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Research on the Visual Appeal of Paper Packaging Design

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The packaging of a product is not only a container for holding goods, but is also a means of promoting the product. The packaging design can significantly affect the sales of goods. This research examined the use of paper for packaging purposes. Then, taking the ginseng antler gift box of the "Li Liangji" brand owned by Suzhou Tianling Chinese Herbal Medicine Co., Ltd. as the subject, the visual appeal of the paper packaging was studied. The results showed that paper-based packaging can integrate different themes through its structure, pattern, and text, and can fully highlight the characteristics of products to make them attractive. Paper has the advantages of being easy to adjust and print during the production of premium gift boxes and general gift boxes.

Keywords: paper material, packaging, visual expression, gift box

1. INTRODUCTION

Papermaking technology is one of China's four greatest inventions. Before the advent of papermaking, most of the writing materials were bamboo slips, stone slabs, wooden boards, silk, etc. (Sirimamilla et al., 2019). All these materials, apart from silk, are both heavy and difficult to write on. Although silk is light and easy to write on, it is expensive and out of reach of the general public (Qian et al., 2018). The emergence of papermaking enabled people to use fiber materials such as bark, linen, and fishnet, to mass-produce enough light and tough paper. The cost of manufacturing paper is quite low, making it affordable for most people. Cheap paper has become a new text carrier, and its scope of application has gradually increased (Liao, 2015). Paper is ideal for the packaging of products as it is light and easy to fold into a simple container. After the product is put into a paper container, the paper container can be used as product packaging. Papermaking technology is constantly being improved. By adding different ingredients to the manufacturing process, the properties of the paper are changed, which changes the characteristics of packaging (color, texture, etc.) (Douglas et al., 2015). Also, text and images on the outside and/or inside of the packaging paper can be created by combining paper with typography, making the packaging more attractive and adding value to the product. Fang et al. (2016) designed a green logistics box and a corresponding direct recycling mode to solve problems of excessive express packaging, difficult recovery, and low packaging standardization. Muratore et al. (2018) grafted eugenol onto cellulose to develop a biodegradable active packaging material. The experimental results showed that the paper was a good active packaging material with antioxidant, repellent, and insecticidal properties appropriate for castor and broad beans. Fadiji et al. (2017) carried out specific mechanical property tests on corrugated paperboard under different environmental conditions. The results showed that environmental conditions affected the mechanical properties of paper and paperboard. During refrigerated transportation, the modulus of elasticity strongly decreased in the range of 20–53% compared with standard conditions for all the paper grammages.

This current paper examined paper material and its application in packaging, and analyzed the visual performance of paper packaging by taking the ginseng antler gift box of "Li Liangji" brand owned by Suzhou Chinese Herbal Medicine Co., Ltd. as the subject.

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2. PAPER MATERIAL AND ITS APPLICATION IN PACKAGING STRUCTURE

2.1 Introduction to Paper Material

Before the appearance of paper, characters and patterns were mostly recorded on materials such as slate, wood, bamboo slips, and silk. As mentioned above, these materials were either cumbersome, difficult to write on, or expensive. The original papermaking technology was a by-product of the silk-bleaching process. The residual broken silk floss fiber in the water adhered to the surface of the bamboo mat used for filtration. After drying, a thin sheet of fiber was obtained, which was the original paper (Wang et al., 2015). However, although this kind of paper was consciously obtained during the silk bleaching process, it was still the by-product of silk bleaching; hence, the amount of production depended on the quantity of silk bleaching; therefore, it was expensive. Subsequently, Lun Cai improved papermaking technology. He not only separated it from the by-product of silk bleaching, but also used cheaper plant fiber as the raw material (Briand Decré & Cloonan 2019). Until modern times, the technological principle of improved papermaking technology had not changed substantially. The plant skin (cuticle) is crushed and dissolved in water, and the plant fiber is made to be as fine as possible by methods such as boiling and stirring to form a pulp. Moreover, the auxiliary materials with different formulations are added to improve the paper characteristics. Then a hand sheet machine with filtering function, such as a bamboo curtain, is used to sheet the paper pulp. The paper pulp fiber on the surface of the handsheet former is dried. Finally, the paper is obtained.

