LUND UNIVERSITY
School of Economics and Management

Virtual influencers come to the rescue?

A Quantitative study exploring consumer purchase intentions based on their perceived credibility of virtual influencers, with the mediating role of taste leadership

by

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May 2022

Master's Programme in International Marketing and Brand Management

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Abstract

Title: Virtual influencers come to the rescue?

Date of the seminar: June 3rd, 2022

Course: BUSN39 - Degree Project in Global Marketing

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Keywords: Virtual influencer, Influencer marketing, Source credibility, Taste-leadership, Purchase intention

Thesis purpose: The purpose of this research is to investigate the extent to which virtual influencers are perceived as credible sources of advertising and how their credibility attributes affect purchase intention among consumers. Specifically, this study aims to provide a deeper comprehension of this new influencer marketing phenomenon and to guide marketing managers in the understanding of consumer perceptions of virtual influencers.

Methodology: This is a quantitative study that explores virtual influencers' credibility from a consumer perspective. The research follows a deductive approach with a realist ontological perspective and a positivist epistemological position. This approach was chosen in order to permit a more suitable interpretation of the phenomenon.

Theoretical perspective: This paper combines the Source Credibility Model, developed by Ohanian (1990), with past taste leadership and purchase intention literature to develop a deeper connection between consumers' opinions of virtual influencers and consequential purchase behaviour.

Empirical data: This research is based on primary data collection. The researchers collected consumers' opinions through an online survey. Here, participants were asked to report their level of agreement with several scale items including the three elements of credibility (attractiveness, trustworthiness, expertise), taste leadership and purchase intention. Additionally, participants' demographics were also retrieved via the online questionnaire.

Findings: What was found was that only the perceived trustworthiness and expertise of a virtual influencer significantly affect purchase intention, so a higher level of trust or expertise leads to a higher level of purchase intention. Additionally, taste leadership was found to mediate the relationship between perceived trustworthiness and expertise, and purchase intention.

Practical Implications: This paper provides practical insights on the extent to which consumers perceive virtual influencers as credible information sources. It highlights the characteristics that they need to enhance in order to be perceived not only as credible but as possible taste leaders. If practitioners can leverage this information, they could manage to take greater advantage of the benefits of virtual influencers.

Acknowledgements

This paper represents the end of a chapter, the conclusion of the Master's Programme in International Marketing and Brand Management attended at the Lund University School of Economics and Management. Before we begin the presentation of the research, we would like to give our utmost regards to all the people that have contributed to making this work possible. First of all, our supervisor Javier Cenamor. His assuring energy and his deepfelt insights gave new perspectives to the research and led us to formulating a greater understanding of the topics of this study. To add on, his knowledge of quantitative methods was truly essential in aiding us through the analysis of the data. All of this with incredible humor and constant encouragement.

We would also like to thank our families and friends, who have supported us through this challenging writing process. And, of course, we cannot forget the participants who so kindly helped us through the data collection process. This thesis would not have been possible without you!

From the bottom of our hearts,

Thank you!

Lund, 31 May 2021

Xie Yimei

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1. Introduction

1.1 Background

The adoption of social media enables consumers to express their opinions about products and brands, thereby transforming them from consumers to promoters of brands (Vrontis et.al., 2021). Some promoters grow into social media influencers with a large fan base by posting original and engaging content on social media. Leveraging social media influencers by brands to endorse and promote products or services is known as influencer marketing, which has been found to be a successful marketing strategy (Dabiran, Wang & Farivar, 2022; Vrontis et.al., 2021; Wibawa et.al., 2022). Approximately 81% of marketers who used influencer marketing considered it effective (Wibawa et.al., 2022). By 2027, the global market for the influencer marketing industry is expected to exceed 370 million dollars (Statista, 2022a).

At the same time, as the investments in influencer marketing keep growinng, the challenges associated with influencer marketing are of great concern to marketers, particularly the damage to brand image resulting from a negative influencer image. When exposed to influencer endorsements, consumers tend to associate influencers with brands. In other words, consumers' perception of influencers positively influences brand attitudes (Chetioui, Benlafqih & Lebdaoui, 2020). Therefore, if an influencer's behaviour is not congruent with the values of the brand that he or she collaborates with, public resentment toward the influencer often spills over to the brand, leading to a tarnished brand reputation (Backaler, 2018). The problem, however, is that brands often find it difficult to control the behaviour and image of influencers. Interestingly, influencers are not necessarily real people (Dabiran, Wang & Farivar, 2022). To protect brands from influencer scandals, marketers adopt virtual influencers who are easier to manage as a solution to influencer marketing (Oliveira & Chimenti, 2021).

Over the past decade, virtual influencers have emerged as a burgeoning future trend in influencer marketing (Lisowski, 2021). Virtual influencers, also known as "human avatars" (Moustakas et.al., 2020, p.1), refer to computer-generated human character with a huge fan base on social media (Moustakas et.al., 2020; Wibawa et.al., 2022). There are over 125 active virtual influencers only on Instagram (Huang, 2020). Since 2018, On image-based social platforms such as Instagram and TikTok, virtual influencers have accumulated a large audience

(Wibawa et.al., 2022). For example, created by the artificial intelligence company Brud in 2016, Lil Miquela, a 19-year-old Brazilian-Spanish model, is widely considered to be the first virtual influencer. Lil Miquela has attracted Gen-Z and young millennials over the years, with 3 million followers on Instagram and 3.2 million TikTok (Dabiran, Wang & Farivar, 2022). She was even named one of the 25 most influential people on the Internet by Time magazine (Time, 2018).

Compared to human influencers, virtual influencers have the following advantages. Firstly, brands have flexibility when working with virtual influencers as influencers can work from anywhere and at any time to satisfy marketing needs (Wibawa et al., 2022). In addition, the use of virtual influencers may be less risky than real human influencers with respect to brand image management, because virtual influencers are less likely to have scandals that cause controversy and negative fan reactions (Lisowski, 2021; Moustakas et.al., 2020). Secondly, virtual influencers have been found to be effective in engaging consumers. The engagement rate of virtual influencers is almost three times higher than that of real influencers (Baklanov, 2020). Finally, virtual influencers are a great way to reach a younger, more technologically oriented audience. According to Hype Auditor's research, more than half of the audience of virtual influencers (52%) are not older than 24 years old (Scholz, 2014).

Many brands, from the luxury sector (e.g. Prada) to the technological sector (e.g. Samsung), have worked with computer-generated virtual influencers for their marketing communications (Wibawa et.al., 2022). In addition to working with virtual influencers, some luxury fashion brands have pioneered creating their own brand avatars. For example, Yoox, the online luxury retail site of the Net-a-Porter Group, launched a virtual influencer called Daisy in 2018. She participated in a series of brand campaigns, wearing items from Calvin Klein and Tommy Hilfiger. In addition, the German sporting goods brand Puma, created a virtual influencer, named Maya, in the Southeast Asian market to promote its new Future Rider sneakers. (Lim, 2020).

Although virtual influencers are not new ideas, there is an emerging trend where the boundaries between humans and many virtual influencers are becoming increasingly blurred due to the anthropomorphic appearance, personality and behaviour of virtual influencers (Moustakas et.al., 2020). Virtual influencers have a behind-the-scenes team working for them, including professionals in various fields including film production, motion capture, 3D modelling, social media communication (Wibawa et.al., 2022). Creator teams are devoted to craft compelling background stories for virtual influencers to keep audiences interested (Moustakas et.al., 2020; Wibawa et.al., 2022).

Pandemic restrictions and the metaverse boom have accelerated the thriving of human-like virtual influencers. Firstly, as the technology of merging virtual and reality continues to develop, it has become easier to create virtual influencers. The metaverse is a simulation of the natural world as it relates to humans and society. Virtual influencers, or avatars, are gaining more visibility and attention on social platforms as true metaverse pioneers (Wibawa et.al., 2022). Staff (2021) predicts that virtual influencers will gain greater visibility in the future with the arrival of metaverse. Furthermore, influencers had to stay at home due to the Covid-19 pandemic lockdown, leaving them with little opportunity to participate in offline brand events. Given that virtual influencers can appear anywhere in the digital world to work for brands, hiring virtual influencers seems to become a more practical marketing solution.

In short, the advent of social media has given rise to social media influencers. Influencer marketing, the use of social media influencers for marketing, has been incorporated by brands into their marketing strategies. Despite the success and maturity of this marketing technique, influencer marketing still faces numerous challenges. One of the biggest challenges is the reputational risk that influencers pose to partner brands. It is easier to control the image and behaviour of a virtual influencer than that of a human influencer. Hence, brands are increasingly using virtual influencers as a potential alternative to human influencers to promote or endorse products. In addition, the restrictions during the pandemic and the technological advances that accompanied the metaverse boom act as a catalyst for the development of virtual influencers. Virtual influencers are a key trend in the future of digital marketing.

