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Impact of Metaverse on Digital Marketing Strategy: An Experimental Study on Generation Z in Jakarta

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Abstract: This study analyzes the influence of metaverse usage on digital marketing strategies, with Generation Z serving as a mediating variable. The method employed is a quantitative approach through a questionnaire survey of 100 Generation Z students in Jakarta. Data were analyzed using Partial Least Squares (PLS) with tests of validity, reliability, coefficient of determination (R^2), and path analysis. The findings indicate that metaverse usage significantly affects the effectiveness of digital marketing strategies. Generation Z acts as a partial mediator, meaning that although the characteristics of Generation Z strengthen the influence, the direct effect of the metaverse on marketing strategies remains dominant. The R^2 value of 53.3% for the Generation Z variable and 71.4% for the marketing strategy variable demonstrates the model's strong explanatory capability. These findings affirm that integrating the metaverse into digital marketing strategies is a strategic step for companies to reach Generation Z consumers, who are highly familiar with technology, interactive, and value authentic experiences.

Keywords: Metaverse, Generation Z, Digital Marketing Strategy, Mediation, Experiment.

INTRODUCTION

Information technology has developed rapidly, beginning with the evolution of the internet in 1969, initiated by the United States Department of Defense through the Defense Advanced Research Project Agency (DARPA). This project, implemented across several universities, was later named the Advanced Research Project Agency Network (ARPANET) (Syahfitri, A., 2025). The development of the internet in Indonesia began in 1990, opening the eyes of Indonesian society to the advancement of global information (Akmala, S., 2019).

The presence of the internet as infrastructure and connectivity greatly supports the effectiveness and efficiency of companies, particularly in terms of publication and product marketing. The implementation of the metaverse, which bridges the virtual and real worlds, enables users to interact with others through digital avatar representations (Lee et al., 2021). The concept of the metaverse originated from Neal Stephenson's 1992 novel *Snow Crash*, which depicted virtual life in a 3D world. The term "meta" means virtual, while "verse" refers to the universe (Karthick, V., 2023).

One factor driving the implementation of the metaverse was the COVID-19 pandemic at the end of 2019. The pandemic accelerated the advancement of technologies that reshaped social interaction, learning (Ananda Ismail & Febriyanti, 2024), and working systems, as traditional office-based work declined during 2022. Flexible work systems and digitalization continue to progress with increasingly diverse support technologies, including the latest metaverse innovations.

Digital marketing strategies must adopt a holistic approach, combining multiple technological channels to create optimal customer experiences. In the context of the metaverse, strategies based on Kingsnorth's approach can be applied to understand its impact on digital marketing, especially for Generation Z, who are known as digital natives (Wu et al., 2023). Digital marketing strategies applicable to the metaverse include:

1. Customer Experience,
2. Digital Communication,
3. Content Marketing,
4. Search Engine Optimization (SEO) and data analytics,
5. Digital Channel Integration (Nasir & Chalimi, 2024).

Generation Z refers to the generational cohort typically born between 1997 and 2012, who have grown up in an era where digital technology has become inseparable from everyday life. This situation creates several communication challenges that must be understood and addressed (Gaol & Hutasoit, 2021). Generation Z differs from previous generations, such as Generation Y (Millennials). They are a generation raised with digital technology, easy access to the internet, and smart devices. Consequently, communication with Generation Z requires a different approach. From their perspective, communication is a form of freedom of expression and creativity (Gilang Ramadhan et al., 2025). This study focuses on four main research questions:

1. How well does Generation Z understand and accept the concept of the metaverse in digital marketing?
2. How does the effectiveness of metaverse-based marketing strategies compare with conventional methods?
3. What factors influence Generation Z's engagement in metaverse-based marketing strategies?
4. To what extent does the metaverse affect Generation Z's purchasing decisions compared to conventional marketing platforms?

The population refers to a group with specific characteristics (Sugiyono, 2019, p.21). The population in this study consists of Generation Z in Jakarta. Generation Z includes individuals born between 1997 and 2012 (BPS, 2020). Jakarta was selected as the research area because it ranks second in internet penetration in Indonesia (GoodStats, 2023) and is the largest business hub in the country. The population of students in Jakarta is 768,603 (BPS, 2024). A total of 100 students were sampled, based on Slovin's formula with a 10% margin of error.

