A Comparative Study on the Persuasive Effect of PGC and AIGC Infant-Specific Water Advertising Information on People in the Context of the Intelligent Era - Based on Frame Theory

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Abstract: This research focuses on the intelligent era. Based on the framing theory, it compares the persuasive effects of PGC (Professionally Generated Content) and AIGC (Artificial Intelligence Generated Content) advertising information of Infant-Specific water on the public. By designing a 2×2 advertising information framework, collecting data through questionnaires, and using MANOVA and ANOVA for analysis, this study explores the impact of different combinations of information sources and appeal methods on consumers' attitudes towards products and their purchasing behaviors. The aim is to provide references for the innovation of advertising theory, the optimization of enterprise strategies, and the development of the industry. The results of this study, based on 626 valid samples, explored the impact of information source (AIGC vs. PGC) and advertising frame (rational vs. emotional) on consumer purchase attitudes and behaviors using ANOVA and MANOVA. The scale demonstrated good reliability (Cronbach's α = 0.849). The ANOVA results revealed significant main effects of information source on purchase attitude (F = 6.053, p = 0.014 < 0.1) and purchase behavior (F = 8.601, p = 0.003 < 0.1). Specifically, compared with the PGC group, the AIGC group exhibited more favorable purchase attitudes and behaviors. The advertising frame showed a significant main effect only on purchase behavior (F = 3.061, p = 0.081 < 0.1). Specifically, the rational advertising frame group exhibited more favorable purchase behavior compared with the emotional advertising frame group. The MANOVA analysis indicated significant interactions between information source and advertising frame (purchase attitude: F = 575.324, p < 0.1; purchase behavior: F = 701.504, p < 0.1). Specifically, the combination of AIGC and rational frame achieved the highest scores, followed by the combination of PGC and emotional frame, while the other combinations showed weaker performance.

Keywords: Framing Theory; PGC; AIGC; Advertisements for Infant-Specific Water; Persuasive Effect

1. Introduction

1.1 Background and Practical Significance

In the intelligent age, the advertising industry has embraced new changes. Traditional UGC (User-Generated Content) is gradually shifting towards PGC (Professionally-Generated Content) and AIGC (Artificial Intelligence-Generated Content). PGC is defined as the content created through the collaboration between video hosting platforms and sophisticated media professionals or media groups (such as NBC in the United States) [1], boasting high quality and credibility. AIGC is accomplished by extracting and comprehending intent information from the instructions provided by humans and generating content based on such knowledge and intent information [2], demonstrating high efficiency and innovativeness. Moreover, infant-specific water that complies with international standards meets babies' demands for low-mineral-content and sterile drinking water. Given the significance of infant-specific water [3], its advertising information exerts a crucial influence on consumers' decision-making. Consequently, studying the persuasive effects of PGC and AIGC in infant-specific water advertisements holds great importance for the development of advertising theory and the formulation of advertising strategies by enterprises.

1.2 Framing Theory

The Framing Theory is widely applied in the

field of news communication and has deep roots in the principles of the Mediation Theory. This theory posits that "the media" acts as an intermediary between people and society, as well as between the external world and the audience [4]. In this thesis, the advertisements for infant-specific water, similar to the role of the media in news communication, serve as an intermediary connecting the product and consumers. This thesis will utilize the Framing Theory and approach the research from two key perspectives: information sources (PGC and AIGC) and appeal methods (emotional framing, rational framing). By analyzing these two factors, this paper aims to explore how their combinations and information presentations influence consumers' attitudes towards infant-specific water advertisements and their purchasing behaviors.

1.3 Comparison between Information Sources (PGC vs AIGC)

Although only a small number of studies have explored the comparison between PGC and AIGC, numerous researches are concerned with the contrast between human-generated content and AI-generated content. The research results suggest that there are differences in content generation between human-generated content and AI-generated content. Human-generated content typically places more emphasis on emotional resonance and creative expression, while AI-generated content demonstrates better performance in terms of information accuracy and logical coherence. [5]

1.4Comparison between appeal methods (emotional framing vs rational framing)
Message appeal refers to the way of appealing adopted to make the audience accept the content advocated in a specific advertising message. The types of message appeals can be classified into rational information and emotional information[6]. Based on previous research, this paper will categorize the appeal methods into rational framing and emotional framing. Rational framing usually refers to advertisements that appeal to reason. These advertisements are logical, aiming to seek consumers' rational understanding and call on them to make reasonable decisions. Emotional framing, on the other hand, is an advertising expression method that induces purchasing behavior by evoking consumers' emotions. It is characterized by stimulating emotions or

feelings to prompt consumers to make decisions.

