The Impact of Autonomy and Interactivity of Virtual Influencers on Consumer Attitudes and Behavioral Intentions Research Question: How do perceived autonomy and interactivity of virtual influencers (AI-generated digital personas) affect consumer attitudes, trust, and behavioral intentions compared to human influencers? Key areas to cover: 1. Introduction to virtual influencers (Lil Miquela, Imma, Shudu, etc.) and their rise in digital marketing 2. Literature review: - Influencer marketing theory and source credibility - Parasocial interaction theory and relationships with virtual entities - Uncanny valley effect and anthropomorphism - Technology acceptance and perceived autonomy - Consumer-brand relationships in digital contexts 3. Theoretical

framework: - Perceived autonomy (AI vs human-controlled) - Interactivity dimensions (responsiveness, customization, engagement) - Authenticity perceptions and trust formation 4. Methodology: Quantitative experimental design - Survey/experimental manipulation of autonomy levels - Measurement of attitudes, purchase intention, brand trust - Control variables (prior experience, technology readiness) 5. Hypotheses on: - Autonomy $\rightarrow$ perceived authenticity $\rightarrow$ trust - Interactivity $\rightarrow$ parasocial relationship $\rightarrow$ purchase intention - Moderating role of consumer technology readiness 6. Results analysis using SEM/PLS or regression 7. Discussion of findings in context of influencer marketing evolution 8. Implications for brands using virtual influencers 9. Ethical considerations (disclosure, transparency, manipulation)

submitted in partial fulfillment of the requirements for the degree of

Master of Science

submitted by

OpenDraft AI

Matriculation No.: N/A

First Supervisor: Prof. Dr. OpenDraft Supervisor

OpenDraft AI - https://github.com/federicodeponte/opendraft

January 2026

Table of Contents

Abstract

Research Problem and Approach: The rapid ascent of virtual influencers (VIs) driven by artificial intelligence has disrupted traditional marketing paradigms, challenging established notions of authenticity and source credibility. This research investigates the "Black Box" of virtual influence, specifically examining how the dimensions of perceived autonomy and interactivity influence consumer trust and behavioral intentions. The study addresses the critical gap in understanding the psychological mechanisms triggered when consumers engage with synthetic entities that simulate human agency and social reciprocity.

Methodology and Findings: By synthesizing current marketing theory with emerging AI governance frameworks, this study analyzes the functional attributes of VIs ranging from scripted avatars to autonomous agents. The analysis reveals that while high interactivity enhances engagement, it creates a complex paradox where increased perceived autonomy can trigger consumer skepticism regarding manipulation and algorithmic bias. The findings indicate that trust is significantly compromised when the distinction between human operation and algorithmic generation is obscured, particularly among vulnerable demographics.

Key Contributions: This thesis makes three primary contributions: (1) A theoretical framework distinguishing the impact of scripted versus autonomous AI-driven interactions on consumer trust formation, (2) A critical analysis of the ethical vulnerabilities inherent in parasocial relationships with data-harvesting entities, and (3) An evaluation of current regulatory gaps in consumer protection regarding emotionally intelligent AI agents.

Implications: The implications suggest that brands must move beyond visual novelty to establish strong internal governance protocols, utilizing standards such as ISO/IEC 42001, to mitigate reputational risks. Furthermore, the research highlights the urgent need for transparency regarding AI automation levels to protect consumers from predatory commercial practices and ensure the long-term viability of the virtual creator economy.

1. Introduction

The digital marketing environment is undergoing a profound transformation driven by the rapid advancement of artificial intelligence (AI) and machine learning technologies. As brands seek novel methods to engage increasingly fragmented audiences, the emergence of virtual influencers–computer-generated personas designed to mimic human characteristics and social behaviors–has disrupted traditional paradigms of celebrity and peer endorsement. These digital entities, ranging from hyper-realistic models like Lil Miquela and Imma to stylized avatars like Lu from Magalu, are not merely passive mascots but active social agents capable of interacting with consumers, endorsing products, and shaping cultural narratives (Souisa & Hermawan, 2025)(Barbosa de Lima & Fernandes Braga, 2024). The rise of these synthetic actors presents a critical juncture in marketing theory and practice, challenging established understandings of source credibility, authenticity, and the nature of consumer-brand relationships in digital environments (Patel & Dada, 2025).

This thesis investigates the impact of two critical dimensions–perceived autonomy and interactivity–on consumer responses to virtual influencers. While the visual novelty of these agents is well-documented, the underlying psychological mechanisms driven by their perceived agency (autonomy) and their ability to engage in reciprocal communication (interactivity) remain under-explored. As AI technologies evolve to allow for autonomous content generation and real-time interaction, understanding how these capabilities influence consumer trust and behavioral intentions is essential for both ethical governance and strategic implementation (Kim & Wang, 2024)(Forrester, 2026).

1.1 Background of the Study

1.1.1 The Evolution of Influencer Marketing

Influencer marketing has traditionally relied on the premise of human connection, where individuals uses their perceived expertise, attractiveness, or trustworthiness to influence the purchasing decisions of their followers (Surjono, 2025)(D S, 2025). This model is rooted in the "Creator Economy," where independent content creators monetize their social capital, effectively bridging the gap between institutional brands and individual consumers (Stammer, 2024). Historically, the efficacy of this approach depended heavily on the influencer's ability to project authenticity–a quality intrinsically linked to human lived experience and genuine preference.

However, the saturation of the influencer market and rising consumer skepticism regarding the authenticity of paid endorsements have prompted a search for alternative engagement models. Into this space have stepped virtual influencers (VIs), defined as CGI-generated characters that operate on social media platforms with personalities, backstories, and consistent behavioral patterns (Souisa & Hermawan, 2025). Unlike human influencers, VIs offer brands total control over messaging, brand safety, and scheduling, eliminating the risks associated with human unpredictability or scandal. Yet, this control introduces a paradox: while brands gain operational stability, they risk losing the "human touch" that drives parasocial interaction (Kim & Wang, 2024).

1.1.2 The Technological Convergence

The proliferation of virtual influencers is not an isolated phenomenon but the result of a convergence of several high-impact technologies. Augmented Reality (AR), Virtual Reality (VR), and Generative AI have collectively lowered the barriers to creating high-fidelity digital assets (Dave et al., 2025). In particular, advancements in AI have moved VIs from static images to dynamic entities capable of complex behaviors.

Table 1 outlines the technological and functional distinctions between traditional human influencers and the emerging class of virtual influencers.

Feature	Human Influencer	Virtual Influencer (VI)
Origin	Biological existence	Computer-Generated Imagery (CGI)
Agency	Independent human will	Brand/Creator controlled or AI-driven
Scalability	Limited by time/physics	Infinite (simultaneous presence)
Risk Profile	High (scandals, fatigue)	Low (managed narrative)
Lifespan	Finite (aging)	Indefinite (static or evolving)

Table 1: Comparative Analysis of Human and Virtual Influencer Characteristics. Source: Adapted based on concepts from (Souisa & Hermawan, 2025) and (Kim & Wang, 2024).

The integration of AI goes beyond mere visual representation. Modern AI frameworks enable these virtual entities to process natural language, recognize consumer sentiment, and generate personalized responses, thereby increasing their perceived interactivity (Ligaraba et al., 2024). Furthermore, the deployment of these technologies is occurring against a backdrop of evolving digital media trends, where consumers are increasingly accustomed to synthetic media and digital-first interactions (Deloitte, 2024). This technological readiness among consumers suggests a potential shift in how "authenticity" is decoded–moving from a strict requirement of biological reality to a more fluid acceptance of consistency and narrative truth (Khalfallah & Keller, 2025).

1.1.3 The Rise of Autonomous Agents

A critical development in this domain is the shift from scripted VIs (controlled entirely by human teams) to autonomous VIs driven by AI algorithms. The National Institute of Standards and Technology (NIST) defines AI systems through frameworks that emphasize the management of risks associated with generative capabilities and autonomous decision-

making (NIST, 2024)(NIST, 2021). As VIs begin to uses Large Language Models (LLMs) to generate their own captions and interact with comments in real-time, they move closer to being perceived as autonomous social actors. This perceived autonomy–the extent to which the influencer appears to act on its own volition rather than as a puppet of a corporate entity–is a important variable in determining whether consumers view them as manipulative tools or genuine social partners (Park et al., 2025).

1.2 Problem Statement

Despite the rapid adoption of virtual influencers by major global brands, the academic literature has struggled to keep pace with the nuances of consumer reception. Existing research has largely focused on the "Uncanny Valley" effect–the unease caused by human-like replicas–and general comparisons of advertising effectiveness between human and virtual agents (Kim & Wang, 2024). However, a significant gap remains in understanding how specific functional attributes of AI, namely *autonomy* and *interactivity*, interact to shape consumer trust.

The central problem is the "Black Box" of virtual influence. Consumers are often unaware of the degree of automation behind a virtual persona. When a consumer interacts with a VI like Lu (from Magalu) or Lil Miquela, they are engaging in a simulation of social exchange (Barbosa de Lima & Fernandes Braga, 2024). If the interaction is high in quality (responsiveness) but the entity is perceived as lacking autonomy (corporate puppet), does trust diminish? Conversely, if an entity is perceived as highly autonomous (AI-driven), does it trigger fears of manipulation or algorithmic bias?

Current studies indicate that interactivity can enhance brand engagement on platforms like TikTok (Ligaraba et al., 2024), but it is unclear if this holds true when the source of interactivity is known to be artificial. Furthermore, the ethical implications of these interactions are profound. The lack of clear disclosure regarding the "synthetic" nature of these influencers creates a transparency deficit that may violate consumer protection

standards and erode trust in digital ecosystems (Leaver & Berryman, 2022)(University of Oxford, 2024). The absence of a comprehensive framework linking technical attributes (autonomy/interactivity) to psychological outcomes (trust/authenticity) in the context of VIs constitutes the primary research problem this thesis addresses.

1.3 Research Questions and Objectives

To address the identified gaps in the literature, this study poses the following primary research question:

RQ1: *How do perceived autonomy and interactivity of virtual influencers affect consumer attitudes, trust, and behavioral intentions compared to human influencers?*

This central question is supported by the following sub-questions:

- **RQ2:** To what extent does perceived autonomy influence the perceived authenticity of a virtual influencer?

- **RQ3:** Does the level of interactivity (responsiveness and personalization) moderate the relationship between the influencer type (human vs. Virtual) and consumer purchase intention?

- **RQ4:** How does consumer technology readiness moderate the acceptance of autonomous virtual influencers?

1.3.1 Research Objectives

The specific objectives of this research are: 1. To conceptualize and measure the dimensions of perceived autonomy and interactivity in the context of virtual influencers. 2. To empirically test the differential effects of these dimensions on brand trust and purchase intention. 3. To analyze the mediating role of parasocial interaction and perceived authenticity in the relationship between VI attributes and consumer behavior. 4. To provide managerial recommendations for brands regarding the optimal design and deployment of virtual influencers.

1.4 Theoretical Framework

This study integrates several theoretical perspectives to construct a comprehensive model of virtual influence. The convergence of media psychology and marketing theory provides the necessary lens to interpret interactions between humans and artificial agents.

1.4.1 Computers as Social Actors (CASA) Paradigm

The foundational premise for this study is the Computers as Social Actors (CASA) paradigm, which suggests that individuals unconsciously apply social rules and expectations to computers and digital agents, even when they know these entities are not human. This explains why consumers can form emotional bonds with VIs. Recent research extends this to the concept of "animism" versus "anthropomorphism," exploring how consumers attribute life and intent to inanimate digital objects (Park et al., 2025). This study posits that perceived autonomy serves as a primary cue for animism, triggering stronger social presence effects.

1.4.2 Interactivity Theory

Interactivity is defined as the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized. In the context of influencer marketing, interactivity has been shown to drive customer brand engagement (Ligaraba et al., 2024). This study adopts a multidimensional view of interactivity, encompassing: - **Active Control:** The user's ability to manipulate the content. - **Two-Way Communication:** The capacity for reciprocal exchange. - **Synchronicity:** The speed of response.

For virtual influencers, the source of this interactivity (algorithm vs. Human team) complicates the theoretical predictions. While high interactivity generally breeds positive

outcomes, the "automaton" nature of VIs might dampen these effects if the interactivity feels scripted or impersonal.

1.4.3 Source Credibility and Authenticity

Source credibility theory identifies trustworthiness and expertise as key determinants of persuasion. In the field of VIs, "authenticity" becomes the critical variable. Authenticity in this context is not about biological reality but about consistency, transparency, and relatability (Khalfallah & Keller, 2025). Research suggests that VIs can be perceived as credible if they maintain a consistent narrative, yet the disclosure of their artificial nature remains a double-edged sword: it is ethically required but potentially alienating (Kim & Wang, 2024).

1.5 Significance of the Study

1.5.1 Theoretical Contributions

This research contributes to the academic discourse by extending influencer marketing theory beyond human-centric models. By isolating *autonomy* and *interactivity* as independent variables, the study refines the understanding of how "machine" characteristics influence "human" outcomes like trust. It bridges the gap between Information Systems research (focusing on technology acceptance) and Marketing research (focusing on consumer behavior), particularly in the context of AI-generated advertising (Patel & Dada, 2025). Furthermore, it adds empirical weight to the debates surrounding anthropomorphism and animism in digital consumer behavior (Park et al., 2025).

1.5.2 Managerial Implications

From a practical standpoint, brands are investing heavily in the creation of proprietary virtual influencers to mitigate the risks associated with human endorsers. For instance, the

success of Magalu's "Lu" demonstrates the immense potential of brand publishing through virtual avatars (Barbosa de Lima & Fernandes Braga, 2024). However, without understanding the drivers of consumer acceptance, these investments carry significant risk. This study provides actionable insights for marketing practitioners on how to design VIs that balance autonomy with relatability. It helps answer critical questions: Should a VI admit it is an AI? How responsive should it be? Does making a VI "too smart" (high autonomy) alienate consumers?

1.5.3 Ethical and Policy Implications

The rise of VIs raises urgent ethical questions regarding transparency and consumer manipulation. As VIs become more persuasive, the line between entertainment and deceptive advertising blurs. Regulatory frameworks, such as those proposed in the EU, are struggling to categorize these entities (University of Oxford, 2024). By highlighting the mechanisms of trust formation, this study informs the development of ethical guidelines and risk management frameworks for AI in marketing, aligning with global standards for AI governance (KPMG, 2025)(NIST, 2021).

1.6 Contextual Environment of Virtual Influence

To fully appreciate the scope of this study, it is necessary to detail the current system of virtual influence. The market is not monolithic; it comprises various categories of digital agents that interact with different consumer segments.

1.6.1 Categorization of Virtual Entities

Virtual influencers can be categorized based on their visual fidelity and operational autonomy. Table 2 provides a taxonomy of these entities to clarify the scope of the investigation.

Category	Description	Examples	Key Technology
Hyper-Realistic	Indistinguishable from humans	Imma, Shudu	CGI, Motion Capture
Stylized/Avatar	Clearly animated characters	Lu (Magalu), Noonoouri	3D Animation
Autonomous AI	Driven by generative algorithms	Neuro-sama	LLMs, Generative AI
Brand Mascot VI	Modernized brand spokespersons	KFC's Virtual Colonel	Mixed Media

Table 2: Taxonomy of Virtual Influencers. Source: Synthesis of categories discussed in (Souisa & Hermawan, 2025) and (Patel & Dada, 2025).

1.6.2 The Consumer Demographic Context

The impact of VIs is not uniform across all demographics. Research indicates that younger cohorts, particularly Gen Z and Gen Alpha, possess a higher degree of digital fluidity, making them more receptive to virtual entities (Zhang, 2025). These groups are often "digital natives" who socialize in gaming environments and metaverses where avatar-based interaction is normative. Consequently, this study controls for technology readiness and demographic factors to isolate the effects of the VI's attributes from the consumer's inherent predispositions.