Using purposive sampling, the study involved 100 Generation Z respondents residing in Jakarta. The criteria for respondents included: aged 16–25 years, student status, male and female gender, and residence in West, Central, South, East, or North Jakarta. Data were collected through an online questionnaire distributed via Google Forms. The instrument measured three variables: metaverse usage, Generation Z characteristics, and digital marketing strategies. Each variable was assessed using a 5-point Likert scale.

Data collection took place over two months, from June to July 2025. Questionnaires were distributed online via Google Forms, shared through social media platforms such as WhatsApp. This method was chosen for efficiency in reaching a large number of respondents spread across

different regions. The questionnaire was developed through several stages, including literature reviews, discussions, and pilot testing on 30 respondents using validity and reliability tests to ensure item relevance. Respondents answered questions by selecting from predefined options.

Data analysis was conducted using Partial Least Squares (PLS) version 3.0. PLS is a multivariate statistical method that compares multiple exogenous and endogenous variables to determine and explain statistical relationships among latent variables (Ghozali, 2021, p.67). The data analysis procedure included:

1. Outer model testing (validity and reliability),
2. Inner model testing (coefficient of determination R^2),
3. Effect size (f^2),
4. Predictive relevance (Q^2),
5. Goodness of Fit (GOF), and
6. Hypothesis testing (path analysis).

H1: Metaverse usage has a positive and significant effect on Generation Z

The more intensively users engage with the metaverse as an immersive, interactive, and technology-oriented virtual experience, the stronger its influence on the characteristics and preferences of Generation Z. The study obtained a path coefficient of 0.565, indicating a fairly strong effect. This finding is consistent with Rafiq & Mahmud (2024), who revealed that Generation Z demonstrates strong preferences for immersive experiences in the metaverse, which are crucial for designing effective virtual marketing platforms.

H2: Metaverse usage has a positive and significant effect on Marketing Strategy

The adoption of the metaverse as a marketing medium provides opportunities for brands to apply new approaches such as immersive branding, gamification, and interactive virtual experiences that can strengthen and refresh marketing strategies. This study found a path coefficient of 0.771, showing a very strong influence. These results align with previous qualitative studies by Afif & Susanto (2023) and Hendrayati et al. (2023), which demonstrated that the metaverse can enhance brand engagement and product awareness through deeper and more interactive brand experiences.

H3: Generation Z has a positive and significant effect on Marketing Strategy

As digital natives, Generation Z tends to value authentic and personalized experiences. Their behaviors and characteristics provide an important foundation for effective marketing strategies. This generation prioritizes authentic, personalized digital interactions and engaging experiences. The study obtained a path coefficient of 0.397, indicating a moderate effect. This finding is consistent with Ismail (2024) and Ginting & Hadikusuma (2024), who found that Generation Z responds strongly to digital marketing strategies offering authentic, interactive, and high-quality content.

H4: Generation Z mediates the effect of Metaverse usage on Marketing Strategy

The impact of metaverse usage on marketing strategies is not only direct but also mediated by Generation Z, who shape the way consumers perceive and respond. Because of their openness and attraction to interactivity in the metaverse, Generation Z plays a crucial role in bridging this influence, thereby creating a mediating effect.

METHOD

This study is explanatory in nature and employs a quantitative approach. A quantitative method was chosen because this research aims to explain causal relationships among variables

to clarify specific phenomena (Sugiyono, 2019, p.21). The method used is a survey, in which the researchers collected data through questionnaires (Sugiyono, 2019, p.15).

RESULT AND DISCUSSION

Respondent Demographics

A total of 100 student respondents participated in this study. Their socio-demographic characteristics are presented in the following table:

Table 1. Socio-demographic characteristics of respondents

Item	Frequency n = 100	Percentage
Gender		
Male	32	32%
Female	68	68%
Age		
16-18 years	3	3%
19-21 years	74	74%
22-25 years	23	23%
Residence		
West Jakarta	14	14%
Central Jakarta	18	18%
South Jakarta	20	20%
East Jakarta	35	35%
North Jakarta	13	13%

Source: Processed questionnaire data

The data show that the majority of respondents were female (68%), while male respondents accounted for 32%. In terms of age, most respondents were 19–21 years old (74%), followed by 22–25 years old (23%) and 16–18 years old (3%). Regarding residence, the largest proportion (35%) lived in East Jakarta, followed by South Jakarta (20%), Central Jakarta (18%), West Jakarta (14%), and North Jakarta (13%).

