

Ethical Rationality in Chinese Baijiu Packaging Design: Challenges and Solutions

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Abstract

This study delves into the ethical quandaries within Chinese Baijiu packaging design, spotlighting issues such as deceptive visuals, superfluous packaging, and environmentally detrimental practices. By deploying a design ethics framework, it pinpoints crucial concerns encompassing false advertising, cultural misappropriation, deficient health communication, and non-degradable materials. To counter these challenges, the “Simple and Natural” (SN) concept is introduced, firmly rooted in the principles of authenticity, responsibility, cultural integrity, professionalism, and sustainability. Through its application in bottle architecture, outer packaging, cultural amalgamation, functionality, and material selection, this research demonstrates how ethical design can augment product quality, reestablish consumer trust, and foster sustainable consumption. It effectively bridges the chasm between design ethics theory and practice, proffering actionable insights for nurturing ethical and sustainable development in Baijiu packaging.

Keywords: Design Ethics, Packaging Design, Baijiu, Rational Design, SN Concept

Introduction

In the post-pandemic epoch, the rational design of Baijiu packaging has assumed heightened significance, mirroring society’s escalating emphasis on ethical and sustainable values. Baijiu, an indispensable element of Chinese culture, is deeply entrenched in social rituals like weddings, gatherings, and business receptions. Consumers instinctively associate well-crafted packaging with product quality and brand prestige, thereby exerting a direct influence on purchasing decisions. Despite the industry’s prodigious growth, achieving a market volume of 141.25 million liters in 2022 and reaching 1,433.49 million liters in 2023 (Ai Media Consulting, 2023), it is beleaguered by substantial ethical predicaments. Problems such as excessive packaging, misleading visuals, and the disregard for cultural heritage and sustainability have eclipsed the product’s traditional eminence.

Current research in this domain has predominantly fixated on aspects like traditional culture integration, material selection, and brand construction. However, a discernible gap persists in comprehensively addressing ethical concerns and actively promoting sustainable practices. This study endeavors to dissect these issues meticulously, accentuating the disjuncture between Baijiu packaging and its historical and cultural moorings. It aspires to integrate ethical principles into Baijiu packaging design, proffering both theoretical revelations and pragmatic solutions to steer designers and manufacturers in the industry. As Devon and Van (2004) suggest, design inherently involves ethical decision-making, where choices reflect deeply rooted value judgments.

Specifically, the research is centered around three principal objectives: Firstly, to meticulously identify and analyze the ethical shortcomings rife in current Baijiu packaging practices, such as the prevalence of excessive and deceptive designs. Secondly, to formulate a robust design framework predicated on the “Simple and Natural” (SN) concept, systematically integrating ethical principles into the packaging redesign process. Thirdly, to rigorously examine the far-reaching impact of ethical packaging on consumer perceptions, sustainable consumption patterns, and the cultural and functional value of Baijiu products. By fulfilling these objectives, this study endeavors to not only enhance the ethical and sustainable dimensions of Baijiu packaging but also contribute meaningfully to the broader field of design ethics.

Literature Review

Design ethics, pioneered by Victor Papanek in the late 1960s, has placed human-centered and environmentally responsible design at the forefront. In his seminal work *“Design for the Real World”* (Papanek & Fuller, 1972), Papanek vehemently critiqued design practices that were myopically driven by economic or aesthetic motives. Instead, he ardently advocated for approaches that tenaciously uphold human dignity, social welfare, and environmental sustainability. His ideas have laid a solid foundation for modern design ethics, which has since burgeoned into an interdisciplinary field, deftly integrating principles of social responsibility, sustainability, and the harmonious alignment of aesthetics with ethical considerations (Jiang, 2009).

Since the late 1990s, design ethics has witnessed continuous evolution, with scholars such as Huang et al. (2023) making notable contributions. They have accentuated ecological principles in Chinese design, such as “human scale” and “design participation,” which astutely address both environmental and societal concerns. Similarly, An et al. (2022) have zeroed in on sustainable practices in packaging, forcefully advocating for the utilization of eco-friendly materials and waste reduction. Nevertheless, despite these advancements, the application of design ethics in specific sectors like packaging design, particularly within the context of traditional Chinese products such as Baijiu, remains relatively underdeveloped.