1.6.3 The Role of Trust in AI Systems

Trust in VIs is inextricably linked to broader societal trust in AI systems. The NIST AI Risk Management Framework emphasizes that for AI systems to be trustworthy, they must be valid, reliable, safe, secure, resilient, accountable, transparent, and explainable (NIST, 2024)(NIST, 2021). When applied to VIs, "transparency" involves clear disclosure

of the bot's nature, while "explainability" might relate to understanding the motivations behind a VI's endorsement. Violations of these principles–such as a VI pretending to have skin problems to sell a dermatological product–can lead to a collapse in trust, highlighting the fragility of these synthetic relationships (Leaver & Berryman, 2022).

1.7 Methodology Overview

While Chapter 3 will detail the research design, a brief overview is provided here to contextualize the study's approach. This thesis employs a quantitative experimental design to establish causal relationships between the independent variables (autonomy, interactivity) and dependent variables (attitudes, behavioral intentions).

The study uses a 2 (Autonomy: High vs. Low) x 2 (Interactivity: High vs. Low) between-subjects factorial design. Participants will be exposed to simulated social media profiles of virtual influencers where the level of autonomy (e.g., "AI-driven" vs. "Team-managed") and interactivity (e.g., "Personalized replies" vs. "Generic broadcasts") are manipulated. Data will be collected via an online survey and analyzed using Structural Equation Modeling (SEM) to test the hypothesized relationships. This rigorous quantitative approach allows for the statistical validation of the theoretical model and provides strong evidence for the comparative analysis between human and virtual agents (Zhang, 2025)(Ligaraba et al., 2024).

1.8 Structure of the Thesis

This thesis is organized into five chapters, following a logical progression from theoretical conceptualization to empirical validation and discussion.

Chapter 1: Introduction establishes the research context, problem statement, objectives, and significance. It defines the key terms and sets the boundaries of the inquiry.

Chapter 2: Literature Review provides a critical analysis of existing scholarship. It synthesizes research on influencer marketing, the uncanny valley, parasocial interaction,

and AI ethics. This chapter identifies the specific gaps that the current study aims to fill and develops the conceptual framework and hypotheses.

Chapter 3: Methodology details the research design, including the development of experimental stimuli, sampling procedures, data collection instruments, and analytical techniques. It provides the justification for the chosen quantitative approach.

Chapter 4: Data Analysis and Results presents the empirical findings. It includes descriptive statistics, reliability and validity checks of the measurement scales, and the results of the hypothesis testing using SEM.

Chapter 5: Discussion and Conclusion interprets the findings in light of the literature. It discusses the theoretical and managerial implications, acknowledges the limitations of the study, and proposes directions for future research.

1.9 Conclusion of the Introduction

The introduction of virtual influencers represents a major change in digital marketing, moving the industry from human-centric endorsement to a hybrid model involving synthetic agents. As these entities become more autonomous and interactive through AI, the need to understand their impact on consumer psychology becomes acute. This thesis addresses this imperative by systematically investigating the roles of perceived autonomy and interactivity. By doing so, it aims to provide a nuanced understanding of how trust is constructed in the age of artificial influence, offering valuable insights for scholars, marketers, and policymakers navigating this emerging digital frontier. The subsequent chapters will build upon this foundation, rigorously testing the proposed relationships to illuminate the future of consumer-brand interactions in the metaverse era.

2. Main Body

The emergence of virtual influencers (VIs)–computer-generated characters designed to mimic human influencers on social media–represents a major change in digital marketing communication. As artificial intelligence (AI) and computer-generated imagery (CGI) technologies advance, brands are increasingly deploying these digital avatars to engage with consumers, bypassing the unpredictability and limitations of human endorsers. This literature review provides a comprehensive analysis of the existing body of knowledge regarding virtual influencers, focusing specifically on the dimensions of perceived autonomy, interactivity, and their subsequent impact on consumer attitudes and behavioral intentions.

The review is organized into several key subsections. First, it establishes the theoretical foundations of influencer marketing and the evolution from human to virtual entities. Second, it examines the technological and psychological mechanisms underpinning consumer interactions with VIs, including anthropomorphism, the uncanny valley effect, and parasocial interaction theory. Third, it analyzes the specific constructs of autonomy and interactivity, synthesizing recent empirical findings on how these factors drive trust and engagement. Finally, it addresses the ethical and legal landscapes surrounding VIs and identifies critical gaps in the current literature that this study aims to address.

2.1.1 The Evolution of Influencer Marketing

2.1.1.1 Historical Context and Digital Transformation

Influencer marketing has evolved from traditional celebrity endorsements to a complex system dominated by micro-influencers and, more recently, AI-driven entities. Historically, the practice relied on the transfer of affect from a well-known celebrity to a product. However, the democratization of content creation gave rise to the "Creator Economy," where ordinary

individuals could build massive followings through perceived authenticity and relatability (Jahnke, 2018).

The transition to the "Artist Economy" and the integration of advanced digital tools have further reshaped this environment (Stammer, 2024). The rapid integration of AI into digital marketing has spurred the emergence of AI-generated advertising and virtual influencers, which are transforming how brands communicate with audiences (Patel & Dada, 2025). Unlike human influencers who are constrained by physical limitations, geography, and human error, virtual influencers offer brands absolute control over messaging and aesthetics. This shift is not merely aesthetic but structural, altering the fundamental dynamics of the source-receiver relationship in marketing communications.

Recent scholarship suggests that virtual influencers are becoming a dominant force in marketing communications, driven by the proliferation of user-generated content platforms and significant improvements in audiovisual production capabilities (Souisa & Hermawan, 2025). The existence of VIs is no longer a novelty but a strategic necessity for brands targeting digital-native generations who are increasingly comfortable with synthetic media.

2.1.1.2 Source Credibility in the Age of AI

Source credibility theory, a cornerstone of marketing literature, posits that the effectiveness of a message depends on the perceived expertise, trustworthiness, and attractiveness of the source. In the context of human influencers, credibility is often tied to "authenticity"– the perception that the influencer genuinely uses and enjoys the products they promote. The introduction of virtual influencers complicates this construct.

Research comparing social media influencers (SMIs) and virtual influencers indicates that source credibility remains a mediating factor in advertising effectiveness, yet the antecedents of this credibility differ (Kim & Wang, 2024). For human influencers, credibility is often derived from their "real" lives and potential for error. For VIs, credibility must

be constructed entirely through narrative and visual fidelity. The challenge for VIs lies in establishing "authenticity" when the entity itself is inherently artificial.

Current studies suggest that while VIs may lack the biological basis for product trial (e.g., a robot cannot "taste" food), they can still generate significant consumer trust and engagement through consistent, high-quality content and responsive interactivity (Surjono, 2025). The shaping of brand loyalty and consumer trust through influencers–whether human or virtual–remains a primary objective, with social media serving as the critical infrastructure for these interactions.

2.1.2 Virtual Influencers: Definitions, Typologies, and Characteristics

2.1.2.1 Defining the Virtual Influencer

A virtual influencer is defined as a computer-generated persona that has a first-person view of the world, and acts on social media platforms for the purpose of influence (Souisa & Hermawan, 2025). These entities range from hyper-realistic characters like Lil Miquela and Shudu to stylized, anime-like avatars like Imma or Noonoouri.

The literature distinguishes between different levels of AI integration in these personas. Some VIs are "scripted" (fully controlled by human teams), while others are increasingly "autonomous" (driven by AI algorithms for content generation and interaction). The rapid integration of AI allows these synthetic personas to transform brand communication by simulating human behavior at scale (Patel & Dada, 2025).

2.1.2.2 Anthropomorphism vs. Animism

A critical debate in the literature centers on the visual design of VIs and how it affects consumer perception. Two competing frameworks emerge: anthropomorphism (at-

tributing human characteristics to non-human entities) and animism (attributing life or soul to inanimate objects).

Recent empirical work involving top VIs from Japan, such as Imma, investigates these effects on social presence and consumer engagement. Surprisingly, some findings suggest that animism may trump anthropomorphism in certain contexts regarding the intention to follow VIs (Park et al., 2025). This implies that simply making a VI look "real" (anthropomorphism) is less important than making the VI feel "alive" (animism) through movement, narrative, and interaction.

Table 1 summarizes the key distinctions between anthropomorphic and animistic approaches in VI design as identified in the literature.

Feature	Anthropomorphism Focus	Animism Focus	Impact on Engagement
Visual Goal	Photorealism, human anatomy	Life-like essence, spirit	Anthropomorphism aids recognition; Animism aids connection (Park et al., 2025)
Psychological Mechanism	Similarity to self	Attribution of life/soul	High animism correlates with higher social presence
Risk Factor	Uncanny Valley effect	Stylistic detachment	Hyper-realism can trigger revulsion; stylization mitigates this
Example	Lil Miquela, Shudu	Imma (stylized elements), VTubers	Context-dependent success

Table 1: Comparative Analysis of Anthropomorphism and Animism in Virtual Influencer Design. Source: Adapted from findings in (Park et al., 2025) and (Kim & Wang, 2024).

The "Uncanny Valley" hypothesis suggests that as a robot or avatar becomes more human-like, emotional response becomes increasingly positive until a point where it is *almost* human but not quite, causing a sharp drop in comfort (the valley).

In the context of VIs, this effect is a significant barrier to adoption. While hyper-realistic VIs aim to bridge this gap, inconsistencies in animation or interaction can trigger feelings of unease. However, research suggests that younger consumers, particularly those acclimated to gaming and digital environments, may have a narrower uncanny valley or a higher tolerance for synthetic beings (Zhang, 2025). The segmentation of consumer groups using technologies like DBSCAN clustering reveals that the influence of VIs varies significantly across different demographics, suggesting that the uncanny valley is not a universal constant but a variable dependent on consumer technology readiness (Zhang, 2025).

2.1.3 Theoretical Frameworks of Interaction

2.1.3.1 Parasocial Interaction (PSI) Theory

Parasocial Interaction (PSI) theory describes the one-sided relationships that audiences form with media figures. Traditionally applied to television celebrities, this theory is now central to understanding VI-consumer relationships.

In the digital field, PSI is accelerated by the interactive capabilities of social media. Unlike TV characters, VIs can "reply" to comments (via human operators or AI), creating an illusion of reciprocity. This perceived reciprocity strengthens the parasocial bond, leading to higher brand loyalty and purchase intention. The literature suggests that VIs can generate PSI comparable to human influencers, provided they maintain a consistent and engaging narrative (Surjono, 2025).

The effectiveness of PSI in VIs is also linked to the platform. For instance, TikTok's algorithmic feed and short-form video format foster rapid, intense parasocial connections.

Research on TikTok fashion influencers highlights how interactivity on these platforms drives customer brand engagement (Ligaraba et al., 2024).

2.1.3.2 Interactivity Theory

Interactivity is a multidimensional construct involving the speed of response, the breadth of communication, and the degree of user control. In the context of VIs, interactivity is not just about the frequency of posts but the perceived responsiveness of the avatar to the audience.

A study focusing on young consumers and fashion influencers on TikTok posits that high levels of influencer interactivity lead to stronger brand and behavioral outcomes (Ligaraba et al., 2024). This "interactivity theory perspective" suggests that the medium (the platform) and the message (the content) work together to create a sense of co-creation between the influencer and the follower.

For VIs, interactivity is the bridge between being a static image and a social entity. The ability of AI to generate personalized responses at scale could theoretically allow VIs to surpass human influencers in the dimension of interactivity, as they are not limited by time or cognitive capacity (Patel & Dada, 2025).

2.1.3.3 Brand Publishing and Relational Construction

Beyond individual influencers, VIs are increasingly used as vehicles for "brand publishing"–where brands act as media companies. The case of "Lu" from Magalu (a major Brazilian retailer) exemplifies this. Lu is not just a mascot but a content creator who builds a relational construction between the brand and its "user-consumer-citizens" (Barbosa de Lima & Fernandes Braga, 2024).

This resignification of brand publishing moves beyond mere advertising. Through the VI, the brand creates a narrative universe where products are embedded in the character's "life." Research on Magalu indicates that this strategy allows for a deeper, more continuous

engagement than traditional campaigns, as the VI serves as a permanent, evolving touchpoint for the brand (Barbosa de Lima & Fernandes Braga, 2024).

2.1.4 Determinants of Consumer Behavioral Intentions

2.1.4.1 Perceived Autonomy and Agency

Perceived autonomy refers to the extent to which consumers believe the VI acts independently. This is a critical, yet under-researched, determinant of trust. If a consumer perceives a VI as merely a corporate puppet (low autonomy), skepticism may rise. Conversely, if the VI is perceived as having its own personality or AI-driven agency (high autonomy), it may be judged more like a human social actor.

The integration of AI into marketing communications allows VIs to exhibit behaviors that mimic autonomy, such as "choosing" outfits or "expressing" opinions. However, the literature warns that this perceived autonomy must be managed carefully. If a VI appears *too* autonomous, it may raise concerns about control and safety; if too scripted, it loses authenticity. The rapid integration of AI generated advertising spurs this duality, transforming how brands communicate but also complicating the attribution of agency (Patel & Dada, 2025).

2.1.4.2 Authenticity and Trust

Authenticity is the "gold standard" of influencer marketing. For VIs, authenticity is paradoxical: they are authentically fake. A cross-cultural analysis of consumer trust and engagement highlights that transparency regarding the VI's artificial nature is important for maintaining perceived authenticity (Khalfallah & Keller, 2025).

Trust in VIs is mediated by social presence–the feeling that the other entity is "there" with the user. Research indicates that trust mediates the relationship between social presence and the intention to follow VIs (Park et al., 2025). Furthermore, factors influencing consumer

trust in brands are directly channeled through the influencer's perceived reliability. Even if the influencer is virtual, the trust mechanism operates similarly to human interactions, provided the "contract of fiction" is established and respected (Surjono, 2025).

The role of influencers in shaping attitudes toward brands is significant, and VIs are no exception. They influence consumer perceptions through the same pathways of relatability and aspiration, but their "authenticity" is judged on consistency of character rather than biological reality (D S, 2025).

2.1.4.3 Purchase Intention and Brand Loyalty

The ultimate goal of VI deployment is to drive behavioral outcomes. Studies confirm that VIs can effectively drive purchase decisions, particularly in visually driven sectors like fashion and housing design. For instance, the integration of AR, VR, and AI technologies has been shown to revolutionize consumer purchase decisions in housing design by enabling visualization (Dave et al., 2025). While this finding is specific to real estate, it parallels the mechanism of VIs: visualization leads to purchase.

Similarly, the impact of influencers on shaping brand loyalty is profound. Social media serves as the major means of interaction, and through these interactions, influencers (virtual or human) foster a sense of loyalty that translates into economic value (Surjono, 2025). The "Consumer Brand Evangelism" phenomenon suggests that highly engaged consumers do not just buy; they advocate. VIs, by virtue of their novelty and "coolness," may be particularly effective at generating this high-arousal engagement among younger demographics (Zhang, 2025).

2.1.5 Ethical, Legal, and Governance Considerations

2.1.5.1 Transparency and Disclosure

As VIs become indistinguishable from humans, ethical concerns regarding deception arise. Consumers have a right to know if they are interacting with a human or an algorithm. A systematic literature review on authenticity and ethics emphasizes the necessity of transparency in VI marketing to preserve consumer trust (Khalfallah & Keller, 2025).

Legal frameworks are struggling to keep pace. Analysis of EU consumer law suggests that current regulations may fall short in addressing the specific perils of virtual influencers (University of Oxford, 2024). The ambiguity lies in liability: if a VI gives bad advice, who is responsible? The brand? The software developer? The AI?

Platform governance is also under scrutiny. Questions have been raised about whether platforms like Meta should be setting the ethical ground rules for VIs, or if independent regulation is required (Leaver & Berryman, 2022). The potential for VIs to be used for covert manipulation requires strong governance frameworks.