Validity and Reliability Tests

This study recommends conducting a measurement model test, particularly the outer model, to assess the validity and reliability of variables. The study applies convergent validity and discriminant validity to evaluate validity, and composite reliability and Cronbach's alpha to assess reliability. Convergent validity is determined by the loading factor of latent variables with their indicators. A correlation is considered to have convergent validity if the loading factor exceeds 0.6 (Ghozali, 2018). Discriminant validity is evaluated using the Average Variance Extracted (AVE), which should be greater than 0.5. In addition, the reliability of a construct can be assessed by examining Cronbach's alpha. A construct is considered credible if its Cronbach's alpha value is greater than 0.60. The detailed values of loading factors, AVE, and Cronbach's alpha are presented in Table 2 below.

Table 2. Outer Loadings and Average Variance Extracted (AVE)

Variable	Dimensions	Items	Loading	AVE	Cronbach's Alpha
Metaverse Users	Understanding	X1.1	0,772	0,588	0,950
		X1.2	0,741		
		X1.3	0,755		
	Interactivity	X1.4	0,756		
		X1.5	0,712		
		X1.6	0,786		
		X1.7	0,768		

	Authenticity & Immersion	X1.8	0,785		
		X1.9	0,830		
	Digital Economic Activities	X1.10	0,816		
		X1.11	0,717		
		X1.12	0,731		
	Personalization & Technological Preferences	X1.13	0,738		
		X1.14	0,777		
		X1.15	0,806		
Generation Z	Characteristics	Z1.1	0,747	0,587	0,956
		Z1.2	0,733		
		Z1.3	0,735		
	Digital Native	Z1.4	0,741		
		Z1.5	0,745		
		Z1.6	0,766		
	Independence and Self-Learning	Z1.7	0,749		
		Z1.8	0,747		
		Z1.9	0,759		
	Need for Immersive and Interactive Experience	Z1.10	0,709		
		Z1.11	0,760		
		Z1.12	0,793		
	Speed and Efficiency	Z1.13	0,801		
		Z1.14	0,797		
	Digital Consumerist Tendencies	Z1.15	0,871		
		Z1.16	0,740		
		Z1.17	0,820		
Marketing Strategy	Digital Market Segmentation	Y1.1	0,775	0,599	0,916
		Y1.2	0,757		
		Y1.3	0,826		
	Digital Market Targeting	Y1.4	0,738		
		Y1.5	0,741		
		Y1.6	0,852		
	Digital Brand Positioning	Y1.7	0,745		
		Y1.8	0,799		
		Y1.9	0,722		

Source: Processed SmartPLS 3.0 Data (2025)

Coefficient of Determination (R^2)

The coefficient of determination (R^2) measures the proportion of variance in the endogenous variable explained by the exogenous variables. R^2 values of 0.75, 0.50, and 0.25 indicate strong, moderate, and weak models, respectively (Ghozali & Latan, 2016).

Table 3. Coefficient of Determination (R^2)

Items	R-Square	R-Square Adjusted
Generation Z	0,824	0,820
Marketing Strategy	0,594	0,590

Source: SmartPLS 3.0 processed data (2025)

The results indicate that metaverse usage explains 59% of the variance in marketing strategies, while 41% is influenced by other factors not included in this study. Additionally, metaverse usage explains 82% of the variance in Generation Z, while the remaining 18% is explained by other variables.

Hypothesis Testing

The hypotheses in this study were examined through model estimation using the bootstrapping method. Hypothesis testing was conducted in two stages: the direct effect, which

evaluates the direct influence of exogenous variables on endogenous variables, and the indirect effect, which examines the indirect influence of exogenous variables on endogenous variables. The hypothesis testing was carried out at a significance level of 0.05 with a one-tailed approach. The following is a description of the hypothesis testing results obtained in this study.

First, the direct effect hypothesis test was conducted, as shown in the path coefficient table. The results of the direct effect hypothesis test are as follows:

Table 4. Path Coefficients (Direct Effect)

	***Original Sample* (O)**	***Sample Mean* (M)**	***Standard Deviation* (STDEV)**	***T Statistics* (|O/STDEV|)**	***P Values***
Metaverse Usage → Generation Z	0,565	0,560	0,069	8,184	0,000
PENGGUNA Metaverse Usage → Marketing Strategy	0,771	0,766	0,059	12,998	0,000
Generation Z → Marketing Strategy	0,397	0,402	0,070	5,672	0,000

Source: SmartPLS 3.0 processed data (2025)

Table 4 presents the results of the path coefficient calculations to obtain the T-statistic and p-value. A hypothesis is accepted if the T-statistic value is greater than 1.65 or the p-value is below 0.05. Based on these criteria, all hypotheses were accepted.

