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INTRODUCTION

In recent years, influencer marketing has become a powerful and largely used tool for brands to build relationships with their target and affect their behavior (according to Influencer Marketing Hub, the influencer marketing market was estimated to reach 24 billion U.S. dollars). However, issues such as lack of transparency (e.g. based on research conducted by the European Commission in February 2024, 97% of European influencers post commercial content but only 20% disclose its nature) and questionable endorsements have led to increasing consumer skepticism in influencers. Consumers are now able to spot and distinguish disingenuous endorsements, leading to significant backlash: for instance, on X (formerly Twitter), Italian users have even coined the viral hashtag #influcirco (it is the combination of “influencer” and “circo”, meaning circus in Italian) to report and mock unethical influencer behavior. In response to the rising scrutiny and the evident unethical practices, regulatory authorities, like Italy’s AGCOM and the UK’s Competition and Markets Authority, have responded by tightening rules and issuing new guidelines.

This growing mistrust toward human influencers poses significant risks for brands: even highly regarded celebrities can quickly lose favor due to ethical issues and scandals, impacting negatively also on their business partners' reputation and sales. For instance, in 2022 Kanye West faced a significant scandal due to his antisemitic remarks, which led Adidas (that was collaborating with the celebrity on the highly successful Yeezy line) to sever ties with him. While the split left Adidas with over \$1.2 billion worth of unsold Yeezy products, heavily impacting its finances, this scandal had a major effect on Adidas' reputation and revenue: a \$465 million drop in revenue in 2023 and a lawsuit by investors, who accused the company of having prior knowledge of West's behavior and still failed to mitigate the financial damage.

Therefore, the financial implications of influencers incidents can be severe, leading brands to reconsider their reliance on human influencers. To mitigate these risks, many companies are turning to AI-powered virtual influencers since they offer brands a way to reach consumers without the same ethical risks and limitations posed by human influencers. Consequently, AI influencers are gaining popularity in various sectors, including luxury and fashion, as well as in certain geographical areas such as Brazil and South Korea. Given the emergence and expansion of virtual influencers, it is important to understand the practices and strategies that brands and companies need to adopt to make the most of this new tool.

These virtual influencers offer several advantages over human influencers, such as greater control over campaign content and the almost absence of scandals (e.g. Sands et al., 2022b; Fauser et al.,

2023; da Siva Oliveira & Chimenti, 2021; Moustakas et al. 2020). However, they also face challenges regarding authenticity and trustworthiness, as they lack real-world experiences and emotional depth (Arsenyan & Mirowska, 2021). While transparency about their virtual nature can enhance credibility (Koles et al., 2024), it doesn't fully mitigate perceptions of inauthenticity (Mirowska & Arsenyan, 2023; Lim & Lee, 2023).

Since the majority of research has focused on virtual influencers' performance relative to human counterparts (e.g. Sands et al., 2022a; Belanche et al., 2024; Liu & Lee, 2024a), there is a limited understanding of how different categories of virtual influencers (human-like vs. cartoon-like) affect consumer behavior. To address this gap, this thesis will investigate how different virtual influencer designs interact with the type of good being promoted (product vs. service) to affect consumers' purchase intentions. Given ongoing concerns about authenticity, perceived authenticity will be tested as a mediator in this relationship.

To explore the research question, a 2x2 between-subject experimental design has been used and the data was analyzed via ANOVA and moderated mediation analysis using IBM SPSS Statistics 29. The main contributions of this experiment lie in providing additional evidence to support and enrich previous studies related to purchase intention and anthropomorphism and offering practical insights in terms of influencer-good fit for brands and marketers seeking to leverage this novel tool.

The thesis is structured as follows: the first chapter presents a theoretical examination of virtual influencer marketing from its origins; the second chapter employs empirical case studies of virtual influencers, both human-like and cartoon-like, to elucidate their strengths and current usage and lastly, the third chapter discusses the experimental study and its findings, emphasizing the thesis's key insights.

CHAPTER 1: FROM DIGITAL MARKETING TO VIRTUAL INFLUENCER MARKETING

1.1 A foundation of current trends: Digital Marketing

As we delve into the realm of virtual influencers, it is essential to understand the broader context of digital marketing, which has become the basis of contemporary trends, including virtual influencer marketing.

Indeed, virtual influencers are a direct result of advancements in digital marketing and technology: digital marketing strategies are crucial to the operation and success of these computer-generated personas. Therefore, digital marketing tools enabled virtual influencers to reach their target audience, generate engagement, and ultimately achieve their marketing objectives.

It is evident that digital marketing is the core of the birth and widespread adoption of this novel type of influencer, which is gaining millions of followers on social media and partnering with major brands, as shown by cases like Lil Miquela.

1.1.1 Definition and Evolution of Digital Marketing

As published in the “2024 Global Digital Report”, over 66% of the Earth's population uses the internet, counting 5.35 billion users spending an average of 6 hours and 40 minutes online per day, according to ongoing research from GWI.

Digital channels offer a significant advantage over most traditional marketing channels since they enable marketers to choose precisely targeted advertising, improving the concentration of prospects. This is one of the key reasons for Google and Facebook's dominance in digital advertising: these platforms offer a diverse and higher-quality range of targeting possibilities. In this digital landscape, it is also pertinent to consider the crucial role of social media (SNS): at the beginning of this year, GWI identified more than 5 billion active social media user accounts, with an average daily usage of 2 hours and 23 minutes. These statistics provide a glimpse of the significance of digital marketing in the current era where people go online to obtain information, keep in touch with friends and family, and engage with leisure activities or content.

Digital marketing is “the process of promoting, selling, and delivering products or services through online platforms and channels using the internet and electronic devices in a digital environment” (Jin

et al., 2024). This dynamic field has evolved significantly over the years, adapting to the rapidly changing landscape of the digital world.

In its earliest form, often referred to as Web 1.0, the Internet was characterized by read-only static websites, created using simple HTML. From 1990 to 2000, websites primarily served as information repositories that users could consult but not interact with. This is the reason why marketing strategies had the objective to offer products or services that meet basic needs, without emphasizing customer connection.

The term "digital marketing" was first coined years before, in 1980, by a company named Channel (formerly known as Soft Ad Group) which pioneered advertising in digital form. The introduction of personal computers by IBM in 1981 constituted a significant milestone since firms, businesses, and households began adopting computers. By 1990, the term digital marketing was becoming more common, with the first clickable banner ad appearance in 1993 marking the beginning of online advertising. However, slow internet speeds, limited access and high costs hindered the widespread adoption of the internet and consequently digital marketing.

The transition to Web 2.0 around 2004 marked a significant evolution in digital marketing: Mark Zuckerberg founded Facebook, which will connect people globally; Gmail emerged as a digital communication tool; etc. With the advent of dynamic programming languages, the internet became interactive, allowing users to engage with websites through blogs, forums, and social networks. Due to the facilitated greater user participation, the focus shifted from merely presenting products to creating relationships with customers, fostering loyalty and enhancing user experience. In this sense, social networks played a crucial, especially with the rise of various social media in the following years.

From 2006 onwards, the internet's role expanded further into what is known as Web 3.0 or the Data Web. In this phase, data and semantics gained prominence, while the proliferation of personal computers, smartphones, and high-speed internet access led to a dramatic increase in online activity and content. Therefore, there was an increase in user-generated content (UGC), a pivot in digital marketing. Marketing strategies evolved to become multichannel and omnichannel, aiming not only to retain customers but also to engage them emotionally and align with their values.

In recent years, the concept of Web 4.0 has introduced new technologies such as augmented reality (AR) and Big Data, further transforming digital marketing. It offers a more cost-effective approach since it allows businesses to reach a large audience, even on a global scale, with minimal overhead costs. Big data analytics tools, such as Google Analytics, enable precise targeting based on

demographic, geographic, behavioral and interest-based criteria. In this era, digital marketing campaigns can be monitored and measured in real-time, providing valuable insights to optimize their strategies and anticipate trends.

The advent of the COVID-19 pandemic accelerated the adoption of social media and mobile marketing, as well as the widespread use of metaverse games like Roblox and Fortnite. These platforms have emerged as crucial communication channels, essential for brand engagement and consumer interaction, particularly with Gen Z.

As this paragraph has demonstrated, the evolution of digital marketing reflects the broader transformation in technology and consumer behavior. Therefore, its continuous development is driven by the need to meet consumer expectations, leverage new technologies, and adapt to changing market landscapes. Since customers continue to embrace digital channels, digital marketing has ensured its key position as a fundamental aspect of marketing for businesses of all sizes.

1.1.2 Overview of key digital marketing strategies

“A digital marketing strategy is a comprehensive plan that guides business on how to use online channels to reach more customers, increase brand visibility, drive more sales, and achieve specific business goals” (Vora, 2023).

To achieve the desired results of long-term profits, brands need a well-defined marketing strategy to attract prospects and convert customers into loyal customers, advocates in the best-case scenario. Now through digital marketing channels, brands have a large range of methods that ensure exposure to the right segments of consumers and the following loyalty building.

The choice of strategies should align with the business's goals, target audience, and resources. Combining these strategies effectively can lead to increased brand awareness, higher conversion rates, and sustained business growth.

Budget considerations and return on investment (ROI) are crucial: ROI is determined by cost per exposure, customer concentration, and the effectiveness of each exposure.



Figure 1.1 ROI formula (Larson Jeff and Draper Stuart, 2022, *Digital Marketing Essentials*)

With all this information in mind, let's explore some of the most effective digital marketing strategies, focusing on their benefits.

Email campaign is a profitable tactic due to its low cost per exposure and high exposure effectiveness. The company must establish an effective and legitimate method to collect potential customers' email addresses. Recipients usually give their consent to send them marketing emails because they have an underlying interest in the product/service or brand. To incentivize people to sign up for an email list, businesses can offer lead magnets (e.g. a digital report, a book, a tool, or some other piece of content). Constant contact with consumers through email has a positive effect in terms of brand loyalty, prompting recipients to recommend the brand to friends and visit physical or online stores for purchasing (Merisavo & Raulas, 2004).

Search Engine Optimization (SEO) can assure an extremely high return: a good organic search rank translates into high customer concentration with high exposure effectiveness at low cost per exposure. Indeed, the relevance of a site is essential: in this sense, the position is fundamental as failing to appear on the first few search pages can lead to a significant drop in organic click. Therefore, high search rankings enhance a brand's credibility and trustworthiness, establishing a solid foundation for long-term online visibility.

Paid Search Advertising guarantees a high customer concentration and exposure effectiveness. Indeed, platforms like Google Ads allow advertisers to target specific demographics, interests, and behaviors, ensuring ads reach the right audience. The only disadvantage is the high cost per exposure that is determined via an auction where the valuable keywords tend to be expensive.

Social Media Marketing is a key tactic to reach stronger brand visibility and engagement rate due to the variety of targeting methods that social media platforms offer. Consequently, it assures a high level of customer concentration and exposure effectiveness, but at the same time a high cost per exposure.

Content Marketing is a “strategic marketing approach focused on creating and distributing valuable, relevant, and consistent content to attract and retain a clearly defined audience — and, ultimately, to drive profitable customer action” (Content Marketing Institute). Therefore, it is a valuable strategy that should provide high exposure and high concentration at a low cost. It is crucial for a loyalty-building perspective since it can show the company's efforts to stay in touch with consumers, to give them valuable insights about the brand/service/product, etc.

Display Advertising uses visual ads like videos, images or text presented on websites or social media platforms. It has a low cost per exposure but also a low effectiveness since users tend to avoid looking at banner ads. However, creative and targeted display ads can still contribute to brand awareness.

Affiliate Marketing consists of the promotion of products/services/brands through affiliate marketers' websites. The brands ensure low-risk profitable traffic to their channels and in return, affiliate marketers gain a commission for every visitor or customer brought by their own marketing efforts. This method increases the brand's exposure and customer base (Peter & Dalla Vecchia, 2021).

Instead, influencer marketing foresees collaboration with influencers who receive a fee or free product/service for posting sponsored content. An influencer campaign is also considered a profitable tactic to increase brand awareness and sales, even if it implies some pitfalls: difficulties in verifying the impact of this campaign (e.g. fake followers account), decrease in brand loyalty and purchasing whenever the influencer loses trust and credibility, etc. This strategy will be analyzed more in details in the next paragraph.

It is clear that the main digital marketing strategies encompass a broad spectrum of techniques designed to enhance online visibility, engage with target audiences, and drive business growth. By leveraging a combination of these strategies, businesses can build strong customer relationships, increase brand loyalty, and achieve significant returns on investment.

1.2 The Relevance of Influencer Marketing

As previously stated, influencer marketing represents a rapidly growing marketing strategy that relies on influencers to endorse brands and products/services to their followers. Its continued expansion has

been testified by a global influencer marketing market value of 21.1 billion U.S. dollars, registered by Statista at the end of 2023, and its expected value of 24 billion U.S. dollars, predicted by Influencer Marketing Hub.

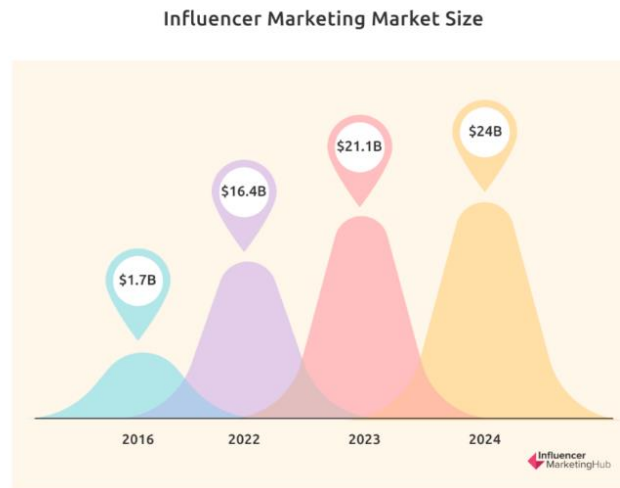


Figure 1.2 Influencer marketing market size (Influencer Marketing Hub, 2024, taken from Influencer Marketing Hub: <https://influencermarketinghub.com/influencer-marketing-benchmark-report/#toc-2>)

Nowadays consumers face an overwhelming array of choices, leading to “choice overload” or “overchoice”. Then consumers frequently resort to mental shortcuts or rules of thumb, such as relying on the informed advice of others who have previously made similar choices. This reliance on others’ experiences aligns with the adoption of influencers, particularly when the influencer has gained a certain degree of authority in terms of reliability and credibility (Solis, 2012). Indeed, consumers seek information, opinions and advice prior to making purchase decisions and influencers fulfill this need by providing informed advice on specific topics, appearing trustworthy, reliable, expert and familiar.

Influencers allow companies to connect “authentically” with consumers, fostering trust through content based on personal experiences. This relationship makes influencer marketing more effective than other forms of advertising. As a result, influencer marketing is expected to continue gaining importance in the marketing field. In June 2024, Influencer Marketing Hub observed an increase of over 45.8% in budget allocation for influencer marketing, resulting in more than 30% of the total budget. Additionally, there has been a rise in marketers' perception of influencer marketing effectiveness, with only 21.8% of the interviewees expressing doubt about its efficacy. This major shift highlights its growing relevance and potential.

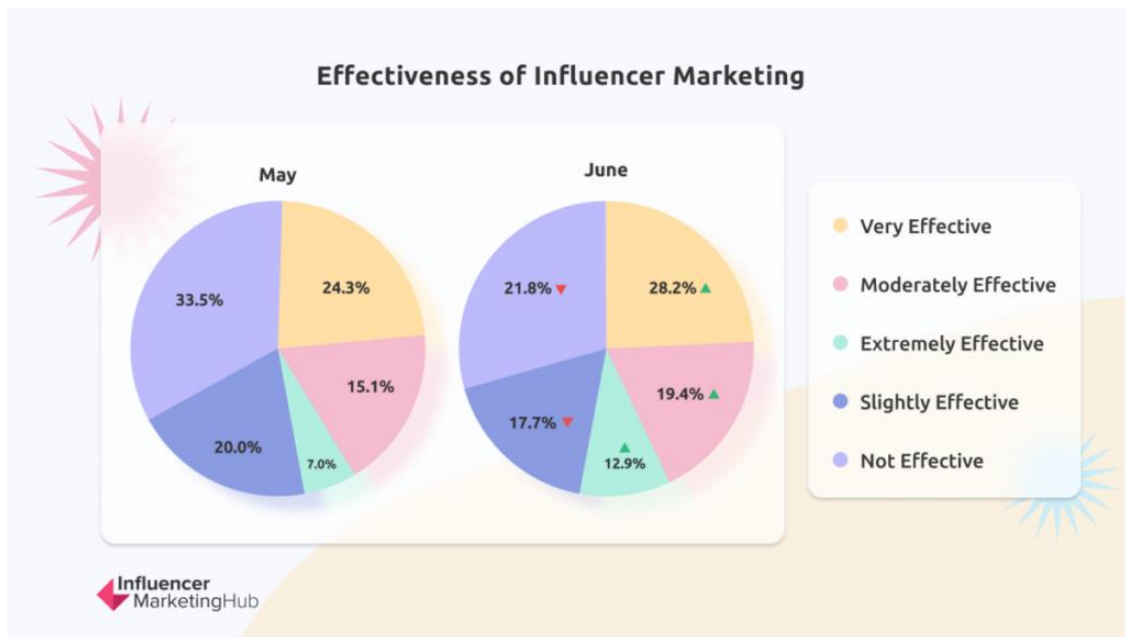


Figure 1.3 Effectiveness of Influencer Marketing (Kasumovic Djanan, 2024, taken from Influencer Marketing Hub: <https://influencermarketinghub.com/monthly-influencer-marketing-report/>)

1.2.1 Definition and role of influencers: how they create value for brands

An influencer is an individual who is able to “influence” the followers' base behavior, in terms of purchase intention, brand/product/service perception and so on. This ability to affect others derives from the influencer’s perceived authority, knowledge, positioning, relationships, and how they engage with their audiences (Pogliani, 2019). Let’s explore these key characteristics: authority, derived from the recognized expertise and reliability in a specific subject; knowledge, which enhances individual credibility; positioning, since an assured central role in a network secures effective communication, and relationships, which facilitate the widespread of a message.

Thanks to their ability to connect with followers, influencers can contribute to brands in different ways.

First of all, influencers can ensure to reach a relevant audience: influencers often have engaged followers that align with the brand target audience (Kohlbach, 2020). In the case of influencers with a large follower base, they can also provide a broaden reach (Pogliani, 2020), guaranteeing an increase in brand visibility and recognition.

They can also positively influence brand perception through authentic endorsements and storytelling (Kohlbach, 2020), even humanizing the brand (Pogliani, 2020) and increasing long-term loyalty.

Influencers' content can boost user engagement with the brand through their qualitative content (Pogliani, 2020), leading followers to take specific actions like a purchase. Indeed, a recommendation from a trusted influencer can easily drive sales (Yuliati & Huda, 2022; Ren et al., 2021) thanks to influencers' relatable and empathetic content.

Influencers can also provide a higher return on investment for each campaign: according to Influencer Marketing Hub, businesses make \$5.2 ROI for every \$1 invested in influencer marketing. The variables that determine a positive impact on ROI are: the number of followers, since a large following comports great reach and high engagement rates, influencer's originality and the inclusion of links, cause the linked pages or profiles offer additional information (Leung et al., 2022).

