of the core of shanxi traditional culture can reflected in furniture design? *
- A. Retain the original cultural symbols and structures
 - B. Incorporating modern elements and functionalities into the design
 - C. Innovate materials and techniques while preserving cultural symbols
 - D. Other (please specify)
18. What type of cultural elements do you prefer in furniture design? *
- A. Concrete traditional symbols (such as dragon and phoenix, auspicious cloud patterns)
 - B. Abstract traditional cultural symbols
 - C. The integration of implicit cultural heritage
 - D. The combination of modern culture and traditional culture
 - E. Other (please specify)
19. Which traditional cultural elements can use for furniture design? *
- A. Decorative effect
 - B. Main design
 - C. Integration with functionality
 - D. Other (please specify)
20. In the future, in what aspects do you think traditional furniture design in Shanxi can be further innovated? *
- A. By combining technology and culture, we aim to enhance the intelligence level of furniture
 - B. Integrating traditional Shanxi furniture into new home scene designs, such as small spaces or movable furniture
 - C. Introducing more environmentally friendly production methods to achieve the green transformation of traditional culture
 - D. By using digital technology to preserve and inherit traditional crafts, more young people can come into contact with and learn from them
 - E. Other (please specify)

Questionnaire 3

打印问卷

<https://www.wjx.cn/wjx/design/printq.aspx?activity=320156579>

Ask customers opinion about new design satisfaction

1. What is your gender? *

- A. Male
 B. Female
 C. LGBTQAI+
 D. Not specific

2. Your age? *

- A. 18-25 years old
 B. 26-35 years old
 C. 36-45 years old
 D. 46-55 years old

3. What is your occupation: *

- A. Furniture design
 B. Furniture manufacturer
 C. Home decorator
 D. Student
 E. Other (please specify)

4. Please choose the option that describes your personal monthly income level to help us better understand the preferences and needs of different income groups for Shanxi traditional furniture design. *

- A. Less than 5000 yuan
 B. 5001 to 10000 yuan
 C. 10001 to 20000 yuan
 D. 20001 yuan and above

5. What is your overall satisfaction with the newly designed furniture? Why? *

- A. Very satisfied (The design is aesthetically pleasing, of good quality, fully functional, and highly comfortable.)
 B. Satisfied (Simple style, easy to use, high cost-effectiveness, and durable materials.)
 C. Generally (The design is ordinary, the comfort level is average, the functions are incomplete, and some parts are worn out.)
 D. Not satisfied (Outdated style, insufficient storage space, poor comfort, average quality.)
 E. Very dissatisfied (Poor quality, low comfort, uncoordinated design, and impractical functionality.)
 F. Unable to determine (Short usage time, insufficient experience, low demand, and lack of prominent feelings.)

6. What is your first impression of the newly designed furniture? *

- A. Very good
 B. Better
 C. Generally
 D. Not good
 E. Very bad

7. How do you feel about the newly designed chair? *

- A. Very satisfied (The chair design is unique and beautiful, in line with my style.)
 B. Satisfied (The chair design is simple and practical, suitable for daily use)
 C. Generally (The chair design is conventional and lacks any particularly prominent highlights.)
 D. Not very satisfied (The chair design doesn't quite match my aesthetic taste, it's not fashionable enough.)
 E. Very dissatisfied (The chair design is too complex or impractical and does not meet the



requirements.)

F. Not yet determined (The usage time is not long enough to fully evaluate.)

8. Do you think the price of furniture with traditional cultural elements from Shanxi matches its cultural value? (¥2000-3000yuan) *

- A. Very compatible
 B. Basic Match
 C. Generally
 D. Not quite matching
 E. Completely mismatched

9. Do you think that furniture with traditional cultural elements from Shaanxi can reflect your personal taste and cultural identity? *

- A. I strongly agree
 B. More agree
 C. Generally
 D. I don't quite agree
 E. Completely disagree

10. What aspects do you value the most when choosing newly designed furniture? (Multiple Choice) *

- A. Price
 B. Appearance design
 C. Brand
 D. Material
 E. Cultural elements
 F. Functional
 G. Environmental friendliness

11. What do you think is the most important thing when integrating traditional cultural elements from Shanxi into furniture design? *

- A. Aesthetics
 B. Practicality
 C. Cultural connotation
 D. Price
 E. Durability

12. Are you satisfied with the combination of traditional cultural elements and modern design in Shanxi? Why? *

- A. Very satisfied (The combination is very natural, retaining the essence of traditional culture while also possessing a modern feel.)
 B. Satisfied (The integration of traditional elements and modern design is good, which can reflect cultural characteristics.)
 C. Generally (The combination is acceptable, but the expression of cultural elements is slightly superficial.)
 D. Not satisfied (The combination of traditional elements and modern design is not tight enough, lacking a sense of coordination.)
 E. Very dissatisfied (The design is too complex, and cultural and modern elements conflict with each other, resulting in a poor overall effect.)
 F. Unable to determine (I don't have a clear view on the combination of traditional culture and modern design.)

