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The Impact of Virtual Human Influencers' Attractiveness and Human Similarity on Sharing Intention: The Moderating Role of Consumer Innovativeness

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Abstract. This study examines the influence of virtual human influencers' attractiveness and human similarity on consumers' sharing intentions, with a particular focus on the moderating role of consumer innovativeness. A survey was conducted with 183 university students, and the collected data were analyzed using SPSS and the PROCESS Macro. The results reveal that the attractiveness of virtual human influencers significantly enhances consumers' intention to share content, especially among individuals with high levels of innovativeness. Furthermore, while physical similarity does not exhibit a significant moderating effect, inner similarity exerts a more substantial positive influence on sharing intention among highly innovative consumers. These findings underscore the crucial role of both attractiveness and inner similarity in influencing consumer engagement with virtual human influencers. Moreover, they suggest that consumer innovativeness enhances the effectiveness of marketing strategies that utilize such influencers. Accordingly, advertising, marketing, and content strategies should be tailored to reflect consumers' levels of innovativeness to maximize campaign effectiveness.

Keywords: virtual human influencers, attractiveness, human similarity, sharing intention, consumer innovativeness

1. Introduction

The rapid advancement of artificial intelligence (AI) technologies has led to the emergence of virtual human influencers as a novel tool in digital marketing. Sophisticated AI capabilities—such as deep learning, machine learning, natural language processing (NLP), and computer graphics—have enabled the creation of virtual characters with highly realistic appearances and personalities that are often indistinguishable from real humans. These virtual human influencers are actively engaging on social media platforms, collaborating with brands to promote products and services like real-life influencers. They have gained substantial popularity, particularly among younger consumers, and are becoming a core component of contemporary digital marketing strategies.

According to Imagine Research, a global market research firm, the virtual human market is projected to reach USD 52.76 billion by 2030 (SobiLife, 2021), signaling the growing strategic importance of virtual influencers in future marketing landscapes. Successful examples include Lil Miquela in the United States, Imma in Japan, Liu Yexi in China, and Rozy in South Korea. These virtual personalities captivate audiences with their flawless visual aesthetics and distinctive characteristics, successfully fostering emotional connections with consumers. Moreover, the rapid expansion of the virtual human industry is evident in recent developments such as the world's first AI beauty pageant in May 2024—with a total prize of USD 20,000 (Electronic Times, 2024)—and the launch of the "2024 Virtual Star Audition" project aimed at discovering the next generation of virtual idols and digital celebrities (Money Today, 2024).

Amid this growing attention, academic interest in virtual human influencers has also intensified. Prior studies have predominantly focused on examining how the attributes of virtual influencers affect consumer responses, offering theoretical and practical implications for their application in advertising and marketing contexts (Paudel et al. 2025). The present study builds upon a previous investigation by Baik (2024), hereafter referred to as the "preceding study," which found that the attractiveness and internal human similarity of virtual influencers, as well as consumer innovativeness, positively influenced content-sharing intention. In contrast, external human similarity and perceived commerciality did not show statistically significant effects.

Expanding on these findings, the current research aims to explore in greater depth the interactions among key variables. Specifically, this study investigates how the attractiveness and human similarity of virtual human influencers (both external and internal) affect consumers' intention to share content while also examining the moderating role of consumer innovativeness. Through this approach, the study aims to propose a personalized marketing strategy framework that takes into account consumer traits and to explore ways to enhance the effectiveness of virtual influencers in branding efforts.

The primary objective of this study is thus to analyze the effects of virtual influencers' attractiveness and human similarity on consumers' sharing intention and to identify how consumer innovativeness moderates these relationships. The study ultimately aims to provide strategic insights for businesses seeking to enhance the impact of marketing campaigns that incorporate virtual human influencers.

2. Theoretical Background

2.1. Virtual Human Influencers and Marketing Strategy

Virtual human influencers are AI- and 3D computer graphics (CG)-generated digital personas that primarily operate on social media platforms and collaborate with brands as marketing agents. Their appearance, personality, and behavior can be customized to align with the goals of specific campaigns, and their activities are not constrained by time or space. These features enable consistent brand messaging and facilitate highly personalized marketing strategies.

Compared to traditional human influencers, virtual influencers offer several distinct advantages. First, they are free from the risks associated with personal scandals or unpredictable behavior. While human influencers may damage a brand's image through inappropriate speech or conduct, virtual

influencers are entirely controllable by the brand, minimizing reputational risk. Second, virtual influencers can be tailor-made to meet the aesthetic and communicative needs of a campaign. Companies can design characters with specific visual traits and personalities to enhance the persuasiveness of their message and audience engagement.

In addition to message delivery, virtual influencers play a unique role in building relationships with consumers. Mouritzen et al. (2023) categorized virtual human influencers into four types—Hyper-Realistic Non-Humans, Hyper-Realistic Humans, Unrealistic Non-Humans, and Unrealistic Humans—and found that Hyper-Realistic Humans generate higher levels of perceived human similarity, particularly inner similarity, leading to stronger feelings of intimacy and emotional connection. This type of virtual influencer is particularly effective in the fashion and beauty industries, as it enhances brand trust and creates immersive, emotionally resonant experiences.

