Consumer Perception of Virtual Influencers: A Study on Trust, Engagement, and Purchase Intention among Gen Z

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Abstract
The growing adoption of virtual influencers (VIs) in digital marketing has sparked interest in their impact on Generation Z (Gen Z) in emerging markets like Malaysia. This study explores how Gen Z's trust and engagement with VIs influence purchase intention, leveraging the Source Credibility Theory and Elaboration Likelihood Model. Using a quantitative survey of 200 Malaysian Gen Z respondents, the research finds that trust in VIs directly drives engagement and purchase intention, while engagement partially mediates this relationship. Cultural preferences for transparency and value alignment are key moderators. The study contributes to understanding VI effectiveness in collectivist contexts and offers insights for brands targeting Gen Z.
Keywords: Virtual Influencers, Gen Z, Trust, Engagement, Purchase Intention

Introduction
Driven by artificial intelligence and digital animation, virtual influencers are emerging as a new and controllable way to engage with audiences in marketing. Compared to real people, virtual influencers do not age, are not involved in scandals, and are not emotionally or behaviorally unpredictable, making them ideal candidates for many companies seeking long-term brand partnerships. Represented by Lil Miquela in the United States and Imma in Japan, these virtual characters have attracted millions of fans around the world and established partnerships with many brands covering luxury, fashion, lifestyle and other fields.

For Generation Z, born between 1997 and 2012, they are veritable "digital natives" and have grown up in an environment of social media. Virtual influencers have become commonplace. This generation values creativity, diversity and inclusion, and a sense of technology, which are the characteristics of virtual influencers that make them attractive to Generation Z.

However, despite the increasing popularity of virtual influencers, their effectiveness in building real trust, deeply interacting with fans, and even influencing consumer decisions still lacks systematic empirical verification, especially in emerging markets in Southeast Asia such as Malaysia. This study aims to explore Generation Z consumers' subjective perceptions of the credibility and interactivity of virtual influencers, and further analyze how these factors affect their willingness to purchase products endorsed by virtual influencers.

Literature Review
Virtual Influencers
Virtual influencers are digital characters created using artificial intelligence, 3D modeling or motion capture technology. They can interact on social media like real people (Moustakas et al., 2020). Unlike real influencers, the appearance, content and cooperation of virtual influencers are all fully controlled by the behind-the-scenes team, which can avoid the risks that may arise from scandals or inconsistent behaviors of real people. For instance, the virtual influencer Lil Miquela in the United States has 11 million fans and is famous for her image as an artist who cares about social issues. The Japanese virtual influencer Imma has 2 million followers and her style is simple and fashionable. They have also collaborated with luxury brands such as Prada and Dior and have become very famous (Sprout Social, 2024).

Secondly, globally speaking, virtual Internet celebrities are becoming increasingly popular. Because they can break through the limitations of region and culture. In Western countries, people like the new technologies and perfect images of virtual influencers. In Asia, virtual influencers pay more attention to conforming to local cultures, such as collectivism and aesthetic requirements. For instance, the virtual Internet celebrity "AYAYI" in China uses very realistic 3D technology, which conforms to the aesthetics of the skincare industry. The virtual influencer "Rozy" in South Korea promotes K-pop culture and attracts global fans (Jayasingh et al., 2025). However, although virtual influencers are becoming increasingly popular, there is still a lack of research on them in emerging markets like Malaysia, especially regarding the trust and participation of Generation Z, a digital indigenous group, in them.

Finally, in Malaysia, Generation Z accounts for approximately 30% of the population and they spend an average of 4.3 hours a day on social media (Hootsuite, 2024). Some brands, such as ZALORA and Sephora, have also begun to use virtual influencers to attract these young and tech-savvy consumers. However, unlike real-life Internet celebrities, virtual Internet celebrities have no real life experiences. They need to build trust through the consistency, transparency of the content and the alignment of values (Lou & Yuan, 2019). So this also brings about a contradiction: Although virtual Internet celebrities can be completely controlled, because they are not human beings, in a culture that values interpersonal relationships, it is not easy to gain people's trust in them.

Trust in Virtual Influencers
The trust building of virtual influencers is the key to their marketing success, but the trust mechanism is different from that of real influencers. Real-life Internet celebrities usually gain trust through real experiences and emotional resonance (McKnight et al., 2002), while virtual influencers rely more on digital characteristics and well-designed operation strategies to win user recognition.

