

A Comparative Analysis of Source Credibility Between Virtual and Human Influencers on the Purchase Intention of Generation Z

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Abstract

The rapid advancement of artificial intelligence in digital marketing has introduced a new paradigm through the emergence of virtual influencers (VI) as substitutes for human influencers (HI). The presence of this algorithm-driven artificial appeal raises strategic questions regarding its effectiveness in shaping customer purchasing decisions. The objective of this study is to analyze how Generation Z consumers' perceptions of source credibility differ between these two types of influencers and how this affects their purchase intentions. Data were collected from 116 students at the Faculty of Economics and Business, Universitas Teknologi Sumbawa (UTS), utilizing a quantitative method with a causal-associative approach and multiple assessments. Linear regression modeling and Paired Sample T-Tests were employed for data analysis. The comparative test findings verify that human influencers generate a higher purchase intention ($M=16.65$ vs. $M=15.58$) and are considered significantly more credible ($M=4.184$ vs. $M=3.917$). However, regression analysis reveals that because the virtual influencer model eliminates the possibility of human error, it provides slightly superior causality prediction power and accuracy ($R^2=94.0\%$ vs. $R^2=91.8\%$). Partial testing of the human influencer group indicates that the primary factors driving increased purchase intention are emotional closeness (X2.4) and review honesty (X2.5). These results provide strategic guidance for marketers on how to maximize the collaboration between human and computational efforts.

Keywords: Human Influencer, Virtual Influencer, Source Credibility, Purchase Intention

JEL Classification: M31, M37, O33

1. Introduction

1.1 Background of the Phenomenon and Digital Market Context

Driven by artificial intelligence innovations and advanced computer graphics, the digital marketing landscape is undergoing a significant transformation. The rise of virtual influencers (VIs) as a cutting-edge alternative for digital marketers represents one of the latest examples of this technological disruption. Virtual characters, such as Lil Miquela on a global scale or Thalasya and Rozy in the domestic market, are non-human entities strictly curated by creative teams using computer algorithms. Although they differ from traditional human influencers

(HIs), they are fully capable of interacting with audiences, amassing millions of followers, and promoting products. Virtual influencers provide businesses and marketers with numerous tactical benefits, including complete control over content narratives, the elimination of personal scandals that could damage a brand's image, and long-term cost-effectiveness.

However, the success of this new marketing strategy is ultimately determined by the psychological acceptance of the target consumers. 80% of Generation Z trusts influencers who share real experiences more than celebrity endorsements 67% and mega influencers 75% [Manifest Media \(2025\)](#). Gen Z is well-known for being a highly critical demographic that carefully filters information and verifies content authenticity before making a purchase decision. Students from the Faculty of Economics and Business at the Sumbawa University of Technology (FEB UTS) represent a segment of Generation Z that is not only actively engaged on social media but also possesses sharp economic and business acumen when evaluating marketing messages.

Table 1. Number of Active Students at Sumbawa University of Technology 2025-2026

Summary Of Student Academic Status - Semester: Even 2025/2026										
No	Study Program	Active, Not Yet Registered	On Leave	Inactive	Withdrawn	Dropped Out	Graduated	Pending Competency Exam	Missing	
1	Accounting - Regular Undergraduate 1	123	7	1	1	0	0	0	0	0
2	Digital Business - Regular Undergraduate 1	72	2	0	21	0	0	0	0	51
3	Development Economics - Regular Undergraduate 1	70	6	0	0	0	0	0	0	0
4	Actuarial Science - Regular Undergraduate 1	46	0	0	12	0	0	0	0	16
5	Entrepreneurship - Regular Undergraduate 1	82	3	0	0	0	0	0	0	0
6	Management - Regular Undergraduate 1	159	23	0	0	0	0	0	0	66

Source: Customer service FEB UTS (2026)

As a general overview of the population in this study, data from the Even Semester of 2025/2026 indicates a total of 552 active students within FEB UTS, with the largest contributions coming from the Management program (159 students) and the Accounting program (123 students). Through this dynamic population, the dilemma between the influence of computer algorithms and the credibility of organic sources can be comprehensively examined within future market segments.

On the one hand, Generation Z is recognized as a highly adaptable and open group of digital natives who are completely accustomed to the presence of advanced technology in their daily lives. On the other hand, consumer behavior literature emphasizes that Gen Z is a deeply skeptical demographic that places immense value on a brand's authenticity, honesty, and

transparency before making any purchasing decisions. These contradictory traits create a fundamental dilemma in contemporary marketing communication: "Can the architecture of computer algorithms match or even replace the organic credibility and natural empathy of real human beings?"

1.2 Integration of Previous Research

To understand the competitive dynamics between humans and algorithms, academic studies must rely on the Source Credibility Theory, which evaluates message effectiveness based on the dimensions of expertise, trustworthiness, and attractiveness. Scientific research comparing the effectiveness of these two entities has sparked intense debate among researchers worldwide, leaving conclusions inconclusive.

Several previous studies provide supporting arguments for algorithmic superiority. Research by [Sands et al. \(2022\)](#) found that virtual influencers (VIs) are frequently perceived as superior in terms of virtual attractiveness and content novelty due to the boundless nature of digital creativity. Their consistent physical perfection and aesthetics allow VIs to instantly capture the virtual attention of modern consumers. Furthermore, [Arsenyan and Mirowska \(2021\)](#) suggest that younger consumers no longer mind the artificial nature of computer-generated agents, provided that the product information presented is accurate, objective, and demonstrates a high level of expertise.