During the manufacturing process, various other materials can be added according to user requirements to produce paper of different types and with specific properties. Paper can be hand-made or machine-made. The former is manually obtained from the pulp sheet by a hand sheet former, and the latter is produced in bulk by machinery (Park et al., 2017). The hand-made paper is softer and more natural in texture than the machine-made paper. The aesthetic characteristics of hand-made paper make it more suitable for decorative art. The addition of other materials during the paper production process can make the end product more robust. Moreover, its foldable characteristic allows the paper to be processed into different container shapes, which costs little. These characteristics have led to paper being widely used for the packaging of a variety of products.

2.2 Application of Paper Material in Packaging

Packaging refers to the containers and materials used to protect and promote goods, and facilitate the transportation and distribution of goods using one or more technologies (Chtioui et al., 2016). Packaging design is intended to beautify and decorate packaging materials using technological processes. Because of its low cost and easily-processed structure, paper material has been used for product packaging. The packaging of goods can be divided into transport-type packaging and sales-type packaging. The former are containers used for transportation, which are nondescript in appearance and usually have labels containing only the necessary information. Packaging may be in the form of corrugated carboard boxes, cartons, paper bags, etc.; the latter is more inclined to improve product sales (Oguntala et al., 2019).

Compared with other packaging materials, paper has several natural and social attributes: it can safeguard products from damage, it facilitates the transportation and distribution of goods, it can be labelled in order to distinguish different products, and it enhances the attractiveness of products, thereby promoting the brand products (Burg et al., 2015). The social attributes of paper packaging include the cultural attribute for satisfying consumers' pleasant psychology, the decorative attribute for improving the beauty of the environment, and the public attribute for promoting social spiritual benefits. Consumers' pleasant psychology refers to the positive emotions that the goods can bring to consumers. Social spiritual benefits refers to the advertising effect brought by the packaging design, which can convey the positive emotions in the packaging design and play a role in enhancing the social and spiritual outlook.

The promotion function and social attributes of paper packaging depend on the natural and social attributes of the paper. As paper is made of plant fiber, it has different textures. When paper is used as a packaging material, the combination of texture and product theme can enhance the attractiveness and added value of paper packaging so as to strengthen the promotion function.

If the texture is the natural attribute that paper contributes to paper packaging, then the social attribute of packaging can be improved by means of visual effects (Liu et al., 2019). The natural texture of paper can give the packaging a corresponding texture after simple treatment. Also, paper lends itself to writing and drawing, making it suitable for patterns, calligraphy and artistic embellishments that give it special social attributes. When paper is used for packaging, it can be decorated with characters and patterns that reflect the characteristics of the product, convey the necessary information about the product, realize the cultural, decorative and public attributes of the packaging, and enhance the attractiveness of the products (Zhang et al., 2015).

3. ANALYSIS OF THE VISUAL PERFORMANCE OF PAPER MATERIAL IN PACKAGING STRUCTURE

The appeal and salability of a product depends not only on the quality of the product itself but also on the marketing strategies. There are many kinds of marketing methods including advertising, star endorsement, online community promotion, etc.; however, the packaging of goods can also be an effective marketing strategy. The first thing consumers encounter when searching for a specific product is its packaging. Hence, an excellent packaging design can maximize the consumers' attraction to the product.