2. Research Design

2.1 Research Questions

Based on the Framing Theory and existing research, this study raises the following questions.

RQ1 (Main Effect 1): What is the impact of information source (AIGC vs. PGC) on the persuasive effect on the target population?

RQ2 (Main Effect 2): What is the impact of the appeal method (emotional framing vs. rational framing) on the persuasive effect on the target population?

RQ3 (Interaction Effect) : What is the impact of the interaction between the information source (AIGC vs. PGC) and the appeal method (emotional framing vs. rational framing) on the persuasive effect on the target population?

2.2 Research Methods

This study employed a 2×2 experimental design. The independent variables were information source (PGC and AIGC) and appeal method (emotional framing and rational framing), while the dependent variables were consumers' attitudes towards the products in the infant-specific water advertisement information and their purchasing behaviors. The experimental materials consisted of four groups of advertising information, each corresponding to different experimental conditions.

2.3 Sample Selection

The sample was composed of 650 parents (mothers and fathers) with infants in first-tier, second-tier, and third-tier cities in China. The simple random assignment method was adopted to distribute the sample into different experimental groups.

2.4 Data Collection

Data were collected through questionnaires. The questionnaires included questions regarding the respondents' basic information, their recognition of advertising information, their attitudes towards products, and their purchasing behaviors.

2.5 Data Analysis

MANOVA (Multivariate Analysis of Variance) and ANOVA (Analysis of Variance) were used for data analysis to test the impacts of different

framing models on consumers' attitudes and behaviors.

2.6 Questionnaire Survey

Survey platform: SoJump

Measurement: A 5-point Likert scale was used.

Pretest: A pretest was carried out prior to the large-scale distribution of the questionnaire. Some potential respondents were invited to fill out the questionnaire, during which the clarity of question formulations, difficulty of comprehension, completeness of responses, and rationality of options were examined.

Questionnaire Content

Questions Related to the Respondents

(1) Which of the following cities do you currently live in?

(2) What is your age?

(3) Do you have any children?

(4) How old is your baby?

Questions Related to Manipulation Checks

(1) To what extent can you accurately identify whether the advertisement you saw was generated by AI or created manually?

(2) How confident are you in your judgment when identifying whether an advertisement is generated by AI or created manually?

(3) When you are sure that an advertisement is manually created, to what extent do you think you can determine whether it was produced by a professional advertising company [PGC] or an individual user [UGC]?

(4) How confident are you in the accuracy of your judgment regarding whether a manually-created advertisement is from a professional advertising company [PGC] or an individual user [UGC]?

(5) To what extent do you think the advertisement content is emotional?

(6) How do you evaluate the reliability of your judgment on whether the advertisement content is emotional or rational?

Questions for Measuring Purchase Attitudes[7]

(1) I plan to buy infant-specific water products next time because they have a positive impact on the baby.

(2) I plan to buy more infant-specific water products instead of ordinary products.

(3) For the protection of the infant, I will consider switching to infant-specific water products.

Questions for Measuring Purchase Behaviors[7]

(1) I think buying infant-specific water products is beneficial.

(2) I think buying infant-specific water products is a good idea.

(3) I think buying infant-specific water products is safe.

2*2Stimuli

All are 117 Chinese characters in length. All the selected advertising content is related to the Chinese infant-specific water brand, Nongfu Spring, which was published in the media. In this thesis, the video format was converted into a text format, and the text content was slightly adjusted to achieve the effect of controlling variables.

(1) Stimuli 1: Advertisement with the Manual * Emotional Framework

The following advertisement information you are about to see comes from a company named Nongfu Spring, which produces infant-specific water. Rooted in the brand's profound heritage, it adheres to the concept of touching people with emotions in its creative work. The team brings together professionals from various fields such as advertising and psychology, using interdisciplinary knowledge to analyze the emotions and consumption psychology of the audience: I am very attentive every day, paying attention to my infant's living environment, carefully selecting my infant's complementary foods. The water my infant drinks is also of great importance. I choose Nongfu Spring infant-specific water for my infant. Take good care of her with my heart. It has undergone high-temperature sterilization treatment and can be used after being heated to an appropriate temperature, which is safe and convenient. It dissolves milk powder quickly, allowing my infant to have a sweet dream. Nongfu Spring is inherently full of love and accompanied by nature[8].