First of all, transparency and content consistency are important methods for building trust. Proactively informing fans that you are a virtual character, such as stating "I am a digital character" in the profile, can help gain their trust. A study in Malaysia shows that 63% of Generation Z believe that transparent virtual influencers are more "honest" (Jayasingh et al., 2025). Besides, it is also very important to keep the content consistent. Virtual influencers who focus on a certain topic are more likely to be trusted. For example, influencers who continuously post environmental protection content have a 35% higher credibility than their counterparts with messy content (Lou & Yuan, 2019).

Secondly, the matching of values and cultural adaptation can significantly increase trust. When the image of a virtual influencer aligns with the values of their fans, the level of trust will increase significantly. For instance, the virtual influencer "Amira" from Malaysia promotes moderate fashion and participates in Ramadan charity, thereby increasing trust among young women by 41% (Jie et al., 2022). Virtual influencers who incorporate local cultural elements, such as celebrating Eid al-Fitr or using Malay slang, are more likely to be regarded as "down-to-earth" and gain more trust (Hootsuite, 2024).

In addition, interactive participation is very important for trust. Frequent and sincere interaction can simulate real interpersonal relationships. A study found that virtual influencers who gave personalized responses to comments had a 27% higher level of trust than those who only gave mechanical responses (Lim et al., 2017). For instance, the virtual idol Lil Miquela successfully created the image of a "thoughtful digital partner" by regularly holding online Q&A sessions (Sprout Social, 2024).

However, the establishment of trust also faces some obstacles. The first one is the "uncanny Valley effect". When virtual influencers are overly realistic, they may make people feel uncomfortable. A survey in Malaysia shows that 32% of the respondents feel "uneasy" about the "hyper-realistic" image that conceals their virtual identity, considering it deceptive (Coman et al., 2020).

Secondly, the lack of endorsement from real experiences is also a difficult problem. Real-life influencers can establish emotional connections through stories of "personal experiences", such as "This skin care product has improved my skin", while the recommendations of virtual influencers usually seem rather stiff. Data shows that the trust level of Generation Z in real-person health product recommendations in Malaysia is 2.3 times that of virtual recommendations (De Veirman et al., 2017).

According to the "source credibility Theory", the trust of virtual influencers mainly comes from professionalism, reliability and attractiveness. In a collectivist culture like Malaysia, social proof (such as the number of likes and comments) can significantly enhance trust. Even if virtual influencers do not have clear and trustworthy identifiers, virtual influencers with high interaction volumes may still be regarded as "reliable sources recognized by the group" (Gefen et al., 2003).

Engagement with Influencer Content
The interaction between users and virtual influencer content mainly includes behaviors such as liking, commenting, and sharing, as well as deeper participation, such as creating relevant

content or investing emotions. These interactions are of great significance to virtual influencers, especially among Generation Z in Malaysia, who are more accustomed to using technology and pay more attention to the interactive experiences on social media.

Next, the improvement of interaction can be achieved in multiple ways. For instance, using AR filters to allow users to try virtual makeup or accessories is an effective way to shift the audience from passive viewing to active participation. Studies have pointed out that this type of interaction form can increase user engagement by 58%. In Malaysia, the AR purple lipstick filter launched by virtual influencer Lil Miquela in collaboration with a local beauty brand was shared more than 10,000 times within one day.

In addition, gamified challenges combined with culture can also bring about good results. For instance, during the Spring Festival, the virtual character "Chen Chen" launched a # My New Year's Dishes challenge, encouraging users to share family dishes with her image. This activity received over 1.2 million views, indicating that content close to culture is more likely to stimulate users' participation.

In addition, authenticity and a sense of resonance are also important factors driving interaction. Generation Z prefers content that feels realistic rather than perfectly packaged. For instance, some virtual influencers will share their "behind-the-scenes" production process or "daily life" videos, which makes them look more "human-like". Studies have pointed out that this type of content can bring about a 63% increase in comments. In Malaysia, virtual influencer Amira successfully attracted more young audiences by discussing issues such as the pressure of online courses and digital detox, and her interaction rate increased by 40% as a result.

Furthermore, the localization of language and culture can also increase the interaction rate. When virtual influencers use the common "rojak language" (a mixture of Chinese, English and Malay) in Malaysia or participate in local traditional festivals, users are more likely to feel close. For instance, the content about traditional costumes and Malay blessings posted by the virtual character Zalia during the Eid al-Fitr had an interaction rate 35% higher than that of ordinary content.