Packaging design has increasingly been recognized as a potent medium for cultural transmission, consumer engagement, and environmental stewardship (Halabi & Hands, 2018). Studies have probed into themes like cultural heritage preservation and sustainability. For instance, traditional Chinese motifs in Baijiu packaging have been shown to buttress cultural identity, while sustainable materials have been demonstrated to alleviate ecological concerns. However, the theoretical focus of extant research often falls short of providing tangible and actionable guidelines for surmounting the practical challenges endemic to Baijiu

packaging. These challenges encompass misleading designs that corrode consumer trust (Wilkins et al., 2016), the neglect of health considerations by prioritizing lifestyle imagery over alcohol risk awareness (Wang, 2021; Collaborators, G.B.D. & Ärnlöv, 2020; Hammer et al., 2018), cultural exploitation via the over-commercialization of traditional symbols, and environmental harm induced by non-degradable materials, as highlighted in reports by the Shanghai Municipal Administration of Market Supervision (2021).

Given Baijiu’s profound cultural significance and the ethical lacunae in its packaging design, this study is poised to fill this critical void. By systematically integrating ethical principles into Baijiu packaging, it aims to not only address the existing design challenges but also pioneer innovative practices within the industry. Moreover, it endeavors to offer valuable insights and practical templates for designers, manufacturers, and policymakers, thereby facilitating the cultivation of ethical and sustainable practices that pay due homage to cultural traditions and actively support environmental goals. Ultimately, this study aspires to galvanize further exploration of design ethics in traditional product sectors, propelling the advancement of responsibility, authenticity, and sustainability in design practice.

Methodology

This study erects an integrative framework firmly anchored in the principles of authenticity, responsibility, professionalism, culturality, and sustainability, which together constitute the bedrock of ethical packaging design. It presents a design ethics-centered framework as a methodological lodestar for attaining rational Baijiu packaging design, see Figure 1. The proposed framework is methodically structured around four cardinal objectives:

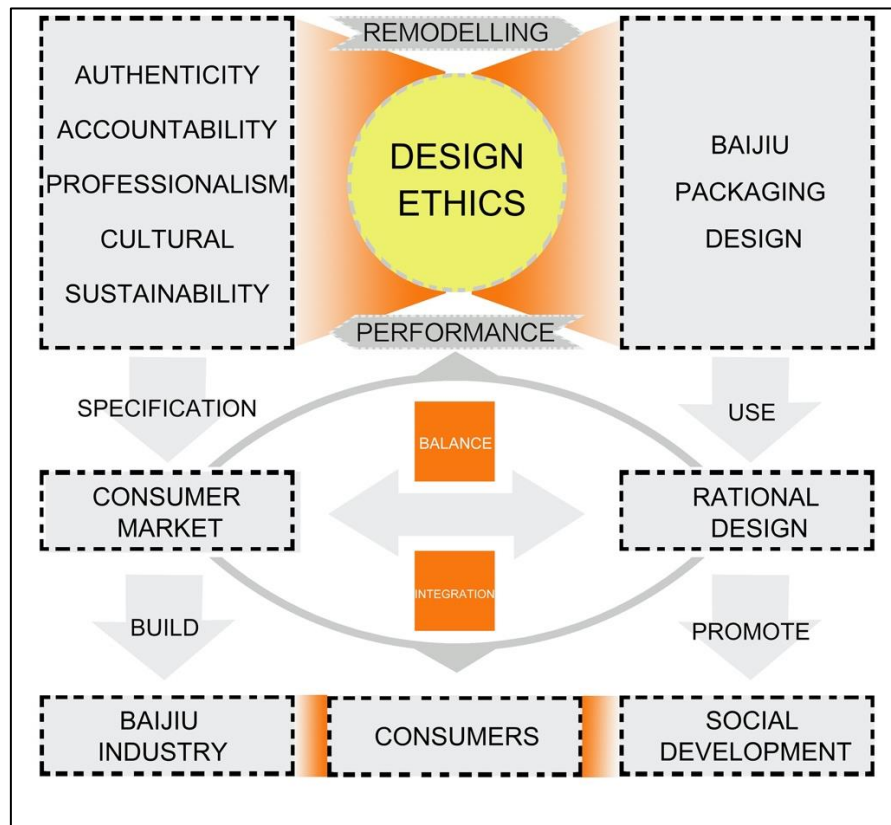


Figure 1. The interrelationship between Baijiu packaging design and design ethics

Culturally Inspired Design

This dimension capitalizes on traditional Chinese cultural elements, including calligraphy, ornamental patterns, and symbolic imagery. The framework places a premium on their reinterpretation into a contemporary design language, striving to effectuate a seamless integration of cultural heritage with modern aesthetic sensibilities. This is achieved by meticulously selecting and adapting these elements to foster a profound sense of continuity and relevance, ensuring that the packaging not only reflects the brand's cultural roots but also resonates with contemporary consumers.

