Advances in Consumer Research
https://acr-journal.com/
Volume-2 | Issue-5 | November 2025
Original Researcher Article

AI and CGI Ads Redefining Consumer Engagement in FMCG- Retail Advertising

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Received: 02/10/2025
Revised: 31/10/2025
Accepted: 08/11/2025
Published: 15/11/2025

ABSTRACT
The integration of Artificial Intelligence (AI) and Computer-Generated Imagery (CGI) has transformed advertising strategies, particularly within the Fast-Moving Consumer Goods (FMCG) sector. This study investigates the influence of AI- and CGI-based advertisements on emotional engagement, trust, and purchase intention, with a specific focus on the role of virtual influencers. A quantitative approach with multiple linear regression was applied to data collected from 300 respondents. Independent variables included trust, product engagement, brand loyalty, product category, and customer loyalty, while dependent variables measured emotional engagement, trust, and purchase intention. Findings reveal that customer loyalty and product category are the strongest predictors of emotional engagement, whereas virtual influencers significantly shape consumer trust and purchase behavior. Emotional engagement emerges as the most powerful driver of purchase intention, underscoring the strategic importance of immersive, AI-driven experiences. The study also highlights critical ethical issues—such as data privacy and algorithmic bias—that directly affect consumer trust in AI-powered advertising. This research contributes to the growing discourse on digital marketing by empirically validating how AI and CGI technologies reshape consumer behavior in FMCG advertising. The insights provide both theoretical contributions to consumer engagement models and practical guidance for marketers aiming to integrate ethical, transparent, and innovative digital strategies.

Keywords: Artificial Intelligence (AI) in advertising; Computer-Generated Imagery (CGI) in marketing; Virtual influencers; Consumer engagement; Emotional engagement; Trust; Ethical AI; Personalization.

INTRODUCTION

Artificial Intelligence (AI) and Computer-Generated Imagery (CGI) are reshaping advertising practices, particularly in the Fast-Moving Consumer Goods (FMCG) sector. These technologies enable brands to deliver personalized, visually immersive campaigns that resonate with consumers at emotional and cognitive levels. By analyzing consumer data, AI supports highly targeted marketing strategies, while CGI enhances storytelling through hyper-realistic visuals (Gupta & Singh, 2022; Reddy et al., 2022).

A recent advancement in this domain is the rise of virtual influencers—AI- and CGI-generated personas that engage consumers through narrative-driven and relatable content. Unlike traditional human influencers, virtual influencers provide scalable, consistent brand messaging while leveraging emotional storytelling to strengthen consumer–brand connections (Brown et al., 2022; Sharma, Biswal, & Patel, 2023). However, this innovation raises critical concerns around trust, transparency, and ethics. Consumers increasingly demand clarity in digital interactions, and concerns such as data privacy and algorithmic bias have become central to perceptions of fairness in AI advertising (Chen et al., 2022; Davis & Patel, 2023).

Despite the rapid adoption of AI and CGI in advertising, existing research remains fragmented. Prior studies focus largely on technology adoption and innovation frameworks rather than empirically validating consumer psychological outcomes such as emotional engagement, trust, and purchase intention (Dwivedi et al., 2021; Huang & Rust, 2021). Additionally, research into the role of virtual influencers in shaping authenticity and consumer loyalty is still limited (Hudders & Lou, 2022). To address these gaps, this study investigates how AI- and CGI-based advertising influences emotional engagement, trust, and purchase intention in FMCG markets. It examines contextual factors—such as product category, product engagement, brand loyalty, and customer loyalty—and evaluates the moderating role of virtual influencers. The study also considers ethical challenges such as data privacy and algorithmic bias, which are increasingly relevant in digital advertising ecosystems.

This research contributes to theory by extending models of consumer engagement to include AI-driven advertising and to practice by providing insights into how FMCG brands can design transparent, trustworthy, and emotionally resonant campaigns.

LITERATURE REVIEW

2.1 AI and CGI in FMCG Advertising

The integration of Artificial Intelligence (AI) and Computer-Generated Imagery (CGI) has significantly reshaped advertising strategies, particularly in the Fast-Moving Consumer Goods (FMCG) sector. AI enables hyper-personalization, predictive targeting, and real-time consumer interaction, while CGI provides immersive storytelling experiences that increase visual appeal and memorability (Yu, 2022; Ezzat, 2023). Reports by McKinsey & Company (2023) suggest that AI-driven personalization can improve engagement and loyalty by up to 40% in FMCG campaigns. However, other studies caution that predictive targeting may also enable manipulative practices, especially in impulse-driven purchases (Ashraf, Singh, & Thomas, 2024). Despite these advancements, much of the literature has focused on adoption and innovation rather than the psychological outcomes of AI and CGI advertising, such as consumer trust, emotional engagement, and purchase behavior (Dwivedi et al., 2021; Huang & Rust, 2021).

