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The Effect of AI Product Image Anthropomorphism on Consumer Purchase Intention

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Abstract. The study focused on deconstructing the image of AI anthropomorphism in the casual food industry and investigating its impact on consumers' intention to purchase. This was done by examining impression-based cues and interaction-based cues, while also considering the role of psychological distance and information processing fluency. Additionally, the study explored the moderating role of consumers' self-constructed type. Previous research has shown that factors like AI anthropomorphic impression-based cues and interactive cues significantly influence consumers' purchase intention. Notably, the influence of interactive cues appears to be stronger. Furthermore, it has been found that both psychological distance and information processing fluency partially mediate the effect of AI anthropomorphism of product image on consumer purchase intention. Furthermore, the influence of anthropomorphic interactive cues on consumer purchase intention is contingent upon the type of consumer self-construction. Notably, individuals who possess interdependent self-construal are more inclined to purchase AI anthropomorphic product images that incorporate interactive cues, as opposed to those who possess independent self-construal. Conversely, there is no substantial disparity in the willingness to purchase AI anthropomorphic product images with impressionistic cues among consumers with different self-construal.

Keywords. Product Image AI Anthropomorphism; Purchase Intention; Psychological Distance; Information Processing Fluency

1. Introduction

With the advent of the market economy, enterprises are increasingly enhancing their core competitiveness through product upgrades and innovations. Furthermore, there is a growing emphasis on the establishment of product image within enterprises. Notably, the utilization of AI anthropomorphic product image has garnered significant attention due to its distinct advantages. Consequently, the application of product image AI anthropomorphic marketing strategy has emerged as a prominent research topic among scholars. Existing studies primarily concentrate on investigating the disparities in marketing effectiveness between AI anthropomorphism and non-AI anthropomorphism [1]. Additionally, scholars have explored a range of psychological processes, attitudes, evaluations, and purchasing behaviors that may arise when consumers are confronted

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with product images or products bearing human-like characteristics [2]. Furthermore, a few researchers have delved into the impact of AI anthropomorphic communication on consumer attitudes and behaviors [3], as well as the effects of AI anthropomorphic images associated with various product attributes (such as competence or warmth) on consumer behaviors [4].Overall, existing studies have taken product image AI anthropomorphism as an independent unidimensional variable to conduct relevant empirical research, Wang Tao et al[5], proposed that product image AI anthropomorphism should be defined as a multidimensional concept, however, when it comes to assessing the marketing effectiveness of product image AI anthropomorphism, purchase intention is considered a more suitable measure, there is a lack of research exploring the specific mechanisms through which product image AI anthropomorphism influences purchase intention.

As marketing research evolves, Guo Guo Qing et al argue that certain fundamental concepts and theories from psychology and sociology can effectively elucidate the influence of product image marketing strategies on consumer behavior [6]. Product image AI anthropomorphism emphasizes the portrayal of human characteristics in product images to evoke consumer associations. This approach facilitates consumer comprehension of the conveyed information, reduces unfamiliarity with the product image, and establishes a closer connection between the consumer and the product image.

Consequently, these factors ultimately shape consumer attitudes and preferences towards the product. This paper examines the marketing impact of AI anthropomorphic product image shaping, specifically focusing on two dimensions: impression-based cues and interaction-based cues. It also investigates the influence of psychological distance and information processing fluency on consumers' purchase intention in relation to the AI anthropomorphism of product image. Additionally, the role of consumer self-construction as a moderating variable is explored to determine if there are discrepancies in the effect of AI anthropomorphism on purchase intention among consumers with different construct types.