However, interaction will also face some challenges. For instance, if virtual influencers post excessive advertising content, it will make users feel that they lack sincerity. Studies show that when the proportion of advertisements exceeds 70%, the interaction rate will drop by 32% within a few weeks. Also, although the majority of Generation Z in Malaysia have access to the Internet, some users in rural areas may be unable to watch 3D videos or live streams that require high data levels due to slow Internet speeds or high data costs.

Finally, as the attention span of Generation Z is relatively short, virtual influencers need to post short and concise video content. If a video lasts longer than two minutes, it may lose half of its audience. Therefore, "short, fast and interesting" become the key to successful interaction.

Purchase Intention

Trust is a key prerequisite that influences the intention to purchase. If virtual influencers can gain users' trust, they can effectively reduce users' sense of purchase risk and enhance their acceptance of product recommendations. For instance, a study found that Malaysian Generation Z who trusted a virtual influencer's recommendation of skin care products had a 58% higher purchase intention than those who did not. This also confirms the "source credibility theory", that is, users are more likely to accept information from professional, reliable and attractive sources. In actual cases, the virtual character Imma, with its consistent minimalist style and sense of reality, has helped the luxury brand it collaborates with increase the purchase intention by 30%.

Secondly, a high degree of interaction can also further promote the intention to purchase. When users frequently interact with the content of virtual influencers, such as commenting, sharing or participating in challenges, they not only establish an emotional connection with the brand, but are also regarded as participants in the "trend-following" behavior. This is particularly evident in a country like Malaysia where the collectivist culture is relatively strong. For instance, an AR lipstick filter driven by VI saw a 200% increase in sales within a week of its launch. Highly interactive content, such as UGC challenges or popular tags, is often accompanied by a stronger sense of social identity, thereby stimulating more purchasing motivation.

Thirdly, the alignment of culture and values is also a factor that cannot be ignored. If the products recommended by virtual influencers align with the core values of Generation Z, such as environmental protection, halal certification or ethical consumption, they are more likely to resonate. In Malaysia, the virtual character Amira has increased the purchase intention of her partner brand among young women by 41% by promoting zero waste and moderate Muslim fashion. On the contrary, if virtual influencers suddenly cross over to endorse products that do not match their image (for example, fitness bloggers recommend fast food), the purchase intention may drop by 35%.

Of course, there are also some challenges that can affect the transformation from intention to action. For instance, even if users have a certain level of trust and interaction with virtual influencers, some people still remain skeptical about their business motives. A survey indicates that 45% of the respondents believe that the endorsements of virtual influencers are not as reliable as those of real people. Furthermore, although users in some remote areas can view the content, they may give up purchasing due to logistics issues or the inability to try out the products.

Meanwhile, there are also differences in the acceptance of virtual influencers among Generation Z of different age groups. Older Generation Z (such as those aged 24 to 25) tend to trust human influencers with real experience when dealing with high-risk products (such as healthcare and education).

Finally, from a theoretical perspective, the "Technology Acceptance Model" (TAM) explains how users' purchasing intentions are influenced by "usefulness" and "ease of use". For virtual influencers, usefulness may be reflected in personalized recommendations, while ease of use includes smooth shopping experiences such as one-click ordering and link

redirection. Studies have shown that these two factors combined can explain up to 44% of changes in online purchasing intentions.

In the local empirical research in Malaysia, it was also found that "social influence" is an important mediating variable. Many Gen Z people feel "FOMO" (fear of missing out) due to the limited-time offers and exclusive activities initiated by virtual influencers, and thus make impulse purchases. A survey shows that 62% of young users in Malaysia admitted that they placed orders because "their peers were all buying".

To sum up, virtual influencers have certain potential in promoting purchase intentions, but this requires a balance to be struck among trust building, interaction strategies, and cultural alignment in order to truly drive Generation Z from "wanting to buy" to "placing an order".

Generation Z and Digital Behavior
Generation Z (born between 1997 and 2012) is regarded as the "natives" of the digital age due to their early exposure to technology and habit of using social media. In Malaysia, they account for approximately 30% of the total population and spend an average of 4.3 hours a day using social media (Hootsuite, 2024). Their online habits and preferences are profoundly influencing the effectiveness of virtual influencer (VIs) marketing.

First of all, Generation Z is not only a recipient of content but also an active content creator. They are passionate about Posting videos, pictures and product reviews on platforms such as TikTok and Instagram. According to statistics, 72% of Gen Z users in Malaysia frequently create and share content (Hootsuite, 2024). Therefore, they are more looking forward to "co-creation" with virtual influencers, such as participating in the #MyVIOutfit challenge, designing VI looks, or deciding on the content direction of VI release through voting, etc.

