

The Reincarnation of Traditional Auspicious Patterns in Smart Furniture: An Historical Exploration of Aesthetic Impact and Cultural Heritage

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Abstract

This study explores the potential and significance of integrating traditional Chinese auspicious patterns into smart furniture design, specifically focusing on their contribution to cultural value and distinctiveness. The study posits that auspicious patterns can offer a distinct cultural identity and design inspiration for smart furniture while addressing the issue of design uniformity. These patterns exhibit remarkable accomplishments in art and also confront the challenges of contemporary society. The design of smart furniture serves as a link between tradition and modernity, enabling the products to serve as a platform for the continuation of traditional art. This study primarily focuses on aesthetic impact and user acceptance. It utilises questionnaire surveys and SPSS software for analysis, encompassing diverse groups from various regions of China. The study primarily suggests that designers should integrate traditional heritage and modern technology to enhance the aesthetic and cultural value of products. Additionally, it provides a new perspective and serves as a foundation for future research in the field of smart furniture design.

Keywords: Smart Furniture Design; Traditional Auspicious Patterns; Cultural Heritage; Modern Aesthetics.

Introduction

Smart furniture, as a crucial component of the home environment, combines contemporary design and technology to enhance the convenience of people's daily lives. Nevertheless, there is a need to enhance the ability of current smart furniture

designs to express and preserve traditional culture, as they currently prioritise functionality and modern aesthetics (Han, 2014). China possesses a rich cultural heritage, with historical patterns that hold deep cultural significance and aesthetic value. This paper primarily examines the use of traditional auspicious patterns in the design of smart furniture, in light of prevailing social issues. China's traditional auspicious patterns have a long history. These artworks serve as both artistic expressions and reflections of the Chinese nation's beliefs and desires. The inclusion of cultural elements can enhance the depth and aesthetic appeal of products (Shilin Wu, 2022). This study investigates the incorporation of traditional auspicious patterns into smart furniture through historical and cultural research and a questionnaire survey. The focus is on the integration of aesthetics and cultural heritage (Shi & Liu, 2021).

This study holds significant social importance in advocating for the integration of traditional culture into contemporary design. The research primarily involves historical and cultural investigation, social questionnaire survey, and case analysis. It examines the utilisation of traditional Chinese auspicious patterns in the integration process of design, practice, and other disciplines. The endeavour described here is noteworthy in its efforts to promote the preservation and development of traditional culture, while also enriching the cultural dimensions of modern design (He, 2022). This study aims to offer fresh insights and approaches for the contemporary revitalization of traditional culture, thereby facilitating the dissemination and advancement of traditional culture in an increasingly globalised society.

Literature Review

The integration of smart furniture with design aesthetics reflects the interplay of technology, culture, and art. The introduction of automated home design in the early 20th century brought about the development of smart furniture. The development of computer and Internet technology has led to the evolution of intelligent furniture into a more complex product. Smart furniture initially prioritised convenience by incorporating features such as automatically adjustable seating and transformable tables (Liu et al., 2020). Over time, the functionality of the system

expanded to include integrated environmental control, health monitoring, and personalised experiences. The integration of high-tech features into furniture has been made possible with the emergence of Internet of Things (IoT) technology. This allows furniture to establish wireless connections with other devices, exchange data, and make intelligent adjustments, as depicted in [Figure 1](#).

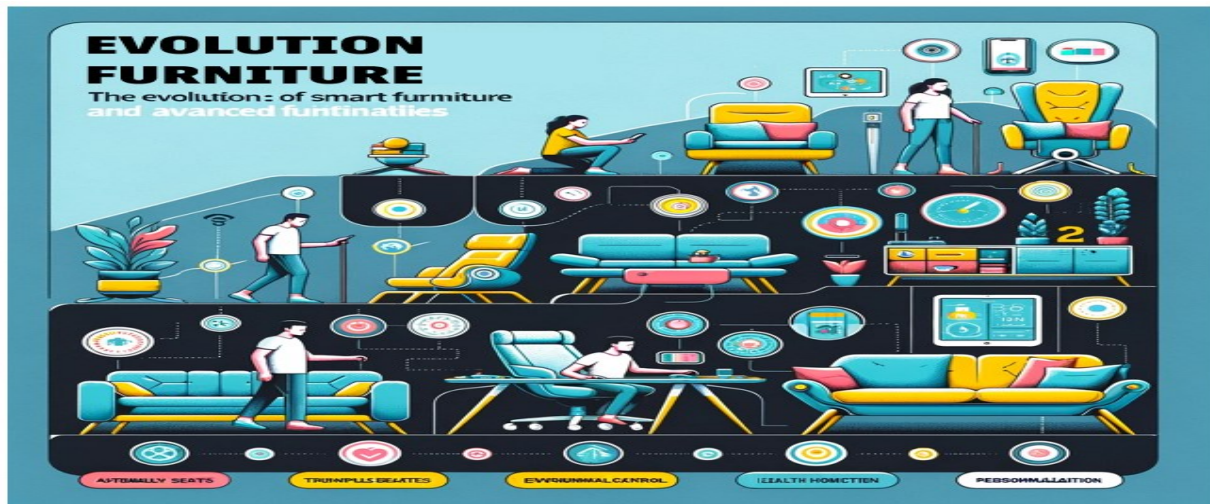


Figure 1: Evolution Process of Smart Furniture.

Chinese traditional auspicious patterns are filled with positive meanings and symbols, skilfully blending objects and homophonic elements to convey people's well-wishes, blessings, aspirations, and a sense of psychological support with an uplifting significance. Jiang Shiquan, a poet from the Qing Dynasty, beautifully expressed it: "People adore auspiciousness, and artists excel in celebrating it," highlighting the enduring affection for these patterns and their renewed relevance and vitality in the modern era. Patterns are essential in smart home decor, and they have a wide range of uses in smart furniture. Traditional Chinese auspicious motifs encompass a wide range of content, such as animals, plants, human figures, and text. These elements come together to create patterns that hold diverse meanings ([Zheng, 2016](#)).