2.2 Trust, Authenticity, and Virtual Influencers

Trust is widely recognized as a critical determinant of advertising effectiveness. AI-generated virtual influencers, digital personas created through CGI, are gaining popularity due to their relatability and scalability. Transparent disclosure that content is AI-generated enhances consumer trust, while non-disclosure can lead to skepticism and reduced credibility (Chen et al., 2022; Belova, Ivanov, & Chen, 2022). Hansen and Lee (2022) found that source credibility—perceived expertise and trustworthiness—directly influences consumer acceptance of AI-driven ads. Similarly, Brown, Chen, and Patel (2022) emphasize that the effectiveness of virtual influencers is contingent on authenticity. Yet, limited empirical evidence exists comparing consumer perceptions of human versus AI-based influencers (Hudders & Lou, 2022). This indicates a significant gap in understanding the authenticity–trust relationship in the context of AI advertising.

2.3 Emotional Engagement and Purchase Intention

Emotional engagement plays a central role in shaping consumer purchase decisions. CGI-based storytelling has been shown to elicit stronger emotional responses compared to static advertising (Park & Kim, 2022). AI-enhanced narratives and sentiment analysis tools allow marketers to personalize messages based on consumer emotions, thereby increasing recall and brand affinity (Sharma, Biswal, & Patel, 2023). Gamification strategies further strengthen emotional engagement by making advertisements interactive and memorable (Raju, Singh, & Patel, 2023; Patel & Singhal, 2022). However, while prior work demonstrates the potential of AI/CGI to evoke emotions, few studies provide empirical evidence linking emotional engagement to purchase intention in FMCG contexts (Patel & Singhal, 2023).

2.4 Cultural and Generational Perspectives

Cultural and generational differences significantly shape consumer responses to AI-driven advertising. Martínez et al. (2023) highlight the importance of cultural alignment in global campaigns, while López, Martínez, and Torres (2023) warn that culturally insensitive advertising can trigger consumer backlash. Generational studies show that Gen Z consumers are more open to AI advertising compared to Gen X and Baby Boomers (Singh, Jain, & Sharma, 2022; Lee et al., 2023). Janson, Kim, and Singh (2023) further note that regional customization enhances consumer acceptance in diverse markets, while Koontz, Lee, and Singh (2023) stress the risks of cultural bias embedded in AI training datasets. Despite these insights, few studies examine the intersection of culture, trust, and emotional engagement, presenting an area for deeper exploration.

2.5 Ethical Concerns and Algorithmic Bias

The ethical use of AI in advertising remains a central concern. Data privacy violations, covert data collection, and manipulative targeting undermine consumer trust (Ahmed, Wang, & Patel, 2023; Davis & Patel, 2023). Algorithmic bias—arising from skewed training data—can perpetuate stereotypes and unfair ad targeting, particularly across demographic groups (Williams, Thomas, & Gupta, 2021; Khan & Kaur, 2024). Scholars argue that algorithmic transparency and fairness significantly shape consumer perceptions of AI-driven campaigns (Cian, Bright, & Williams, 2022). Although frameworks for ethical AI exist (Wu & Wen, 2021), their integration into FMCG marketing practices remains limited, raising important questions about consumer trust and fairness (Kumar, Gupta, & Sharma, 2023).

2.6 Synthesis and Research Gap

The reviewed literature underscores the growing potential of AI and CGI to transform FMCG advertising through enhanced personalization, predictive targeting, and immersive storytelling (Dwivedi et al., 2021; Huang & Rust, 2021). Despite these advancements, several critical gaps remain. First, while prior studies have explored consumer attitudes toward AI-driven advertising, there is still limited empirical evidence on how such advertisements influence deeper outcomes such as **emotional engagement, trust, and purchase intention** within FMCG markets (Jain, Kumar, & Chawla, 2022; Sharma, Biswal, & Patel, 2023). Second, although **virtual influencers** are increasingly being used as brand ambassadors, their authenticity and trustworthiness compared to human influencers are not yet fully understood, leaving open questions about their credibility in shaping consumer perceptions (Hudders & Lou, 2022; Szymanski, O'Reilly, & Stewart, 2023). Finally, **cultural influences and ethical considerations**—particularly those related to privacy, fairness, and algorithmic bias—have not been adequately examined in the context of AI-driven campaigns, even though they are central to building

sustainable consumer trust (Kim, Park, & Lee, 2021; De Mooij, 2019; Kumar, Gupta, & Sharma, 2023; Martin & Murphy, 2017).