Secondly, authenticity is particularly important for Generation Z. They tend to focus on genuine and transparent content rather than traditional and overly packaged advertisements. 54% of Generation Z in Malaysia said they would be suspicious if their VI accounts were filled with advertising content (RippleXn, 2023). On the contrary, VI that is willing to openly state that they are virtual characters, transparently display the creative process or the background of cooperation, often win their favor more easily. For instance, VI Lil Miquela has established a stable fan base by candidly sharing her virtual identity (Sprout Social, 2024).

Furthermore, Generation Z emphasizes diversity and inclusiveness. They are more willing to interact with VI that can reflect Malaysia's multiculturalism, such as those that can speak multiple languages (Malay, English, and Chinese), or virtual avatars that showcase different ethnic groups and body styles. Relevant studies show that the user interaction rate of those VI that integrate Malay, Chinese and Indian cultural elements is 35% higher than that of VI with a single style (Lim et al., 2017), indicating that local cultural representativeness helps enhance the relevance and attractiveness of VI.

In the local cultural context, the behaviors of Generation Z also exhibit unique characteristics. For instance, under the influence of collectivist culture, they are more likely

to be influenced by the behaviors of their peers and tend to believe in content that has received multiple likes or shares. After a VI promoted a video of local snacks on TikTok and received more than 10,000 shares, the purchase intention of related products rose by 48% (De Veirman et al., 2017), even users who had not followed the VI before were attracted.

Religious values also influence the acceptance of digital content by Generation Z. Especially for Malay Muslim users, they have more trust in content that conforms to Islamic values, such as Muslim fashion, family-oriented videos or themes related to Ramadan. VI Amira is popular for her gentle and moderate dressing image. 68% of Muslim women said that her content was "culturally trustworthy" and were willing to make purchases according to her recommendations (Jie et al., 2022).

It is worth noting that even though Generation Z is well-versed in digital platforms, they still attach great importance to the integration of online and offline experiences. For instance, they might use the AR makeup try-on function through VI to get a preliminary understanding of the product, but eventually choose to try it in the store before making a decision. This "online interaction + offline purchase" model suggests to the brand that VI content should support an omni-channel integration strategy in order to meet the real purchasing process of Generation Z (Coman et al., 2020).

Of course, if brands want to continuously attract Generation Z through their VI, they also face some challenges. The first is the problem of information overload. Due to being exposed to a large amount of content every day, Generation Z has a relatively high "immunity" to advertisements. 45% of users will swipe through pure sales content within a few seconds (Sprout Social, 2024). Secondly, it is the duration of attention. The average attention span of Generation Z is only 8 seconds. If VI fails to convey clear values within a short period of time, it is likely to lose its audience. For instance, when a virtual character endorses an electronic product, due to the overly complex content, 58% of the viewers quit within the first 10 seconds of the video playing (Optimize YourMarketing, n.d.).

In addition, the preferences of Generation Z vary slightly among different age groups. The "older Generation Z" aged 24 to 25 trust real influencers more, especially when it comes to major decisions such as education or career advice. The young group aged 18 to 21 is more open to VI and is suitable for promoting daily or trendy products (Hootsuite, 2024).

From a theoretical perspective, Hofstede's "Cultural Dimension Theory" can help explain the behavioral characteristics of Generation Z. They attach great importance to collective identity and long-term development, such as community identity, trend sustainability and other factors. These values also influence their way of interacting with VI.

Therefore, if brands want to successfully reach Generation Z through virtual influencers, they can consider the following strategies: First, encourage user co-creation, such as allowing fans to participate in the planning of VI content or the design of virtual merchandise; The second is to utilize the "micro moment" strategy to release short and contextualized content, such as sharing makeup tips or learning methods in VI. Third, adhere to the value orientation, enabling VI to actively convey issues of concern to Generation Z such as environmental

protection, mental health or social justice, thereby establishing a deeper emotional connection.

Theoretical Framework

The Credibility Theory of Information Sources

The theory of credibility of information sources holds that whether a piece of information is persuasive depends on the credibility and professionalism of the information source in the minds of the audience. In influencer marketing, this means that if consumers believe influencers are honest, reliable and possess certain professional knowledge, they are more likely to accept their product recommendations. Although virtual influencers are not real people, when their content demonstrates a high degree of consistency, professionalism, and transparency and openness towards their "virtual identity", they still have the potential to gain the trust of their audience.