With the improvement of living standards, there is a growing emphasis on the appreciation of aesthetics and a greater desire for comfort and quality in living spaces. The contemporary design market offers a wide range of styles, including American, Japanese, and European, each representing diverse cultural backgrounds. Over the past few years, the Chinese style has become incredibly popular among consumers, highlighting the growing trend and evolving aesthetics towards diversity in design

(Jing & Ab Aziz, 2023). Thus, a thorough understanding of traditional Chinese auspicious patterns is crucial for the development of Chinese design styles.



Figure 2: Types of Chinese Traditional Auspicious Patterns.

Moreover, the cultural and artistic significance of traditional auspicious patterns has been widely acknowledged. The dragon, phoenix, and lotus are culturally significant patterns in visual arts (Sun & Ab Aziz, 2023). The application of aesthetic principles in furniture design has evolved. Aesthetic standards have evolved significantly, transitioning from the intricate carvings and symmetrical proportions of ancient times to the minimalist lines and pragmatic approach of the modern era. The modern design movement prioritises the integration of form and function, adhering to the principle of 'form follows function' and placing emphasis on material innovation and craftsmanship. According to Zhang (2018), social and cultural changes have an impact on furniture design. In response to the demands of modern life, furniture designs are becoming multifunctional and modular, reflecting the values of simplicity, flexibility, and practicality. Figure 3 displays a range of smart furniture products, including sofas, tables, and wardrobes, featuring intricate auspicious patterns such as dragons, phoenixes, or flowers. The integration of these patterns into furniture design showcases the ability of traditional art to enhance the aesthetic appeal

of modern smart furniture (Zi, 2017).

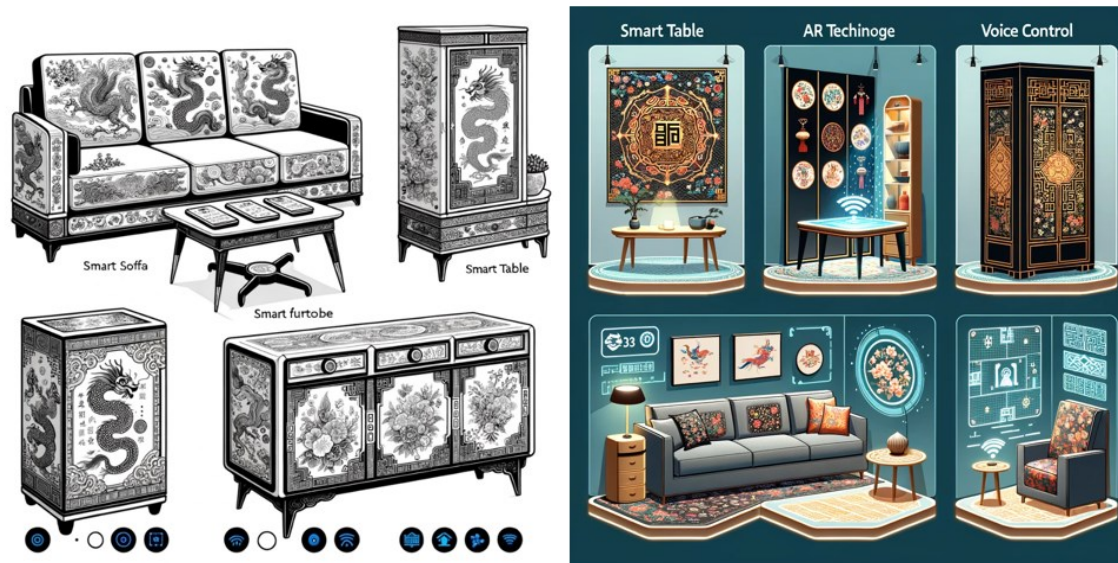


Figure 3: Application of Auspicious Patterns in Smart Furniture.

The Chinese traditional culture encompasses various concepts pertaining to 'harmony,' including the notions of diversity and unity between heaven and humanity. These concepts are fundamental to Chinese culture. The application of the principle of 'harmony' from Chinese tradition to modern interior design can generate novel artistic forms and styles. The design philosophy of this approach is to achieve harmony without uniformity by combining modern design materials and language with traditional Chinese elements, resulting in a culturally rich atmosphere (Zeng, 2016). Smart furniture embodies the concept of integration and fosters a harmonious relationship between humans and nature.

Western culture also values the unity between humans and nature. The architects of Fallingwater advocate for the integration of design with the surrounding environment, creating a harmonious relationship between people, architecture, and nature (Ouyang, 2017). This approach aims to enhance the interdependence between humans and the natural environment.

The integration of colour extraction from traditional auspicious patterns with modern design is crucial. The colour combinations in these patterns symbolise China's rich historical and cultural heritage, reflecting traditional Chinese cultural essence. The traditional Chinese understanding of colour is closely associated with the theory

of the Five Elements (metal, wood, water, fire, earth), which corresponds to the colours black, red, blue, white, and yellow. When combined with auspicious patterns like clouds, colours acquire human emotions, personality, cultural significance, and political connotations, despite their inherent lack of emotion.

The use of traditional colours in interior space design carries significant cultural and spiritual connotations, providing both decorative and symbolic elements while emphasising simplicity. The authors (Krejcar et al., 2019) emphasise that these showcases exemplify the charm of traditional Chinese residential culture and the national spirit, thereby highlighting distinct Chinese characteristics. Figure 4 presents a comparison of various interior design styles, including Chinese, American, Japanese, and European. The Chinese style exhibits traditional patterns and furniture, the American style showcases a modern and spacious layout, the Japanese style emphasises minimalism and natural elements, and the European style encompasses classic and elegant designs. Each section emphasises the distinct cultural background and aesthetic characteristics of its corresponding style.