By addressing these gaps, the present study aims to provide empirical evidence on the interplay between contextual factors—such as trust, product engagement, brand loyalty, product category, and customer loyalty—and key outcomes including emotional engagement, perceptions of virtual influencers, and purchase intention in FMCG advertising.

2.7 Research Gap

Although substantial progress has been made in understanding Artificial Intelligence (AI) and Computer-Generated Imagery (CGI) in advertising, several critical gaps remain.

First, while many studies acknowledge the emotional impact of AI- and CGI-based advertising (Dwivedi et al., 2021; Huang & Rust, 2021), limited empirical research has explored how these technologies influence consumer loyalty and purchase intentions within the FMCG sector. Much of the existing work emphasizes technology adoption and general attitudes, but few studies investigate long-term behavioral implications such as brand loyalty (Jain, Kumar, & Chawla, 2022).

Second, research on virtual influencers is still emerging. Although virtual influencers are increasingly used as digital brand ambassadors, their authenticity and trustworthiness remain underexplored compared to human influencers. Current evidence suggests they may shape consumer perceptions (Szymanski, O'Reilly, & Stewart, 2023), yet there is insufficient understanding of their role in building trust and authenticity (Hudders & Lou, 2022).

Third, cultural and demographic influences on consumer responses to AI-driven advertising are rarely addressed. Globalization has intensified the importance of cultural customization in marketing (Kim, Park, & Lee, 2021), but limited research examines how cultural values and generational differences affect perceptions of AI and CGI advertising (De Mooij, 2019).

Finally, growing ethical concerns such as data privacy, algorithmic bias, and fairness have not been adequately integrated into FMCG advertising research. Since AI-driven personalization depends heavily on consumer data, issues of trust, perceived fairness, and transparency are increasingly significant (Kumar, Gupta, & Sharma, 2023; Martin & Murphy, 2017).

This study seeks to address these gaps by investigating how AI and CGI advertising influence consumer engagement in the FMCG sector, focusing on emotional engagement, trust, virtual influencers, and purchase intention, while considering cultural and ethical dimensions.

2.8 Research Questions

Based on the identified gaps, this study is guided by the following research questions:

1. How do AI and CGI advertisements influence emotional engagement among consumers in the FMCG sector?
2. What role do virtual influencers play in shaping consumer perceptions of trust and authenticity in AI-driven advertising?
3. How do cultural differences affect consumer acceptance and engagement with AI and CGI advertisements?
4. What are the implications of ethical considerations, such as data privacy and algorithmic bias, on consumer trust in AI-driven FMCG advertising?
5. How do emotional engagement and trust derived from AI and CGI advertisements influence consumer loyalty and purchase intentions?

2.9 Research Model

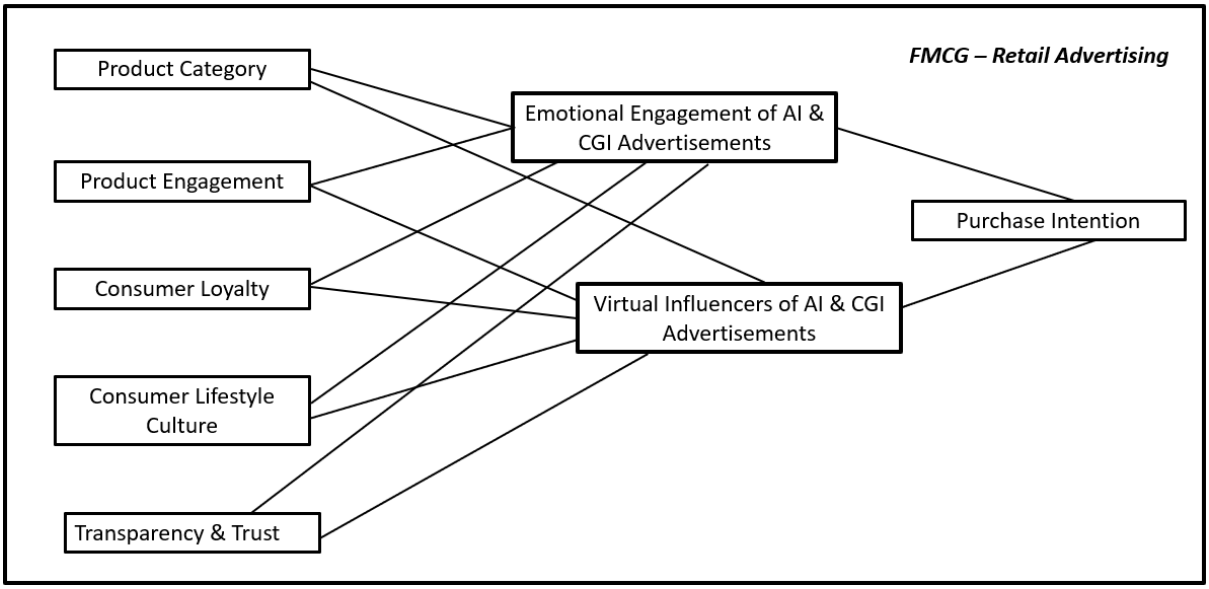
Based on the identified research gaps and research questions, a conceptual framework was developed to examine how AI- and CGI-based advertising shapes consumer behavior in the FMCG sector. The framework integrates **independent variables** representing contextual factors with **dependent variables** reflecting consumer outcomes, thereby capturing the mechanisms through which advertising influences engagement and purchase behavior.