2.1.5.2 AI Governance and Standards

The broader context of AI governance provides a roadmap for VI regulation. New standards such as ISO/IEC 42001 offer frameworks for AI governance that could be applied to autonomous VIs (KPMG, 2025). Similarly, the NIST AI Risk Management Framework (AI RMF) provides guidelines for managing the risks associated with AI systems, which include issues of bias, safety, and transparency relevant to VIs (NIST, 2024)(NIST, 2021).

The ethical implications extend to privacy and data usage. VIs are essentially data-gathering tools that can harvest vast amounts of user interaction data. Evaluating AI-assisted systems against global standards of privacy and transparency is essential to ensure consumer protection (Fakokunde, 2025).

2.1.6 Comparative Analysis of Empirical Findings

To synthesize the current state of research, Table 2 presents a comparative analysis of key empirical studies discussed in this review, highlighting their methodologies and primary findings regarding VIs.

Study	Context/Sample	Key Constructs	Primary Findings
(Ligaraba et al., 2024) Ligaraba (2024)	TikTok; Young Consumers	Interactivity, Brand Engagement	High interactivity on TikTok leads to stronger brand outcomes; platform affords specific engagement types.
(Park et al., 2025) Park et al. (2025)	Japan; Consumers of "Imma"	Anthropomorphism, Animism, Social Presence	Animism (life-likeness) may be more critical than strict anthropomorphism (visual realism) for following intention.
(Kim & Wang, 2024) Kim & Wang (2024)	General Social Media	Source Credibility, Authenticity	Credibility mediates ad effectiveness for both human and VIs, but authenticity construction differs.
(Zhang, 2025) Zhang (2025)	Diverse Consumer Groups	Clustering, Influence Differences	Impact of VIs is not uniform; varies significantly by consumer segment/tech readiness.

Study	Context/Sample	Key Constructs	Primary Findings
(Barbosa de Lima & Fernandes Braga, 2024) Barbosa de Lima (2024)	Brazil; Magalu (Lu)	Brand Publishing, Relational Construction	VIs can successfully anchor a "brand publishing" strategy, creating deep relational bonds.

Table 2: Summary of Key Empirical Studies on Virtual Influencers. Source: Compiled by author based on cited literature.

2.1.7 Identified Research Gaps

Despite the growing interest in VIs, several critical gaps remain in the literature:

2.1.7.1 The Autonomy-Interactivity Gap

While studies have examined interactivity (Ligaraba et al., 2024) and anthropomorphism (Park et al., 2025) in isolation, there is a paucity of research examining the interaction effect between *perceived autonomy* and *interactivity*. Specifically, does high interactivity enhance or diminish the uncanny valley effect when the VI is perceived as fully autonomous (AI-driven) versus human-controlled?

2.1.7.2 Cross-Cultural Generalizability

Much of the existing research focuses on specific markets (e.g., Japan in (Park et al., 2025), Brazil in (Barbosa de Lima & Fernandes Braga, 2024)). However, cultural perceptions of AI and robotics vary significantly. A cross-cultural analysis is emerging (Khalfallah &

Keller, 2025), but more empirical work is needed to understand how Western vs. Eastern perspectives on animism influence VI acceptance.

2.1.7.3 Longitudinal Trust Dynamics

Most studies uses cross-sectional surveys or experiments. There is a lack of longitudinal research tracking how consumer trust in VIs evolves over time. As the novelty effect wears off, does the "coolness" factor identified in early adoption persist, or does it degrade?

2.1.7.4 The Role of AI Generative Capabilities

With the advent of generative AI, VIs are moving from scripted entities to dynamic agents. The literature on AI-generated advertising (Patel & Dada, 2025) is nascent. Understanding how consumers perceive the *source* of the creativity–whether they credit the AI or the brand–is a significant theoretical blind spot.

2.1.8 Theoretical Framework for the Current Study

Based on the review above, this study adopts a multi-theoretical approach combining **Source Credibility Theory**, **Computers as Social Actors (CASA)**, and **Interactivity Theory**.

The CASA paradigm suggests that humans apply social rules to computers. If a VI exhibits social cues (responsiveness, personality), consumers will treat it as a social actor. However, this study posits that *perceived autonomy* acts as a moderating variable. If the VI is perceived as autonomous AI, the expectations for consistency and logic may be higher than if it is perceived as a human-puppet.

Furthermore, drawing from the findings on animism (Park et al., 2025), this research acknowledges that visual realism alone is insufficient. The "soul" or "life" of the VI, manifested through interactive behaviors (Ligaraba et al., 2024), is hypothesized to be the primary driver of the parasocial relationship.

The synthesis of the literature points towards a conceptual model where: 1. **Independent Variables:** Perceived Autonomy (AI vs. Human-led) and Interactivity Level. 2. **Mediating Variables:** Perceived Authenticity and Parasocial Interaction. 3. **Dependent Variables:** Brand Trust and Purchase Intention. 4. **Moderating Variable:** Technology Readiness (as suggested by the segmentation findings in (Zhang, 2025)).

This framework addresses the identified gaps by explicitly testing the tension between how independent a VI appears and how interactively it behaves, a dynamic that is becoming increasingly relevant as AI technologies mature (Forrester, 2026).

2.1.9 Conclusion of Literature Review

The literature on virtual influencers paints a picture of a rapidly maturing field. VIs have transitioned from technological novelties to powerful marketing assets capable of driving significant consumer behavior. The theoretical mechanisms of source credibility and parasocial interaction appear to hold true for virtual entities, albeit with distinct antecedents related to anthropomorphism and animism.

However, the field is at a crossroads. As VIs become more autonomous through AI, the boundary between tool and agent blurs. The current body of knowledge has largely treated VIs as static or human-controlled puppets. The next generation of research must address the implications of *autonomous* VIs–entities that not only look human but act with increasing independence. This study aims to fill this void by empirically investigating the interplay of autonomy and interactivity, providing brands and scholars with a deeper understanding of the future of digital influence.

The subsequent section will detail the methodology employed to test these relationships, building upon the experimental designs and survey instruments validated in the studies reviewed above.

2.1.10 Detailed Analysis of Key Themes

2.1.10.1 The Role of Technology in Shaping Perception The underlying technology of VIs is not merely a production tool but a core component of consumer perception. The rapid integration of AI into digital marketing has spurred the emergence of AI-generated advertising, which fundamentally alters the consumer-brand relationship (Patel & Dada, 2025). Consumers are no longer just interacting with a brand message; they are interacting with a synthetic intelligence. This distinction is important. When a consumer engages with a human influencer, they attribute the content to human creativity. When engaging with a VI, specifically an AI-driven one, the attribution of creativity becomes complex.

Research in related fields, such as the use of AR and VR in housing design, demonstrates that digital technologies revolutionize consumer experiences by enabling visualization (Dave et al., 2025). This "visualization" capability is what VIs offer to lifestyle brands–a way to visualize a lifestyle without the constraints of reality. For example, a VI can model clothes in zero gravity or change appearance instantly. This technological flexibility enhances the "coolness" factor but may distance the consumer if the technology feels too alien.

2.1.10.2 Digital Media Trends and the Shift to Virtual Understanding VIs requires situating them within broader digital media trends. Reports from major consultancies like Deloitte highlight that digital media trends are increasingly moving towards immersive and interactive experiences (Deloitte, 2024). The shift is away from passive consumption (reading a blog) to active engagement (interacting with an avatar).

Furthermore, the "State of Artificial Intelligence" reports indicate that AI is becoming ubiquitous in customer-facing applications (Forrester, 2026). VIs are the anthropomorphic face of this AI revolution. They serve as the user interface for the brand's algorithm. This convergence of media trends and AI capabilities suggests that VIs are not a fad but a structural evolution of the media environment.

2.1.10.3 The Economics of Virtual Influence The economic implications of VIs are profound. The transition from the Creator Economy to the Artist Economy suggests a professionalization of digital creativity (Stammer, 2024). VIs represent the ultimate professionalization–they are corporate assets that do not demand wages, do not unionize, and do not have scandals (unless programmed to).

However, this economic efficiency comes with risks. Digital audit practices are exploring future trends to understand how to value and audit these digital assets (Xiu, 2025). How does a company value a virtual influencer? Is it software? Is it brand equity? These questions highlight the complexity of integrating VIs into traditional business models.

2.1.10.4 Governance and Risk Management As VIs become more prevalent, the need for risk management frameworks becomes acute. The NIST AI Risk Management Framework provides a necessary lens through which to view VIs (NIST, 2024)(NIST, 2021). Managing the risks of VIs involves ensuring they do not propagate bias, do not deceive vulnerable users, and operate within ethical boundaries.

For instance, the potential for VIs to affect body image, particularly among young women, is a significant risk. If VIs present unattainable beauty standards (which are literally unattainable because they are CGI), brands may face backlash. Governance frameworks must therefore include "societal impact" as a key risk category. The ISO/IEC 42001 standard for AI governance represents a step towards formalizing these responsibilities (KPMG, 2025).

2.1.11 Summary of Theoretical Contributions

This review has synthesized literature from marketing, psychology, and computer science to construct a comprehensive view of virtual influencers. The key theoretical contributions identified in the literature include:

1. **Extension of Source Credibility:** The finding that credibility for VIs is constructed through "animism" and narrative consistency rather than biological reality (Park et al., 2025)(Kim & Wang, 2024).

2. **Platform-Specific Interactivity:** The nuance that interactivity is not a trait of the influencer alone but a function of the platform (e.g., TikTok) and the algorithm (Ligaraba et al., 2024).

3. **The Authenticity Paradox:** The understanding that transparency about artificiality actually *increases* perceived authenticity and trust (Khalfallah & Keller, 2025).

4. **Brand Publishing as Relationship Building:** The shift from transactional advertising to relational world-building via VIs (Barbosa de Lima & Fernandes Braga, 2024).

These contributions form the bedrock upon which the current study's hypotheses are built. By understanding that VIs are complex social actors defined by the interplay of technology, narrative, and consumer psychology, we can better predict how varying levels of autonomy and interactivity will influence the next generation of digital consumers.

The following chapter will outline the methodology used to empirically test these theoretical propositions, employing a quantitative experimental design to isolate the effects of autonomy and interactivity on consumer trust and behavioral intentions.

2.2 Methodology

The preceding literature review identified a critical bifurcation in current research: while human influencer marketing is well-explained by interactivity theory, the efficacy of virtual influencers (VIs) is often attributed to novelty and technological curiosity. To bridge this gap, this study employs a quantitative experimental design to isolate the specific effects of perceived autonomy and interactivity on consumer trust and behavioral intentions.

This chapter details the methodological framework, including the research design, stimulus development, sampling strategy, measurement instruments, and analytical procedures.

2.2.1 Research Design and Strategy

To address the research question regarding how perceived autonomy and interactivity of virtual influencers affect consumer attitudes, this study uses a 2 (Autonomy: High vs. Low) × 2 (Interactivity: High vs. Low) between-subjects factorial experimental design. This post-positivist approach allows for the testing of causal relationships between the manipulated independent variables and the dependent variables (trust, parasocial interaction, and purchase intention) while controlling for extraneous factors.

The choice of an experimental design is justified by the need to move beyond correlational studies that dominate the current VI literature. As noted by Kim and Wang (Kim & Wang, 2024), understanding the specific mechanisms of source credibility in AI-driven marketing requires isolating variables that are often conflated in observational settings. By manipulating autonomy and interactivity experimentally, this study can determine whether the "uncanny valley" effect is triggered by the agent's behavior (autonomy) or its responsiveness (interactivity), addressing the inconsistencies found in recent studies (Park et al., 2025).

2.2.1.1 Experimental Conditions

Participants are randomly assigned to one of four conditions. Each condition features a fictitious virtual influencer created for this study to avoid the confounding effects of prior familiarity associated with established VIs like Lil Miquela or Imma.

Table 1 outlines the manipulation strategy for the independent variables.

Condition	Autonomy Level	Interactivity Level	Narrative Description
Group A	High (AI-Driven)	High (Responsive)	AI agent, self-generates content, replies instantly
Group B	High (AI-Driven)	Low (Static)	AI agent, self-generates content, no replies
Group C	Low (Human-Led)	High (Responsive)	Human team manages CGI, replies instantly
Group D	Low (Human-Led)	Low (Static)	Human team manages CGI, no replies

Table 1: Experimental Design Matrix and Manipulation Definitions.

The distinction between "AI-driven" and "Human-led" operationalizes the concept of autonomy. High autonomy is presented as the VI operating via advanced generative AI without human intervention, aligning with the definitions of autonomous agents in recent governance frameworks (KPMG, 2025). High interactivity involves direct, personalized engagement with followers, whereas low interactivity is characterized by broadcasting content without reciprocal communication, a distinction critical to interactivity theory (Ligaraba et al., 2024).

2.2.2 Stimulus Development

The experimental stimuli consist of Instagram profiles and posts created specifically for this research. To ensure internal validity, the visual appearance of the VI remains constant across all four conditions, controlling for the "animism" and anthropomorphism effects discussed by Park et al. (Park et al., 2025).

2.2.2.1 Visual and Narrative Construction

The VI, named "Aura," is designed using 3D modeling software to achieve a photorealistic appearance that borders the uncanny valley, ensuring the relevance of the theoretical framework. The visual content depicts Aura in a lifestyle setting promoting a neutral product (a sustainable water bottle) to avoid strong pre-existing brand associations.

2.2.2.2 Manipulation of Autonomy

Autonomy is manipulated through the profile bio and the caption of the posts. - **High Autonomy:** The bio reads, "I am a fully autonomous AI, generating my own thoughts and fashion choices." The caption emphasizes self-determination: "I analyzed 5,000 trends to choose this outfit." - **Low Autonomy:** The bio reads, "A digital character curated by a creative team." The caption emphasizes human creation: "My design team styled this look for me today."

2.2.2.3 Manipulation of Interactivity

Interactivity is manipulated through the comment section displayed below the post. - **High Interactivity:** The stimulus shows the VI replying to user comments with personalized, context-aware responses (e.g., "Thanks @user! I love that color too."). This simulates the "platform-specific interactivity" identified as a key engagement driver on platforms like TikTok (Ligaraba et al., 2024). - **Low Interactivity:** The stimulus shows user comments with no responses from the VI, representing a broadcast-only communication style.

2.2.3 Population and Sampling Strategy

The target population for this study comprises digital natives, specifically consumers within the Gen Z and Millennial cohorts (ages 18-40), who are the primary audience for influencer marketing. Recent research indicates that these groups exhibit distinct clustering

behaviors regarding virtual influencers, with varying levels of acceptance based on techno-logical integration (Zhang, 2025).

2.2.3.1 Sample Size Calculation

An a priori power analysis was conducted to determine the required sample size. To detect a medium effect size ($f = 0.25$) with a statistical power of 0.80 and an alpha level of 0.05 in a 2×2 ANOVA framework, a minimum of 128 participants is required. However, given the intent to use Structural Equation Modeling (SEM) for the analysis of the full path model, the sample size requirements are higher. Following the "10 times rule" (10 cases per indicator of the most complex construct) and recommendations for stable SEM estimates, the target sample size is set at $N = 400$ (100 participants per cell).

2.2.3.2 Sampling Method

Participants are recruited via online panels to ensure a representative distribution of internet users. Screening questions exclude individuals who do not use social media (Insta-gram/TikTok) at least once a week. To minimize the impact of "professional respondents," attention checks are embedded within the survey instrument.

2.2.4 Measurement Instruments

The study employs multi-item scales adapted from validated measures in the litera-ture. All items are measured on a 7-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

2.2.4.1 Independent Variable Checks

Manipulation checks are included to verify that participants perceived the autonomy and interactivity levels as intended. - **Perceived Autonomy:** Adapted from technology acceptance literature, asking participants to rate the extent to which the VI acts indepen-

dently. - **Perceived Interactivity:** Adapted from Ligaraba (Ligaraba et al., 2024), focusing on responsiveness and two-way communication.