1.2 Problematization

In a comprehensive literature review of influencer marketing, Vrontis et.al (2021) observed the rise of virtual influencers. They suggest that there is a need to verify whether the antecedents and consequences of social media influencer marketing apply to both real-human and virtual influencers, which would be of value to marketing practitioners. The extant influencer marketing literature focuses on real human influencers (Vrontis et.al., 2021). Such literature examines influencer characteristics such as source credibility, source attractiveness (Djafarova & Rushworth, 2017; Sokolova & Kefi, 2020), psychological factors such as identification, similarity, parasocial interaction (Sokolova & Kefi, 2020; Yılmazdoğan et.al., 2021), content attributes such as entertainment, informativeness (Lou & Yuan, 2019) and advertising disclosure (Weismueller et.al., 2020), and their impacts on consumer outcomes (e.g., brand attitudes and purchase intentions). These findings can facilitate researchers and marketers in understanding the impacts of virtual influencers.

Literature suggests several key mechanisms to explain influencer marketing. Many scholars attribute the success of social media influencer marketing to the high credibility of the influencer. Notably, Uzunoğlu and Kip (2014) reveal that trustworthiness, as a component of credibility, mainly contributes to influencers' power to affect consumers because influencers actually use the product themselves. However, despite having anthropomorphic characteristics, human-like virtual influencers are still in essence non-human and therefore are unable to access products in real life. Hence, it may mean that it could be more difficult for virtual influencers to influence consumers' attitudes and purchase behaviour than real influencers.

Furthermore, in a research exploring how influencers persuade consumers to adopt brands, Ki & Kim (2019) find the impact of taste leadership. When influencers post engaging content and demonstrate expertise, consumers perceive them as taste leaders and desire to copy them, such as their fashion and makeup styles, thus buying the brands and products that the influencers endorse. Among the 15 most popular virtual influencers on Instagram, the majority are in lifestyle and fashion categories (Molenaar, 2021). In a way, this suggests that many human-like virtual influencers are favoured for their ideal lifestyles and good fashion tastes. Just as social media influencers are perceived by consumers as trusted tastemakers (Wibawa et.al., 2022), virtual influencers are also likely to lead trends. With this in mind, taste leadership could be used to explain the influence of virtual influencers on consumers' purchasing behaviour. However, the fact that virtual influencers are not human may complicate the perceptions of taste leadership because consumers are likely to be skeptical about the authenticity of aesthetic ability displayed by virtual influencers. The existing literature has not yet proved whether virtual celebrities can be identified as taste leaders, which is a research gap that deserves further exploration.

In addition, virtual influencer is an emerging research stream in the marketing field. Prior literatures focus on perceptions of virtual influencers' credibility (Molin & Nordgren, 2019; Dabiran, Wang & Farivar, 2022; Cheng & Leung, 2021), parasocial relationship (Molin & Nordgren, 2019), and the pros and cons of using virtual influencer (Oliveira & Chimenti, 2021; Moustakas et.al., 2020; Rodrigo-Martín et.al., 2021). However, research on the effectiveness of virtual influencers is relatively limited， particularly in terms of purchase intentions. Wibbawa et.al (2022) and Moustakas et.al (2020) explore the effectiveness of using virtual influencers as a marketing strategy by interviewing digital experts. Cheng & Leung (2021) compare the human-like virtual influencer (Lil Miquela) and cartoon influencer (Hatsune Miku) advertising in terms of attitudes towards influencers and product interest. Hence, we would argue that there is a lack of empirical studies on the impact of virtual influencers on consumers' purchase intentions.

1.3 Research Question and Purpose

The background section highlights the potential risks posed by influencer marketing and the rapid growth of virtual influencers on social media. Advances in technology blur the lines between virtual and real human influencers. Meanwhile, an increasing number of brands collaborate with human-like virtual influencers to endorse their products because virtual influencers may not only promote brands but also generates trends. Given that virtual influencers are expected to be popularly used in marketing communications campaigns in the near future, companies must understand the marketing effectiveness of virtual influencers, especially in terms of purchase intentions. However, this has not been well discussed in the existing literature. Previous research points out that each credibility attributes (attractiveness, expertise, and trustworthiness) have an independent impact on purchase intentions. Based on the above, this study explores the following question:

RQ: What are the relationships between virtual influencers’ credibility attributes and consumers' purchase intention?

The aim of this study is to uncover the mechanisms by which virtual influencers influence consumers' purchase intentions. Specifically, it borrows from key antecedents (source credibility) in the literature of influencer marketing. The impact of three sources of credibility, namely attractiveness, expertise and trustworthiness, on consumers' purchase intentions is examined. Also, this study further investigates the mediating role of taste leadership in the relationship between credibility and purchase intention.

1.4 Intended Contributions

Drawing on theories of source credibility, taste leadership and purchase intention, we used a quantitative research approach to examine how the credibility characteristics of virtual influencers affect purchase intention and how taste leadership mediates these relationships. The focus of this study is on human-like virtual influencers on Instagram, such as Lil Miquela, as the number of human-like virtual influencers is increasing and more brands are seeking to work with them. In addition, Instagram is currently one of the most popular platforms for virtual influencers, which makes the study of virtual influencers on Instagram valuable for marketers.

Overall, this research contributes to three research streams, namely source credibility, influencer marketing and taste leadership. Firstly, our study finds that the perceived trustworthiness and expertise of virtual influencers have positive impacts on purchase intention, with trustworthiness having the most significant impact. This finding is consistent with some of the results in the existing literature on source credibility (Weismueller et al., 2020). The first contribution of this study is to extend source credibility theory, as it demonstrates that the effects of source credibility apply to both virtual influencers and real human influencers. Second, given that the mechanisms of how virtual influencers influence consumer purchase intention are poorly understood (Vrontis et al., 2021), we introduce a concept, the taste leadership, as a key mediating variable. Our results suggest that virtual influencer's expertise and trustworthiness affect purchase intention through taste leadership. Thus, the second contribution of this study is to fill a research gap in the influencer marketing literature on the effectiveness of virtual influencers. Thirdly, this study sheds light on the relationship between virtual influencers' credibility characteristics and perceived taste leadership. It shows that trustworthiness and expertise enhance the perception of taste leadership. The third contribution of this study is to increase knowledge of the taste leadership in the context of virtual influencers.

Following this introduction, the second section sets out the theoretical background to this study. In the third part the hypothesis and research model are presented. The methods used in this study for data collection and analysis are described in the fourth section. Then, in the fifth and sixth part, the results under each method of analysis are presented. Finally, in the seventh, eighth and ninth sections, we conclude the findings, highlight the theoretical and practical implications, and reveal the limitations of the study to make suggestions for future research.

2. Literature Review

This chapter provides a comprehensive review of the extant literature relevant to our research topic. Firstly, we describe the transformation in consumer behaviour that resulted from the widespread use of social media. This shift in the way consumers access information led to the proliferation of social media influencers, which subsequently has driven the emergence of influencer marketing as a prevalent marketing tool used by companies. Next, we move on to discuss the appeal of influencer marketing with examples of how brands leverage influencer marketing on visual based platforms such as Instagram, Tiktok and YouTube. Nonetheless, influencer marketing also presents its own risks which will be explored in depth in this section. Further, the concept of virtual influencers will be introduced, and the impact on the influencer marketing industry will be analysed. There is little research that explores the mechanisms of virtual influencing on social media. Given the booming popularity of virtual influencers as well as the lack of relevant literature, a study focusing on the impacts of virtual influencers on consumer perception and behaviour should be conducted.

2.1 The shift in consumer behaviour

The popularity of social networking platforms has been growing. According to a recent report, 4.62 billion people around the globe use social media, taking up 58.4% of the total global population (Chaffey, 2022). The prevalence of social media fundamentally changed the way people acquire information (Lou & Yuan, 2019), because the connectivity of social media stimulates knowledge and information sharing (Vrontis et.al., 2021). The increasing use of social media changed the traditional power structure in mass media communication (Evans, 2019), allowing consumers to evolve from passive information receivers to active information creators and sharers.

Consumers are no longer satisfied with traditional advertising, and the media consumption patterns of today’s generation have drastically changed. This shift has given rise to a new main marketing channel known as mobile advertising, specifically social media. Social media includes platforms such as Instagram, Facebook, Tiktok, Twitter, and many more. These are platforms that allow regular individuals to share content with their social circle or to enjoy the content that is produced by others (Haenlein et.al., 2020). The emergence of social media platforms has made it possible for consumers to become part of the communication process and gain ownership of their experiences. Holt (2002) identifies a new emergent consumer culture, a postmodern era in which consumers have not only become distributors of knowledge but have learned to leverage the experiences of others and implement them in their purchasing decisions.