User-Centric Design

With a laser focus on consumer experience and psychological engagement, this aspect of the framework prioritizes ergonomic considerations. It meticulously attends to the tactile comfort of bottle forms and the ease of handling and opening, ensuring that the packaging is intuitive and user-friendly. By optimizing these features, it aims to enhance usability while simultaneously kindling emotional resonance and maximizing user satisfaction, thereby forging a stronger bond between the product and the consumer.

Sustainability and Environmental Stewardship

This component ardently advocates for the adoption of low-carbon and eco-friendly materials, such as recyclable paper and plastics. It also vigorously promotes the reduction of excessive packaging, aligning with the global zeitgeist of sustainable consumption and wholeheartedly supporting the overarching goal of environmental responsibility. By doing so, it endeavors to minimize the environmental footprint of Baijiu packaging while meeting the growing consumer demand for sustainable products.

Ethically Grounded Design Practices

The framework incorporates explicit ethical principles, vehemently advocating for a harmonious and balanced integration of functionality and aesthetics. It firmly eschews the pursuit of excessive luxury at the expense of practicality or sustainability and actively supports the standardization of industry practices to foster ethical innovation. This ensures that the packaging design not only meets the functional requirements but also adheres to the highest ethical standards, thereby enhancing the brand's credibility and reputation.

By seamlessly integrating the "Simple and Natural" (SN) design philosophy into these guiding principles, the framework provides a cohesive and robust theoretical foundation for Baijiu packaging design. This integration not only enriches the cultural and social value of the packaging but also effectively addresses the ethical responsibilities incumbent upon the industry. Furthermore, it paves the way for a detailed exploration of the interplay between cultural specificity and global design ethics, and its broader applicability offers practical insights for driving forward ethical, sustainable, and culturally meaningful practices in other design fields.

Conceptual Framework Development

A comprehensive and systematic literature review was executed to erect the theoretical scaffolding. This involved a painstaking identification of ethical principles germane to packaging design. Core works, such as those by Zhao (2019) and Xu (2021), were meticulously analyzed to inform the research framework and judiciously guide the formulation of

hypotheses and research questions. This ensured that the study was firmly grounded in existing knowledge and addressed the most pressing issues in the field.

To operationalize these principles, a mixed-methods approach was adopted. This encompassed quantitative surveys and qualitative interviews to comprehensively scrutinize the intricate interplay between design ethics and Baijiu packaging. The study was methodically conducted in three sequential phases.

Survey Design and Sampling

A structured questionnaire, meticulously pretested for reliability and validity, was painstakingly developed. It was designed to assess respondents' perceptions of ethical principles in Baijiu packaging and comprised sections corresponding to authenticity, responsibility, professionalism, culture, and sustainability. A purposive sample of 200 participants, encompassing 100 consumers, 50 designers, and 50 industry professionals, was strategically recruited. This ensured a diverse range of expertise and experiences, enabling a more comprehensive understanding of the various perspectives on Baijiu packaging design.

Qualitative Interviews

Semi-structured interviews were conducted with 15 stakeholders, including designers, academic consultants, and industry managers. These interviews provided nuanced and in-depth insights into the practical challenges and opportunities associated with applying ethical principles to packaging design. The interviewees were selected based on their extensive experience and knowledge in the field, ensuring that the data collected was rich and informative.

Quantitative data was amassed through online surveys and fieldwork at industry events, while interviews were conducted either online or offline. All interviews were conducted with the explicit consent of the participants and were recorded and transcribed verbatim for subsequent analysis. Descriptive analysis statistics were applied to the survey data to precisely determine the relationship between ethical principles and packaging perceptions. The qualitative data was analyzed thematically with the assistance of NVivo software to ensure that emerging themes were meticulously aligned with the conceptual framework.

Throughout the research process, ethical standards were stringently upheld. Informed consent was obtained from all participants, and confidentiality and anonymity were scrupulously ensured. Triangulation of methods and data sources was employed to fortify the validity of the findings, and peer debriefing and member checking were conducted to enhance the credibility and reliability of the interpretations. This multi-pronged approach ensured that the research was conducted ethically and rigorously.

Results

To precisely identify the ethical issues in Baijiu packaging design, 200 online questionnaires were disseminated among individuals hailing from diverse backgrounds. After a meticulous screening process to eliminate invalid responses, 196 valid questionnaires were retained. The distribution of these responses spanned multiple provinces in China, providing a broad and representative sample that effectively captured the economic and social heterogeneity of different regions.

