

Quantitative Analysis on Food Packaging Anthropomorphization and Purchase Intention

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Abstract: Food packaging has an important theoretical and practical value and is an emerging research field by giving human characteristics through anthropomorphism, enhancing emotional connection and influencing consumers' purchase intention. Therefore, the research theme of this paper is food packaging anthropomorphism and purchase intention analysis. The research method of this paper is as follows: firstly, a questionnaire is designed to collect data on people's anthropomorphization of food packaging. Secondly, the data were analyzed for preference analysis and purchase intention analysis. The survey shows that anthropomorphic packaging design has the advantage of fun and emotional connection. Consumers' attitudes towards anthropomorphic food packaging design are diversified, and they believe that it has the potential to attract attention, enhance emotional connection and brand recognition, but there are also problems of misinformation and cultural differences. Businesses should balance design and practicality, focus on humor and emotional resonance, ensure design quality, consider cultural differences, while paying attention to potential problems, and enhance brand value through innovation. In the future, anthropomorphic storyline design is considered to have more market potential, and the impact of differences in consumers, cultures and expressions can be studied in the future to promote the development of theory and practice.

1 INTRODUCTION

Food packaging anthropomorphism refers to the food with anthropomorphism on the packaging design. With the typical phenomenological nature of the intuitive method characteristics, the use of anthropomorphism in the external packaging of food directly on the rapid formation of consumer judgment cognition and stimulate the emotional resonance of the experience to produce a great role and value, so that consumers can be more clear, intuitive understanding of food. Food packaging design using anthropomorphic methods for designers to optimize the food packaging design to provide more ideas, so that the food design is more unique, and then effectively attract more consumers' desire to buy, increase product sales.

People in the purchase of food, both concerned about its taste, hygiene conditions, etc., but also from various aspects of food packaging design has a new demand, in food packaging design. Anthropomorphism has an important role to play,

which pulls in the distance between the food and the consumer, not only to make the goods outside to be beautified, but also significantly promote the increase in sales of commodities, and become an important marketing aid. Anthropomorphism in packaging is a very attractive presence, and can touch the softness of the customer's heart, visually bring consumers a sense of joy and satisfaction, so that they get a great spiritual richness. From the results of other literature, designers determine the design scheme from the aspect of anthropomorphism, and combine the anthropomorphic elements perfectly with food packaging, which can effectively attract more consumers' desire to buy, and then increase the sales of the product.

One of the reasons for packaging anthropomorphism lies in its ability to help people use familiar human schemas to understand the unknown, which leads to smoother cognitive processing and easier acceptance of anthropomorphic products by consumers than ordinary products. However, the consistency between the presentation

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mode of the product and the human cognitive pattern determines the implementation effect of the product packaging. Moreover anthropomorphic design through human-related behavior, language and appearance, so that human beings establish a more relevant cognitive schema, so that consumers are more likely to understand and interact. Therefore, this paper utilizes a questionnaire to study food packaging anthropomorphism and purchase intention. This study aims to show that packaging anthropomorphism can make consumers know the food more clearly, distinctly and intuitively, thus bringing the relationship between food and consumers closer and increasing the desire to buy.

The theory of anthropomorphism is that anthropomorphism (Personification) is a widely used in literary and rhetorical device, which refers to giving animals, abstract ideas, or other inanimate things, human form, character, emotions, etc. , in order to express human behavior or thoughts and emotions, to give human characteristics to non-human entities, and to promote the incorporation of objects into the "human" characteristics (Nie et al., 2024; Wang & Wang, 2021). Simply put, it means to personify things, i. e. to write about things as if they were human beings, so that they have human thoughts, feelings and behaviors. It is a way of expression that gives human physical characteristics and makes them have human behavior or thoughts and emotions, which is widely seen in human language expression and art works, and is also increasingly used in online games and packaging design.

Food packaging is an important cue for consumers to "intuitively" understand the health value of a product, and is one of the most important bases for consumers' purchasing decisions (Kim & Petitjean, 2021). Anthropomorphization in packaging is the process by which a third party assigns human characteristics, motives, intentions, and emotions to a target object, thereby altering people's perceptions and attitudes toward the target object (Wang & Wang 2021). Brands communicate with consumers through anthropomorphic techniques called "anthropomorphic marketing". Anthropomorphic marketing is a corporate strategy that can enhance consumer favorability as a whole (Wang & Xie, 2014). Brand anthropomorphic communication refers to the use of interpersonal communication mode by brands to interact with consumers, breaking the identity positioning of the brand in traditional marketing and transforming the brand from an "objective thing" to a "real human being" (Muehling et al., 2004; Widya & Mursalin, 2023).