Through digital media, consumers are now able to write product reviews and interact with other people, making social platforms a resource through which consumers can share and find reliable information to help them with their purchasing decisions (Rahmi, Sekarasih & Sjabadhyni, 2016). Consumers' opinions related to products, services, and brands on social media can influence other consumers' purchasing decisions. Existing literature suggests that user-generated content on social media has a greater impact on purchase intentions than advertisements produced by brands (Goh Heng, & Lin, 2013)

Nowadays, people get used to using social media, especially the younger generation (Gottfried & Shearer, 2016), who are eager to seek information from social media and other consumers (Lou & Yuan, 2019). It is estimated that 74% of shoppers make purchase decisions based on social media. Additionally, according to a survey conducted by PWC, about 45% of respondents are persuaded in their buying behaviour by reading reviews, and platforms users' comments (Baker, 2017). A small group of consumers who generate valuable and likeable content on social media, capture considerable attention, build a fanbase as well as gain fame and influence, often develop to become social media influencers. This can be seen, over the most recent years, with the exponential rise of the social media influencer industry (Haenlein et.al., 2020).

In addition to being successful content creators, a social media influencer is also seen as an opinion leader, defined as an individual who strongly influences consumer attitudes and behaviour (Godey et.al., 2016). Previous research suggests that social media influencers are viewed by consumers as a more credible source than traditional celebrities, as their recognition in a niche group can bring a sense of authenticity to the audiences (Marwick, 2010). According to a study run by Beautycon Media and Culture Co-Op, over 90% of young people follow an influencer on social media, and around 73% of respondents said that social platform influencers have a more significant impact on them than 'traditional celebrities' (Wolf, 2017). Young people often purchase products simply because influencers promote them on social media

(Djafarova & Rushworth, 2017; Marwick, 2010). This phenomenon could be explained by a more intimate relationship between social media influencers and followers which enables followers to trust the recommendations of social media influencers. According to Hassan et.al (2021), social media influencers have a positive influence on online audiences in fashion, beauty, and lifestyle areas because they are often seen as role models whose tastes, ideas, and attitudes are worth emulating (Hassan et.al, 2021). Another research finds that followers tend to buy products, services or brands recommended by influencers when they identify with the influencer (Croes & Bartels, 2021). Given the fact that SMIs can reach thousands to millions of potential customers and influence them (Lin et.al., 2018), influencer marketing has increasingly been used in companies' marketing strategies over the past few years (Vrontis et.al, 2020).

2.2 The rise of influencer marketing

Digital platforms have played a fundamental role in the marketing, distribution and delivery of consumer goods and services. Through digital media, consumers are now able to write product reviews and interact with platform users, making social platforms a resource through which consumers can share and find honest and reliable information to help them with their purchasing decisions (Rahmi, Sekarasih & Sjabadhyni, 2016). Consumers have become knowledge spreaders, learning to integrate other users' information in their buying behaviour, giving rise to a new social media phenomenon: influencer marketing (Holt, 2002).

The terms "*social media influencer*" refers to "*micro-influencers*" or "*digital celebrities*" who have a considerable following on one or more social media platforms and can exert substantial influence on followers (Agrawal 2016; Varsamis 2018; Djafarova & Rushworth， 2017). Traditional celebrities, typically actors, supermodels, and athletes, gain fame and public recognition through their talents and achievements (Hassan et.al. 2021; Khamis et.al., 2017), whereas social media influencers reach fame by posting likeable or viral content on social media. Social media influencers usually have expertise in certain fields or manage to brand themselves as experts in specific fields, such as travel, food, lifestyle, beauty, and fashion. (Lou & Yuan, 2019; Freberg et.al., 2011). In short, the pivotal difference between social media influencers and traditional celebrities is that Social media influencers attract a large following by creating content on social media.

Existing research describes influencer marketing as a marketing strategy that makes use of individuals and their influence as a way to drive brand awareness and purchasing decisions (Isyanto et.al, 2020). Influencer marketing differs from traditional word of mouth because it allows marketers to predict and gain information regarding specific marketing outcomes. The number of likes, views, comments, etc… are key elements that can help marketers understand how their products or services are perceived by consumers, making social media platforms a great space for direct feedback and promotion (Chetioui, Belafqih & Lebdaoui, 2020). Influencers represent a small percentage of the total social media user population. They are a small group of users that are followed by significantly more users, leading to their content being diffused to a substantially larger audience. They can come from inside or outside the platforms and are seen as trustworthy carriers of potential brand messages (Haenlein et.al., 2020). Because of their large breach, companies are naturally interested in working with influencers. In fact, over 80% of firms predict to spend at least 10% of their marketing budget on influencer marketing. Furthermore, the industry as a whole was forecast to reach a value of $16.4 billion by the year 2022 (Geyser, 2022).

Following the COVID-19 pandemic, e-commerce received a significant boost. This has pushed many companies to increase their online advertising budget which made influencer marketing all the more important (Haenlein, 2020). However, the pandemic had also drastic economic consequences that made the influencer lifestyle more and more unattainable. This could decrease the future effectiveness of influencer marketing, but as of now data shows no slowing down with the estimated value of influencer marketing further increasing in 2022 (Geyser, 2022). To add on, the price of social media marketing makes influencer marketing all the more attractive. Chen (2017) estimates that costs for influencers average around $1,000 per 100,000 followers. This only $10 dollar per 1,000 reach compared to traditional TV ads that have an average cost of $30 dollars per 1,000 people reach (Fou, 2014). This places influencer marketing right above pay-per-click advertising, making it a cost-effective marketing strategy for many companies (et.al., 2014). The future of influencer marketing is still bright with a digital population expected to grow to almost 4.41 billion by 2025 (Statista, 2022b).

The above-mentioned data shows that influencer marketing is indeed very successful. For instance, in October 2021, top Chinese live-streamer Li Jiaqi (also known as Austin Li) was able to sell nearly $2 billion worth of goods during a livestream that attracted over 250 million viewers (South China Morning Post, 2021). Nonetheless, when done incorrectly, influencer marketing can also be very damaging. An example of this could be seen with the controversy caused by the influencer Kim Kardashian, who went against FDA (Food and Drug Administration) regulations when promoting the morning sickness drug "Diclegis". The model, Instagram, and reality star forgot to list the full side effects of the medicine leading to the forceful deletion of the endorsed post as ordered by the FDA (Kubbco, 2020). This presents one of the many challenges that influencer marketing poses. Despite the growing industry numbers, influencers are gaining an unfavourable reputation due to image control issues. "*Influencers can do just as much damage as they can good for your reputation*" (Jill Rowley, 2018 from Backaler, 2018). An influencer's personal actions can reflect poorly on a company's brand. If an influencer's behaviour contradicts the values of the collaborating brand, the public backlash often spills over to the brand (Backaler, 2018). Furthemore, disclosure policies may also impact a brand's reputation. As in the case of Kim Kardashian, failure to meet disclosure regulations might pose legal risks for companies. Especially, when working with international influencers, firms should be aware of the different country's regulations, as incorrect disclosure may lead to negative attributions of the influencer and, as a consequence, the advertised brand (Backaler, 2018). The growing challenges of traditional influencer marketing has led marketers to opt for an alternative type of influencer, one whose image can be more easily controlled; with whom long-term partnerships are possible; and whose hiring costs are comparatively low (Pandey, 2021). This new kind of influencer is non-human in nature, and is often referred to as virtual influencer.

2.3. The challenges of collaborating with human influencers

In March 2014, The Walt Disney Company acquired Market studios, the largest multi-channel network in the world. Market studios' most lucrative channel under their management was that of Felix Kjellberg, a 24-year-old youtuber known professionally as PewDiePie. With over 53 million subscribers, PewDiePie's channel grew to become one of the most subscribed YouTube channels on the platform, gaining the youtuber increased public notoriety. Towards the beginning of 2017, as a way to experiment with his content and increase the views on his channel, PewDiePie collaborated with the marketplace Fiverr to create a video in which Indian freelancers were seen dancing with minimum clothes while holding a banner stating "Death to all Jews" (Backaler, 2018). Due to the anti-Semitic nature of the video, Maker studios quickly reacted by ending their ties with the famous Swede youtuber. The acquisition of Maker studios, meant that the image of the company was now directly associated with that of Disney, and the tarnishing of Maker's reputation meant the consequential tarnishing of Disney and its values. This case is just one example of the reputational risks that influencers present for brands. Simply by brand associations, an influencer's negative behaviour can spillover and tarnish a brand's reputation (Backaler, 2018).