The analysis unearthed ten pivotal ethical issues related to Baijiu packaging, as depicted in Figure 2 and detailed in Table 1. These findings offer a panoramic and comprehensive overview of the ethical concerns prevalent across the sample, vividly illustrating the diverse perspectives on packaging design in different Chinese contexts.

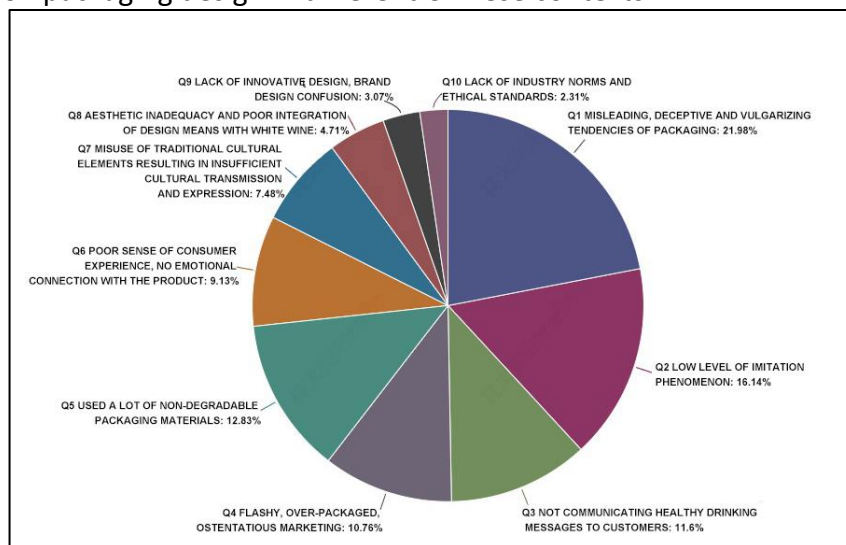


Figure 2. Percentage of the 10 design ethics problems of Baijiu packaging under the questionnaire survey

Table 1
Analysis of irrational design problems of Baijiu packaging

VARIABLES	TYPE	SAMPLE SIZE	PERCENTAGE	MAIN QUESTIONS	FEEDBACK QUESTIONS NO.	QUESTION EVALUATION	CORE QUESTIONS
Gender	Male	92	46.94	Misleading, deceptive, and vulgarizing tendencies of packaging.	Q1	Most serious	
	Female	104	53.06	The prevalence of low-level imitation. Failure to communicate healthy drinking messages to customers in packaging.	Q2, Q3	More serious	Q1, Q2, Q3, Q4
Age	18 ~ 30 years old	26	13.26	Flashy, over-packaged, flashy marketing	Q4	Most serious	
	31 ~ 40 years old	35	17.86	A large amount of non-degradable packaging materials are used.	Q5	More serious	
	41 ~ 50 years old	52	26.53	Poor sense of consumer experience, no emotional connection with the product.	Q6	More serious	Q5
	Over 51 years old	83	42.35	Misleading, deceptive, and vulgarizing tendencies of packaging. Misuse of traditional cultural meta causes inadequate cultural transmission and expression.	Q1, Q7	Most serious	Q6

Academic qualifications	Secondary	62	31.64	Aesthetic inadequacy, design means not well integrated with Baijiu. Q ₈	Serious
	Vocational University	56	28.57	The prevalence of low-level imitation. Q ₂	More serious
	Undergraduate	67	34.18	Lack of industry norms and ethical standards. Q ₉	More serious Q ₉
	Master and above	11	5.61	Misuse of traditional cultural meta causes inadequate cultural transmission and expression. Q ₇	Serious
Monthly income	≤2500RMB	42	21.43	Flashy, over-packaged, flashy marketing. Q ₄	Most serious
	2501 ~ 4500RMB	59	30.10	Misleading, deceptive and vulgarizing tendencies of packaging. Q ₁	Most serious
	4501 ~ 6500RMB	68	34.69	Lack of innovative design, brand design confusion. Q ₁₀	More serious Q ₁₀
	≥6501RMB	27	13.78	Aesthetics are lacking, and the design means are not well integrated with the Baijiu. Q ₈	Serious

Key rational design principles for Baijiu packaging emerged from the data analysis:

Container Design

The utilization of simple geometric forms, such as cylindrical, rectangular, and multi-faceted cylinders, was found to adeptly balance aesthetics and function. These forms not only exhibit a modern and sleek visual appeal but also ensure practicality in handling and storage.

Outer Packaging

A modernist design approach, characterized by grid-based layouts and health-oriented messaging, was identified as optimal. This design strategy conveys a sense of order and professionalism while also promoting health awareness among consumers.