What Drives Influencer Marketing ROI?

A recent analysis identified seven key variables that impact engagement.

Influencer characteristic	Effect on ROI
1. Number of followers	↑ +9.2%*
2. Posting frequency	⚡ Goldilocks effect**
3. Follower-brand fit	⚡ Goldilocks effect**
4. Originality	↑ +15.5%*
Post characteristic	Effect on ROI
5. Positivity	⚡ Goldilocks effect**
6. Includes link to brand	↑ +11.4%
7. Announces a new product	↓ -30.5%

*Change in ROI corresponding to a one-standard-deviation increase.

**The highest ROI was achieved with a medium level of these characteristics —not too little, not too much.

Source: Fine F. Leung, Jonathan Z. Zhang, Flora F. Gu, Yiwei Li, and Robert W. Palmatier



Figure 1.4 Variables impact on ROI (Fine F. Leung, Jonathan Z. Zhang, Flora F. Gu, Yiwei Li, and Robert W. Palmatier, 2022, taken from Harvard Business Review: <https://hbr.org/2022/11/does-influencer-marketing-really-pay-off>)

Besides all these benefits, influencer marketing can result in a cost-effective strategy (Kohlbach, 2020): influencers often produce content themselves, reducing production costs, and this content can be reused by brands, providing additional value over time.

In exchange for this value creation, influencers can receive free or discounted products or earn a fixed fee for each piece of content (e.g., posts, videos, and/or stories) showcasing a product/service or gain a percentage of sales value made through a promo code or link published with the influencer's content. These fees and commissions are not the same in every contract, but they change based on variables such as the notoriety of the influence, follower engagement, exclusivity, etc.

Influencers play a crucial role in marketing strategy: they can raise brand awareness and recognition, reach targets, improve engagement rate, increase sales and positively impact ROI and brand reputation. They can ensure these great results by providing a more personalized and relatable approach to marketing (Ren et al., 2021).

1.2.2 Influencer Classification

Influencers can be classified into four main categories based on factors such as follower count, engagement rates, niche focus and brand partnerships. These categories are Mega-Influencers (including celebrities), Macro-influencers, Micro-influencers and Nano-influencers. For a brand, understanding the characteristics of each type of influencer is crucial when selecting the right partner for a campaign.

Mega-Influencers are individuals who count more than 1 million followers on at least one social media channel. This category also includes celebrities whose fame was gained through offline activities and not on social platforms, like actors and musicians. Due to their high cost, they are mainly hired through agencies or managers by major brands (Campbell & Farrell, 2020) that, in some cases, even appoint them as brand ambassadors. They allow brands to have a massive reach and spread awareness to a large and strong fan base, but they are not the ideal solution in terms of engagement and conversion since mega-influencers are perceived as less genuine in sponsorship content (Pöyry et al., 2019).

Macro-influencers, instead, are individuals with followers ranging from 100,000 to 1 million on a social platform. They are the perfect selection for raising brand awareness, due to their know-how, storytelling skills and experience. The only issue, besides the high cost, is the risk of fraud: some macro-influencers achieve their position by purchasing followers, which could damage the brand's reputation and negatively impact the campaign results. Furthermore, it is challenging to have bi-directional communication with a large audience, decreasing the engagement rate and the trust and authenticity of influencers (Britt et al., 2020).

The third category is composed of micro-influencers. They usually are ordinary people who have between 10,000 and 100,000 followers due to their expertise in a specific niche. Thanks to their authenticity they can assure a high-value communication that can be used to convert their followers into sales or leads (Bijen, 2017). Indeed, they post more reliable content, showing a lifestyle accessible to the follower base. Having a close and interactive relationship with their audience, they also guarantee high engagement rates. However, micro-influencers can be challenging to hire since they do not want to harm their efforts and relationships with their specialist following by working with brands that do not align with their values or that produce “lemons” (subpar products).

A quite recent type of influencer that has gained attention is the nano influencer who has a maximum of 10,000 followers on their social media accounts. Like micro-influencers, they are typically experts or enthusiasts in very niche areas. Due to their close connection with the audience, they have a high influence in small circles, so they are not ideal for brand awareness but for building authentic and trustworthy relationships with customers. In addition, they assure a high engagement rate, as shown by a study of Aspire: nano influencers have the highest engagement in all the platforms with an average rate of 4.39%. Partnerships with nano influencers present some challenges: besides the lower reach, they may also be slower to get results since trust and authentic connection need time to build.

After this overview, it is clear that each category offers distinct advantages and challenges. Mega- and macro-influencers are effective for raising brand awareness on a large scale, but they often come with high costs and potential issues with authenticity and fraud; while micro- and nano-influencers provide more authentic and engaged interactions with their followers.

Brands must understand the various types of influencers and carefully select the ones who align with their values and target audience to ensure successful marketing campaigns. However, according to Aspire search, 64% of brands are working with smaller influencers, highlighting the relevance of the authenticity factor in marketing campaigns.

1.2.3 Influencer Marketing Channels

To develop a successful influencer marketing strategy, marketers need to consider the various channels adopted by influencers to connect with their followers and influence their behavior (Yuliati & Huda, 2022). Influencers primarily choose digital channels like social media platforms that have gained importance since Gen Z tends to use them for brand and product research, as highlighted by a recent GWI research. Given the relevance of these platforms, the most exploited are TikTok, Instagram, YouTube and Facebook.

The Most Common Channel Used by Influencer Marketing Brands

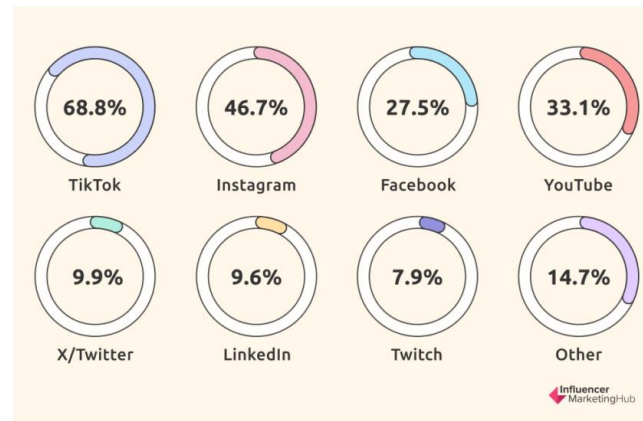


Figure 1.5 The Most Common Channel Used by Influencer Marketing Brands (Influencer Marketing Hub, 2024, taken from Influencer Marketing Hub: <https://influencermarketinghub.com/influencer-marketing-benchmark-report/#toc-2>)

As mentioned in the “State of Influencer Marketing Benchmark Report 2024” by Influencer Marketing Hub, TikTok has become the dominant platform, used by 69% of brands for influencer marketing. Known for its short-form, highly engaged and viral video content, it allows influencers to share relevant information on a brand/product/service in a few seconds, guaranteeing total consumer attention. The key to its success is its algorithm, classified as one of the most advanced by The New York Times: its ability to understand users' preferences enables the platform to keep viewers engaged for hours. Thanks to its growing popularity, now its potential advertising audience is 1.56 billion users, as shown in the “Digital 2024: Global Overview Report”. To summarize, TikTok’s ability to drive viral trends and high engagement rates, especially among Gen Z users, makes it an attractive channel for brands targeting younger audiences.

Instead, Instagram stands as one of the most popular platforms for influencer marketing, with a potential reach of 1.65 billion people worldwide (Digital 2024: Global Overview Report). This visually driven channel offers influencers a variety of content formats to adopt (e.g. photos, reels and stories), making it a great choice for partnerships. This versatility enables influencers to effectively showcase products and services, resulting in customers being particularly receptive to these recommendations. Instagram’s appeal is linked also to the addition of a specific shopping tab which allows to link the company website and facilitates customers' shopping experience. Despite the rise of TikTok, Instagram remains a crucial channel for influencer marketing since it benefits both brands and influencers: companies can easily discover and contact influencers while influencers can help achieve marketing objectives by exploiting the platform features.

YouTube, on the other hand, is the ideal solution for long-form content like tutorials, unboxing videos or vlogs and product reviews. This type of content can involve high production cost that translates into high partnership costs: according to Statista, the average price for sponsored content by mega-influencers can start from 2,500 U.S. dollars while macro-influencers' average demand is at least 1,105 U.S. dollars. Regardless of these costs, YouTube is a relevant channel due to the high engagement rates for mid-to-large-tier creators. Indeed, with a high potential reach of 2.49 billion users (Digital 2024: Global Overview Report), YouTube is an interesting option for brands willing to invest more budget for high-reach campaigns.

Despite its losing popularity, Facebook remains an important channel for influencer marketing due to its potential reach of 2.19 billion accounts (Digital 2024: Global Overview Report). Most of the audience is composed of the older generation but in recent years Facebook has seen a resurgence of younger users, making it a useful platform for marketing across various age groups. Indeed, Meta has added new tools like Meta Business Partner and Meta for Media to enhance marketing campaigns on their platforms (Instagram and Facebook). Meta Business Partner facilitates brands to find ideal influencers, review influencer content, monitor detailed statistics on promotional activities, and lastly gain insight. Meta Media, on the other hand, offers useful tips for creators to exploit their channels to reach a higher audience, build trust, etc.

1.3 The emergence of a new channel: the Metaverse

The concept of the metaverse has been gaining significant attention over the past few years, especially among marketers since it offers an innovative and creative way to consumer engagement.

When Facebook rebranded itself as Meta, CEO Mark Zuckerberg announced his ambition to “help bring the metaverse to life”. Similarly, Microsoft’s proposed acquisition of Activision was promoted as a strategic step to “build blocks for the metaverse”. This enthusiasm was translated into significant financial investments: in 2021, companies related to the metaverse raised over \$10 billion (more than doubling the amount from the previous year), whereas more than \$120 billion was invested in the first half of 2022 alone.

Also, consumers seem to respond well to this phenomenon: a McKinsey research, conducted in 2022, found that approximately 60% of about 3400 consumers were excited about integrating daily activities like shopping into the metaverse. In addition, Gen Z, now entering financial maturity, is more comfortable with virtual spaces than previous generations since they have been immersed for years in realities like Fortnite and Roblox.

Despite the excitement, brands will face some challenges in order to adopt this innovation: developing and implementing metaverse capabilities require specialized skills and resources. Surveys from Deloitte indicate that while some industries are hesitant due to technology barriers, the overall trend points toward growing adoption, with 38% of 1,015 marketers making plans for the metaverse in 2023. Indeed, some brands like H. Moser and Cie (that work in the luxury watches industry) are taking action by developing their own metaverse space whereas others are leveraging existing platforms, as described in the following paragraphs.

To conclude, its emergence as a marketing channel is driven by significant investments, various early adoptions and changing consumer demographics. As the metaverse continues to evolve, it is set to become an integral part of the marketing landscape, offering new opportunities for brands ready to embrace this new frontier.

1.3.1 Definition and features of the metaverse

The metaverse is “the emerging 3-D-enabled digital space that uses virtual reality, augmented reality, and other advanced internet and semiconductor technology to allow people to have lifelike personal and business experiences online” (McKinsey & Company, 2022). Therefore, it is a convergence of technologies enabling novel forms of customer engagement or community where everybody feels more like a stakeholder rather than a mere user, as expressed by Brian Solis of Salesforce.

Metaverse's main features are:

- The sense of immersion, thanks to the advent of VR and AR technology that allow users to feel a sense of being present in the digital environment
- Real-time interactivity, since the metaverse is always active and exists in real-time;
- Spanning realms, as it can be considered a bridge between virtual and physical worlds;
- User agency since users have control over their actions and environment;
- Virtual economy, due to the presence of cryptocurrency, digital goods, and so on;
- Multiple virtual Identities and agencies, enabling peer-to-peer interaction, transactions, etc.

To better understand metaverse functioning, it is crucial to distinguish it from related topics. The metaverse is not AR/VR: AR/VR are important tools to experience the metaverse, yet they are just one of many ways people can interact with the metaverse, as any other technological device like a smartphone or laptop. The metaverse is not just gaming, even if it has been fundamental to widespread the metaverse. Indeed, even some gaming platforms encompass broader usages, such as virtual

concerts. The metaverse is not Web3: Web3 contributed to the metaverse through decentralization and interoperability, whereas the metaverse itself focuses on immersive experiences that can be both centralized or decentralized.

As anticipated in the previous paragraph, brands are hesitant about the technologies necessary for a metaverse building and management, therefore it is essential to have a clear understanding of its components. Metaverse is organized into ten layers:

- Platforms and tools essential for payment and monetization;
- Platforms responsible for all the aspects of a digital identity;
- Platforms ensuring security, privacy and governance;
- Infrastructure, powering the metaverse;
- Device, OS and accessories;
- Creators/3D development platforms;
- Platforms that facilitate the access and discovery of content and experiences through browsers, search engines, etc;
- Virtual worlds, where users can interact and have different experiences;
- Applications, related to metaverse use cases;
- Content, including developer content, UGC, etc.

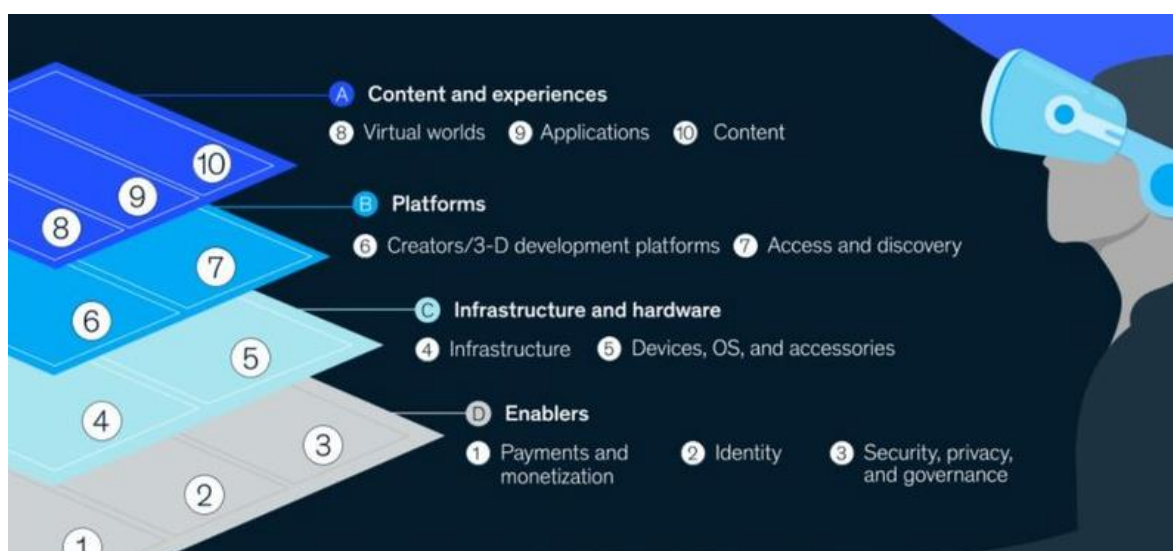


Figure 1.6 The ten layers of the metaverse (McKinsey & Company, 2022, taken from McKinsey & Company: <https://www.mckinsey.com/capabilities/growth-marketing-and-sales/our-insights/value-creation-in-the-metaverse>)

Since the metaverse is a complex evolving ecosystem, it is crucial to address key concerns such as data privacy, inclusivity and safety in order to ensure a healthy and positive metaverse, in compliance

with regulatory standards. It is challenging for users to have and maintain direct control over their data, which could lead to unauthorized collection and misuse. In addition, the ease of access to metaverse platforms raises the risk of spreading illegal and dangerous content, unsuitable for the younger metaverse population. Fake virtual identities and identity theft can also pose significant threats, enabling manipulation of social interactions and virtual markets or facilitating scams. Just as in the real world, diversity and inclusions must be promoted by designing spaces and avatar features that accommodate all individuals or groups. Furthermore, the metaverse should be a “safe” space, free from cyberbullying and hacker attacks. Thus, ethical considerations and the development of secure architectures are necessary to protect users and their interactions.

1.3.2 How brands exploit this channel

Characterized by immersive 3D activities and AI-driven simulations, the metaverse has rapidly gained attention. While still in its early stages, some brands have already used it, gaining valuable insights into consumer engagement.

The metaverse is useful to increase brand awareness among younger audiences since platforms like Roblox are populated with players under 16. However, the common formula, used by early adopters consists of creating a virtual space where players and prospects can buy items to use in the digital world. The focus on selling virtual goods is not a surprise: according to McKinsey research conducted in 2022, about 79% of consumers make purchases in order to improve their virtual experience and in 2022 J.P. Morgan reported 54 billion dollars spent for virtual stuff.

However, taking into account variables like the platform, the audience and the marketing objectives, each brand adds new elements to the formula. There are various cases illustrating how brands exploit this channel.

Gucci has heavily invested in partnering with already existing metaverse platforms like Zepeto, The Sandbox, The Sims, Pokémon Go and Animal Crossing. One of its most well-known initiatives was the “Gucci Garden” on Roblox in May 2021. It actually was a virtual temporary recreation of the real-world installation presented in Florence. Here 19.9 million visitors walked through various themed rooms that paid homage to the brand’s history.

Also Nike launched its own digital space on Roblox known as Nikeland composed of playgrounds and places where players can take part in sports events and have fun with friends while wearing Nike items. The interesting detail was the possibility of wearing the Nike outfits also in other Roblox spaces, making the players a sort of virtual ambassadors for the brand. This project, which lasted about 3

years (from September 2021 to May 2024), was also useful for testing consumers' responses to prototypes of items that would be sold in the real world. In addition, it has already shown its utility also for the promotion of real products: when LeBron James was invited to Nikeland to interact with players, it became an important promotion channel for his partnership sneakers.

In 2021, Balenciaga was the first brand to land in Fortnite, organizing its temporary virtual boutique where players could try on digital outfits, buy digital pieces inspired by real ones, and so on. In this case, the brand was able to generate an impact in the real world: players could unlock some Balenciaga items in Fortnite by purchasing real-life garments.

Brands from other industries have also adopted this channel. For example, in 2022 Chipotle Mexican Grill, a chain of fast-casual restaurants, launched “Chipotle Burrito Builder”: just by playing people can earn Burrito Bucks (Roblox in-game currency) exchangeable for real-world Chipotle entrées. A similar strategy was adopted by Deliveroo, a delivery company: through a collaboration with Animal Crossing, some virtual drivers have made special deliveries containing virtual treats and promo codes to use in real life.

Also the music industry relied on the metaverse, especially during the covid-19 pandemic when live events were impossible. A lot of artists had virtual concerts like BTS on Minecraft, Lil Nas X on Roblox and Travis Scott on Fortnite. As in other cases, brands can achieve significant revenue and real-world results through this channel. For example, Travis Scott's event reached over 27 million users and this visibility resulted in an increase in the artist's followers and streams and the presence of 7 hits in Spotify's “Top 200” playlist. In addition, there was an increase in sales of CDs, vinyl and other merchandising products, including Travis Scott's Fortnite skin.