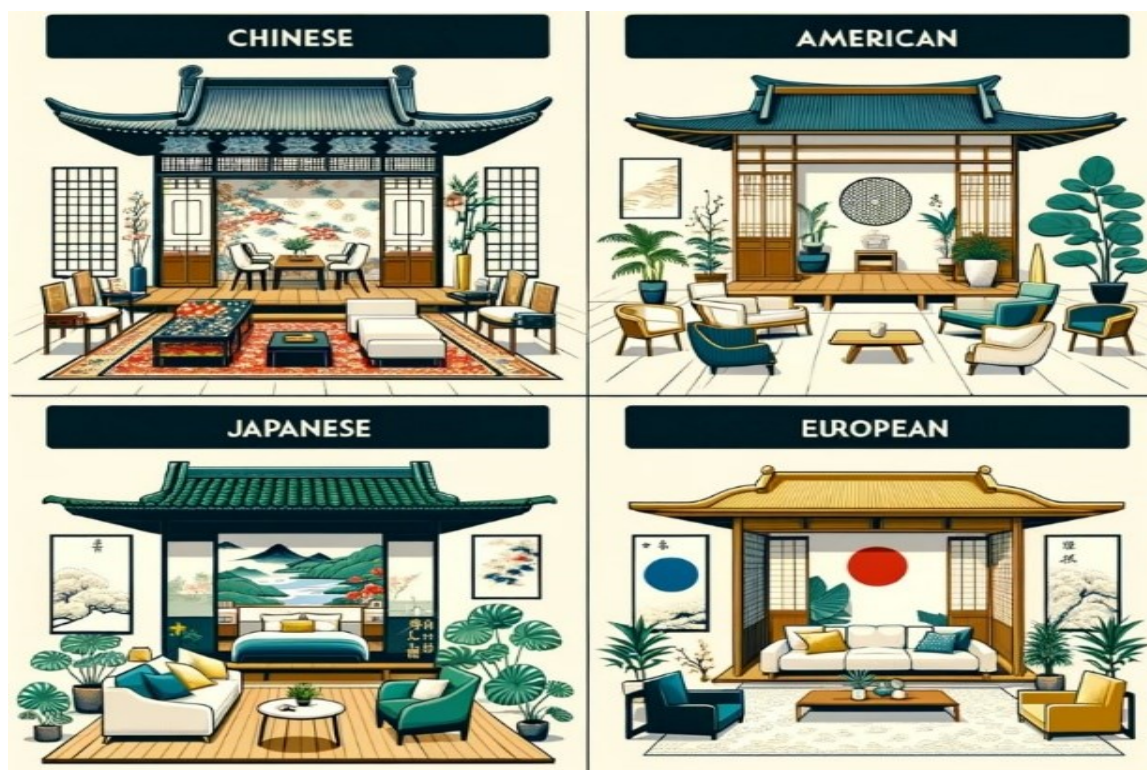


Figure 4: Comparison of Different Design Styles.

Smart furniture is a manifestation of social progress at a specific point in

history, reflecting the level of civilization of a nation. The furniture produced during the Ming and Qing dynasties is highly regarded in the field of Chinese furniture. It has been greatly valued by furniture researchers and collectors worldwide) (Tokuda et al., 2004). The blind adoption of Western trends in modern Chinese furniture design during its rapid development was disappointing, as it often led to the replication of traditional furniture without incorporating national characteristics into modern design. However, the gradual awakening to traditional Chinese culture is encouraging, thanks to the evolution of modern Chinese furniture design and the responsible exploration by dedicated individuals. The symbols of cultural art have a long history and are currently experiencing a resurgence in their ability to evoke historical memories of traditional culture (Chesher et al., 2023). Individuals are increasingly finding inspiration in Chinese historical elements and seeking common ground with modern Chinese furniture design. This approach emphasises national culture while incorporating contemporary aesthetic sensibilities.

The development of smart furniture reflects technological advancement, lifestyle changes, and the fusion of cultural and artistic values. The study by Wessels et al. (2020) examines the use of design aesthetics in furniture design and its relationship to societal and cultural changes. The integration of intelligent furniture and design aesthetics offers a novel approach to creating a functional and visually appealing living space.

Theoretical Framework and Research Methods

Design Theory and Aesthetic Principles

This study examines the historical significance, cultural connotation, and application of traditional auspicious patterns in various design contexts through a literature review and related research. Extensive research has been conducted on the evolving design process of smart furniture by scholars. This research serves as a basis for this paper, avoiding redundant studies and facilitating the establishment of more focused goals and research directions. Sun (2016) examined the integration of traditional cultural themes and modern smart furniture to propose research concepts

for incorporating auspicious patterns in smart furniture. Incorporating favourable patterns into intelligent furniture can enhance its aesthetic appeal and enrich its cultural significance. This integration ensures that smart furniture products align with the aesthetic preferences of Chinese consumers, while also fostering the enhancement and reinvention of auspicious patterns. Essentially, incorporating traditional Chinese auspicious patterns into the design of smart furniture gives these modern pieces a rich cultural significance and a touch of innovation. It effortlessly combines ancient traditions with modern technology.