Among the independent variables, **product category** plays an important role, as consumer responses may vary across different FMCG categories when exposed to AI- and CGI-based advertising (Gupta & Singh, 2022; Martínez, Patel, & Zhang, 2023). **Consumer lifestyle and culture** are also relevant, as cultural values and lifestyle patterns shape perceptions of AI-driven advertisements (Janson, Kim, & Singh, 2023; Koontz, Lee, & Singh, 2023). Although these cultural influences are conceptually important, they are not empirically tested in the present study and are instead highlighted as an avenue for future research. In addition, **transparency and trust** emerge as central constructs, as disclosure and openness in AI-generated campaigns can significantly affect consumer trust (Belova, Kim, & Chen, 2022; Cian, Bright, & Williams, 2022). **Consumer loyalty** also influences engagement, since prior brand experiences and existing loyalty can strengthen or weaken responses to AI-driven content (Raju, Singh, & Patel, 2023; Yu, 2022). Finally, **product engagement** captures the extent to which consumers actively interact with products and advertising stimuli, providing another lens to understand consumer responses (Nguyen & Zhang, 2023; Sussman & Bright, 2022).

On the outcome side, the dependent variables focus on consumer psychological and behavioral responses. **Emotional engagement** reflects the affective reactions elicited by AI- and CGI-based advertisements (Park & Kim, 2022; Sharma, Biswal, & Patel, 2023), while **trust** captures perceptions of authenticity, reliability, and credibility in AI-generated content (Brown, Chen, & Patel, 2022; Miller & Brown, 2023). Ultimately,

purchase intention represents the behavioral dimension, measuring the likelihood of consumers acting upon these advertisements and buying the promoted products (Patel & Singhal, 2023; Yu, 2022).

This conceptual framework thus provides a structured way to assess how contextual factors interact with emotional and behavioral outcomes in AI/CGI advertising. While the current study empirically tests the relationships among product category, product engagement, consumer loyalty, trust, emotional engagement, and purchase intention, cultural and lifestyle factors remain acknowledged as important extensions for future research.



METHODS / RESEARCH DESIGN

3. Research Design and Methodology

3.1 Overview

This study employed a quantitative research design to examine how AI- and CGI-based advertising influences consumer engagement in the FMCG sector. Data were collected through a structured survey of 300 respondents, enabling statistical analysis of relationships between independent variables (product category, product engagement, consumer loyalty, and transparency/trust) and dependent variables (emotional engagement, trust in AI/CGI advertisements, and purchase intention). While cultural and lifestyle factors were included in the conceptual model, they were not empirically tested in this study and are highlighted as an area for future research.

3.2 Research Objectives

The study was guided by the following objectives:

1. To assess the impact of AI and CGI advertisements on emotional engagement among consumers in the FMCG sector.
2. To evaluate the role of virtual influencers in shaping consumer perceptions of trust and authenticity.
3. To analyze how cultural differences may affect consumer acceptance and engagement with AI and CGI advertisements (conceptual only, not tested empirically).
4. To investigate the implications of ethical considerations such as privacy and algorithmic bias on consumer trust in AI-driven FMCG advertising.
5. To determine the relationship between emotional engagement, trust, and purchase intentions.

3.3 Hypotheses

Based on the conceptual framework and literature review, the following hypotheses were formulated:

- H1: Product category, consumer loyalty, trust, and product engagement significantly influence emotional engagement with AI- and CGI-based FMCG advertising.
- H2: Product category, consumer loyalty, brand loyalty, trust, and product engagement significantly influence perceptions of virtual influencers in AI-driven FMCG advertising.
- H3: Emotional engagement and virtual influencers significantly predict purchase intention in the FMCG sector.