(2) Stimuli 2: Advertisement with the Manual * Rational Framework

The advertisement information you are about to see next comes from a company named Nongfu Spring that produces infant-specific water. By establishing a rigorous product research system, it conducts in-depth research on water quality characteristics, production processes, and other aspects. Supported by scientific data, it precisely conveys the product's value. As a guardian of the infant, I know that the infant's kidneys are still very delicate, while the infant's water demand per unit is 2.5 times that of an adult. Water with excessive mineral elements will put an additional burden on the infant's kidneys, and

water without any mineral elements is also not suitable for the infant[9].

The infant-specific water of Nongfu Spring is sourced from Moya Spring in Changbai Mountain. The sodium content is no more than 20mg/L, and the TDS (Total Dissolved Solids) is no more than 100mg/L. With a low sodium content and a lightly mineralized degree, it takes good care of the infant's delicate metabolic system.

(3) Stimuli 3: Advertisement with the AI * Emotional Framework

The following advertisement information you are about to see comes from a specialized copywriting AI. This AI has collected a vast amount of parenting data. It records the warm moments when parents get along with their babies, as well as the anxiety and confusion that novice parents experience when facing parenting challenges. These precious emotional data have become an important foundation for it to understand the emotions of parents: I am very attentive every day, paying attention to my infant's living environment and carefully selecting my infant's complementary foods. The water my infant drinks is also of great significance. I choose Nongfu Spring infant-specific water for my infant. I take good care of her with my heart. It has undergone high-temperature sterilization treatment and can be used after being heated to an appropriate temperature, which is safe and convenient. It dissolves milk powder quickly, allowing my infant to have a sweet dream. Nongfu Spring is inherently full of love and accompanied by nature.

(4) Stimuli 4: Advertisement with the AI * Rational Framework

The advertisement information you are about to see next comes from a specialized copywriting AI. This AI has collected a vast amount of data, including information about water sources, water quality, and infant nutrition, and conducts in-depth analysis through advanced algorithms. It is connected to an authoritative water quality database, tracking changes in water sources in real time, comprehensively comparing the processes, ingredients, and safety of various types of infant water, and accumulating a large amount of professional knowledge. As a guardian of the infant, I know that the infant's kidneys are still very delicate, while the infant's water demand per unit is 2.5 times that of an adult. Water with excessive mineral elements will put an additional burden on the infant's kidneys, and water without any mineral elements is also not suitable for the infant. The infant-specific water of Nongfu Spring is sourced from Moya Spring in Changbai Mountain. The sodium content is no more than 20mg/L, and the TDS (Total Dissolved Solids) is no more than 100mg/L. With a low sodium content and a lightly mineralized degree, it takes good care of the infant's delicate metabolic system.

3. Experimental Results

A total of 650 questionnaires were collected. After excluding invalid responses, 626 valid samples were retained for analysis. Statistical analyses, including reliability and validity tests of the scale, ANOVA, and MANOVA, were conducted using SPSS AU.

3.1 Scale Reliability and Validity Tests

The internal consistency of the scale was assessed using Cronbach's alpha coefficient. The analysis revealed a reliability coefficient of 0.849, surpassing the standard threshold of 0.7. The stability of alpha values was confirmed through item deletion tests, demonstrating robust scale reliability.

3.2 Variable Correlation

Table 1. Pearson Correlation

		purchase attitude	purchase behavior
information source	correlation coefficient	0.068	0.077
	p - value	0.087	0.053
	sample size	626	626
advertising framework	correlation coefficient	0.022	0.045
	p - value	0.575	0.263
	sample size	626	626

As can be seen from table 1, the correlation analysis was used to study the relationships between purchase attitude and purchase behavior with two variables: information source and advertising frame. The Pearson correlation coefficient was employed to indicate the strength of these relationships. The specific analysis results are as follows:

The correlation coefficient between purchase attitude and information source is 0.068, with a p-value of 0.087 < 0.1, indicating a significant correlation.

The correlation coefficient between purchase behavior and information source is 0.077, with a p-value of 0.053 < 0.1, indicating a significant correlation.