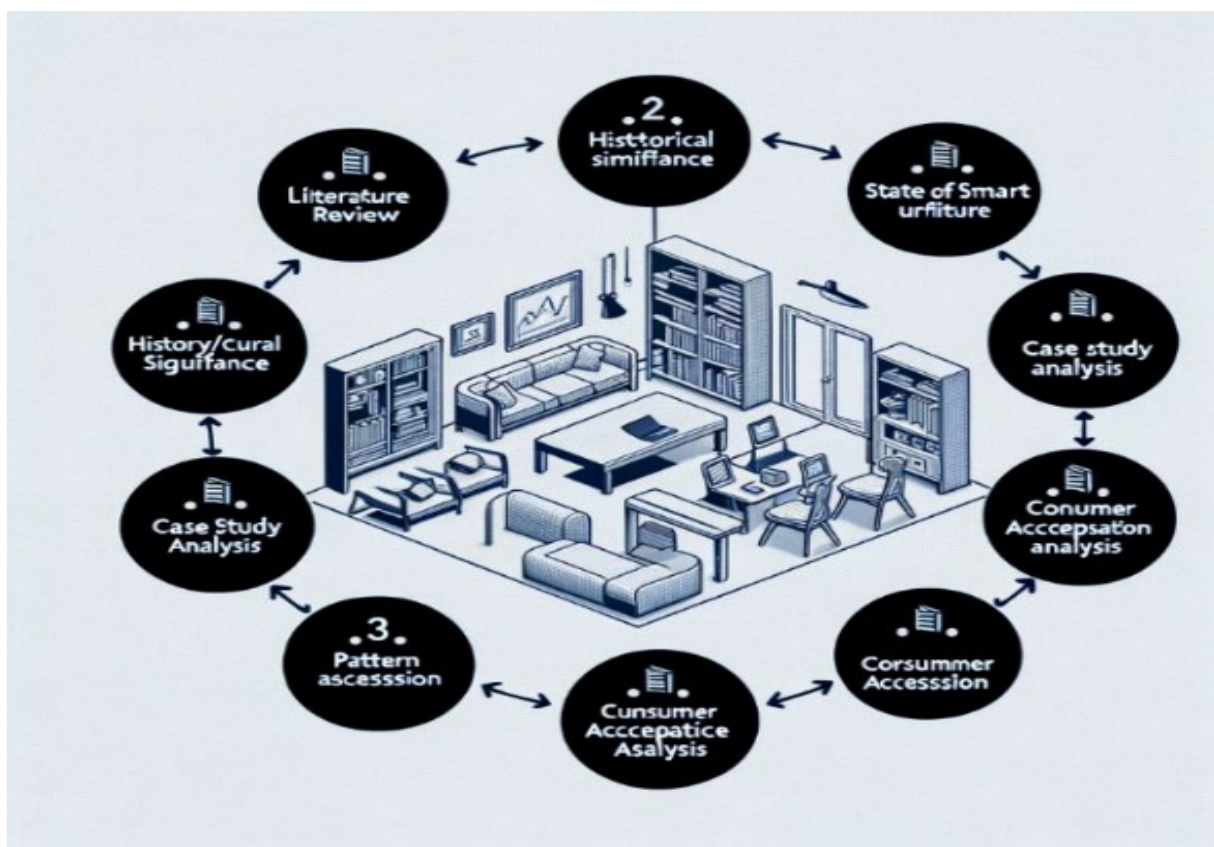


Figure 5: Research flow Chart.

Table 1 presents a hypothetical viewpoint, illustrating the variation in preferences and acceptance levels for smart furniture among different groups. For instance, younger individuals, like students, may not find smart furniture as appealing as professionals do. Additionally, there is a noticeable difference in how traditional patterns are embraced. In addition, opinions on design aesthetics vary among various age groups and occupations.

Table 1: User Preference Survey Results.

Age Group	Gender	Profession	Liking for Smart Furniture	Acceptance of Traditional Patterns	Purchase Intention	View on Design Aesthetics
18-25	Male	Student	2	3	2	1
26-35	Female	Professional	5	2	5	2
36-45	Male	Entrepreneur	3	5	2	4
46-55	Female	Homemaker	3	5	1	5
Over 56	Male	Retired	1	5	3	4

Over the past few years, there has been a significant enhancement in the field of design research in furniture product design, with a strong focus on meeting user needs. The methods and foundational theories mainly include the Kano Model, Analytic Hierarchy Process (AHP), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), Structural Equation Modelling (SEM), Theory of Inventive Problem Solving (TRIZ), and the KJ Method, among others. Researchers have incorporated these users' requirements into a comprehensive framework for designing and creating different furniture products. As an example, [Fang \(2021\)](#) utilised a combination of AHP and fuzzy comprehensive evaluation along with emotional design to carry out a practical design and evaluation of gaming chairs. In their study, [Deng et al. \(2012\)](#) employed the SEM model to examine the practicality of design schemes and the correlations among different attributes in kitchen cabinet design. Scholars and practitioners have developed a method of identification that focuses on user needs. They have combined the Kano Model with SEM and demonstrated its practical validation with a white cane. [Tan et al. \(2023\)](#) have developed an evaluation model that combines AHP with TOPSIS to study the design of children's bedroom furniture. Researchers have combined TRIZ theory with the KJ method to create innovative office storage cabinets that greatly improve the user experience for office groups.

This paper utilises a questionnaire to assess the acceptance and demand for incorporating traditional auspicious patterns into smart furniture design, drawing inspiration from the research methods employed by the aforementioned scholars. By adopting this approach, we can gain insights into the requirements of consumers and assess the feasibility of this research methodology. Additionally, the questionnaire encourages respondents to contribute their suggestions and ideas regarding the

incorporation of traditional auspicious patterns into smart furniture. This valuable input will provide guidance and inspiration for product design. In this design study, the questionnaire survey design focuses primarily on user needs and market trends. The questionnaire survey explores consumers' understanding of smart furniture and investigates their purchase intention, conducting a more in-depth investigation. It also covers inquiries regarding user characteristics, such as personal financial status, age, gender, educational background, and occupation. Surveys can be conducted both online and in physical store settings, with their reach extended through chat software or email communications to collect a more extensive sample size.