13. Which part of the new chair design do you think needs the most improvement? *

- A. Integration of cultural elements
 B. Improvement in Comfort
 C. Functionality and practicality
 D. The overall design of the chair
 E. Material selection and environmental friendliness



14. What is your opinion on the traditional Shanxi patterns or carving elements used in the design of the new chair? *

- A. Very exquisite, enhancing the cultural connotation of the design
- B. Beautiful but slightly excessive in application
- C. The patterns and carvings are relatively ordinary and lack distinctive features
- D. Dislikes appears complex or outdated
- E. It doesn't matter, there are no special requirements for pattern design

15. How satisfied are you with the newly designed chair? Why? *

- A. Very satisfied (The design style of the chair is completely consistent with my aesthetic taste.)
- B. Satisfied (The appearance of the chair is simple and elegant, with practical functions.)
- C. Generally (The design of the chair is ordinary and there is nothing particularly appealing to me.)
- D. Not very satisfied (The design of the chair doesn't quite fit my style and appears somewhat outdated.)
- E. Very dissatisfied (The quality of the chair is poor, and the material is prone to damage or wear.)
- F. Unable to determine (The usage time is not long enough to fully evaluate.)

16. What is your evaluation of the comfort level of the newly designed chair? Why? *

- A. Very comfortable (The design of the chair conforms to ergonomics and can effectively support the body.)
- B. Comfortable (The seating experience of the chair is good, and the overall experience is also quite good.)
- C. Generally (The comfort of the chair is average, and sometimes I feel uncomfortable.)
- D. Not very comfortable (The design of the chair lacks good support for the human body and sitting for a long time can cause fatigue.)
- E. Very uncomfortable (The seat cushion is too hard or too soft, which seriously affects the sitting experience.)
- F. Unable to evaluate (I haven't been using the chair for long enough to fully evaluate it.)

17. Do you think adding cultural story background introduction to furniture design will enhance your purchasing desire? *

- A. It will significantly improve
- B. There will be some improvement
- C. No impact
- D. May reduce interest
- E. Disgusted from excessive cultural introductions

18. What traditional Shanxi elements do you hope to see in furniture design in the future? *

- A. More architectural elements
- B. Details of folk crafts (such as wood carving and lacquerware)
- C. Traditional colors and patterns
- D. Shanxi Religious and Cultural Elements
- E. Other (please specify)



APPENDIX B

IOC and investigation pictures

Questionnaire of Objective 1 IOC

Ask about Customers opinion that can make you use data for new design

Research topic: A Study of Shanxi Traditional Culture for Easy Chair Design

Researcher: LANHAO LYU

Advisor : Dr. Attama Saributr

Co-Advisor : Assoc. Prof. Dr. Chaturong Louhapensang

Question	score			Suggestion
	+1	0	-1	
1.What is your gender?				
<input type="checkbox"/> A. Male				
<input type="checkbox"/> B. Female				
<input type="checkbox"/> C. LGBTQAI+				
<input type="checkbox"/> D. Not specific				
2.Your age?				
<input type="checkbox"/> A. under 25 years old				
<input type="checkbox"/> B. 26-35 years old				
<input type="checkbox"/> C. 36-45 years old				
<input type="checkbox"/> D. 46-55 years old				
<input type="checkbox"/> E. Over 56 years old				
3. What is your occupation:				
<input type="checkbox"/> A. Furniture design				
<input type="checkbox"/> B. Furniture manufacturer				
<input type="checkbox"/> C. Home decorator				
<input type="checkbox"/> D. Student				
<input type="checkbox"/> E. Other (please specify).....				
4. Please choose the option that describes your personal monthly income level to help us better understand the preferences and needs of different income groups for Shanxi traditional furniture design.				
<input type="checkbox"/> A. Less than CNY 5000				
<input type="checkbox"/> B. CNY 5001 to 10000				
<input type="checkbox"/> C. CNY 10001 to 15000				
<input type="checkbox"/> D. CNY 15001 to 20000				
<input type="checkbox"/> E. CNY 20001 and above				

Figure B 5.12 Item of objective Congruence: IOC
Source:Photo by Researcher

5. Do you know about the traditional cultural elements in Shanxi furniture design well?				
<input type="checkbox"/> A. Know very well understood				
<input type="checkbox"/> B. Know something about it				
<input type="checkbox"/> C. Know a little about it				
<input type="checkbox"/> C. I don't know about it				
<input type="checkbox"/> D. No comment				
6. What is your opinion on the use of traditional Shanxi furniture in modern residential buildings?				
<input type="checkbox"/> A. Coexistence of tradition and modernity, creating a unique atmosphere				
<input type="checkbox"/> B. The combination of modern home functionality and traditional furniture aesthetics				
<input type="checkbox"/> C. Integrating smart homes to adapt to modern technological lifestyles				
<input type="checkbox"/> D. Sustainable Design and Environmental Protection Concept				
<input type="checkbox"/> E. As a carrier of cultural inheritance and education				
<input type="checkbox"/> F. Provide high-end customized services to showcase personalized taste				
7. what do you value the most about furniture design in your daily life?				
<input type="checkbox"/> A. Emphasizes practical functions				
<input type="checkbox"/> B. Emphasizes aesthetics and artistic design				
<input type="checkbox"/> C. A balance of practical function and aesthetics				
<input type="checkbox"/> D. Influenced by other factors, such as brand or uniqueness				
<input type="checkbox"/> E. Other (please specify).....				
8. when you choosing furniture, do you consider about furniture design that integrated shanxi cultural elements?				
<input type="checkbox"/> A. Yes, I will consider				
<input type="checkbox"/> B. Sometimes I consider				
<input type="checkbox"/> C. Not considering				
<input type="checkbox"/> D. I'm not sure.				
<input type="checkbox"/> E. Other (please specify).....				