3.4 Sample Size

A sample of 300 respondents was determined to be sufficient for regression analysis, providing statistical significance and reliable insights into consumer behavior. This aligns with established guidelines in social science research (Cohen, 1992; Hair et al., 2019).

3.5 Sampling Method

A stratified random sampling technique was employed to ensure balanced representation across demographic strata. Weights were assigned to key strata, including age, gender, and employment status, to ensure that diverse consumer groups were proportionally represented in the final sample.

3.6 Data Collection Method

Data were collected through a structured questionnaire administered via Google Forms. The questionnaire included demographic questions (age, gender,

employment status) and scaled items measuring the independent and dependent variables.

- Independent variables: product category, product engagement, consumer loyalty, transparency/trust.
- Dependent variables: emotional engagement, trust in AI/CGI advertisements, and purchase intention.

A pilot study of 20 participants was conducted to ensure clarity and reliability. Feedback from the pre-test was used to refine item wording and enhance instrument validity.

3.7 Reliability and Validity

Reliability was assessed using Cronbach's Alpha, which produced a value of 0.865, exceeding the acceptable threshold of 0.70 (Nunnally & Bernstein, 1994). The case processing summary confirmed 300 valid responses, with no exclusions, ensuring representativeness.

Additional descriptive statistics supported the reliability of the scales:

- Mean = 39.67
- Variance = 97.338
- Standard Deviation = 9.866

These values demonstrate that participant responses were not overly concentrated, reflecting a broad and diverse spread of views. Together with the high Cronbach's Alpha, this confirms that the measurement tool was stable, consistent, and suitable for regression analysis.

3.8 Data Analysis

Data were analyzed using SPSS 26.0. Descriptive statistics summarized demographics, while multiple linear regression tested the hypotheses. Model diagnostics including variance inflation factor (VIF), normality checks, and residual analysis confirmed the validity of assumptions.

3.7 Justification of Technique

While Structural Equation Modeling (SEM) offers advanced modeling options, multiple regression was deemed appropriate given the study's focus on direct predictive relationships and its moderate sample size (Hair et al., 2019).

RESULTS AND FINDINGS

4.1 Descriptive Statistics

The survey yielded 300 valid responses, covering a balanced distribution across age, gender, and employment status, as per the stratified random sampling design. Preliminary checks confirmed no missing values.

4.2 Reliability Analysis

Reliability was assessed using Cronbach's Alpha. The value of 0.865 exceeded the minimum threshold of 0.70 (Nunnally & Bernstein, 1994), confirming strong internal consistency across the 18-item measurement scale.

Additional statistics reinforced reliability:

- Mean = 39.67
- Variance = 97.338
- Standard Deviation = 9.866

These results confirm that the instrument was stable, consistent, and suitable for subsequent regression analysis.

4.3 Hypothesis Testing

H1: Product category, consumer loyalty, trust, and product engagement significantly influence emotional engagement.

A multiple regression model was estimated with emotional engagement as the dependent variable and product category, consumer loyalty, trust, brand loyalty, and product engagement as predictors.

- Model Fit: $R = 0.728$; $R^2 = 0.530$; Adjusted $R^2 = 0.523$; $F(5,294) = 66.439$, $p < 0.001$.
- Significant Predictors:
  - Customer Loyalty ($\beta = 0.375$, $p < 0.001$) → strongest predictor.
  - Product Category ($\beta = 0.278$, $p < 0.001$).
  - Trust ($\beta = 0.142$, $p < 0.001$).
- Non-Significant Predictors:
  - Product Engagement ($\beta = –0.027$, $p = 0.540$).
  - Brand Loyalty ($\beta = 0.075$, $p = 0.111$).

Interpretation: Emotional engagement is primarily driven by customer loyalty and product category, with trust also exerting a positive but moderate effect. Product engagement and brand loyalty do not significantly influence emotional engagement.

Decision: H1 Supported (partially) — customer loyalty, product category, and trust are significant drivers, while product engagement and brand loyalty are not.

H2: Product category, consumer loyalty, brand loyalty, trust, and product engagement significantly influence perceptions of virtual influencers.

A second regression model tested the influence of the independent variables on virtual influencer perceptions.

- Model Fit: $R = 0.717$; $R^2 = 0.515$; Adjusted $R^2 = 0.507$; $F(5,294) = 62.380$, $p < 0.001$.
- Significant Predictors:
  - Customer Loyalty ($\beta = 0.288$, $p < 0.001$).
  - Product Category ($\beta = 0.223$, $p < 0.001$).
  - Brand Loyalty ($\beta = 0.197$, $p < 0.001$).
  - Product Engagement ($\beta = 0.147$, $p = 0.001$).
  - Trust ($\beta = 0.142$, $p = 0.003$).