2. Related Works

Product image AI anthropomorphism is mainly composed of three dimensions: external, internal and social, which can be used by enterprises to stimulate consumers' product image AI anthropomorphism perception. The external dimension of product image AI anthropomorphism can be easily perceived by consumers. Empirical studies have shown that consumers associate certain features of beverage bottles, such as a thin middle and wide ends resembling a human "waist", with the product image design. By incorporating elements like "mouth" and "ears" into the design, consumers perceive the product image as a person [7]. The intrinsic dimension of product image AI anthropomorphism reflects the unique personality of a product image and represents its culture and values. Each product image should possess its own personality, as this makes it easier for consumers to perceive it as having human-like qualities [8]. The personality of a product image can also help consumers find a product image that aligns with their own personality, which can impact their decision to consume. In the social dimension, AI anthropomorphism enables the product or product image to autonomously communicate and interact with consumers. Through language, such as greetings, the product or product image can initiate the consumer's perception of AI anthropomorphism, thereby enhancing the customer's emotional experience and gaining trust and favor [9]. To interact with

consumers, AI anthropomorphic product image strategy will also shape different roles and images. Combined with the marketing practice of product image AI anthropomorphic role shaping, scholars have discovered that consumers tend to perceive AI anthropomorphic product image roles as either partners or servants. The study further reveals that consumers are more likely to engage in effective social interactions with AI anthropomorphic product images that align with social norms [10]; Additionally, the utilization of different types of AI anthropomorphic images enables more targeted and personalized communication and interaction with consumers, resulting in the perception of the product image as a real individual. This perception ultimately contributes to enhancing consumer sentiment towards the product image [11].

Psychological distance can systematically influence people's preference and choice decisions, and its important value and role in understanding consumer behavior has received increasing attention from scholars, and more and more scholars have introduced psychological distance into the study of consumer behavior. Existing research mainly focuses on the effects of psychological distance on the persuasive effect of information and on the evaluation of consumers' products or product image, purchase decision and purchase intention. Providing marketing persuasive messages with different levels of explanation matching the time distance for different purchase points of consumers can effectively improve the persuasive effect and influence of these messages, for example, when consumers are going to buy a certain product in the near future, messages with low levels of explanation (e.g., price discounts and purchasing convenience) have a greater influence on consumers' evaluation of the product[12]. When the advertising message matches the psychological explanation level of consumers, i.e., when the psychological distance is close, the advertising message has a stronger persuasive effect and can effectively promote consumers' purchase behavior. In a study conducted by Kim and John [13], the authors explored how two important dimensions of psychological distance, namely temporal distance and social distance, affect consumers' evaluations of products. The findings revealed that consumers tend to prioritize product attributes that can be easily explained when making future purchases at a greater temporal distance or for someone else at a greater social distance. Huang Jing et al found that when the product image offense event occurs, the degree of negative evaluation of the product image by consumers is affected by the psychological distance (spatial distance, social distance), compared to the psychological distance far, the degree of negative evaluation of consumers is higher when the psychological distance is close [14].

Scholars have conducted research on the influence of information processing fluency on consumer behavior. It has been discovered that information processing fluency has a favorable effect on consumer perceptions, evaluations of products or product images, and consumer decisions. Ferraro et al have determined that high information processing fluency can enhance an individual's familiarity with the information presented, resulting in increased knowledge of the processing object[15]. This, in turn, boosts the individual's confidence, which positively impacts their consumption choices, attitudes, and other specific behaviors[16]. Information processing fluency also has the potential to positively influence consumers' impulsive purchasing intentions. When individuals experience information processing fluency, they tend to have a positive and pleasurable experience, which increases the likelihood of impulsive purchasing behavior. Jin Fei and Zhu Huawei have also confirmed the impact of information processing fluency on consumers' impulse purchase intentions [17]. They found that high information processing fluency can stimulate positive information valence and promote consumers' intention to make a purchase.