In addition to PR risks, legal considerations should also be considered when working with influencers. Disclosure regulations differ among different countries. This may limit brands looking to work with foreign influencers. For instance, influencers in the UAE are required to hold a trading license when advertising a company's brand. This is not the case for European and US influencers who are mostly required to disclose the nature of the advertising (Backaler, 2018). To add on, costs for hiring influencers can be expensive. These costs can include flying out the influencer for photoshoots, events, hair and makeup (Pandey, 2021). Moreover, the authenticity of many influencers in visual based platforms has been put to questions, with claims of influencers photoshopping and staging pictures, and content automation (Arsenyan & Mirowska, 2021). Many influencers, including those of great notoriety such as the Kardashians, have been called out for their frequent use of face and body-tuning apps that aim to alter their body image (Jennings, 2019).

With the rise of body positivity movements, influencers are expected to be more human and authentic at the same time. Body imperfections are more welcomed as they help demolish the unattainable standards society has posed on consumers (Jennings, 2019). Given consumer's current desire for authenticity in influencer marketing, it is interesting to note how many companies have decided to cope with the challenges of human influencers by partnering with digital avatars, which one would argue to be the antithesis of what it means to be authentic (Pandey, 2021). Nonetheless, Wills (2019) argues that because digital avatars are so "authentically fake", consumers are aware that they are absorbing staged content. As a consequence, buyers are less likely to feel deceived by influencers claiming to be authentic when they are in fact not. Furthemore, virtual influencers present a perfect opportunity for companies to mould their ideal brand ambassador. The next section will take a closer look at the virtual influencing phenomenon and the growing rise of digital avatars.

2.4. Virtual Influencers come to the rescue

When comparing human influencers to digital avatars, one stark difference is that virtual influencers are not humans, meaning that they only exist within the realm of social networks. News outlets define virtual influencers as "*a digital character created in computer graphics software, then given a personality defined by a first-person view of the world, and made accessible on media platforms for the sake of influence*" (Chrostopher Travers, 2020 from Virtual Human, 2020). Virtual avatars are solely constructed and employed through digital mediums. This does not account for tangible real-life robots with social media channels, as their image was not conceived digitally. The concept of digital avatars is not completely new. Initially, television was the main media platform for first-mover virtual influencers. Think of the famous hip-hop band the "*Gorillaz*". The band was conceived as a virtual band concept, founded in 1998. Composed of 4 fictional and animated 2D characters, Gorillaz was one of the first examples of a virtual celebrity, exerting their influence through music and brand collaborations. In fact, the band found exponential success, collaborating with other famous artists and working as brand ambassadors for brands such as Hypebeast, Levi's, Fred Perry and many more (Boon, 2016).

Today, virtual influencers leverage emerging social media platforms such as Instagram, Tiktok, Youtube, etc…. Instagram has become the most popular platform for virtual influencing as its visual-based format makes it accessible for digital avatars to share their lives with followers, interact with fans through comments and collaborate with brands (Kolsquare, 2021). Miquela Sousa, prominently known as Lil Miquela (@lilmiquela), was the first computer-generated social media influencer. The avatar is a 19-year-old American female with Spanish and Brazilian heritage created by Brud, a small-scale media agency based in Los Angeles. Ever since her debut in April 2016, the influencer has amassed a total of 3.1 million followers on Instagram, which led her to partnering with luxury brands such as Louis Vuitton and Chanel (Moustakas et.al., 2020). What is characteristic of Lil Miquela and many of the other virtual influencers is the assemblement of a human personality around the digital robot. Virtual influencers are given a story, a life that they believe to be their own. This grants digital avatars self-agency. By pairing the virtual influencer with a well-formulated storyline, the avatar is able to create a life of its own with which followers can immerse and relate (Travers, 2020). Lil Miquela is an art student, supportive of social movements such as Black Lives Matter and LGBTQ+ rights. Similar to human influencers, she travels around locations in Los Angeles and captures them through her social media. Furthermore, her captions are trendy and captivating, stimulating conversations among her fans (Robinson, 2020). It is this kind of storytelling that makes virtual influencers like Lil Miquela appealing to the general public.

From a managerial perspective, the appeal of virtual influencers is infused in the mitigation of PR risks that come by collaborating with human influencers. Because the behaviour of digital avatars is controlled and thought of by a group of creators, the risk that an influencer may communicate something that is politically incorrect or not in alignment with the collaborative brand is very low. Additionally, clauses can be added to contracts so that the influencers can retain a specific image that plays into the brand's best interests. Furthermore, virtual influencers are customizable. Because they are created digitally, they can be made to look attractive; to always look good, to not age or fluctuate between dress sizes. In other words, digital avatars can be customised to perfectly fit a brand's requirements (Carr, 2022).

Nonetheless, consumers favour relatability. Traditionally, many influencers have gained fame through their "just like us" content. This can include day to day tasks or thoughts to which a follower can relate to. Virtual influencers, due to their nature, are not able to reach such a level of relatability simply because they do not exist in the real world (Carr, 2022). Additionally, the cultural demonisation of new technologies may further hinder the social acceptance of virtual influencers (Stein et.al., 2020). Because everything about them is controlled and calculated, consumers may perceive less warmth in their interactions with digital avatars compared to human influencers, leading to virtual influencers being perceived as inauthentic. Theory proposes the anthropomorphising of digital avatars as a solution to these challenges. In fact, human-like virtual influencers can help decrease consumers' skepticism and interaction uncertainty, while increasing perceived social presence (Schroeder and Epley, 2016). To add on, Faddoul & Chatterjee (2020) state that attractive human-like features can help virtual influencers increase their persuasive power, while also lessening authenticity concerns. Wills (2019) arguments that because virtual influencers are "authentically fake", the consumer already acknowledges that the content is more likely staged. Thus, diminishing worries of deception and skepticism. Moreover, virtual influencers bridge the gap between the real and fictional world, providing entertaining and engaging content for digital users. As a matter of fact, virtual influencers have been found to have a three times larger engagement rate compared to traditional influencers (Carr, 2022). A study conducted by the Influencer Marketing Factory showed that 58% of respondents were following at least one virtual influencer (Steele, 2022).

The virtual influencers industry is constantly growing; in China alone, the market is expected to reach a value of more than €200 million by 2023 (Kolsquare, 2021). The ready availability and malleability of these new emerging influencers makes the phenomenon all the more appealing.

Even though the anthropomorphising of digital avatars may strengthen the credibility of advertising claims, possible issues regarding the beauty standards of virtual influencers and their impact on young consumers persist. Virtual models are created with a design bias that favours classical beauty standards: skinny, young with well-defined bone structures (Deighton, 2020). Studies have shown that being frequently subjected to digitally altered models may have deteriorating effects on mental health (Lal, 2022). The inhumanly perfect features of virtual influencers may contribute to the development of dysmorphia and a further surge of cosmetic operations. Today's society pushes for progress across beauty and fashion, with a greater request for realistic skin texture, body, and ethnic diversity. This may create a disconnect between companies making use of virtual influencers, and the needs of the consumers who are expected to consume their content (Lal, 2022). This contrast may become a challenge for the growth of virtual influencing, and may delineate whether the industry can become more than just a fad.

3. Theoretical Framework and Hypotheses

The next section will describe the conceptual framework for answering the research question of this study, namely the influence of credibility factors on purchase intention in the context of virtual influencers. First, we will elaborate the theories used in this research and formulate hypotheses, and then visualise proposed relationships into a conceptual model.

3.1 Theoretical background

3.1.1 Purchase intention

It is common for companies to use celebrities to endorse their products or brands, reach their target consumers and change their buying behaviour. Celebrity endorsements can be in the form of either a real celebrity or a virtual celebrity (Sertoglu, Catli & Korkmaz, 2014). It could be argued that, like any other marketing technique, the purpose of influencer marketing is to facilitate the consumer's decision to purchase a product and thus increase sales (De Veirman, Cauberghe & Hudders, 2017).

Purchase intention is a determinant of purchase decisions (Chetioui, Benlafqih & Lebdaoui, 2020). Purchase intention refers to the likelihood that a consumer will make a purchase decision for certain brands or products (Huang et.al., 2011). According to the theory of planned behaviour, if a consumer's purchase intention is higher, he or she is more likely to make a purchase. Therefore, purchase intention is widely used by marketers to estimate the actual purchase behaviour of consumers (Chetioui, Benlafqih & Lebdaoui, 2020). It can be argued that purchase intention is a key measure for evaluating marketing outcomes. Marketers use purchase intention as an indicator for developing influencer marketing strategies, including measuring the ROI of influencer marketing campaigns and selecting appropriate influencers.

Although purchase intention as a marketing consequence has been well discussed in the context of social media influencers, few studies have examined the impact of virtual influencers on consumers' purchase intention. Given the importance of purchase intention to marketers, this study examines the effectiveness of virtual influencers in terms of purchase intentions. Although different theories are adopted in the literature to assess marketing effectiveness, one of the most used theoretical models is Ohanian's (1990) source credibility.