Another key advantage of virtual influencers lies in the consistency of their communication. While human influencers may be influenced by mood, context, or external factors, virtual influencers operate based on predefined scripts and strategies, ensuring consistent message delivery (Lubis et al. 2025). Gerlich (2023) compared consumer responses to messages from virtual and human influencers and found that consumers perceived messages from virtual influencers as more consistent and trustworthy. This consistency, in turn, strengthens brand credibility and fosters positive consumer engagement.

In summary, virtual human influencers transcend being a technological novelty and are emerging as strategic tools in digital marketing. By enabling emotionally resonant and consistent communication, they help brands build trust and increase consumer engagement. In particular, their ability to drive consumer participation and sharing behavior on social media platforms positions them as crucial assets in the evolving digital advertising landscape. As such, virtual influencers open new possibilities for innovation in branding and marketing strategy.

2.2. Attractiveness and Human Similarity of Virtual Human Influencers

Among the key characteristics of virtual human influencers, attractiveness, and human similarity play a critical role in shaping consumers' emotional bonds and their acceptance of brand messages. Attractiveness refers to the extent to which consumers perceive the virtual influencer's appearance as visually appealing (Youm, 2023), and it serves as a core factor in capturing attention and eliciting favorable consumer attitudes. Virtual human influencers can be algorithmically designed based on big data analysis to embody aesthetically idealized traits, thereby maximizing their attractiveness. This strategic customization enables brands to appeal to specific target consumer segments effectively.

Empirical studies consistently support the influence of virtual influencers' attractiveness on consumer responses. Mouritzen et al. (2023) found that attractiveness enhances consumer trust and purchase intention, emphasizing its distinguishing value compared to human influencers. Youm (2023) also reported that attractiveness has a positive effect on advertising attitudes and purchase intention, with curiosity acting as a mediating variable. Similarly, Baik (2024) demonstrated that attractiveness significantly increases content-sharing intention, and in a follow-up study, Youm and Baik [9] identified attractiveness as a central factor influencing attitudes toward virtual influencers, advertising attitudes, and purchase intention.

On the other hand, human similarity refers to the degree to which consumers perceive a virtual human influencer as resembling a real person (Youm, 2023). This perception significantly impacts feelings of familiarity and trust. Human similarity is typically classified into two dimensions: physical similarity, which pertains to physical appearance and visual cues, and inner similarity, which involves perceived personality traits, communication style, and psychological attributes (Youm & Baik, 2024; Cha & Youm, 2023; Lee & Kim, 2022). Higher levels of human similarity can foster greater consumer intimacy and immersion, positively influencing brand evaluations and behavioral intentions.

However, excessive human similarity may trigger the uncanny valley effect, in which characters that are almost—but not perfectly—human-like elicit discomfort or aversion. Mori's et al. (2012) theory of the uncanny valley suggests that when a virtual human closely approximates real human appearance, it can feel artificial or unnatural to viewers. Supporting this, Wu Yuncheng (2023) found that while increased human similarity generally enhances consumer curiosity and trust, overly realistic virtual influencers may provoke unease and reduce the effectiveness of marketing communication. Therefore, maintaining an optimal level of human similarity is essential to ensuring positive consumer responses and minimizing potential psychological resistance.

In conclusion, the attractiveness and human similarity (both inner and physical) of virtual human influencers are pivotal in enhancing consumer emotional engagement, brand message receptivity, and sharing intention. These characteristics serve as strategic variables in developing effective marketing campaigns. Moreover, their influence may be further amplified when interacting with individual consumer traits such as consumer innovativeness, which this study aims to explore in depth.

2.3. Consumer Innovativeness

Consumer innovativeness, conceptualized by Rogers in the early 1960s, refers to a consumer's tendency to adopt new products, services, ideas, or technologies earlier than others. It has been established as a core psychological trait in marketing, playing a pivotal role in both strategic planning and predicting consumer behavior. In the context of today's rapidly evolving digital environment, consumer innovativeness is increasingly recognized as a key factor in understanding technology acceptance, platform selection, and content usage behavior.

According to prior studies, Shin et al. (2020) identified two sub-dimensions of consumer innovativeness—functional and hedonic—and explored their influence on social media usage. Their findings showed that functionally innovative consumers are more likely to engage with information-based platforms (e.g., KakaoStory), while hedonically innovative consumers prefer sensory-based platforms (e.g., Instagram). These results imply that consumers with high innovativeness levels are more proactive in exploring and adopting new technologies and that their innovativeness influences not only technology use but also media behavior and platform preferences (Amin & Lim, 2021).

Du et al. (2021) analyzed the effects of consumer innovativeness and consumption values on the adoption of new electronic products. Their study revealed that highly innovative consumers consider not only practical utility but also external factors such as brand image and social status when making purchase decisions. This suggests that innovativeness plays a crucial role in the psychological process of evaluating and making decisions about products.