For Generation Z who grew up in the digital age, credibility does not necessarily have to be based on "true identity", but can be reflected through creativity, aesthetic presentation and personality positioning. As long as the style and values of virtual influencers resonate with consumers, they can also be regarded as reliable sources of information.

Elaboration Likelihood Model (ELM)

The Elaboration Likelihood Model (ELM), proposed by Petty and Cacioppo (1986), indicates that when individuals are confronted with persuasive information, they process it through two different cognitive paths: the central path and the peripheral path. The former relies on an individual's in-depth thinking and rational judgment of the information content, and usually occurs in situations where the audience has a high level of motivation and information processing ability.(Petty & Cacioppo, 1986) The latter, however, relies more on external cues such as the attractiveness, credibility or popularity of the information source rather than the quality of the information itself (Kitchen et al., 2014).

In the context of virtual influencer marketing, this model provides theoretical support for understanding the response mechanism of Generation Z audiences to persuasive information. For those users who have a high interaction frequency or emotional connection with virtual influencers, their cognition is more likely to proceed through the central path, and thus pay more attention to the functional features, potential benefits of the recommended products and their alignment with their own values (Jin & Phua, 2014). For users with a lower degree of cognitive participation or only superficial browsing, they are more inclined to rely on peripheral paths and respond to formal characteristics such as the appearance design, number of fans or story narration of Internet celebrities, thereby influencing their attitudes and purchase intentions (Lou & Yuan, 2019).

Furthermore, the user's engagement level may play an intermediary or transitional role between the central and peripheral paths. With the increasingly frequent interaction between users and virtual influencers, their attention to the content may gradually shift from superficial attention to in-depth thinking, enhance the persuasive effect, and further trigger behavioral intentions (De Veirman et al., 2017). Therefore, virtual Internet celebrities not only undertake the function of information dissemination but also, imperceptibly, become an

important force driving Gen Z consumers to conduct detailed cognitive processing. (Calder et al., 2009)

H1: Trust in virtual influencers has a significant positive relationship with purchase intention

Over the past decade, trust has emerged as one of the most critical antecedents in digital persuasion and influencer marketing. According to McKnight et al. (2002), trust represents a user's willingness to be vulnerable to the actions of another based on positive expectations. In the context of virtual influencers, trust does not arise from human credibility alone, but rather from the perceived consistency, transparency, and professionalism of the influencer's online persona (Jayasingh et al., 2025). Unlike traditional influencers, virtual influencers are often viewed as "controlled" yet emotionally engaging agents, allowing brands to manage messaging with higher precision and fewer reputational risks (Lou & Yuan, 2019).

Moreover, several studies have emphasized that trust in influencers leads to higher levels of social interaction and engagement. For instance, Jin et al. (2019) showed that followers were significantly more likely to like, comment, and share content when they trusted the influencer's authenticity. In a similar vein, Lim et al. (2017) demonstrated that trustworthiness was positively associated with behavioral engagement on social media, particularly among younger consumers. As such, trust does not merely reflect cognitive evaluation, but also translates into actual interactive behavior.

In addition, recent literature suggests that trust is especially salient for Gen Z consumers, who value authenticity and visual storytelling (Jayasingh et al., 2025). When virtual influencers are perceived as trustworthy through consistent branding, emotional tone, or shared values followers are more inclined to engage with their content regularly. Therefore, building on prior findings, this study proposes the following hypothesis:

H2: Trust in virtual influencers is positively associated with engagement .

Consumer engagement has become a central construct in social media marketing, often regarded as a behavioral indicator of consumers' psychological involvement with digital content. Calder et al. (2009) describe engagement as the extent to which individuals devote time and energy to interacting with brand-related messages. In the context of influencer marketing, such engagement includes liking, commenting, sharing, and following   behaviors that reflect both attention and intention. As De Veirman et al. (2017) point out, this type of social media interaction can create a pathway toward favorable brand outcomes, including purchase behavior.

Furthermore, a growing body of literature has shown that online engagement not only reflects interest but also predicts consumer actions. Lim et al. (2017) found that individuals who regularly interacted with influencer content were more likely to report stronger intentions to purchase endorsed products. Similarly, Jayasingh et al. (2025) observed that engagement acted as a catalyst, transforming followers' admiration for virtual influencers into behavioral responses, such as clicking on purchase links or saving product recommendations. This connection is particularly notable among Gen Z consumers, who are accustomed to making purchase decisions based on immersive and interactive digital experiences.