Interpretation: All predictors are significant in explaining virtual influencer perceptions, with customer loyalty and product category emerging as the strongest drivers, followed by brand loyalty. Trust and product engagement also contribute positively.

Decision: H2 Fully Supported.

H3: Emotional engagement and virtual influencers significantly predict purchase intention.

The third regression model examined the effect of emotional engagement and virtual influencers on purchase intention.

- Model Fit: $R = 0.734$; $R^2 = 0.538$; Adjusted $R^2 = 0.535$; $F(2,297) = 173.069$, $p < 0.001$.
- Significant Predictors:
  - Emotional Engagement ($\beta = 0.495$, $p < 0.001$) → strongest predictor.
  - Virtual Influencers ($\beta = 0.297$, $p < 0.001$).

Interpretation: Both emotional engagement and virtual influencers have significant and positive effects on purchase intention. Emotional engagement is the dominant predictor, highlighting the importance of consumer affective responses in driving purchase behavior.

Decision: H3 Fully Supported.

4.4 Key Findings

The results of this study provide several important insights into how AI- and CGI-driven advertising shapes consumer behavior in the FMCG sector. First, the analysis demonstrates that customer loyalty and product category are the most powerful drivers of emotional engagement, underscoring the significance of prior brand relationships and product relevance in shaping consumers' affective responses to advertising.

Second, perceptions of virtual influencers are influenced by a broader set of factors. In particular, customer loyalty, product category, brand loyalty, trust, and product engagement all play a role in determining how consumers evaluate and interact with these digital brand ambassadors. This suggests that virtual influencers operate at the intersection of multiple contextual and relational variables, making them a complex but powerful tool for marketers.

Third, the findings confirm that emotional engagement is the strongest determinant of purchase intention, followed closely by the impact of virtual influencers. This reinforces the central role of emotional connection in driving consumer decision-making, while also highlighting the growing persuasive power of CGI-based influencers in shaping consumer behavior.

Finally, the results indicate that traditional constructs such as brand loyalty and product engagement, although weaker in shaping emotional engagement, become more important in influencing perceptions of virtual influencers. This suggests a shift in how consumers interpret loyalty and engagement, with these factors exerting greater influence in the context of digitally mediated interactions rather than in direct emotional responses.

DISCUSSION

5.1 Emotional Engagement in FMCG Advertising (H1)

The results show that customer loyalty and product category are the strongest predictors of emotional engagement, while trust has a moderate effect. This aligns with prior studies that emphasize the role of past experiences and product relevance in shaping affective responses to advertising (Dwivedi et al., 2021; Park & Kim, 2022). Interestingly, brand loyalty and product engagement were not significant in this model, suggesting that consumers' emotional responses are less about traditional loyalty constructs and more about the contextual relevance of the product and their ongoing relationship with the brand.

For FMCG companies, this finding indicates that emotional resonance can be achieved more effectively through targeted loyalty programs and product-specific campaigns than through generic brand-building strategies. This nuance is particularly important in the FMCG context, where purchase cycles are shorter and emotional triggers often drive repeat purchases.

5.2 Virtual Influencers and Consumer Trust (H2)

The second model confirmed that all predictors significantly influence perceptions of virtual influencers, with customer loyalty, product category, and brand loyalty being the most influential. These findings extend earlier work on influencer marketing by showing that virtual influencers, despite being computer-generated, can establish consumer trust when contextualized with the right product and loyalty dynamics (Hudders & Lou, 2022; Szymanski et al., 2023).

The significance of brand loyalty in this model, despite its weakness in emotional engagement, suggests that consumers may evaluate virtual influencers partly through their perceptions of the sponsoring brand. Similarly, trust and product engagement also contribute positively, highlighting the importance of transparent communication and interactive campaigns in enhancing the credibility of virtual influencers.

For FMCG advertisers, this suggests that the use of virtual influencers is most effective when paired with strong product positioning and supported by trust-building mechanisms such as disclosure, authenticity cues, and culturally resonant narratives.

5.3 Purchase Intention and the Role of Emotions (H3)

The third regression confirmed that emotional engagement is the dominant predictor of purchase intention, followed by virtual influencers. This reinforces theories of consumer behavior that highlight the primacy of emotions in purchase decision-making (Huang & Rust, 2021; Sharma et al., 2023). It also demonstrates the growing importance of virtual influencers as persuasive agents, capable of shaping consumer purchase behaviors in a manner comparable to human influencers.