As anticipated, in recent years brands have started working on their own metaverse. One of the brands that successfully accomplished it was Bulgari, thanks to the collaboration with the creative tech studio Experiency. In line with the brand's core values, the virtual space is a recreation of Rome characterized by a strong and beautiful light to highlight the beauty and main features of the Eternal City. Here visitors can be immersed in the brand culture and heritage following the lead of the Bulgari Group CEO avatar.

The metaverse offers many opportunities for brands to build awareness, engage consumers and gain new sources of revenue. Brands here can showcase the brands' values alongside their products, through their digital version; incorporate gamification strategies to increase customer engagement; drive sales of both virtual and real items and collect customers' insights to apply also in marketing

strategies. As the metaverse evolves and attracts attention, brands need to exploit its potential by combining it with other marketing tools in innovative ways.

1.4 The Rise of Virtual Influencer Marketing

In the most recent years, virtual influencers have started taking their position in the influencers landscape. Indeed, the Influencer Marketing Hub survey revealed that 62.2% of marketers have used virtual influencers this year. Furthermore, companies are making significant investments to create and manage this novel type of influencer: Superplastic, a pioneer in the synthetic influencer industry, secured \$20 million, primarily from Amazon, while Brud, the creator of the most famous virtual influencer Lil Miquela, amassed \$131 million. Consumer interest in this phenomenon is also noteworthy: a study conducted by The Influencer Marketing Factory proves that already 58% of American respondents followed at least one virtual influencer in 2022. The most intriguing data is related to the reason why they follow these digital identities: 27% of users for their content, 19% for the storytelling and 15% for their inspirational characteristics. Therefore, these virtual influencers are able to effectively communicate with their followers, leveraging also emotional and aspirational elements.

Given the proven interest, it is essential to comprehend the nature and implications of this new tool, which provides various advantages and challenges to brands. Indeed, virtual influencers can be shaped in accordance with brand values, potentially reducing the risk of damage to brand image or reputation. However, they are also costly to implement and require a high level of expertise to achieve a fruitful collaboration that could ultimately prove inadequate in satisfying consumer expectations in terms of authenticity. Despite these drawbacks, the appeal of virtual influencers persists and deserves to be explored further.

1.4.1 Definition and Origin of Virtual Influencer

Virtual influencers represent a unique and dynamic development in the digital landscape. These characters, created through sophisticated software and technology, mirror the roles of human influencers on social media but offer distinct advantages in terms of control, consistency and creative freedom.

A virtual influencer can be defined as a digital persona that leverages social media to build a dedicated following, in a manner analogous to traditional human influencers (Kugler, 2023). These entities are

crafted using advanced technology, including computer graphics and motion capture technology, enabling them to exhibit unique characteristics, interests and lifestyles, while performing as humans. The software used to portray the various range of virtual influencers' appearances, which can range from cartoon-like to human-like, includes: MetaHuman, which enables the production of photorealistic virtual humans; similarly, Maya, Houdini, Modo, Daz Studio and Cinema 4D enhance 3D graphics; 3ds Max and Blender are used for 3D animations and Photoshop is employed for editing the content prior the publication.

Furthermore, the creation of a virtual identity necessitates also the definition of a personality and its associated first-person perspective of the world. This element is crucial for the construction of compelling storytelling, as it determines its immersion degree for consumers: by contextualizing the characters within a life they perceive as their own, fans are able to engage deeply in a similar form of suspended disbelief. The combination of virtual influencers' self-agency, compelling storytelling and captivating design makes virtual influencers appear as autonomous and believable personas.

A further key feature is their accessibility on social media platforms: their creators strategically leverage platforms like Instagram, TikTok and YouTube to distribute content and engage with audiences.

Virtual influencers act similarly to human influencers by showing their lives, expressing thoughts, and conveying emotions. Unlike human influencers, however, they are entirely managed by companies, thereby enabling precise control over their actions and interactions. This degree of control makes virtual influencers an attractive option for brands seeking differentiation and consistency in their marketing efforts.

To summarize, virtual influencers are totally managed by their creators who oversee their appearance, personality, backstories, collaborations and marketing strategies.

In the current era, the emergence of virtual influencers represents a natural evolution, catering to the preferences and needs of a society that has embraced the integration of technology. However, the concept of virtual influencers is not as innovative as it may appear as, even before the advent of computers, fictional celebrities with large follower bases have existed.

In 1932 Lester Gaba created Cynthia, a 100-pound plaster mannequin. Her realistic appearance and public outings with Gaba attracted significant media attention, making her an early example of a fictional media celebrity. Cynthia received fan mail and gifts from brands, participated in high-profile events, and even had her "death" reported in the press, highlighting the public's fascination with lifelike yet fictional personas.

Later, Alvin and the Chipmunks gained popularity: created by Ross Bagdasarian Sr. by pitching up his voice, they became famous through the Christmas record "The Chipmunk Song," which was awarded three Grammys. The anthropomorphic chipmunks' lasting success demonstrates how fictional characters can establish billion-dollar media empires (e.g. songs, films, TV series, etc.) and remain relevant across generations.

In the 1980s, Max Headroom, the first computer-generated TV personality, made its appearance on the entertainment scene by parodying news anchors and talk show hosts, becoming a cultural icon. In reality, he was the actor Matt Frewer whose computer-generated appearance was due to special effects makeup.



Figure 1.7 Max Headroom (Rasmussen Makena, 2022, taken from Virtual Humans: <https://www.virtualhumans.org/article/who-was-the-first-virtual-influencer>)

However, it is the music industry that actually offers the early inspirations for this concept: groups like The Archies (1968-1973) and The Gorillaz (1998-Present) demonstrate how 2D characters could amass considerable followers without being real people, laying the groundwork for the acceptance of virtual personalities in popular culture. This idea has been further developed with the advent of artists such as K/DA, a group comprised of well-known singers whose avatars were based on League of Legends (a famous videogame) characters. This phenomenon has also invaded the K-pop industry: Korean entertainment agencies have introduced virtual members in their groups, such as Aespa (the group consists of four members plus their virtual alter egos with whom they interact in music videos, interviews and performances), or formed groups that solely consist of AI members, such as MAVE.



*Figure 1.8 MAVE (Kim Young-wook, 2023, taken from [이뉴스투데이](https://www.ewestoday.co.kr/news/articleViewAmp.html?idxno=2063212)):
<https://www.ewestoday.co.kr/news/articleViewAmp.html?idxno=2063212>)*

In Japan, instead, the phenomenon of Vocaloid is worthy of note. It was developed in 2000 through a collaboration between Yamaha Corporation and Pompeu Fabra University, resulting in singing voice synthesizer software. Each generated voice has its own character design for use in products and services such as music videos and concerts. In 2007, Crypton Future Media launched Hatsune Miku, the most popular Vocaloid in the country. The program is represented by a mascot with a human appearance: at its concerts, its holographic image sings and dances on the stage, making it appear like a real girl. Her potential extends beyond the music industry: besides the extensive fan-created content, her songs have inspired anime and mobile games.



Figure 1.9 Hatsune Miko (Rasmussen Makena, 2022, taken from Virtual Humans: <https://www.virtualhumans.org/article/who-was-the-first-virtual-influencer>)

Finally, in 2009, the concept of virtual influencers as we recognize them today began to take shape with the introduction of Lu Do Magalu by the Brazilian magazine Louisa to endorse different products over the years. Despite the impressive audience of over 6 million followers on Instagram, her popularity was limited to Brazil. In parallel, on YouTube Ami Yamato began creating vlog content by seamlessly blending animated and real-world elements. In 2010 her animated version paved the way for modern VTubers and virtual streamers, underscoring the growing acceptance of virtual personas in digital content creation.

Virtual influencers stepped into the limelight in 2016 with the debut of Lil Miquela Sousa on Instagram. Miquela's narrative as a robot girl yet not existing anywhere in the real-world captured the attention of millions of followers. Her success illustrates the pivotal role of uniqueness and storytelling in building a dedicated following for virtual influencers. Recently, the creators have decided to add another attractive factor like decision-making power: people can choose the input for the storytelling process, making the relationship with the influencer more interactive.

In the following years, luxury brands such as Balmain embraced virtual influencers, employing digital models such as Margot, Shudu, and Zhi for fashion shows or marketing campaigns. In response to virtual influencer popularity, companies have begun to repurpose brand mascots as virtual influencers (e.g. Colonel Sanders of KFC). This shift enables brands to connect with audiences on social media, humanizing the mascots and reaching younger generations.



Figure 1.10 Colonel Sanders of Kentucky Fried Chicken (Rasmussen Makena, 2022, taken from Virtual Humans: <https://www.virtualhumans.org/article/4-brand-mascots-turned-virtual-influencers>)

In this context, Instagram has emerged as a primary platform for virtual influencers due to its younger audience, interested in this novel phenomenon, and its visual nature, which enhances the storytelling power.

The increasing attention on the metaverse places virtual influencers in a significant role: virtual influencers align with the metaverse's interactive nature, offering greater opportunities for engagement and brand integration.

The origins of virtual influencers are deeply rooted in the convergence of technology, entertainment and marketing. From early fictional characters to sophisticated digital personas, virtual influencers have evolved alongside technological advancements and changing consumer preferences. As the metaverse continues to develop, virtual influencers are expected to become even more integral to marketing, blurring the lines between the digital and physical worlds.

1.4.2 Comparison with human influencers: advantages and limitations

Virtual influencers have become a novel tool in the marketing landscape, with higher engagement rates due to their entertaining and unique content (Choudhry et al., 2022). These AI-generated personalities possess their own public personas and storylines, which facilitate interaction between users and influencers in the virtual environment (Arsenyan & Mirowska, 2021), including the metaverse (Sands et al., 2022b; De Brito Silva et al., 2022). Furthermore, they overcome the

limitations and risks associated with their human counterparts though some researchers (De Cicco et al., 2024; Thomas & Fowler, 2021) indicate that there is not notable distinction between the two types of influencers.

Like human influencers, virtual influencers are subject to both advantages and disadvantages (Laszkiewicz & Kalinsska-Kula, 2023; Sands et al., 2022b; Mouritzen et al., 2024).

Firstly, the adoption of virtual influencers can enhance a brand's image, leveraging on the “novelty” factor (Moustakas et al., 2020; Robinson, 2020) since followers perceive these AI influencers as icons and trendsetters (Mrad et al., 2022). Moreover, this positive effect is intensified when virtual influencers are associated with brands or products that are already perceived as innovative (Thomas & Fowler, 2021). In addition, as with human influencers, they elicit other positive brand effects, such as increased brand awareness (Lou et al., 2023), purchase intention (Gerlich, 2023; Thomas & Fowler, 2021), word-of-mouth intention (Sands et al., 2022a) and willingness to engage (Thomas & Fowler, 2021; Li et al., 2023). In particular, Belanche et al. (2024) discovered that virtual influencers may boost consumer intention to adopt influencers’ recommendations, especially for utilitarian products, as the AI influencers’ advice appears more useful. Sands et al. (2022a) reinforce this concept by proposing that customers are receptive to AI influencer recommendations due to their positive experiences with AI-based recommendation systems. In line with these assertions, Lou et al. (2023) postulate that there are six primary motivations for customers following virtual influencers: novelty (followers’ curiosity), information (followers’ need to seek out new knowledge), entertainment, surveillance (the need to be updated), aesthetics, integration (bonding with influencers' values), and social interaction. Sands et al. (2022a) have identified a further motivation, “uniqueness”, which refers to the desire to follow niche influencers.

These diverse reasons for approaching virtual influencers have resulted in a considerable number of users following them, showing how they are particularly effective in attracting people, especially younger audiences (Fauser et al., 2023; Moustakas et al., 2020), who better enjoy the unpredictability of the virtual world: as shown in a survey conducted by The Influencer Marketing Factory in 2022, already 75% of respondents aged 18 to 24 and 67% of respondents aged 25 to 34 and 35 to 44 reported following at least one virtual influencer.

Virtual influencers also offer unparalleled consistency and longevity. They do not suffer any biological or physical limitations (Allal-Cherif et al., 2024; Fauser et al., 2023; da Siva Oliveira & Chimenti, 2021; Mouritzen et al., 2024; Choudry et al., 2022; Sookkaew & Saephoo, 2021): they do not age, fall ill, or encounter personal issues, providing a stable and enduring presence in the

marketing world without any geographical limitation. Furthermore, the use of an avatar allows virtual influencers to navigate effortlessly from one virtual environment to another, remaining recognizable whether on an Instagram post or within the metaverse (Sands et al., 2022b). This consistency and immediate response to followers and trends, enabled by the technology behind them, allow them to adapt to customer preferences (Thomas & Fowler, 2021; Sookkaew & Saephoo, 2021), maintaining long-term engagement with their audience (Moustakas et al., 2020; Kim & Park, 2024; Jhawar et al., 2023).

A further significant advantage is the reduction in content production costs (Sands et al., 2022b): virtual influencers eliminate expenses associated with human influencers, such as fees for appearances, travel, and personal expenses. Consequently, despite the potential for elevated graphic production costs associated with virtual influencers, they still seem cost-efficient since the costs associated with the creation and management of such influencers have been observed to decline in line with advancements in technology (da Siva Oliveira & Chimenti, 2021).

Despite their artificial nature, virtual influencers often outperform human influencers in engagement rates (Choudhry et al., 2022). A number of studies have demonstrated that virtual influencers achieve high engagement rates (Li et al., 2023; De Brito Silva et al., 2022; Nguyen et al., 2024; Cascio Rizzo et al., 2023; Sands et al., 2022b), indicating their capacity to create engaging and trended content by emulating human behavior and characteristics (Xie-Cason et al., 2023) and fostering interaction among followers (Yu et al., 2024). In their research, Yu et al. (2024) identified the emotional expression of the CGI influencer as a crucial factor for the engagement rate: the impact of this variable on user engagement depends on the context so a positive emotion like happiness does not always translate into positive reactions but, as a rule of thumb, it is better to avoid expressing sadness, especially in glamorized content where it is better to display a neutral facial expression. This evidence aligns with the findings reported by Ham et al. (2024): happiness is the most recommended expression for a great brand perception while sadness and lust should be avoided.

Brands have unmatched creative freedom and control over their campaigns with virtual influencers (Mouritzen et al., 2024; Jhawar et al., 2023). Every aspect of a virtual influencer's appearance, behavior and content can be tailored to align with brand values (da Siva Oliveira & Chimenti, 2021; Sands et al., 2022b; de Brito Silva et al., 2022), ensuring consistency and reducing unpredictability. To achieve absolute control, brands may consider creating their own virtual influencers (Sands et al., 2022b), but this may not always be the ideal solution: Shen (2024) showed that non-branded virtual influencers get higher engagement, especially when they prioritize storytelling and social connections over explicit brand promotion.

Since human creators may intervene in the algorithmic rules that operate AI influencers (Allal-Cherif et al., 2024; Thomas & Fowler, 2021), the risk that virtual influencers could generate scandals and damage the company's reputation is significantly lower (Sands et al., 2022b; Fauser et al., 2023; da Siva Oliveira & Chimenti, 2021). In contrast, Thomas and Fowler (2021) argue that the probability of a virtual agent making a mistake may be greater than that of a human endorser, as the algorithms used by AI influencers to create posts and respond to followers are based on unverified input, potentially leading to the dissemination of incorrect information. The authors further suggest that, when a virtual influencer commits a transgression, it is convenient to substitute it with a human one, assuring a positive consumer attitude towards the brands and higher purchase intention. This evidence is consistent with Deng et al. (2024) research: virtual influencers are not as effective as humans in terms of positive impact on consumers' attitudes towards brands.

However, the overall total control is a double-edged sword since it also reinforces consumers' perception that AI influencers lack autonomy and need human teams for behind-the-scenes operations (Thomas & Fowler 2021; Stein et al., 2024). Indeed, Liu and Lee (2022) demonstrated that AI influencers were attributed less blame for endorsement failures caused by their misbehavior compared to human influencers while the companies behind them and the endorsed brands were held significantly more responsible. Nevertheless, virtual influencers were also assigned diminished credit in the context of successful campaigns relative to their human counterparts, due to consumers applying self-serving attribution to human influencers (Liu & Lee, 2024b).

Therefore, the potentially controlled nature of virtual influencers by their creators and brands raises questions about their genuine representation (Choudhry et al., 2022).

Virtual influencers face challenges related to authenticity and realism: some users perceive the recommendations of these non-existing subjects to be less authentic and reliable than human influencers' advice (e.g. Arsenyan & Mirowska 2021; Lou et al. 2023; Hofeditz et al., 2022; Lee & Ham, 2023; Liu & Lee, 2022; Robinson, 2020), indicating a distinction in terms of effectiveness between human and virtual influencers campaign (Wien & Peluso 2021; Ozdemir et al., 2023).

In contrast, Gerlich (2023) asserts that virtual influencers are preferred over human influencers, with factors such as trust, reliability, relevance and expertise significantly contributing to their acceptance and preference. Then, as for human influencers, variables like expertise, trustworthiness and attractiveness are essential for credibility (Xie-Carson et al., 2023) to establish parasocial interaction and consequently engagement (Melnychuck et al. 2024), one of the key metrics for an influencer marketing campaign.

In general, virtual influencers are perceived as less trustworthy and authentic compared to human influencers (e.g. Yang et al., 2023; Liu & Lee, 2024a; Lou & Kim, 2023; Hofeditz et al., 2022; Ozdemir et al., 2023; Laszkiewicz & Kalinsska-Kula, 2023) due to their limited ability to test products or share genuine experiences (Lou et al., 2023), as well as weaker sensory capabilities (Li et al., 2023; Deng et al. 2024) and weaker parasocial relationships with followers (Lou et al., 2023; Sands et al., 2022a; Zhou et al., 2024a).

Additionally, due to their lack of autonomy and mental capacity for intentionality (Lee & Ham, 2023; Fauser et al., 2023), virtual influencers seem to be reliant on marketers' commercial objectives, posting promotional material (Deng et al., 2024; Moustakas et al., 2020). These factors, in conjunction with the reduced transparency about the mastermind behind virtual influencer content (Robinson, 2020), suggest that virtual influencers face challenges in increasing consumer purchase intention (Lou et al., 2023; Li et al., 2023; Lee & Ham, 2023; Cascio Rizzo et al., 2023) since customers are averse to them (Nguyen et al., 2024) and feel a low similarity to them (Lou et al., 2023).

Nevertheless, the credibility and trustworthiness issue can be overcome by variables such as perceived enjoyment (Kim & Park, 2024), parasocial interactivity (Yang et al., 2023; Allal-Cherif et al., 2024; Gerlich, 2023; Laszkiewicz & Kalinsska-Kula, 2023), diversity (Ferraro et al., 2024), frequency of responses (Choudhry et al., 2022), the presence of a companion (Cascio Rizzo et al., 2023), the use of rational and concrete language rather than emotional (Ozdemir et al., 2023; Cascio Rizzo et al., 2023), creativity and consistence of storytelling (Lou et al. 2023; Stein et al. 2024; Allal-Cherif et al., 2024; da Siva Oliveira & Chimenti, 2021; Choudhry et al., 2022; Moustakas et al., 2020), congruence between post and the influencer crafted lifestyle (De Brito Silva et al., 2022), fit influencer-product (e.g. Alboqami, 2023; Liu & Lee, 2024a; Kim & Park, 2023), mix of visual appeal, mystery and technological novelty (Lou et al., 2023) and AI influencers' attributes (Feng et al., 2024; Zhou, 2023).

