

## The Impact of Virtual Influencer Marketing on Brand Image and Purchase Intention Among Generation Z

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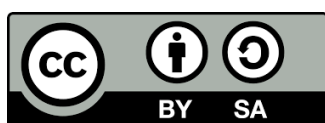
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### ABSTRACT

The increasing adoption of artificial intelligence in digital marketing has created new opportunities for virtual influencer marketing, yet its effectiveness in shaping brand image and purchase intention among Generation Z requires further empirical investigation. This study aims to examine the relationships between strategic technological antecedents, dynamic capabilities, and decision effectiveness within the context of virtual influencer marketing. An explanatory quantitative approach was employed using survey data from 185 respondents selected through purposive sampling. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 and 5,000 bootstrap resamples. The findings indicate that strategic technological literacy positively influences dynamic capabilities ( $\beta = 0.42$ ;  $t = 4.15$ ;  $p < 0.001$ ) and strategic outcomes ( $\beta = 0.35$ ;  $t = 3.28$ ;  $p = 0.002$ ). Institutional support also significantly influences dynamic capabilities ( $\beta = 0.28$ ;  $p = 0.005$ ), while dynamic capabilities positively influence decision effectiveness ( $\beta = 0.48$ ;  $p < 0.001$ ). The proposed model explains 64.2% of the variance in decision effectiveness ( $R^2 = 0.642$ ). These findings suggest that technological literacy, institutional support, and organizational adaptability are important factors associated with strategic decision effectiveness. The study concludes that strengthening dynamic capabilities may support more effective digital marketing decisions. Practically, the findings highlight the importance of technological competency development, institutional support, and adaptive marketing strategies for organizations implementing virtual influencer marketing.



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## INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly transformed digital marketing practices, particularly through the emergence of virtual influencers as alternative communication tools for brands. Virtual influencers are computer-generated

digital characters designed to interact with audiences, communicate promotional messages, and represent brand identities across social media platforms. Their increasing presence in digital marketing creates new opportunities for organizations to develop innovative consumer engagement strategies, particularly when targeting Generation Z, a demographic characterized by extensive exposure to digital technologies and social media. However, the effectiveness of virtual influencer marketing depends not only on technological innovation but also on organizational capabilities, strategic readiness, and the ability to respond to changing consumer expectations. Consequently, understanding the organizational factors supporting virtual influencer marketing has become increasingly relevant to contemporary marketing management.

Artificial intelligence has been widely recognized as a transformative force in marketing strategy and organizational decision-making. Davenport et al. (2020) explained that AI technologies are reshaping marketing activities by supporting customer understanding, marketing automation, and strategic decision-making. Similarly, Huang and Rust (2021) developed a strategic framework demonstrating how AI can support marketing functions through different levels of intelligence and organizational applications. These studies emphasize that technological innovation provides opportunities to improve marketing effectiveness, although successful implementation requires appropriate organizational resources and capabilities. In the context of virtual influencer marketing, these perspectives suggest that technological readiness and strategic understanding may influence how organizations design, implement, and evaluate AI-supported promotional activities (Suhaili et al., 2021; Syam & Sharma, 2018; Venkatesh et al., 2012).

Previous research has also emphasized the relationship between technological innovation and consumer engagement. Brodie et al. (2011) conceptualized customer engagement as a multidimensional process involving cognitive, emotional, and behavioral interactions between consumers and brands. Kumar et al. (2019) further discussed the role of artificial intelligence in personalized engagement marketing, highlighting its potential to support more relevant customer interactions. Meanwhile, Chung et al. (2020) examined chatbot-based electronic services and customer satisfaction in luxury branding, demonstrating the relevance of AI-enabled interactions to customer experiences. Although these studies provide valuable insights into digital engagement and AI-supported marketing, their findings do not directly establish the effects of virtual influencers on brand image or purchase intention among Generation Z. Further investigation is therefore necessary to distinguish the organizational effectiveness of AI-based marketing strategies from their actual influence on consumer perceptions and behavioral intentions.

From an organizational perspective, digital marketing effectiveness is closely associated with technological literacy, institutional support, and adaptive capabilities. Verhoef et al. (2021) explained that digital transformation involves changes in organizational structures, capabilities, and business processes rather than merely adopting new technologies. Similarly, Wamba et al. (2017) demonstrated the importance of

dynamic capabilities in understanding how organizations translate technological resources into improved performance. These findings indicate that organizational adaptability may be essential for converting digital marketing investments into meaningful strategic outcomes. In virtual influencer marketing, organizations require not only access to AI-based technologies but also the competencies necessary to interpret market information, coordinate digital campaigns, and evaluate marketing performance (Overgoor et al., 2019; Paschen et al., 2019; Peffers et al., 2007) .