Figure B 5.13 Item of objective Congruence: IOC
 Source:Photo by Researcher

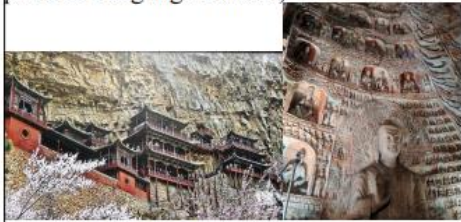


<p>9. Do you think of integration shanxi traditional cultural elements into furniture will add value to the product? How? Please add your opinion.</p>				
<p><input type="checkbox"/> A. Yes, it will increase the value</p>				
<p><input type="checkbox"/> B. No, it will not increase the value</p>				
<p><input type="checkbox"/> C. I'm not sure</p>				
<p><input type="checkbox"/> D. Please add your opinion.....</p>				
<p>10. What specific elements of traditional culture in Shanxi are you most interested in? (Multiple Choice)</p>				
<p><input type="checkbox"/> A. Buddhist cultural elements (such as Hanging Temple and Yungang Grottoes)</p>				
				
<p><input type="checkbox"/> B. Cave dwelling architectural elements</p>				
				
<p><input type="checkbox"/> C. The architectural style of Shanxi (Jin Ci, courtyard culture)</p>				
				

Figure B 5.14 Item of objective Congruence: IOC
 Source:Photo by Researcher

<input type="checkbox"/> D. Folk crafts (wood carving, Paper Cuttings,) 				
<input type="checkbox"/> E. Shanxi lacquerware, painted(Yongle Palace murals) 				
<input type="checkbox"/> F. Shanxi Opera Culture 				
<input type="checkbox"/> G. Shanxi cultural patterns 				
<input type="checkbox"/> H. Other (please specify)..... 				

Figure B 5.15 Item of objective Congruence: IOC
 Source:Photo by Researcher

11. What innovations do you hope to see in furniture design that integral traditional cultural elements?				
<input type="checkbox"/> A. Focus on creative and innovative design				
<input type="checkbox"/> B. Focus on material and process innovation				
<input type="checkbox"/> C. Focus on functional				
<input type="checkbox"/> D. Focus on aesthetic design				
<input type="checkbox"/> E. I'm not sure				
<input type="checkbox"/> F. Other (please specify).....				
12. What are your expectations for integrating Shanxi traditional cultural elements into furniture design? (multiple choice)				
<input type="checkbox"/> A. Decoration in a minimalist modern style				
<input type="checkbox"/> B. The complete presentation of traditional style				
<input type="checkbox"/> C. Designed by combining traditional and modern cultures.				
<input type="checkbox"/> D. I'm not sure				
<input type="checkbox"/> E. Other (please specify).....				
13. Do you think integrating Shanxi traditional cultural elements into furniture design can respond for the aesthetics to people? How? Please add your opinion?				
<input type="checkbox"/> A. Yes.				
<input type="checkbox"/> B. No				
<input type="checkbox"/> C. I'm not sure				
<input type="checkbox"/> D. Please add your opinion.....				
14. What do you expected for the future of traditional furniture design in Shanxi, considering the integration of cultural heritage and innovation?				
<input type="checkbox"/> A. Preserving traditional cultural forms				
<input type="checkbox"/> B. Promote innovation and design.				
<input type="checkbox"/> C. Achieve a balance between heritage and innovation				
<input type="checkbox"/> D. Focus on price and branding, and then culture and innovation.				
<input type="checkbox"/> E. Use environmentally friendly materials				
<input type="checkbox"/> F. Customized services available				
<input type="checkbox"/> G. The combination of historical and cultural stories with furniture design				
<input type="checkbox"/> H. Other (please specify).....				

Figure B 5.16 Item of objective Congruence: IOC
 Source:Photo by Researcher

15. What services or support do you hope to receive when purchasing traditional Shanxi furniture?				
<input type="checkbox"/> A. Customized services				
<input type="checkbox"/> B. Express delivery				
<input type="checkbox"/> C. Cash on delivery				
<input type="checkbox"/> D. good maintenance				
<input type="checkbox"/> E. Other (please specify).....				
16. Do you willing to use Shanxi traditional element furniture at home? Why?				
<input type="checkbox"/> A. Yes, because I like its style				
<input type="checkbox"/> B. Yes, because I believe they have cultural value				
<input type="checkbox"/> C. No, because I prefer modern furniture				
<input type="checkbox"/> D. No, because I don't think it's practical				
<input type="checkbox"/> E. Other (please specify).....				
17. How do you think Shanxi traditional furniture compares to other furniture in today's market? Would you suggest it to your friends or family?				
<input type="checkbox"/> A. Shanxi traditional furniture is very competitive, and I would recommend it to friends or family.				
<input type="checkbox"/> B. Shanxi traditional furniture is somewhat competitive, and I might recommend it depending on the situation.				
<input type="checkbox"/> C. Shanxi traditional furniture is not very competitive compared to other options, and I would not recommend it.				
<input type="checkbox"/> D. I'm not familiar enough with Shanxi traditional furniture to assess its competitiveness or recommend it.				
<input type="checkbox"/> E. I'm not sure				
<input type="checkbox"/> F. Other, please specify.....				
18. Can traditional cultural elements be included in modern furniture design?				
<input type="checkbox"/> A. Combining traditional patterns with modern minimalist design				
<input type="checkbox"/> B. The combination of traditional craftsmanship and modern materials				
<input type="checkbox"/> C. The combination of cultural symbols and modern functions				
<input type="checkbox"/> D. Cultural innovation in traditional color matching.				
<input type="checkbox"/> E. Drawing inspiration from traditional architectural structural design				
<input type="checkbox"/> F. Transforming cultural stories into design				