From a practical perspective, FMCG companies must recognize that emotional connections—created through storytelling, authenticity, and relatable digital personas—are far stronger drivers of purchase intention than rational appeals alone. Virtual influencers, if deployed strategically, can complement these emotional drivers by offering consistent, scalable, and culturally adaptable engagement opportunities.

5.4 Ethical and Cultural Implications

While the study demonstrates the effectiveness of AI and CGI in enhancing consumer engagement, it also highlights critical ethical considerations. The reliance on consumer data for hyper-personalization risks privacy breaches and algorithmic bias (Ahmed et al.,

2023; Wu & Wen, 2021). Transparency and fairness are thus essential for sustaining consumer trust, particularly in the FMCG sector where purchase frequency and consumer-brand interactions are high.

Cultural influences, while not empirically tested in this study, remain an important consideration. Prior literature suggests that acceptance of AI-driven advertising varies across cultural contexts (Kim et al., 2021; De Mooij, 2023). Future research should therefore investigate how cultural values shape emotional engagement and trust in virtual influencers, ensuring that AI-driven campaigns are sensitive to global diversity.

5.5 Contribution to Theory and Practice

This study makes two key contributions:

1. Theoretical contribution: It extends consumer behavior models by showing how emotional engagement, loyalty, and trust interact with emerging constructs such as virtual influencers in shaping purchase intentions.
2. Practical contribution: It provides actionable insights for FMCG marketers, emphasizing that emotional engagement and trust-building are stronger levers of purchase behavior than traditional brand loyalty. Virtual influencers, when deployed transparently, can enhance this process by offering authenticity and scalability in consumer outreach.

6. Implications

6.1 Managerial Implications

The findings highlight several strategic priorities for FMCG marketers. Foremost among these is the need to prioritize emotional engagement, as it emerged as the strongest driver of purchase intention. Brands should therefore move beyond purely rational appeals and instead invest in storytelling, personalized campaigns, and interactive experiences that create meaningful emotional connections with consumers.

Another important implication concerns the use of virtual influencers, which were found to significantly shape both trust and purchase intentions. FMCG brands can benefit from deploying these digital ambassadors as cost-efficient and scalable alternatives to human influencers, while also tailoring them to resonate with diverse cultural contexts.

The study also reinforces the importance of trust-building and transparency in AI-driven advertising. With consumers becoming increasingly aware of privacy issues and algorithmic bias, marketers must embed explicit disclosures, authenticity cues, and ethical safeguards into their campaigns to maintain credibility and long-term trust.

Finally, the results point to the need for targeted loyalty strategies. Since customer loyalty and product category were shown to strongly influence emotional engagement, marketers should design loyalty programs and category-specific initiatives that not only encourage repeat purchases but also deepen emotional ties with consumers.

6.2 Theoretical Implications

This study contributes to the academic discourse on AI- and CGI-driven advertising in several important ways. First, it highlights the interplay between traditional constructs such as trust, loyalty, and product engagement, and emerging constructs including virtual influencers and AI-generated content. By bringing these dimensions together, the study advances understanding of how established consumer behavior variables interact with new digital advertising mechanisms.

Second, the findings empirically validate the role of emotional engagement as a mediator between contextual advertising factors and consumer purchase intentions. This reinforces prior research on the importance of affective responses in consumer decision-making, while offering new evidence in the context of AI-driven FMCG advertising.

Finally, the study extends the literature on AI advertising by incorporating virtual influencers as a novel construct within the FMCG sector. The results provide empirical evidence of their persuasive power, demonstrating that digital influencers can meaningfully shape trust and purchase intentions alongside more traditional consumer engagement drivers.

7. Limitations

While this study offers important insights into the impact of AI and CGI advertising in the FMCG sector, several limitations must be acknowledged. First, the survey included 300 respondents, which provided sufficient statistical power but may not fully capture the diversity of the broader consumer population. The relatively narrow sample limits the generalizability of the findings to wider markets. Moreover, the study focused exclusively on the FMCG sector. Given the short purchase cycles and habitual buying patterns characteristic of this industry, the results may not translate directly to other sectors such as luxury goods, services, or technology, where consumer decision-making processes differ significantly.

Another limitation lies in the range of variables examined. While this research investigated product category, trust, loyalty, and product engagement, other relevant factors—such as social influence, influencer credibility, and broader economic conditions—were not included. These elements may also play a crucial role in shaping consumer responses to AI-driven advertising and warrant further exploration.

Importantly, cultural and demographic influences, although incorporated conceptually into the framework, were not empirically tested. Given the impact of globalization and the variation in consumer perceptions across cultural and generational groups, this remains a critical area for future inquiry. Finally, the study employed a cross-sectional design, capturing responses at a single point in time. Consumer attitudes and

behaviors toward AI and CGI advertising are dynamic, and longitudinal studies will be necessary to track changes over time and assess the durability of emotional engagement and trust.