In addition, engagement is often interpreted by users themselves as a form of social validation   a signal that they align with the influencer's aesthetic, values, or message. As a result, the more consumers engage with virtual influencers, the more likely they are to internalize the recommendations as relevant and trustworthy. Therefore, based on prior research, the following hypothesis is proposed:

H3: Engagement with virtual influencers is positively associated with purchase intention .

In the domain of online persuasion, trust has been widely acknowledged as a pivotal factor influencing purchase behavior. According to Gefen et al. (2003), trust reduces uncertainty and risk, especially in environments where consumers have limited direct experience with the product or the seller. In influencer marketing, this notion extends to the influencer's ability to convince followers to adopt or purchase a recommended item. When an influencer is deemed trustworthy transparent, consistent, and reliable consumers are more likely to act on their recommendations (Lou & Yuan, 2019).

Although trust has been extensively studied in human influencer contexts, recent research suggests that it is equally applicable to virtual influencers. Jin et al. (2019) argue that the perception of sincerity and competence in an influencer's persona is more influential than whether the persona is human or AI-generated. Jayasingh et al. (2025) further found that trust in virtual influencers significantly enhances consumers' perceived message credibility, thereby influencing their willingness to purchase. Their study reported that consumers who trusted virtual influencers were more open to product endorsements and less skeptical of their promotional intent.

Moreover, trust plays a particularly important role among Gen Z audiences, who are not only digital natives but also highly attuned to authenticity and brand alignment. When virtual influencers communicate in a way that resonates with these values, their endorsements are likely to be interpreted as genuine. In turn, this enhances the persuasive power of the message and increases purchase intention. Therefore, the following hypothesis is proposed:

H4: Engagement mediates the relationship between trust and purchase intention .

While trust and purchase intention have been widely examined as a direct relationship in prior studies, recent literature has begun to emphasize the importance of mediating mechanisms that explain how trust is transformed into behavioral intent. One such mechanism is consumer engagement the set of behavioral expressions that indicate interest, involvement, and interaction with influencer content (Brodie et al., 2011). As suggested by Calder et al. (2009), engagement serves not only as an outcome of trust but also as a pathway through which trust influences downstream behaviors such as intention to purchase.

Several empirical studies support this mediating role. For example, Lim et al. (2017) found that trust in influencers enhances engagement levels, which in turn increase the likelihood of product adoption. Jayasingh et al. (2025) further argue that engagement operates as a psychological bridge between perception and action, especially in contexts involving virtual influencers. Their research demonstrates that consumers who perceive virtual influencers as credible are more likely to interact with their content, and that such interaction positively affects purchasing decisions. In this sense, engagement plays both a

relational and motivational role it reflects how deeply consumers connect with an influencer and drives them toward behavioral follow-through.

Additionally, engagement allows followers to reaffirm their trust through repeated exposure, emotional alignment, and community reinforcement. Particularly for Gen Z consumers, whose decision-making is heavily influenced by digital interactivity, engagement is not merely a passive reaction but a deliberate, ongoing commitment.

This diagram illustrates the hypothesized relationships between trust in virtual influencers , engagement , and purchase intention among Generation Z consumers.
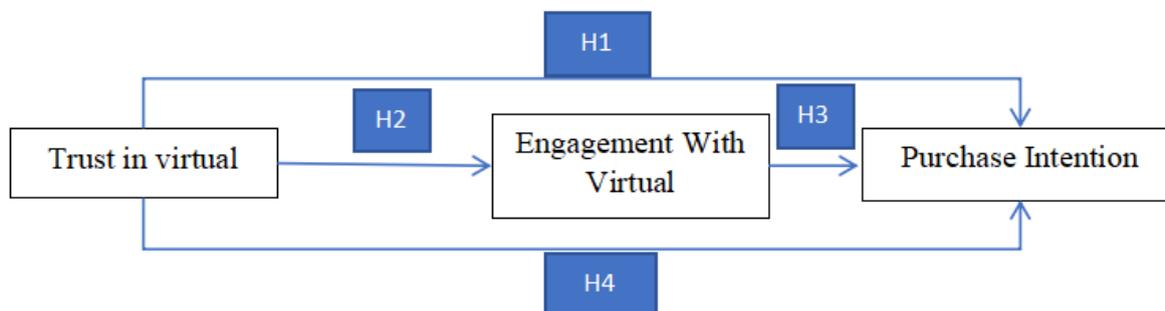

Figure 1. Theoretical Framework

Methodology
Respondents for this study were drawn from Generation Z consumers in Malaysia using convenience sampling. The questionnaire was distributed via Google Form, with invitations sent through social media, email, and WhatsApp. The survey comprises two sections: Section 1 collects demographic information (age, gender, social media usage), while Section 2 measures trust in virtual influencers (VIs), engagement levels, and purchase intention using 5-point Likert scales (1 = Strongly Disagree, 5 = Strongly Agree).