3.1.2 Source credibility

The credibility of a communicator is an important contributor to his or her persuasive power (Hovland & Weiss, 1951). Earlier studies used source credibility to measure the effect of communicators on the effectiveness of persuasive information (Hovland & Weiss, 1951). Ohanian (1990) defines source credibility as the positive characteristics of a communicator that affect the receivers' acceptance of the message. The source credibility theory, first proposed by Hovland et.al. (1951), argued that audiences could be persuaded by communicators (the source of information) who are perceived as credible. More specifically, source credibility can change the audience to favour the opinion advocated by the communicator (Cheung et.al., 2021). When the source credibility is high, changes in audiences' opinions often become evident (Hovland & Weiss, 1951; Hovland et.al., 1953). Although the existing literature acknowledges that source credibility plays an important role in changing consumer views and behaviour, there are different views on what elements constitute source credibility.

Hovland, Janis, and Kelley （1953 cited in Riley, 1954） argue that expertise and trustworthiness are two key factors that determine source credibility. Trustworthiness refers to the extent to which an endorser is perceived to be “honest, sincere, or truthful” (Lou & Yuan, 2019, p. 61). Expertise describes the degree to which an endorser is regarded as qualified, knowledgeable, and experienced (Erdogan, 1999). Based on the definition, expertise does not require that endorsers have to be actual experts in their fields. (Ohanian, 1991). In the following decades, McGuire (1985 cited in Lou & Yuan, 2019) proposes a source attractiveness model, suggesting that familiarity, similarity, and likability constitute endorsers’ attractiveness, which could enhance advertising effectiveness. Building on earlier research, Ohanian (1990) further developed the source credibility model by introducing a third determinant of credibility, namely physical attractiveness, which refers to the perception of an endorser as beautiful, classy, and sexy (Erdogan, 1999).

Ohanian (1990) argues that the credibility of a celebrity endorser is determined by perceived attractiveness, trustworthiness, and expertise. If a celebrity endorsement wants to be deemed credible, then the endorser should meet three requirements: attractiveness, expertise, and trustworthiness (Wiedmann & von Mettenheim, 2020). Furthermore, another important contribution of his research is to construct a scale to measure these three factors. According to his model, attractiveness, trustworthiness, and expertise determine the perceived credibility of an endorser, which subsequently influences the persuasiveness of the endorsement.

The application of the source credibility model extends from the context of traditional celebrity endorsement to that of social media influencer marketing (Hassan et.al., 2021; Lou & Yuan, 2019; Sertoglu, Catli & Korkmaz, 2014; Weismueller et.al., 2020; Seiler & Kucza, 2017). A literature review on social influencer marketing finds that one of the most widely discussed research topics concerns the impact of influencer characteristics on consumer outcomes (Vrontis et.al., 2021). Source credibility, one of the most important influencer attributes, explains the effectiveness of influencer marketing from the perspective of influencers themselves (Kay, Mulcahy & Parkinson, 2020). The success of influencer marketing comes from the high perceived credibility of influencers. Fink et.al. (2020) find that the credibility of the influencer increases purchase intention, and this effect could persist for four years. Other studies also obtain similar findings. Brand attitude, brand image, brand interaction, and purchase intention are all influenced by influencers' expertise, trustworthiness, and attractiveness to various degrees. (Sokolova & Kefi, 2020; Chetioui, Benlafqih & Lebdaoui, 2020; Duh & Thabethe, 2021; Wiedmann & von, 2020). Moreover, three dimensions of credibility, source expertise, source credibility, and source attractiveness, are found to have an independent and direct effect on purchase intention (Weismueller et al., 2020).

Considering that influencer credibility significantly affects consumers' attitudes and behaviour, we use the source credibility model to study the impact of virtual influencers' credibility factors (attractiveness, trustworthiness, and expertise) on consumers' purchase intentions. In addition to the source credibility, taste leadership is an important mechanism through which social media influencers exert influence on consumers (Ki & Kim, 2019). Therefore, we also draw on the literature on taste leadership to further understand whether consumers are capable to develop positive attitudes toward virtual influencers (viewing them as taste leaders).

3.1.3 Taste leadership

Before discussing taste leadership, it is necessary to understand what is meant by taste. The meaning of taste could be divided into two categories (McQuarrie, Miller & Phillips, 2013). The first perspective regards taste as a means of bringing together people with similar preferences and distinguishing them from those with different ones. The second view is that taste is defined as the aesthetic judgments about aesthetic objects such as art, furniture, and fashion. Taste is related to cultural capital, which refers to the knowledge, experience, and judgement associated with cultural matters and aesthetic domains (McQuarrie, Miller & Phillips, 2013). In line with this definition, McQuarrie and Phillips (2014) argue that fashion bloggers indicate individuals who accumulate cultural capital in the field of fashion by repeatedly performing their taste capabilities. The concept of taste leadership develops from the last view of taste. Taste leadership is defined as an influencer's ability to demonstrate taste by sharing aesthetically appealing things with a large number of followers on social media (Ki & Kim, 2019).

In a study of postmodern consumer culture, Holt (2002) introduces the concept of “tastemaker” (p.85), describing the ways in which social media influencers are able to dominate and influence consumers' product tastes. Social networks allow individuals to turn themselves into social media influencers by displaying their own personal tastes to attract other users. In other words, through the presentation of good taste judgments on social networks, social media users may acquire a large fan base and then influence other consumers' purchasing. This process is known as the 'megaphone effect' (McQuarrie & Phillips, 2014; McQuarrie et.al., 2013).

McQuarrie, Miller and Phillips (2013) are the first to propose a loop mechanism to reveal how fashion bloggers gain cultural capital, economic rewards and social capital through the display of taste. First, an ordinary consumer publicly shares his or her fashion purchases to show his or her aesthetic judgement. When this judgement is appreciated by the audience and brings his or her a large following, the consumer could be viewed as a taste leader. Then, because of the influence among followers, the taste leader is likely to be invited to attend fashion events and build connections with fashion designers, thus elevating his or her social status. Gradually, taste leaders could be seen as an insider in the fashion world. Furthermore, he or she is paid to endorse brands or products, which in turn strengthen their taste leadership.

Instead of doing branding directly, companies may opt to cooperate with influential tastemakers to convey that the brand has particular cultural meaning (e.g. cool), thus shaping brand image in the minds of consumers. Holt (2002) calls this marketing technique "Stealth Branding" (p.85). It is worth mentioning that Holt argues that tastemakers are not necessarily celebrities, but anyone who is perceived to have social impact.

In a research on how social media influencers persuade consumers to adopt brands, Ki and Kim (2019) find that social media influencers play a key role as taste leaders in this process. Unlike opinion leader, who offer professional advice and suggestions (Ki & Kim, 2019), taste leader focuses on people who share what looks good, the latest trends and high style (Ki & Kim, 2019; McQuarrie et.al., 2012). Influencers who are considered taste leaders are likely to elicit consumers' desire to imitate, which drives consumers to purchase products and brands endorsed by taste leaders. To sum up, taste leadership is a driving factor for influencers to promote consumers’ purchase decisions (Ki & Kim, 2019).

More importantly, in the age of digital marketing, social media influencers with taste leadership have a greater impact on consumer purchase decisions. Ki & Kim (2019) argue that consumers may abandon the complex decision-making processes including recognizing a need, searching for information, and evaluating alternatives. They are prone to make purchase decisions more quickly. Sometimes followers buy products or brands endorsed by influencers simply because they want to look like them (Ki & Kim, 2019). Virtual influencers are not only able to promote brands but, more interestingly, to generate trends (Rodrigo-Martín et.al, 2021). Thus, virtual influencers have the potential to develop taste leadership as human influencers do, and thereby influence purchase intentions.

In addition to the consequence of tastemaker leadership, Ki & Kim (2019) examined the antecedents of tastemaker leadership. They find that when an influencer's content manifests high attractiveness and professionalism, audiences tend to perceive that the influencer has taste leadership. In summary, an influencer's credibility and taste leadership positively influence purchase intentions. To get an understanding of how virtual influencers contribute to purchase intention, this study proposes a research model that incorporates influencer credibility and taste leadership.

3.2 Hypotheses Formulation

The literature on celebrity endorsement and influencer marketing suggests that source credibility is a predictor of purchase intention (Saima & Khan, 2021; Seiler & Kucza, 2017; Weismueller et.al., 2020). Researchers find that the attractiveness, expertise and trustworthiness of influencers, which are components of credibility, can have varying degrees of direct and independent effects on consumers' purchase intentions (Weismueller et.al., 2020). As a new category of social media influencers, consumers' attitude towards virtual influencers (perceived trustworthiness) could influence purchase intention. Also, previous literature suggests that influencer taste leadership is positively related to purchase intentions (Ki & Kim, 2019). On the basis of these findings, the following section presents hypotheses on the relationships among the three dimensions of source credibility, taste leadership and purchase intention in the context of virtual influencers.