In contrast, another body of research firmly defends conventional human interaction. A significant study by [Thomas and Fowler \(2021\)](#) emphasizes that human influencers maintain a distinct advantage that algorithms cannot replicate: the ability to build parasocial relationships, which are characterized by genuine, two-way emotional connections. Humans possess real-life experiences, emotions, and natural imperfections that inherently make them appear more genuine and trustworthy. Consumers understand that real people actually consume, experience, and physically evaluate products. In line with this, an investigation by [Lou et al. \(2023\)](#) revealed that the perceived artificiality of virtual influencers frequently provokes consumer skepticism, ultimately leading to a drastic decline in both trust and purchase intention.

The urgency of this research stems from gaps identified in previous studies. The majority of prior comparative research has been conducted within the context of metropolitan societies in Western countries or global-scale industries. There are still very few empirical studies examining the dilemma between humans and algorithms in local landscapes, particularly within the Generation Z ecosystem in developing regions such as Sumbawa Regency. Students from the Faculty of Economics and Business at UTS (FEB UTS) in Sumbawa represent a highly unique subject profile: they are an educated group intensively studying theories of economics, management, and market digitalization, while simultaneously being active social media users in a communal environment that continues to highly value close social relationships.

Therefore, conducting the research titled "The Dilemma Between Humans and Algorithms: A Comparative Analysis of Source Credibility of Virtual Influencers vs. Human Influencers on Generation Z's Purchase Intention" is highly significant. This study aims to empirically and comparatively identify which entity is considered more credible by Generation Z at FEB UTS, and to understand the extent to which these differences in credibility perception translate into their purchase intention for products promoted in the digital space.

2. Literature Review

2.1 Source Credibility Theory

Source Credibility Theory, originally introduced by ([Campbell & Farrell, 2020](#)) and later expanded into a multidimensional model by [Ohanian \(1990\)](#), serves as a cornerstone in marketing communication and consumer behavior studies. This theory suggests that the effectiveness and audience acceptance of a marketing message are heavily dependent on how the public perceives the positive attributes of the messenger. Within the context of digital marketing, a communicator's credibility is a crucial asset that helps reduce perceived shopping risks and foster consumer trust. [Ohanian \(1990\)](#) operationalized this source credibility into three primary dimensions.:

1. **Attractiveness:** This dimension encompasses not only virtual physical attractiveness but also non-physical elements such as similarity, familiarity, and consumer likability toward the figure.
2. **Trustworthiness:** This dimension measures the communicator's level of trustworthiness, objectivity, honesty, and integrity from the consumer's perspective. As noted by [Lou and Yuan \(2019\)](#), trust is established when consumers believe that the source provides information sincerely and without excessive commercial manipulation.
3. **Expertise:** This dimension refers to the extent to which a communicator is perceived to possess knowledge, competence, experience, and valid qualifications regarding the product or industry category they are promoting.

2.2 Comparison of Source Characteristics: Virtual Influencer vs. Human Influencer

These three dimensions of Source Credibility were tested in parallel on two entities with contrasting existential ontologies: humans (Human Influencers) and computational code (Virtual Influencers).

Virtual Influencers (VIs) are fictional characters created using CGI (Computer-Generated Imagery) and powered by artificial intelligence. According to [Arora et al. \(2019\)](#) and [Moustakas et al. \(2020\)](#), every aspect of their presentation, from their facial structure and fashion choices to the narratives of their daily lives, is entirely controlled by their creating agencies. Within the VI group, credibility indicators (X1.1 to X1.6) are completely constructed through technical means. [Flavián et al. \(2021\)](#) point out that their dimensions of attractiveness and expertise can be digitally optimized to achieve aesthetic perfection and precise informational accuracy. However, due to their lack of physical existence and genuine consciousness, they face significant challenges in the dimension of trustworthiness when engaging with critical consumers.

Human Influencers (HIs) are real individuals who organically build their reputations and social influence through authentic interactions on digital platforms. [Backaler \(2018\)](#) notes that for the HI group, credibility indicators (X2.1 to X2.6) are established through spontaneous emotional and social connections. Although human credibility is dynamic and vulnerable to human errors or moral scandals that can damage their image, humans possess inherent strengths such as genuine emotions, empathy, and physical sensory experiences when using products, which serve as the fundamental basis for developing the trustworthiness dimension.

2.3 Purchase Intention

Purchase intention is defined as the strength of a consumer's psychological drive, plan, or subjective probability indicating their inclination to purchase a specific product, brand, or

service in the future [Lou and Yuan \(2019\)](#). Within the marketing communication hierarchy of effects model, purchase intention is positioned as the conative (behavioral) stage that bridges cognitive evaluation (awareness and knowledge) with the actual purchasing action.