Figure B 5.17 Item of objective Congruence: IOC
 Source:Photo by Researcher

inspiration Traditional Culture and Sustainability				
<input type="checkbox"/> G. Other, please specify.....				
19. Which furniture design do you interested for from integrating of traditional cultural elements?				
<input type="checkbox"/> A. furniture in living room (such as sofa, coffee table, etc.)				
<input type="checkbox"/> B. Furniture in dining room (such as table, chair, etc.)				
<input type="checkbox"/> C. Furniture in bedroom (such as bed, side table, cupboard, etc.)				
<input type="checkbox"/> D. Furniture for decoration (such as shelf, partition, etc.)				
<input type="checkbox"/> E. Other, please specify.....				
20. Do you expect for the future of traditional cultural elements in Shanxi furniture design?				
<input type="checkbox"/> A. I think traditional cultural elements will blend well with modern designs to create unique and new furniture.				
<input type="checkbox"/> B. I expect traditional craftsmanship and techniques to come back, focusing on keeping cultural heritage in furniture.				
<input type="checkbox"/> C. I see traditional elements being used only a little, mainly as decorations in modern furniture.				
<input type="checkbox"/> D. I hope there will be more focus on teaching people about the cultural importance of traditional elements in furniture.				
<input type="checkbox"/> E. Other, please specify.....				
21. What are your expectations for the future design of traditional cultural furniture in Shanxi?				
<input type="checkbox"/> A. More innovative designs				
<input type="checkbox"/> B. Retain more traditional elements.				
<input type="checkbox"/> C. Add modern features				
<input type="checkbox"/> D. Reduce prices				
<input type="checkbox"/> E. Improve quality				
22. How do you think we can improve the current design of traditional cultural furniture in Shanxi?				
<input type="checkbox"/> A. Strengthen the expression of cultural elements				
<input type="checkbox"/> B. Add modern features				
<input type="checkbox"/> C. Improve materials and processes				
<input type="checkbox"/> D. Enhance cost-effectiveness				
<input type="checkbox"/> E. Add more design styles				

Figure B 5.18 Item of objective Congruence: IOC
 Source:Photo by Researcher

23. What do you think is the most important aspect of incorporating Shanxi cultural elements into design?				
<input type="checkbox"/> A. Accurate expression of cultural symbols				
<input type="checkbox"/> B. Color and material selection				
<input type="checkbox"/> C. Innovation in Form and Structure				
<input type="checkbox"/> D. The combination of practicality and modern functionality				
<input type="checkbox"/> E. Other (please specify).....				
24. What do you think are the most effective ways to promote furniture with traditional cultural elements from Shanxi? (Multiple Choice)				
<input type="checkbox"/> A. Social media advertising				
<input type="checkbox"/> B. Furniture Exhibition				
<input type="checkbox"/> C. E-commerce platform				
<input type="checkbox"/> D. Offline physical stores				
<input type="checkbox"/> E. Cultural themed exhibition				
<input type="checkbox"/> F. Other (please specify).....				
25. What is your opinion on the design of incorporating environmentally friendly materials into the new chair?				
<input type="checkbox"/> A. Very supportive, environmentally friendly materials are the trend of future design				
<input type="checkbox"/> B. Support, but the comfort and durability of environmentally friendly materials need to be improved				
<input type="checkbox"/> C. It doesn't matter, the material type doesn't have much impact on me				
<input type="checkbox"/> D. Not very supportive, traditional materials have more texture and cultural heritage				
<input type="checkbox"/> E. Completely unsupported, the texture and aesthetics of environmentally friendly materials do not meet my needs				

Suggestion

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.....