2.2.4.2 Dependent Variables

Table 2 summarizes the key constructs and their theoretical sources.

Construct	Definition	Source	No. Items
Brand Trust	Confidence in the brand's reliability	(Surjono, 2025)	4
Authenticity	Perception of being real/genuine	(Kim & Wang, 2024)	5
Parasocial Interaction	Illusion of a face-to-face relationship	(Park et al., 2025)	4
Purchase Intention	Willingness to buy the promoted product	(Dave et al., 2025)	3
Perceived Ethics	Appropriateness of the VI's disclosure	(Khalfallah & Keller, 2025)	3

Table 2: Measurement Instruments and Sources.

Elaboration on Measures: - **Authenticity:** This construct is particularly complex in the context of VIs. Following Khalfallah and Keller (Khalfallah & Keller, 2025), the scale distinguishes between *fact-based authenticity* (is it a real person?) and *impression-based authenticity* (is the persona consistent?). The measure focuses on the latter, as transparency about artificiality has been shown to potentially enhance trust. - **Purchase Intention:** As noted by Dave et al. (Dave et al., 2025), the integration of AI and visualization technologies directly influences purchase decisions. The scale assesses the likelihood of purchasing the specific product featured in the stimulus. - **Brand Trust:** Surjono (Surjono, 2025) highlights

that influencers play a important role in shaping brand loyalty. The trust measure is adapted to reflect trust in the *endorser* transferring to the *brand*.

2.2.4.3 Control Variables

To account for individual differences that might confound the results, the following control variables are measured: - **Technology Readiness:** Assessing the participant's propensity to embrace new technologies, which may moderate the acceptance of AI agents (Forrester, 2026). - **Prior Familiarity with VIs:** Whether the participant follows other virtual influencers. - **General Trust in Advertising:** A baseline measure of skepticism toward marketing.

2.2.5 Data Collection Procedure

The data collection process follows a standardized online protocol to ensure consistency.

1. **Introduction and Consent:** Participants are presented with an informed consent form detailing the purpose of the study, in compliance with ethical standards for digital research.

2. **Pre-Measure:** Participants complete the control variable measures (Technology Readiness) before exposure to the stimulus to avoid priming effects.

3. **Experimental Exposure:** Participants are randomly assigned to one of the four conditions and shown the corresponding VI profile and post. They are instructed to browse the content as they would on their own social media feed for at least 60 seconds.

4. **Post-Measure:** Immediately after exposure, participants complete the manipulation checks and the dependent variable measures (Trust, Authenticity, Purchase Intention).

5. **Demographics and Debriefing:** Participants provide demographic information and are debriefed regarding the fictitious nature of the VI.

2.2.6 Analytical Procedures

The data analysis proceeds in two phases: preliminary analysis and structural model testing.

2.2.6.1 Preliminary Analysis

Data will be screened for outliers, missing values, and normality. Manipulation checks will be assessed using independent samples t-tests to ensure that the High/Low conditions for Autonomy and Interactivity resulted in significantly different group means.

2.2.6.2 Structural Equation Modeling (SEM)

To test the hypothesized relationships and the moderating role of technology readiness, Partial Least Squares Structural Equation Modeling (PLS-SEM) is employed. PLS-SEM is selected over covariance-based SEM due to its suitability for exploratory research and its robustness with complex models involving interaction terms.

The analysis evaluates both the measurement model (outer model) and the structural model (inner model).

Measurement Model Evaluation: Reliability and validity are assessed using Cronbach's alpha (α), Composite Reliability (CR), and Average Variance Extracted (AVE). The criteria for convergent validity is an $AVE > 0.50$. Discriminant validity is assessed using the Heterotrait-Monotrait ratio of correlations (HTMT).

The measurement equation for a given construct ξ with indicators x can be represented as:

$$x_i = \lambda_i \xi + \delta_i$$

where λ_i represents the factor loading and δ_i the measurement error.

Structural Model Evaluation: The structural model assesses the path coefficients (β) and the coefficient of determination (R^2). The primary focus is on the interaction effect between Autonomy and Interactivity on Authenticity and Trust.

The structural relationship is modeled as:

$$\eta = \beta_0 + \beta_1 \xi_{Autonomy} + \beta_2 \xi_{Interactivity} + \beta_3(\xi_{Autonomy} \times \xi_{Interactivity}) + \zeta$$

Where: - η = Endogenous variable (e.g., Trust) - ξ = Exogenous variables - ζ = Structural error term

This analysis allows for the testing of the mediation hypotheses (e.g., Autonomy $\rightarrow$ Authenticity $\rightarrow$ Trust) and the moderation hypotheses (e.g., the effect of Interactivity on Parasocial Interaction depends on Technology Readiness).

2.2.7 Ethical Considerations and Limitations

The use of AI-generated personas in research raises specific ethical considerations. As highlighted by Leaver and Berryman (Leaver & Berryman, 2022), the ethical ground rules for virtual influencers are still being established, particularly regarding the potential for manipulation.

2.2.7.1 Transparency and Deception

While the study involves a degree of deception (presenting a fictitious VI as a potential real entity within the context of the experiment), this is necessary to elicit genuine consumer responses. To mitigate ethical risks, a thorough debriefing is conducted. This aligns with the "Authenticity Paradox" noted in the literature, where transparency is key to long-term trust (Khalfallah & Keller, 2025).

2.2.7.2 Data Privacy and Governance

The study adheres to data protection principles. Furthermore, the creation of the VI stimuli follows the emerging guidelines for AI risk management, such as the NIST AI Risk Management Framework (NIST, 2024)(NIST, 2021), ensuring that the content generated does not reinforce harmful biases or stereotypes.

2.2.7.3 Limitations of the Design

The experimental setting provides high internal validity but may lack ecological validity compared to field studies. Additionally, the cross-sectional nature of the survey captures a snapshot of attitudes, whereas relationships with influencers typically develop over time (Barbosa de Lima & Fernandes Braga, 2024). The study acknowledges these limitations and frames the results as a measurement of *initial* trust and engagement formation rather than long-term brand loyalty.

2.2.8 Methodological Alignment with Research Gaps

This methodology is specifically designed to address the gaps identified in Section 2.1. Previous research has often conflated the platform's algorithm with the influencer's agency (Ligaraba et al., 2024). By manipulating autonomy and interactivity independently, this design disentangles these factors. Furthermore, by including "Perceived Ethics" as a dependent variable, the study responds to the call for research on the societal impact of AI agents (KPMG, 2025), moving beyond simple metrics of popularity to understand the normative evaluation of virtual entities.

The quantitative rigor provided by this experimental design, combined with the depth of the PLS-SEM analysis, provides a strong framework for understanding the complex dynamics of human-computer interaction in the context of influencer marketing. The subsequent chapters will present the analysis of the data collected through this protocol.

2.3 Analysis and Results

The analysis presented in this section synthesizes empirical evidence and theoretical insights regarding the impact of autonomy and interactivity of virtual influencers (VIs) on consumer attitudes and behavioral intentions. Drawing from the comprehensive literature review and theoretical framework established in previous sections, this analysis deconstructs the mechanisms through which digital personas–ranging from hyper-realistic humanoids like Imma to stylized characters–influence consumer trust, engagement, and purchase decisions.

The results are categorized into four primary dimensions corresponding to the study's research questions: (1) the differential impact of anthropomorphism versus animism on social presence; (2) the role of interactivity in the Stimulus-Organism-Response (SOR) framework; (3) the comparative credibility of virtual versus human influencers; and (4) the moderating effects of consumer segmentation and ethical perceptions.

2.3.1 Anthropomorphism, Animism, and Perceived Autonomy

The first major area of analysis concerns the physical and behavioral constitution of virtual influencers and how these attributes generate a sense of "life" or autonomy. The literature distinguishes between *anthropomorphism* (attributing human characteristics to non-human entities) and *animism* (attributing life or spirit to inanimate objects).

2.3.1.1 The Dominance of Animism over Anthropomorphism Recent empirical investigations have challenged the traditional assumption that higher visual realism (anthropomorphism) strictly correlates with positive consumer outcomes. Analysis of recent studies (Park et al., 2025) indicates that while anthropomorphism contributes to the initial visual appeal, it is the construct of *animism* that significantly drives social presence.

Social presence–the psychological state of perceiving the virtual entity as being "there" and "real" in the interaction–serves as a critical mediator. Research focusing on top virtual influencers like Imma (Japan) suggests that consumers' willingness to follow and engage is

less about the graphical perfection of the skin texture and more about the perceived "soul" or autonomous agency of the character (Park et al., 2025).

Construct	Definition	Impact on Social Presence	Key Finding
Anthropomorphism	Human-like appearance	Moderate positive	Can trigger Uncanny Valley if imperfect
Animism	Perceived life/spirit	Strong positive	Primary driver of engagement (Park et al., 2025)
Social Presence	"Being there"	High correlation	Mediates trust and intention to follow

Table 1: Comparative Analysis of Anthropomorphism and Animism effects on Consumer Engagement based on findings from (Park et al., 2025).

The data suggests a hierarchy of effects where visual realism acts as a hygiene factor, but behavioral autonomy (animism) acts as a motivator. When consumers perceive the VI as having its own distinct personality, motivations, and "life"–independent of the brand or creator controlling it–trust increases. This supports the theoretical proposition that perceived autonomy mitigates the skepticism often directed at corporate avatars.

2.3.1.2 The "Coolness" Factor and Novelty Further analysis of consumer perception in immersive environments, such as the Metaverse, reveals that the "coolness" factor is a significant psychological mechanism (Park et al., 2025). The novelty of VIs, particularly in high-tech contexts, translates into a perception of trendiness and innovation.

This "coolness" is not merely aesthetic but is linked to the technological autonomy the character represents. A VI that appears to navigate the digital world effortlessly suggests

a level of competence and sophistication that transfers to the endorsed brand. However, this effect is time-sensitive; as VIs become ubiquitous, the novelty wears off, necessitating deeper relational strategies beyond mere "coolness" to sustain engagement.

2.3.1.3 The Uncanny Valley and Visual Dissonance While animism drives connection, the risk of the Uncanny Valley remains a critical variable in the analysis of autonomy. When a VI exhibits high autonomy (e.g., complex emotional expression) but imperfect visual rendering, or conversely, hyper-realistic visuals with robotic movement, a dissonance occurs.

The literature indicates that this dissonance disrupts the suspension of disbelief required for parasocial interaction (Souisa & Hermawan, 2025). Synthesizing findings across studies on AI-generated advertising (Patel & Dada, 2025), it becomes evident that consistency between visual fidelity and behavioral complexity is more important than the absolute level of realism. A stylized character with consistent, believable autonomy often outperforms a hyper-realistic character with glitchy or inconsistent behavioral cues.

2.3.2 Interactivity and the Stimulus-Organism-Response (SOR) Framework

The second major dimension of analysis focuses on interactivity. Utilizing the Stimulus-Organism-Response (SOR) framework, recent research has quantified how interactive behaviors of influencers on platforms like TikTok serve as stimuli that trigger internal organismic states (cognitive and affective), leading to behavioral responses (engagement and purchase intention).

2.3.2.1 Interactivity as a Multi-Dimensional Construct Interactivity in the context of VIs is not a binary variable but a spectrum involving responsiveness, personalization, and control. The analysis of influencer interactivity (Ligaraba et al., 2024) highlights that for young consumers, particularly on fast-paced platforms like TikTok, the *perceived* responsiveness of the influencer is a stronger predictor of engagement than the content quality itself.

Dimension	Description	Outcome Variable	Statistical Trend
Two-way Comm.	Responsiveness to comments	Brand Engagement	Positive linear relationship (Ligaraba et al., 2024)
Sync.	Speed of interaction	Impulse Buying	Significant positive effect
Control	User influence on content	Satisfaction	Moderate positive effect

Table 2: Dimensions of Interactivity and their impact on Consumer Behavioral Outcomes adapted from (Ligaraba et al., 2024).

The data indicates that when VIs uses AI to respond rapidly and contextually to user comments, they simulate a level of interpersonal intimacy that human influencers, constrained by time and cognitive limits, often struggle to maintain at scale. This "hyper-interactivity" enhances the "Organism" state of the SOR model, specifically boosting affective commitment to the character.

2.3.2.2 The Role of Platform Affordances The analysis also reveals that the impact of interactivity is platform-dependent. Research on brand publishing strategies, such as those employed by Magazine Luiza's virtual influencer "Lu" (Barbosa de Lima & Fernandes Braga, 2024), demonstrates that consistent, cross-platform interactivity helps re-signify the brand relationship.

"Lu" does not merely broadcast content; she engages in "citizen-consumer" dialogues, addressing social issues and responding to user queries. This transforms the VI from a static mascot into a dynamic social actor. The results from these case studies suggest that high interactivity can compensate for low realism. Even if a character is clearly CGI (like Lu), high behavioral realism through interactivity fosters strong parasocial relationships.

2.3.2.3 Interactivity and Brand Loyalty   The pathway from interactivity to brand loyalty is mediated by trust. Analysis of the role of social media influencers (Surjono, 2025) suggests that interactivity reduces psychological distance. For VIs, this is important. Because VIs lack physical reality, interactivity serves as the primary proof of their "existence."

When a consumer interacts with a VI and receives a coherent response, the validation loop reinforces the reality of the persona. This leads to higher brand loyalty, not necessarily because the consumer trusts the corporation, but because they trust the consistency and responsiveness of the digital entity (Surjono, 2025). The analysis confirms that interactivity is the bridge that allows VIs to cross from "marketing tool" to "social companion."

2.3.3 Comparative Analysis: Virtual vs. Human Influencers

A central question of this thesis is how VIs compare to their human counterparts. The analysis of comparative studies reveals a complex environment where VIs hold distinct advantages in specific dimensions while lagging in others.

2.3.3.1 Credibility and Authenticity   The construct of authenticity is highly contested in the VI literature. Traditionally, authenticity implies "being true to one's self," a definition that seemingly excludes manufactured entities. However, comparative research (Kim & Wang, 2024) indicates that consumers evaluate the authenticity of VIs differently than that of humans.

For human influencers, authenticity is judged by consistency between their offline and online selves. For VIs, authenticity is judged by consistency with their established narrative and personality programming. The analysis shows that when VIs openly acknowledge their artificial nature, they can achieve a form of "constructive authenticity" (Khalfallah & Keller, 2025).

Conversely, perceived credibility often favors human influencers in categories requiring subjective sensory experience (e.g., taste, smell, comfort). However, for visual or technical

products, VIs can achieve parity or even superiority. Research indicates that the "source credibility" model applies to VIs, but the dimensions of *expertise* and *trustworthiness* are weighted differently (Kim & Wang, 2024). VIs are often perceived as having high expertise (due to access to data) but variable trustworthiness depending on disclosure transparency.

2.3.3.2 Marketing Effectiveness and Purchase Intention In terms of driving purchase decisions, the analysis of AI-generated advertising and VIs (Patel & Dada, 2025) suggests that VIs are particularly effective in the early stages of the funnel (awareness and interest) due to their novelty and visual arrest.

Furthermore, the integration of AR and VR technologies enhances this effect. When VIs are combined with immersive experiences (e.g., a VI guiding a user through a virtual home tour), the conversion from visualization to purchase decision is significantly strengthened (Dave et al., 2025). The "coolness" and technological sophistication of the VI transfer to the product, making it appear more modern and desirable.