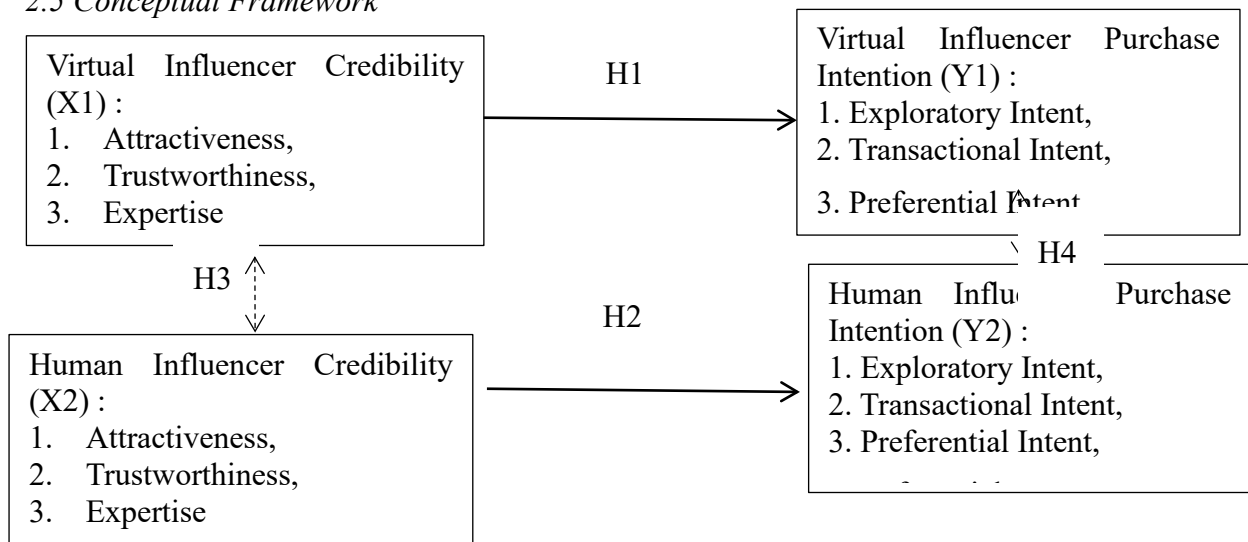
In the social media ecosystem, purchase intention (measured by indicators y1.1-y1.4 for the VI context and y2.1-y2.4 for the HI context) is significantly influenced by the level of consumer trust in the recommendations they receive. When consumers view a recommendation source as highly credible, their psychological barriers to trying a product are reduced, thereby linearly increasing their purchasing interest ([Lou & Yuan, 2019](#)).

2.4 Generation Z Consumer Behavior and Digital Technology Adoption

Generation Z (Gen Z), specifically defined in this study as active students from the Faculty of Economics and Business at Sumbawa University of Technology (FEB UTS), exhibits unique and distinct consumer behavior. Born during the internet boom, Gen Z represents a generation of true digital natives with exceptionally high technological literacy. [Vinio et al. \(2024\)](#) explain that this characteristic makes them highly receptive to digital innovations such as virtual influencers, viewing them as both a form of entertainment and a contemporary trend.

Nevertheless, as economics students trained to critically analyze market dynamics, Gen Z at FEB UTS is also known for having a high degree of skepticism toward overly curated commercial messages. [Sankaran and Chakraborty \(2022\)](#) establish that they demand brand authenticity and honesty, seeking out reference figures who are perceived as real, provide genuine reviews, and are capable of building balanced parasocial relationships. Consequently, for Gen Z, the decision to convert digital attention into actual purchase intent is the result of a complex psychological calculation that balances an admiration for technological sophistication (algorithms) with a fundamental need for emotional connection (human).

2.5 Conceptual Framework



Source: Developed by researchers (2026)

Research hypothesis

Based on the background and literature review, the hypotheses for this study are formulated as follows :

1. **H1:** The credibility of a virtual influencer influences the formation of purchase intention.
2. **H2:** The credibility of a human influencer influences the formation of purchase intention.
3. **H3:** There is a significant difference in the perceived level of credibility between Virtual Influencers and Human Influencers.
4. **H4:** There is a significant difference in the level of purchase intention between Virtual Influencers and Human Influencers.

3. Research Method

3.1 Research Design and Sampling

3.1.1 Research Approach

This research employs a quantitative approach, utilizing both causal, associative, and comparative designs. The causal approach is used to examine the impact of source credibility dimensions on purchase intention within each object group. Meanwhile, the comparative design is applied to analyze significant differences in source credibility and purchase intention levels between the algorithm-driven Virtual Influencer (VI) group and the real-life Human Influencer (HI) group.

3.1.2 Population and Sample

The study's demographic comprises all current Generation Z students at the Faculty of Economics and Business, Sumbawa University of Technology (FEB UTS). A non-probability purposive sampling procedure was utilized. The sample was determined using the following criteria :

1. Active students at the Faculty of Economics and Business, Sumbawa University of Technology.
2. Active users of social media platforms (Instagram, TikTok, or YouTube).
3. Individuals who are aware of or have been exposed to marketing content delivered by either Virtual Influencers or Human Influencers.

Following the distribution of the digital questionnaire, a final valid sample of N = 116 respondents met the eligibility requirements for analysis.

3.2 Operational Definition and Variable Indicators

To ensure clarity regarding the measurement metrics, the specific conceptual breakdowns for each item code have been explicitized below to address item tracking concerns :

Table 2. Operationalization of Research Variable Indicators :

Main Variable	Operational Description	Indicator Code	Dimension	Specific Statement Focus / Dimension	Stimulus Group
Source Credibility	Measuring respondents' perceptions of the attractiveness,	X1.1	Attractiveness	Evaluate the physical appearance, visuals, or presentation	Virtual Influencer (Algorithm)

(Independent Variable X)	trustworthiness, and expertise of the product recommender.			style of the engaging content.
		X1.2	Attractiveness	Evaluating the charm or charisma that makes the content enjoyable to follow.
		X1.3	Trustworthiness	Evaluating whether the provided product review is completely honest and genuine (Example: Lil Miquela x Samsung).
		X1.4	Trustworthiness	Objective and reliable in evaluating and delivering information (not merely an advertisement). (Example: Ludo magalu x vogue).
		X1.5	Expertise	Evaluates possessing extensive knowledge about the promoted product. (Example: barbie x balmain).
		X1.6	Expertise	Evaluating the expertise and competence in explaining product features or benefits.