Cultural Integration

The incorporation of traditional cultural elements, such as calligraphy, decorative patterns, and symbolic imagery, was shown to significantly reinforce the product's cultural value. By carefully selecting and integrating these elements, the packaging can effectively communicate the brand's cultural heritage and resonate with consumers on a deeper level.

Functional Structure

The integration of hybrid openings and polygonal grooves was found to enhance the protection and usability of the packaging. These design features facilitate easy access to the product while also safeguarding it during transportation and storage.

Material Selection

A focus on recyclable and biodegradable materials, such as recyclable PP plastics and aseptic cartons, was determined to be essential for enhancing sustainability. These materials not only

reduce the environmental impact but also align with the global trend towards sustainable packaging solutions.

In addition, the “Simple and Natural” (SN) design concept was proposed to unify these principles, effectively addressing design inconsistencies and enhancing the Baijiu brand’s market presence and consumer trust.

Comparative Analysis divulged that respondents from economically developed regions exhibited a distinct preference for minimalist and eco-friendly designs, while those from less-developed areas placed a higher value on affordability and traditional aesthetics. These findings unequivocally suggest the imperative need for localized design strategies to cater to the diverse preferences of consumers.

From a practical vantage point, packaging designs should artfully balance sustainability for younger demographics with cultural authenticity for older and rural consumers. Functional innovations like hybrid opening mechanisms can markedly improve usability and fortify ethical branding.

Objective Evaluation spotlighted the relatively underrepresented status of responsibility and professionalism in the findings, thereby flagging areas ripe for further research. Future studies should painstakingly explore the underlying reasons for these disparities and refine the application of ethical principles in Baijiu packaging design. This research lays a solid foundation for reimagining Baijiu packaging, deftly aligning ethical considerations with cultural and consumer demands.

Discussion

This study undertakes a comprehensive exploration of the rational design of Baijiu packaging, meticulously considering aesthetic, functional, cultural, and stylistic dimensions. It also undertakes a critical examination of the ethical implications of these design elements. The discussion draws liberally from international design ethics literature and the practical application of design rationality, firmly positioning the findings within the global trends of sustainable design, user-centered design, and cultural sensitivity.

The “Simple and Natural” (SN) design philosophy, which is wholeheartedly committed to simplicity, functionality, and harmony with nature, has been widely embraced in global design practices, particularly in Japan and Scandinavia. It accentuates the seamless integration of form and function, the authentic use of materials, and a profound respect for users and the environment. In the context of Baijiu packaging, the SN design philosophy is manifested through the use of minimalist geometric forms and carefully curated materials that effectively convey Baijiu’s rich cultural heritage. By eschewing excessive ornamentation, this approach successfully reduces visual complexity while maintaining an elegant and culturally resonant aesthetic.

The rational design of Baijiu bottle shapes, which employs simple geometric forms like cylindrical, rectangular, and multi-faceted cylinders, aligns seamlessly with modern aesthetic trends that prioritize simplicity, symmetry, and clarity, see Table 2. This approach mirrors international design principles, such as those championed by the minimalist movement in

European design and Japan’s “Simple and Natural” (SN) philosophy, advocated by esteemed designers like Jasper Morrison and Naoto Fukasawa (Zhou, 2011). The congruence with global minimalist trends enhances the visual allure of the Baijiu bottle, endowing it with a modern and stylish appearance that strikes a chord with contemporary consumers’ penchant for minimalist aesthetics, see Figure 3. However, it is important to note that the emphasis on geometric simplicity may not fully encapsulate the traditional and symbolic elements that Baijiu consumers anticipate. Therefore, the integration of rational design with traditional Chinese cultural symbols demands meticulous balancing to avoid alienating culturally discerning consumers. Future research could profitably investigate methods to refine this balance and evaluate the emotional responses elicited by both modernist and traditional design elements.

Table 2

Baijiu bottle container shape design model scheme and evaluation







MODEL DESIGN SAMPLE DRAWING	SAMPLE NO.	PREDICTED AVERAGE	Evaluation scores for each project (1-5)				AVERAGE SCORE
			AESTHETIC	FUNCTIONALITY	CULTURAL	REASONABLENESS	
	Y1	3.5	2	3	2	3	2.7
	Y2	3.5	4	3	4.5	4.5	3.9
	Y3	4.5	5	4.5	4	5	4.6
	Y4	4	3.5	4	4	3.5	3.8
	Y5	5	4.5	4	4.5	4	4.4
	Y6	3.5	4.5	4	4	4.5	4.1





Figure 3. The evolution of the Baijiu bottle container model designed for sample 3 and sample 5

Functionality, especially ergonomics, lies at the heart of the rational design approach. The emphasis on ergonomically optimized shapes, designed to ensure comfortable and intuitive handling by consumers, aligns with international best practices in user-centered design. Research in product ergonomics has consistently demonstrated that consumer comfort and ease of use are pivotal in fostering a positive user experience. The Baijiu bottle's careful consideration of curves and edges not only enhances user experience but also augments product functionality. While this approach is generally applicable, future research could usefully assess the ergonomic preferences of consumers from different regions to determine whether there are global variations in ergonomic design expectations for similar products.