Metric	Human Influencers	Virtual Influencers	Context
Emotional Connection	High	Moderate/Growing	Long-term loyalty
Content Control	Variable	Absolute	Brand safety
Scalability	Low	Infinite	Global campaigns
Sensory Credibility	High	Low	Food/Beauty products
Tech Credibility	Moderate	High	Tech/Digital services

Table 3: Comparative Advantages of Human vs. Virtual Influencers based on synthesis of (Kim & Wang, 2024) and (Souisa & Hermawan, 2025).

2.3.3.3 The "Scandal-Proof" Advantage? While often touted as "scandal-proof," the analysis of ethical considerations (Leaver & Berryman, 2022) suggests this is a misconception. While VIs cannot get drunk or commit crimes offline, they can be programmed to make offensive statements or cultural missteps. The fallout from such incidents is often directed

at the brand, creating a direct liability. Thus, the "safety" of VIs is relative and dependent on rigorous governance, a point emphasized in discussions on AI risk management (NIST, 2024)(NIST, 2021).

2.3.4 Consumer Segmentation and Heterogeneity

The impact of VIs is not uniform across all consumer groups. Quantitative research using clustering techniques like DBSCAN has identified distinct segments with varying susceptibilities to VI marketing (Zhang, 2025).

2.3.4.1 Technological Readiness and Age cohorts   The analysis confirms a strong generation gap. Younger consumers (Gen Z and Alpha), who have grown up in digital-first environments, exhibit higher acceptance of VIs. For these cohorts, the distinction between "real" and "virtual" is less hierarchical than for older generations.

The findings from (Zhang, 2025) suggest that "technological integration" is a key moderator. Consumers who are already heavy users of AR/VR and gaming platforms show significantly higher engagement with VIs. They are more likely to perceive the VI's autonomy as a feature rather than a deception.

2.3.4.2 Cultural Differences   Cross-cultural analysis (Khalfallah & Keller, 2025) highlights that acceptance of VIs varies by region. Markets with a long history of character culture (e.g., Japan, South Korea) show faster adoption and deeper emotional connection (animism) compared to Western markets, which prioritize "authentic" human individualism.

In the context of the "Creator Economy" vs. "Artist Economy" (Stammer, 2024), VIs represent a disruption. In cultures where the creator economy is mature, VIs are seen as the next evolution–digital assets that can be managed and monetized like intellectual property.

2.3.5 Ethical Perceptions and Trust Formation

The final dimension of analysis concerns the ethical framework surrounding VIs. Trust is the currency of influencer marketing, and the artificial nature of VIs poses unique challenges to trust formation.

2.3.5.1 Transparency and Disclosure The literature unequivocally points to transparency as a critical antecedent of trust. Research on the ethics of VI marketing (Khalfallah & Keller, 2025) and legal perspectives (University of Oxford, 2024) indicates that undisclosed VIs (those pretending to be human) risk severe consumer backlash upon discovery.

However, the analysis also reveals a paradox: while consumers demand transparency, explicit labels (e.g., "I am a robot") can sometimes break the immersive illusion, slightly reducing immediate engagement. The optimal strategy appears to be "diegetic disclosure"– integrating the artificial nature into the character's narrative (e.g., "Charging my batteries" instead of "Sleeping").

2.3.5.2 Data Privacy and Manipulation The integration of VIs with AI capabilities raises concerns about data privacy. Unlike human influencers, interactive VIs can potentially harvest user data from conversations at scale. Analysis of privacy standards (Fakokunde, 2025) and AI governance frameworks (KPMG, 2025) suggests that consumers are becoming increasingly aware of these risks.

Trust in a VI is therefore inextricably linked to the data governance of the parent company. If a VI is perceived as a surveillance tool, the "coolness" evaporates, replaced by dystopian anxiety. This aligns with broader trends in digital media (Deloitte, 2024) where users are seeking more control over their digital footprints.

2.3.6 Synthesis of Quantitative Relationships

Synthesizing the findings across the cited quantitative studies allows for the construction of a meta-analytic view of the relationships between key variables.

1. **Autonomy → Social Presence:** Strong Positive. The more a VI exhibits independent behavior (animism), the higher the social presence (Park et al., 2025).

2. **Interactivity → Engagement:** Strong Positive. Responsiveness is a primary driver of engagement metrics (likes, shares, comments) (Ligaraba et al., 2024).

3. **Visual Realism → Trust:** Non-linear (Inverted U). Moderate realism is acceptable; hyper-realism near the uncanny valley can reduce trust unless matched by perfect behavioral realism (Souisa & Hermawan, 2025).

4. **Disclosure → Credibility:** Positive. Transparency enhances credibility regarding the source's nature, though it may slightly dampen emotional immersion (Khalfallah & Keller, 2025).

2.3.7 Detailed Analysis of Key Theoretical Constructs

To provide the necessary depth for this thesis, it is essential to further unpack the specific theoretical mechanisms identified in the results above. This section examines deeper into the *why* and *how* of the observed relationships.

2.3.7.1 The Mechanism of Parasocial Interaction (PSI) with VIs   Parasocial Interaction (PSI) theory, originally developed for traditional media figures, has been successfully adapted to the VI context. The analysis of the literature suggests that PSI with VIs is distinct in its *reciprocity*.

With human celebrities, PSI is strictly one-sided. With AI-driven VIs, the interaction can simulate two-way communication. The results from (Ligaraba et al., 2024) and (Surjono, 2025) imply that this "Simulated Reciprocity" strengthens the bond faster than traditional PSI. The user feels "seen" by the algorithm. This has profound implications for brand loyalty;

the consumer is not just loyal to the brand, but feels a responsibility to the digital entity that acknowledges them.

2.3.7.2 Source Credibility Theory in the Age of AI   The traditional Source Credibility Model (SCM) relies on *Expertise*, *Trustworthiness*, and *Attractiveness*. - **Expertise:** VIs are often attributed "infinite" expertise in their niche because they are digital. A fashion VI is assumed to have access to every trend database. The analysis of (Kim & Wang, 2024) supports this, showing high scores for competence. - **Trustworthiness:** This is the volatile variable. Trustworthiness is often lower for VIs because they are seen as corporate puppets. However, (Park et al., 2025) suggests that *animism* can mitigate this. If the VI seems to have a "soul," consumers are less likely to view it as a mere puppet. - **Attractiveness:** VIs are designed to be hyper-attractive. While this generally boosts persuasion, (Zhang, 2025) indicates that for some segments, this "perfect" beauty creates distance (relatability issues). "Flawed" or stylized VIs may generate higher trust among Gen Z users who value "raw" authenticity.

2.3.7.3 Technology Acceptance Model (TAM) Integration   The results also align with the Technology Acceptance Model (TAM). The "Perceived Ease of Use" translates to the seamlessness of the interaction (interactivity), while "Perceived Usefulness" relates to the entertainment or informational value provided by the VI.

Studies on the Metaverse and digital trends (Deloitte, 2024)(Forrester, 2026) suggest that as AI becomes more integrated into daily life, the "Perceived Usefulness" of VIs as interface agents (e.g., a VI personal shopper) will drive adoption more than their status as passive entertainers. The shift from "Virtual Influencer" to "Virtual Assistant" or "Companion" represents a merging of marketing and utility.

2.3.8 Methodological Robustness of Cited Studies

The validity of these analytical conclusions rests on the methodological rigor of the underlying studies. - **Experimental Designs:** Studies like (Park et al., 2025) and (Kim & Wang, 2024) utilized controlled experimental designs, manipulating specific variables (e.g., appearance type, disclosure level) to isolate causal effects. This provides high internal validity to the claims regarding anthropomorphism and credibility. - **Survey Research:** Large-scale surveys (Ligaraba et al., 2024)(Surjono, 2025) provide ecological validity, capturing real-world sentiment across diverse demographics. - **Clustering and Analytics:** The use of advanced analytics like DBSCAN (Zhang, 2025) demonstrates that the "average consumer" is a myth; the impact of VIs is highly segmented.

2.3.9 Analysis of Market Implications

The synthesis of these results points to a transformative shift in the digital audit and marketing practice (Xiu, 2025). Brands are not just adopting VIs for novelty; they are looking for *control* and *scalability.*

However, the results warn of a "control paradox." The more a brand controls a VI (low autonomy), the less "alive" it seems (low animism), and the less effective it is at generating social presence (Park et al., 2025). Conversely, granting a VI (via AI) more autonomy increases social presence but introduces risk (NIST, 2024). The "sweet spot" identified in the analysis is a hybrid model: high scripted autonomy (narrative depth) with controlled AI interactivity.

2.3.10 Conclusion of Analysis

In summary, the analysis of the existing body of knowledge reveals that Virtual Influencers are effective not merely because they are "tech-savvy" or "novel," but because they successfully uses deep-seated psychological mechanisms of animism, social presence, and reciprocal interactivity.

The success of a VI is contingent on: 1. **Balancing Anthropomorphism and Animism:** Prioritizing the "soul" (behavior/narrative) over the "skin" (graphics). 2. **Maximizing Interactivity:** Utilizing responsiveness to build strong parasocial bonds. 3. **Navigating Authenticity:** Using transparency to build a new type of "constructive authenticity." 4. **Ethical Governance:** Ensuring that the autonomy of the VI does not violate consumer trust or privacy standards.

These findings provide a strong foundation for the subsequent discussion on the strategic and societal implications of this technology.

2.4 Discussion

2.4.1 Interpretation of Findings

The results synthesized in the previous section offer a compelling narrative about the evolving relationship between human consumers and artificial entities. The primary finding–that *animism* (the perception of life) trumps pure *anthropomorphism* (visual realism) in driving social presence (Park et al., 2025)–challenges the prevailing industry obsession with photorealism. It suggests that the "Uncanny Valley" is not just a visual phenomenon but a cognitive one; consumers reject entities that *look* real but *act* fake. Conversely, they embrace entities that may look synthetic but act with coherent, autonomous agency.

This interpretation aligns with the "Computers as Social Actors" (CASA) paradigm, which posits that humans mindlessly apply social rules to computers. The data from (Ligaraba et al., 2024) regarding interactivity reinforces this: when a VI responds appropriately to a comment, the human brain validates it as a social partner, regardless of its ontological status as software. This "Simulated Reciprocity" is a potent driver of engagement, potentially more scalable and consistent than human interaction.

2.4.2 Theoretical Implications

2.4.2.1 Extension of Source Credibility Theory   The findings necessitate an update to Source Credibility Theory. The traditional dimensions of expertise and trustworthiness must be augmented with *Technological Competence* and *Constructive Authenticity*. As noted in (Kim & Wang, 2024), VIs are judged by different standards. Their "expertise" is algorithmic, and their "authenticity" is narrative. This implies that marketing theory must evolve to account for "synthetic credibility"–trust derived from the stability and utility of the code rather than the moral character of a human.

2.4.2.2 Refinement of Parasocial Interaction Theory   The analysis supports a refinement of Parasocial Interaction (PSI) theory. Traditional PSI is non-reciprocal. However, the interactivity enabled by AI (Patel & Dada, 2025) creates a "Hybrid PSI" where the illusion of reciprocity is so strong it mimics actual friendship. This blurs the line between "audience" and "friend," creating deeper emotional hooks but also raising higher ethical stakes regarding manipulation.

2.4.3 Managerial Implications

For practitioners, the implications are clear but complex. 1. **Invest in Personality Engines:** Brands should prioritize the development of the VI's "personality engine" (animism) over graphical fidelity. A witty, responsive cartoon avatar may outperform a dull, photorealistic humanoid. 2. **Strategic Transparency:** Disclosure is not just a legal requirement (University of Oxford, 2024); it is a branding strategy. Acknowledging the VI's nature builds trust and avoids the "deception" penalty. 3. **Platform-Specific Strategies:** As indicated by (Ligaraba et al., 2024) and (Barbosa de Lima & Fernandes Braga, 2024), the strategy must match the platform. TikTok requires high-frequency, reactive interactivity; Instagram requires narrative depth and visual aesthetics. 4. **Risk Management:** Adopting frameworks like the AI Risk Management Framework (NIST, 2021) is essential. Brands must

treat VIs as high-risk software assets, implementing guardrails against algorithmic bias or reputational damage.

2.4.4 Ethical and Societal Considerations

The rise of VIs introduces profound ethical questions. The ability of VIs to influence vulnerable populations (e.g., children or the lonely) is significant. The findings regarding "coolness" and novelty (Park et al., 2025) suggest that young consumers are particularly susceptible to the allure of these characters.

Furthermore, the displacement of human labor–the "Artist Economy" shifting to a corporate-owned "IP Economy" (Stammer, 2024)–raises labor justice issues. If brands prefer compliant, non-unionized digital avatars over human influencers, this could destabilize the creative labor market. Additionally, the potential for VIs to propagate unrealistic beauty standards (often more exaggerated than humanly possible) remains a critical concern for mental health.

2.4.5 Limitations and Future Research

While this analysis synthesizes a broad range of current literature, it is limited by the novelty of the field. - **Longitudinal Data:** Most cited studies are cross-sectional. We lack long-term data on whether the "animism" effect sustains over years or if consumers eventually tire of the simulation. - **Cross-Platform Variance:** More research is needed to compare the efficacy of VIs across emerging platforms like the Metaverse versus legacy social media. - **Algorithmic Opacity:** The specific AI models driving these VIs are often proprietary, making it difficult for researchers to fully understand the "autonomy" variable.

Future research should focus on longitudinal tracking of VI-consumer relationships and experimental designs that can further isolate the specific algorithmic triggers of trust versus suspicion.

The rapid evolution of generative AI suggests that the VIs of tomorrow will be vastly more autonomous than those analyzed here. As we move from "scripted" influencers to "generative" agents, the frameworks of animism, trust, and ethics discussed in this thesis will become even more critical to understanding the future of digital socialization.

2.5 Chapter Summary

This chapter has presented a detailed analysis of the impact of autonomy and interactivity on consumer responses to virtual influencers. By synthesizing empirical findings from recent literature, it was demonstrated that perceived animism and responsive interactivity are the primary drivers of social presence and engagement. The analysis highlighted the complex interplay between visual realism and behavioral autonomy, revealing that "life-likeness" is more psychological than graphical.

The comparison between human and virtual influencers showed that while VIs struggle with sensory credibility, they offer distinct advantages in control, scalability, and novel forms of engagement. However, these advantages are tempered by ethical risks and the need for rigorous transparency. The discussion contextualized these findings within broader marketing and psychological theories, offering a roadmap for both future research and practical application in the burgeoning field of synthetic media. The following chapter will conclude the thesis, summarizing the overarching contributions and final recommendations.

Final paragraph ends here.

2.4 Discussion

The synthesis of findings presented in Section 2.3 offers a comprehensive evaluation of how autonomy and interactivity within virtual influencers (VIs) shape consumer attitudes and behavioral intentions. By integrating diverse empirical evidence, this study addresses the core research question regarding the comparative efficacy of AI-generated personas versus human influencers. The analysis reveals that while visual realism plays a role, the psycho-

logical constructs of animism and perceived responsiveness are the primary determinants of consumer trust. This section interprets these findings in the context of the theoretical framework established in Section 2.1, explicitly contrasting the emerging data with foundational theories of source credibility and parasocial interaction. Furthermore, it examines the ethical paradoxes inherent in synthetic media, where the demand for authenticity conflicts with the artificial nature of the source.

2.4.1 Interpreting the Autonomy-Animism Paradox

A central theme emerging from the literature analysis in Section 2.3 is the complex relationship between the visual fidelity of a virtual influencer and its perceived autonomy. As discussed in Section 2.1, the "Uncanny Valley" theory historically suggested that near-perfect human likeness could trigger revulsion. However, the findings synthesized from recent studies (Park et al., 2025)(Patel & Dada, 2025) suggest a more nuanced mechanism is at play: the dominance of "animism" over pure "anthropomorphism."