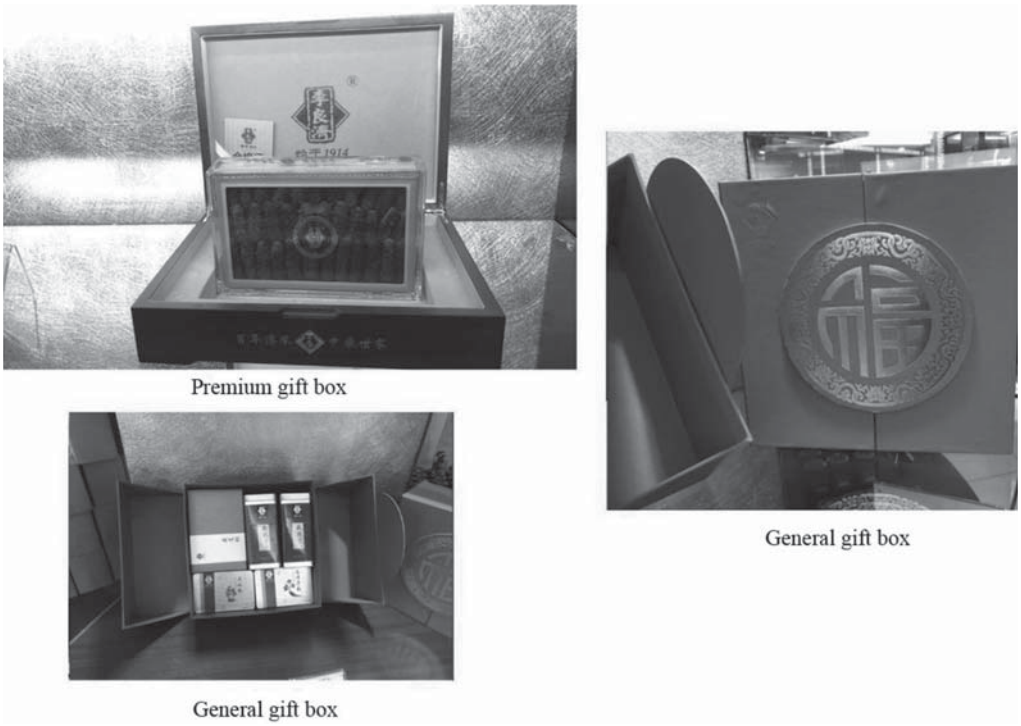

Figure 1 The premium gift box and general gift box for "Li Liangji" ginseng antler.

3.1 Company Profile

This paper analyzed the visual attraction of the packaging design of the "Li Liangji" brand. "Li Liangji" is one of the brands of Suzhou Tianling Traditional Chinese Herbal Medicine Co., Ltd., whose predecessor was Li's herbal medicine shop, which was opened in 1914 by Jinbao Li, a Suzhou pharmaceutical farmer. It was famous for its authentic medicinal products. Later, it was incorporated into the collective supply and marketing cooperatives during the cooperative movement after liberation in 1982. The son of the founder established a herbal medicine processing factory to study the processing technology of Chinese herbal medicine. In 2002, the founder's grandson inherited the ancestral business and transformed "Li's herbal medicine shop" to Suzhou Tianling Chinese Herbal Medicine Co., Ltd., which combines traditional techniques with modern technology. In 2004, the company registered the trademark of "Li Liangji" and won the famous trademark of Suzhou in 2007. In 2013, the traditional paste-making process of the company was recognized as intangible cultural heritage of Suzhou. The company's tenet is "benefit the world and help people with conscience and good medicine"; its business philosophy is "to specialize in pharmacy, and to be honest"; its business strategy is to "focus, be professional, sincere, and honest"; its brand core is "passing down the quintessence of traditional Chinese medicine, promoting technological innovation, and standardizing the standards of traditional Chinese medicine".

3.2 Subject of Analysis

This paper analyzed the properties of the premium gift box and general gift box used for packaging the ginseng antler sold by Suzhou Tianling Chinese Herbal Medicine Co., Ltd. Figure 1 presents images of these boxes. The general gift box is a simple box container. The cover of the box is designed as a window, which is opened from the middle. The whole gift box has a simple structure, created by folding and pasting the cardboard. Compared with the general gift box, the premium gift box has a more complex structure. The premium gift box is more substantial inside, and the outer shell of the gift box is made of thicker cardboard. The interior is lined with foam and fabric, and the brand trademark is printed on the latter.