Similarly, Seyed Esfahani and Reynolds (2021) confirmed that consumer innovativeness is a key variable in the adoption of new products, emphasizing that hedonic innovativeness contributes to the formation of positive consumer attitudes. Cha and Youm (2018) further examined sensory innovativeness in the context of IoT product advertising. They found that consumers with higher levels of sensory innovativeness formed more favorable attitudes toward the advertised product and perceived it as more useful.

Collectively, prior research has predominantly defined consumer innovativeness as a dispositional tendency to accept new products, technologies, and services, focusing mainly on its direct effects (Shin et al., 2020; Du et al., 2021; Seyed & Reynolds, (2021); Kamyad (2024); Hoeft, 2023). However, this perspective tends to treat innovativeness as a fixed personal trait and has overlooked its potential moderating function within specific situational contexts. In particular, although consumer responses to technology-driven content—such as virtual human influencers—may vary significantly depending on their level of innovativeness, this interaction has rarely been addressed in existing literature.

This study, therefore, focuses on the moderating role of consumer innovativeness. Specifically, it examines how consumer innovativeness influences the relationship between the characteristics of

virtual human influencers—namely, attractiveness, inner similarity, and physical similarity—and consumers' sharing intention. Unlike prior studies focused on direct effects, this research aims to expand theoretical understanding by examining the interaction between consumer innovativeness and message characteristics, thereby providing meaningful insights into the effectiveness of AI-based marketing communication.

2.4. Sharing Intention

Sharing intention refers to an individual's voluntary willingness to share their information, resources, or experiences with others. With the growing ubiquity of digital environments and social media platforms, the importance of sharing intention has become increasingly prominent. It directly influences the diffusion of information, brand message transmission, viral marketing, and the activation of online communities. As such, it is considered a core variable in digital marketing strategies and consumer behavior analysis.

According to Cho and Jeong (2019), in their empirical study on the intention to use sharing economy services, factors such as usefulness, enjoyment, and perceived risk significantly influenced consumers' attitudes and trust, which in turn positively affected their usage intentions. These findings suggest that consumers evaluate not only the practical benefits of a service but also its emotional and trust-based aspects when deciding whether to share it.

Kang (2020), in a study on knowledge-sharing behavior among users of online Q&A platforms, found that both continuance intention and past sharing behavior significantly influenced the frequency and persistence of knowledge-sharing. These results highlight the role of previous experiences and motivational continuity in reinforcing sharing behaviors, suggesting that consumer intention to share is shaped over time through behavioral repetition.

In the context of virtual human influencers, several studies have further confirmed the relevance of sharing intention. Baik (2024) found that the attractiveness and inner similarity of virtual human influencers positively influence consumers' intention to share content. Likewise, Kim (2022) demonstrated that perceived attractiveness and social closeness with virtual human influencers significantly affect consumers' information acceptance intentions. Chenxia et al. (2016) the more attractive and relatable consumers perceive a virtual influencer to be, the more likely they are to engage with and share the associated content. These findings suggest that specific characteristics of virtual human influencers—such as attractiveness and perceived human similarity—can meaningfully enhance consumers' sharing intentions. Therefore, when implementing digital marketing strategies involving virtual influencers, it is essential to go beyond mere exposure or brand awareness and instead foster voluntary message diffusion through enhanced consumer engagement. Sharing intention plays a critical role not only in the dissemination of brand messages but also in strengthening consumer–brand interaction and maximizing the impact of participatory marketing.

3. Research Questions

Based on the preceding theoretical discussions and prior research, this study examines the moderating role of consumer innovativeness in the relationship between the characteristics of virtual human influencers—namely, attractiveness and human similarity (physical and inner)—and consumers' sharing intention. Accordingly, the following research questions are proposed:

RQ1: Does consumer innovativeness moderate the effect of virtual human influencers' attractiveness on consumers' sharing intention?

RQ2: Does consumer innovativeness moderate the effect of the physical similarity of virtual human influencers on consumers' sharing intention?

RQ3: Does consumer innovativeness moderate the effect of the inner similarity of virtual human influencers on consumers' sharing intention?

4. Research Methodology

4.1. Participants and Data Collection

This study conducted a survey targeting university students with prior awareness or experience related to virtual human influencers. Before responding to the questionnaire, participants were provided with a clear explanation of the concept and examples of virtual human influencers. Only respondents who had previously encountered advertisements or marketing content featuring virtual human influencers were included in the final sample. Data were collected using a structured self-administered questionnaire. Of the 200 completed surveys, 183 valid responses were retained for analysis after excluding 17 responses due to incompleteness or insincerity. Among the valid respondents, 52.5% were male (n=96), and 47.5% were female (n=87), with an average age of 22.55 years (SD = 1.26).

4.2. Measurement Instruments

4.2.1. Attractiveness of Virtual Human Influencers

The perceived attractiveness of virtual human influencers was measured using a scale developed by Youm and Baik (2024). This scale assesses respondents' evaluations of the visual and emotional appeal of the virtual influencer. It consists of five items: (1) The virtual human influencer looks cool. (2) The virtual human influencer appears beautiful. (3) The virtual human influencer seems likely to be popular. (4) The virtual human influencer has an appealing presence. (5) The virtual human influencer appears attractive. All items were rated on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree).