Next, in the stage of evaluating the mediation effect, the bootstrapping method was used to obtain the sampling distribution of the indirect relationships. The mediating relationship can be observed in the specific indirect effect table. The following is the specific indirect effect table:

Table 5. Indirect Effect (Mediation)

	***Original Sample* (O)**	***Sample Mean* (M)**	***Standard Deviation* (STDEV)**	***T Statistics* (|O/STDEV|)**	***P Values***
Metaverse Usage → Generation Z → Marketing Strategy	0,306	0,308	0,060	5,079	0,000

Source: SmartPLS 3.0 processed data (2025)

The results show a significant mediating role of Generation Z in the relationship between metaverse usage and marketing strategies.

Future testing will examine the hypotheses or path coefficients. Path coefficient testing involves evaluating the t-statistic values and comparing them with the critical value of 1.96 at a 5% significance level. A hypothesis is accepted if the t-statistic is greater than 1.96 and rejected if it is smaller. The significance level is also assessed using the p-value (Ghozali & Latan, 2016). The alternative hypothesis (Ha) is accepted if the p-value is less than 0.05, and Ha is rejected if the p-value is greater than 0.05. SmartPLS 3.0 applies the bootstrapping method for hypothesis testing. Figure 2 presents the findings of the hypothesis testing or path coefficient analysis and investigation.

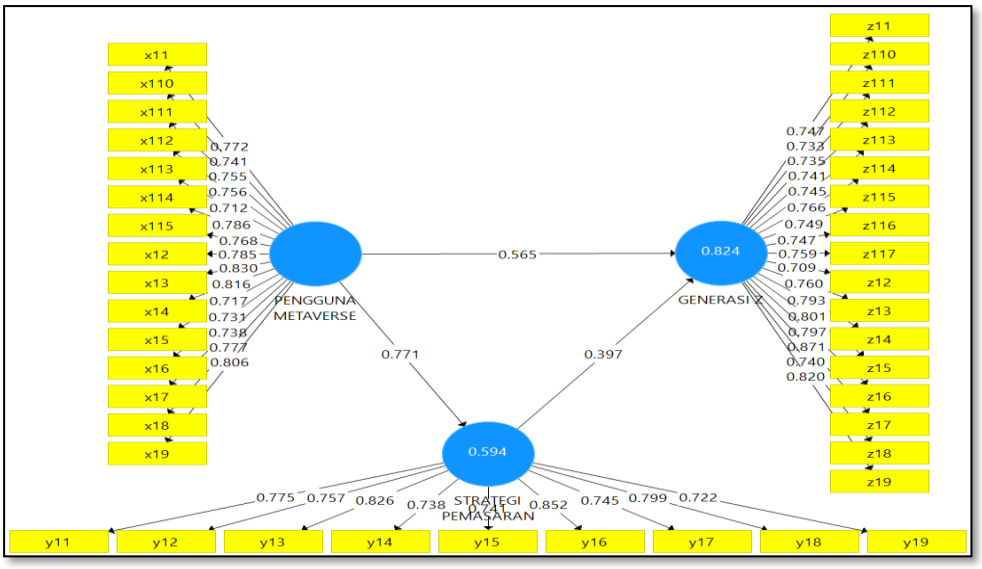


Figure 1. SmartPLS 3.0 Bootstrapping Data
Source: SmartPLS 3.0 processed data (2025)

Based on Figure 2 above, the structure of the research model can be described as follows:

1. Latent variables (constructs):
   a. Metaverse Users (exogenous construct, left)
   b. Generation Z (endogenous construct and mediator, right)
   c. Marketing Strategy (endogenous construct, bottom)
2. Relationships among variables:
   a. Metaverse Users → Generation Z (path coefficient = 0.565)
   b. Metaverse Users → Marketing Strategy (path coefficient = 0.771)
   c. Generation Z → Marketing Strategy (path coefficient = 0.397)
3. Outer Loadings:
   All indicators (x, y, z) are above 0.7 or close to 0.7, indicating adequate convergent validity.