The concept of self-construal plays a significant role in influencing various aspects of consumer behavior, such as self-motivation, value judgment, and attitude preference. Consumers with different types of self-constructs exhibit distinct perceptions, attitudes, and purchasing decisions towards products or product images. Lalwani and Shavit have argued that individuals with different self-constructing tendencies process information differently, thereby impacting their evaluation of products [18]. Those with interdependent constructs tend to integrate information and seek connections between various pieces of information, adopting a holistic thinking approach that often leads to more emotionally driven behavioral decisions. On the other hand, individuals with independent constructs prefer processing information autonomously, adopting an analytical thinking style that tends to result in more rational behavioral decisions. Thus, individuals possessing interdependent constructs exhibit a greater inclination to perceive connections among product components than individuals with independent constructs. Regarding impulsive buying behavior, individuals with interdependent self-construal display a heightened propensity for impulsive purchases compared to individuals with independent self-construal [19]. This is attributed to the former's reliance on emotions during decision-making, while the latter tend to adopt a more rational and evidence-based approach [20]. Furthermore, individuals with independent self-construal possess the ability to restrain their own consumption impulses. The field of consumer behavior has extensively explored the moderating impact of self-construal on attitudes and behaviors from diverse perspectives [21-23].

3. Research Hypothesis and Modeling

3.1. Research Hypothesis

The effect of product image AI anthropomorphism on consumer purchase intention.AI anthropomorphic features can stimulate consumers' cognitive patterns, enhance their perceptual fluency, and stimulate positive emotional responses, and these emotional positives will be transmitted to the product or brand image, which will improve consumers' attitudes and evaluations [2]. At the same time, AI anthropomorphic design helps to reduce the risk perceived by consumers [1], reduces hesitation in purchasing, and prompts consumers to be more inclined to purchase. In addition, the interaction between the AI anthropomorphic product image and consumers satisfies human social needs, through which consumers can satisfy basic social needs, establish social connections and emotional bonds, and ultimately form positive product image attitudes and purchase behavior [6]. For this reason, this paper proposes the following hypotheses.

- H1: Product image AI anthropomorphism has a positive effect on consumer purchase intention.
- H1a: Product image AI anthropomorphic impression-based cues have a positive effect on consumer purchase intention.
- H1b: Product image AI anthropomorphized interactive cues have a positive effect on consumer purchase intention.

The mediating role of psychological distance. Prior studies have demonstrated that imbuing product images with human characteristics, thoughts, and emotions can elicit a sense of friendliness, trust, and persuasion among consumers. Gupta et al discovered that interactive communication between AI anthropomorphized product images and

consumers fosters a closer relationship between the two parties [24], with increased communication leading to greater trust and emotional connection. Furthermore, researchers examining psychological resistance theory found that when AI anthropomorphized communication incorporates unrelated information alongside product images, consumers perceive it as less persuasive compared to traditional promotional messaging. Consequently, this reduces psychological resistance towards the product image or the product itself and shortens the psychological distance between consumers and the product image. As a result, consumers' attitudes towards the product image are improved[5]. Notably, the reduction in psychological distance can directly or indirectly influence consumers' purchase intentions[25]. In addition, Zhou Fei and Sha Zhen Quan studied the effect of product image AI anthropomorphism on consumers' ability and warmth perception, and found that psychological distance plays a mediating role. To this end, the following hypotheses are formulated in this paper.

- H2a: Product image AI anthropomorphic impression-based cues can bring consumers closer to the psychological distance of the product image.
- H2b: Product image AI anthropomorphic interactive cues can bring consumers closer to the psychological distance of the product image.
- H3: The closer consumers are psychologically to the product image, the greater their willingness to buy the product image (product).
- H4: Psychological distance mediates the effect of AI anthropomorphism of product image on consumer purchase intention.
- H4a: Psychological distance mediates the effect of product image AI anthropomorphic impression-based cues on consumer purchase intention.
- H4b: Psychological distance mediates the effect of product image AI anthropomorphic interactive cues on consumer purchase intention.

The mediating role of information processing fluency. Oppenheimer highlighted the significance of enhancing information processing fluency in enhancing consumers' attitudes and purchase intentions towards products or product images. Information processing fluency can be categorized into two dimensions: perceptual fluency and conceptual fluency. Perceptual fluency pertains to the ease or difficulty in identifying a target stimulus based on its physical attributes, such as size, shape, color, and other observable characteristics. On the other hand, conceptual fluency refers to the ease or difficulty in identifying the target stimulus through the analysis of its semantic and other intricate information attributes. In light of this, this paper puts forward the following hypotheses.