The design and appearance of smart furniture play a crucial role in capturing the attention and ensuring the satisfaction of users. If individuals value and embrace the aesthetic appeal of smart furniture, they are more inclined to buy and utilise these products. As a result, it is crucial for manufacturers and designers of smart furniture to prioritise aesthetic design in order to improve user experience and stay competitive in the market. In this context, the focus is on the artistic value of traditional Chinese auspicious patterns. The colours and shapes of these patterns play a crucial role as key elements. These patterns highlight the idea that every design serves a specific purpose, and that purpose is always positive and favourable. Every decorative motif represents a multitude of meaningful symbols, capturing the artist's perceptions and visions of life. These designs draw inspiration from nature and often showcase plants, animals, and mythical creatures in intricate patterns with unique and captivating shapes. Different patterns in architecture and furniture, ranging from porcelain to silk, convey aspirations and visions of a beautiful life through their shapes and colours.

In the realm of smart furniture design, the key factors to consider are the aesthetic appeal and practicality of the pieces. Smart furniture is a perfect blend of furniture and appliances, seamlessly incorporating cutting-edge features of home appliances into your furniture, thereby enhancing its functionality. As an example, the integration of smart chargers into sofas allows for convenient device charging, while the inclusion of intelligent touchscreens on dining tables enables remote ordering and other features. These cutting-edge features improve the functionality and ease of use of furniture. When it comes to combining home appliance and furniture design, it's

important to think about how the forms and styles of both can work together to create a unified and visually pleasing look. Exploring novel uses of favourable patterns in the functionality of intelligent furniture, as outlined in [Table 2](#).

Table 2: The Different Variables and Sub-Variables in the Smart Furniture Research.

Variable Type	Variable Name	Description
Dependent	Aesthetic Effect of Smart Furniture	The impact of smart furniture's design and appearance on user attraction and satisfaction
Dependent	User Acceptance	The degree of user liking and willingness to use smart furniture
Independent	Artistic Value of Traditional Patterns	Including color and shape, emphasizing the auspicious meaning of each pattern
Independent	Decoration of Smart Furniture	Considering the consistency of form and style between appliances and furniture
Independent	Functionality of Smart Furniture	Innovative features integrated into smart furniture, such as smart chargers, touch screens
Sub-variable	Innovative Application of Pattern Shape in Smart Furniture Decoration	Applying traditional patterns' shapes in the decoration of smart furniture
Sub-variable	Innovative Application of Pattern Color in Smart Furniture Decoration	Applying traditional patterns' colors in the decoration of smart furniture
Sub-variable	Application of Auspicious Patterns in Smart Furniture Functionality	Incorporating traditional patterns into the functional design of smart furniture

Questionnaire Survey

Table 3: Questionnaire Results.

Basic Information	Classification	Frequency	Percentage
What is your age?	18-25	10	12.2
	26-35	28	34.1
	36-45	18	22
	46-55	17	20.7
	56+	9	11
What is your gender?	Male	41	50
	Female	41	50
What is your monthly household income?	Under 15,000	16	19.5
	15,000-30,000	43	52.4
	Above 30,000	23	28
The city you live in is in the south or north of China?	South	41	50
	North	41	50
What is your marital status?	Married	67	81.7
	Single	10	12.2
	Divorced	5	6.1

To ensure the accuracy of the data, we specifically targeted a diverse population encompassing various age groups, genders, and occupations. A stratified random sampling method was utilised in this study to ensure a population sample that accurately reflects the diversity of the population. This method also contributes

to reducing sampling bias and enhancing the reliability and validity of research results. The data collected is analysed to gain insights into the correlation between different variables. For example, we examine how users' preferences for specific auspicious patterns relate to their satisfaction with furniture.

The survey participants in this study primarily consist of individuals between the ages of 26-35, making up 47% of the total sample. Additionally, middle-aged individuals between the ages of 36-45 account for 32% of the overall respondents, while those over the age of 56 make up 21% of the total participants. When it comes to gender, both male and female respondents had an equal share of 50% each. Based on the respondents' profits, a significant majority (approximately 52.4%) have a monthly household income ranging from 15,000 to 30,000 yuan. The research on subjects was evenly distributed between China's southern and northern regions, with each region accounting for 50% of the participants. This distribution of locations ensures a diverse range of cultural and geographical preferences. A significant majority of respondents (81.7%) were found to be married. Interestingly, 12.2% of the participants were single, while 6.1% had experienced divorce. The specialised distribution of these survey agencies will help gather information on the research path, especially in terms of tailored intelligent fixtures created to cater to the unique needs and preferences of specific demographic groups.

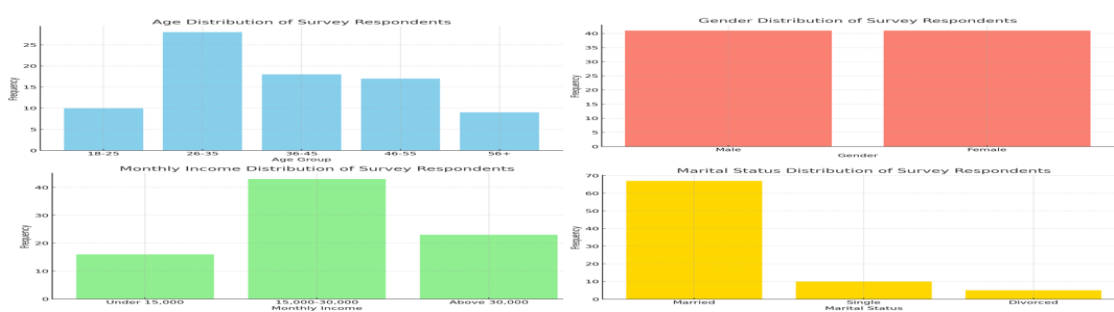


Figure 6: Survey Results.