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Figure B 5.19 Item of objective Congruence: IOC
 Source:Photo by Researcher

Questionnaire of Objective 2 IOC
Ask experts for how to design or the new design is suitable

Research topic: A Study of Shanxi Traditional Culture for Easy Chair Design

Researcher: LANHAO LYU

Advisor : Dr. Attama Saributr

Co-Advisor : Assoc. Prof. Dr. Chaturong Louhapensang

Question	score			Suggestion
	+1	0	-1	
1.What is your gender?				
2.Your age?				
3. What is your occupation:				
4. Do you know about the traditional cultural elements in Shanxi furniture design well?				
<input type="checkbox"/> A. Know very well understood				
<input type="checkbox"/> B. Know something about it				
<input type="checkbox"/> C. Know a little about it				
<input type="checkbox"/> C. I don't know about it				
<input type="checkbox"/> D. No comment				
5. How to choose Shanxi traditional cultural elements that are suitable for integration into furniture design?				
<input type="checkbox"/> A. Choose by studying the history, architecture, and folk culture of Shanxi				
<input type="checkbox"/> B. Extract representative cultural elements such as Jin Shang culture and Buddhist culture				
<input type="checkbox"/> C. Choose visually appealing cultural symbols according to market demand				
<input type="checkbox"/> D. Combining furniture functions and selecting elements that conform to modern aesthetics				
<input type="checkbox"/> E. Other (please specify)				
6. Which function that should be in traditional cultural element furniture?				
<input type="checkbox"/> A. Storage function				
<input type="checkbox"/> B. Decorative function				
<input type="checkbox"/> C. Multi purpose function				
<input type="checkbox"/> D. Easy to move				
<input type="checkbox"/> E. Other (please specify)				

Figure B 5.20 Item of objective Congruence: IOC
 Source:Photo by Researcher

7. How to balance cultural heritage and modern aesthetics in furniture design?				
<input type="checkbox"/> A. Prioritize maintaining the integrity of traditional culture and simplify design appropriately				
<input type="checkbox"/> B. Incorporating a minimalist and fashionable design style while preserving cultural symbols				
<input type="checkbox"/> C. Complete innovation, reinterpreting cultural elements in a modern way				
<input type="checkbox"/> D. By innovating in color matching, materials, and forms, reconcile the differences between the two				
<input type="checkbox"/> E. Other (please specify).....				
8. How to ensure the practicality of Shanxi traditional cultural elements in furniture design?				
<input type="checkbox"/> A. Modernizing the structure of traditional furniture				
<input type="checkbox"/> B. Introducing multifunctional design to improve the utilization rate of furniture				
<input type="checkbox"/> C. While retaining the traditional appearance, optimize the storage and comfort functions of furniture				
<input type="checkbox"/> D Improve durability through modern technological improvements to traditional craftsmanship				
<input type="checkbox"/> E Other (please specify).....				
9. How to reflect Shanxi traditional culture through materials in furniture design?				
<input type="checkbox"/> A. Use materials from traditional Shanxi architecture, such as elm, rosewood, etc				
<input type="checkbox"/> B. Combining modern environmentally friendly materials to maintain traditional cultural temperament while enhancing environmental friendliness				
<input type="checkbox"/> C. Using materials with historical significance to reflect the continuity of culture				
<input type="checkbox"/> D. Using composite materials to combine traditional elements with modern technology				
<input type="checkbox"/> F. Other (please specify)				
10. What do you expect about the combination of traditional cultural elements and modern design in Shanxi?				
<input type="checkbox"/> A. Fully embody the essence of traditional culture				
<input type="checkbox"/> B. Maintain a minimalist and modern feel				
<input type="checkbox"/> C. The balanced combination of the two				
<input type="checkbox"/> D. Other (please specify)				

Figure B 5.21 Item of objective Congruence: IOC
 Source:Photo by Researcher

11. Do you think that the cultural elements should be presented in furniture design?				
<input type="checkbox"/> A. Clearly display cultural symbols				
<input type="checkbox"/> B. Low profile integration				
<input type="checkbox"/> C. Combining modern style with traditional elements				
<input type="checkbox"/> D. Other (please specify)				
12. which channels do you usually use to gather information when choosing furniture? (multiple choice)				
<input type="checkbox"/> A. Physical store				
<input type="checkbox"/> B. Furniture Exhibition				
<input type="checkbox"/> C. Internet/social media				
<input type="checkbox"/> D Recommended by friends or family				
<input type="checkbox"/> E Designer recommendation				
<input type="checkbox"/> F Other (please specify)				
13. What cultural sensitivity issues do you think need to be considered when using traditional cultural elements?				
<input type="checkbox"/> A. Ensure that the use of cultural elements does not deviate from their original historical and cultural background				
<input type="checkbox"/> B. Respect the local culture and customs of Shanxi, and avoid the misuse of cultural symbols				
<input type="checkbox"/> C. Considering the cultural understanding of consumers in different regions and adjusting the expression of cultural elements				
<input type="checkbox"/> D. Maintain cultural integrity in the commercialization process and avoid over simplification				
<input type="checkbox"/> E. Other (please specify).....				
14. What do you think should be the focus of product improvement after integrate traditional cultural elements into furniture design?				
<input type="checkbox"/> A. Innovative function				
<input type="checkbox"/> B. Appearance design				
<input type="checkbox"/> C. Cultural expressiveness				
<input type="checkbox"/> D. Environmentally friendly materials				
<input type="checkbox"/> E. Production process				
<input type="checkbox"/> F. Other (please specify)				