- H5: Product image AI anthropomorphism has a positive effect on information processing fluency.
- H5a: Product image AI anthropomorphic impressionistic cues have a positive effect on information processing fluency。
- H5b: Product image AI anthropomorphic interactive cues have a positive effect on information processing fluency.
- H6: Information processing fluency has a positive effect on consumer purchase intention.
- H7: Information processing fluency mediates the effect of AI anthropomorphism of product image on consumer purchase intention.
- H7a: Information processing fluency mediates the effect of product image AI anthropomorphic impression-based cues on consumer purchase intention.

- H7b: Information processing fluency mediates the effect of product image AI anthropomorphic interactive cues on consumer purchase intention.

3.2. Model Construction

Based on the above literature compilation and analysis, the conceptual model of this study is proposed (see Figure 1).

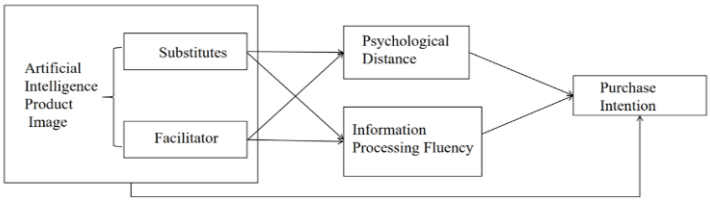

Figure 1. Conceptual framework

4. Research Design and Computational Analysis

4.1. Design and Inspection

This scholarly paper has selected the product image within the leisure food industry as the subject of empirical investigation. The study was carried out over the period spanning from January 2020 to the end of January 2020. A total of 250 questionnaires were distributed, out of which 238 valid questionnaires were successfully collected, resulting in a commendable recovery rate of 95.2%. Through the analysis of descriptive statistical data derived from the valid questionnaires, it was observed that the samples exhibited a wide distribution and demonstrated a high level of representativeness. This approach aimed to minimize the impact of random factors on the research findings as much as possible.

Within this scholarly paper, an examination of descriptive statistical analysis and correlation testing was conducted using SPSS *22.0*. The resulting data presents the following: The average value for the impression-based cue dimension of AI anthropomorphism within the product image is 5.8655, whereas the average value for the interaction-based cue dimension is *4.9160*. Notably, both of these dimensions possess average values that surpass the median of *3.5,* indicating a relatively high level of anthropomorphism. Consequently, this signifies that consumers hold a favorable overall assessment regarding the extent of AI anthropomorphism within the sample product image, thus reinforcing the validity of our product image selection. The Cronbach's alpha coefficients for product image AI anthropomorphism, psychological distance, information processing fluency, purchase intention, and self-construal all exceed 0.8. The reliability of these variables was assessed by removing the question items, and no increase in reliability was found. This indicates that the formal research data is highly reliable. Furthermore, the KMO value and Bartlett's spherical test were conducted on the data for product image AI anthropomorphism, psychological distance, information processing fluency, purchase intention, and self-construction. The KMO value exceeded 0.7, and the p-value for Bartlett's spherical test was 0.000, which is much smaller than 0.01, demonstrating high significance. Finally, the Pearson correlation test revealed a

significant correlation between the independent variables, mediator variables, and dependent variables.

4.2. Calculation and Analysis

This study will utilize SPSS *22.0* to perform a regression analysis on the variables, aiming to examine the hypotheses put forth. To evaluate causality in the regression analysis, a significance p-value below 0.05 and a t-value exceeding *1.96* are deemed as indicators. Table 1 presents the detailed outcomes of the hypothesis testing conducted in this research.