4.2.2. Human Similarity of Virtual Human Influencers

The perceived human similarity of virtual human influencers was measured using the physical similarity and inner similarity subscales developed by Youm and Baik [9]. Physical similarity refers to how closely the influencer resembles a real human in appearance and was measured using three items: (1) The virtual human influencer does not appear visually awkward. (2) The virtual human influencer would not look out of place standing next to a real human. (3) It is difficult to distinguish the virtual human influencer from a real person. Inner similarity refers to the perceived similarity in cognitive or communicative aspects and was assessed using two items: (1) The virtual human influencer seems to think and speak like me. (2) The virtual human influencer seems capable of communication like a real person. All five items were rated on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree).

4.2.3. Consumer Innovativeness

To measure consumer innovativeness, this study adopted the scale developed by Chang and Youm (2017). The scale consists of the following four items: (1) I enjoy trying out new and novel things; (2) I tend to be among the first to try new things before those around me; (3) I like to experiment with various new methods when doing things; (4) When a new medium or technology is introduced, I am among the first group of users. Each item was assessed using a five-point Likert scale (1 = Strongly disagree, 5 = Strongly agree).

4.2.4. Sharing Intention

Sharing intention was defined as a user’s willingness to share content with others voluntarily. It was measured using a scale adapted from Baik (2024). The three items were as follows: (1) When using content featuring virtual human influencers, I sometimes feel like posting it on my social media network (SNS). (2) When using content featuring virtual human influencers, I sometimes want to inform others about it. (3) When using content featuring virtual human influencers, I sometimes want to recommend it to others. Each item was rated on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree).

4.3. Data Analysis

The collected data were analyzed using SPSS for Windows , version 21.0, and the PROCESS Macro developed by Hayes (2012). Descriptive statistics and frequency analyses were conducted to examine participants' demographic characteristics, and the internal consistency of each measurement scale was assessed using Cronbach's alpha coefficients.

To evaluate the construct validity of the instruments, exploratory factor analysis (EFA) was performed. To test the proposed research questions, PROCESS Macro Model 1 was employed with a 95% confidence interval. Model 1 is a basic moderation model designed to assess whether the relationship between an independent variable (X) and a dependent variable (Y) varies according to the level of a moderator (M). This model was appropriate for the current study, which aimed to investigate whether consumer innovativeness moderates the effects of virtual human influencer characteristics—such as attractiveness, physical similarity, and inner similarity—on consumers' sharing intention.

5. Result

5.1. Validity and Reliability of Measurement Instruments

The validity and reliability of all measurement instruments employed in this study are summarized in Table 1. As indicated, an exploratory factor analysis (EFA) was conducted to verify construct validity. The results revealed a clear five-factor structure encompassing attractiveness, consumer innovativeness, sharing intention, physical similarity, and inner similarity. All items demonstrated initial communalities above 0.50, and factor loadings exceeded 0.70—well above the minimum acceptable threshold of 0.40. Furthermore, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .819, and Bartlett's test of sphericity yielded statistically significant results ($\chi^2 = 2019.941$, $df = 136$, $p < .001$), indicating that the dataset was appropriate for factor analysis and that the construct validity of the instruments was satisfactory. Regarding reliability, Cronbach's alpha coefficients were calculated for each subscale.

The results indicated strong internal consistency for attractiveness (.889), consumer innovativeness (.864), sharing intention (.942), and physical similarity (.732), all of which exceeded the generally accepted threshold of .70. However, the reliability coefficient for inner similarity was .672, slightly below the conventional cutoff. It is important essential to consider note that this subscale comprised consisted of only two items. As Cronbach's alpha is known to be sensitive to the number of items in a scale, particularly in short subscales, the reliability estimate may underrepresent the true internal consistency of the construct (Eisinga et al., 2013).

This study adopted the measurement items validated and utilized in the prior survey of Youm and Baik (2024), and the factor structure was retained based on their established content validity and conceptual alignment. Additionally, the correlation between the two items comprising the inner similarity subscale was statistically significant. Therefore, despite the slightly lower alpha value, the reliability of the inner similarity subscale can be deemed acceptable given the methodological constraints.