Zhou (2023) illustrated that attractiveness, expertise and trustworthiness are the three key features that positively impact perceived authenticity and consequently customer purchase intention. Attractiveness is considered crucial also by Kim and Park (2023): they observed that the attractiveness of virtual influencers significantly affects mimetic desire and brand attachment, which both in turn positively influence purchase intention. This result indicates that consumers are prone to emulate the behaviors and choices of attractive virtual influencers, leading to increased purchase intentions. Similarly, a strong attachment to the brand, fostered by the influencer's attractiveness, further enhances purchase intention.

Feng et al. (2024) have identified seven key attributes (anthropomorphism, artificiality, attractiveness, luminary, quality, trendiness, and robophobia) that can affect customer acceptance of AI influencers: robophobia has a negative effect, while the other six attributes have a positive effect.

The literature review implies that virtual influencers cannot rely on authenticity, trustworthiness (Hofeditz et al., 2022), and credibility due to the absence of sensory capability (Li et al., 2023), which could potentially negatively impact perceptions of customers who perceived the influencer's recommendation as advertising (Deng et al., 2024). Zhou et al. (2024b) specify that consumers perceive virtual influencers to be lacking in haptic, olfactory and gustatory while they do not see any difference with human influencers in terms of visual and auditory senses.

Some researchers (Mrad et al., 2022; Um, 2023; Ham et al., 2024; Shao, 2024) appoint anthropomorphism as one of the most relevant factors in determining how individuals react and interact with them.

The advancement of Artificial Intelligence systems has enabled creators and developers to design virtual influencers that appear and act as humans (da Siva Oliveira & Chimenti, 2021), to the point that consumers are unable to distinguish between human and virtual influencers (Hofeditz et al., 2022; Mrad et al., 2022; Miao et al., 2022). This confusion can be translated into negativity toward this kind of influencer (Nguyen et al., 2024; Arsenyan & Mirowska, 2021). Mirowska and Arsenyan (2023) demonstrated that individuals prefer to engage with a virtual influencer when there is an explicit disclosure of their nature due to the “escapism effect”: due to the expected lower cognitive and emotional demands, virtual influencers provide a means of evading everyday human emotional experiences. It is therefore evident that design clues are crucial to mitigate the negative impact of humanism design (Cornelius et al. 2023). The theme of disclosure was also analyzed by Lim and Lee (2023): they demonstrated that it reduces perceived humanness, but this does not impact negatively credibility and parasocial interaction when the disclosure is associated with a positive emotional post.

However, Instagram has indirectly provided a sort of solution to this issue since it has already verified virtual accounts with the famous blue checkmark, a symbol of trustworthiness and respect in the social media context. Unfortunately, according to Looi and Kahlor's (2024) research, it did not particularly affect metrics like engagement.

In addition, followers may perceive human-like virtual influencers as unpleasant and unrealistic if their resemblance to humans is too accurate (Wiese & Weis, 2020; Arsenyan & Mirowska, 2021; Kim et al., 2024). Consequently, it may be more effective to adopt less human-like virtual influencers (Cornelius et al., 2023), particularly cartoon-like virtual influencers (Cheung & Leung, 2021), which

can better capture consumer attention due to the cartoonish features. Nevertheless, in certain cases, the unsettling anthropomorphism leverages a persuasive effect on followers, making their distorted humanity and non-existent world appealing and intriguing (Block & Lovegrove, 2021; De Brito Silva et al., 2022). As Ma and Li (2024) have observed, when a virtual influencer has a more anthropomorphized visual design, users form stronger parasocial interactions, ensuring a positive brand attitude and purchase intention. This study is in accordance with Jiang et al.'s (2024) research, which illustrates that consumers tend to prefer AI influencers that possess human-like qualities: due to their image and emotional appeals, human-like virtual influencers generate greater purchase intentions, brand attitudes, and credibility compared to animated-like virtual influencers.

Given the relevance of visual and aesthetic aspects (De Cicco et al., 2024), it is worthwhile to consider also the search of Chan et al. (2023) about the effect of color: warmer colors elicit more favorable reactions due to the increase of perceived warmth that substitutes competence and credibility.

The majority of the searches investigated anthropomorphism in terms of appearance, but Dabiran et al. (2024) highlighted the relevance of other aspects like anthropomorphism in moral value and cognitive experience that positively impact credibility and parasocial relationships. Kim et al. (2024), instead, proved that realistic human-like behavior reduces the sense of eeriness and increases coolness, positively influencing customer behavior.

A further disadvantage is the impossibility for virtual influencers to establish real, deep emotional connections with their audience: they are unable to experience and express genuine emotions (Miao et al., 2022; Mrad et al., 2022), which can lead to a perceived emotional distance between the influencer and the followers (Sands et al., 2022a). However, some studies (Xie-Carson et al., 2023; De Cicco et al., 2024) have shown that virtual influencers, especially those with a higher level of anthropomorphism, can generate emotional responses from followers underlining their capacity to form connections (De Brito Silva et al., 2022).

Lastly, there is a risk that virtual influencers may promote unreachable beauty and lifestyle standards (Moustakas et al., 2020; Mouritzen et al., 2024; Sands et al., 2022b; Choudhry et al., 2022). Due to the ambiguous nature of the influencer, social media users may find it difficult to distinguish between reality and digitally manipulated content. This can increase pressure and frustration, subsequently undermining self-esteem, especially among younger generations (Robinson, 2020; Mrad et al., 2022; da Siva Oliveira & Chimenti, 2021). Therefore, when virtual influencers are clear and transparent about their nature, they achieve a higher perception of honesty (Allal-Cherif et al., 2024) and authenticity (Choudhry et al., 2022).

In conclusion, virtual influencers offer numerous advantages, including consistency, cost reduction and higher engagement rates. Despite concerns regarding authenticity and the potential promotion of unrealistic standards, virtual influencers continue to attract considerable followings, particularly among younger audiences, by leveraging factors such as perceived enjoyment, storytelling, anthropomorphism and emotional connection. As the digital landscape continues to evolve, virtual influencers are likely to play an increasingly prominent role in marketing strategies, providing innovative ways for brands to engage with their audiences.

CHAPTER 2: EXPLORING THE SPECTRUM OF VIRTUAL INFLUENCERS CASE STUDIES

As previously outlined in the preceding chapter, virtual influencers can be classified into two distinct categories: human-like and cartoon-like influencers. As the name implies, the first category is distinguished by a heightened degree of anthropomorphism, especially in terms of appearance, to better fit into the human social networks. Conversely, cartoon-like virtual influencers offer a refreshing break from reality through their concise yet entertaining content.

The following sections will examine a range of case studies to elucidate the potential of these two categories of virtual influencers.

2.1 Human-like Virtual Influencers

Human-like influencers are designed to engage audiences in ways that mirror human interaction. Therefore, their appeal lies not only in their visually captivating appearances but also in their ability to embody and project reliable lifestyles, societal values and compelling narratives. As they navigate different domains (from the simple promotion of brands to the creation of their own NFT collections or products), these virtual figures challenge conventional norms, offering new possibilities for marketing.

2.1.1 LIL MIQUELA: the face of virtual authenticity

Created by the transmedia studio Brud, a Californian startup founded by Trevor McFedries and Sara DeCou, Lil Miquela is a pioneering virtual influencer which has become a significant figure in the realms of fashion, music and social advocacy.

Lil Miquela Sousa initially presented herself as a 19-year-old influencer of mixed heritage (Brazilian, American, Spanish and Portuguese roots) residing in Los Angeles. Debuted on Instagram in 2016, Lil Miquela is the first hyper-realistic virtual influencer to gain significant notoriety. Indeed, from the start, Lil Miquela garnered considerable attention, partly due to initial speculation that British model Emily Bador might be behind her creation. These conjectures were subsequently dispelled when Brud formally disclosed the veracity of Lil Miquela's digital existence. This disclosure was part of a larger storytelling strategy that includes her grappling with her artificiality while continuing to display human-like emotions and experiences. This phase of her narrative has prompted a response from her

audience that has been characterized by both confusion and acceptance, demonstrating a blend of paranoia and engagement with her character.

She represents a sophisticated synthesis of human-like characteristics and digital artistry: her character design is characterized by golden skin, a distinctive fringe, freckles and a diastema between her teeth. She exhibits a human appearance and displays a range of complex human emotions, including sympathy affection and heartbreak.



Figure 2.11 Lil Miquela (Travers Christopher, 2022, taken from Virtual Humans: <https://www.virtualhumans.org/article/instagram-has-verified-35-virtual-influencers>)

Lil Miquela has a significant presence across multiple digital platforms, including TikTok and YouTube. Her considerable following is indicative not only of her digital allure but also of her capacity to engage with audiences in a meaningful manner. In 2018, she was recognized by TIME magazine as one of the 25 most influential individuals on the internet, alongside other prominent figures such as BTS and Rihanna.

Her posts offer glimpses into her daily life, encompassing snapshots with friends, personal struggles, and her involvement in various social causes. Her interaction with fans, whom she calls "Miqaliens," includes activities such as hairstyle polls, the adoption of filters and participation in discussions on social and cultural issues. Additionally, Miquela has created a Snapchat series entitled "GET REAL, MIQUELA", which delves into her avatar identity and engages the audience in authentic conversations.

Her creators developed a compelling narrative around her character that goes beyond the mere digital presence to include interactions with other characters, enhancing the immersive quality of her story. Miquela operates within a transmedia framework, with her story unfolding across various platforms and interacting with both virtual and real influencers. Her online presence is enriched with real-world dialogues and staged events, such as the Instagram account hack by a CGI character named Bermuda, another creation of Brud. Additionally, her involvement in the real world is noteworthy, including interviews with musicians at Coachella and appearances on television programs such as Zach Sang Show. Such interactions, in conjunction with AI-driven responses, serve to enhance the character's credibility and engagement with audience.

Miquela's storyline underwent an intriguing transformation with the advent of her relationship with Bermuda: initially characterized by a competitive dynamic, this relationship subsequently evolved into friendship till their divergence of views, driven by political differences, comported the ending of this bond, mirroring real-world conflicts and illustrating the depth of storytelling that is possible in virtual spaces.



Figure 2.12 Lil Miquela and Bermuda (Astrid Hiort, 2021, taken from Virtual Humans: <https://www.virtualhumans.org/article/do-virtual-influencers-fall-in-love>)

In 2021, Lil Miquela's narrative evolved to explore themes of personal growth: she addressed her existential struggles with agelessness, celebrating her 19th birthday for the sixth time. Her aspiration to evolve by growing up resonate with her followers, creating an opportunity to empathize with her. It was an intriguing concept to utilize her "past" with a USB necklace, gifted by Brud, as a narrative

device: this strategy included revealing “baby” photos, after the reach of a specific number of likes, and engaging in nostalgia-driven content to increase interaction and relatability. Her exploration of different life phases resonated with followers, enhancing her emotional connection with the audience



Figure 2.13 Photos of Lil Miquela Growth (Makena Rasmussen, 2021, taken from Virtual Humans: <https://www.virtualhumans.org/article/virtual-influencers-never-age-or-die-unless-you-want-them-to>)

As Brud transitions into creating community-owned media through DAOs (Decentralized Autonomous Organizations), it is anticipated that Miquela's narrative will become increasingly interactive. The introduction of a voting system enables fans to exert influence over aspects of the character's narrative, thereby bridging the gap between audience and character. This evolution demonstrates the potential for virtual influencers to engage with audiences in novel and participatory ways.

Miquela has made waves in the music industry, releasing a series of singles and music videos, and establishing a notable presence on platforms like Spotify and YouTube. Since her musical debut in 2017, Miquela has released several pop tracks and collaborated with well-known artists, like J. Balvin and Rosalía, as well as with other CGI characters, such as @blawko22 and Baauer.

She has also modeled for prestigious fashion brands such as Moncler, Balenciaga, Pat McGath and Chanel, and has been featured in advertising campaigns for brands like Nike and Samsung.

In 2018, Miquela collaborated with Prada during Milan Fashion Week, assuming control of the brand's Instagram account and offering followers a distinctive behind-the-scenes perspective. By blurring the lines between digital and real-world experiences, Lil Miquela enabled Prada to connect

with a young and tech-savvy audience, thereby reinforcing the brand's image as innovative and cutting-edge.

Miquela also starred in Samsung's #TeamGalaxy campaign, embodying the brand's message of overcoming limitations through technology since she, a coded script, has become an influencer and celebrity on social media worldwide through innovation and creativity. As the sole virtual influencer among human celebrities like Steve Aoki and Millie Bobby Brown, Miquela's presence in the campaign introduced a futuristic dimension that resonated with Samsung's innovative image. This collaboration has resulted in significant success for the brand, which has been able to exploit technological trends and select an endorser aligned with the message the company wanted to convey in the commercial.

Nevertheless, campaigns that employ virtual influencers have also been the subject of criticism: for instance, her partnership with Calvin Klein faced backlash from the LGBTQ+ community for perceived queerbaiting. In 2019, Miquela was featured in Calvin Klein's "I speak my truth in #MyCalvins" campaign alongside Bella Hadid, promoting an invitation to freedom of gender and self-expression. Despite its positive message to embrace diversity and break free from social conventions, it was negatively accepted for the kiss scene between Miquela and Bella.



Figure 2.14 Bella Hadid and Lil Miquela for Calvin Klein Campaign (Astrid Hiort, 2022, taken from Virtual Humans: <https://www.virtualhumans.org/article/5-ways-virtual-influencers-earn-money>)

Also the orchestrated hack of Miquela's Instagram account illustrates how this category of influencers navigates controversies. While bold maneuvers can garner attention, they can also elicit unfavorable responses if perceived as deceptive.

Additionally, Miquela is an activist for a number of social causes, including the Black Lives Matter movement, Planned Parenthood and LGBTQ+ rights. Her involvement in social issues makes her appear authentic and this perceived authenticity, despite being entirely constructed, is a key to her success, making her a powerful and innovative marketing figure.

In 2020 Lil Miquela broke new ground through her NFT debut, “Rebirth of Venus,” sold for \$82,361. This NFT venture and her subsequent collections represented a significant integration of virtual personas into the digital asset space. After Dapper Labs' acquisition of Brud in 2022, she was also involved in metaverse with her new digital home, Villa M. Developed for the PFP collection preview, it has become a space dedicated to collective growth, learning and forging connections. Miquela’s role as a host and curator underscored her expanding influence within the virtual spaces.

Through her strategic collaborations, narrative engagement and advocacy for social causes, she has demonstrated that perceived authenticity can be more significant than being a real human. As virtual influencers continue to shape the digital landscape, Lil Miquela’s journey offers valuable insights into the blending of technology, marketing and human-like interaction.

2.1.2 SHUDU GRAM: representation of black beauty

Shudu Gram, recognized as the world's first digital supermodel, has emerged as a pioneering figure in the domain of virtual influencers. In April 2017, British photographer Cameron-James Wilson created her to embody a strong and powerful image, drawing inspiration from iconic figures such as Naomi Campbell and the “South African Princess” Barbie doll. As Wilson elucidated, the objective was to challenge the status quo by celebrating the beauty that was not commonly observed in the media.

The genesis of Shudu Gram can be traced to Wilson's aspiration to celebrate and represent black beauty in a manner that was previously underrepresented in mainstream media. By employing sophisticated 3D modelling and AI technology, Wilson created a digital avatar with an almost imperceptible robotic quality, thereby enhancing its appeal and realism in the digital space.

Her inaugural appearance as influencer on social media, accompanied by Rihanna's Fenty Beauty lipstick, was met with a combination of fascination and controversy. Shudu's digital presence quickly expanded through collaborations with high-profile brands, including Balmain and Chanel, as well as featuring in editorial shoots for prominent publications such as Cosmopolitan, Vogue and Women's Wear Daily.



Figure 2.15 Shudu's post promoting Fenty Beauty (Travers Christopher, 2020, taken from <https://www.virtualhumans.org/article/the-latest-from-cameron-james-wilson-shudu-grams-creator>)

The Balmain campaign, launched in the autumn of 2018, was particularly notable: Shudu, along with two other virtual models, Margot and Zhi, formed the "Balmain Army." The creation of a trio of virtual models reflects a broader attempt to represent diverse ethnic backgrounds within the virtual modeling industry. Indeed, the objective of this initiative was to provide a more inclusive and varied portrayal of beauty, thereby challenging traditional and often narrow standards. The campaign provoked a range of responses, encompassing admiration for the artistic merit and innovative approach, as well as criticism concerning the replacement of human models, particularly those of colour, and the potential implications for job opportunities in the fashion industry. However, proponents, including Balmain and Wilson, argue that these digital models represent a new form of art and creativity rather than a threat to human models.



Figure 16 Balmain Army (Isabel Greenberg, 2018, taken from Harpers Bazaar: <https://www.harpersbazaar.com/fashion/models/a22875448/olivier-rousteing-virtual-models-balmain/>)

In addition to her work as a model, Shudu has become a prominent figure in the movement for racial inclusivity and body positivity: her Instagram account frequently features content that espouses the virtues of black beauty and diversity, utilizing hashtags such as #blackisbeautiful and #melanin.

The success of Shudu Gram has established a precedent for the future of virtual influencers. Her capacity to engage audiences, collaborate with leading brands and promote significant social issues exemplifies the potential for digital models to influence both the fashion industry and broader societal discourses, advocating for enhanced representation and inclusivity in media and fashion.

2.1.3 LING: Chinese Culture Ambassador

China's virtual influencer market has seen significant growth and it was estimated to be worth already \$960 million by 2021 (Teh, 2021). One prominent figure in this market is Ling, a virtual influencer created and managed by Shanghai Xmov Information Technology and Beijing Cishi Culture Media Company. Launched in May 2020, Ling is designed as a Beijing resident who embodies a blend of traditional Chinese beauty and contemporary style: with her pale skin, sharp chin and dark straight hair styled in a bun, she attracts a young audience interested in fashion and entertaining content.



Figure 2.17 Ling (Jiayi Mao, 2021, taken from Vogue Business: <https://www.voguebusiness.com/consumers/can-chinas-virtual-idols-have-real-influence>)

Ling's social media presence on Weibo includes routine activities such as visiting art galleries, enjoying quiet afternoons at cafes and sharing selfies and travel photos. She is notable for rarely interacting with other virtual or human influencers, instead focusing on solitary experiences that she shares with her followers. As a result, Ling's followers engaged in parasocial interactions, treating her as a friend and expressing concern for her well-being: comments ranged from concern about her health to interest in her daily activities, demonstrating a high level of intimacy typically seen in interactions with real influencers. This connection helped to blur the lines between Ling's virtual identity and a human presence.

Ling's role as a brand endorser is significant, promoting a range of products including cars, watches, milk tea and fashion items. She first endorsed Tesla four months after its launch, showcasing a blend of traditional Chinese style and modern technology.

Unlike many other virtual influencers, Ling is not just a commercial endorser, but also a cultural ambassador promoting Chinese culture and heritage. Therefore, Ling's identity as "a cross-dimensional girl who loves traditional Chinese culture" is central to her role: she enjoys Peking opera, calligraphy and tai chi, and often dresses in traditional costume for cultural events. Her participation in a TV show called "Bravo youngsters", which aims to popularize traditional Chinese culture among young people, further cemented her image as a cultural ambassador.