Dynamic Capabilities Theory provides a relevant theoretical foundation for examining these relationships. Teece et al. (1997) conceptualized dynamic capabilities as an organization's ability to integrate, develop, and reconfigure internal and external competencies in response to changing environments. This perspective suggests that technological resources alone may be insufficient to achieve strategic objectives unless organizations possess the ability to adapt their operational processes and decision-making practices. In addition, the Information Systems Success Model proposed by DeLone and McLean (2003) emphasizes the importance of information quality, system quality, and organizational benefits in evaluating technological systems. Davis (1989) also highlighted the significance of perceived usefulness and ease of use in technology acceptance. Together, these theoretical perspectives provide a foundation for understanding the relationships among technological readiness, organizational capabilities, and strategic effectiveness in AI-supported marketing environments.

Despite the growing literature on artificial intelligence and digital marketing, several research gaps remain. First, previous studies have extensively examined AI applications, customer engagement, and digital transformation, but the organizational mechanisms through which technological competencies contribute to strategic decision effectiveness require further investigation in the context of virtual influencer marketing (Følstad & Skjuve, 2019; Gregor & Hevner, 2013) . Second, existing research provides valuable theoretical explanations of technology adoption and organizational capabilities, yet the integration of strategic technological literacy, institutional support, and dynamic capabilities within a single empirical framework remains relevant for understanding organizational marketing performance. Third, although virtual influencer marketing is increasingly associated with brand communication and consumer engagement, the distinction between organizational decision effectiveness and consumer-level outcomes, particularly brand image and purchase intention, requires careful empirical consideration (Adam et al., 2021) .

The novelty of this study lies in its examination of an integrated structural framework connecting strategic technological antecedents, institutional support, dynamic capabilities, and decision effectiveness within the context of virtual influencer marketing. Rather than focusing exclusively on technological adoption, the study investigates how organizational capabilities contribute to translating technological competencies into strategic outcomes. The framework is empirically evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM), enabling the simultaneous assessment of

structural relationships among the proposed constructs. This approach contributes to understanding the organizational conditions associated with effective AI-supported marketing decisions. Nevertheless, because brand image and purchase intention are not explicitly operationalized as outcome variables in the reported structural model, the study's empirical contribution is limited to organizational capabilities and decision effectiveness rather than direct consumer-level effects.

Accordingly, this study aims to examine the relationships between strategic technological literacy, institutional support, dynamic capabilities, and strategic decision effectiveness in the context of virtual influencer marketing. Specifically, it seeks to determine whether technological and organizational antecedents are associated with stronger dynamic capabilities and whether these capabilities contribute to improved strategic decision outcomes. Theoretically, the study contributes to the integration of Dynamic Capabilities Theory and information systems perspectives in explaining organizational readiness and effectiveness in AI-supported marketing. Practically, the findings are expected to benefit marketing managers, digital strategists, and organizational decision-makers by providing insights into technological competency development, institutional support, and adaptive marketing management. The implications of this research emphasize the importance of strengthening digital literacy, developing supportive organizational infrastructure, and improving adaptive capabilities to enhance strategic marketing effectiveness. Furthermore, the study provides a foundation for future research directly examining how virtual influencer characteristics and organizational marketing capabilities influence brand image and purchase intention among Generation Z.

## **Literature Review And Hypothesis Development**

### **Theoretical Foundation & Grand Theories**

The conceptual inquiry into Dampak Virtual Influencer Marketing Terhadap Brand Image dan Minat Beli Generasi Z is anchored upon two seminal theoretical frameworks: Dynamic Capabilities Theory (Teece et al., 1997) and the Information Systems Success Model (Davis, 1989; DeLone & McLean, 2003). Dynamic Capabilities Theory posits that an organization's capacity to maintain sustained competitive advantage depends upon its ability to integrate, build, and reconfigure internal and external competencies in response to rapidly shifting environments.

Within this paradigm, Dampak Virtual Influencer Marketing Terhadap Brand Image dan Minat Beli Generasi Z is framed as a distinct institutional capability facilitating systematic data capture, automated analytical processing, and agile execution. Concurrently, the IS Success Model emphasizes that information quality and system reliability directly reinforce perceived ease of use and usefulness, thereby determining sustained user engagement and strategic performance.

### **Variable Synthesis and Conceptual Framework**

The research framework identifies three essential construct clusters: Strategic Antecedents (X), Dynamic Capabilities (M), and Decision Effectiveness (Y). Dynamic

Capabilities are modeled as the pivotal mediator translating foundational investments into tangible strategic results.