The purpose of anthropomorphic packaging design is to manipulate the anthropomorphic tendencies of consumers by providing appropriate stimuli to give human characteristics to something that is not human, so that consumers perceive the product or brand as a personified one. In packaging, anthropomorphism can be used to create a unique brand image and bring the product or service closer to the consumer, and the anthropomorphism of the product can increase the perceived similarity of the product to the consumer and shorten the psychological distance between itself and the product (Wu et al., 2025).

Chinese scholars believe that brand anthropomorphic images affect consumers' attitudes and purchasing behaviors through their perceptions, and that consumers will have different expectations of partner brand anthropomorphic images and servant brand images (Liang et al., 2024). For example, some brands may anthropomorphize their product or service into a character with distinctive personality and characteristics to create an emotional connection with consumers.

At the level of marketing strategy, appearance anthropomorphism, disposition anthropomorphism and interaction anthropomorphism represent the continuous enrichment and development of anthropomorphic means (Wang & Wang, 2021). That is, from the initial provision of visual and auditory sensory stimulation information, it gradually begins to advance towards the deeper perception of the audience. Anthropomorphic packaging is no longer satisfied with simple physical anthropomorphism or cartoon images, but attempts to use anthropomorphic images to communicate and interact with consumers in depth, through anthropomorphic packaging images to make their products and brands not only "look like people", but also "feel like people", with human temperament and thought. Enterprises through anthropomorphic marketing strategy, the use of humorous language, pictures and cartoons, animation and other anthropomorphic images, shorten the emotional distance between consumers and enterprises, so that the corporate brand deep into the hearts of consumers (Lu, 2020).

2 LITERATURE REVIEW

Zhang Yu conducted a study with an experiment, which was a between-group design with the level of anthropomorphization of product packaging (anthropomorphic vs. non-anthropomorphic) as the independent variable and the anthropomorphism

rating score as the dependent variable (Zhang, 2022). With the results of their experiments, the following studies were conducted: the mediating role of social interaction in the effect of anthropomorphism on brand attitudes; the moderating role of adult playfulness in the effect of anthropomorphism on brand attitudes, and the following conclusions were drawn: (1) Consumers preferred product packages with anthropomorphic elements over those without anthropomorphic elements. (2) Social interaction plays a mediating role between anthropomorphism level and brand attitudes. When product packaging contains anthropomorphic elements, anthropomorphic manipulation of appearance as well as context enables the establishment of social interaction between the anthropomorphic image and the consumer, which in turn elicits more positive brand attitudes from the consumer. (3) Adult fun plays a moderating role in the relationship between anthropomorphism level and brand attitudes, when consumers' level of adult playfulness traits is high, the higher the anthropomorphism level of the product packaging, the more positive consumers' attitudes towards the brand; while there is no significant difference in brand attitudes towards product packaging with or without anthropomorphic elements among consumers with low adult playfulness traits.

Hu used experimental and interview methods to conduct the study (Hu, 2021). Experiment 1 tested that the interaction between anthropomorphic brand roles and consumers' self-constructed types had an effect on purchase intention; Experiment 2 demonstrated that perceived value (functional value vs. emotional value) has a mediating role in the mechanism by which anthropomorphic brand roles and consumers' self-constructs interact to influence purchase intention. The researcher used interviews to gain insight into consumers' knowledge of anthropomorphic brand personas. The experimental and interview methods led to the following conclusion: when consumers are independent (vs. dependent) self-constructs, consumers have higher purchase intention for anthropomorphic brands with servant (vs. partner) roles. Perceived value plays a mediating role in the interaction of anthropomorphic brand roles and self-constructs in influencing consumers' purchase intention, including emotional value and functional value. When the brand appears in the role of partner, if the consumers are dependent self-constructs, they will have higher affective value, which will enhance their purchase intention; when the brand appears in the role of servant, if the consumers are independent self-constructs, they will have higher

functional value, which will enhance their purchase intention.

Huang Fan used two quasi-experiments to conduct the study - Experiment 1: The effect of the interaction of anthropomorphic packaging and the type of nutrition label on the front of the package on the willingness to purchase food; the effective sample was 137. Experiment 2: The mediating role of comparative judgment strategies; the effective sample was 189 participants (Huang et al., 2023). The following conclusions were drawn from the study: (1) anthropomorphic packaging (vs. non-anthropomorphic packaging) of a food product would lead to a greater preference for an absolute judgment strategy (vs. a dimensional judgment strategy) in evaluating that food product; and (2) This would further lead to a greater consumer preference for anthropomorphic packaged foods with evaluated front-of-pack nutrition labels and for non-anthropomorphic packaged foods with objective front-of-pack nutrition labels.