Figure B 5.22 Item of objective Congruence: IOC
 Source:Photo by Researcher

15. Which cultural elements do you think best reflect the regional characteristics of Shanxi?				
<input type="checkbox"/> A. The architectural symbols and structure of Jin Shang Yuan				
<input type="checkbox"/> B. Shanxi opera, Paper Cuttings and other folk cultural elements				
<input type="checkbox"/> C. Religious and cultural representatives such as Hanging Temple and Yungang Grottoes				
<input type="checkbox"/> D. Details of ancient architectural designs such as Jin Ci and Pingyao Ancient City				
16. Which traditional element do you think the most clearly communicates the mood of a design?				
<input type="checkbox"/> A. Family cultural symbol.				
<input type="checkbox"/> B. Regional cultural elements.				
<input type="checkbox"/> C. Classical Literature and Historical Stories				
<input type="checkbox"/> D. Religion and Philosophical Thought				
<input type="checkbox"/> E. Other (please specify)				
17. What do you think of the core of shanxi traditional culture can reflected in furniture design?				
<input type="checkbox"/> A. Retain the original cultural symbols and structures				
<input type="checkbox"/> B. Incorporating modern elements and functionalities into the design				
<input type="checkbox"/> C. Innovate materials and techniques while preserving cultural symbols				
<input type="checkbox"/> D. Other (please specify)				
18. What type of cultural elements do you prefer in furniture design?				
<input type="checkbox"/> A. Concrete traditional symbols (such as dragon and phoenix, auspicious cloud patterns)				
<input type="checkbox"/> B. Abstract traditional cultural symbols				
<input type="checkbox"/> C. The integration of implicit cultural heritage				
<input type="checkbox"/> D. -The combination of modern culture and traditional culture				
<input type="checkbox"/> E. Other (please specify)				
19. Which traditional cultural elements can use for furniture design?				
<input type="checkbox"/> A. Decorative effect				
<input type="checkbox"/> B. Main design				
<input type="checkbox"/> C. Integration with functionality				
<input type="checkbox"/> D. Other (please specify)				

Figure B 5.23 Item of objective Congruence: IOC
 Source:Photo by Researcher

Questionnaire of Objective 3 IOC

Ask customers opinion about new design satisfaction

Research topic: A Study of Shanxi Traditional Culture for Easy Chair Design

Researcher: LANHAO LYU

Advisor : Dr. Attama Saributr

Co-Advisor : Assoc. Prof. Dr. Chaturong Louhapensang

Question	score			Suggestion
	+1	0	-1	
1.What is your gender?				
<input type="checkbox"/> A. Male				
<input type="checkbox"/> B. Female				
<input type="checkbox"/> C. LGBTQAI+				
<input type="checkbox"/> D. Not specific				
2.Your age?				
<input type="checkbox"/> A. under 25 years old				
<input type="checkbox"/> B. 26-35 years old				
<input type="checkbox"/> C. 36-45 years old				
<input type="checkbox"/> D. 46-55 years old				
<input type="checkbox"/> E. Over 56 years old				
3. What is your occupation:				
<input type="checkbox"/> A. Furniture design				
<input type="checkbox"/> B. Furniture manufacturer				
<input type="checkbox"/> C. Home decorator				
<input type="checkbox"/> D. Student				
<input type="checkbox"/> E. Other (please specify).....				
4. Please choose the option that describes your personal monthly income level to help us better understand the preferences and needs of different income groups for Shanxi traditional furniture design.				
<input type="checkbox"/> A. Less than CNY 5000				
<input type="checkbox"/> B. CNY 5001 to 10000				
<input type="checkbox"/> C. CNY 10001 to 15000				
<input type="checkbox"/> D. CNY 15001 to 20000				
<input type="checkbox"/> E. CNY 20001 and above				

Figure B 5.25 Item of objective Congruence: IOC
Source:Photo by Researcher

5. What is your overall satisfaction with the newly designed furniture? Why?				
<input type="checkbox"/> A. Very satisfied (The design is aesthetically pleasing, of good quality, fully functional, and highly comfortable.)				
<input type="checkbox"/> B. Satisfied (Simple style, easy to use, high cost-effectiveness, and durable materials.)				
<input type="checkbox"/> C. Generally (The design is ordinary, the comfort level is average, the functions are incomplete, and some parts are worn out.)				
<input type="checkbox"/> C. Not satisfied (Outdated style, insufficient storage space, poor comfort, average quality.)				
<input type="checkbox"/> D. Very dissatisfied (Poor quality, low comfort, uncoordinated design, and impractical functionality.)				
<input type="checkbox"/> F. Unable to determine (Short usage time, insufficient experience, low demand, and lack of prominent feelings.)				
6. What is your first impression of the newly designed furniture?				
<input type="checkbox"/> A. Very good				
<input type="checkbox"/> B. Better				
<input type="checkbox"/> C. Generally				
<input type="checkbox"/> D. Not good				
<input type="checkbox"/> E. Very bad				
7. How do you feel about the newly designed chair?				
<input type="checkbox"/> A. Very satisfied (The chair design is unique and beautiful, in line with my style.)				
<input type="checkbox"/> B. Satisfied (The chair design is simple and practical, suitable for daily use)				
<input type="checkbox"/> C. Generally (The chair design is conventional and lacks any particularly prominent highlights.)				
<input type="checkbox"/> D. Not very satisfied (The chair design doesn't quite match my aesthetic taste, it's not fashionable enough.)				
<input type="checkbox"/> E. Very dissatisfied (The chair design is too complex or impractical, and does not meet the requirements.)				
<input type="checkbox"/> F. Not yet determined (The usage time is not long enough to fully evaluate.)				