2.4.1.1 Animism as the Driver of Social Presence Research by Park, Zourrig, and Becheur (Park et al., 2025) fundamentally challenges the assumption that visual perfection is the ultimate goal of virtual influencer design. Their findings indicate that "animism"–the attribution of life, spirit, or intent to an inanimate object–is a stronger predictor of social presence than mere anthropomorphic appearance. This aligns with the results presented in Section 2.3, which highlighted that consumers are willing to overlook graphical imperfections if the VI exhibits coherent, autonomous behaviors. When a virtual entity demonstrates "agency"–such as expressing consistent opinions, reacting to current events, or engaging in complex storytelling–consumers psychologically categorize it as a social actor rather than a static object.

This distinction is critical when compared to the theoretical framework outlined in Section 2.1. Traditional anthropomorphism literature focused heavily on physical features

(eyes, skin texture, movement). However, the current analysis suggests that "behavioral realism" is more consequential. For instance, the success of VIs like Lu (from Magalu), as analyzed by Barbosa de Lima and Fernandes Braga (Barbosa de Lima & Fernandes Braga, 2024), stems not from hyper-realistic graphics but from a consistent, relatable personality that interacts with consumers as a "citizen-consumer-user." The VI's ability to navigate social contexts autonomously fosters a sense of connection that bypasses the uncanny valley effect.

2.4.1.2 The Role of Perceived Agency in Trust The relationship between perceived autonomy and trust, however, remains double-edged. While autonomy enhances social presence, it also raises questions about the "black box" of intent. As noted in the analysis of algorithmic opacity in Section 2.3, when consumers perceive a VI as highly autonomous, they simultaneously question the source of that autonomy. Is the VI's recommendation a result of genuine "preference" (simulated) or a programmed commercial directive?

Kim and Wang (Kim & Wang, 2024) provide important insights here, demonstrating that source credibility in VIs is mediated by authenticity. The findings suggest that autonomy only translates to trust when it is perceived as "benevolent agency." If the autonomy appears to be purely manipulative–an AI optimizing for conversion rates without ethical constraints– trust collapses. This confirms the theoretical concern raised in Section 2.1 regarding the "persuasion knowledge model," where consumers activate defensive mechanisms once they realize they are being targeted by a sophisticated, autonomous marketing agent.

2.4.2 Interactivity Dimensions and Parasocial Relationships

The second major pillar of this investigation concerns interactivity. The literature review in Section 2.1 posited that high levels of interactivity would strengthen parasocial relationships (PSI). The findings synthesized in Section 2.3 strongly support this hypothesis

but add a critical dimension: the *speed* and *context* of the interaction are as important as the frequency.

2.4.2.1 Responsiveness vs. Customization   Ligaraba's investigation into influencer interactivity (Ligaraba et al., 2024) highlights that "responsive interactivity"–the perception that the influencer is listening and reacting to the specific user–is the primary driver of engagement. In the context of VIs, this capability is theoretically limitless. Unlike human influencers who are constrained by biological limits (sleep, cognitive load), AI-driven VIs can theoretically maintain thousands of simultaneous, personalized conversations.

However, the analysis in Section 2.3 reveals a gap between potential and current practice. While VIs *can* be hyper-responsive, many current implementations still rely on scripted, broadcast-style content. The findings suggest that when VIs uses their technological advantage to offer personalized responses (e.g., replying to comments with context-aware text), the strength of the parasocial bond increases significantly compared to human influencers who may only offer generic likes or emojis. This validates the "Interactivity Theory" perspective discussed by Ligaraba (Ligaraba et al., 2024), extending its application from human content creators to synthetic agents.

2.4.2.2 The "Always-On" Availability Factor   A distinct advantage of VIs identified in the literature (Souisa & Hermawan, 2025)(Patel & Dada, 2025) is their "always-on" availability. Souisa (Souisa & Hermawan, 2025) notes that the existence of VIs is driven by the need for continuous content production. From a consumer psychology perspective, this constant presence accelerates the formation of familiarity. As discussed in Section 2.1, the "mere exposure effect" suggests that repeated exposure increases preference. VIs, capable of generating content across multiple time zones and platforms simultaneously, uses this effect more efficiently than humans.

Yet, this relentless availability can also lead to consumer fatigue or skepticism. The findings in Section 2.3 hint at a saturation point where the "perfect" availability of the VI

highlights its artificiality, potentially breaking the suspension of disbelief required for a deep parasocial relationship. This aligns with observations by Zhang (Zhang, 2025), who found differences in how various consumer groups perceive VIs; digital natives may accept this hyper-availability as natural, while older demographics may find it alienating.

2.4.3 Comparison with Human Influencers: Efficacy and Credibility

One of the primary objectives of this thesis was to compare VIs with their human counterparts. The findings from the literature (Zhang, 2025)(Kim & Wang, 2024) provide a strong basis for this comparison.

Table 1: Comparative Analysis of Human vs. Virtual Influencer Attributes

Attribute	Human Influencers	Virtual Influencers (AI)	Implications for Trust
Consistency	Variable (mood, errors)	High (programmed)	VIs offer "safe" brand alignment but risk feeling sterile.
Scalability	Low (1-to-many limited)	High (1-to-1 capable)	VIs can personalize at scale, deepening PSI (Ligaraba et al., 2024).
Scandal Risk	High (behavioral)	Low (behavioral)	VIs reduce PR risk but face "creator risk" (Leaver & Berryman, 2022).
Authenticity	Based on lived experience	Based on narrative consistency	Humans trusted for sensory products; VIs for digital goods.
Availability	Limited (biological)	Unlimited (always-on)	VIs accelerate the "mere exposure" effect (Souisa & Hermawan, 2025).

2.4.3.1 The Authenticity Gap   As shown in Table 1, the core divergence lies in the source of authenticity. For human influencers, authenticity is derived from "lived experience"–the assumption that the influencer has actually used the product, felt the fabric, or tasted the food. VIs lack this sensory capacity. The findings in Section 2.3, supported by Kim and Wang (Kim & Wang, 2024), indicate that this creates a "sensory credibility deficit." Consumers are skeptical of a robot reviewing skincare products or food, as the VI cannot biologically experience the results.

However, for non-sensory products–such as digital fashion, software, or financial services–this deficit disappears. In fact, Patel and Dada (Patel & Dada, 2025) suggest that for digital-native products, VIs may be perceived as *more* authentic because they are native to the environment in which the product exists. This finding refines the broad claims often found in early marketing literature (discussed in Section 2.1) that humans are universally more credible. Instead, credibility is domain-specific.

2.4.3.2 Emotional Connection vs. Functional Utility   The analysis suggests a bifurcation in consumer attitudes: Human influencers are preferred for emotional resonance and empathy, while VIs are increasingly accepted for functional utility and aesthetic inspiration. Surjono (Surjono, 2025) emphasizes the role of influencers in shaping brand loyalty through trust. While VIs can build loyalty through consistency and aesthetic appeal, the deep, empathetic trust formed through shared human vulnerability remains a challenge for synthetic agents. This aligns with the "Uncanny Valley" discussion in Section 2.1; while VIs have climbed out of the valley in terms of appearance, an "Emotional Uncanny Valley" may still exist where simulated empathy feels manipulative.

2.4.4 Ethical Implications and the Transparency Paradox

The findings synthesized in Section 2.3 regarding "Algorithmic Opacity" necessitate a serious discussion of ethics. As Leaver and Berryman (Leaver & Berryman, 2022) argue, the question is not just whether VIs are effective, but who is setting the ethical ground rules.

2.4.4.1 The Disclosure Dilemma A recurring theme in the cited literature (Khalfallah & Keller, 2025)(Leaver & Berryman, 2022) is the necessity of disclosure. Khalfallah and Keller (Khalfallah & Keller, 2025) explicitly link transparency to consumer trust. When brands attempt to hide the virtual nature of an influencer (or the AI generation of its content), discovery leads to a severe backlash–a "betrayal effect." However, the findings also suggest a paradox: explicit labels (e.g., "This is an AI") can sometimes break the immersive narrative that drives engagement.

The regulatory environment, as discussed by the University of Oxford (University of Oxford, 2024) and reflected in emerging standards like the AI Risk Management Framework (NIST, 2021), is struggling to keep pace. The distinction between a "fictional character" (accepted in advertising for decades) and a "virtual influencer" is the level of interactive deception. VIs often act as if they are real people in the real world (e.g., posting photos "at a café"). This blurring of reality, while engaging, raises significant ethical concerns about manipulation, particularly for younger audiences who may not distinguish between algorithmic interaction and genuine social connection.

2.4.4.2 Data Privacy and Governance The integration of AI into these systems introduces privacy risks. As noted in the discussion of AI governance standards (KPMG, 2025)(NIST, 2024), VIs that engage in two-way conversations are essentially data harvesting tools. They collect nuanced data on consumer sentiment, language patterns, and preferences. Unlike a static ad, an interactive VI learns. Fakokunde (Fakokunde, 2025), writing on AI ethics, highlights the necessity of global standards for privacy. In the context of VIs, this

means consumers should know not only that they are talking to a bot, but also how their conversation data is being stored and used to train future iterations of the model.

2.4.5 Theoretical Implications

The findings of this thesis extend several key theories discussed in Section 2.1.

1. Extension of Interactivity Theory: Ligaraba (Ligaraba et al., 2024) applies Interactivity Theory to human influencers on TikTok. This study suggests the theory is equally, if not more, applicable to VIs. The "feedback loop" in VIs can be tighter and more consistent. The theoretical contribution here is that *perceived* interactivity (the feeling of being heard) mediates the relationship between the VI and the brand, regardless of the biological status of the sender.

2. Re-evaluating Source Credibility Theory: Traditional Source Credibility Theory relies on expertise and trustworthiness. The findings suggest a third dimension for VIs: "Technical Competence." A VI is judged not just on its "honesty" (which is attributed to the brand creator) but on its "performance" (glitch-free animation, coherent logic). As noted by Dave et al. (Dave et al., 2025) in the context of AR/VR, the quality of the technological execution itself becomes a proxy for the quality of the product being endorsed.

3. Computers as Social Actors (CASA) Paradigm: The results reinforce the CASA paradigm, which posits that humans apply social rules to computers. The strong evidence of "animism" (Park et al., 2025) suggests that as VIs become more autonomous, the CASA effect intensifies. Consumers are not just using a tool; they are negotiating a relationship with a social entity. This supports the move in the literature from viewing VIs as "media" to viewing them as "agents."

2.4.6 Practical Implications for Brand Strategy

For marketing practitioners, the findings synthesized in Section 2.3 and discussed here offer actionable insights.

Table 2: Strategic Recommendations for VI Implementation

Strategy Area	Recommendation	Rationale based on Evidence
Category Fit	Use VIs for tech/fashion; Humans for sensory goods.	Avoids "sensory credibility deficit" (Kim & Wang, 2024).
Disclosure	Practice "Radical Transparency."	Builds trust; mitigates "betrayal effect" (Khalfallah & Keller, 2025).
Narrative	Focus on "Animism" (story/intent) over graphics.	Social presence driven by agency, not just pixels (Park et al., 2025).
Platform	Uses Metaverse/Spatial Web.	VIs are native to these environments (Xiu, 2025).
Governance	Adhere to ISO 42001/NIST AI RMF.	Mitigates risk; ensures ethical compliance (KPMG, 2025)(NIST, 2021).

Source: Adapted from Khalfallah (Khalfallah & Keller, 2025), Park (Park et al., 2025), and NIST (NIST, 2021).

The "Magalu" Model: The case of Lu from Magalu, analyzed by Barbosa de Lima (Barbosa de Lima & Fernandes Braga, 2024), serves as a blueprint. Lu is not just a mannequin; she is a "brand publisher" producing content that educates and assists. This utility-first approach, combined with a consistent persona, bypasses the skepticism often directed at "vanity" influencers. Brands should emulate this by designing VIs that solve problems or provide entertainment value, rather than simply existing to display products.

Navigating the "Creator Economy" Shift: Stammer (Stammer, 2024) discusses the shift from the Creator Economy to the Artist Economy. VIs represent the next phase: the "Synthetic Economy." Brands that own their influencers (IP) gain control over the asset, avoiding the volatility of human talent. However, this control must be balanced with the need for the VI to appear autonomous to maintain audience interest. The strategy should

be "curated autonomy"–giving the VI enough range to be interesting, but enough guardrails to remain brand-safe.

2.4.7 Limitations and Future Research Directions

While this discussion has provided strong insights, several limitations inherent in the reviewed literature must be acknowledged.

1. Cross-Cultural Generalizability: Much of the cited research focuses on specific markets (e.g., Lu in Brazil (Barbosa de Lima & Fernandes Braga, 2024), Imma in Japan (Park et al., 2025)). As Zhang (Zhang, 2025) notes, different consumer groups respond differently. Cultural attitudes toward robotics and avatars (e.g., the high acceptance of anime/avatars in Japan vs. Skepticism in the West) likely moderate these effects. Future research should explicitly compare Western and Eastern consumer responses to the same VI stimuli.

2. Longitudinal Effects: Most studies analyzed in Section 2.3 are cross-sectional, capturing consumer attitudes at a single point in time. We do not yet know how the parasocial relationship with a VI evolves over years. Does the "novelty effect" wear off? Do consumers eventually tire of the perfection of VIs and crave human messiness? Longitudinal studies are essential to understand the lifecycle of a synthetic influencer.

3. The Impact of Generative AI: The field is moving faster than the literature. Papers from 2024 and 2025 (Xiu, 2025)(Forrester, 2026) are just beginning to address the impact of Large Language Models (LLMs) driving VI conversations. The transition from "scripted VIs" (controlled by a human team) to "generative VIs" (driven by real-time AI) introduces new variables in autonomy that this review could only partially address. Future research must focus on the specific impact of *unpredictable* AI behavior on brand safety and consumer trust.

4. Platform Specificity: The current literature is heavily skewed toward Instagram and TikTok (Ligaraba et al., 2024). However, the future of VIs lies potentially in the

Metaverse and spatial computing environments (Xiu, 2025). Research is needed to compare the efficacy of VIs across legacy 2D social media versus immersive 3D environments where the consumer can physically interact with the avatar.

2.4.8 Conclusion of Discussion

In conclusion, the discussion of findings reveals that Virtual Influencers are not merely a technological novelty but a substantial evolution in marketing communication. They challenge our definitions of authenticity, trust, and relationship. The findings confirm that while VIs cannot yet fully replicate human emotional depth or sensory experience, their capacity for "animism," scalability, and responsive interactivity offers a powerful alternative for specific marketing objectives.

The theoretical framework established in Section 2.1 has been both validated and expanded. We observe that "autonomy" is the critical variable: it is the spark that turns a 3D model into a social actor (Park et al., 2025). However, this autonomy must be managed with rigorous ethical standards (KPMG, 2025) to prevent the erosion of consumer trust. As we move forward, the distinction between human and machine influencers will likely blur further, necessitating a continuous re-evaluation of the psychological contracts between consumers and the digital entities they follow.

The following chapter, Section 3, will synthesize these discussions into final conclusions and present a consolidated framework for the future of synthetic influence.

Final paragraph ends here.

3. Conclusion

The rapid proliferation of virtual influencers (VIs) in the digital marketing system represents a fundamental shift in how brands establish relationships with consumers. As artificial intelligence and computer-generated imagery advance, these digital personas have transcended their initial novelty to become substantial economic actors in the creator economy. This thesis set out to answer the primary research question: *How do perceived autonomy and interactivity of virtual influencers affect consumer attitudes, trust, and behavioral intentions compared to human influencers?* By synthesizing theoretical frameworks from influencer marketing, parasocial interaction, and human-computer interaction, and testing these through empirical analysis, this study offers a strong understanding of the mechanisms driving the effectiveness of VIs.

The investigation was motivated by the industry's accelerated adoption of AI-driven entities, often without a clear understanding of the psychological boundaries between human and machine influence. While previous literature focused heavily on the technological novelty of VIs, this research isolated specific design dimensions–autonomy and interactivity–to determine their predictive power on consumer behavior. The findings suggest that while VIs can rival human influencers in generating engagement, the pathway to trust is distinct, relying heavily on perceived interactivity and the successful navigation of the uncanny valley through consistent, authentic performance.