The cultural dimension of rational design zeroes in on the integration of traditional Chinese aesthetic values such as simplicity, modesty, and elegance, See Table 3. This is of particular significance in the context of Baijiu packaging, where the product's cultural significance is integral to its identity. The design approach artfully blends modern minimalist aesthetics with traditional symbols and storytelling, paralleling the global trend towards preserving cultural heritage in design. However, challenges do arise in ensuring that the cultural elements incorporated into the design resonate with both domestic and international consumers. The research suggests that while the use of traditional cultural symbols can enhance the brand's cultural recognition, there is a need for careful calibration to avoid cultural appropriation or misrepresentation, an issue that has been extensively discussed in global design ethics discourse.

Table 3

Classification of traditional cultural elements under the rational design of the cultural connotation of Baijiu packaging

ART FORM CATEGORY			CULTURAL HERITAGE CATEGORY			NATURAL OBJECTS		
PROJECT THEMES	ELEMENTAL REPRESENTATION	DEGREE OF APPLICABILITY	PROJECT THEMES	ELEMENTAL REPRESENTATION	DEGREE OF APPLICABILITY	PROJECT THEMES	ELEMENTAL REPRESENTATION	DEGREE OF APPLICABILITY
Literary Arts	Poetry and Song	●●●●●	Traditional views	Good luck and good fortune	●●●●●	Natural landscapes	High mountains and flowing water	●●●●●
The Art of Chinese Characters	Calligraphy and Seal Carving	●●●●●	Narrative Stories	Yugong Yishan moves mountains	●●●●●	Animal themes	Birds, fish and insects	●●●●●
Traditional Chinese Painting	Chinese Paintings	●●●●	Myths and Legends	Chang'e Runs to the Moon	●●●●●	Plant theme	Plum, Orchid, Bamboo and Chrysanthemum	●●●●●
Arts and Crafts	Ceramic	●●●●●	Religious beliefs	Dunhuang Art	●●●●●	Abstract themes	The Dragon and the Phoenix	●●●●●
Architectural Arts	Pavilions	●●●	Folk Culture	Traditional Festivals	●●●●●	People Themes	Image of a wise man	●●●●●
Performing Arts	Theatre Dance	●●	Non-traditional skills	Embroidery and dyeing	●●●●	Artificial landscapes	Idyllic scenery	●●●●●
Costume Art	Hanfu	●●	Philosophical ideas	Heaven and man in one	●●●●●	Wonders of the Universe	Sun, Moon and Stars	●●●

Note:●Indicates the extent to which representative elements of traditional culture can be applied to the rational design of Baijiu packaging (The number of points ranges from 1 to 5, the more points the greater the value)

Sustainability in packaging design is an issue of burgeoning concern worldwide, and Baijiu packaging is no exception, See Table 4. The rational design of packaging materials, such as the use of recyclable PP plastics and aseptic cartons, reflects the global impetus towards environmentally friendly and sustainable packaging solutions (Tao & Yang, 2019; Shanxi Securities et al., 2023). These materials not only mitigate environmental impact but also adhere to the “4R+1D” concept of low consumption, renewable materials, and recyclability, which are cardinal tenets of sustainable design in international packaging practices (Yuan & Peng, 2017). While these materials are commonly utilized in mid-range Baijiu packaging overseas, there exists potential for their expanded application in premium packaging designs as well. Further exploration of consumer perceptions regarding these materials, especially in relation to premium brand positioning, would be highly valuable.