Table 1. Validity and reliability validation results

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Commonality
Attractiveness 5	.850					.809
Attractiveness 4	.810					.799
Attractiveness 2	.807					.741
Attractiveness 1	.795					.729
Attractiveness 3	.710					.539
Innovativeness 2		.882				.815
Innovativeness 1		.869				.764
Innovativeness 3		.865				.781
Innovativeness 4		.724				.614
Sharing Intention 2			.893			.924

Sharing Intention 3			.888			.921
Sharing Intention 1			.870			.839
Physical Similarity 2				.793		.760
Physical Similarity 3				.775		.655
Physical Similarity 1				.745		.615
Inner Similarity 2					.836	.747
Inner Similarity 1					.767	.755
Eigen value	5.814	2.721	1.785	1.483	1.005	-
% of Variance	34.200	16.007	10.498	8.725	5.914	-
Cumulative %	34.200	50.207	60.705	69.430	75.344	-
Reliability	.889	.864	.942	.732	.672	
KMO (Kaiser-Meyer-Olkin) = .819, Bartlett test $\chi 2$ = 2019.941 (df = 136, p<.001)						

5.2. Results of Research Question 1 Using PROCESS Macro

Research Question 1 aimed to examine whether consumer innovativeness moderates the relationship between the attractiveness of virtual human influencers and consumers' sharing intention. To test this, both the independent variable (attractiveness) and the moderating variable (consumer innovativeness) were mean-centered, and their interaction term was included in a regression analysis using Model 1 of the PROCESS Macro. The results are presented in Table 2.

As shown in Table 2, the interaction effect between attractiveness and consumer innovativeness was statistically significant, with a regression coefficient of B = .153 (p < .05). This finding indicates that when consumer innovativeness is high, the positive influence of virtual human influencers' attractiveness on sharing intention becomes stronger. In other words, consumer innovativeness functions as a moderator that amplifies the effect of perceived attractiveness on consumers' willingness to share content.

Table 2. Validation results of research question 1

Variable	B	S.E.	t	*p*
Attractiveness	.525	.071	7.352	.000
Consumer Innovativeness	.100	.074	1.357	.177
Attractiveness * Consumer Innovativeness	.153	.073	2.088	.038
F (*p*)			23.160 (.000)	
R^2			.280	
$\triangle R^2$			.018 (F = 4.359, *p* = .038)	

Based on the preceding results, a simple slope analysis was conducted to examine the conditional effects of consumer innovativeness on the relationship between the attractiveness of virtual human influencers and the intention to share. The study was performed by categorizing consumer innovativeness into three levels: low (–1 SD), mean and high (+1 SD). The results are presented in Table 3. At the low level of consumer innovativeness (–1 SD), the effect of attractiveness on sharing intention was significant (B = .392, p < .001), indicating that higher perceived attractiveness leads to greater sharing intention. At the mean level of innovativeness, the effect increased to B = .525 (p < .001), and at the high level (+1 SD), it further increased to B = .658 (p < .001). These findings suggest that consumer innovativeness amplifies the positive effect of virtual human influencer attractiveness on sharing intention, thereby confirming its role as a significant moderating variable.

This moderating effect is further illustrated in Figure 1. As shown, the high-innovativeness group (+1 SD) demonstrated a steeper increase in sharing intention in response to increases in perceived attractiveness (B = .658), compared to the low-innovativeness group (–1 SD), which exhibited a more gradual increase (B = .392). These results indicate that highly innovative consumers are more sensitive

to the attractiveness of virtual human influencers and are more likely to translate such perceptions into proactive sharing behavior. This finding reflects the greater receptivity and openness of innovative consumers to new content and visual stimuli.

Table 3. Results of testing the conditional effect of the moderator variable

Variable	Effect	S.E.	t	*p*	LLCI	ULCI
-1SD	.392	.100	3.906	.000	.194	.591
Mean	.525	.071	7.352	.000	.384	.666
+1SD	.658	.091	7.258	.000	.479	.837

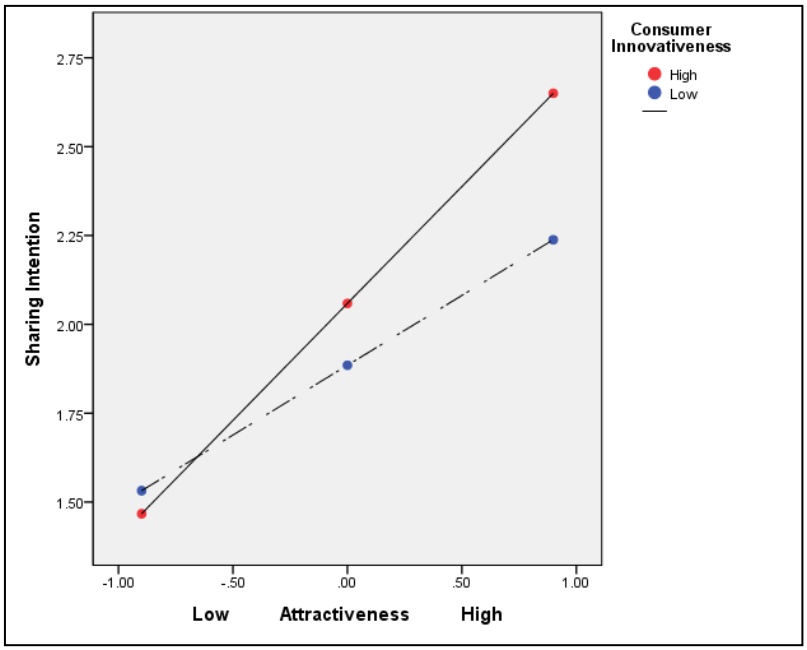

Fig. 1: The Moderating effect of consumer innovativeness on the relationship between attractiveness and sharing intention

5.3. Results of Research Question 2 Using PROCESS Macro

Research Question 2 aimed to examine whether consumer innovativeness moderates the effect of physical similarity of virtual human influencers on consumers' sharing intention. The results of the analysis are presented in Table 4. After mean-centering both physical similarity (independent variable) and consumer innovativeness (moderating variable), the interaction term was entered into the regression model. The results showed that the interaction effect was B = .125 (p > .05), indicating that it was not statistically significant.