		(Example: rozy x chevrolet).	
X2.1	Attractiveness	Evaluate the physical appearance, visuals, or presentation style of the engaging content.	Human Influencer
X2.2	Attractiveness	Evaluating the charm or charisma that makes the content enjoyable to follow.	
X2.3	Trustworthiness	Evaluating whether the provided product review is completely honest and genuine (Example: raffi ahmad & nagita slavina x grab).	
X2.4	Trustworthiness	Objective and reliable in evaluating and delivering information (not merely an advertisement) . (Example: fadil jaidil x wow spagethi).	
X2.5	Expertise	Evaluates possessing extensive knowledge about the promoted product. (Example: aurel	

Purchase Intention (Independent Variable Y)	Measuring the strength of the respondents' psychological motivation, plans, and subjective probability to purchase the recommended product.	X2.6	Expertise	hermansyah x ms glow). Evaluating the expertise and competence in explaining product features or benefits. (Example: tasya farasyah x L'Oréal Paris).	
		Y1.1	Transactional Intention	Assessing a strong desire to purchase the product in the future. (Example: ludo magalu x eile).	Virtual Influencer (Algorithm)
		Y1.2	Referential Intention	Assess the willingness to recommend the product to friends or family. (Example: barbie x aldo).	
		Y1.3	Preferential Intention	Considering this product as the primary choice over other brands. (Example: imma x ikea).	
		Y1.4	Explorative Intention	Assessed as interested in seeking further information regarding the product details.	
		Y2.1	Transactional Intention	Assessing a strong desire to purchase the product in the future.	Human Influencer

		(Example: nagita slavina x skintific).
Y2.2	Referential Intention	Assess the willingness to recommend the product to friends or family.
		(Example: fadil jaidil x pocari sweat).
Y2.3	Preferential Intention	Considering this product as the primary choice over other brands.
		(Example: tasya farasyah x maybelline new york).
Y2.4	Explorative Intention	Assessed as interested in seeking further information regarding the product details.

Source: Identification of Research Data Indicators (2026)

3.3 Data Analysis Techniques

To produce an accurate interpretation of this human-algorithm dilemma, the quantitative data analysis was conducted through the following four stages of statistical testing :

1. Scale Reliability Evaluation (Reliability Test): Measures the internal consistency of the questionnaire by evaluating Cronbach's alpha and McDonald's omega metrics. The instrument is considered reliable if the coefficient value is > 0.70 .
2. Factorial Validity Evaluation: Principal Component Analysis (PCA) with Promax rotation is utilized. This stage aims to verify the construct's unidimensionality and ensure that the component loadings meet the convergent validity criterion (> 0.50).
3. Multiple Linear Regression Analysis: This method is used to test the hypothesis regarding the causal impact of source credibility indicators on consumer purchase intention. Testing is conducted separately for the Virtual Influencer and Human Influencer regression models. The evaluation criteria are based on the coefficient of determination (R^2), simultaneous significance (F-test in ANOVA), and partial significance (t-test).
4. Paired Samples T-Test: Since the same respondents evaluated two different stimuli (VI and HI), a paired t-test was utilized to compare the mean values of the total credibility scores

and the total purchase intention scores. The analysis was supported by a Shapiro-Wilk normality test and an effect size calculation using Cohen's d.

4. Findings and Discussions

4.1 Instrument Quality Evaluation: Reliability

Prior to conducting comparative and causal hypothesis testing, all research instruments were evaluated to ensure the suitability of their measurement metrics. Scale reliability testing demonstrated excellent internal consistency across all research constructs.

Table 3. Reliability of virtual influencer credibility

Frequentist Scale Reliability Statistics

Coefficient	Estimate	Std. Error	95% CI	
			Lower	Upper
McDonald's ω	0.949	0.008	0.934	0.963
Cronbach's α	0.942	0.007	0.929	0.955

Frequentist Individual Item Reliability Statistics

Item	McDonald's ω (if item dropped)			Cronbach's α (if item dropped)		
	Estimate	Lower 95% CI	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI
X1.1	0.935	0.916	0.954	0.926	0.910	0.941
x.1.2	0.963	0.952	0.973	0.962	0.950	0.973
x.1.3	0.934	0.914	0.953	0.925	0.906	0.943
x.1.4	0.936	0.917	0.955	0.927	0.908	0.945
x.1.5	0.933	0.913	0.953	0.924	0.903	0.944
x.1.6	0.930	0.909	0.950	0.922	0.902	0.942

Source: Data processed using JASP (2026)

The test results indicate that the virtual influencer credibility instrument (items X1.1 to x1.6) possesses excellent reliability, with a Cronbach's alpha of 0.942 and a McDonald's omega of 0.949. All statements on the scale demonstrate strong internal consistency and are reliable for research purposes, as evidenced by coefficient values that significantly exceed the minimum threshold of 0.70.