Rongrong Wang determined the research questions, research theories and research models mainly through the literature analysis method and focus group interviews in the early stage; and verified the proposed hypotheses mainly through the experimental research method and statistical analysis method in the later stage (Wang, 2024). Literature analysis method: in the stage of determining the research question, literature and books related to food anthropomorphism and factors affecting the willingness to purchase healthy food at home and abroad are sorted out and summarized to summarize the existing theoretical results, research frontiers and shortcomings. In the stage of determining the research model, the relevant stereotype content model theory and dual-process theory are reviewed, and the conceptual model among the relevant variables in this paper is clarified through systematic analysis and organization to provide theoretical guidance for the empirical research. Focus group interview method: in the stage of refining the research question, consumers' views on healthy food and food anthropomorphism are interviewed. Experimental research method: subjects were randomly assigned to different simulated consumption situations to understand the effect of anthropomorphism of healthy food on consumers' purchase intention and the effect of different healthy food consumption frequencies on this effect, and the corresponding variables were measured by scales. Statistical analysis method: firstly, Excel was used to pre-process the data, and then SPSS was used to analyze the pre-processed

data, including the statistical and descriptive analysis of basic information, the reliability and validity analysis of the content of the scale, the mediation analysis, and the analysis of moderating effects. The following conclusions are drawn from the above methods: (1) Compared with no anthropomorphism strategy, warm anthropomorphism and competence anthropomorphism for healthy food can increase consumers' willingness to buy healthy food to the same extent. (2) Perceived fun and perceived quality mediate the effect of the type of anthropomorphization of health food (warm vs. competent) on purchase intention. (3) Health food consumption frequency (low frequency vs. high frequency) moderated the relationship between health food anthropomorphization type (warm vs. competent) and purchase intention. Low-frequency health foods with anthropomorphization strategies of warmth type (vs. competence type) had higher fun perceptions and higher purchase intentions: high-frequency health foods with anthropomorphization strategies of competence type (vs. warmth type) had higher quality perceptions and higher purchase intentions.

3 METHODOLOGY

3.1 Questionnaire and Data Collection

In order to explore people's preference and purchase willingness for food packaging anthropomorphism, this paper designed a questionnaire. The questionnaire was divided into two parts, containing thirteen questions, involving respondents' basic information, respondents' views on anthropomorphization of food-based packaging. It was released on February 19, 2025 on the platform of Questionnaire Star, and a total of 100 valid questionnaires were collected by February 25, 2025, with a recovery rate of 100%. The basic information of the respondents is as follows:

There are relatively more "female" respondents in the questionnaire, with a proportion of 64.00%. The proportion of "male" sample is 36.00%.

More than 30% of the respondents were in the age range of "18-24 years". (see Figure 1)

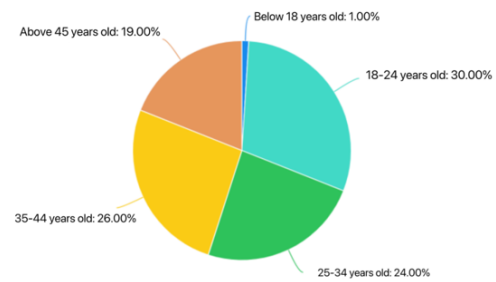


Figure 1. Results of age distribution

3.2 Preference Analysis of Anthropomorphism in Food Packaging

Table 1. Anthropomorphic design: attractiveness and potential problems at the same time

Name (of a thing)	Options	Frequency	Percentage (%)
What is your attitude towards anthropomorphic design of food packaging?	very supportive	16	16.00
	supportive	28	28.00
	neutral	54	54.00
	opposed	2	2.00

More than 50% of the samples in the survey chose "neutral". The reasons may be as follows: anthropomorphic design can attract attention, enhance emotional connection, improve brand recognition and promote sales. However, anthropomorphic design may also have potential problems such as misleading consumers, cultural differences, over-reliance on packaging, and target group limitations (see Table 1).

The proportion of "humorous anthropomorphic language" in the survey questionnaire is relatively high (51.00%). Humorous anthropomorphic language packaging is more popular due to its emotional resonance, memory points, brand personality, stress relief, target group and cultural acceptance. This type of packaging not only enhances brand appeal, but also improves consumers' shopping experience and satisfaction (see Table 2).