This suggests that consumer innovativeness does not significantly moderate the relationship between physical similarity and sharing intention in the context of virtual human influencers. In other words, physical similarity alone may not effectively influence consumers' intention to share, regardless of their level of innovativeness, highlighting the limited role of visual resemblance in driving consumer engagement.

Table 4. Validation results of research question 2

Variable	B	S.E.	t	*p*
Physical Similarity	.343	.074	4.624	.000
Consumer Innovativeness	.180	.079	2.276	.024
Physical Similarity * Consumer Innovativeness	.125	.079	1.584	.115
F (*p*)	10.421 (.000)			
R^2	.149			
$\triangle R^2$	.012 (F = 2.509, *p* = .115)			

5.4. Results of Research Question 3 using PROCESS Macro

Research Question 3 examined whether consumer innovativeness moderates the relationship between the inner similarity of virtual human influencers and consumers' sharing intention. The results of this analysis are presented in Table 5. As shown in Table 5, a regression analysis was conducted using mean-centered values of inner similarity (independent variable) and consumer innovativeness (moderator), along with their interaction term. The interaction effect was found to be statistically significant (B = .163, p < .05), indicating an moderating meaningful impact.

This finding suggests that when consumer innovativeness is high, the positive influence of inner similarity on sharing intention becomes more pronounced. In other words, consumer innovativeness functions as a moderator in the relationship between inner similarity and consumers' intention to share, strengthening the effect as the level of innovativeness increases.

Table 5. Validation results of research question 3

Variable	B	S.E.	t	*p*
Inner Similarity	.380	.069	5.491	.000
Consumer Innovativeness	.131	.077	1.705	.090
Inner Similarity * Consumer Innovativeness	.163	.080	2.052	.042
F (*p*)	15.247(.000)			
R^2	.204			
$\triangle R^2$	.019 (F = 4.210, *p* = 0.042)			

Based on the above findings, a simple slopes analysis was conducted to examine the conditional effects of the moderator, dividing consumer innovativeness into three levels: −1 SD (low), the mean, and +1 SD (high). The results of this analysis are presented in Table 6. When consumer innovativeness was at a low level (−1 SD), the effect of inner similarity on sharing intention was significant (B = .238, p < .05), indicating that as consumers perceived greater inner similarity with the virtual human influencer, their intention to share the content increased. At the mean level of consumer innovativeness,

the effect was more substantial (B = .380, p < .001), and it became even more pronounced at the high level (+1 SD) (B = .522, p < .001). These results demonstrate that consumer innovativeness significantly moderates the relationship between inner similarity and sharing intention, strengthening the positive effect as innovativeness increases.

This finding reflects the greater receptivity and openness of innovative consumers to new content and visual stimuli. This moderating effect is visually depicted in Figure 2. As shown, the group with high consumer innovativeness (+1 SD) exhibited a steep increase in sharing intention as perceptions of inner similarity increased (B = .522). In contrast, the low innovativeness group (−1 SD) displayed a more gradual slope (B = .238), suggesting a weaker effect. These findings suggest that when consumers perceive a virtual human influencer not merely as an aesthetically appealing figure, but as one possessing similar ways of thinking and communicating, they are more likely to share content featuring that influencer. In particular, consumers with high innovativeness are more sensitive to such perceived psychological and communicative congruence and are more likely to translate emotional affinity into active sharing behaviors.

Table 6. Results of testing the conditional effect of the moderator variable

Variable	Effect	S.E.	t	*p*	LLCI	ULCI
-1SD	.238	.106	2.253	.025	.030	.447
Mean	.380	.069	5.491	.000	.243	.517
+1SD	.522	.089	5.839	.000	.346	.698

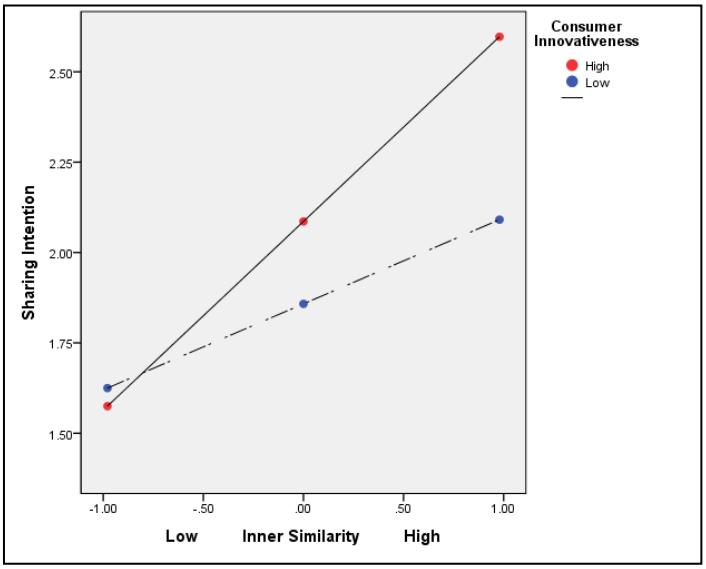

Fig. 2: The moderating effect of consumer innovativeness on the relationship between inner similarity and sharing intention