Table 4. Reliability of human influencer credibility

Frequentist Scale Reliability Statistics

Coefficient	Estimate	Std. Error	95% CI	
			Lower	Upper
McDonald's ω	0.951	0.007	0.938	0.965

Cronbach's α	0.950	0.009	0.933	0.967
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Frequentist Individual Item Reliability Statistics

Item	McDonald's ω (if item dropped)			Cronbach's α (if item dropped)		
	Estimate	Lower 95% CI	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI
x.2.1	0.938	0.920	0.956	0.937	0.916	0.957
x.2.2	0.940	0.923	0.957	0.938	0.913	0.962
x.2.3	0.941	0.924	0.958	0.939	0.916	0.962
x.2.4	0.946	0.930	0.961	0.944	0.920	0.967
x.2.5	0.945	0.929	0.961	0.943	0.920	0.965
x.2.6	0.944	0.927	0.960	0.943	0.919	0.966

Source: Data processed using JASP (2026)

The internal consistency test results indicate that the human influencer credibility scale demonstrates very high reliability, as evidenced by McDonald's omega coefficient of 0.951 and Cronbach's alpha of 0.950. Because these values are well above the 0.70 threshold and the removal of individual items does not significantly improve reliability, all statement items (X2.1 to X2.6) are considered highly consistent and valid for use as a measurement instrument.

Table 5. Reliability of Virtual Influencer Purchase Intention

Frequentist Scale Reliability Statistics

Coefficient	Estimate	Std. Error	95% CI	
			Lower	Upper
McDonald's ω	0.941	0.009	0.924	0.959
Cronbach's α	0.941	0.010	0.921	0.960

Frequentist Individual Item Reliability Statistics

Item	Cronbach's α (if item dropped)		
	Estimate	Lower 95% CI	Upper 95% CI
y.1.1	0.922	0.898	0.946
y.1.2	0.925	0.894	0.956
y.1.3	0.927	0.897	0.957
y.1.4	0.914	0.885	0.944

Source: Data processed using JASP (2026)

The test results indicate that the virtual influencer purchase intention variable has excellent reliability, with a Cronbach's alpha value of 0.941 and a McDonald's Omega coefficient of 0.941. All statement components of the instrument demonstrate exceptional internal consistency and are highly reliable for use in research, as the obtained values significantly exceed the typical threshold of 0.70.

Table 6. Reliability of purchase intention for human influencers

Frequentist Scale Reliability Statistics

Coefficient	Estimate	Std. Error	95% CI	
			Lower	Upper
McDonald's ω	0.934	0.010	0.915	0.954
Cronbach's α	0.932	0.015	0.902	0.962

Frequentist Individual Item Reliability Statistics

Item	McDonald's ω (if item dropped)			Cronbach's α (if item dropped)		
	Estimate	Lower 95% CI	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI
y.2.1	0.892	0.858	0.926	0.892	0.831	0.953
y.2.2	0.923	0.899	0.947	0.920	0.874	0.966
y.2.3	0.924	0.900	0.948	0.920	0.884	0.957
x.2.4	0.915	0.889	0.942	0.912	0.859	0.965

Source: Data processed using JASP (2026)

The test results indicate that the human influencer purchase intention variable demonstrates excellent reliability, with a Cronbach's alpha of 0.932 and a McDonald's Omega coefficient of 0.934. All statement components of the instrument exhibit exceptional internal consistency and are highly reliable for research use, as the obtained values significantly exceed the standard threshold of 0.70.

4.2 Evaluation of Instrument Quality: Validity

Table 7. Validity of virtual influencer credibility

Chi-Squared Test

	Value	df	p
Model	17.336	9	.044

Component Loadings

	RC1	Uniqueness
x.1.6	0.940	0.116
x.1.5	0.930	0.136
x.1.3	0.926	0.142
X1.1	0.918	0.157
x.1.4	0.914	0.165
x.1.2	0.640	0.590

Note. Applied rotation method is promax.

Component Characteristics

	Unrotated solution			Rotated solution		
	Eigenvalue	Proportion var.	Cumulative	SumSq. Loadings	Proportion var.	Cumulative
Component 1	4.695	0.782	0.782	4.695	0.782	0.782

Source: Data processed using JASP (2026)

The results of the Principal Component Analysis (PCA) indicate that all statement items (x.1.1 to x.1.6) are valid, as their component loading values (RC1) are above 0.40, ranging from 0.640 to 0.940. The validity of this instrument is further supported by an Eigenvalue of 4.695, which explains 78.2% of the data variance (proportion variance), along with a significant Chi-Squared value ($p = 0.044 < 0.05$).

Table 8. Validity of human influencer credibility

Chi-Squared Test

	Value	df	p
Mode 1	18.875	9	.026

Component Loadings

	RC1	Uniqueness
x.2.1	0.920	0.153
x.2.2	0.912	0.168
x.2.3	0.899	0.191
x.2.6	0.889	0.211
x.2.5	0.880	0.226
x.2.4	0.875	0.235

Note. Applied rotation method is promax.

Component Characteristics

	Unrotated solution			Rotated solution		
	Eigenvalue	Proportion var.	Cumulative	SumSq. Loadings	Proportion var.	Cumulative
Component 1	4.817	0.803	0.803	4.817	0.803	0.803

Source: Data processed using JASP (2026)

The results of the Principal Component Analysis (PCA) confirm the validity of all instrument items (x.2.1 to x.2.6), demonstrating very strong component loading values (RC1) ranging from 0.875 to 0.920 (above the standard threshold of 0.40). This factor structure is proven valid and significant ($p = 0.026 < 0.05$), with an Eigenvalue of 4.817 that cumulatively explains 80.3% of the data variance.

Table 9. Validity of Virtual Influencer Purchase Intention
Chi-Squared Test

	Value	df	p
Model	47.624	2	< .001

Component Loadings

	RC1	Uniqueness
y.1.4	0.938	0.121
y.1.1	0.920	0.154
y.1.2	0.917	0.159
y.1.3	0.913	0.167

Note. Applied rotation method is promax.