A total of 200 questionnaires were collected and analyzed using the Statistical Package for the Social Sciences (SPSS) and SmartPLS. Descriptive statistics, correlation analysis, regression, and mediation analysis were employed to assess the validity and reliability of the data, as well as to test the hypothesized relationships between variables.

Result and Discussion
Descriptive Statistics
This section provides an overview of the mean and standard deviation values for the three key variables in this study: Trust, Engagement, and Purchase Intention. The aim is to understand the general tendencies and dispersion in responses collected from 209 participants.

As shown in Table 1, the mean values of all three variables are relatively high, indicating that respondents generally had favorable perceptions toward virtual influencers. Specifically, Trust in virtual influencers showed the highest mean score (M = 4.235, SD = 0.321), followed closely by Purchase Intention (M = 4.196, SD = 0.469) and Engagement (M = 4.153, SD = 0.476). This suggests that not only do participants trust virtual influencers, but they also show

meaningful behavioral and attitudinal reactions toward them, including a willingness to make purchases based on their recommendations.

Table 1
Descriptive Statistics of Study Variables

	Trust	Engage	Purchase
Mean	4.235	4.153	4.195
Median	4.200	4.200	4.200
Standard Deviation	.3206	.4761	.4692
Square Deviation	.103	.227	.220
Minimum	3.0	2.7	2.6
Maximum	5.0	5.0	5.0

Pearson Correlation Analysis

Table 2 presents the Pearson correlation coefficients between the study variables. As shown, Trust is positively and strongly correlated with Engagement ($r = .698$, $p < .001$) and Purchase Intention ($r = .634$, $p < .001$). Furthermore, Engagement also has a strong positive correlation with Purchase Intention ($r = .598$, $p < .001$). All correlations are significant at the 0.01 level (two-tailed), indicating that higher levels of trust in virtual influencers are associated with greater user engagement and stronger purchase intention.

Table 2
Pearson Correlation Matrix

	Trust	Engage	Purchase
Trust	1	.698**	.634**
		<.001	<.001
	209	209	209
Engage	.698**	1	.598**
	<.001		<.001
	209	209	209
Purchase	.634**	.598**	1
	<.001	<.001	
	209	209	209

Regression Analysis

To assess the influence of Trust and Engagement on Purchase Intention, a multiple regression analysis was conducted. The results, displayed in Table 3, demonstrate that both Trust and Engagement are significant predictors of Purchase Intention. Trust had a standardized coefficient (β) of .422 and Engagement had a coefficient of .303, indicating that both variables contribute meaningfully to explaining variation in consumers' intent to purchase products endorsed by virtual influencers. The regression model was statistically significant, $F(2, 206) = 83.76$, $p < .001$, and explained 44.9% of the variance ($R^2 = .449$) in the outcome variable.

Table 3
Multiple regression results predicting Purchase Intention (N = 209).

Predictor	B	SE	β	t	p
Predictor	0.338	0.322		1.051	.295
Trust	0.618	0.106	.422	5.843	< .001
Engagement	0.299	0.071	.303	4.194	< .001

Mediation Analysis

Mediation analysis was conducted using PROCESS Macro (Model 4) with Trust as the independent variable (X), Engagement as the mediator (M), and Purchase Intention as the dependent variable (Y). The results revealed that Trust significantly predicted Engagement (B = 1.0364, p < .001), and both Trust (B = 0.6179, p < .001) and Engagement (B = 0.2986, p < .001) significantly predicted Purchase Intention. The total effect of Trust on Purchase Intention was significant (B = 0.9273, p < .001).

More importantly, the indirect effect of Trust on Purchase through Engagement was also significant (indirect effect = 0.3095, BootCI [.1565, .4690]). As the confidence interval does not contain zero, the mediating effect is confirmed. Thus, Engagement partially mediates the relationship between Trust and Purchase Intention.

Table 4
Mediation analysis summary using PROCESS Model 4 (N = 209).