Reliability is an important factor to consider when evaluating the consistency and dependability of survey responses across different instances and locations. When conducting statistical analysis, researchers often use Cronbach's alpha (α) to assess the reliability and consistency of a questionnaire. The typical range for Cronbach's alpha

is between zero and 1. A range of alpha coefficients from 0.65 to 0.70 is considered to be the minimum threshold for desirability. A range of 0.7 to 0.8 indicates excellent reliability, while a range of 0.8 to 1.0 signifies excessive reliability. The self-belief result is demonstrated in Figure 6.

In this study, the author utilised SPSS software to compute Cronbach's alpha coefficient for each variable and dimension. This step was essential in determining whether the empirical data collected for each variable and dimension met the criteria for internal consistency and reliability. The precise outcomes of these calculations would ascertain the strength of the survey data and its appropriateness for subsequent analysis.

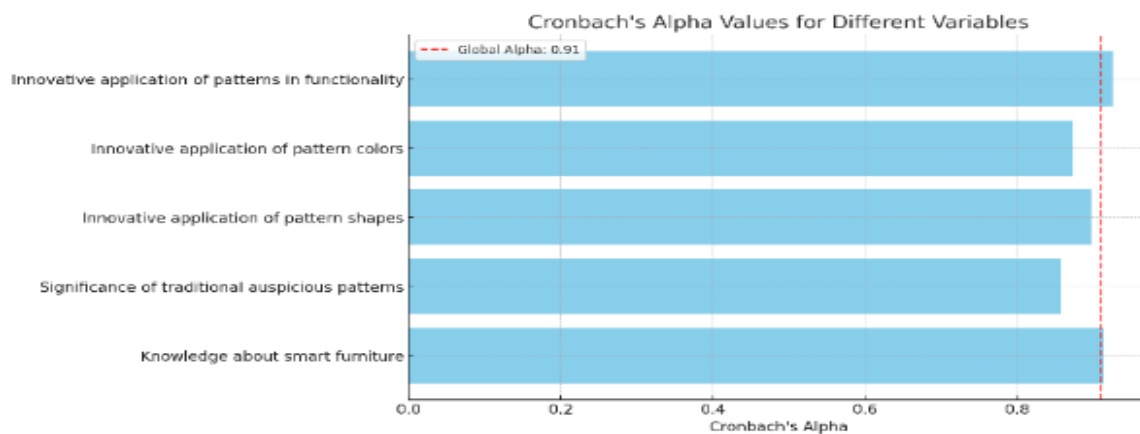


Figure 7: Results of Questionnaire Credibility.

The questionnaire's reliability evaluation reveals the establishment of 27 size gadgets, which correspond to 5 latent variables. The reliability of the standard questionnaire, as measured by Cronbach's alpha, was found to be 0.910. The reliability values for the variables of gender have been as follows: Variable A is measured at 0.913, Variable B at 0.857, Variable C at 0.897, Variable D at 0.873, and Variable E at 0.926. The statistical findings demonstrate that the reliability coefficients of all variables surpass the standard threshold of 0.7, indicating that the questionnaire is reliable and consistent.

In addition, the Corrected Item-Total Correlation (CITC) for each observable variable in relation to its latent variable exceeded the 1/2 benchmark, indicating that the questions were suitable for each latent variable and that the questionnaire had good overall reliability. In addition, a thorough examination of each aspect object was

utilised. In previous studies, it was found that removing any individual item did not result in an improvement in the overall Cronbach's Alpha coefficient. This suggests that each item was well-constructed and made a positive contribution to the reliability of the questionnaire. An Exploratory Factor Analysis (EFA) is used to assess the structural validity of the scale, with the goal of confirming the consistent and reliable nature of the measured variables for each underlying factor. EFA is a commonly utilised tool for assessing the validity of scales (Jiayu Wu, 2022). For this research, the analysis of the composition of each dimension was conducted using the SPSS software programme 21.

When conducting aspect evaluation for validity testing, the initial step involves verifying if the statistics meet the necessary requirements for factor analysis. In order to proceed, two important requirements must be met. One important consideration is that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy should be higher than 0.7. This indicates the suitability of the pattern dimension for aspect analysis in an academic context. In the second scenario, it is expected that Bartlett's Test of Sphericity will produce a value significantly below 0.05. This indicates a strong correlation between the observable variables, making it suitable for issue evaluation. Meeting these two criteria suggests a connection between the observed variables, implying that the dataset is ready for analysis.

Table 4: KMO and Bartlett's Test of Sphericity.

	KMO	0.808
Bartlett's test of sphericity	Chi-square approximation	1530.54
	Freedom degree	351
	Sig	0.000

The validity test results indicate that the KMO test value of the survey data is 0.808. This value exceeds 0.70, suggesting that the questionnaire results are suitable for data analysis. When it comes to data analysis, one powerful tool that can be used is the logistic regression model (LR). It allows for the effective utilisation of collected data. This model is well-suited for studying the application of colour and shape of traditional auspicious patterns in smart furniture design. Once the data has been collected, it can be entered into the SPSS software for a thorough analysis. Initially, a descriptive statistical analysis is conducted to gain insights into the basic trends and distributions

within the dataset. This analysis involves calculating frequency, percentage, mean, and standard deviation, which helps establish a solid understanding of the general characteristics of the data. Following that, a thorough statistical analysis was conducted to further investigate the correlation between the variables. Following the statistical analysis, comprehensive documents are prepared to provide a detailed explanation of the analysis results. Furthermore, it is essential to address any challenges that arise during the statistical process. Using SPSS for statistical analysis provides a comprehensive and thorough approach to data processing.

Case Research

The case of smart furniture design demonstrates the successful integration of technology and design aesthetics, resulting in the creation of practical and visually appealing products. The renderings of these products can be seen in [Figure 8](#). Utilising traditional auspicious patterns in contemporary design demonstrates the seamless integration of traditional cultural elements with modern aesthetics and technology. As an illustration, incorporating the traditional "Fu" character pattern into the surface design of a smart coffee table not only visually showcases the elegance of Chinese culture, but also serves additional purposes. Through intelligent induction technology, the pattern can be illuminated when the user approaches, creating an interactive and enjoyable experience. The smart lampshade features a traditional lotus pattern and utilises LED technology to serve as both a light source and a medium for conveying Chinese cultural aesthetics.