Component Characteristics

	Unrotated solution			Rotated solution		
	Eigenvalue	Proportion var.	Cumulative	SumSq. Loadings	Proportion var.	Cumulative
Component 1	3.400	0.850	0.850	3.400	0.850	0.850

Source: Data processed using JASP (2026)

All items related to virtual influencer purchase intention are declared valid due to their high component loading (RC1) values, which range from 0.913 to 0.938. The instrument's validity is further supported by an Eigenvalue of 3.400, which accounts for a cumulative data variance of 85.0%, as well as a highly significant test result ($p < 0.001$).

Table 10. Validity of Human Influencer Purchase Intention
Chi-Squared Test

	Value	d f	p
Model	241.33 9	2	< .001

Component Loadings

	RC1	Uniqueness
y.2.1	0.971	0.057
y.2.4	0.970	0.060
y.2.2	0.892	0.204
y.2.3	0.887	0.213

Note. Applied rotation method is promax.

Component Characteristics

	Unrotated solution			Rotated solution		
	Eigenvalue	Proportion var.	Cumulative	SumSq. Loadings	Proportion var.	Cumulative
Component 1	3.466	0.866	0.866	3.466	0.866	0.866

Source: Data processed using JASP (2026)

All statement items regarding purchase intention for human influencers are proven to be significantly valid ($p < 0.001$), with very strong component loading values (RC1) ranging from 0.887 to 0.971. The precision of this instrument is supported by an Eigenvalue of 3.466, which explains a very high cumulative data variance of 86.6%

4.2 Comparative Analysis: Examining the Human vs. Algorithm Dilemma

A Paired Samples T-Test was conducted to determine whether there is a significant difference in the perspectives of Generation Z at FEB UTS regarding the existence of real humans compared to digital algorithms.

Table 11. Paired Samples T-Test Results

Paired Samples T-Test

Measure 1		Measure 2	t	df	p	Cohen's d	SE Cohen's d
total_credibility_VI	-	total_credibility_HI	3.359	115	.001	-0.312	0.078
total score of purchase intention_VI	-	total score of purchase intention_HI	3.016	115	.003	-0.280	0.083

Note. Student's t-test.

Assumption Checks

Test of Normality (Shapiro-Wilk)

		W	p
total_credibility_VI	- total_credibility_HI	0.625	< .001
total score of purchase intention_VI	- total score of purchase intention_HI	0.765	< .001

Note. Significant results suggest a deviation from normality.

Source: Data processed using JASP (2026)

Based on the test results presented in Table 11, a highly significant difference in perceived source credibility was found between the two object groups ($t(115) = 3.359$, $p = .001$, $d =$

0.312). A similar finding was observed in the consumer purchase intention construct, which also demonstrated a statistically significant difference ($t(115) = 3.016$, $p = .003$, $d = 0.280$). To determine the direction of these differences, the descriptive statistics provide comparative mean values for each construct.

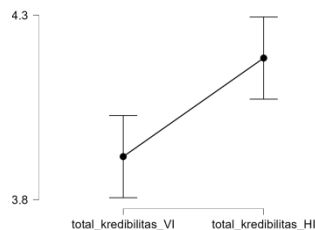
Table 12. Descriptive Statistics of Variable Mean Values

Descriptives

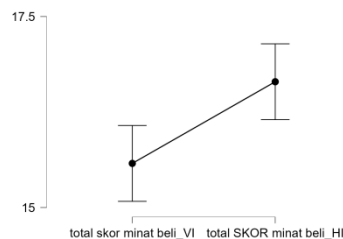
	N	Mean	SD	SE	Coefficient of variation
total_credibility_VI	116	3.917	1.124	0.104	0.287
total_credibility_HI	116	4.184	0.921	0.086	0.220
total score of purchase intention_VI	116	15.58	4.614	0.428	0.296
total score of purchase intention_HI	116	16.65	3.998	0.371	0.240

Descriptives Plots

total_credibility_VI-total_credibility_HI



total score of purchase intention_VI- total score of purchase intention_HI



Source: Data processed using JASP (2026)

Data Table 12 indicates that human influencers have a significantly higher credibility level ($M = 4.184$) compared to virtual influencers ($M = 3.917$). This superiority of human figures directly impacts digital marketing performance, as the total consumer purchase intention score for human influencer recommendations ($M = 16.65$) demonstrably surpasses that for virtual influencers ($M = 15.58$). Although the Shapiro-Wilk normality test indicates a deviation in the distribution with a significance value of $p < .001$, the large sample size of $N=116$ ensures the stability and validity of this parametric t-test based on the Central Limit Theorem.

4.3 Causal Regression Analysis: The Effect of Indicators on Purchase Intention

4.3.1 Virtual Influencer Credibility Regression Model (Algorithm)

Regression analysis was conducted to determine the strength of the causal effect of algorithm credibility indicators on the purchase intention of Gen Z consumers.