The Effect of Metaverse Users on Generation Z

Generation Z refers to the cohort born between 1997 and 2012 (Dimock, 2019). They are considered digital natives because they have been familiar with the internet, social media, and digital technology from an early age. Generation Z tends to prefer indoor activities over outdoor play and large social interactions. This is due to their habitual use of technology, which often leads to addictive behaviors. They are also known as the "instant generation," who expect immediate results, driving the emergence of artificial intelligence technologies that simplify various aspects of life. Because of their preference for speed, Generation Z often finds more efficient ways of accomplishing tasks, resulting in new innovations born from this behavior (Zis et al., 2021). Metaverse users are generally young people, particularly Generation Z and Millennials, as they are more open to adopting new technologies. Their primary motivations include entertainment, social interaction, learning, and virtual shopping (Dwivedi et al., 2022).

The hypothesis that metaverse users have a positive and significant influence on Generation Z is also supported by Hadi & Sutabri (2025), who found that Millennials are more influenced by effort expectancy and price value, while Generation Z is more strongly influenced by social influence.

The Effect of Metaverse Users on Marketing Strategy

Metaverse users expect interactive and immersive experiences (e.g., virtual events, 3D stores, AR/VR try-ons). As a result, marketing strategies must transform from one-way

communication to two-way experiential engagement that fosters emotional and behavioral involvement. According to Gumilang (2019), it is essential for businesses to adopt appropriate marketing strategies and media to attract their target markets, thereby increasing sales volume and profitability. Consumers' interest and purchasing decisions can be influenced by various factors, one of which is marketing strategy.

The hypothesis that metaverse users have a significant positive influence on marketing strategies is supported by Al-Adwan et al. (2025), who revealed that gamification and event marketing in the metaverse significantly enhance interaction and willingness-to-pay for digital goods when experiences are designed to align with community contexts.

The Effect of Generation Z on Marketing Strategy

According to Arya et al. (2022), marketing is an activity carried out by companies or individuals to promote products or services to potential targets. Marketing is a crucial point for businesses to operate effectively and meet organizational goals (Amir & Setiawan, 2023). Strategies to market products include utilizing metaverse applications, TikTok, and other social media platforms. Social media, with its various features, can be leveraged by businesses to implement marketing strategies by setting competitive prices, uploading creative and attractive content marketing, adopting viral marketing strategies, and using live streaming shopping to promote products.

According to the Indonesian Internet Service Providers Association (APJII, 2024), there are 221 million internet users in Indonesia, the majority of whom are Generation Z, comprising 34.4% or approximately 76 million people.

The hypothesis that Generation Z significantly and positively influences marketing strategies is supported by Priporas et al. (2017), who stated that Generation Z has a strong preference for interactive technology and personalization in online shopping, indicating that marketing strategies should focus on digital experience.

The Effect of Generation Z on Marketing Strategy through Mediating Metaverse Usage

Generation Z are digital natives who are highly familiar with interactive technologies, online games, AR/VR, and social media. They seek authentic, fast, visual, and community-based experiences. The metaverse has emerged as an interactive virtual space that fits Gen Z's preferences: immersive, collaborative, avatar-based, and allowing co-creation and digital ownership.

Marketing strategies have shifted because Generation Z engages more in the metaverse than through traditional channels. Brands must therefore enter this digital ecosystem with approaches such as experiential marketing, community engagement, and digital assets. Consequently, the effect of Generation Z on marketing strategies becomes stronger when mediated by metaverse usage. In other words, Gen Z pushes companies to enter the metaverse, and their activities within it reinforce the direction of digital marketing strategies.

The mediating role of Generation Z in the relationship between metaverse usage and marketing strategies is supported by Francis & Hoefel (2018), who argued that Generation Z demands brands to be present in their digital community spaces, which are now evolving into the metaverse. This is further reinforced by Park & Kim (2022), who highlighted that the metaverse creates opportunities for new marketing strategies based on immersive marketing, gamification, and digital ownership. Similarly, Dwivedi et al. (2022) found that metaverse adoption in marketing is heavily influenced by Generation Z as primary users, who in turn encourage companies to build new digital strategies.

CONCLUSION

Metaverse usage has a significant effect on digital marketing strategies. This finding suggests that leveraging metaverse platforms can improve the effectiveness of marketing strategies through immersive, interactive, and personalized digital experiences. Generation Z plays a role as a partial mediator. Although Generation Z strengthens the relationship between metaverse usage and marketing strategies, the direct effect of metaverse usage remains dominant.

The explanatory power of the research model is relatively strong. The R^2 value of 53.3% for Generation Z and 71.4% for marketing strategy indicates that the model is capable of explaining inter-variable relationships effectively. Overall, integrating the metaverse into digital marketing strategies is a relevant and crucial step to engage Generation Z, who are digital natives with strong preferences for interactive and authentic experiences.

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