Figure 2.18 Ling performs Peking opera on the "Bravo Youngsters!" show (Zhang Rui, 2021, taken from China.org.cn: http://www.china.org.cn/arts/2021-01/25/content_77151834.htm)

Through her social media posts, Ling celebrates traditional Chinese festivals and shares poetic expressions, further enhancing her cultural appeal. As her cultural content increased, so did the engagement of her audience, which evolved from entertainment fans to cultural enthusiasts and nationalists. Unfortunately, while some praised her for promoting Chinese culture, others criticized her appearance for conforming to Western stereotypes of Chinese women. This controversy shows that virtual influencers cannot guarantee a smooth promotional experience.

Ling is a pioneering figure in China's virtual influencer landscape, seamlessly blending cultural promotion with commercial endorsement. Her unique position as both a cultural ambassador and a social media influencer has sparked important debates about cultural representation and the role of AI in contemporary society; however, through her interactions with her followers, Ling has managed to resonate deeply with her audience.

2.1.4 IMMA: from virtual influencer to brand owner

Since her debut, Imma, a virtual influencer and model from Japan, has rapidly become a significant figure in the fashion industry. Created by Aww Inc., Japan's first virtual human company, Imma's unique persona and aesthetic have garnered her a substantial following on social media platforms like Instagram and TikTok. Imma first appeared on social media in July 2018: her posts showcased her interests in lifestyle, fashion, interior design and technology. Imma's initial breakthrough occurred in 2019 when she participated in a campaign for Kanebo Cosmetics alongside real-life models. Her perfect skin, pink bob and charming style quickly distinguished her on social media, attracting nearly 360,000 followers and paving the way for numerous brand collaborations such as Porsche Japan, Dior and Nike.

One of Imma's most notable collaborations was with IKEA Japan in 2020. This partnership aimed to promote a new store in Harajuku by creating a realistic installation featuring Imma's virtual living space. For three days, passersby could observe Imma performing daily activities like cleaning, working out and interacting with her environment via LED screens which simulated her presence in the store.



Figure 2.19 Glimpses of Imma daily activities (Andrea Nepori, 2020, taken from domus: <https://www.domusweb.it/en/design/gallery/2020/10/01/ikea-picked-a-virtual-influencer-to-promote-its-new-tokyo-store.html>)

This installation highlighted the integration of virtual and physical worlds, drawing significant attention and curiosity from the public. The collaboration served to demonstrate IKEA's products in addition to emphasizing sustainable living practices: the virtual room, complete with plants that Imma cared for, served to underscore the importance of a healthy living environment, particularly in an urban setting such as Harajuku.

Imma's Instagram presence extends beyond fashion and brand collaborations: she shares aspects of her personal life, including her relationships and daily activities, which serve to enhance her relatability to her audience. Her interactions with her "brother" Zinn and his romantic relationship with another virtual influencer, Ria, contribute to the narrative in a way that reflects the emotional dynamics of real-life relationships. This storytelling approach enhances the perceived authenticity of her virtual persona.



Figure 2.20 Imma with his brother Zinn and his girlfriend Ria (Astrid Hiort, 2023, taken from *Virtual Human*: <https://www.virtualhumans.org/article/imma-the-virtual-influencer-disrupting-the-fashion-industry>)

Indeed, as her creator, "M", asserts, what distinguishes Imma is her relatable nature despite her status as a virtual entity: she is portrayed as an ordinary girl who can be clumsy and goofy but also strong when needed. This blend of human traits and high-quality CGI occasionally renders her indistinguishable from a real person.

Her distinctive pink bob haircut and flawless virtual appearance, coupled with her ability to engage audiences through both digital and physical spaces, led to her being named "Woman of the Year 2020" by Forbes Women and included in Japan Economic News's "New 100 Talent to Watch."

In addition, in August 2023, Imma launched her own fashion brand, Astral Body. This represented a significant departure from her previous role as the public face of other global brands, marking her transition into the position of brand owner. Astral Body's clothing line features digital art elements and reflects Imma's "spacey rave" style, resonating deeply with her Gen-Z fanbase. This development is a relatively recent phenomenon in the virtual influencer market, where influencers typically partner with existing brands rather than pursuing independent brand ownership.



Figure 2.21 Imma wearing its own pieces (Astrid Hiort, 2023, taken from Virtual Human: <https://www.virtualhumans.org/article/imma-the-virtual-influencer-disrupting-the-fashion-industry>)

Furthermore, Imma has embraced web3 technologies to strengthen her connection with fans. By releasing NFT collections that experiment with digital art and creative concepts, she offers pieces of her digital identity and world to her followers. Additionally, collaborations with RTFKT Studios and the gaming platform Zepeto allow fans to interact with Imma in new and immersive ways, further expanding her digital persona.

Imma's journey from a CGI model to a virtual influencer with her own fashion brand exemplifies the evolving landscape of digital influencers. Her ability to blend virtual and real-world elements, interact with fans through innovative technologies and sustain a relatable and dynamic persona has distinguished her in the industry.

2.1.5 Italian Case Studies

The landscape of digital marketing in Italy is slowly changing with the emergence of virtual influencers, a trend that has gained significant attention following recent events. One of the most talked about controversies is Chiara Ferragni's partnership with Balocco, which signed the decline in terms or credibility and reputation of the human influencer. The "Pink Christmas" campaign faced

criticism for misleading consumers: they incentivized the sale of the premium pandoro by making customers believe that by purchasing Chiara Ferragni's pandoro they were contributing to the donation in favor of the Regina Margherita Hospital in Turin. Despite her public apology and attempts to clarify the situation, including a substantial donation to the hospital in question, the scandal has had a lasting negative effect on her credibility and reputation, leading the public to question the influencer industry. Paradoxically, this controversy may highlight the growing acceptance and potential of virtual influencers in Italy.

However, this trend is not without its challenges, as evidenced by last year's failed "Italy - Open to Meraviglia" campaign, launched by the Ministry of Tourism in collaboration with ENIT and the Armando Testa Group. The €9 million campaign featured a virtual influencer, a digital rendition in modern style of Botticelli's Venus, and it was intended to promote Italian tourism internationally. Contrary to expectations, it was widely criticized for technical errors (such as the failure to register the domain "opentomeraviglia.it" or the use of images and video not shot in Italy) and, above all, for trivializing cultural heritage, focusing on stereotypical cliché and failing to resonate with the target audience.

Despite these setbacks, the increasing presence of virtual influencers on Italian social media platforms signals a growing interest in this innovative approach.

2.1.5.1 ELI & SOFI: the first Italian virtual influencers

Eli and Sofi, created by Elisa Nieli, an expert in video mapping and digital media, have distinguished themselves as pioneers in the field of Italian virtual influencers.

The project commenced in January 2021, during the lockdown, as a response to Nieli's desire to have a twin. The virtual twins from Sicily are depicted with long red hair and green eyes: the red hair symbolizes rarity and extinction, while the green eyes represent hope. Their apparent realism has generated curiosity and wonder among followers, who initially struggled to believe they were digital avatars.



Figure 2.22 Eli and Sofi (Influenxer Redazione, 2022, taken from Influenxer: <https://www.influenxer.it/interviste/virtual-influencer-italiane-lintervista-alla-creator-di-eli-e-sofi/>)

The twins were developed in 3D graphics, combining Nieli's artistic skills with the assistance of Alberto Pian, who crafted a captivating and engaging narrative surrounding the characters. Their stories include details such as their educational journey and life experiences, which are disseminated via their social media channels: for example, during their secondary education, Eli pursued studies in design and fashion, whereas Sofi concentrated on environmental sciences.

Despite their status as twins, the two individuals in question display distinct personalities and interests. Eli is characterized as determined, cheerful, and adventurous, with a passion for fantasy novels and animated films. In contrast, Sofi displays a more tranquil and contemplative disposition, with an inclination towards literature on environmental issues and historical and mystery films. Such an in-depth narrative facilitates the establishment of an emotional connection with the followers, thereby enabling the creation of a robust community around the subject.

Despite their recent debut, Eli and Sofi have rapidly gained a considerable following on social media. The pair's Instagram profile has amassed 45,000 followers, thanks to their diverse content ranging from selfies and childhood photos to daily stories and brand promotions. Their influence also extends to the marketing domain, as evidenced by their numerous sponsorships and collaborative endeavors with prominent fashion brands. An example is the collaboration with United Colors of Benetton for their metaverse shop "Play Change": the two virtual influencers were the ideal solution to promote this new Roblox experience where users can gain QR codes for purchases in physical stores by playing games.



Figure 2.23 Eli and Sofi promoting "Play Change" (Interiorissimi, 2022, taken from Interiorissimi: <https://interiorissimi.it/le-prime-influencer-virtuali-italiane-eli-e-sofi-sono-gia-un-successo/>)

On 30 November 2022, Eli and Sofi were awarded the national first prize in the junior category at the "Italy Ambassador Award," a contest sponsored by ENIT (National Tourism Agency). The competition required participants to create content about sustainability, waste management, and related topics. The twins were victorious with a video presentation on the subject of virtual travel and sustainable fashion. This is a particularly noteworthy achievement, as it marks the first occasion on which a virtual avatar has been awarded a prize in a competitive context alongside real influencers and bloggers.



Figure 2.24 Eli and Sofi's post for winning Italy Ambassador Awards (Eli and Sofi Team, 2022, taken from their website: <https://www.elisofitwins.com/>)

Eli and Sofi's work extends beyond mere entertainment; they utilize their platform to address pertinent social issues. They are actively involved in promoting sustainability, environmental respect, and combating bullying and cyberbullying. The twins have publicly expressed their opposition to pollution, racism and discrimination, utilizing their spaces to raise awareness and provide practical advice on these issues. In particular, they concentrate on the themes of inclusion and self-acceptance, also addressing topics such as homosexuality. Their openness and commitment to these issues are evident from the use of hashtags and dedicated posts, which contribute to a narrative that promotes equality and respect.

The case of Eli and Sofi provides an intriguing Italian example of the potential impact of combining detailed storytelling, social commitment and audience engagement in influencer marketing.

2.1.5.2 NEFELE: promotion of diversity and imperfection

Launched in December 2021, Nefele represents a novel fusion of creativity and technology, challenging traditional standards of beauty and engagement in the digital world.

The conceptualization and realization of Nefele were undertaken by a team of three Italian entrepreneurs (Filippo Boscherò, Laura Elicona and Luca Facchinetti), using advanced 3D computer graphics software.

With approximately 3,124 followers on Instagram, Nefele is actively engaging with her audience through a range of content that highlights various aspects of her virtual life: to illustrate, her posts frequently showcase picturesque views of renowned locales, reflecting her affinity for nature and travel. This virtual influencer also functions as a conduit for broader social messages, including those pertaining to gender equality and sexual inclusivity.



Figure 2.25 Nefele admiring Istanbul landscape (Flu Agency, 2022, taken from Flu: <https://www.flu.agency/intervista-a-nefele-virtual-influencer-italia/?error-name=Inserisci+il+t>)

The creation of Nefele was driven by the creators' desire to address the perceived shortcomings of contemporary human influencers, particularly their tendency to perpetuate unrealistic standards of beauty and lack of substantive content. As Boschero elucidated in an interview with Redazione Futura News, the genesis of Nefele was predicated upon the realization that contemporary influencers frequently disseminate messages of inferior social relevance. Therefore, the objective was to create a virtual influencer that could convey a more meaningful and inclusive message.

Nefele is designed to embrace and promote the concept of "wabi-sabi", a Japanese worldview that finds beauty in imperfection and transience: Nefele's physical attributes, such as her vitiligo and freckles, are deliberate choices that are intended to celebrate diversity and challenge the conventional beauty standards that pervade social media. The goal is to motivate individuals to accept their individuality and move away from the limiting stereotypes that are prevalent in the digital domain.



Figure 2.26 Nefele and her imperfections (Flu Agency, 2022, taken from Flu: <https://www.flu.agency/intervista-a-nefele-virtual-influencer-italia/?error-name=Inserisci+il+t>)

Additionally, the name, which translates to "cloud" in Greek, reflects their intention to make Nefele embody and celebrate diversity: just as clouds take on various shapes and forms, Nefele's identity is fluid and inclusive, not constrained by rigid categorization or stereotypical expectations.

There is a growing recognition among brands of the value of virtual influencers. The capacity of Nefele to engage with a diverse range of audiences while maintaining a coherent and controlled presence represents a compelling alternative to that of human influencers, who may encounter constraints in terms of authenticity and engagement.

Nefele represents a pioneering step in the world of virtual influencers, combining cutting-edge technology with a profound social message. Her existence challenges the conventional norms that govern the representation of beauty, diversity, and engagement. Her success demonstrates the increasing acceptance of virtual entities and their capacity to facilitate meaningful discourse and connections in the digital age.

2.2 Cartoon-like Virtual Influencers

Cartoon-like virtual influencers represent a playful and unconventional twist on the digital persona trend. These virtual figures often exhibit bold, vibrant and surreal designs and personalities that resonate with audiences through the use of humor and creativity. Indeed, their content frequently leverages entertainment and satire, offering a refreshing departure from the polished realism of more

human-centric virtual figures. However, the cartoonish appearance does not restrict them to entertainment content: they can also serve a relevant role in the advocacy of social issues. By capitalizing on popular culture and internet trends, cartoon-like influencers are able to create memorable brand experiences, becoming a source of joy for their followers.

2.2.1 KIZUNA AI: the Vtuber who feels real

Kizuna AI, a trailblazer in the realm of virtual influencers, stands as a monumental figure in the VTuber phenomenon. Since her debut in November 2016, Kizuna AI has amassed a considerable following, with over 4 million subscribers across three YouTube channels, making her the most popular VTuber (virtual YouTuber who use computer generated avatar). Her emergence has not only inspired an entire generation of VTubers but has also cemented her presence in both online and offline media, with her image being displayed on billboards, posters and merchandise throughout Tokyo.

Kizuna AI began her journey on the "A.I.Channel" in 2016, becoming one of the earliest virtual YouTubers in the world. Characterized by her sweet anime persona with a heart-shaped bow, she quickly gained popularity through a diverse range of content including discussions, Q&A videos and traditional game-play streaming. Her success resulted in the establishment of additional channels, namely A.I.Games and A.I.Channel China, thereby facilitating an expansion of her reach and influence. The recent announcement of an anime project signals a pivotal new phase, as Kizuna AI explores opportunities to stay relevant and connected with her audience through innovative formats.

Self-described as “(probably) the world’s first virtual YouTuber,” Kizuna AI popularized the VTuber style and the term “virtual YouTuber” despite the earlier use of CGI avatars in YouTube content.

Her popularity extends beyond digital platforms: she has been a spokesperson for SoftBank and the Japan National Tourism Organization, participated in music festivals, appeared in commercials, engaged with fans through offline meetings and discussed with Nobel Prize winners from Japan.

Her name, Kizuna, translates to "connection" and "bond" in Japanese, while AI stands for "love," reflecting her branding as an artificial intelligence system. By emphasizing her non-human characteristics, such as her inability to age and her advanced computational capabilities, she distinguishes herself from human content creators, adding an exotic layer to her character.

The anonymity of her voice model, a common feature among VTubers, has been the subject of both interest and controversy. In 2019, the introduction of additional voice models to replicate Kizuna AI resulted in a significant backlash from fans, who demanded to unsubscribe from her channel if they

valued her authenticity. In response to the concerns raised by fans, the company took the initiative of assigning distinct nicknames and visual identifiers to the newly introduced voice models. The acknowledgment of Kizuna AI's voice model, Nozomi Kasuga, underscores the intricate relationship between the virtual persona and its real-life creator: fans have recognized Nozomi's contributions to Kizuna AI's charm and appeal and this recognition has shaped their loyalty and attachment to the character. The debate over voice changes demonstrates the intrinsic link between the authenticity and continuity of the virtual persona and the real-world individuals behind the scenes.

Kizuna AI's character design integrates elements from both cyberculture and Japanese visual heritage: her appearance combines features of "pixel vixens" from cyberculture (e.g. young, slim, and idealized digital women) with kawaii aesthetics (cute and sweet features) and moe (traits that elicit affection from otaku fans) elements from Japanese culture.

Indeed, her visual design incorporates a number of distinctive features, including long, shiny hair, bright, large eyes, and a youthful, symmetrical face, which collectively contribute to her overall appeal. Her attire, comprising white and pink garments with heart-shaped embellishments, evinces a kawaii fashion sensibility.



Figure 2.27 Kizuna AI kawaii design (Devin Mancuso, 2020, taken from *Virtual Humans*: <https://www.virtualhumans.org/article/the-rise-of-vtubers-as-social-media-influencers-explained>)

An alternative approach is the use of the moe element "alter", which represents a significant alteration in the personality of an anime/manga or game character, often involving a transition to a more sinister identity. The "alter" manifested in Kizuna AI's narration as "Black Kizuna AI," a persona generated from a virus contracted by the virtual influencer. This version is characterized by dark color outfits and detached demeanor. By employing this moe strategy, producers provided audiences, particularly the otaku segment, with additional topics their own contents or comments.

Kizuna AI's content often blurs the lines between reality and virtuality: through live streaming, interviews and interactive components, she creates the impression of real-time engagement, fostering a sense of immediacy and personal connection with her audience.



Figure 2.28 Kizuna AI live stream (Makena Rasmussen, 2021, taken from *Virtual Humans*:
<https://www.virtualhumans.org/article/whats-the-difference-between-virtual-influencers-vtubers-artificial-intelligence-avatars>)

The real-time interactions between Kizuna AI and her audience are facilitated by advanced motion capture techniques, which enable her to engage with fans in a manner that emulates real-time human interaction, despite her status as a two-dimensional virtual entity. By maintaining consistent eye contact and utilizing medium to close-up shots in her videos, she simulates the sensation of face-to-face interaction. This visual proximity is intended to evoke a sense of direct communication, analogous to the manner in which human celebrities interact with their audiences.

The frequent use of close-up shots serves to accentuate her facial expressions and movements, reinforcing the perceived intimacy between her and her viewers. Furthermore, the settings in Kizuna AI's videos further amplify this sense of closeness: for instance, in her ASMR content, Kizuna AI adopts intimate scenarios like chatting in pajamas or conducting ear-picking treatments. These settings are designed to mimic personal and private interactions, typically confined to close relationships. The use of sound technology, particularly in ASMR videos, enhances this illusion by creating auditory experiences that evoke a sense of physical proximity, engendering the impression that Kizuna AI is right beside the viewer.

Also, her music videos further explore the interplay between the virtual and the tangible realms. For instance, in her video “AIAIAI,” Kizuna AI performs alongside human dancers who interact with her as if she were a real person, blurring the lines between virtual and physical realities. The final scenes of the video emphasize the distinction between the real and virtual worlds, with Kizuna AI serving as the bridge connecting these domains.

Kizuna AI performs is adept at evoking emotional responses from her audience: fans often express profound affection and attachment to Kizuna AI, regarding her as a source of joy and comfort. The emotional responses elicited by her videos demonstrate the strong emotional bonds that can be formed between virtual personas and their audiences. This connection extends beyond individual interactions to encompass a broader sense of community: fans frequently describe Kizuna AI as a unifying force, bringing people together through shared affection and appreciation. This sense of community is further reinforced by fan-generated content and discussions, which contribute to the ongoing creation and reinforcement of Kizuna AI's intimate persona.