3.2.1 Expertise

In the literature on celebrity endorsement, expertise is defined as the extent to which an endorser is considered to “to be a source of valid assertions” (Erdogan, 1999, p.298). Expertise is related to the product knowledge and experience of communicators (Martensen, Brockenhuus-Schack & Zahid, 2018). However, endorsers do not necessarily possess expertise, as long as consumers acknowledge them. Social proof is what renders a person a legitimate expert. Social proof is small cues that manifest authority and persuasiveness, such as the number of followers (Schaefer, 2012, cited in Martensen, Brockenhuus-Schack & Zahid, 2018)

Prior literature has examined the effect of expertise on consumer attitudes. Endorsers who are perceived as experts are found to ignite higher brand satisfaction and brand attitudes among consumers (Bergkvist, Hjalmarson & Mägi, 2016). This is likely because expertise is seen as a peripheral persuasive cue whereby individuals consider favourable claims about a brand from experts as trustworthy,

Similarly, in the context of social media influencers, expertise can increase the persuasiveness of the influencer (Martensen et.al., 2018). The perceived level of expertise is considered to be one of the most important factors in influencing consumer purchase intentions (Chetioui et.al., 2020). The reasons are that consumers will be more prone to accept the sayings from influencers who are perceived as experts in their field (Yadav et.al., 2013), and believe they are qualified to make an accurate assessment of the product (Chetioui et.al., 2020). Taking fashion influencers as an example, research finds that the expertise of fashion influencers has a positive impact on consumers’ brand attitudes and purchase intentions (Chetioui et.al., 2020).

However, in the context of virtual influencers, few studies prove the impact of perceived expertise on purchase intentions. Existing literature suggests that consumers are sceptical of the expertise of virtual influencers. As virtual influencers are not real, they are not capable of seeing and using any products. Therefore, in this respect, they cannot have the same expertise in a particular field as human influencers. However, since virtual influencers become involved in more and more commercial collaborations, this may, to some extent, provide social proof and then increase the perceived expertise, thus contributing to purchase intention. For example, Lil Miquela's engagement in fashion events, shooting for fashion magazine covers, and collaborations with fashion brands may increase her fashion expertise, which in turn leads to consumers' adoption of the fashion products and brands she endorses. Therefore, we propose this hypothesis:

H1(a). Perceived expertise (IV) of virtual influencers is positively related to purchase intention (DV).

Furthermore, people with more experience and knowledge have better judgement to identify what is of aesthetic value or visually appealing. Simply, they can display better taste (McQuarrie et.al., 2012). However, good taste is not only possessed by experts in a particular field. Holbrook's (2005) experimental research confirms that ordinary people can exhibit good taste as experts in a specific cultural field. This idea is the premise behind the “megaphone effect” (McQuarrie, Miller & Phillips, 2013, p.136). Ordinary consumers can gain a large following by showing their good tastes. For social media influencers, perceived expertise affects consumers' attitudes towards the influencer (the perception of an influencer as a taste leader) (Ki & Kim, 2019). In the fashion field, some influencers are not experts. An expert is an individual who receives fashion-related education or works for fashion-related companies, such as a fashion editor or designer. However, non-expert social media influencers are considered to have expertise because they look stylish by matching brands and products to their style.

In the context of virtual influencers, even though virtual influencers lack real expertise because they are unable to try the products themselves and provide reliable opinions. The images and storylines crafted by their creative teams may increase the perception of influencers’ expertise. For example, the well-known virtual influencer Lil Miquela often displays stylish looks and participates in fashion events on Instagram. Rich fashion knowledge and experience shown by Lil Miquela may lead consumers to believe that she has aesthetic judgement and taste. Based on the above analysis, we propose the following hypothesis:

H1(b). Perceived expertise of virtual influencers is positively related to taste leadership.

3.2.2 Attractiveness

Attractiveness arises from the influencer's attractive appearance and body (Li & Peng, 2021; Ohanian, 1991). Since the visual pleasure may lead customers to have a positive attitude toward the attractive influencer (Li & Peng, 2021; Ki and Kim, 2019), the statements from the attractive influencers about brands or products tend to be more convincing (Wiedmann & von, 2020). This argument is in line with consistency theory that a positive attitude toward the communicator suggests a more positive judgement of the message, (Joseph, 1982; Osgood and Tannenbaum, 1955, cited in Wiedmann & von, 2020).

Attractive sources not only enhance the persuasiveness of advertising messages, but also stimulate consumers' desire to buy. In a study examining the effect of physical attractiveness of celebrity endorsements on consumers, Kahle and Homer (1985) found that having an attractive celebrity was more likely to enhance consumers' purchase intentions and brand recall than an unattractive celebrity. In the context of social media, researchers have also confirmed that attractiveness is a key factor in the effectiveness of endorsements. The attractiveness of social media influencers positively influences consumers' brand attitudes and purchase intentions (Lou & Yuan, 2019). However, there are also studies that point to the influence of attractiveness in relation to product type. When the product being endorsed is associated with enhanced attractiveness, (e.g. fashion, beauty), attractive endorsers lead to better advertising results (Kahle & Homer, 1985)

Followers establish emotional connections with influencers who look similar to them (Ki et al., 2020, cited in Vrontis et al., 2021) and develop trust in the influencer's branded content, thus generating purchase intentions (Lou & Yuan, 2019) Likewise, Dabiran, Wang, and Farivar (2022) explore the relationship between the anthropomorphism of virtual influencers and consumer responses. They find that the anthropomorphic characteristics of virtual influencers increase their attractiveness and may build a parasocial relationship with audiences; so, an attractive and humanised virtual influencer may positively affect brand attitudes and purchase intention.

This idea is supported by other research, as a study on the effectiveness of virtual influencer advertising examined consumers' reactions to smartphone advertisements for the virtual influencer Imma. The result shows that both the virtual influencer Imma and her mobile phone advertisements received many compliments because of her beauty (Oliveira & Chimenti, 2021).

However, the possibly overly beautiful appearance of the avatar may lead to negative reactions. Existing research suggests that the perfect appearance of virtual influencers may pose a risk to the mental health of some followers due to the unattainable comparisons made by consumers (Oliveira & Chimenti, 2021). Despite facing criticism, anthropomorphic appearance enhances the attractiveness of the virtual influencer, which may lead to positive attitudes toward virtual influencer's endorsement, and therefore encourage purchase intention. Therefore, we hypothesise that:

H2(a). The perceived attractiveness of virtual influencers (IV) is positively related to purchase intention (DV).

The relationship between attractiveness and taste leadership is supported by existing literature, with Ki & Kim defining attractiveness as the degree of aesthetic pleasure on the influencer's social media Instagram content rather than physical appearance. Taste can be seen as judgement and preference for aesthetic objects (Hoyer & Stokburger-Sauer, 2012). When influencers show aesthetically pleasing designs or objects through their Instagram content, consumers are attracted to the influencers and can perceive them as taste leaders.

At the same time, the influencer's physical attractiveness reinforces the content's appeal. A study based on Instagram influencers in the fashion category found that influencers' physical attractiveness increases the appeal of the fashion looks they present (Martensen et.al, 2018), which potentially further enhances their status as a taste leader. We argue that the attractiveness of a virtual influencer influences consumers' judgement of whether the influencer can demonstrate taste leadership. According to Ohanian (1990), attractiveness refers to the appealingness of communicators' physical attributes. Past research has shown that visually or aesthetically appealing content posted by real influencers causes consumers to be attracted to the influencer and view them as a taste leader (Ki & Kim, 2019).

However, prior research points out that humanised robots or avatars that look too similar to real people can lead to negative emotional responses. This is known as the 'Uncanny Valley Theory' (Mori et.al., 2012, p.98), which suggests that as non-human entities become more human-like, they may come to a stage where users generate counter reactions due to the uncanny similarity of the non-human entity to humans. Nevertheless, anthropomorphic representations of virtual agents, especially visually attractive ones, elicit positive responses and behavioural changes (Khan & Sutcliffe, 2014). Therefore, if a consumer perceives a virtual influencer to be visually attractive like a human influencer, she/he is likely to be perceived as a taste leader. We hypothesise that:

H2(b). The perceived attractiveness of the virtual influencer is positively related to taste leadership.

3.2.3 Trustworthiness

Trust in influencers also has a significant positive impact on purchase intention through trust in branded content (Lou & Yuan, 2019). In a comparative study on celebrities and influencers, Schouten et.al. (2020) revealed that influencer endorsements are perceived to have a higher level of trustworthiness than celebrity endorsements. When consumers develop trust in influencers, they tend to trust the recommendation from influencers and subsequently change their attitude towards brands and products, and their purchasing behaviour (Chekima, Chekima & Adis, 2020; Chetioui, Benlafqih & Lebdaoui, 2020). Chetioui et.al. (2013) examined how fashion influencers contribute to purchase intention. They found that fashion influencers, who are perceived to be trustworthy influencers, can influence followers' attitudes, choices and purchase intentions. Specifically, if a consumer trusts an influencer and that influencer likes a brand, the consumer will also like the brand (Wiedmann & Von, 2020).