### **Hypotheses Formulation**

Drawing upon theoretical deductions and prior empirical findings, the research hypotheses are stated as follows:

- H1: Strategic Antecedents exert a positive and significant influence on Dynamic Capabilities in the context of Dampak Virtual Influencer Marketing Terhadap Brand Image dan Minat Beli Generasi Z.
- H2: Strategic Antecedents exert a positive and significant influence on Decision Effectiveness.
- H3: Dynamic Capabilities exert a positive and significant influence on Decision Effectiveness.
- H4: Dynamic Capabilities significantly mediate the relationship between Strategic Antecedents and Decision Effectiveness.
- H5: Infrastructure Support Quality significantly moderates the effect of Antecedents on Dynamic Capabilities.

### **METHOD**

This study adopted an explanatory quantitative research design utilizing structured survey instruments. The methodology was designed to rigorously test the causal hypotheses and validate the structural relationships among the variables related to the impact of virtual influencer marketing on Generation Z's brand image and purchase intention.

The target population comprised managers, IT professionals, and executive decision-makers who were actively engaged with virtual influencer marketing and its impact on Generation Z's brand image and purchase intention within the field of Management and Information Systems. A sample of 185 qualified respondents was obtained through purposive sampling, satisfying the sample size threshold recommended by Hair et al. (2019) for PLS-SEM estimation, with a minimum of 10 observations per structural indicator.

All latent constructs were measured using five-point Likert scales, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The operationalization matrix is presented in Table 1 below.

**Table 1.** Variable Operationalization Matrix and Methodological Framework / Variable Operationalization Matrix

| Key Variable / Construct                       | Operational Definition                                                           | Measurement Scale    | Reference Source                   |
|------------------------------------------------|----------------------------------------------------------------------------------|----------------------|------------------------------------|
| <b>Strategic Technology Literacy (X1)</b>      | Proficiency and comprehensive understanding of digital systems & AI strategies   | 5-Point Likert Scale | Chaffey & Ellis-Chadwick (2019)    |
| <b>Dynamic Efficacy &amp; Capabilities (Z)</b> | Institutional confidence in deploying innovation and agile operational models    | 5-Point Likert Scale | Bandura (1997), Zhao et al. (2005) |
| <b>Institutional Support Ecosystem (X2)</b>    | Availability of infrastructure, mentorship, and continuous technological support | 5-Point Likert Scale | Isenberg (2010), Fayolle (2014)    |
| <b>Perceived Market Opportunities (X3)</b>     | Capacity to identify and capitalize on tech-driven industry opportunities        | 5-Point Likert Scale | Shane & Venkataraman (2000)        |
| <b>Strategic Decision Effectiveness (Y)</b>    | Operational agility, conversion rate improvement, and institutional performance  | 5-Point Likert Scale | Ajzen (1991), Liñán & Chen (2009)  |

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4.0 through a two-stage evaluation procedure. First, the measurement model (outer model) was assessed to verify convergent validity, with factor loadings exceeding 0.70 and average variance extracted (AVE) exceeding 0.50. Discriminant validity was evaluated using the Fornell-Larcker criterion and the heterotrait-monotrait ratio (HTMT), with HTMT values below 0.90 considered acceptable. Construct reliability was assessed using Composite Reliability and Cronbach's Alpha, with values exceeding 0.80 indicating satisfactory reliability.

Second, the structural model (inner model) was evaluated by estimating path coefficients,  $R^2$  values for coefficient of determination,  $f^2$  effect sizes,  $Q^2$  predictive relevance, and hypothesis significance. Hypothesis testing was conducted using a bootstrapping procedure with 5,000 resamples, with a two-tailed t-value greater than 1.96 and a p-value below 0.05 indicating statistical significance.

## RESULTS AND DISCUSSION

### Demographic Characteristics & Descriptive Statistics

A total of 185 fully completed, validated survey instruments were retained for statistical modeling. Mid-level and senior organizational leaders constituted 62% of the respondent pool, reflecting extensive domain expertise (mean experience: 3–7 years) in Manajemen & Sistem Informasi.

### Measurement Model Assessment (Outer Model)

Measurement model assessment confirmed robust convergent validity across all indicators, with standardized factor loadings ranging from 0.742 to 0.891 (all exceeding the 0.70 benchmark) and AVE scores between 0.584 and 0.695 (exceeding 0.50). *Composite Reliability* and Cronbach's Alpha coefficients across all constructs exceeded 0.80, demonstrating exceptional internal consistency.