As an influencer, Kizuna AI has been involved in high-profile commercial campaigns, such as her role as the ambassador for Nissin Cup Noodles. These collaborations capitalize on her extensive global fan base to drive sales and brand engagement, as exemplified by the successful miso-flavored noodle campaign, where Kizuna AI's endorsement led to a sell-out of the product.



Figure 2.29 Kizuna AI x Nissin Cup Noodles (Astrid Hiort, 2022, taken from *Virtual Humans*: <https://www.virtualhumans.org/article/leading-vtuber-kizuna-ai-confirms-anime-project-debut>)

However, Kizuna AI's presence is highly commodified, becoming a key product: her appeal drives merchandise sales, sponsorships and other commercial ventures. The concept of "sellability" is of central importance, with her virtual presence creating a unique market niche.

Kizuna AI's case highlights the dynamic interplay between virtual identities and real-world consumption. As Kizuna AI persists in innovating and extending her reach through initiatives such as her forthcoming anime series, she continues to be a pivotal figure.

2.2.2 NOONNOOURI: lower degree of anthropomorphism to higher brand and advocacy awareness

Noonoouri is a virtual influencer created in 2018 by Joerg Zuber, founder of the creative agency Opium, based in Munich, Germany.

Inspired by iconic figures such as Naomi Campbell and Kim Kardashian, she embodies a cartoonish and non-human aesthetic, deliberately designed to stand out in the digital influencer space with her doll-like features. In line with this concept, Noonnoouri's creators have made no effort to disguise her digital and fictional nature. This transparency is a strategic choice by Zuber: keeping her visibly artificial was necessary to draw attention to her causes and the brands she represents, rather than herself. This approach contrasts with other virtual influencers who often strive for a more realistic look.



Figure 2.20 Noonnoouri doll face (Astrid Hiort, 2022, taken from Virtual Humans: <https://www.virtualhumans.org/article/virtual-influencers-are-changing-the-face-of-beauty>)

Her content includes posing in real-life haute couture, participating in fashion campaigns and collaborating with celebrities such as Lewis Hamilton in his Tommy Hilfiger collection. Despite her fictional nature, Noonnoouri's posts offer a blend of brand promotion and social advocacy that resonates with a diverse audience. Indeed, Zuber's vision was to create a digital character that would not only engage audiences with high fashion, but also promote values of social and environmental activism: Noonnoouri employs her platform to advance the causes of veganism, sustainable fashion, women's rights, animal protection, and so on.



Figure 2.21 Noonnoouri advocacy post (Astrid Hiort, 2023, taken from Virtual Humans: <https://www.virtualhumans.org/article/noonnoouri-fashion-icon-turned-pop-star>)

Her advocacy is also evidenced by her refusal to wear fur in her campaigns and her participation in events such as the Green Carpet Awards, which she has done in collaboration with the high-fashion brand Genny. However, Noonnoouri's campaigns frequently emphasize sustainability and social responsibility, which align with contemporary consumer values and enhance brand images. This dual focus on fashion and activism renders Noonnoouri a formidable voice in the digital domain, exerting influence over both consumer behavior and brand values.

In the context of the fashion industry, she has collaborated with a number of high-profile luxury brands, including Versace, Chanel, Balenciaga, Lacoste and Bulgari. It is worthy of note the Dior campaign for Rouge in 2018. Noonnoouri was the protagonist, replacing Natalie Portman, the previous

ambassador. Her virtual features imbued the recreations of the human shoots with a sense of uniqueness.



Figure 2.22 Comparison between the 2 spots for Dior Rouge (Sarah Ramirez, 2018, taken from Luxury Daily: <https://www.luxurydaily.com/dior-hopes-to-reach-new-audiences-with-noonouri-tribute/>)

Her creative output, collaborative endeavors and activism illustrate the capacity of digital characters to shape both fashion trends and social causes.

2.2.3 NOBODY SAUSAGE: the virtual entertainment icon

Among these digital personas, Nobody Sausage is notable for its quirky and unconventional characterization, which has attracted considerable interest from consumers and especially brands. Indeed, this cartoon-like figure, with its distinctive aesthetic and engaging personality, offers to brand an innovative approach to connect with target audiences and differentiate itself from competitors.

Initially conceived as a personal project by Kael Cabral for the purpose of developing proficiency in character animation, Nobody Sausage has gained widespread popularity on TikTok. On this platform, the abstract and absurd 3D animated sausage appeared for the first time in a dance video, which immediately went viral. This whimsical character, with its colorful, groovy dance moves and human-like expressions, rapidly amassed a considerable following across social media, particularly TikTok where it currently has in excess of 21.6 million followers.

TikTok is an optimal platform for this influencer, as the format of the content (short video) does not necessitate the development of complex and extensive storylines. Instead, it relies on brief instances of pure entertainment and humor. Consequently, the content created for the platform aligns with the humorous and entertaining nature of Nobody Sausage's content, which often references current popular culture. For example, a recreation of a scene from the popular TV series Squid Game attracted 32 million views and 2 million likes on TikTok. Overall, the character's engagement rate of 6.85% on social media is significantly higher than that of other virtual influencers, including Miquela (2.16%), Noonouri (2.12%), and Imma (1.99%).



Figure 2.23 Nobody Sausage entertaining content (Astrid Hiort, 2022, taken from Virtual Humans: <https://www.virtualhumans.org/article/how-to-create-a-successful-virtual-influencer-on-tiktok>)

The distinctive appeal of Nobody Sausage has attracted the attention of global brands, resulting in a multitude of collaborations. In 2022, Hugo Boss featured Nobody Sausage in their Spring/Summer campaigns, #HowDoYouHUGO and #BeYourOwnBoss, alongside renowned athletes and models such as Kendall Jenner and Hailey Bieber. These campaigns marked a pivotal moment for Hugo Boss,

as they underwent a rebranding process, splitting into two distinct identities, Hugo and Boss, with the aim of connecting with Gen-Z and Millennials.

The posts created by Nobody Sausage in promotion of Hugo Boss received approximately 27,300 likes and 238 comments, which serves to illustrate the character's capacity to stimulate engagement and enhance brand awareness. The success of Nobody Sausage's campaigns highlights the increasing demand for novel and creative methods of reaching and engaging target audiences in the digital age.



Figure 2.24 Nobody Sausage x Hugo Boss (Kitty Lana Carr, 2024, taken from The Influence Agency: <https://theinfluenceagency.com/blog/navigating-authenticity-innovation-virtual-influencers/>)

This cartoon-like figure, capitalizing on the potential of entertainment and the distinctive playfulness nature, provides brands with the opportunity to explore new avenues for the creation of memorable and impactful marketing campaigns.

2.2.4 JANKY & GUGGIMON: integration in the digital pop culture

Janky and Guggimon are notable examples of non-human virtual influencers created by Superplastic, a company renowned for its pioneering approach to the creation of synthetic celebrities.

Superplastic was established by Paul Budnitz, the founder of Kidrobot, in 2017. The company comprises 10 animators and designers, including Jared Johnson, the character animator of Jurassic

Park, Mark Gmehling and Huck Gee, a renowned toy designer. Budnitz's previous failures experiences in the Hollywood film industry led him to develop a self-sustaining model where characters live their lives on social media.

Janky, a cartoon streetwear cat from Los Angeles, made its first appearance in June 2019. Janky is depicted as a cartoon stuntman with a penchant for extravagance, participating in high-profile collaborations and maintaining a distinct streetwear aesthetic. Indeed, thanks to his distinctive appearance and charismatic personality, Janky has been able to enhance his reputation through collaborations with brands such as Gucci, Prada and Red Bull.



Figure 2.25 Janky (Superplastic, n.d., taken from Superplastic: <https://superplastic.co/universe>)

Guggimon, conversely, is a rabbit-like character from Montreal with a proclivity for horror themes, which has also made his debut in June 2019. The posts on the accounts are often eccentric, featuring violent and humorous interactions with Janky: these include scenes where he tortures Janky or engages in other bizarre activities, such as driving an axe into his head.



Figure 2.26 Guggimon (Makena Rasmussen, 2021, taken from *Virtual Humans*: <https://www.virtualhumans.org/article/superplastic-founder-paul-budnitz-on-guggimons-major-fortnite-appearance>)

The Instagram accounts of Janky and Guggimon serve as the primary platforms for their animated adventures, with frequent updates and interactions with followers. However, Instagram is not the only platform used. To illustrate, Guggimon and Janky are also present in the Fortnite gaming environment and the NFT market, thereby further extending their digital footprint. The inclusion of Guggimon and Janky into the video game Fortnite Battle Royale Season 7 and Season 8, alongside other popular cultural figures such as Superman and Rick Sanchez, indicates their integration into mainstream digital culture. Their relevance in the pop culture is reinforced by the recent collaboration between Superplastic and Fortnite: “Most Wanted”, a fast-paced game set in New York City featured Superplastic characters.

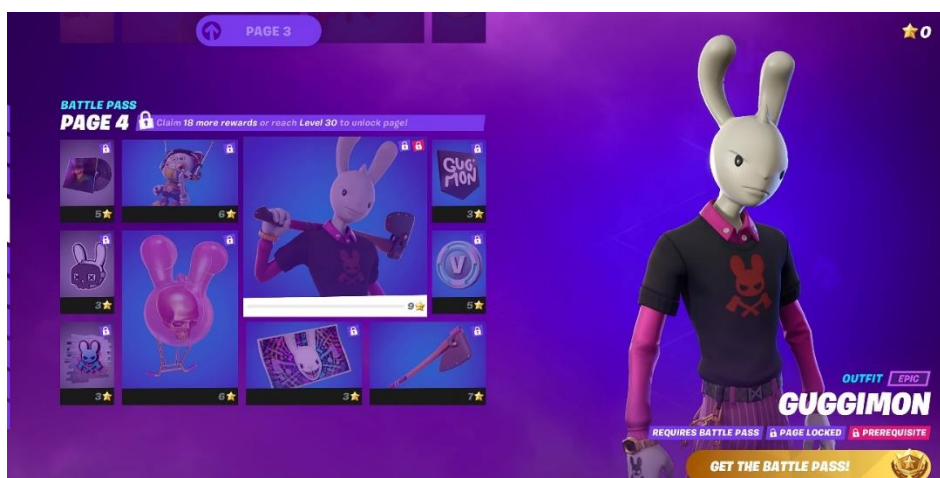


Figure 2.27 Guggimon skin and equipment for Fortnite (Makena Rasmussen, 2021, taken from *Virtual Humans*: <https://www.virtualhumans.org/article/superplastic-founder-paul-budnitz-on-guggimons-major-fortnite-appearance>)

Superplastic's strategy of leveraging social media and online gaming environments has been effective in transforming Janky and Guggimon into recognizable virtual celebrities with substantial influence.

Consequently, both Janky and Guggimon have collaborated with prominent brands such as Mercedes, Amazon and Tinder. However, their most notable collaboration is with DJ Steve Aoki on the Color of Noise tour, which exemplifies the potential for virtual influencers to serve as hype men and drive brand recognition. Despite the cancellation of the tour due to the global pandemic, the agreement proved advantageous for both parties: Janky and Guggimon's stage appearance enhanced their personal brand recognition and social authority, while Aoki benefited from employing novel influencers and potentially generated revenues from the toy licensing partnership, which was previously announced on the DJ's Instagram profile.

CHAPTER 3: THE STUDY

3.1 Research Question and Hypothesis

As the body of research on virtual influencers grows, most studies have focused on comparing virtual influencers, especially human-like ones, to human influencers (e.g. Sands et al., 2022a; Li et al., 2023; Yang et al., 2023; Dondapati & Dehury, 2024; Liu & Lee, 2024a). Fewer studies (e.g. Kim et al, 2024; Cheung & Leung, 2021; Xie-Carson et al., 2023) have examined the differences between types of virtual influencers themselves (e.g., human-like vs. cartoon-like) and how these different designs impact consumer behavior. This represents a critical gap in the literature as industries increasingly rely on different types of virtual influencers in their marketing strategies.

Another overlooking factor is the fit between the influencer and the product (e.g. Alboqami, 2023; Liu & Lee, 2024a; Feng et al., 2024), even if it also plays a significant role in determining the success of an influencer campaign: when the type of virtual influencer is well-matched with the type of product endorsed, credibility increases, boosting purchase intention (Dabiran et al., 2024). Since many studies have focused on luxury products (as the luxury industry has already widely adopted this tool), green products (Jiang et al., 2024) or categories like utilitarian vs hedonic (Belanche et al., 2024; Dondapati & Dehury, 2024), this thesis will explore the broader applicability of virtual influencers by manipulating "products vs. services" to achieve more generalizable results.

In marketing, purchase intention is often the primary objective, as campaigns aim to drive consumer decisions toward a brand's products or services. Previous studies have produced conflicting results regarding the impact of virtual influencers on purchase intention. Several studies have demonstrated that virtual influencer endorsements decrease purchase intention due to their lack of autonomy and mental capacity (Lee & Ham, 2023) or lack of sensory capacity (Zhou et al., 2024b). In contrast, Gerlich (2023) demonstrated that customers perceived virtual influencers as more trustworthy and credible than their human counterparts, resulting into an increase in purchase intention. This discrepancy highlights the need for further research in this field to clarify how virtual influencer design impacts purchase behavior, which leads to the following research question:

How do the design of virtual influencers (human-like vs. cartoon-like) and the type of good they promote (product vs. service) interact to influence customers' purchase intention?

Therefore, this study will investigate how different virtual influencer designs affect consumer behavior, focusing on their aesthetic features, as anthropomorphism has emerged as one of the most significant considerations when examining virtual influencers' design (da Silva Oliveira & Chimenti, 2021). In general, human-like virtual influencers are found to evoke higher levels of credibility and

endorsement effectiveness than their cartoon-like counterparts (Jiang et al., 2024). This result aligns with Ma and Li (2024) findings: the closer a virtual influencer resembles a human in appearance and behavior, the more successful they are likely to be in engaging with consumers (Choudhry et al., 2022), creating a parasocial relationship (Stein et al. 2024) and ultimately driving purchase intention (Gerlich, 2023). However, when virtual influencers resemble humans too closely, they can evoke discomfort and be perceived as overly artificial (Wiese & Weis, 2020; Arsenyan & Mirowska, 2021; Kim et al., 2024). In this case, cartoon-like virtual influencers might be more effective (Cheung & Leung, 2021; Cornelius et al., 2023).

Given these discrepancies, the following hypothesis is proposed:

H1: The effect of the type of virtual influencer (human-like vs cartoon-like) on the purchase intention varies depending on the type of good promoted (product vs service).

In the context of product and service promotion, it is expected that human-like virtual influencers should tend to perform better with products since they evoke a high level of consumer trust and investment. On the other hand, cartoon-like virtual influencers may perform better in promoting services due to their novelty and ability to capture attention (Cheung & Leung, 2021), especially given their success in the video-gaming industry. Additionally, it can be assumed that cartoon-like virtual influencers are well-suited for service promotion, as services primarily rely on distal sensory capacities (e.g., visual and auditory) and, based on Zhou et al.'s (2024a) findings, customers perceive virtual influencers as possessing similar distal sensory capacities to humans. Formally:

H1a: When a human-like influencer promotes a product, customers' purchase intention increases.

H1b: When a cartoon-like influencer promotes a service, customers' purchase intention increases.

In addition, research indicates that virtual influencers, regardless of their level of anthropomorphism, are generally perceived as less authentic than human influencers (e.g. Lou et al., 2022; Yang et al., 2023; Hofeditz et al., 2022; Ozdemir et al., 2023), as they lack real-world experiences (Hofeditz et al., 2022) and emotional depth (Arsenyan & Mirowska, 2021; Lou et al., 2023). Despite these factors, some research (Gerlich, 2023) shows that these influencers are perceived as authentic and credible.

Liu and Lee (2024a) suggest that this perceived lack of authenticity negatively affects brand attitude and purchase intention, even if they discovered that the perceived authenticity did not vary across different product types (functional vs symbolic vs experiential). Furthermore, Zhou (2023) assessed that perceived authenticity plays a mediating role in the impact of virtual influencers' characteristics on purchase intention.

Therefore, given its cruciality in influencer marketing and the mixed results in virtual influencer marketing, it has been decided to investigate the mediating effect of perceived authenticity, forming the following hypothesis:

H2: The interaction effect between the type of virtual influencer and the type of product on purchase intention is mediated by perceived authenticity.

3.2 Methodology

This study employs a 2 (human-like vs. cartoon-like) x2 (product vs service) between-subject experimental design aimed at investigating how variations in virtual influencer types (human-like vs. cartoon-like) and good types (product vs. service) impact purchase intention. Consequently, the experiment includes four distinct conditions, combining the two types of virtual influencers and the two types of goods to test their effects on consumers. To analyze the data collected, an ANOVA and a Moderated Mediation Analysis have been conducted using IBM SPSS Statistics 29.

3.2.1 Experimental stimuli

The stimuli used were Instagram posts, designed to closely mimic actual content that might be shared by influencers on social media, and each condition was carefully crafted to ensure that the only major variations were in the virtual influencer design and the nature of the goods being promoted.

The images used in this study were generated using AI tools, specifically Bing Image Creator and DeepAI: Bing Image Creator allows to generate images through detailed and specific text prompts, while DeepAI offers the additional option of selecting an art style from its extensive library. For this study, DeepAI's "Anime Portrait Generator" was chosen to create the cartoon-like virtual influencer and its "3D Character Generator" was used to design the human-like influencer; whereas, on Bing Image Creator, the "anime style" and "big eye" features were emphasized for the cartoon condition text prompt, while the "realistic" and "human-like design" were used for the human-like condition.

For the captions, they were set up to replicate the style of a typical influencer post, incorporating hashtags and brand mention. A fictional brand, InnovAce, was used to avoid potential bias from participants that could arise from familiarity with real-world brands.

While many previous studies have focused on the manipulation of luxury or innovative products, this experiment deliberately chose mass goods (products characterized by high production volumes, wide

accessibility and frequent consumption): specifically, the selected goods (laptop and streaming service) were chosen to appeal to different age groups.