Figure B 5.26 Item of objective Congruence: IOC
 Source:Photo by Researcher

8. Do you think the price of furniture with traditional cultural elements from Shanxi matches its cultural value? (CNY2000-3000)				
<input type="checkbox"/> A. Very compatible				
<input type="checkbox"/> B. Basic Match				
<input type="checkbox"/> C. Generally				
<input type="checkbox"/> D. Not quite matching				
<input type="checkbox"/> E. Completely mismatched				
9. Do you think that furniture with traditional cultural elements from Shaanxi can reflect your personal taste and cultural identity?				
<input type="checkbox"/> A. I strongly agree				
<input type="checkbox"/> B. More agree				
<input type="checkbox"/> C. Generally				
<input type="checkbox"/> D. I don't quite agree				
<input type="checkbox"/> F. Completely disagree				
10. What aspects do you value the most when choosing newly designed furniture? (Multiple Choice)				
<input type="checkbox"/> A. Price				
<input type="checkbox"/> B. Appearance design				
<input type="checkbox"/> C. Brand				
<input type="checkbox"/> D. Material				
<input type="checkbox"/> E. Cultural elements				
<input type="checkbox"/> F. Functional				
<input type="checkbox"/> G. Environmental friendliness				
11. What do you think is the most important thing when integrating traditional cultural elements from Shanxi into furniture design?				
<input type="checkbox"/> A. Aesthetics				
<input type="checkbox"/> B. Practicality				
<input type="checkbox"/> C. Cultural connotation				
<input type="checkbox"/> C. Price				
<input type="checkbox"/> D. Durability				

Figure B 5.27 Item of objective Congruence: IOC
 Source:Photo by Researcher

12. Are you satisfied with the combination of traditional cultural elements and modern design in Shanxi? Why?				
<input type="checkbox"/> A. Very satisfied (The combination is very natural, retaining the essence of traditional culture while also possessing a modern feel.)				
<input type="checkbox"/> B. Satisfied (The integration of traditional elements and modern design is good, which can reflect cultural characteristics.)				
<input type="checkbox"/> C. Generally (The combination is acceptable, but the expression of cultural elements is slightly superficial.)				
<input type="checkbox"/> D. Not satisfied (The combination of traditional elements and modern design is not tight enough, lacking a sense of coordination.)				
<input type="checkbox"/> E. Very dissatisfied (The design is too complex, and cultural and modern elements conflict with each other, resulting in a poor overall effect.)				
<input type="checkbox"/> F. Unable to determine (I don't have a clear view on the combination of traditional culture and modern design.)				
13. Which part of the new chair design do you think needs the most improvement?				
<input type="checkbox"/> A. Integration of cultural elements				
<input type="checkbox"/> B. Improvement in Comfort				
<input type="checkbox"/> C. Functionality and practicality				
<input type="checkbox"/> D. The overall design of the chair				
<input type="checkbox"/> E. Material selection and environmental friendliness				
14. What is your opinion on the traditional Shanxi patterns or carving elements used in the design of the new chair?				
<input type="checkbox"/> A. Very exquisite, enhancing the cultural connotation of the design				
<input type="checkbox"/> B. Beautiful but slightly excessive in application				
<input type="checkbox"/> C. The patterns and carvings are relatively ordinary and lack distinctive features				
<input type="checkbox"/> D. Dislikes, appears complex or outdated				
<input type="checkbox"/> E. It doesn't matter, there are no special requirements for pattern design				

Figure B 5.28 Item of objective Congruence: IOC
 Source:Photo by Researcher

15. How satisfied are you with the newly designed chair? Why?				
<input type="checkbox"/> A. Very satisfied (The design style of the chair is completely consistent with my aesthetic taste.)				
<input type="checkbox"/> B. Satisfied (The appearance of the chair is simple and elegant, with practical functions.)				
<input type="checkbox"/> C. Generally (The design of the chair is ordinary and there is nothing particularly appealing to me.)				
<input type="checkbox"/> D. Not very satisfied (The design of the chair doesn't quite fit my style and appears somewhat outdated.)				
<input type="checkbox"/> E. Very dissatisfied (The quality of the chair is poor, and the material is prone to damage or wear.)				
<input type="checkbox"/> F. Unable to determine (The usage time is not long enough to fully evaluate.)				
16. What is your evaluation of the comfort level of the newly designed chair? Why?				
<input type="checkbox"/> A. Very comfortable (The design of the chair conforms to ergonomics and can effectively support the body.)				
<input type="checkbox"/> B. Comfortable (The seating experience of the chair is good, and the overall experience is also quite good.)				
<input type="checkbox"/> C. Generally (The comfort of the chair is average, and sometimes I feel uncomfortable.)				
<input type="checkbox"/> D. Not very comfortable (The design of the chair lacks good support for the human body, and sitting for a long time can cause fatigue.)				
<input type="checkbox"/> E. Very uncomfortable (The seat cushion is too hard or too soft, which seriously affects the sitting experience.)				
<input type="checkbox"/> F. Unable to evaluate (I haven't been using the chair for long enough to fully evaluate it.)				
17. Do you think adding cultural story background introduction to furniture design will enhance your purchasing desire?				
<input type="checkbox"/> A. It will significantly improve				
<input type="checkbox"/> B. There will be some improvement				
<input type="checkbox"/> C. No impact				
<input type="checkbox"/> D. May reduce interest				
<input type="checkbox"/> E. Disgusted from excessive cultural introductions				