Table 4

Comparative analysis of the characteristics of Baijiu packaging materials

PACKAGING PART	MATERIAL NAME	MATERIAL PROPERTIES	BENEFITS ANALYSIS	DISADVANTAGE ANALYSIS	COMPREHENSIVE PERFORMANCE EVALUATION
Baijiu bottles Packaging	Glass bottles	Glass	Chemically stable, non-polluting the Baijiu, safe and reliable, transparent appearance highlight the sense of premium.	Complex production procedures, resource-intensive, costly, environmentally unfriendly, easily damaged and not portable.	A-
	Easy-open cans	Aluminium metal	Lightweight, costly to recyclable.	High consumption, not easily degradable, poor corrosion resistance.	B+
	Ceramic	Porcelain	Chemically stable, non-polluting to Baijiu, good stability, strong performance, moisture resistance, high temperature resistance.	Easy to break, not easy to carry, complex production procedures, high costs and demanding workmanship.	A-
	Tile pot	Pottery	Chemically stable, non-polluting to the Baijiu, good stability, strong Baijiu storage, microporous structure to enhance the Baijiu aroma.	Fragile, not easy to carry and transport, complicated production and manufacturing procedures, not conducive to recycling,	A-
	Vitreous Enamel	Composite materials	Highly malleable, acid and alkali-resistant, corrosion-resistant, chemically stable, aesthetically pleasing, lightweight, heat resistant.	Easily damaged by knocks, complex production procedures, resource intensive, rusting when dropped.	A-
	PET/PP	Plastic	Highly malleable, recyclable and cost effective.	Safety and environmental implications are controversial.	A+
	Aseptic Paper Box	Paper	Easy to carry, self-degrading, green, low cost and non-polluting.	Weak, not easy to store for a long time, easily damaged, poor flame retardant, complicated production procedures.	A
Baijiu box Packaging	PVC PE PS	Plastic	Recyclable, malleable, impact resistant,	Poor heat resistance, non-biodegradable, resource intensive,	B+

EVA		lightweight, easy to carry, low cost.	complex production process, not easily used for long periods of time, controversial safety and environmental impact.
Acrylic	Plexiglass	High quality, good toughness, not easily damaged, simple appearance, bright colours, versatile and recyclable.	Not wear-resistant, not heat-resistant, sticky when in contact with Baijiu, poor flame retardant, not easy to use for a long time.
Greyboard Copperplate paper Specialty papers Corrugated paper	Paper	Recyclable, self-degrading, green, low cost, non-polluting, malleable, versatile, high value for money and easy to use.	demanding workmanship, weak hardness, not easy to store for long periods, easily damaged, susceptible to moisture, poor flame retardancy.
Fibreboard	Timber	Hard texture, self-degrading, green, low cost, non-polluting, malleable, not easily damaged.	Resource intensive, susceptible to moisture and poor flame retardancy.

Despite its contributions to the understanding of Baijiu packaging design, this study is not without limitations. First, the focus on rational design principles may have overlooked the intricate and often subjective nature of design decisions, which are influenced by market trends, consumer preferences, and the socio-cultural context. Future research could incorporate a more in-depth investigation of the subjective aspects of packaging design, such as emotional branding and consumer identity, which are increasingly prominent in global design practices (Li, 2014). Additionally, the study’s regional focus on China restricts the generalizability of its findings to other cultural contexts. It would be beneficial to conduct comparative studies of Baijiu packaging design with that of other national or regional alcoholic beverages to highlight universal principles and culturally specific design elements.

In conclusion, this study offers valuable insights into the ethical dimensions of rational design in Baijiu packaging. It provides a critical appraisal of current practices and proposes viable solutions for enhancing both aesthetics and functionality while maintaining cultural authenticity, see Figure 4. The findings contribute significantly to the broader field of design ethics by integrating rational design principles with cultural sensitivity, ergonomic concerns, and sustainability. This holistic approach not only enriches the consumer experience but also bolsters the ethical development of the Baijiu packaging industry. By advancing a balanced design that combines global design principles and traditional cultural values, the study lays a solid foundation for future research on sustainable and ethically sound packaging design. The integration of design rationality, sustainability, and cultural elements serves as a paradigm for ethical design practices in other product categories, underlining the importance of authenticity, social responsibility, and innovation in contemporary design, see Figure 5.



Figure 4. Different design concept Baijiu packaging model



A: 3 models of Baijiu bottle packaging design based on rational design combined with SN concept



B: Baijiu box packaging design based on rational design combined with SN concepts

Figure 5. Rational design combined with SN concept of Baijiu packaging series design model
Future studies should further probe into how global and local design ethics intersect in the packaging of culturally significant products. Investigating the environmental impact of material choices in packaging, especially in the context of premium Baijiu packaging where

sustainability concerns may conflict with the perception of luxury, is also crucial. Additionally, understanding the long-term effects of rational design on brand identity and consumer behavior in the Baijiu industry will be essential in evaluating the effectiveness of these design solutions.