6. Conclusion and Discussion

This study investigated whether consumer innovativeness moderates the relationship between the attractiveness of virtual human influencers and human similarity (inner and physical) and consumers' sharing intention. Data were collected from 183 university students who had been exposed to advertisements or marketing content featuring virtual human influencers. The analysis was conducted using SPSS 21.0 and the PROCESS Macro with a bootstrapping approach.

The key findings are as follows. First, the attractiveness of virtual human influencers significantly enhanced consumers' intention to share related content, with this effect being more pronounced among individuals with higher levels of innovativeness. This aligns with prior research suggesting that

innovative consumers tend to be more receptive to novel technologies and digital media, often expressing their identity by engaging with and sharing cutting-edge content. Notably, the visual appeal and distinctive personality traits of virtual human influencers appear to amplify this effect.

Second, inner similarity—defined as the perceived psychological resemblance or shared values between the consumer and the virtual human influencer—also had a significant positive effect on sharing intention, particularly among highly innovative consumers. In contrast, physical similarity did not yield a considerable influence, indicating that visual resemblance alone may not be sufficient to evoke meaningful engagement or sharing behavior. These results suggest that virtual influencers who evoke emotional resonance or appear internally relatable are more effective in motivating consumer interaction.

These findings provide empirical support for the moderating role of consumer innovativeness in digital marketing contexts, particularly in shaping responses to the attractiveness and inner similarity of virtual human influencers. They extend the existing literature by demonstrating that innovativeness not only influences direct media engagement but also enhances the effectiveness of communication strategies built on emotionally resonant or aesthetically appealing content. From a practical standpoint, marketers should tailor virtual influencer strategies based on target consumers' levels of innovativeness, prioritizing storytelling, internal character development, and psychological relatability over superficial realism.

Despite these insights, several limitations should be noted. First, the use of a student sample may limit the generalizability of the findings. University students tend to be more digitally fluent and innovation-oriented, which may not reflect the attitudes of the broader population. Future research should aim to include more diverse demographic groups to improve external validity.

Second, the study employed a basic moderation model (PROCESS Model 1), limiting the analysis to first-order interaction effects. Future research could adopt more sophisticated models (e.g., PROCESS Models 4 or 7) to investigate mediating psychological variables such as curiosity, emotional engagement, or cognitive appraisal. In addition, dual moderation models incorporating other variables, such as digital literacy or technological anxiety, could offer a more comprehensive view of consumer responses.

Third, although the study relied on validated measurement instruments from prior literature, it focused on structural relationships rather than the development of new measurement instruments. Confirmatory Factor Analysis (CFA) was not conducted. Future studies are encouraged to implement CFA to verify the dimensional stability and construct validity of the measurement tools, thereby strengthening the overall reliability and robustness of the research.

References

Amin, M., & Lim, F. P. C. (2021). The impact of social media marketing activities on consumer equity: Evidence from luxury brand. *International Journal of Smart Business and Technology*, 9(2), 65–76. https://doi.org/10.21742/IJSBT.2021.9.2.05

Baik, J. Y. (2024). The influence of virtual human influencers characteristics and consumer innovativeness on content sharing intentions. *Journal of Business Convergence*, 9(5), 101–105. https://doi.org/10.31152/JB.2024.10.9.5.101

Cha, H. Y., & Youm, D. S. (2018). Study on the audience effect of advertisements of IoT products across different levels of sensory innovativeness. *Journal of Digital Convergence*, 16(5), 145–152. https://doi.org/10.14400/JDC.2018.16.5.145

Cha, H. Y., & Youm, D. S. (2023). Effects of characteristics of virtual human influencers on mind perception and psychological discomfort. *Journal of Business Convergence*, 8(5), 77–83. http://dx.doi.org/10.31152/JB.2023.10.8.5.77

Chang, S. B., & Youm, D. S. (2017). A study on the audience effect on wearable device: Focused on technology acceptance model. *The Korean Journal of Advertising*, 28(6), 73–101. https://doi.org/10.14377/KJA.2017.8.31.73

Cho, Y. S., & Jeong, Y. G. (2019). An empirical study on intention of the sharing economy services. *The Journal of the Korea Contents Association,* 19(3), 183–196. https://doi.org/10.5392/JKCA.2019.19.03.183

Du, C. T., Ngo, T. T., Tran, T. V., & Nguyen, N. B. T. (2021). Consumption value, consumer innovativeness and new product adoption: Empirical evidence from Vietnam. *Journal of Asian Finance, Economics and Business*, 8(3), 1275–1286. https://koreascience.kr/article/JAKO202106438543786.pdf