The combination of traditional elements and modern design concepts can result in products that possess both historical depth and a contemporary aesthetic. The smart dresser, which draws inspiration from ancient furniture, has been updated both in terms of materials and functionality. The dresser combines simple lines and natural colours with a touch screen and intelligent lighting system, creating a blend of traditional aesthetics and modern functionality. The smart table incorporates traditional landscape painting by utilising modern digital printing technology to accurately reproduce the intricate details of the artwork. These examples of smart furniture design demonstrate the successful integration of traditional auspicious

patterns with the demands of contemporary living through intelligent technology and innovative design approaches. This integration enhances the aesthetic value and functionality of the product, while effectively inheriting and carrying forward traditional culture. It brings new inspiration and direction to modern design.



Figure 8: Effect of Smart Furniture.

Discussion

This study conducted a thorough investigation into the utilisation of traditional auspicious patterns in smart furniture design and its impact on user acceptance. The research employed questionnaire surveys and case analysis to delve into this topic. The findings indicate that incorporating traditional patterns into smart furniture can greatly enhance users' aesthetic experience and cultural resonance. The introduction of these products improves both the aesthetic appeal and the user's comprehension and appreciation of the cultural significance of the product. The survey results indicate that the majority of respondents expressed a strong interest in smart furniture that incorporates traditional cultural elements. The acceptance of furniture products that combine traditional cultural significance with modern scientific and technological functions is particularly high among young consumer groups.

Therefore, in the subsequent process of optimising the product, it is possible to effectively integrate both traditional and modern elements in order to satisfy the market's dual requirements for novelty and cultural richness. The questionnaire results indicate that incorporating traditional patterns in smart furniture design serves

as both a visual embellishment and a means of cultural and historical preservation. This design method enhances people's understanding and respect for traditional culture by adding a unique cultural flavour to modern homes. In addition, this design method facilitates the interaction between traditional art and modern technology, offering a novel approach to the advancement of traditional culture in today's society. Nevertheless, it is important to exercise caution when incorporating traditional patterns into contemporary design to prevent any potential misinterpretation or misuse of cultural elements. Designers must possess a thorough understanding of the cultural significance of traditional motifs in order to create new works that appropriately incorporate and honour the original traditional culture.

The integration of traditional cultural elements into design methods will be a significant trend in smart furniture due to consumers' growing demand for product personalisation and cultural connotation. This can fulfil individuals' desires for aesthetically pleasing products and cultural variety, while also fostering the harmonious cohabitation of traditional culture and contemporary way of life. Furthermore, as technology continues to advance, particularly with the integration of augmented reality (AR) and virtual reality (VR), future smart furniture designs are expected to exhibit even greater innovation in terms of interaction and user experience. This will enhance users' immersion and experience by providing a more expressive platform for the modern representation of traditional culture. Applying traditional auspicious patterns to smart furniture design not only preserves traditional culture but also influences future furniture design trends. This design approach meets the market's demand for novelty while also demonstrating a commitment to respecting and preserving cultural heritage. The ongoing integration of technology and culture is expected to lead to the emergence of more innovative design products that enhance aesthetic effects and cultural inheritance.

Conclusion

This paper examines the reproduction of traditional auspicious patterns in intelligent furniture design and its impact on aesthetic effect and cultural inheritance through questionnaire surveys and case analysis. The study findings indicate that

incorporating traditional auspicious patterns into the design of smart furniture can enhance the aesthetic value and cultural significance of products, as well as contribute to individuals' cultural identity and experience. This diagram method not only provides culturally significant merchandise to customers, but also facilitates the protection and evolution of traditional culture. This study has examined the significant impact of this style on the current design industry, highlighting both its challenges and opportunities through case research and personal surveys.

Designers and producers should prioritise the incorporation of typical cultural factors in clever furnishings design, based on these findings. Designers should explore the cultural heritage and significance of traditional patterns in order to create designs that acknowledge subcultures while also conforming to contemporary aesthetics. Producers must find ways to combine traditional craftsmanship with modern manufacturing techniques while preserving the cultural authenticity and high quality of the products. Furthermore, conducting market research and gathering personal feedback can enhance understanding of client desires and preferences for intelligent furniture designs that incorporate cultural elements. This can inform product development and marketing strategies.

Future research should also investigate the role of common cultural factors in various design domains, such as wearable technology and interior decoration, to fully understand the influence and management of everyday lifestyle in contemporary design. Furthermore, it is important for research to prioritise the examination of consumer acceptance and reactions to traditional elements within diverse cultural contexts, in order to facilitate the advancement of cross-cultural design. Future research could explore the application of advanced technologies, such as virtual and augmented reality, to enhance the presentation and immersion of traditional cultural elements. This has the potential to greatly enhance opportunities for innovative design.

The application of traditional auspicious patterns in smart furniture necessitates their adaptation to modern aesthetics and suitable modifications. The elimination of feudal superstition from these patterns is crucial, while preserving elements that celebrate a good life and promote a positive lifestyle. Traditional auspicious patterns exhibit a wide range of rich and diverse representations. The

application of traditional Chinese auspicious patterns in practical case designs can be improved through deep learning and research. The application of traditional auspicious patterns in interior space design can be enhanced through simplification, refinement, and reconstruction, along with the use of modern design materials. This approach enables a more rational inheritance and development of these patterns.