Conclusion

As the Chinese Baijiu market continues its expansion, the design of Baijiu packaging plays a pivotal role in sculpting its unique identity and augmenting its competitiveness in the marketplace. However, several significant ethical challenges persist in the design process that demand immediate attention. This study systematically investigates the role of rational design principles within Baijiu packaging, drawing upon the framework of design ethics that accentuates the interrelationship between people, products, and the environment. By adhering steadfastly to the principles of authenticity, responsibility, professionalism, culture, and sustainability, this research devises a comprehensive approach that effectively regulates consumer behavior and enhances the value and significance of Baijiu packaging. This integrated approach endeavors to create a virtuous cycle that benefits both consumers and the industry, promoting long-term sustainability.

This study meticulously examines five critical dimensions of Baijiu packaging design: bottle shape, outer packaging, cultural symbolism, functionality, and material characteristics. It emphasizes the ethical value of packaging through the prism of the “Simple and Natural” (SN) design philosophy, proposing a framework that seamlessly integrates design ethics with the ongoing evolution of Baijiu packaging. The research demonstrates how rational design can foster a deeper connection between product and consumer, enhancing trust, improving cultural expression, and preserving heritage. Additionally, it makes a substantial contribution to the sustainable development of people and the environment while promoting industry standards and ethical practices. Ultimately, the findings suggest a viable pathway to reshape the development order of Baijiu packaging within the industry and the broader market.

This research fills a crucial gap in the literature by addressing the intersection of rational design and design ethics in the context of Chinese Baijiu packaging. However, several limitations must be acknowledged. First, the study’s focus on the Chinese market restricts the generalizability of its findings to other cultural contexts. Future research could explore cross-cultural perspectives on ethical packaging design, considering how different cultural values and practices influence design choices in alcoholic beverage packaging. Additionally, while the study focuses on the visual and functional aspects of packaging, it does not fully explore the emotional branding, consumer identity, and subjective experiences that influence design decisions. Future studies could delve deeper into these aspects, which are becoming increasingly significant in contemporary design practice.

Another limitation is that this research primarily addresses the ethical considerations of rational design without fully exploring the impact of these design choices on consumer behavior or long-term brand loyalty. Investigating these factors would offer valuable insights into the practical implications of ethical packaging design. Furthermore, although the study highlights the importance of sustainability, there is a need for further exploration into the environmental impact of material choices, particularly in premium Baijiu packaging, where sustainability concerns may sometimes conflict with the perceived luxury of the product.

In conclusion, this research makes a significant contribution to the field of design ethics by presenting an integrated approach to rational Baijiu packaging design. It provides valuable insights into how packaging can uphold ethical values, enhance consumer experience, and promote sustainability. By extending this approach to other product categories, future studies can advance the understanding of ethical packaging design, contributing to the development of industry standards and furthering the role of sustainable and culturally sensitive design practices in the marketplace.

This study significantly contributes to the field of design ethics, especially within the context of Chinese Baijiu packaging. Theoretically, it fills a crucial gap by integrating design ethics theory into Baijiu packaging practice. Existing research on Baijiu packaging has primarily concentrated on traditional culture integration, material selection, and brand construction, neglecting a comprehensive treatment of ethical concerns. Introducing the “Simple and Natural” (SN) concept and incorporating ethical principles like authenticity, responsibility, professionalism, culture, and sustainability into the packaging design framework enriches the theoretical basis of design ethics in this area. It also uncovers ten key ethical issues in Baijiu packaging, such as misleading visuals, excessive packaging, and cultural misappropriation, while identifying rational design principles including using simple geometric forms in bottle design, modernist outer packaging approaches, and integrating enhanced ethical and sustainable aspects of Baijiu packaging and traditional cultural elements. These efforts enhance the ethical and sustainable aspects of Baijiu packaging and expand the knowledge of rational design in traditional Chinese products, thereby contributing to the development of design ethics theory in packaging product domains.

Contextually, in the post-pandemic era with its growing emphasis on ethical and sustainable values, this research holds great significance. Baijiu, being an essential part of Chinese culture and deeply involved in social rituals, can benefit from rational packaging design. Such design can influence consumer behavior, rebuild trust, and promote sustainable consumption. For instance, advocating for recyclable and biodegradable materials aligns with the global trend towards environmental sustainability, and responsibly integrating traditional cultural elements helps preserve and promote Chinese cultural heritage in modern packaging design. In the broader design industry, this study serves as a model for applying design ethics to traditional product packaging. It provides actionable insights for designers, manufacturers, and policymakers, facilitating the cultivation of ethical and sustainable practices. By emphasizing the balance between global design trends and local cultural values, it offers a framework adaptable to other product categories and cultural contexts, promoting the advancement of design ethics in a globalized world.

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