Figure B 5.29 Item of objective Congruence: IOC
 Source:Photo by Researcher



Figure B 5.31 Item of objective Congruence: IOC
Source:Photo by Researcher



Figure B 5.32 Item of objective Congruence: IOC
Source:Photo by Researcher



Figure B 5.33 Item of objective Congruence: IOC
Source:Photo by Researcher



APPENDIX C

Duplicate check

Plagiarism Checking Report

Created on 2025-05-21 14:08:05 at 14:08 PM

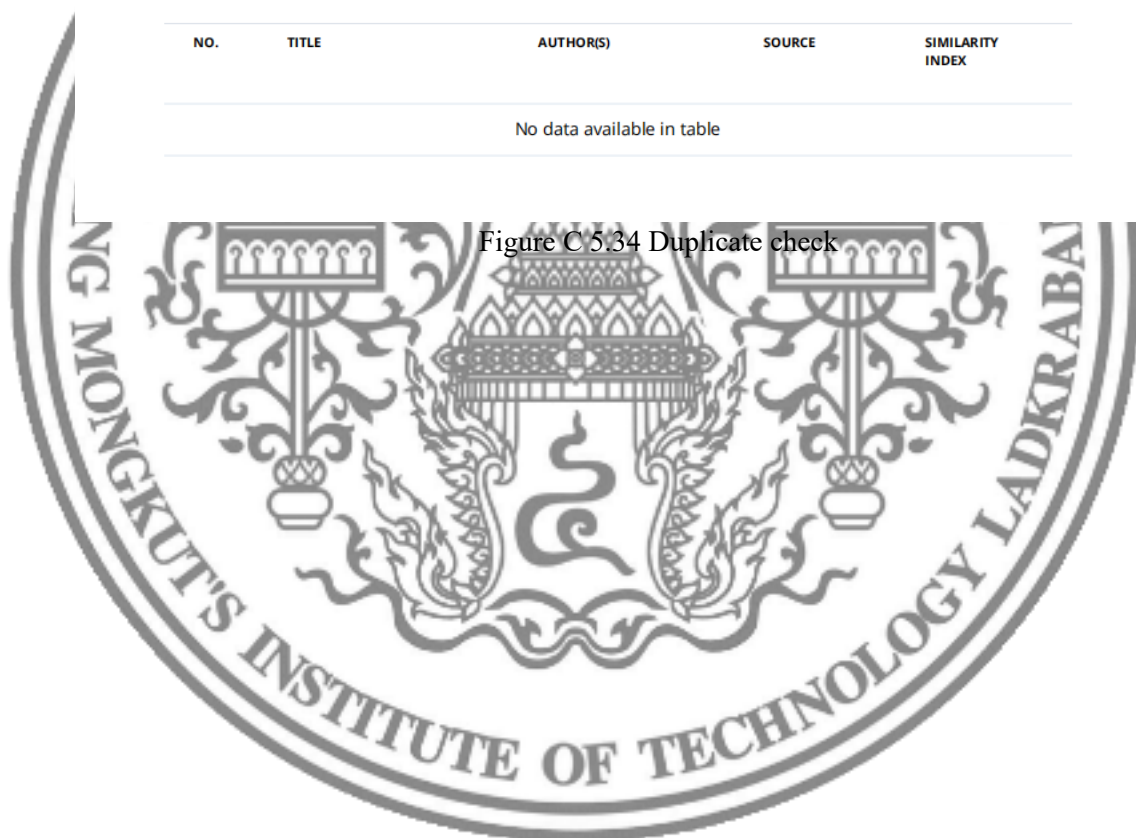
Submission Information

ID	SUBMISSION DATE	SUBMITTED BY	ORGANIZATION	FILENAME	STATUS	SIMILARITY INDEX
4296611	May 21, 2025 at 14:02 PM	attama.sa@kmit.lac.th	สถาบันเทคโนโลยีพระจอมเกล้าลาดกระบัง	67036005 Lanhao Lyu.pdf	Completed	0.00 %

Match Overview

NO.	TITLE	AUTHOR(S)	SOURCE	SIMILARITY INDEX
No data available in table				

Figure C 5.34 Duplicate check



AUTHOR BIOGRAPHY



Name-Surname	Mr. Lanhao Lyu
Date of Birth	February 22, 1995
Place of Birth	Shijiazhuang, Hebei, China
Education	<p>In 2024 Enrolled in Technology of Industrial Design Program at King Mongkut's Institute of Technology Ladkrabang.</p> <p>In 2024 , Graduated Bachelor Degree of Integrated Innovation for Products and Services at King Mongkut's Institute of Technology Ladkrabang.</p> <p>In 2020, Graduated from Changchun Institute of Technology with a major in Mechanical Manufacturing and Automation</p>
Current Address	Pracha Phatthana Rd, Thap Yao, Lat Krabang, Bangkok
Publication	DRLE Published Journals
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