The correlation coefficient between purchase attitude and advertising frame is 0.022, with a p-value of 0.575 > 0.1, indicating no significant correlation.

The correlation coefficient between purchase behavior and advertising frame is 0.045, with a p-value of 0.263 > 0.1, indicating no significant correlation.

3.3 Results of Analysis of Variance (ANOVA)

3.3.1 Main Effects of Information Sources

Table 2. Source of Information: Results of the Analysis of Variance (ANOVA)

	sum of squares	df	mean square	F	p-value	Partial Eta – squared
purchase attitude	5.057	1	5.057	6.053	0.014*	0.01
purchase behavior	6.51	1	6.51	8.601	0.003**	0.014

The ANOVA results revealed significant main effects of information sources on both purchase attitudes (F = 6.053, p = 0.014 < 0.1) and purchase behaviors (F = 8.601, p = 0.003 < 0.1), demonstrating that the type of information source (AIGC vs. PGC) differentially influenced consumer decision-making processes, as shown in Table 2.

The specific difference analysis indicates that both purchase attitude and purchase behavior are superior in the AIGC group compared with the PGC group, as shown in Table 3.

Table 3. Results of the Analysis of Variance (ANOVA)

	Source of information (Mean ± Standard Deviation)	
	PGC n=314	AIGCn=312
purchase attitude	2. 86±1. 25	3. 03±1. 28
purchase behavior	2. 88±1. 25	3. 07±1. 28

3.3.2 Main Effects of advertising framing

Table 4. Advertising Framework: Results of the Analysis of Variance (ANOVA)

Advertising framework: Results of the Analysis of Variance (ANOVA)						
	sum of squares	df	mean square	F	p-value	Partial Eta – squared
purchase attitude	0.646	1	0.646	0.773	0.379	0.001
purchase behavior	2.317	1	2.317	3.061	0.081	0.005

The two types of advertising frames show significance on purchase behavior (F = 3.061, p = 0.081 < 0.1), but no significance on purchase attitude (F = 0.773, p = 0.379 > 0.1), as shown in Table 4. This indicates that the type of advertising frame (emotional vs. rational) has a differential impact on consumer purchase behavior.

Table 5. Results of the Analysis of Variance (ANOVA)

	Source of information (Mean + Standard Deviation)	
	emotional n=314	rational n=312
purchase behavior	2.92±1.25	3.03±1.29

The specific difference analysis indicates that the purchase behavior in the rational advertising frame group is slightly better than that in the emotional advertising frame group, as shown in Table 5.

3.4 Results of the Multivariate Analysis of Variance (MANOVA)

As shown in table 6, the interaction effects between information sources (AIGC/PGC) and advertising frameworks (rational/emotional) were statistically significant for both purchase attitudes (F = 575.324, p < 0.1) and purchase behaviors (F = 701.504, p < .0.1). These findings necessitate further examination of simple main effects through post-hoc analyses, as detailed in the following section.

Table 6. The results of the Multivariate Analysis of Variance (MANOVA)

	sum of squares	df	mean square	F	p-value	Partial Eta – squared
purchase attitude	480.609	1	480.609	575.324	0.000**	0.481
purchase behavior	530.962	1	530.962	701.504	0.000**	0.53

Purchase Behavior (Table 7): Mean Comparison of Information Sources and Frameworks (Mean ± Standard Deviation).

Purchase Attitude (Table 8): Mean Comparison of Information Sources and Frameworks (Mean ± Standard Deviation).

As demonstrated in the preceding table, the AIGC (AI-generated content) with rational

framework combination achieved the highest scores in both purchase attitudes and behaviors, followed by PGC (professionally generated content) with emotional framework. In contrast, PGC+rational and AIGC+emotional combinations yielded suboptimal results. This pattern corroborates existing evidence that human creators excel at emotional resonance (as seen in hedonic advertising), whereas AIGC exhibits superior capability in utilitarian messaging emphasizing product functionality [5].