Table 2. Differences in acceptance of anthropomorphic design elements

Name (of a thing)	Options	Frequency	Percentage (%)
Which of the following anthropomorphic design elements do you find most appealing?	Cute cartoon image	24	24.00
	Vivid Emoticons	20	20.00
	Humorous anthropomorphic language	51	51.00
	else	5	5.00

39% of respondents prefer anthropomorphic food packaging design.

Whether the anthropomorphic design of food packaging in the questionnaire can attract attention, people choose "a certain degree of attraction" relatively more, the proportion of 39.00%, proving that the anthropomorphic design of food packaging compared to ordinary food packaging, some people will be more fond of anthropomorphic design of food packaging.

Table 3. Future food packaging trends: anthropomorphic storylines to enhance emotional connection and brand value

name (of a thing)	Frequency	Percentage (%)
A Cartoon image	41	41.00
B anthropomorphic storyline	58	58.00
C Interactive design	36	36.00
D Emotional expression	55	55.00
E Else	9	9.00

Based on the questionnaire survey, more anthropomorphic storylines should be added to food packaging design in the future, as this design approach can enhance emotional connection, improve brand memory, convey brand concepts and increase fun. Anthropomorphic storyline not only attracts more consumers, but also gives deeper emotional value to the brand and adapts to the future market trend (see Table 3).

3.3 Food Packaging Anthropomorphic Product Purchase Willingness Analysis

More than 50% of the samples in the questionnaire paid a premium for "Depends on the situation", reflecting consumers' cautious and conditional attitude towards anthropomorphic design. They may

consider the following factors: design quality, brand trust, product value, personal preference, price sensitivity, market comparison, and cultural acceptance. Thus, consumers may judge whether they are willing to pay extra for anthropomorphic designs based on a combination of these factors(see Table 4).

Table 4. Willingness of over 50% of consumers to pay a premium for anthropomorphic design depending on conditions

Name (of a thing)	Options	Frequency	Percentage(%)
If a food product is slightly more expensive due to anthropomorphic design, would you be willing to pay a premium for it?	Yes	16	16.00
	No	27	27.00
	Depends on the situation	57	57.00

Anthropomorphic packaging design: to 'interesting' feeling to win the favor of consumers

From the questionnaire data, 79% of people chose "interesting" for what anthropomorphic packaging design will bring to consumers. Anthropomorphic packaging design can bring more interesting feelings due to its advantages of emotional connection, creative expression, memory point, brand personality, target group, interactive experience and cultural acceptance.

4 CONCLUSIONS

Through the consumer questionnaire survey on anthropomorphic food packaging products, the survey data shows the following main conclusions: consumer attitudes towards anthropomorphic food packaging design are diversified. More than 50% of the samples chose "neutral", indicating that anthropomorphic design has the potential to attract attention, enhance emotional connection and improve brand recognition, but there are also potential problems such as misleading consumers and cultural differences. Nevertheless, humorous anthropomorphic language design is more popular with 51% of respondents, and can significantly enhance brand appeal and consumer satisfaction due to its advantages of emotional resonance and brand personality. At the same time, 39% of respondents believe that anthropomorphic design is "somewhat

attractive", indicating that it is more popular with some consumers than ordinary packaging. In the future, anthropomorphic storyline design is considered to have more market potential due to its ability to enhance emotional connection and convey brand concepts. However, consumers are more cautious about paying a premium for anthropomorphic designs, depending on multiple factors such as design quality and brand trust. Based on the results of the current study, the following recommendations are made for packaging design by merchants: balance design and practicality, focus on humor and emotional resonance, explore anthropomorphic storylines, ensure design quality, and consider cultural differences. Merchants should fully utilize the advantages of anthropomorphic design, while paying attention to the potential problems: misleading consumers, cultural differences and sensitivities, prudence of consumers in paying premiums, overdesign or aesthetic fatigue, matching of brand personality and market positioning, limitations of target audiences, market competition and risk of imitation, longevity of emotional connection, environmental protection and sustainability. People should meet market demand and enhance brand value through innovation and optimization.

Overall, anthropomorphic packaging design has brought more interesting feelings to consumers with its fun and emotional connection advantages. The future is expected to bring more interesting feelings to consumers through further research on the influence of internal factors of different consumers, the influence of cultural differences and subcultures, the specific expressions of anthropomorphic design, the market effects of anthropomorphic packaging, the ethics and sustainability of anthropomorphic packaging, technology-driven anthropomorphic design innovation, the emotional and psychological effects of anthropomorphic packaging's emotional and psychological effects and other research themes. An in-depth study of these topics can provide a more comprehensive understanding of the potential and limitations of anthropomorphic packaging design, provide more targeted design strategies for businesses, and promote theoretical innovation and practical development in the field of packaging design.

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