In terms of perceived trustworthiness of virtual influencers, Molin & Nordgren (2021) make an exploratory analysis by interviewing Swedish consumers and find that virtual influencers are difficult to be trusted by consumers in comparison to human influencers because of lack of transparency in the way virtual influencers work and their purpose. Furthermore, the lack of authenticity of influencers makes them less likely to be trusted. Secondly, the fact that consumer virtual influencers are created and run by companies increases consumers' distrust of virtual influencers. Nonetheless, despite most people's negative attitude towards the trustworthiness of virtual influencers, some consumers also see no difference between using virtual influencers and human influencers in marketing. They can trust a robot just as well as they trust a human. The human-like virtual influencer is considered more trustworthy than the animated virtual influencer because of the human-like appearance. As in the case of real influencers, the perceived trustworthiness of human-like influencers may lead consumers to trust the endorsed product or brand, thus stimulating purchase intentions. In light of the above discussion, we propose the following hypothesis:

H3(a). The perceived trustworthiness of virtual influencers (IV) is positively related to purchase intention (DV).

Trust is earlier defined as the consumer's expectation that the service provider is dependable and can be relied upon to deliver on his/her promises (Sirdeshmukh et.al., 2002). Trustworthiness is later conceptualised as the level of confidence and acceptance of the communicator and its message (Sallam & Wahid, 2012). Consumers are more likely to be persuaded by a message when they believe that the source is trustworthy (Chu & Kamal, 2008). Trustworthiness is found to be a dominant contributor to the persuasiveness of a message (Martensen et.al., 2018). Furthermore, the perceived trustworthiness of the message sender has a positive impact on consumers' attitudes towards the brand and behavioural intentions (Senecal & Nantel, 2004).

Consumers engage in a complex assessment of social media influencer trustworthiness. Overly perfect pictures on Instagram have a negative impact on both influencers' content as well as their trustworthiness (Martensen et.al., 2018). However, when consumers feel that there is a real and personal relationship between them and the influencer, influencers are more likely to be perceived as highly credible. In the context of virtual influencers, the fact that virtual influencers are created and run by companies may undermine consumers' trust. However, human-like appearance and transparent disclosure of their robotic identity could increase trust in virtual influencers (Molin & Nordgren, 2019). If virtual influencers are perceived as trustworthy, consumers are likely to trust what virtual influencers communicate, including their aesthetic judgments, that is, their tastes. Based on this, we infer that:

H3(b). The perceived trustworthiness of virtual influencers is positively related to taste leadership.

3.2.4 The mediating effects of taste leadership

Previous literature suggests that there is a positive relationship between consumers' positive attitudes towards social media influencers (e.g. perceptions of taste leadership) and positive behavioural responses (e.g. willingness to imitate and intention to buy). Specifically, the perception of influencers as taste leaders stimulates consumers' desire to imitate, and this desire motivates consumers to purchase products/services/brands endorsed by influencers (Ki & Kim, 2019).

In a survey focusing on the reasons why US consumers follow virtual influencers, 26.6% of respondents said they follow virtual influencers because of the influencer's content. 15% claimed that they follow virtual influencers as influencers inspire them (Statista, 2022c). Therefore, it is reasonable to expect virtual influencers can have a positive impact on consumers. When virtual influencers present visually appealing content and exercise taste leadership, consumers may consider that the virtual influencer's endorsement is worth mimicking. Accordingly, we propose that:

H4. Taste leadership of virtual influencers mediates the relationship between perceived expertise and purchase intention.

H5. Taste leadership of virtual influencers mediates the relationship between perceived attractiveness and purchase intention.

H6. Taste leadership of virtual influencers mediates the relationship between perceived trustworthiness and purchase intention.

3.3. Conceptual Model

In the conceptual model of our research, there are three independent variables, namely expertise, attractiveness, and trustworthiness, which are the elements of source credibility. One mediator variable (taste leadership) and one dependent variable (purchase intention) are included. Hypotheses 1(a) and 1(b) focus on the impact of expertise, suggesting a relationship between expertise and purchase intention, and also between it and taste leadership. In similar vein， Hypotheses 2(a) and 2(b) pay attention to the effects of attractiveness. Hypotheses 3(a) and 3(b) present the impacts of trustworthiness. In addition, Hypotheses 4, 5 and 6 show the mediating effects of taste leadership.

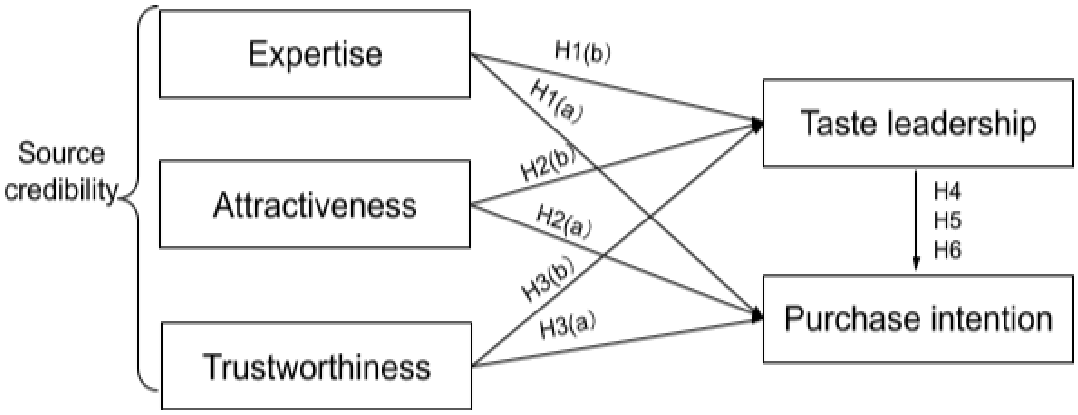

Source credibility
Expertise
Attractiveness
Trustworthiness
H1(b)
H1(a)
H2(b)
H2(a)
H3(b)
H3(a)
Taste leadership
H4
H5
H6
Purchase intention

Figure 1- Conceptual model showing the relationship between all variables

3.4 Summary of research hypotheses

The following table (Table 1) summarises the research hypotheses of this study discussed in Chapter 3. For clarification three abbreviations were used denoting the variable type: "IV" which refers to the independent variables, "MV" which refers to the mediating variables, and "DV" which refers to the dependent variables.

Table 1 - List of research hypotheses

Hypothesis	Description
1(a)	*The **perceived expertise** of virtual influencers (IV) is positively related to **purchase intention** (DV).*
1(b)	*The **perceived expertise** of virtual influencers (IV) is positively related to **taste leadership** (MV).*
2(a)	*The **perceived attractiveness** of the virtual influencer (IV) is positively related to **purchase intention** (DV).*
2(b)	*The **perceived attractiveness** of virtual influencers (IV) is positively related to **taste leadership** (MV).*
3(a)	*The **perceived trustworthiness** of virtual influencers (IV) is positively related to **purchase intention** (DV).*
3(b)	*The **perceived trustworthiness** of virtual influencers (IV) is positively related to **taste leadership** (MV).*
4	***Taste leadership** (MV) of virtual influencers mediates the relationship between **perceived expertise (IV)** and **purchase intention (DV)***
5	***Taste leadership** (MV) of virtual influencers mediates the relationship between **perceived attractiveness** (IV) and **purchase intention** (DV)*
6	***Taste leadership** (MV) of virtual influencers mediates the relationship between **perceived trustworthiness** (IV) and **purchase intention** (DV)*

4. Methodology

This section will describe the methodological approaches utilised for the collection and analysis of the data within this study. Firstly, terminology definitions will be given regarding the specific theoretical approaches undertaken for the development of our research design. Finally, the research design will provide a thorough summary of the procedures used in data collection and analysis, as well as the scale items developed for the measurement of the variables.

4.1 Research Philosophy

All studies base themselves on underlying philosophical foundations. Esterby-Smith, Thorpe and Jackson (2015) present two major outlooks in research philosophy: ontology and epistemology. Ontology focuses on the understanding of reality, while epistemology describes the understanding of knowledge. From an ontological perspective, this study will base itself on the foundations of the scientific realist model (Hunt & Hansen, 2009), which suggests that the world is real and exists independent from the human mind. Through the use of a questionnaire we aimed to find evidence for the used theoretical concepts, with the objective to explain and predict the external world. Specifically, the phenomenon of virtual influencers. This permitted us to contribute successfully to existing theoretical knowledge.