The gift boxes described above are paper containers used for packaging ginseng antler. Understanding the characteristics of the targeted consumers is crucial, as it indicates the ways in which packaging can be improved to enhance its visual attraction. The main consumers of the company's ginseng antlers are middle-aged or elderly, who usually pay more attention to their mental and physical health the middle. As today's living standards improve, the health awareness of middle-aged and elderly people increases; therefore, their interest in ginseng antler also increases. In addition to the middle-aged and elderly people, younger people have gradually become major consumers of healthcare products. Nowadays, most young people are well-educated and recognise the importance of being healthy, particularly in light of increasing work pressures.

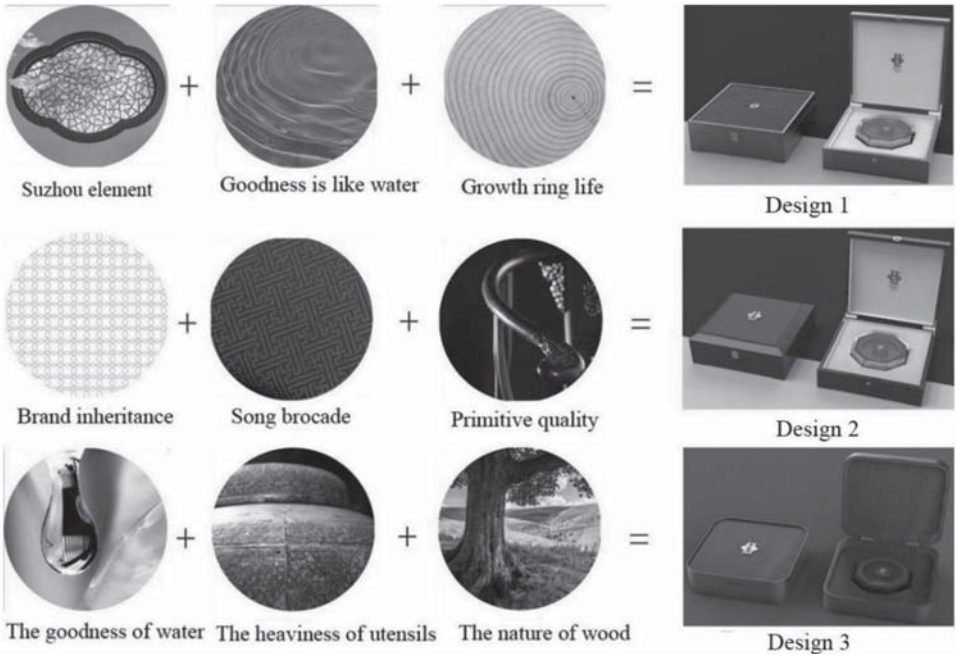

Figure 2 Three designs of the premium gift box.

3.3 Analysis Method

The purpose of this paper is to study the visual appeal of paper packaging. The consumer's response to packaging is highly subjective, so it is difficult to apply a mathematical formula to accurately measure the quality of visual elements and their advantages and disadvantages. Therefore, in order to change the relatively subjective evaluation into an objective performance evaluation as much as possible, this paper used a questionnaire survey and the Analytic Hierarchy Process (AHP) to score the three designs of premium gift box and general gift box, and provide a simple summary of the evaluation of different designs. Figure 2 shows the three packaging designs of the premium gift box, and Figure 3 shows the three packaging designs of the general gift box.