The final conditions were as follows:

- Human-like virtual influencer promoting a product



Figure 3.30 Manipulation (Source: created by author through AI)

2. Human-like virtual influencer promoting a service



Figure 3.31 Manipulation (Source: created by author through AI)

3. Cartoon-like virtual influencer promoting a product



Figure 3.32 Manipulation (Source: created by author through AI)

4. Cartoon-like virtual influencer promoting a service



Figure 3.33 Manipulation (Source: created by author through AI)

A manipulation check has been conducted through Independent Samples t-Test in order to verify that the experimental conditions influenced participants' perceptions as intended. In this study, the manipulation aimed to distinguish between the virtual influencer's appearance (human-like vs. cartoon-like) and the type of good sponsored (product vs. service). Regarding the perception of the virtual influencer's design, participants in the human-like condition ($N = 130$) rated the virtual influencer as more human-like ($M = 5.20$, $SD = 1.849$), whereas participants in the cartoon-like condition ($N = 127$) rated the VI as more cartoon-like ($M = 5.78$, $SD = 1.579$). The t-test revealed a significant difference ($t = -2.685$, $p = 0.008$), while the mean difference of -0.578 and the effect sizes (Cohen's $d = -0.336$, Hedges' $g = -0.335$, and Glass's $\delta = -0.366$) all point to a small to medium effect, confirming that the manipulation was effective in distinguishing between the two appearances. The manipulation related to the type of good was also successful: participants in the product condition ($N = 125$) rated the influencer with a mean response of 3.06 ($SD = 1.933$), whereas those in the service condition ($N = 131$) had a significantly higher mean response of 5.22 ($SD = 1.807$). This difference was statistically significant, as demonstrated by the t-test ($t = -9.228$, $p < 0.001$). The mean difference of -2.157 and the large effect sizes (Cohen's $d = -1.154$, Hedges' $g = -1.150$, and Glass's $\delta = -1.194$) indicate a substantial effect. These results support the effectiveness of the experimental manipulation and provide a strong basis for the analysis.

3.2.2 Survey Structure and Measurement

The online survey was designed using Qualtrics, a widely used platform for academic research. The questionnaire was distributed in both English and Italian between 9 and 12 September 2024, with the data collection carried out over four days.

At the beginning of the survey, participants were provided with a brief introduction explaining the academic purpose of the research and the confidentiality of their responses, in accordance with ethical research standards. All data were collected anonymously and the only personal details requested were age, occupation and nationality, which were collected solely for demographic analysis.

Participants were then instructed to pay attention to the following manipulation, which showed a virtual influencer promoting a fictitious brand. After being randomly assigned to one of the four conditions, there is a series of questions to measure the dependent variable (purchase intention) and the mediator (perceived authenticity). This is followed by the manipulation check section with a recall of the type of influencer seen and the type of good promoted. Finally, after answering minimal demographic questions, participants are thanked for their contribution to the study.

The variables were measured using Likert scale (1 = Strongly Disagree, 7 = Strongly Agree), given its intuitive usage, the flexibility with which it can be used for all variables and the more detailed insights it provides. To validate the multi-item scales, a reliability analysis has been carried out for each of them, confirming an excellent consistency ($\alpha \geq 0.9$) for all of them (Cronbach's Alpha of 0.932 for purchase intention and 0.958 for authenticity).

3.2.3 Participant sample

The initial sample consisted of 274 participants; however, the final effective sample size was reduced to 259, after excluding respondents who either spent less than one minute on the stimuli screen or provided inconsistent or implausible responses (e.g., unusual answers for age). This ensured that only participants who meaningfully engaged with the stimuli and the study were included in the analysis. Participants were primarily recruited through word of mouth and social media platforms, particularly Instagram, with a significant proportion of responses, approximately 83.85% (218 participants), coming from Italy. While the majority of respondents were Italian, the sample also included participants from other European countries, such as France, Portugal and Ukraine, as well as a few from non-European regions, including Africa, Turkey and Mexico.

A large proportion of the sample were students (127 respondents) or employed (109 participants), and the majority were female (69.9%). The sample covered a wide age range, with most participants belonging to Generation Z (56.9%) and smaller proportions from Generation Y (18.92%) and X (18.53%).

3.3 Analysis and Results

In this study, a two-way ANOVA was conducted to examine the main effects and the interaction effect of two factors on purchase intention. The first factor, called “human”, refers to the type of virtual influencer: either human-like (coded as 1) or cartoon-like (coded as 0). The second factor, named “product”, indicates whether the good is a product (coded as 1) or a service (coded as 0).

The descriptive statistics suggest that human-like influencers (human = 1) lead to slightly higher purchase intentions (Mean = 4.249) compared to cartoon-like influencers (human = 0, Mean = 3.888). Similarly, products (product = 1) elicit higher purchase intention (Mean = 4.177) than services (product = 0, Mean = 3.970). More specifically, the combination of human-like virtual influencers

promoting products results in the highest purchase intention (Mean = 4.599), while cartoon-like influencers with products result in the lowest purchase intention (Mean = 3.742).

<i>human</i>	<i>product</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>N</i>
<i>0</i>	<i>0</i>	4,0253	1,75539	66
	<i>1</i>	3,7419	1,63569	62
	<i>Total</i>	3,8880	1,69776	128
<i>1</i>	<i>0</i>	3,9154	1,58947	67
	<i>1</i>	4,5990	1,60156	64
	<i>Total</i>	4,2494	1,62583	131
<i>Total</i>	<i>0</i>	3,9699	1,66841	133
	<i>1</i>	4,1772	1,66837	126
	<i>Total</i>	4,0708	1,66839	259

Table 3.1 Descriptive Statistics for Purchase Intention by Type of Virtual Influencer and Type of Good (Source: SPSS analysis conducted by the author)

These preliminary findings indicate a preference for human-like depictions over cartoon-like depictions; however, strong conclusions should not be drawn from descriptive statistics alone, and further statistical testing is required to determine if these differences are significant.

The results of Levene's Test of Equality of Error Variances ($p = 0.517$) indicate that the assumption of homogeneity of variances is satisfied, meaning that the ANOVA results can be considered valid and reliable.

Regarding the main effects, there is a marginally significant effect of “human” on purchase intention ($F(1,255) = 3.328, p = 0.069$): while human-like depictions tend to generate higher purchase intentions than cartoon-like depictions (Mean difference = 0.374), this effect is not strong enough to reach full statistical significance ($p < 0.05$). Therefore, while the data suggest a trend that human-like influencers are more effective, the evidence is not conclusive. The main effect of good type (whether it is a product or a service) on purchase intention is not statistically significant ($F(1,255) = 0.955, p = 0.329$): the small difference in means between products and services (Mean difference = 0.200) does not represent a meaningful impact on purchase intentions when considered alone. However, the interaction effect (human*product) is statistically significant ($F(1,255) = 5.573, p = 0.019$), meaning

that the effect of type of virtual influencer on purchase intention changes depending on whether the good is a product or a service, supporting H1.

<i>Source</i>	<i>Type III Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig</i>	<i>Partial Eta Squared</i>
<i>Corrected Model</i>	26,313	3	8,771	3,233	0,023	0,037
<i>Intercept</i>	4287,329	1	4287,329	1580,247	<0,001	0,861
<i>human</i>	9,029	1	9,029	3,328	0,069	0,013
<i>product</i>	2,591	1	2,591	0,955	0,329	0,004
<i>human*product</i>	15,119	1	15,119	5,573	0,019	0,021
<i>Error</i>	691,834	255	2,713			
<i>Total</i>	5010,111	259				
<i>Corrected Total</i>	718,147	258				

Table 3.2 Test of Between-Subjects Effects (Source: SPSS analysis conducted by the author)

<i>(I) human</i>	<i>(J) huma</i>	<i>Mean Difference (I-J)</i>	<i>Std. Error</i>	<i>Sig</i>	<i>95% Confidence Interval Difference</i>
<i>0</i>	<i>1</i>	-0,374	0,205	0,069	[-0,777; 0,030]
<i>1</i>	<i>0</i>	0,374	0,205	0,069	[-0,030; 0,777]

Table 3.3 Pairwise Comparisons of Virtual Influencer Type for Product and Service (Source: SPSS analysis conducted by the author)

<i>(I) product</i>	<i>(J) product</i>	<i>Mean Difference (I-J)</i>	<i>Std. Error</i>	<i>Sig</i>	<i>95% Confidence Interval Difference</i>
<i>0</i>	<i>1</i>	-0,200	0,205	0,329	[-0,603; 0,203]
<i>1</i>	<i>0</i>	0,200	0,205	0,329	[-0,203; 0,603]

Table 3.4 Pairwise Comparisons of Good Type for Human-like and Cartoon-like (Source: SPSS analysis conducted by the author)

<i>human</i>	<i>product</i>	<i>Mean</i>	<i>Std. Error</i>	<i>95% Confidence Interval</i>
<i>0</i>	<i>0</i>	4,025	0,203	[3,626; 4,425]
	<i>1</i>	3,742	0,209	[3,330; 4,154]
<i>1</i>	<i>0</i>	3,915	0,201	[3,519; 4,312]
	<i>1</i>	4,599	0,206	[4,193; 5,004]

Table 3.5 Estimated Marginal Means for purchase intention (Source: SPSS analysis conducted by the author)

Specifically, for product, human-like influencer has a greater impact on purchase intention (Mean difference = 0.857, $p = 0.004$), accepting H1a; for service, the difference in purchase intention between human-like and cartoon-like design is not significant (Mean difference = - 0.110, $p = 0.701$), failing to support H1b as the type of virtual influencer has a limited impact on purchase intention for services.

<i>product</i>	<i>(I)human</i>	<i>(J)human</i>	<i>Mean Difference (I-J)</i>	<i>Std. Error</i>	<i>Sig</i>	<i>95% Confidence Interval Difference</i>
<i>0</i>	<i>1</i>	<i>0</i>	-0,110	0,286	0,701	[-0,672; 0,453]
<i>1</i>	<i>1</i>	<i>0</i>	0,857	0,294	0,004	[0,279; 1,435]

Table 3.6 Pairwise Comparisons (Source: SPSS analysis conducted by the author)

A review of the profile plot further highlights the interaction effect: when "product" is 0 (service), shifting from "cartoonlike" (human = 0) to "humanlike" (human = 1) is not significant, but when "product" is 1 (product), the shift has a significant and positive effect. Thus, the type of virtual influencer matters more for products than for services: in particular, the use of humanlike depictions significantly boosts purchase intentions when promoting a product (red line), while for service (blue line) the type of influencer (humanlike vs. cartoonlike) appears to have a much smaller impact on consumer behavior.

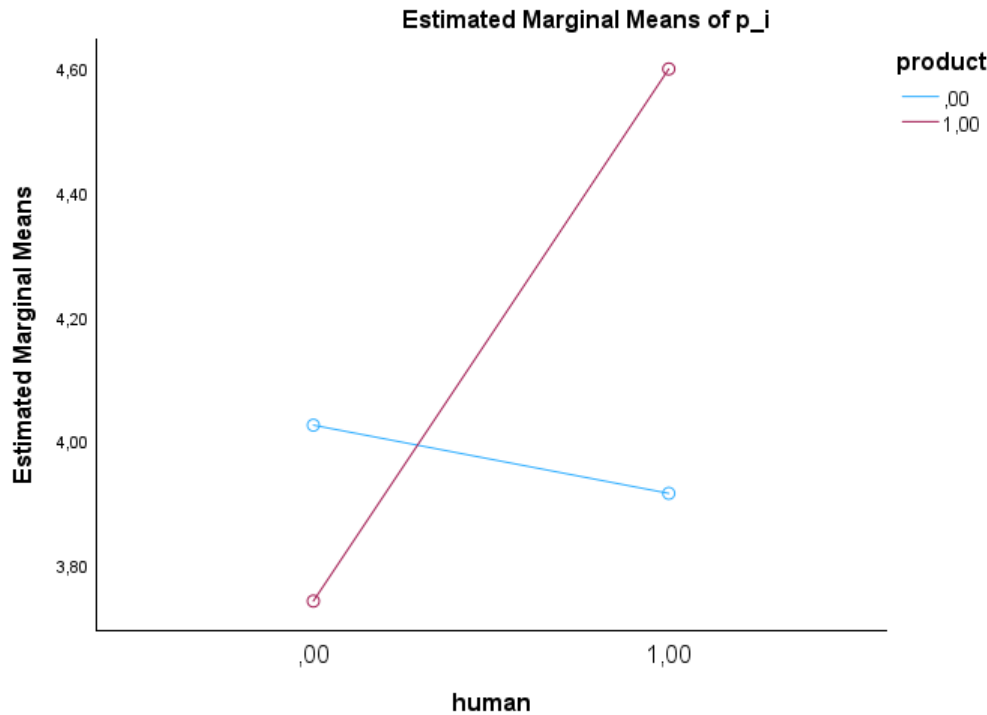


Figure 3.34 Profile Plot (Source: SPSS analysis conducted by the author)

Subsequently, a moderated mediation analysis (through PROCESS Macro Model 7) was conducted to examine how perceived authenticity mediates the relationship between the type of influencer and purchase intention, with good type acting as moderator.

The first model examines how the independent variable (type of influencer), the moderator (type of good), and their interaction influence perceived authenticity (the mediator).

The type of influencer does not have a significant effect on authenticity ($b = -0.200$, $p = 0.479$), nor does the type of good promoted ($b = -0.226$, $p = 0.432$). However, the interaction between the type of influencer and the type of good is significant ($b = 0.812$, $p = 0.045$), indicating that the effect of the influencer type on authenticity depends on whether the ad promotes a product or a service.

	<i>coeff</i>	<i>se</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
<i>constant</i>	4,0404	0,1997	20,2305	0,0000	3,6471	4,4337
<i>human</i>	-0,1996	0,2814	-0,7094	0,4787	-0,7537	0,3545
<i>authenticity</i>	-0,2259	0,2870	-0,7872	0,4319	-0,7910	0,3392
<i>int_1</i>	0,8122	0,4035	2,0131	0,0452	0,0177	1,6067

Table 3.7 Model Coefficient for perceived authenticity (Source: SPSS analysis conducted by the author)

Thus, in the case of a service sponsorship, the effect of the independent variable on authenticity is not significant and negative ($b = -0.200, p = 0.479$): using a human-like or cartoon-like virtual influencer does not significantly impact the perception of authenticity. For a product, the effect of human-like on authenticity is significant and positive ($b = 0.613, p = 0.035$), suggesting that ads featuring human-like virtual influencers are perceived as significantly more authentic than ads with cartoon-like ones.

<i>product</i>	<i>Effect</i>	<i>se</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
<i>0</i>	-0,1996	0,2814	-0,7094	0,4787	-0,7537	0,3545
<i>1</i>	0,6126	0,2891	2,1187	0,0351	0,0432	1,1819

Table 3.8 Conditional effects of the focal predictor at values of the moderator (Source: SPSS analysis conducted by the author)

The second model examines how purchase intention is influenced by the type of influencer and perceived authenticity. The model explains 55.65% of the variance in purchase intention ($R^2 = 0.5565$), indicating a good fit, and it is statistically significant ($F = 160.6203, p < 0.001$).

<i>R</i>	<i>R-sq</i>	<i>MSE</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>
0,7460	0,5565	1,2441	160,6203	2	256	0,0000

Table 3.9 Model Summary for purchase intention (Source: SPSS analysis conducted by the author)

There is no significant direct effect of the type of influencer on purchase intention ($b = 0.213, p = 0.126$): whether the virtual influencer is human-like or cartoon-like does not directly impact purchase intention. Instead, perceived authenticity has a strong positive and significant effect on the dependent variable ($b = 0.756, p < 0.001$): the more sincere the virtual influencer is perceived to be, the greater the likelihood of purchasing the good.

	<i>coeff</i>	<i>se</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
<i>constant</i>	0,9156	0,1945	4,7080	0,0000	0,5326	1,2985
<i>human</i>	0,2130	0,1389	1,5334	0,1264	-0,0605	0,4864
<i>authenticity</i>	0,7562	0,0426	17,7326	0,000	0,6722	0,8401

Table 3.10 Model Coefficient for purchase intention (Source: SPSS analysis conducted by the author)

Regarding the indirect effect of virtual influencer type on purchase intention through authenticity, it depends on the good promoted: in the case of a service, it is negative and not significant ($b = -0.151$, BootLLCI = -0.5820, BootULCI = 0.2648), as the confidence interval includes zero; for a product,

the indirect effect of type of influencer on purchase intention through authenticity is positive significant ($b = 0.463$, BootLLCI = 0.0389, BootULCI = 0.8989). Thus, for a service, the type of virtual influencer (human-like vs. cartoon-like) does not significantly affect purchase intention, either directly or indirectly through authenticity. However, for a product, the presence of a human-like virtual influencer significantly increases purchase intention indirectly by making the virtual influencer seem more authentic.

<i>product</i>	<i>Effect</i>	<i>BootSE</i>	<i>BootLLCI</i>	<i>BootULCI</i>
<i>0</i>	-0,1509	0,2141	-0,5820	0,2648
<i>1</i>	0,4632	0,2199	0,0389	0,8989

Table 3.11 Indirect effect of Virtual Influencer Type on purchase intention through perceived authenticity (Source: SPSS analysis conducted by the author)

The Index of Moderated Mediation is significant, as the confidence interval does not include zero (Index = 0.6141, BootLLCI = 0.0325, BootULCI = 1.2237). This confirms that the indirect effect of the type of virtual influencer on purchase intention through perceived authenticity depends on the type of good. Specifically, the mediation effect of authenticity is stronger for products than for services.

	<i>Index</i>	<i>BootSE</i>	<i>BootLLCI</i>	<i>BootULCI</i>
<i>product</i>	0,6141	0,3164	0,0020	1,2350

Table 3.12 Index of moderated mediation (difference between conditional indirect effects) (Source: SPSS analysis conducted by the author)

Therefore, Hypothesis 2 (H2), which states that the interaction effect between the type of virtual influencer and the type of product on purchase intention is mediated by perceived authenticity, is supported. This is particularly true for product-related ads, where a human-like virtual influencer enhances perceived authenticity and, subsequently, purchase intention.

3.4 Theoretical Contributions and Managerial Implications

The results of this research bring insights to the body of knowledge on virtual influencer marketing trends and practices in the industry today. With the development of research in this domain, this study presents a viewpoint by examining the visual design of virtual influencers: particularly exploring the contrast between human-like and cartoon-like portrayals and how these variations influence consumer views on authenticity and buying inclination. This study stands out from previous research

that mainly looked at comparing AI influencers with their human counterparts (e.g. Sands et al., 2022a; Dondapati & Dehury, 2024; Liu & Lee, 2024a): it is among the few studies that delve into exploring the categories of virtual influencers (e.g. Jiang et al., 2024; Arsenyan & Mirowska, 2021; Kim et al., 2023) to provide fresh perspectives on this growing area of research. By distinguishing between these two categories (human-like and cartoon-like virtual influencers), this research provides critical insights into the role of visual realism design in establishing perceived authenticity of virtual influencers and influencing customers' purchase intention. This is particularly pertinent in the context of product promotion, where consumers view human-like virtual influencers as more authentic, thereby driving higher purchase intentions. Conversely, cartoon-like virtual influencers struggle to gain trust and lack effectiveness in persuading consumer buying behavior. These results extend previous research, that highlights the success of virtual influencers in increasing consumer purchase intentions (Gerlich, 2023; Thomas & Fowler, 2021), by asserting that humanoid influencers are more effective in this regard. This study aligns with previous findings that anthropomorphic virtual influencers foster stronger parasocial interactions (Ma & Li, 2024), thanks to their image and emotionally appealing characteristics (Jiang et al., 2024), boosting their effectiveness (Kim & Park, 2023).

Consequently, the current research identifies significant challenges faced by cartoon-like virtual influencers in enhancing consumer purchase intentions. While previous studies have explored the increasing popularity of AI influencers, they have often concluded that virtual influencers in general face hurdles in driving purchase behavior (Lou et al., 2023; Li et al., 2023; Lee & Ham, 2023; Rizzo et al., 2023). However, this study refines this understanding by differentiating between human-like and cartoon-like influencers, showing that cartoon-like figures are less effective in generating consumer trust and influencing purchase decisions.