Table 13. Model Summary and ANOVA for Virtual Influencer (VI) Purchase Intention

Model Summary - total skor minat beli_VI

Model	R	R ²	Adjusted R ²	RMSE	R ² Change	df1	df2	p
Mo	0.000	0.000	0.000	4.614	0.000	0	115	
M ₁	0.969	0.940	0.936	1.164	0.940	6	109	< .001

Note. M₁ includes X1.1, x.1.2, x.1.3, x.1.4, x.1.5, x.1.6

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M ₁	Regression	2301	6	383.4	282.8	< .001
	Residual	147.8	109	1.356		
	Total	2448	115			

Note. M₁ includes X1.1, x.1.2, x.1.3, x.1.4, x.1.5, x.1.6

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
Mo	(Intercept)	15.58	0.428		36.36	< .001
M ₁	(Intercept)	0.072	0.435		0.165	.870
	X1.1	0.527	0.179	0.149	2.937	.004
	x.1.2	0.635	0.110	0.164	5.756	< .001
	x.1.3	0.577	0.199	0.156	2.902	.004
	x.1.4	0.645	0.183	0.174	3.522	< .001
	x.1.5	0.819	0.196	0.227	4.182	< .001
	x.1.6	0.759	0.205	0.225	3.709	< .001

Source: Data processed using JASP (2026)

The results in Table 13 demonstrate a Coefficient of Determination (R²) value of 0.940. This indicates that 94.0% of the variance in the purchase intention of Generation Z at FEB UTS toward AI-based promotions is simultaneously determined by the credibility dimensions of the Virtual Influencer. The regression model proves to be highly fit and statistically significant ($F(6,109) = 282.8$, $p < .001$). Partially, all indicators from X1.1 to x1.6 exhibit a statistically significant positive effect ($p < 0.05$), proving that comprehensive improvements to every detail of digital characterization will collectively increase consumer purchase intention.

4.3.2 Human Influencer Credibility Regression Model

Published by:

Table 14. Model Summary and ANOVA of Purchase Intention for Human Influencer (HI)

Model	R	R ²	Adjusted R ²	RMSE	df2	p
M ₀	0.000	0.000	0.000	3.998	115	
M ₁	0.958	0.918	0.913	1.177	109	< .001
Model	Sum of Squares			df	p	
M ₁	Regression		1687	6	< .001	
	Residual		151.0	109		
	Total		1839	115		
Model	Unstandardized		Standard Error	t	p	
M ₀	Intercept	16.65	0.371	44.84	< .001	
M ₁	Intercept	-0.840	0.549	-1.530	.129	
	x.2.1	0.425	0.209	2.030	.045	
	x.2.2	0.691	0.215	3.210	.002	
	x.2.3	0.508	0.210	2.419	.017	
	x.2.4	0.916	0.191	4.788	< .001	
	x.2.5	1.066	0.187	5.711	< .001	
	x.2.6	0.570	0.234	2.430	.017	

Source: Data processed using JASP (2026)

Based on Table 14, the explanatory power of the Human Influencer model is $R^2 = 0.918$ (Adjusted $R^2 = 0.913$). The model demonstrates an excellent fit to the data and is simultaneously significant ($F(6,109) = 203.0$, $p < .001$).

Additionally, a partial evaluation of the unstandardized parameter coefficients indicates the specific contribution of each indicator:

1. Indicator X2.1 ($\beta = 0.425$, $t = 2.030$, $p = .045$)
2. Indicator X2.2 ($\beta = 0.691$, $t = 3.210$, $p = .002$)
3. Indicator X2.3 ($\beta = 0.508$, $t = 2.419$, $p = .017$)
4. Indicator X2.4 ($\beta = 0.916$, $t = 4.788$, $p < .001$)
5. Indicator X2.5 ($\beta = 1.066$, $t = 5.711$, $p < .001$)
6. Indicator X2.6 ($\beta = 0.577$, $t = 2.430$, $p = .017$)

Based on the partial test results for the human group, indicator x2.5 demonstrated the most significant positive impact on purchase intention ($\beta = 1.066$, $t = 5.711$), followed by indicator x2.4 ($\beta = 0.916$, $t = 4.788$). This indicates that within the Human Influencer group, the specific elements in the 4th and 5th questionnaire items play the most crucial role in driving students' purchasing decisions.

4.4 Discussion

The empirical findings of this study reveal the reality behind its primary premise: a clear dilemma between human influence and algorithmic superiority within the Generation Z market at the Faculty of Economics and Business (FEB), Sumbawa University of Technology (UTS).

Causally, the regression model yields a unique finding: the coefficient of determination for Virtual Influencers ($R^2 = 94.0\%$) slightly surpasses that for Human Influencers ($R^2 = 91.8\%$). This aligns directly with the framework presented by [Mei et al. \(2025\)](#), who found that because AI-based influencers operate under strict corporate parameters, their lack of personal scandals yields highly stable, mathematically predictable promotional results. Any enhancement in the Virtual Influencer variable results in a highly precise increase in purchase intention. This is because the fictional nature of AI characters allows them to be entirely under the technical control of marketers, effectively eliminating the risk of human error.

However, despite the technical advantages of these algorithms, the Paired Samples T-Test results conclusively favor the existence of real humans. FEB UTS students assign significantly higher credibility ratings to Human Influencers ($M = 4.184$) compared to Virtual Influencers ($M = 3.917$). This empirical outcome strongly mirrors the classic positions established by [Thomas and Fowler \(2021\)](#) and [Lou and Yuan \(2019\)](#), who stress that human communication is anchored in true social presence and sensory verification elements that code alone cannot mimic. Generation Z, who constantly navigate a flood of artificial information, develops a psychological craving for true authenticity. These economics students understand that behind the virtual perfection of an AI character lies a corporate commercial interest rigidly controlled by lines of computer code.