3.4 Analysis Results

In order to undertake an objective evaluation of the visual appeal of the premium gift box and the general gift box, this paper used a questionnaire survey and the AHP to evaluate the three designs of the two gift boxes. The questionnaire survey focused on the visual expression of natural and social attributes. The natural attributes were subdivided into protection function, discrimination function, and promotion function; social attributes were subdivided into cultural attribute, decorative attribute, and public attribute. The final statistical results are shown in Table 1. The total score of Design 1 for the premium gift box was 7.18, the total score for Design 2 was 8.26, and the total score for Design 3 was 7.54. The total score of Design 1 for the general gift box was 6.42, the total score of Design 2 was 8.64, and the total score of Design 3 was 7.5. These results indicate that there is little difference between the visual appeal of the three premium gift box designs, although it was slightly better for Design 2. The small difference between the three designs was that the premium gift box itself was positioned as a high-end gift with a superior design. Based on the different target groups of gift boxes, general gift boxes are generally purchased by young people with relatively low income. The products tend to be cheaper and are generally bought for personal use, not as gifts. Therefore, the design of gift box packaging might not be high quality, making the discrepancy between the three designs more obvious.

3.5 Evaluator's Evaluation and Discussion on Different Designs

The analytical results were obtained through the quantitative evaluation of the visual appeal of the three packaging designs of the two gift boxes using the AHP. However, simple numbers could not fully show the characteristics of the visual appeal of packaging. The evaluators' assessment and views on the gift box packaging design are summarized in Table 1.

The first is the evaluation and analysis of the visual appeal of the three designs of the premium gift box. In Design 1, the themes of the gift box packaging is "Suzhou element", "goodness is like water" and "growth ring life". Cardboard was used to construct a container similar to a wooden box, which matched the wood corresponding to the theme of "growth ring life". Then, the paper label pasted on the lid of the box was printed with a pattern that combined three themes: the stone window in the "Suzhou element" is shaped like a growth ring and a water wave is spreading outward, and the stone window in the center bears the brand name, "Li Liangji". This combination of various elements not only gave the gift box the Suzhou cultural element, but also clearly indicated its brand. Moreover, the concept of health preservation is subtly conveyed by "goodness like water" and "growth ring life".

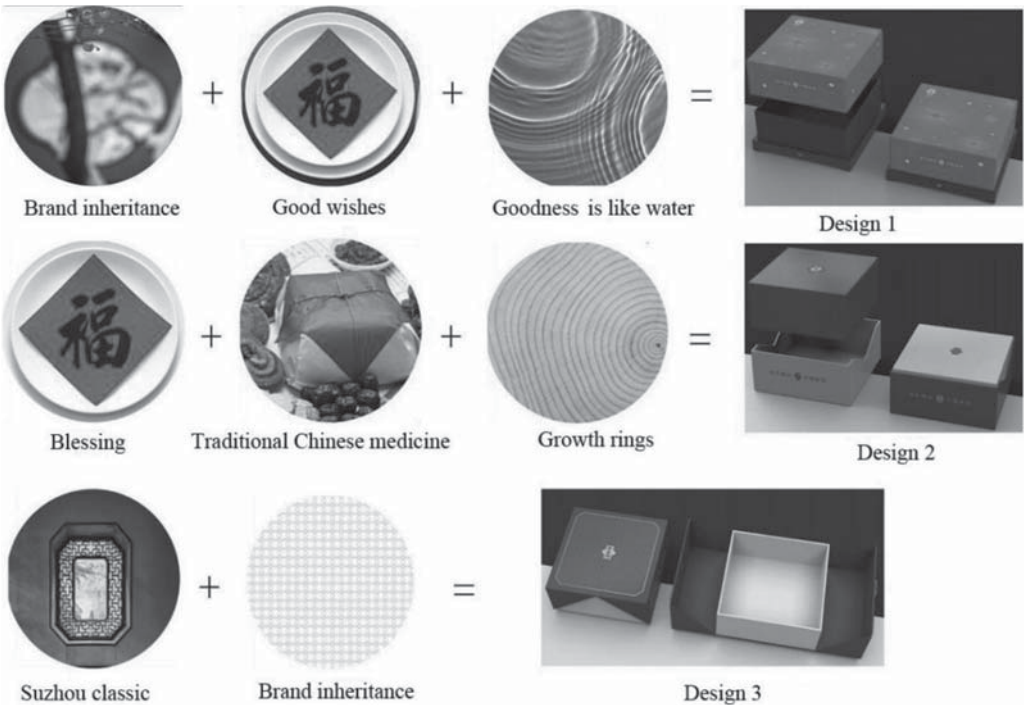

Figure 3 Three designs of the general gift box.