The study builds upon existing theories pertaining to authenticity in virtual influencer marketing (e.g. De Brito Silva et al., 2022; Zhou, 2023; Hofeditz et al., 2022; Lou et al. 2023; Lee & Ham, 2023; Liu & Lee, 2022), emphasizing the importance of visual cues in shaping consumers' perceptions of sincerity and trustworthiness. The findings serve to reinforce the notion that perceived authenticity acts as a crucial mediator between the type of virtual influencer and purchase intention, particularly in the context of advertisements for products.

Additionally, this research investigates the alignment between influencers and products, confirming the positive impact highlighted in previous studies (e.g., Kim & Park, 2023; Feng et al., 2024): specifically, it reveals that the alignment of human-like virtual influencers promoting products significantly influences purchase intentions.

Finally, this contribution is especially valuable as it addresses a gap in the literature by examining the role of virtual influencers in the promotion of mass-market products: prior research has largely focused on virtual influencers in the promotion of luxury products and green goods (Jiang et al., 2024) or comparing different categories like functional vs symbolic vs experiential product (Liu & Lee, 2024a) or utilitarian vs hedonic (Belanche et al., 2024; Dondapati & Dehury, 2024). In contrast, this study broadens the understanding of virtual influencers by examining their effects on mass goods, thereby offering a more comprehensive perspective on how different types of virtual influencers influence consumer behavior across a wider range of product categories.

In the following sections, the theoretical insights presented above are translated into practical implications for marketers and businesses seeking to integrate virtual influencers into their strategies. Indeed, the current environment shows a rising fascination and financial commitment to AI development, presenting a promising opportunity for brands to gain a competitive advantage by embracing this innovation at an early stage. Henceforth it is imperative for enterprises and marketers to comprehend the most effective strategies for utilizing this novel phenomenon. The findings of this study provide suggestions for managers to assist businesses in making informed choices. First of all, the research indicates that marketers need to customize the appearance of influencers according to the product or service being advertised rather than adopting a one-size-fits-all approach. For instance, with items like laptops, virtual influencers that resemble humans tend to have an impact in influencing consumers' willingness to buy because they come across as more genuine. Therefore businesses promoting products should focus more on this type of virtual influencers to leverage their capacity for creating an impression of authenticity. On the other hand, when it comes to brands that provide services, the specific virtual influencer used seems to be less crucial, allowing for more creative and experimental designs without fearing a major decrease in people's willingness to buy. Nevertheless, as the study indicates, human-like design, with its realistic characteristics, may still offer a stronger sense of authenticity for brands focused on building long-term trust. This is particularly crucial for brands targeting customers with low familiarity with virtual influencers. As with any innovation, consumer education is of the utmost importance: brands should also consider strategies for gradually introducing virtual influencers to their audience, with the aim of normalizing their presence and reducing skepticism, especially towards cartoon-like virtual influencers.

Perceived authenticity emerged as a key factor in driving purchase intentions: when designing marketing campaigns, brands should prioritize authenticity, particularly in the context of product promotion. This focus enhances not only the initial appeal of virtual influencers but also the long-term authenticity and trust. At present, based on these results, using human-like virtual influencers

that evoke a sense of realism and sincerity seems the key to strengthening the connection with consumers and improving outcomes. Given the significance attributed to authenticity, it is recommended that brands allocate resources toward the development of consistent and credible personas for their virtual influencers: this approach is likely to yield more enduring outcomes over time, as evidenced by the case studies examined in the second chapter (e.g. Lil Miquela).

3.5 Limitations and Future Directions

This study, while providing valuable insights into the impact and effectiveness of virtual influencers, has several limitations that must be acknowledged.

First of all, the relatively small sample size constrains the reliability and validity of the findings: a larger sample would yield more robust and generalizable results, allowing for a deeper exploration of sub-group differences and a more comprehensive understanding of the impact of virtual influencers across different demographic and geographic groups. Furthermore, the use of convenience sampling, specifically through social media recruitment on Instagram, introduces limitations in terms of sample representativeness. It is possible that the methodology employed may have resulted in a bias towards individuals who are active on social media, particularly those belonging to younger demographic groups. As a result, the findings may reflect the perceptions and behaviors of a population with a high level of familiarity with social media, rather than a broader and more diverse group. It would be beneficial for future research to consider utilizing more representative sampling methods that encompass a wider range of demographics and social media usage patterns, thus enhancing generalizability. Furthermore, it would also be valuable to investigate how the effect of different virtual influencer types on purchase intention differs across subgroups.

The geographic concentration of participants in Italy limits the generalizability of the findings to other cultural and geographic contexts. The perceptions and behaviors regarding virtual influencers may vary across different regions, therefore future research could conduct comparative analyses between countries with contrasting cultures. Such studies would help understand how virtual influencers are received across various cultural contexts and further investigate the virtual influencer's role in culturally sensitive marketing strategies, as illustrated by the Ling case.

Additionally, the study's sample predominantly consists of students and young adults, particularly from Generation Z: this demographic bias may potentially impact the findings related to purchase intentions and the perceived efficacy of virtual influencers. Future research should include a more diverse demographic profile, encompassing a broader range of age groups, occupations and

educational backgrounds. Exploring how different age groups respond to various virtual influencer designs could also provide valuable insights: for instance, treating age as a moderator to identify the most effective virtual influencer designs for different target age groups could offer practical guidance for brands.

Also the manipulation can be considered a potential limitation since it was conducted using free tools that may not fully replicate the experience of a real Instagram post. To enhance the realism of the conditions, future research should utilize more professional tools and consider experimenting with different content formats, such as videos or reels. Given that cartoon-like virtual influencers, such as Nobody Sausage, are known for their high engagement rates through their video content, investigating the effectiveness of various types of virtual influencers through different content types (e.g., image vs. video) could provide valuable insights into engagement strategies: it could help determine which content formats and virtual influencer types are most effective in driving engagement.

A further potential limitation is the participants' low familiarity with virtual influencers: it could have impacted their ability to accurately assess and differentiate between human-like and cartoon-like virtual influencers. In addition, the limited knowledge of virtual influencers among participants could have led to biased or less informed responses. It would be beneficial for future research to consider the variable of participants' familiarity with virtual influencers and examine the impact of varying levels of familiarity on customer behavior and perceptions.

Regarding future research directions, in addition to the ones already identified while addressing the limitations, it should be considered to conduct longitudinal studies to investigate how perceptions and attitudes towards virtual influencers evolve over time and explore the long-term effects of virtual influencers on consumer behavior and brand perceptions.

CONCLUSION

With the present research, it has been decided to study the early-stage phenomenon of virtual influencer marketing: in particular, this study objective was to examine the interaction between virtual influencer design (human-like vs. cartoon-like) and the type of good promoted (product vs. service) on consumers' purchase intention. The findings suggest that human-like virtual influencers generally evoke higher purchase intentions than cartoon-like ones, particularly for products, due to the mediated effect of perceived authenticity.

The study contributes to the emerging literature on virtual influencers reinforcing the importance of authenticity (e.g. De Brito Silva et al., 2022; Zhou, 2023; Lou et al. 2023; Lee & Ham, 2023; Liu & Lee, 2022), influencer-good fit (e.g. Li et al., 2023; Liu & Lee, 2024a; Feng et al., 2024) and anthropomorphism (e.g. Mrad et al., 2022; Um, 2023; Ham et al., 2024; Shao, 2024; Stein et al., 2024) in shaping consumer behavior also in this research field, particularly at this embryonal stage of the phenomenon.

By examining the interaction between virtual influencer design and the nature of the goods promoted, the research offers practical insights for brands and marketers seeking to optimize the effectiveness of their virtual influencer marketing strategies.

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APPENDIX

Reliability Analysis

Purchase intention

Reliability Statistics

Cronbach's Alpha	N of Items
,932	3

Item Statistics

	Mean	Std. Deviation	N
In light of this influencer's Instagram post, please rate the extent to which you would buy the product/service sponsored: - I will consider purchasing the product/service	4,09	1,796	259
In light of this influencer's Instagram post, please rate the extent to which you would buy the product/service sponsored: - It is likely that I will buy it	3,73	1,829	259
In light of this influencer's Instagram post, please rate the extent to which you would buy the product/service sponsored: - I would consider buying it in the future	4,39	1,709	259

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
In light of this influencer's Instagram post, please rate the extent to which you would buy the product/service sponsored: - I will consider purchasing the product/service	8,12	11,036	,905	,865
In light of this influencer's Instagram post, please rate the extent to which you would buy the product/service sponsored: - It is likely that I will buy it	8,48	11,142	,866	,897
In light of this influencer's Instagram post, please rate the extent to which you would buy the product/service sponsored: - I would consider buying it in the future	7,83	12,361	,813	,937

Authenticity

Reliability Statistics

Cronbach's Alpha	N of Items
,958	6

Item Statistics

	Mean	Std. Deviation	N
To what extent do you agree with the following statements? - This influencer appears to be genuine	4,30	1,724	259
To what extent do you agree with the following statements? - I feel that this influencer is authentic in its content	4,07	1,751	259
To what extent do you agree with the following statements? - This influencer seems to be real and not just acting for the promotion	3,66	1,893	259
To what extent do you agree with the following statements? - The influencer's content feels sincere to me	4,06	1,771	259
To what extent do you agree with the following statements? - The influencer does not try to present a false image or narrative	4,30	1,759	259
To what extent do you agree with the following statements? - The influencer's content feels heartfelt and personal	3,79	1,871	259

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
To what extent do you agree with the following statements? - This influencer appears to be genuine	19,88	68,439	,856	,951
To what extent do you agree with the following statements? - I feel that this influencer is authentic in its content	20,11	67,286	,887	,947
To what extent do you agree with the following statements? - This influencer seems to be real and not just acting for the promotion	20,53	64,987	,893	,947
To what extent do you agree with the following statements? - The influencer's content feels sincere to me	20,12	66,323	,914	,944
To what extent do you agree with the following statements? - The influencer does not try to present a false image or narrative	19,88	69,439	,794	,957
To what extent do you agree with the following statements? - The influencer's content feels heartfelt and personal	20,39	66,138	,860	,950

Independent t-test

Human-like vs cartoon-like

Group Statistics

	human	N	Mean	Std. Deviation	Std. Error Mean
The virtual influencer shown to you was: - Definitely human-like:	1,00	130	5,20	1,849	,162
Definitely cartoon-like	,00	126	5,78	1,579	,141

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
The virtual influencer shown to you was: - Definitely human-like: Definitely cartoon-like	Equal variances assumed	3,368	,068	-2,685	254	,004	,008	-,578	,215	-1,002	-,154
	Equal variances not assumed			-2,692	250,086	,004	,008	-,578	,215	-1,001	-,155

Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
The virtual influencer shown to you was: - Definitely human-like: Definitely cartoon-like	Cohen's d	1,721	-,336	-,582	-,089
	Hedges' correction	1,726	-,335	-,580	-,088
	Glass's delta	1,579	-,366	-,614	-,116

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Product vs service

Group Statistics

	product	N	Mean	Std. Deviation	Std. Error Mean
What kind of good is the influencer sponsoring? - Definitely a Product: Definitely a Service	1,00	125	3,06	1,933	,173
	,00	131	5,22	1,807	,158

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
What kind of good is the influencer sponsoring? - Definitely a Product: Definitely a Service	Equal variances assumed	,180	,672	-9,228	254	<,001	<,001	-2,157	,234	-2,618	-1,697
	Equal variances not assumed			-9,213	250,724	<,001	<,001	-2,157	,234	-2,619	-1,696

Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
What kind of good is the influencer sponsoring? - Definitely a Product: Definitely a Service	Cohen's d	1,870	-1,154	-1,418	-,888
	Hedges' correction	1,875	-1,150	-1,413	-,885
	Glass's delta	1,807	-1,194	-1,477	-,907

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

ANOVA

Between-Subjects Factors

N		
human	,00	128
	1,00	131
product	,00	133
	1,00	126

Descriptive Statistics

Dependent Variable: p_i

human	product	Mean	Std. Deviation	N
,00	,00	4,0253	1,75539	66
	1,00	3,7419	1,63569	62
	Total	3,8880	1,69776	128
1,00	,00	3,9154	1,58947	67
	1,00	4,5990	1,60156	64
	Total	4,2494	1,62583	131
Total	,00	3,9699	1,66841	133
	1,00	4,1772	1,66837	126
	Total	4,0708	1,66839	259

Levene's Test of Equality of Error Variances^{a,b}

		Levene Statistic	df1	df2	Sig.
p_i	Based on Mean	,761	3	255	,517
	Based on Median	,557	3	255	,644
	Based on Median and with adjusted df	,557	3	248,743	,644
	Based on trimmed mean	,782	3	255	,505

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Dependent variable: p_i

b. Design: Intercept + human + product + human * product

Tests of Between-Subjects Effects

Dependent Variable: p_i

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	26,313 ^a	3	8,771	3,233	,023	,037
Intercept	4287,329	1	4287,329	1580,247	<,001	,861
human	9,029	1	9,029	3,328	,069	,013
product	2,591	1	2,591	,955	,329	,004
human * product	15,119	1	15,119	5,573	,019	,021
Error	691,834	255	2,713			
Total	5010,111	259				
Corrected Total	718,147	258				

a. R Squared = ,037 (Adjusted R Squared = ,025)

Estimated Marginal Means

- human

Estimates

Dependent Variable: p_i

human	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
,00	3,884	,146	3,597	4,170
1,00	4,257	,144	3,974	4,541

Pairwise Comparisons

Dependent Variable: p_i

(I) human	(J) human	Mean Difference (I-J)	Std. Error	Sig. ^a	95% Confidence Interval for Difference ^a	
					Lower Bound	Upper Bound
,00	1,00	-,374	,205	,069	-,777	,030
1,00	,00	,374	,205	,069	-,030	,777

Based on estimated marginal means

- Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Dependent Variable: p_i

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Contrast	9,029	1	9,029	3,328	,069	,013
Error	691,834	255	2,713			

The F tests the effect of human. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

2. product

Estimates

Dependent Variable: p_i

product	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
,00	3,970	,143	3,689	4,252
1,00	4,170	,147	3,881	4,459

Pairwise Comparisons

Dependent Variable: p_i

(I) product	(J) product	Mean Difference (I-J)	Std. Error	Sig. ^a	95% Confidence Interval for Difference ^a	
					Lower Bound	Upper Bound
,00	1,00	-,200	,205	,329	-,603	,203
1,00	,00	,200	,205	,329	-,203	,603

Based on estimated marginal means

- a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Dependent Variable: p_i

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Contrast	2,591	1	2,591	,955	,329	,004
Error	691,834	255	2,713			

The F tests the effect of product. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

3. human*product

Estimates

Dependent Variable: p_i

human	product	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
,00	,00	4,025	,203	3,626	4,425
	1,00	3,742	,209	3,330	4,154
1,00	,00	3,915	,201	3,519	4,312
	1,00	4,599	,206	4,193	5,004

Pairwise Comparisons

Dependent Variable: p_i

product	(I) human	(J) human	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
						Lower Bound	Upper Bound
,00	,00	1,00	,110	,286	,701	-,453	,672
	1,00	,00	-,110	,286	,701	-,672	,453
1,00	,00	1,00	-,857 [*]	,294	,004	-1,435	-,279
	1,00	,00	,857 [*]	,294	,004	,279	1,435

Based on estimated marginal means

*. The mean difference is significant at the ,05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Dependent Variable: p_i

product		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
,00	Contrast	,401	1	,401	,148	,701	,001
	Error	691,834	255	2,713			
1,00	Contrast	23,131	1	23,131	8,526	,004	,032
	Error	691,834	255	2,713			

Each F tests the simple effects of human within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

4. human*product

Estimates

Dependent Variable: p_i

human	product	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
,00	,00	4,025	,203	3,626	4,425
	1,00	3,742	,209	3,330	4,154
1,00	,00	3,915	,201	3,519	4,312
	1,00	4,599	,206	4,193	5,004

Pairwise Comparisons

Dependent Variable: p_i

human	(I) product	(J) product	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
						Lower Bound	Upper Bound
,00	,00	1,00	,283	,291	,332	-,290	,857
	1,00	,00	-,283	,291	,332	-,857	,290
1,00	,00	1,00	-,684 [*]	,288	,018	-1,250	-,117
	1,00	,00	,684 [*]	,288	,018	,117	1,250

Based on estimated marginal means

*. The mean difference is significant at the ,05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Dependent Variable: p_i

human		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
,00	Contrast	2,566	1	2,566	,946	,332	,004
	Error	691,834	255	2,713			
1,00	Contrast	15,293	1	15,293	5,637	,018	,022
	Error	691,834	255	2,713			

Each F tests the simple effects of product within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

Moderated Mediation Model 7 Output

Authenticity = med

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 4.2 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 7
Y : p_i
X : human
M : med
W : product

Sample
Size: 259


```

*****
OUTCOME VARIABLE:
med

Model Summary
      R      R-sq      MSE      F      df1      df2      p
    ,1496    ,0224    2,6326    1,9469    3,0000    255,0000    ,1225

Model
      coeff      se      t      p      LLCI      ULCI
constant    4,0404    ,1997    20,2305    ,0000    3,6471    4,4337
human       -,1996    ,2814     -,7094    ,4787    -,7537    ,3545
product     -,2259    ,2870     -,7872    ,4319    -,7910    ,3392
Int_1       ,8122    ,4035     2,0131    ,0452    ,0177    1,6067

Product terms key:
Int_1      :      human      x      product

Test(s) of highest order unconditional interaction(s):
      R2-chng      F      df1      df2      p
X*W      ,0155    4,0524    1,0000    255,0000    ,0452
-----
      Focal predict: human      (X)
      Mod var: product      (W)

Conditional effects of the focal predictor at values of the moderator(s):

      product      Effect      se      t      p      LLCI      ULCI
      ,0000      -,1996    ,2814     -,7094    ,4787    -,7537    ,3545
      1,0000      ,6126    ,2891     2,1187    ,0351    ,0432    1,1819

*****
OUTCOME VARIABLE:
p_i

Model Summary
      R      R-sq      MSE      F      df1      df2      p
    ,7460    ,5565    1,2441    160,6203    2,0000    256,0000    ,0000

Model
      coeff      se      t      p      LLCI      ULCI
constant    ,9156    ,1945     4,7080    ,0000    ,5326    1,2985
human       ,2130    ,1389     1,5334    ,1264    -,0605    ,4864
med         ,7562    ,0426    17,7326    ,0000    ,6722    ,8401

***** DIRECT AND INDIRECT EFFECTS OF X ON Y *****

Direct effect of X on Y
      Effect      se      t      p      LLCI      ULCI
      ,2130      ,1389     1,5334    ,1264    -,0605    ,4864

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
human      ->      med      ->      p_i

      product      Effect      BootSE      BootLLCI      BootULCI
      ,0000      -,1509      ,2178      -,5854      ,2664
      1,0000      ,4632      ,2196      ,0429      ,9084

Index of moderated mediation (difference between conditional indirect effects):

```

	Index	BootSE	BootLLCI	BootULCI
product	,6141	,3164	,0020	1,2350

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

----- END MATRIX -----