In contrast, Human Influencers are considered far more credible because they provide organic social interactions, natural human imperfections that foster emotional intimacy, genuine empathy, and real sensory experiences with a product. This point is further supported by the partial regression results for the human category, where indicators $x_{2.5}$ ($\beta = 1.066$) and $x_{2.4}$ ($\beta = 0.916$) emerge as the primary drivers of purchase intention. This indicates that when a real person successfully conveys honest testimonials and builds a close emotional connection that resonates with consumers, it immediately triggers a strong surge in purchase intention among Gen Z consumers at FEB UTS.

The empirical findings that Human Influencers possess higher levels of credibility ($M = 4.184$) and purchase intention ($M = 16.65$) than Virtual Influencers ($M = 3.917$ and $M = 15.58$), respectively, reinforce the arguments presented by Thomas and Fowler (2021) and Lou et al. (2023). This occurs because FEB UTS students, as part of Gen Z, exhibit significant skepticism toward rigid algorithmic constructs. Furthermore, the partial advantage in indicators $X_{2.5}$ (honest reviews) and $X_{2.4}$ (emotional connection) substantiates the parasocial relationship theory of [Sankaran and Chakraborty \(2023\)](#), where entirely organic human interactions foster a sense of security (authenticity) that lowers the psychological barriers for consumers to conduct a transaction a barrier that the artificial perfection of computer code fails to overcome.

5. Conclusion

5.1 Conclusion

This research reached the following findings after conducting a comprehensive series of data analyses, hypothesis testing, and empirical discussions involving a sample of current students at the Faculty of Economics and Business, Sumbawa University of Technology (FEB UTS):

1. Significant Difference in Source Credibility: There is a highly significant difference in the perceived source credibility between Virtual Influencers (VI) and Human Influencers (HI) among Generation Z consumers at FEB UTS ($t(115) = 3.359$, $p = .001$). The mean scores indicate that Human Influencers are perceived as significantly more credible ($M = 4.184$)

compared to Virtual Influencers ($M = 3.917$). This demonstrates that the artificial appeal of algorithms is not yet able to match the power of organic trust established by real humans.

2. **Significant Difference in Purchase Intention:** A statistically significant difference in purchase intention exists between the two stimulus groups ($t(115) = 3.016$, $p = .003$). Product recommendations delivered by Human Influencers generated a higher total purchase intention score ($M = 16.65$) than those driven by Virtual Influencers ($M = 15.58$). The virtual perfection of artificial intelligence is not yet compelling enough to drive the economic conversion of Gen Z consumers beyond the influence of human figures.
3. **Substantial Predictive Power of Causality:** The credibility dimension across both influencer groups demonstrates a highly dominant causal contribution (exceeding 91%) in predicting shifts in the purchase intention of Gen Z consumers at FEB UTS. Through regression modeling, it was found that the Virtual Influencer model yields a slightly higher coefficient of determination ($R^2 = 94.0\%$) compared to the Human Influencer model ($R^2 = 91.8\%$). This indicates that algorithm-driven promotions offer highly precise measurability and consistent impact, as they are free from human error. However, within the Human Influencer group, partial testing confirms that the fifth indicator ($x2.5$, $\beta = 1.066$) and the fourth indicator ($x2.4$, $\beta = 0.916$) serve as the most crucial key drivers in stimulating a significant surge in purchase intention.

5.2 Research Implications

5.2.1 Theoretical Implications

This study provides an important theoretical contribution to the expansion of Source Credibility Theory ([Ohanian, 1990](#)) by contextualizing it within the competition between humans and non-human entities (algorithms/AI). The research findings demonstrate that while the dimensions of attractiveness and expertise can be replicated or even perfected by CGI technology and lines of code, the dimension of trustworthiness remains a significant dividing barrier. This boundary cannot be penetrated by algorithms because they lack emotional awareness and real sensory experiences. For academics, this research proves that within Gen Z consumer psychology, the concept of authenticity still reigns supreme over the sophistication of virtual technology.

5.2.2 Practical / Managerial Implications

For marketing practitioners, brand managers, and local MSME owners, the results of this research provide concrete strategic direction:

1. If the primary goal of a brand's marketing campaign is achieving long-term cost efficiency, absolute narrative control free from scandal risks, and mathematically measurable impact targeting, then investing in AI-based Virtual Influencers (VIs) is a highly promising option ($R^2 = 94.0\%$).
2. However, if the primary goal of a business campaign is to establish deep emotional connections, foster loyalty, boost consumer trust, and maximize purchase intent conversion among Gen Z, using conventional Human Influencers (HI) remains the best and most irreplaceable strategy ($M = 16.65$).
3. Marketing practitioners who utilize human influencers must fully focus on maximizing indicators $x2.5$ and $x2.4$ specifically by emphasizing genuine reviews and intimate emotional connections because these two points are the most sensitive factors in students' purchasing decisions.

5.3 Limitations and Suggestions

This study is not without limitations, providing opportunities for improvement in future research. First, the initial data collection was primarily conducted among students from the Faculty of Economics and Business at Sumbawa University of Technology (N = 116), which limits the generalizability of the findings across various academic disciplines in developing countries. It is recommended that future researchers expand the sample scope to encompass other faculties, institutions, or cities with varying levels of digital penetration.

Second, this research utilized a global linear regression model and paired difference tests. Future studies are encouraged to employ Structural Equation Modeling (SEM) to analyze mediating variables, such as emotional attachment (parasocial interaction) or product involvement. This approach would provide a more detailed understanding of why genuine human emotion continues to outperform the appeal of digital algorithmic codes.

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