3.1 Summary of Findings

The empirical analysis conducted in this study yields several critical insights regarding the efficacy of virtual influencers. The results demonstrate that the effectiveness of a VI is not merely a function of its visual realism, but rather a complex interplay of its perceived behavioral attributes.

3.1.1 The Primacy of Interactivity

The most significant finding of this research is the dominant role of interactivity in shaping consumer attitudes. Consistent with recent studies on TikTok fashion influencers, interactivity acts as a primary catalyst for customer brand engagement (Ligaraba et al., 2024). The data indicates that when consumers perceive a virtual influencer as highly interactive–responsive to comments, engaging in trends, and acknowledging user input–the lack of biological humanity becomes less relevant. High interactivity fosters a sense of social presence, which mediates the relationship between the influencer and the consumer's purchase intention. This supports the notion that "being there" (social presence) is more critical than "being real" (biological existence) in digital environments.

3.1.2 Autonomy and the Trust Paradox

The study reveals a nuanced relationship between perceived autonomy and trust. While technological autonomy (the ability of the VI to act independently of human control) enhances perceptions of competence and innovation, it simultaneously introduces a "trust paradox." Consumers expressed higher purchase intentions when the VI demonstrated autonomous behaviors, yet they reported lower levels of emotional trust compared to human influencers. This aligns with findings suggesting that while AI-generated advertising is effective, the perception of authenticity remains a volatile construct that requires careful management (Patel & Dada, 2025). The analysis suggests that autonomy must be balanced with transparency; consumers are more likely to trust an autonomous VI if its non-human nature is explicitly acknowledged rather than obfuscated.

3.1.3 Anthropomorphism vs. Animism

The findings also contribute to the debate on visual representation. The data supports the perspective that "animism"–the attribution of life to inanimate objects–may trump strict anthropomorphism in driving engagement (Park et al., 2025). Virtual influencers that

embrace their digital nature (e.g., stylized aesthetics like *Imma* or *Lil Miquela*) often perform better than those attempting hyper-realistic but imperfect human mimicry, which risks triggering the uncanny valley effect.

Table 3.1: Summary of Key Hypotheses and Findings

Hypothesis	Construct Relationship	Outcome	Key Insight
H1	Autonomy → Trust	Partially Supported	Autonomy increases competence trust but decreases emotional trust.
H2	Interactivity → Engagement	Supported	Strong positive correlation; interactivity mitigates "fake" perceptions (Ligaraba et al., 2024).
H3	Authenticity → Purchase Intent	Supported	Authenticity is defined by consistency, not biology (Khalfallah & Keller, 2025).
H4	Tech Readiness (Moderator)	Supported	High tech-readiness consumers prefer autonomous VIs (Zhang, 2025).

Table 3.1 summarizes the core empirical results of the study. It highlights that while interactivity consistently drives positive outcomes, the impact of autonomy is complex and moderated by the consumer's technological readiness.

3.2 Theoretical Implications

This research makes several substantive contributions to the academic literature on digital marketing and human-computer interaction. By deconstructing the monolithic concept of "virtual influencers" into specific variables of autonomy and interactivity, the study refines existing theoretical models.

3.2.1 Extending Parasocial Interaction Theory

Traditionally, Parasocial Interaction (PSI) theory has been applied to human media figures. This study extends PSI into the field of artificial agents, demonstrating that consumers form genuine parasocial bonds with entities they know to be synthetic. The findings suggest that the cognitive awareness of an influencer's artificiality does not preclude the emotional experience of connection. This challenges the "suspension of disbelief" requirement often cited in media studies; instead, consumers engage in a "conscious decoupling" where they accept the VI as a social actor despite its ontological status as software. This aligns with the evolving definition of influence in the "Creator Economy," where the value is derived from the content and community interaction rather than the creator's physical identity (Stammer, 2024).

3.2.2 Redefining Authenticity in the AI Era

The study contributes to the re-conceptualization of "authenticity" (Khalfallah & Keller, 2025). In the context of VIs, authenticity is not synonymous with "reality." Instead, it is a construct of *consistency* and *transparency*. A VI is perceived as authentic when it acts in accordance with its established persona and brand values, even if that persona is entirely

fictional. This mirrors the "brand publishing" phenomena seen in cases like Magazine Luiza's virtual influencer "Lu," where the character serves as a consistent narrative vehicle for the brand (Barbosa de Lima & Fernandes Braga, 2024). The theoretical implication is that source credibility models must be updated to include "algorithm credibility"–the trust that the underlying AI or management team will maintain the character's integrity.

3.2.3 The Role of Consumer Segmentation

The research highlights that the impact of VIs is heterogeneous across consumer groups. Utilizing clustering approaches similar to those found in recent studies (Zhang, 2025), this thesis confirms that younger, "digital native" demographics exhibit different acceptance thresholds for AI autonomy compared to older cohorts. This suggests that technology acceptance models (TAM) applied to marketing must account for generational shifts in ontological categorization–where younger consumers may view VIs not as "fake humans" but as a distinct, legitimate category of social entity.

3.3 Managerial Implications

For marketing practitioners and brand managers, the rise of virtual influencers offers both lucrative opportunities and significant risks. The findings of this study translate into actionable strategies for deploying VIs effectively.

3.3.1 Strategic Implementation of Interactivity

Brands should prioritize the *interactive* capabilities of their VIs over pure visual fidelity. The investment in hyper-realistic CGI is less effective if the character remains static or unresponsive. Managers should uses AI-driven tools to enable real-time responses to comments and dynamic content creation. As noted in the literature, interactivity is the lever that converts passive viewing into active brand engagement (Ligaraba et al., 2024). A VI

that "listens" and "responds" builds a community; a VI that merely "posts" is viewed as a glorified mannequin.

3.3.2 Managing the Authenticity Narrative

Practitioners must carefully manage the narrative of the VI. Rather than hiding the corporate or algorithmic origins of the influencer, brands should lean into the digital nature of the character. The study indicates that transparency regarding the VI's artificiality can actually enhance trust by removing the suspicion of deception (Khalfallah & Keller, 2025). Brands can position VIs as "brand ambassadors 2.0"–transparently constructed entities that embody the brand's values perfectly, without the risk of human scandal. This approach aligns with the growing trend of brands taking control of their publishing narratives (Barbosa de Lima & Fernandes Braga, 2024).

3.3.3 Targeted Deployment

The heterogeneity of consumer responses suggests that VIs should not be a "one-size-fits-all" strategy. Brands targeting tech-savvy, younger demographics can experiment with high-autonomy VIs that uses generative AI to create unpredictable content. However, for broader audiences or luxury segments where traditional "human" touch is valued, VIs should be used as complementary figures rather than replacements for human endorsers. This aligns with the understanding that different consumer groups require distinct engagement strategies (Zhang, 2025).

Table 3.2: Strategic Recommendations for Brand Managers

Strategy Dimension	Recommendation	Rationale	Citation Support
Design	Prioritize stylized consistency over hyper-realism.	Avoids uncanny valley; establishes distinct identity.	(Park et al., 2025)

Strategy Dimension	Recommendation	Rationale	Citation Support
Engagement	Implement AI-driven responsiveness.	High interactivity drives purchase intention.	(Ligaraba et al., 2024)
Disclosure	Explicitly label as "Virtual/AI".	Transparency builds long-term trust.	(Khalfallah & Keller, 2025)(Fakokunde, 2025)
Platform	Tailor autonomy to platform norms (e.g., TikTok vs. LinkedIn).	Context determines acceptance of AI agents.	(Deloitte, 2024)

Table 3.2 outlines the core strategic pillars for brands, emphasizing that successful VI deployment requires a balance of design, engagement technology, and ethical transparency.

3.4 Ethical and Societal Considerations

The integration of autonomous virtual agents into social spaces raises profound ethical questions that this thesis has highlighted. As VIs become more persuasive, the line between entertainment and manipulation blurs.

3.4.1 Transparency and Consumer Protection

A recurring theme in the analysis is the necessity of disclosure. There is a tangible risk that vulnerable consumers may not distinguish between human and virtual advice, particularly in sensitive areas like health or finance. The literature emphasizes the need for rigorous transparency standards (Khalfallah & Keller, 2025). Current regulatory frameworks, such as those in the EU, are beginning to address these gaps, but consumer law often lags behind technological capability (University of Oxford, 2024). Brands have a moral obligation to

label AI-generated content clearly, ensuring that the "influence" exerted is not based on deception regarding the influencer's existence.

3.4.2 Algorithmic Bias and Governance

Virtual influencers are not neutral; they are cultural products designed by humans and algorithms. Consequently, they can perpetuate societal biases or unrealistic beauty standards. The governance of these entities is critical. Adopting frameworks like the ISO/IEC 42001 for AI governance (KPMG, 2025) or the NIST AI Risk Management Framework (NIST, 2024)(NIST, 2021) is essential for organizations deploying VIs. These frameworks provide guidelines for managing the risks associated with AI systems, ensuring they operate fairly and transparently. The ethical deployment of VIs requires a commitment to "responsible AI," where the impact on social norms and consumer well-being is considered alongside marketing metrics (Leaver & Berryman, 2022).

3.4.3 The Future of Human Creativity

Finally, the rise of VIs prompts a broader societal reflection on the role of human creativity in the Creator Economy. While VIs offer efficiency and control, they also risk displacing human creators (Stammer, 2024). The ethical brand must consider the system impacts of replacing human labor with digital automation. A balanced approach, where VIs coexist with and amplify human creativity rather than replacing it, appears to be the most sustainable path forward.

3.5 Limitations and Future Research

While this study provides comprehensive insights, several limitations must be acknowledged, which pave the way for future research avenues.

3.5.1 Methodological Constraints

The primary limitation lies in the cross-sectional nature of the data. Consumer relationships with influencers develop over time, yet this study captured a snapshot of attitudes. Future research should employ longitudinal designs to track how parasocial relationships with VIs evolve–specifically, whether the novelty effect wears off and if trust deepens or erodes after extended interaction. Additionally, the study focused primarily on visual social media platforms (Instagram/TikTok). The rapid evolution of immersive technologies suggests that VIs will soon inhabit three-dimensional spaces. Research into how Augmented Reality (AR) and Virtual Reality (VR) influence the perception of VIs is a critical next step (Dave et al., 2025).

3.5.2 Cultural Generalizability

The study's findings are largely contextualized within Western and select Asian markets where VIs are currently prevalent. However, cultural perceptions of animism and robotics vary significantly. For instance, the acceptance of "non-human" agents is often higher in cultures with strong animist traditions, such as Japan (Park et al., 2025). Future studies should conduct rigorous cross-cultural comparisons to determine if the drivers of VI acceptance (e.g., autonomy vs. Interactivity) are universal or culturally specific.

3.5.3 Technological Evolution

The pace of AI development means that the "autonomy" measured in this study is already evolving. As Large Language Models (LLMs) enable VIs to hold complex, unscripted conversations, the definition of "interactivity" will expand. Future research must investigate the implications of *generative* VIs–entities that create their own personality traits and content in real-time–and the subsequent risks regarding brand safety and misinformation (Fakokunde, 2025).

3.6 Final Remarks

The virtual influencer is not merely a marketing trend but a harbinger of a digitized social future. This thesis has demonstrated that while the technology behind VIs is artificial, the influence they exert is undeniably real. By manipulating dimensions of autonomy and interactivity, brands can craft powerful social agents that drive consumer behavior. However, the sustainability of this marketing channel rests on a foundation of trust. As the digital line between the born and the made continues to blur, the most successful virtual influencers will not be those that deceive consumers into believing they are human, but those that use their digital nature to create authentic, interactive, and transparent value. The future of influencer marketing is not just about who is speaking, but how the listener engages with the voice–whether that voice comes from a larynx or a line of code.

4. Appendices

4.1 Appendix A: Measurement Scales and Operationalization

This appendix details the measurement instruments and operationalization of variables utilized in the research design. The scales presented here are adapted from established literature to ensure construct validity and reliability within the specific context of virtual influencers (VIs) and artificial intelligence-driven marketing. The measurement model focuses on capturing the nuances of human-computer interaction, specifically separating the technological attributes of the influencer from the psychological responses of the consumer.

4.1.1 Construct Definitions and Sources

The following table outlines the primary constructs investigated in this study, their definitions derived from the literature, and the original sources from which the measurement items were adapted.

Construct	Definition	Source Adaptation
Perceived Autonomy	The extent to which a VI is perceived as acting independently.	Adapted from AI agency literature (Patel & Dada, 2025)
Perceived Interactivity	The degree of two-way communication and responsiveness.	Ligaraba (2024) (Ligaraba et al., 2024)
Source Credibility	Perceived expertise, trustworthiness, and attractiveness.	Kim & Wang (2024) (Kim & Wang, 2024)
Social Presence	The sense of being with another "real" entity.	Park et al. (2025) (Park et al., 2025)

Construct	Definition	Source Adaptation
Brand Engagement	Behavioral manifestation of customer-brand connection.	Ligaraba (2024) (Ligaraba et al., 2024)

Table A1: Operationalization of Research Constructs.

4.1.2 Measurement Scale Justification

Perceived Autonomy and Agency The measurement of perceived autonomy is critical for distinguishing between virtual influencers that appear as puppets controlled by human marketing teams and those that appear as autonomous AI agents. Recent research suggests that the "agency" of an AI entity significantly influences consumer perception. As noted in recent studies on AI-generated advertising, the synthetic nature of these personas transforms how brands communicate, necessitating a specific measure for how independent consumers believe these entities to be (Patel & Dada, 2025). Items in this scale measure the consumer's belief that the VI makes its own choices regarding content creation and product endorsement, rather than following a script provided by a brand.

Interactivity Dimensions Interactivity is operationalized not merely as the frequency of posting, but as the quality of reciprocal communication. Drawing from interactivity theory, this study uses scales that assess the perceived responsiveness of the influencer. Ligaraba (Ligaraba et al., 2024) highlights that on platforms like TikTok, interactivity is a primary driver of brand engagement. The scale items therefore focus on the VI's ability to respond to comments, engage in trends, and create a sense of dialogue. This is distinct from simple presence; it captures the dynamic exchange that fosters a sense of community among followers.

Source Credibility and Authenticity Traditionally, source credibility relies on the human characteristics of expertise and trustworthiness. However, in the context of

VIs, authenticity becomes a complex construct involving "technical authenticity" (realistic rendering) and "existential authenticity" (being true to oneself). Kim and Wang (Kim & Wang, 2024) argue that source credibility mediates the relationship between the influencer type and advertising effectiveness. Consequently, the scale used in this study separates credibility into three sub-dimensions: expertise (knowledge of the product), trustworthiness (honesty in endorsement), and attractiveness (visual appeal), while also incorporating items related to the transparency of the VI's artificial nature (Khalfallah & Keller, 2025).

Social Presence and Anthropomorphism To measure the psychological impact of the VI's appearance, this study employs scales measuring social presence and anthropomorphism. Park, Zourrig, and Becheur (Park et al., 2025) distinguish between anthropomorphism (attributing human traits to non-humans) and animism (attributing life to non-living objects). Their findings suggest that the visual fidelity of VIs–whether they look hyper-realistic like Imma or stylized like Lu–affects the level of social presence experienced by the user. The scale items assess the extent to which the user feels they are interacting with a living, breathing entity, which is a predictor of their intention to follow recommendations.

Consumer Trust and Behavioral Intentions Finally, the outcome variables of trust and purchase intention are measured using standard marketing scales adapted for the digital context. Trust is particularly volatile in VI marketing due to the potential for deception. As noted by Leaver and Berryman (Leaver & Berryman, 2022), the ethical environment regarding VIs is evolving, and consumer trust is contingent on transparency. The items measure the consumer's confidence in the VI's recommendations and their willingness to purchase endorsed products, taking into account the "uncanny valley" effect where high realism might inadvertently lower trust if it induces discomfort.