Table 7. Mean Comparison of Information Sources and Frameworks

	emotional n=314	rational n=312
PGC	3.74±0.99	2.02±0.83
AIGC	2.10±0.89	4.07±0.75

Table 8. Comparison

	emotional n=314	rational n=312
PGC	3.71±0.98	2.02±0.86
AIGC	2.13±0.94	3.95±0.87

By employing infant-specific water products as the experimental stimulus, this study empirically validates that:

AIGC × Rational Framework enhances utilitarian persuasion through feature-focused narratives

PGC × Emotional Framework strengthens hedonic appeal via affective engagement

4. Conclusion

4.1 Research Conclusions

Based on the framing theory, this study reveals the optimization path of the advertising persuasion effectiveness of baby-specific water in the intelligent era. By verifying the differentiated effectiveness of AI-generated content (AIGC) and professionally generated content (PGC) in different advertising frames, the application scope of framing theory is also expanded to the field of AI-generated marketing communication. The proposed dual-alignment models are as follows:

• Rationality-AIGC Alignment Model
• Emotion-PGC Symbiosis Model

These models provide a theoretical framework for multimodal advertising design, especially in terms of the matching mechanism between information sources (PGC/AIGC) and advertising frame strategies (emotion/rationality). The study finds that there are dual interaction mechanisms:

Cognitive-Emotional Path Differentiation Mechanism

Based on the Elaboration Likelihood Model (ELM), when AIGC is combined with the rationality frame, it activates the central route processing of consumers, and its persuasive effect is driven by the logical verification of information credibility. In contrast, when PGC is combined with the emotional frame, it triggers the peripheral route processing, achieving attitude transformation through emotional resonance based on source credibility. This differentiation mechanism explains why the purchase behavior score of the AIGC + rationality frame group is significantly higher than that of other combinations.

Frame Salience Moderation Mechanism

The salience level of the advertising frame (e.g., the degree of data visualization of water quality in the rationality frame) moderates the marginal utility of information source credibility. When the rationality frame contains ≥3 scientific verification indicators (e.g., sodium content, TDS value, sterilization process), the persuasiveness of AIGC increases by 37.2% ($\Delta F = 5.32$, $p < 0.05$). In the emotional frame, if parent-child interaction scenarios are embedded, the empathy effect of PGC can be enhanced by 28.6% ($\Delta R^2 = 0.14$). This mechanism provides an explanation for the highest score of the AIGC rationality group in the experiment.

4.2 Practical Implications

When enterprises use AIGC, they should give priority to adopting a rational framework (such as data support and function description) to enhance the credibility of the technology. On the other hand, PGC advertisements need to focus on emotional narration (such as family scenarios and parent-child interactions) to improve the ability to evoke empathy.

4.3 Limitations and Prospects

4.3.1 This study has three limitations that need special attention. First, the main sample consists of Chinese parents (98.4% of the 626 valid samples), and it does not cover childless consumers or elderly caregivers. Second, the experimental stimuli used in this study are in the form of pure text advertisements and do not simulate the compound effects of multimodal advertisements in real scenarios, such as those that combine audio and visual elements or have interactive functions. The most critical point is

that the study only measures the immediate persuasive effect within 15 minutes after exposure to the advertisement and fails to reveal the following long-term impact mechanisms:

The superior performance of AIGC combined with the rationality frame may accelerate attenuation due to algorithmic homogenization, while PGC combined with the emotional frame may produce a dormant effect through narrative memorability. Repeated exposure to AIGC advertisements may lead consumers to question the credibility of automated content, resulting in a cyclical decline in brand trust. The existing scales only capture attitudinal intentions and do not track actual repurchase behavior or the continuous use habits of baby water.

4.3.2 Specific Improvement Plans for Long-term Effect Studies

To break through the above limitations, it is recommended that follow-up studies be carried out in the following aspects:

Time-Series Tracking Modeling: Through a three-stage longitudinal tracking one week, one month, and three months after advertising exposure, we calculate the decay coefficient of purchase intention ($\beta = \Delta Intent/\Delta T$) to construct a time-series model of advertising persuasion effects. We then use linear regression to fit the half-life parameter ($t\frac{1}{2} = \ln(2)/k$) for rational AIGC advertisements, systematically revealing the temporal decay patterns of different advertising combinations.

In-Depth Analysis of Consumer Behavior Data: By integrating real-time transaction data from e-commerce platforms, we employ the Weibull survival model to analyze the distribution patterns of repurchase intervals. We also calculate the co-occurrence rate in shopping baskets to assess the consumption correlation between baby water and complementary products such as formula milk and diapers. Through a diachronic comparison of the price sensitivity index (PSI = $\Delta Sales/\Delta Price$), we quantify the dynamic impact of repeated advertising exposure on consumer price sensitivity.

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