Table 1. Results of hypothesis testing

Suppose that	Hypothetical content	Test results
H1a	Product image anthropomorphizing impression-based cues have a positive effect on consumer purchase intention	be tenable
H1b	Product image anthropomorphic interactive cues have a positive effect on consumer purchase intention	be tenable
H2a	Product image anthropomorphic impression-based cues can bring consumers closer to the psychological distance of the product image	be tenable
H2b	Product image anthropomorphized interactive cues can bring consumers closer to the psychological distance of the product image	be tenable
H3	The closer the consumer is psychologically to the product image, the greater their willingness to buy the product image (product)	be tenable
H4a	Psychological distance plays a mediating part in the effect of anthropomorphic impressionistic cues of product image on consumers' purchase intention	be tenable
H4b	Psychological distance plays a mediating part in the effect of product image anthropomorphic interactive cues on consumer purchase intention	be tenable
H5a	Product image anthropomorphic impressionistic cues have a positive effect on information processing fluency	be tenable
H5b	Product image anthropomorphizing interaction-based cues have a positive effect on information processing fluency	be tenable
H6	Information processing fluency has a positive effect on consumer purchase intention	be tenable
H7a	Information processing fluency plays a mediating part in the effect of anthropomorphic impressionistic cues of product image on consumer purchase intention	be tenable
H7b	Information processing fluency plays a mediating part in the effect of anthropomorphic interactive cues of product image on consumer purchase intention	be tenable

5. Conclusion

5.1. The Role of Product Image AI Anthropomorphism on Consumer Purchase Intention

Product image AI anthropomorphism is an emerging marketing tool that has the potential to positively influence consumers' purchase intention, regardless of impression-based or interaction-based cues. Empirical analysis further supports this notion, indicating that the interactive cues of AI anthropomorphism in product images have a greater impact on consumers' purchase intention compared to the responses generated by impression-based

cues. This can be attributed to the fact that when product images incorporate interactive AI anthropomorphic cues, such as expressing emotions and personalities, as well as interacting with consumers, it becomes easier for consumers to perceive them as real-life "human-like" individuals. This enhances the relationship between consumers and the product image, ultimately boosting consumers' purchase intention.

5.2. The Mediating Role of Psychological Distance

Both the impression-based cues and interaction-based cues of product image AI anthropomorphism could reduce the psychological distance between consumers and the product image. This closer psychological distance has a significant impact on consumers' love for the product image as well as their intention to purchase the product. The mediating role of psychological distance is evident in the influence of product image AI anthropomorphism on consumers' purchase intention. Interestingly, the study findings indicate that interactive cues of product image AI anthropomorphism are more effective in reducing the psychological distance between consumers and the product image compared to impression-based cues. In this context, psychological distance refers to the mental connection between consumers' perception and the product image. The interactive cues primarily focus on the communication and interaction between the product image and consumers. Through this communication and interaction, consumers develop a deeper perception of AI anthropomorphism, which ultimately increases their willingness to purchase the product and brings them closer to the psychological distance with the product image.

5.3. The Mediating Role of Information Processing Fluency

Both impression-based cues and interaction-based cues of product image AI anthropomorphism have the potential to enhance consumers' information processing fluency, thus positively impacting their purchase intention towards the product. The influence of product image AI anthropomorphism on purchase intention is partially mediated by information processing fluency. Moreover, the study results indicate that impression-based cues of product image AI anthropomorphism have a greater impact on consumers' perceived information processing fluency compared to interactive cues. These impression-based cues are more intuitive and simpler in presenting product image or information, thereby reducing the difficulty consumers face in understanding the product. Additionally, these cues do not emphasize interactivity, allowing consumers to process information more easily without needing to actively participate in interactions.

5.4. The Moderating Role of Self-Construal

The consumer's self-construction type partially moderates the influence of product image AI anthropomorphism on their purchase intention. However, self-construction does not moderate the influence of product image AI anthropomorphism impressionistic cues on purchase intention. Additionally, there is no significant difference in the purchase intention of consumers with different construct types when exposed to impressionistic AI anthropomorphic product images. On the other hand, self-construction does play a moderating role in the effect of product image AI anthropomorphic interaction type cues on purchase intention. Furthermore, interdependent self-constructed consumers exhibit

stronger purchase intention for interaction type AI anthropomorphic product images compared to independent self-constructed consumers.

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