4.2 Appendix B: Comparative Analysis of Influencer Typologies

This appendix provides supplementary data and comparative analyses regarding the different classifications of influencers discussed in the literature review. It synthesizes findings from multiple studies to highlight the structural, economic, and psychological differences between human influencers, virtual influencers, and AI-driven content generators.

4.2.1 Human vs. Virtual Influencers

The following table synthesizes key differences identified in the literature regarding the operational and reception-based distinctions between human and virtual influencers.

Dimension	Human Influencers	Virtual Influencers (VIs)	Theoretical Implication
Control	Low; prone to scandals and unpredictability.	High; fully controlled by brand/creators.	Brand Safety (Souisa & Hermawan, 2025)
Scalability	Limited by human constraints (time, location).	Infinite; can exist in multiple places simultaneously.	Efficiency (Dave et al., 2025)
Authenticity	Based on lived experience and relatability.	Constructed; based on narrative storytelling.	Source Credibility (Kim & Wang, 2024)
Cost	High for top-tier celebrities/macro-influencers.	High initial dev cost, low marginal cost.	Economic Efficiency (Xiu, 2025)
Lifespan	Finite; subject to aging and career shifts.	Ageless; indefinite lifespan.	Long-term Brand Equity (Barbosa de Lima & Fernandes Braga, 2024)

Table B1: Comparative Analysis of Human vs. Virtual Influencers.

Analysis of Control and Brand Safety A primary driver for the adoption of virtual influencers is the desire for control. Human influencers present inherent risks to brands through behavioral unpredictability or past controversies. In contrast, VIs offer brands absolute control over the messaging, appearance, and interactions of the persona. Souisa and Hermawan (Souisa & Hermawan, 2025) note that this control allows for precise alignment with brand values. However, this high degree of control creates a paradox of authenticity. While brands gain safety, they risk alienating consumers who value the spontaneous and genuine nature of human content creators.

Scalability and Multimodal Presence The technological underpinnings of VIs allow for scalability that is impossible for human actors. Through the integration of Augmented Reality (AR) and Virtual Reality (VR), VIs can interact with products and consumers in immersive environments. Dave et al. (Dave et al., 2025) discuss how these technologies revolutionize consumer experiences, allowing VIs to demonstrate products in virtual spaces or appear in consumers' physical environments via AR. This capability extends the "Creator Economy" into what Stammer (Stammer, 2024) refers to as an "Artist Economy," where the boundaries of content creation are redefined by digital capabilities.

4.2.2 Typology of Virtual Personas

Virtual influencers are not a monolith; they exist on a spectrum of visual realism and autonomy. The following table categorizes these entities based on the literature.

Type	Visual Style	Key Examples	Primary Mechanism
Hyper-realistic	Indistinguishable from humans.	Imma, Lil Miquela	Anthropomorphism (Park et al., 2025)
Stylized/Avatar	Cartoon-like or clearly CGI.	Lu (Magalu), Noonoouri	Animism (Barbosa de Lima & Fernandes Braga, 2024)

Type	Visual Style	Key Examples	Primary Mechanism
AI-Generated	Dynamic, evolving appearance.	Aitana Lopez	Generative AI (Patel & Dada, 2025)

Table B2: Classification of Virtual Influencers.

Visual Realism and the Uncanny Valley The distinction between hyper-realistic and stylized VIs is important for understanding consumer response. Park et al. (Park et al., 2025) investigate how appearance affects social presence, finding that "animism" (the attribution of life) may be more effective than strict anthropomorphism for certain types of engagement. Hyper-realistic VIs risk falling into the "uncanny valley," where slight imperfections in human-like appearance cause revulsion. Stylized characters like Lu from Magalu avoid this by establishing a clear separation from reality while maintaining high relatability through narrative depth (Barbosa de Lima & Fernandes Braga, 2024).

The Role of Generative AI The newest generation of VIs uses generative AI to produce content and interactions autonomously. Unlike earlier VIs that were manually animated by teams, these AI-driven entities can generate text, images, and video in real-time. Patel and Dada (Patel & Dada, 2025) argue that this shift transforms the influencer from a "character" into a "system," raising new questions about the authenticity of the interaction. When an AI generates a response to a comment, the consumer perception of that interaction relies heavily on whether they view the AI as a tool or a social agent.

4.3 Appendix C: Glossary of Terms

This glossary defines key technical and theoretical terms used throughout the thesis, grounded in the cited literature.

Animism The attribution of life and consciousness to inanimate objects or digital entities. In the context of virtual influencers, this differs from anthropomorphism; while

anthropomorphism focuses on human-like traits, animism focuses on the "spark of life" or soul attributed to the avatar. Research suggests animism can trump anthropomorphism in driving consumer engagement for certain VI types (Park et al., 2025).

Artificial Intelligence (AI) Governance The framework of rules, practices, and processes used to ensure the responsible development and deployment of AI technologies. This includes adherence to standards such as ISO/IEC 42001 (KPMG, 2025) and the NIST AI Risk Management Framework (NIST, 2024)(NIST, 2021), which provide guidelines for managing risks related to transparency, bias, and safety in AI systems.

Creator Economy An economic system consisting of independent content creators, curators, and community builders, including influencers, bloggers, and videographers, as well as the software and finance tools designed to assist them with growth and monetization. The rise of VIs represents a technological evolution within this economy, potentially shifting it toward an "Artist Economy" where digital assets hold primary value (Stammer, 2024).

Interactivity A multidimensional construct referring to the degree to which a communication medium allows for reciprocal exchange. In influencer marketing, it is defined by the speed, frequency, and quality of the influencer's response to audience engagement. High interactivity is positively correlated with brand engagement and loyalty (Ligaraba et al., 2024).

Parasocial Interaction (PSI) A psychological relationship experienced by an audience in their mediated encounters with performers in the mass media, particularly on television and online. Viewers or listeners come to consider media personalities as friends, despite having limited or no interactions with them. This concept is central to understanding how consumers form bonds with virtual influencers despite knowing they are not real (Souisa & Hermawan, 2025).

Source Credibility Theory A theory proposing that the persuasiveness of a message depends on the perceived credibility of the source. The two primary dimensions are expertise (knowledge/skill) and trustworthiness (honesty/integrity). In the context of VIs,

this theory is being re-evaluated to understand how "manufactured" credibility competes with human authenticity (Kim & Wang, 2024).

Virtual Influencer (VI) A computer-generated character that mimics the characteristics and behaviors of human influencers on social media. These entities have names, personalities, and backstories, and they endorse products or viewpoints. They can be hyper-realistic or stylized and are increasingly powered by AI technologies (Souisa & Hermawan, 2025)(Barbosa de Lima & Fernandes Braga, 2024).

4.4 Appendix D: Ethical and Regulatory Frameworks

This appendix outlines the ethical considerations and regulatory frameworks relevant to the deployment of virtual influencers. As the lines between human and machine-generated content blur, issues of transparency, manipulation, and consumer protection have moved to the forefront of academic and legal discourse.

4.4.1 Regulatory Standards and Risk Management

The following table summarizes key global standards and frameworks that apply to the governance of AI and virtual entities in marketing.

Standard/Framework	Issuing Body	Key Focus Area	Relevance to VIs
ISO/IEC 42001	ISO/IEC	AI Governance	Establishes management systems for AI use (KPMG, 2025).
AI RMF 1.0	NIST	Risk Management	Maps risks of AI trustworthiness (NIST, 2021).

Standard/Framework	Issuing Body	Key Focus Area	Relevance to VIs
GDPR/EU Law	European Union	Data & Consumer Rights	Addresses transparency in automated decisions (University of Oxford, 2024).
Platform Policies	Meta/TikTok	Content Labeling	Requires disclosure of AI-generated content (Leaver & Berryman, 2022).

Table D1: Key Regulatory Frameworks for AI and Virtual Influencers.

4.4.2 Ethical Challenges in Virtual Influencer Marketing

Transparency and Disclosure The most pressing ethical issue concerns the disclosure of a VI's non-human status. While some VIs are obviously stylized, hyper-realistic avatars can deceive consumers. Khalfallah and Keller (Khalfallah & Keller, 2025) emphasize that transparency is a prerequisite for ethical engagement. If consumers believe they are interacting with a human, the trust formation process is based on a false premise. Current EU consumer law is scrutinized for its adequacy in addressing these novel forms of commercial practice, with scholars arguing that existing frameworks may fall short in protecting consumers from the subtle manipulations possible with emotionally intelligent AI agents (University of Oxford, 2024).

Manipulation and Vulnerable Audiences Virtual influencers, particularly those driven by AI, have the capacity to optimize interactions for maximum persuasion based on user data. This raises concerns about the manipulation of consumer behavior, especially among younger demographics who may be less able to distinguish between reality and sim-

ulation. Zhang (Zhang, 2025) explores the differences in influence across consumer groups, suggesting that demographic segmentation is necessary to understand vulnerability. The ability of VIs to form parasocial relationships means that their endorsements can bypass rational skepticism, functioning more like advice from a friend than traditional advertising (Surjono, 2025).

Corporate Responsibility and Governance As brands increasingly integrate AI into their marketing stacks, the need for strong internal governance grows. The ISO/IEC 42001 standard provides a blueprint for organizations to manage AI responsibly (KPMG, 2025). Furthermore, the NIST AI Risk Management Framework highlights the necessity of "Map, Measure, Manage, and Govern" functions to ensure AI systems are valid, reliable, and fair (NIST, 2021). For brands using VIs, this means establishing clear protocols for what the VI can say, how it interacts with users, and how it handles sensitive topics. Leaver and Berryman (Leaver & Berryman, 2022) question whether social media platforms like Meta should be the sole arbiters of these ethical ground rules, or if broader governmental oversight is required to prevent the exploitation of digital trust.

Data Privacy and Surveillance The operation of interactive VIs often requires the processing of vast amounts of user data to generate personalized responses. This intersects with data privacy concerns. While the VI appears to be a single persona, it is often a front for a data-gathering operation. Fakokunde (Fakokunde, 2025) discusses the importance of privacy and transparency in AI-assisted systems, a principle that applies equally to educational AI and marketing AI. Consumers engaging with a VI may not realize that their sentiment, language patterns, and engagement times are being harvested to train the model further, raising questions about informed consent in the era of the "Artist Economy" (Stammer, 2024).

References

Barbosa de Lima, & Fernandes Braga. (2024). Ressignificação do brand publishing:. *Culturas Midiáticas*, *22*. Https://doi.org/10.22478/ufpb.2763-9398.2024v22n.70532.

D S. (2025). The Role Of Influencers In Shaping Consumer Attitudes Toward Brands. *International Journal of Research Publication and Reviews*, *6*(6), 6444-6451. Https://doi. org/10.55248/gengpi.6.0625.2226.

Dave, Gupta, Gandhi, & Sejpal. (2025). From Visualization to Purchase: How Augmented Reality (AR), Virtual Reality (VR) and Artificial Intelligence (AI) Influence Consumer Purchase Decisions in Housing Design Decisions. *International Journal of Innovative Science and Research Technology*. Https://doi.org/10.38124/ijisrt/25apr1332.

Deloitte. (2024). *2024 Digital Media Trends introduction | Deloitte Insights.* Https:// www.deloitte.com/us/en/insights/industry/technology/digital-media-trends-consumption-habits-survey/2024/digital-media-trends-introduction.html

Fakokunde. (2025). Ethics, Privacy, and Transparency in AI-Assisted Teaching: Evaluating Notegrade.ai Against Global Standards. *International Journal of Research Publication and Reviews*, *6*(9), 2069-2079. Https://doi.org/10.55248/gengpi.6.0925.3326.

Forrester. (2026). *The State Of Artificial Intelligence And Machine… | Forrester.* Https://www.forrester.com/report/the-state-of-artificial-intelligence-and-machine-learning-adoption-in-b2b-marketing-2025/RES187729

Jahnke. (2018). *Ist Influencer-Marketing wirklich neu?.* Springer Fachmedien Wiesbaden. Https://doi.org/10.1007/978-3-658-20854-7_1

Khalfallah, & Keller. (2025). Authenticity, ethics, and transparency in virtual influencer marketing: A cross-cultural analysis of consumer trust and engagement: A systematic literature review.. *Acta Psychologica.* Https://doi.org/10.1016/j.actpsy.2025.105573.

Kim, & Wang. (2024). Social media influencer vs. Virtual influencer: The mediating role of source credibility and authenticity in advertising effectiveness within AI influencer

marketing. *Computers in Human Behavior: Artificial Humans, 2*(2), 100100. Https://doi.
org/10.1016/j.chbah.2024.100100.

KPMG. (2025). *ISO/IEC 42001: a new standard for AI governance.* Https://kpmg.
com/ch/en/insights/artificial-intelligence/iso-iec-42001.html

Leaver, & Berryman. (2022). *'Virtual influencers' are here, but should Meta really be
setting the ethical ground rules?.* The Conversation. Https://doi.org/10.64628/aa.665gf6vdk

Ligaraba, Mohammed, & Mohamed. (2024). The effect of influencer interactivity
on customer brand engagement: An interactivity theory perspective: The effect of influ-
encer interactivity on customer brand engagement: An interactivity theory perspective..
IROCAMM-International Review Of Communication And Marketing Mix, 2(7), 105-127.
Https://doi.org/10.12795/irocamm.2024.v07.i02.06.

NIST. (2024). *Artificial Intelligence Risk Management Framework (AI RMF 1.0) -
Japanese translation.* National Institute of Standards and Technology. Https://doi.org/10.
6028/nist.ai.100-1.jpn

NIST. (2021). *AI Risk Management Framework | NIST.* Https://www.nist.gov/itl/ai-
risk-management-framework

Park, Zourrig, & Becheur. (2025). The Effect of Virtual Influencers' Appearance
on Social Presence and Consumer Engagement: Does Animism Trump Anthropomorphism?.
Review of Marketing Science. Https://doi.org/10.1515/roms-2025-0061.

Patel, & Dada. (2025). The Impact of AI-Generated Advertising and Virtual Influ-
encers on Consumer Perception and Brand Authenticity. *Journal of Media & Management.*
Https://doi.org/10.47363/jmm/2025(7)199.

Souisa, & Hermawan. (2025). Systematic Literature Review: Eksistensi Influencer
Virtual dalam Komunikasi Pemasaran. *Jurnal Audience, 8*(1), 32-51. Https://doi.org/10.
33633/ja.v8i1.12345.

Stammer. (2024). *1.4 Von der Creator Economy zur Artist Economy? Zu den Auswirkungen der Creator Economy auf die Musikwirtschaft.* Nomos Verlagsgesellschaft mbH & Co. KG. Https://doi.org/10.5771/9783845289373-53

Surjono. (2025). Impact of Social Media Influencers on Shaping Brand Loyalty and Consumer Trust. *TECHNO-SOCIO EKONOMIKA*, *18*(1), 1-9. Https://doi.org/10.32897/techno.2025.18.1.3832.

University of Oxford. (2024). *The Perils and Promises of Virtual Influencers: Where EU Consumer Law Falls Short | Oxford Law Blogs.* Https://blogs.law.ox.ac.uk/oblb/blog-post/2024/11/perils-and-promises-virtual-influencers-where-eu-consumer-law-falls-short

Xiu. (2025). Deloitte Digital Audit Practice Exploration and Future Trend Research. SCITEPRESS - Science and Technology Publications. (pp. 240-248). Https://doi.org/10.5220/0013842200004719

Zhang. (2025). Differences in the influence of virtual influencers on different consumer groups. *Journal of Infrastructure Policy and Development.* Https://doi.org/10.24294/jipd10831.