Table 1 Statistical results of the analytic hierarchy process and questionnaire.

Middle layer		Natural attribute			Social attribute		
Weight		0.4			0.6		
Target layer		Protection function	Discrimination function	Promotion function	Cultural attribute	Decorative attribute	Public attribute
Weight		0.2	0.3	0.5	0.3	0.4	0.3
Premium gift box	Score of Design 1	7	8	7	7	8	6
	Score of Design 2	8	8	9	9	9	6
	Score of Design 3	9	8	8	7	8	6
General gift box	Score of Design 1	6	6	6	6	7	7
	Score of Design 2	9	8	9	9	8	9
	Score of Design 3	8	8	7	7	9	6

The themes adopted for Design 2 were "brand inheritance", "song brocade", and "traditional quality". Paper was made into paper boxes similar to wooden boxes, but in this design, the surface is printed in the form of the lacquered wooden chair which suggests "primitive quality". The paper on the lid suggests the texture of "song brocade", the chain pattern suggests "brand inheritance", and the brand mark is in the center. The lacquered wooden box surface made the gift box more primitive, and the label in the center clearly showed the brand.

The themes of Design 3 were "the goodness of water", "the heaviness of utensils", and "the nature of wood". Paper was made into a paper container similar to board to reflect the theme of "the nature of wood". The eight corners of this gift box were smoother than the other two, suggesting "the goodness of water", and it made the gift box look softer and safer. The paper on the surface of the lid was printed with a pattern similar to that of bronzeware reflecting the theme of "the heaviness of utensils", which made the gift box look heavier; the trademark was in the center.

Next was the evaluation and analysis of the visual appeal of the three packaging designs of the general gift box. In Design 1, the themes were "brand inheritance", "good wishes", and "goodness is like water". Unlike the premium gift box, the general gift box did not have paper printed with a pattern imitating woodgrain, and the box was made of cardboard. The cardboard lid was printed in red with the theme of "good wishes". The stone window shape in "brand inheritance" was distributed on the paper lid like the ripple in the theme of "goodness is like water". These designs made the packaging full of blessings.

The themes used in Design 2 were "blessing", "traditional Chinese medicine", and "growth rings". The whole gift box was made of cardboard. Similar to Design 1, the box and lid were separate, but the difference was that they were combined to form a package of traditional Chinese medicine.

This design was very suitable for ginseng antlers and could make people quickly associate the packaging with traditional Chinese medicine. Similar to Design 1, the lid was printed in red to suggest the theme of "blessing". The bottom of the box was in in original wood color, accompanied by the pattern of growth rings.

The themes of Design 3 were "Suzhou classic" and "brand inheritance". The gift box was made of cardboard. The box and lid were not separated, and it opened in the middle like a double door. The gift box was very close to the packaging of traditional Chinese medicine. The window shape in the theme of "Suzhou classic" was reflected in the edge pattern of the box lid, and the pattern of the theme of "brand inheritance" was printed on the box lid.

4. CONCLUSION

This paper gave an overview of the origins and production of paper, and examined the use of paper in packaging. Then, taking the ginseng antler gift box of the "Li Liangji" brand owned by Suzhou Tianling Chinese Herbal Medicine Co., Ltd. as the subject, the visual appeal of various styles of paper packaging was studied. According to the questionnaire survey results of evaluators, all the premium gift boxes adopted thicker cardboard that looks like wood and combined the characteristics of design themes; the general gift boxes were all made from cardboard and organically combined the features of different designs in the packaging pattern and structure.

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