Path	B	SE	t	p	95% CI
Trust → Engagement	1.036	0.074	14.02	< .001	[0.89, 1.18]
Trust → Purchase (direct)	0.618	0.106	5.84	< .001	[0.41, 0.83]
Engagement → Purchase	0.299	0.071	4.19	< .001	[0.16, 0.44]
Trust → Purchase (total)	0.927	0.079	11.78	< .001	[0.77, 1.08]
Indirect effect (Trust→Engage→Purchase)	0.310	0.080			[0.157, 0.469]

Conclusions and Recommendations

Using the source credibility model as the theoretical foundation, the objective of this study was to identify the key factors that influence consumers' purchase intention in the context of virtual influencers among Gen Z in Malaysia. The results of this study demonstrate that all four hypotheses are supported. The hypotheses tested include:

H1: Trust in virtual influencers has a significant influence on consumer engagement;
H2: Trust in virtual influencers is positively associated with engagement;
H3: Trust in virtual influencers has a significant influence on purchase intention;
H4: Engagement mediates the relationship between trust and purchase intention.

The findings suggest that consumers who perceive virtual influencers as trustworthy are more likely to engage with their content, and this interaction subsequently enhances their willingness to purchase recommended products. Trust acts as a foundation for digital persuasion, while engagement functions as a psychological mechanism that converts favorable impressions into behavioral intentions.(Moustakas et al., 2020) These results confirm the growing relevance of AI-generated influencers in digital marketing, particularly among Gen Z, who are highly responsive to authenticity, aesthetics, and interactive online experiences.(Gefen et al., 2003)

In addition, the study indicates that well-designed and emotionally resonant virtual influencer content can successfully simulate human credibility. When users engage with such content frequently and meaningfully, they are more inclined to accept product endorsements and even make purchases. (De Veirman et al., 2017) Therefore, brands should invest in the visual storytelling, consistency, and personality alignment of virtual influencers to build long-term trust and engagement.

Furthermore, the mediation effect observed in this study emphasizes the strategic importance of engagement. It is not enough for consumers to merely trust a virtual influencer; they must also interact with them actively in order to translate trust into buying behavior.(Gefen et al., 2003) Digital marketers should therefore focus on strategies that encourage two-way communication, such as polls, comments, personalized messages, and real-time interactions.(Hootsuite, 2024)

To enhance the generalizability and significance of future research, the sample size could be expanded to include consumers from other demographics, age groups, and regional backgrounds. Moreover, future studies could explore moderating variables such as product type, influencer design (human-like vs. cartoon-style), or perceived authenticity level. Longitudinal studies could also be conducted to examine whether trust and engagement with virtual influencers translate into sustained consumer loyalty or long-term brand equity.

In conclusion, this study has successfully achieved its objective by examining how trust and engagement influence Gen Z consumers' purchase intentions toward virtual influencers in Malaysia. The results validate all proposed hypotheses and offer both theoretical and practical insights into the psychological mechanisms that shape consumer behavior in the age of digital influence.

Significance of the Study

This study offers both theoretical and contextual contributions to the growing field of influencer marketing, particularly within the emerging phenomenon of virtual influencers (VIs). Theoretically, it extends the Source Credibility Theory and the Elaboration Likelihood Model (ELM) by demonstrating that perceived trust and engagement with VIs significantly predict purchase intention among Generation Z. While prior studies have primarily focused on real influencers (Jin et al., 2019; Ohanian, 1990), this study affirms that credibility mechanisms can also apply to AI-generated influencers, provided they exhibit consistency, transparency, and cultural alignment (Lou & Yuan, 2019). The mediation analysis further elucidates the psychological mechanism through which trust is converted into behavioral

intent via engagement, reinforcing the role of engagement as a pivotal construct in digital persuasion (Calder et al., 2009; Brodie et al., 2011).

Contextually, this research fills a significant gap by exploring the perceptions and responses of Gen Z consumers in Malaysia, a digitally savvy yet culturally distinct market often underrepresented in global influencer literature. Unlike Western settings, Malaysian consumers operate within a collectivist cultural environment, where peer influence, social validation, and cultural resonance heavily shape purchasing behavior (Gefen et al., 2003; Jayasingh et al., 2025). By identifying how localized virtual influencers build trust and encourage interaction, this study provides valuable insights for brands seeking to implement culturally responsive influencer strategies in Southeast Asia. Moreover, as the use of virtual influencers continues to rise, especially in privacy-conscious and regulated environments, understanding how digital avatars gain consumer trust and influence decisions becomes increasingly critical.

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