Eisinga, R., Grotenhuis, M. T., & Pelzer, B. (2013). The reliability of a two-item scale: Pearson, Cronbach, or Spearman-Brown? *International Journal of Public Health*, 58, 637–642. https://doi.org/10.1007/s00038-012-0416-3

Electronic Times. (2024). News article. *Electronic Times*. https://www.etnews.com/20240710000332

Gerlich, M. (2023). The power of virtual influencers: Impact on consumer behaviour and attitudes in the age of AI. *Administrative Sciences*, 13(8), 178. https://doi.org/10.3390/admsci13080178

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling (White paper). http://www.afhayes.com/public/process2012.pdf

Hoeft, F. (2023). Cognition in human resource allocation for digital product creation. *International Journal of Smart Business and Technology*, 11(2), 39–52. https://doi.org/10.21742/IJSBT.2023.11.2.04

Kang, M. H. (2020). Influences of continuance intention and past behavior on active users' knowledge sharing continuance and frequency: Naver Knowledge-iN case. *Knowledge Management Research*, 21(3), 67–87. https://doi.org/10.15813/kmr.2020.21.3.004

Khajeheia, K. (2024). Impact of IoT on capacity efficiency and customer satisfaction. *International Journal of Smart Business and Technology*, 12(2), 13–20. https://doi.org/10.21742/IJSBT.2024.12.2.02

Kim, M. J. (2022). A study on the effect of perceived attractiveness and social distance of virtual influencer on information acceptance intention. *Journal of the Convergence on Culture Technology*, 8(2), 309–314. http://dx.doi.org/10.17703/JCCT.2022.8.2.309

Lee, J. H., & Kim, H. K. (2022). The effect of consumers' perception of similarity toward virtual influencer on purchase intention through emotional bond. *The Journal of Information Systems*, 31(2), 89–110. http://dx.doi.org/10.5859/KAIS.2022.31.2.89

Money Today. (2024). News article. Money Today. https://news.mt.co.kr/mtview.php?no=2024051613272641096

Mori, M., MacDorman, K. F., & Kageki, N. (2012). The uncanny valley [From the field]. *IEEE Robotics & Automation Magazine*, 19(2), 98–100. https://doi.org/10.1109/MRA.2012.2192811

Mouritzen, S. L. T., Penttinen, V., & Pedersen, S. (2023). Virtual influencer marketing: The good, the bad and the unreal. *European Journal of Marketing*, 58(2), 410–440. https://doi.org/10.1108/EJM-12-2022-0915

Seyed Esfahani, M., & Reynolds, N. (2021). Impact of consumer innovativeness on really new product adoption. *Marketing Intelligence & Planning*, 39(4), 589–612. https://doi.org/10.1108/MIP-07-2020-0304

Shin, H. C., Kim, Y. W., & Kim, Y. K. (2020). An exploratory study on user characteristics of social media: From the perspective of consumer innovativeness. *Journal of Digital Convergence*, 18(10), 195–206. https://doi.org/10.14400/JDC.2020.18.10.195

SobiLife. (2024). News article. SobiLife. http://www.sobilife.com/news/articleView.html?idxno=36865

Wu, Y. (2023). A comparative study on the advertising effect of human-like virtual influencers and anime-like virtual influencers: The moderating effect of human likeness (Master's thesis). Hanyang University.

Youm, D. S. (2023). A study on scale development for virtual human influencers characteristics. *Journal of Practical Research in Advertising and Public Relations*, 16(2), 165–190. https://doi.org/10.21331/jprapr.2023.16.2.007

Youm, D. S. (2023). The impact of attractiveness of virtual human influencers on advertising effectiveness: Focusing on the mediating effect of curiosity. *Journal of Business Convergence*, 8(3), 59–63. http://dx.doi.org/10.31152/JB.2024.06.9.3.87

Youm, D. S., & Baik, J. Y. (2024). The effect of virtual human influencers' traits on consumers' effects. *Journal of Business Convergence*, 9(3), 87–91. https://doi.org/10.31152/JB.2024.06.9.3.87

Chenxia, S., Yujie, M., Peng, W., Bin, X., & Yong, Y. (2016). Consumers' Sustainable Product Preference and Green Supply Chain Management Analysis. *International Journal of u - and e - Service, Science and Technology*, 9(7), 203-212, http://dx.doi.org/10.14257/ijunnesst.2016.9.7.21.

Paudel, S. R., & Thapa, P. (2025). Impact of Environmental, Social, Governance Factors on Consumers' Behavior in the Light of Digital Transformation. *Journal of Service, Innovation and Sustainable Development*, 6(1), 87-107.

Lubis, Y., Hutagaol, J., & Syaifuddin. (2025). An Empirical Analysis on the Influence of On-Time Delivery on Generation Z Customer Loyalty Mediated by Payment Methods. *Journal of Management Changes in the Digital Era*. 2(1), 160-169.