References

- Chesher, C., Hanchard, M., Humphry, J., Merrington, P., Gangneux, J., Joss, S., Maalsen, S., & Wessels, B. (2023). Discovering smart: Early encounters and negotiations with smart street furniture in London and Glasgow. *Digital Geography and Society*, 4, 100055. <https://doi.org/10.1016/j.diggeo.2023.100055>
- Deng, X., Xu, B., & Wang, L. (2012). Elements of cabinet design under the concept of Interaction design: Empirical analysis based on SEM. *Journal of Forest Engineering*, 7(2), 199-206.
- Fang, K. (2021). Research on Emotional design of home computer chair based on fuzzy Analytic Hierarchy Process. *Shanghai: East China University of Science and Technology*.
- Han, C. (2014). A study on application of Chinese auspicious pattern in modern design. *Asian Social Science*, 10(12), 53-58. <http://dx.doi.org/10.5539/ass.v10n12p53>
- He, Z. (2022). [Retracted] Study on the Application of Traditional Chinese Auspicious Images in Environmental Art Design Based on VR Senses. *Computational Intelligence and Neuroscience*, 2022(1), 1189613. <https://doi.org/10.1155/2022/1189613>
- Jing, S., & Ab Aziz, A. (2023). The Characteristics of Chinese Traditional Auspicious Patterns in Design. *Asian Journal of Research in Education and Social Sciences*, 5(1), 122-136. <https://doi.org/10.55057/ajress.2023.5.1.13>
- Krejcar, O., Maresova, P., Selamat, A., Melero, F. J., Barakovic, S., Husic, J. B., Herrera-Viedma, E., Frischer, R., & Kuca, K. (2019). Smart furniture as a component of a smart city – definition based on key technologies specification. *IEEE Access*, 7, 94822-94839. <https://doi.org/10.1109/ACCESS.2019.2927778>
- Liu, E., Liu, L., Wang, J., Jin, Q., Yao, C., & Ying, F. (2020). Int-Papercut: An Intelligent Pattern Generation with Papercut Style Based on Convolutional Neural

- Network. In *2020 15th IEEE Conference on Industrial Electronics and Applications (ICIEA)* (pp. 59-67). IEEE. <https://doi.org/10.1109/ICIEA48937.2020.9248173>
- Ouyang, Y. (2017). Cute Visions: Designing an Interplay Between Traditional Chinese Auspicious Patterns and Japanese Kawaii Cuteness. <https://openrepository.aut.ac.nz/items/bee3ba7b-f26c-4b9b-9933-cd89ee01aa90>
- Shi, M., & Liu, C. (2021). Design Inspired by Intangible Cultural Heritage of Taoyuan Woodcarving Craft Platform. In *Distributed, Ambient and Pervasive Interactions: 9th International Conference, DAPI 2021, Held as Part of the 23rd HCI International Conference, HCII 2021, Virtual Event, July 24–29, 2021, Proceedings 23* (pp. 250-259). Springer. https://doi.org/10.1007/978-3-030-77015-0_18
- Sun, J., & Ab Aziz, A. (2023). Exploring the redesign value of Chinese traditional Auspicious patterns in the context of modern design. *EDucatum Journal of Social Sciences*, 9(1), 12-26. <https://doi.org/10.37134/ejoss.vol9.1.2.2023>
- Sun, L. (2016). Study on the application of Chinese traditional patterns in modern graphic design. In *2nd International conference on arts, design and contemporary education* (pp. 404-406). Atlantis Press. <https://doi.org/10.2991/icadce-16.2016.92>
- Tan, Y., Yang, X., & Zhang, Z. (2023). Research on furniture design of children's bedroom based on AHP TOPSIS method. *Forest Products Industry*, 60(4), 69-74. <https://doi.org/10.19531/j.issn1001-5299.202304012>
- Tokuda, H., Yang, L., Guo, M., Gao, G., & Jha, N. (2004). Smart furniture: A platform for creating context-aware ubiquitous applications everywhere. In *EUC* (pp. 1112). Springer. <https://doi.org/10.1007/b100039>
- Wessels, B., Humphry, J., Gangneux, J., Hanchard, M., Chesher, C., Joss, S., Maalsen, S., Merrington, P., Sadowski, J., & Dowling, R. (2020). Smart Publics: Public perceptions of smart street furniture in London and Glasgow: insights for policy and practice. <https://eprints.gla.ac.uk/221600/1/221600.pdf>
- Wu, J. (2022). Research on the Application of Chinese Traditional Auspicious Elements in Modern Jewelry Design. *Frontiers in Humanities and Social Sciences*, 2(3), 9-13. [https://doi.org/10.29561/FHSS.202203_2\(3\).0003](https://doi.org/10.29561/FHSS.202203_2(3).0003)
- Wu, S. (2022). Application of Chinese traditional elements in furniture design based

- on wireless communication and artificial intelligence decision. *Wireless Communications and Mobile Computing*, 2022(1), 7113621. <https://doi.org/10.1155/2022/7113621>
- Zeng, J. (2016). The Application Of Auspicious Patterns In Decoration Of Traditional Ancient Houses In Sichuan. In *2016 4th International Education, Economics, Social Science, Arts, Sports and Management Engineering Conference (IEESASM 2016)* (pp. 1257-1262). Atlantis Press. <https://doi.org/10.2991/ieesasm-16.2016.276>
- Zhang, J. (2018). A Study on Chinese Traditional Auspicious Fish Pattern Application in Corporate Identity Design. *Cartoon and Animation Studies*, 349-382. <https://doi.org/10.7230/KOSCAS.2017.50.349>
- Zheng, W. (2016). Research on Designing Intentions of Suzhou Style Chair in Ming Dynasty. In *2nd International Conference on Arts, Design and Contemporary Education* (pp. 724-727). Atlantis Press. <https://doi.org/10.2991/icadce-16.2016.174>
- Zi, W. (2017). The Influence of Traditional Auspicious Thoughts on Chinese Belly-Band Patterns. *Chinese Studies*, 6(03), 201-212. <https://doi.org/10.4236/chnstd.2017.63020>