8. Future Research Directions

Building on the limitations of this study, several avenues for future research emerge. First, there is a need to expand the scope and sample size by including larger and more diverse populations across multiple regions. Such expansion would strengthen the generalizability of the findings and provide a more comprehensive understanding of consumer behavior in varied market contexts.

Second, future studies should employ longitudinal research designs to track consumer engagement and purchase behavior over time. This would make it possible to capture how perceptions of AI-driven campaigns and virtual influencers evolve, offering richer insights into the long-term sustainability of emotional engagement and trust.

A third priority lies in conducting cross-cultural analyses. Since cultural values and demographic factors are likely to moderate consumer acceptance of AI- and CGI-based advertising, comparative studies across different global markets would shed light on the cultural nuances that shape consumer engagement.

In addition, researchers should consider incorporating new variables such as influencer credibility, social media engagement, and economic conditions into future models. These constructs could offer a more holistic understanding of the drivers behind consumer purchase intentions in digital contexts.

Finally, there is a pressing need to examine ethical and regulatory dimensions of AI advertising. Future work should explore how corporate governance frameworks and emerging regulations address critical issues of privacy, fairness, and algorithmic bias, ensuring that AI-driven marketing strategies remain transparent and consumer-centric.

7.2 Future Research Directions

Future studies could address these limitations in several meaningful ways. One promising direction is cross-cultural validation, where comparative studies across regions or countries could test whether cultural sensitivity influences consumer responses to AI-driven advertising (López, Martínez, & Torres, 2023). This would provide richer insights into how global diversity shapes engagement with AI- and CGI-based campaigns. Another important avenue is generational analysis, extending the scope of investigation to include Baby Boomers and Gen Alpha. Examining how different cohorts interpret AI and CGI advertisements could deepen understanding of age-related differences in trust, authenticity, and emotional engagement (Singh, Jain, & Sharma, 2022; Lee et al., 2023).

Methodologically, future research should explore advanced modeling techniques such as structural equation modeling (SEM) or partial least squares (PLS). These approaches would allow scholars to capture more complex relationships among constructs like trust, authenticity, and emotional engagement, moving beyond the explanatory power of multiple regression (Hair et al., 2019). In addition, greater attention should be given to ethical frameworks in practice. Studies could investigate how consumers respond to explicit disclosure of AI usage, fairness audits, or ethical certifications in advertising, thereby evaluating the effectiveness of strategies aimed at building transparency and safeguarding trust (Ahmed, Wang, & Patel, 2023; Wu & Wen, 2021).

Finally, there is scope for behavioral experimentation. Lab-based or field experiments that measure actual purchase behavior in response to AI- and CGI-based campaigns would provide stronger evidence beyond self-reported perceptions. Such designs could capture real-time consumer reactions and validate whether emotional engagement and virtual influencers translate into observable behaviors.

By addressing these areas, future research can build on the present findings to offer a more comprehensive understanding of the role of AI and CGI in FMCG advertising, while also strengthening both theoretical development and practical application.

CONCLUSION

This study examined how AI- and CGI-driven advertising shapes consumer engagement in the FMCG sector, focusing on the roles of emotional engagement, trust, and virtual influencers. The findings provide clear evidence that customer loyalty and product category are the strongest predictors of emotional engagement, while trust also contributes moderately. Virtual influencers emerged as effective mediators of consumer perceptions, significantly influencing both trust and purchase intention. Most importantly, the results highlight that emotional engagement is the dominant driver of purchase intention, underscoring the central role of affective connections in FMCG consumer behavior.

Theoretically, the study extends existing literature on AI in advertising by integrating virtual influencers as a construct, empirically validating their relevance in shaping consumer outcomes. It also reinforces the importance of trust and transparency as ethical imperatives in AI-driven campaigns, contributing to ongoing debates about privacy, bias, and fairness in digital marketing. From a managerial perspective, the findings suggest that FMCG brands should prioritize emotional resonance, trust-building, and loyalty-focused strategies, while leveraging virtual influencers to scale engagement across diverse consumer segments. Looking ahead, the research opens new avenues for inquiry. Future studies should expand across larger and more diverse samples, adopt longitudinal designs, and conduct cross-cultural comparisons to better understand

how consumer acceptance of AI/CGI advertising evolves across markets. Further exploration of ethical and regulatory frameworks will also be crucial to ensuring that AI-driven advertising practices remain transparent, fair, and consumer-centric. Ultimately, the balance between technological innovation and ethical responsibility will define the future of AI in FMCG advertising.

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