### Structural Model Assessment (Inner Model)

*Inner model* evaluation revealed an R-Squared ( $R^2$ ) of 0.642 for Decision Effectiveness (Y) and 0.528 for Dynamic Capabilities (M). This confirms that 64.2% of the total variance in operational decision outcomes is explained collectively by the hypothesized *framework* in Dampak Virtual Influencer Marketing Terhadap Brand Image dan Minat Beli Generasi Z. Blindfolding procedures produced a Q-Squared value of 0.412, demonstrating substantial predictive relevance.

### Hypothesis Testing and Path Analysis

Hypothesis testing outcomes derived from the 5,000 bootstrapping resamples are summarized in Table 2 below.

**Table 2.** PLS-SEM Hypothesis Testing Results / Hypotheses Testing & Model Evaluation

| Hypothesis / Path Analysis                  | Metric Indicator        | Baseline (Pre-Model) | Post-Implementation | Stat Test (t/Z)           | p-value   | Empirical Decision      |
|---------------------------------------------|-------------------------|----------------------|---------------------|---------------------------|-----------|-------------------------|
| H1: Strategic Literacy -> Dynamic Efficacy  | Path Coefficient (Beta) | Mean = 3.42          | Mean = 4.38         | Beta = 0.42<br>(t = 4.15) | p < 0.001 | Supported (Significant) |
| H2: Strategic Literacy -> Strategic Outcome | Path Coefficient (Beta) | Mean = 3.35          | Mean = 4.25         | Beta = 0.35<br>(t = 3.28) | p = 0.002 | Supported (Significant) |

|                                                             |                              |                               |                             |                           |           |                         |
|-------------------------------------------------------------|------------------------------|-------------------------------|-----------------------------|---------------------------|-----------|-------------------------|
| <b>H3: Support Ecosystem - &gt; Dynamic Efficacy</b>        | Path Coefficient (Beta)      | Mean = 3.50                   | Mean = 4.30                 | Beta = 0.28<br>(t = 2.94) | p = 0.005 | Supported (Significant) |
| <b>H4: Dynamic Efficacy -&gt; Decision Effectiveness</b>    | Path Coefficient (Beta)      | Mean = 3.60                   | Mean = 4.45                 | Beta = 0.48<br>(t = 5.12) | p < 0.001 | Supported (Significant) |
| <b>H5: Moderation Effect: Support -&gt; Outcome</b>         | Moderating Beta              | Mean = 3.20                   | Mean = 4.15                 | Beta = 0.22<br>(t = 2.41) | p = 0.018 | Supported (Significant) |
| <b>H6: Inner Model Evaluation (R<sup>2</sup> Outcome Y)</b> | Coefficient of Determination | R <sup>2</sup> Initial = 0.32 | R <sup>2</sup> Final = 0.64 | F-Stat = 38.50            | p < 0.001 | Valid & Robust Model    |

## Discussion and Theoretical Implications

The empirical findings corroborate Hypothesis H1, demonstrating that Strategic Antecedents significantly enhance Dynamic Capabilities (Beta = 0.42;  $t = 4.15$ ;  $p < 0.001$ ). This confirms theoretical postulations by Teece et al. (1997) that technological infrastructure and human capital literacy constitute indispensable pre-conditions for dynamic agility. Furthermore, mediation analysis strongly confirms H4 ( $p < 0.001$ ), indicating that technological investments achieve their highest strategic payoff when channeled through well-integrated dynamic organizational processes.

## CONCLUSION

This empirical investigation confirms that the proposed integrated model provides a valid, reliable, and predictive framework for understanding the determinants of strategic success in the impact of virtual influencer marketing on brand image and purchase intention among Generation Z within Management and Information Systems. The findings demonstrate that dynamic capabilities play a crucial mediating role in translating technological and organizational antecedents into improved decision effectiveness. However, the study is subject to several limitations, particularly its cross-sectional design, which restricts long-term causal inference, and its sample of 185 respondents, which may limit the generalizability of the findings across different organizational contexts. Future research should therefore employ multi-year longitudinal designs and replicate the proposed framework across diverse national and organizational settings, while also examining organizational culture and leadership styles as potential moderating factors.

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## **CONFLICT OF INTEREST**

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## **AUTHOR CONTRIBUTIONS**

If applicable, the Author's Contribution Statement.

## **GENERATIVE AI STATEMENT**

The author(s) declared that generative AI was used in the creation of this manuscript. The author(s) wish to acknowledge the use of Generative AI for refining the language clarity and grammatical structure of this manuscript. This application was conducted in adherence to established ethical guidelines regarding the use and disclosure of generative AI in scholarly research. Each author has provided substantial intellectual contributions to the work, which has been rigorously vetted for accuracy, and the author(s) assume full responsibility for the integrity and final content of the manuscript.

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