From an epistemological perspective, this research chose to implement a positivist philosophical approach which posits that "truth and reality are free and independent of the observer" (Aliyu *et.al., 2*014, pg. 81). In other words, this viewpoint suggests the existence of a structured world with predictable patterns of cause and effect that can be measured with objective measures (Burns & Burns, 2008; Esterby-Smith, Thorpe and Jackson 2015). The positivist perspective argues that the objective measuring of reality is a far more efficient method when compared to the subjective judgement of reality. Hence why, this study's quantitative approach to the research problem was based on positivist philosophy.

4.2 Research Approach

The purpose of this research is to investigate the extent to which consumers perceive virtual influencers as credible advertising sources and how such judgement, consequently, impacts consumer's purchase intention. Many influencers, specifically in the lifestyle and fashions industry sectors, are considered to be tastemakers (Holt, 2002). Meaning, that they exhibit the power of greatly affecting consumer's tastes and influencing their purchasing decision. For this reason, taste-leadership mediates the relationship between perceived credibility and purchase intention. These relationships were reported through the formulation of hypotheses, which will be tested by quantitative means. The quantitative research approach is mostly used in instances in which the researcher aims to conduct a study with measurable results that test hypotheses. Quantitative studies allow for a greater generalisation of the results, as it is grounded in an objective analysis of reality. Because this study aims to statistically test hypotheses generated through the analysis of existing theory, a quantitative approach was the most appropriate for the gathering of empirical data (Bryman & Bell, 2017).

4.2.1. Deductive research method

Current research accounts for two main research methods: inductive and deductive. The inductive approach involves the formation of theories from specific observations. The researcher engaging in inductive reasoning seeks for patterns in observations and then theorizes through those patterns. On the other hand, a deductive approach is one where existing theory is tested through the gathering of empirical data. In such a case, the researcher engaging in deductive reasoning will look for existing theories regarding a phenomenon and will then test to see if the theories still hold in a given circumstance (Burns & Burns, 2008).

Based on well-established celebrity endorsement studies, theories regarding how influencers influence consumers have been widely discussed, so we do not aim to develop new theories in this research, which is why we do not use an inductive approach. Instead, we hope to build on existing theories to formulate hypotheses and then test them by gathering unique data in the context of visual-based social media platforms such as Instagram and Tiktok. This top-down strategy, moving from the general to the specific, is a deductive approach (Burns & Burns, 2008, p.36). The aim of this study is, therefore, to reach statistically tested conclusions that can be generalised beyond this specific study.

4.2.2 Cross-sectional design

There are two basic approaches to the research design, the cross-sectional approach and the longitudinal approach (Burns and Burns, 2008). A cross-sectional research design is one in which all variables of a study are measured simultaneously at one point in time. In contrast, the longitudinal design approach refers to the repeated measurement of variables across time but within the same data sample. This can be both time-consuming and costly, and given the limited time and budget available for this research a cross-sectional design was instead used.

4.3 Sampling Process and Data Collection

4.3.1 Sampling process

According to Burns and Burns (2008), the sampling process is addressed in a systematic sequence: defining the population, selecting a sampling method, and determining the sample size. We will discuss each in the following section.

Defining the population

In the study, the target population was that of social media users of any gender with age above 18 years old. Specifically, we were looking for users of influencer-heavy platforms such as Instagram. Social media has captured billions of users across the world giving us a large enough pool from which the data could be collected. Secondly, Instagram is an entertainment-based platform, where users follow other users for their entertainment value (Haenlein et.al, 2020). This makes it easier for certain users to become influential and these platforms facilitate the creation of parasocial relationships (Lou & Kim, 2019). Instagram specifically has the youngest user base, making the platform more likely to attract those generations who are the most exposed to influencer marketing (Haenlein et.al, 2020).

Because the survey was conducted online, no geographical restrictions were imposed on the population. Influencers' followers can be widely distributed, and a geographical restriction may actually have limited the depth and generalizability of this study.

Selecting a sampling method

Although probability sampling has its advantages, we preferred to use non-probability sampling instead of probability sampling due to the time and cost required. In terms of non-probability sampling, we adopted a mixture method of convenience sampling and snow-ball sampling, because they are uncomplicated, fast, and inexpensive (Burns & Burns, 2008). Convenience sampling is a data collection method where the study participants sampled are those most convenient to the researcher (*et.al*, 2008). For this study, this included family members, classmates and social media groups. Snowball sampling is a data collection method where already recruited participants help to enroll new study participants (*et.al*, 2008). For this study, the researchers requested for the questionnaire to be distributed to other potential participants via means of word of mouth.

Determining the sample size

According to Roscoe's rule for determining sample size, for multivariate data analysis (e.g. regression analysis), the sample size should be 10 times or more the number of variables (Sekaran & Bougie, 2016). In this study, we had a total of 5 variables and given the limited time and availability of observations, we aimed to have a sample size of at least 100 participants in order to avoid missing or meaningless answers in the data collection process. Fortunately, we were able to achieve that, and after a week of data collection we closed our questionnaire after having reached 102 respondents.

4.3.2 Social media selection

When it came to the selection of which social media platforms to focus on, Instagram emerged to be the most appropriate platform. Out of all the social media networks, Instagram is one of the most widely used and has become the most effective platforms for influencers (Haenlein et.al, 2020). Virtual influencers greatly utilise Instagram as their main communication channel. Skewing the research towards this one platform would have increased the probability of sampling for participants who had come in contact with virtual influencers, thus increasing the quality of this study's results. Furthermore, through the independent variable source credibility, an aspect of the research aims to focus on the physical appearance of the influencers. Because Instagram is a visual based platform, where images and short videos are prioritised, it will be easier for respondents to judge the image of the virtual influencers.

4.3.3 Data collection

We preferred to design and distribute the questionnaire online thus collecting data through digital instruments. Before we did that, pre-testing was used to ensure the clarity and comprehensibility of the statement of the questionnaire. The following subsection will elaborate on the data collection methods.

Data collection instrument

Given the spread of the COVID-19 pandemic, we chose an internet-based self-administered questionnaire as the data collection tool for this study. We used the online survey software Google Form as it is a free software that is easy to use and quick to complete. In addition, given its cross-platform compatibility, from desktop browsers to smartphones, Google Form has the potential to result in higher response rates. In addition, the program complies with data privacy standards, allowing respondents to be kept anonymous.

Pretesting of questionnaire

Pretesting questionnaires is also helpful to identify confusing statements or other issues (Burns & Burns, 2008). In this paper, we conducted a small-scale online pre-test study to test and optimise our questionnaire design. We recruited 10 respondents to pre-test our questionnaire via a 'pre-page' of Google Form. In doing so, we included participants from different cultural and professional backgrounds to ensure that statements are not understood by only one particular group of people (e.g. marketing students or professionals). Once the pre-test was completed, the questionnaire was modified according to the received feedback. After the new implementations were made, the questionnaire was distributed to the public.

4.4. Questionnaire Design

In this study, the questionnaire design strictly followed the guideline of GDPR by ensuring anonymity to protect the privacy of participants. Besides, the survey items to measure variables were drawn from existing scales of previous research papers.

4.4.1 Variables and measurements

To address the research question, this questionnaire dealt with 3 independent variables which are attractiveness, expertise and trustworthiness. We examined the relationship between the three predictor variables and the dependent variable, purchase intention, as well as the mediating variable, taste-leadership. To operationalize our conceptual framework, all measures used in this research were based on previous literature. All items adopted in this study were measured using 7-point Likert-type scales, which range from 1 (strongly disagree) to 7 (strongly agree). Respondents were asked to use this scale to display how they perceived virtual influencers. The demographics of the sample were also collected and analysed. Appendix 1 shows a full summary of the variables and their respective items.

Purchase Intention. Purchase intention is the dependent variable of this research. The measure consists of a two-item scale adapted from Sokolova and Kefi (2020). An example item is "I think in the future, I would purchase the products/brands/services that Lil Miquela endorsed or posted on her Instagram". The scale shows sufficient reliability with a measured Cronbach's Alpha equal to 0.944.

Taste Leadership. Taste leadership is the mediating variable of this research. The variable was measured using a three-item scale adapted from Ki & Kim (2019). An example item is "I think Lil Miquela takes the lead in sharing what looks good with her followers through Instagram". The scale shows sufficient reliability with a measured Cronbach's Alpha equal to 0.801.

Perceived Attractiveness. Perceived Attractiveness is the first independent variable of this research. The variable was measured using a four-item scale adapted from Ohanian (1990) and Peetz (2012). An example item is "I think Lil Miquela is attractive physically". The scale shows sufficient reliability with a measured Cronbach's Alpha equal to 0.912.

Perceived Trustworthiness. Perceived trustworthiness is the second independent variable of this research. The variable was measured using a three-item scale adapted from Ohanian (1990), Wiedmann et.al. (2020) and Chetioui et.al (2020). An example item is "I think I can depend on Lil Miquela to make purchasing decisions". The scale shows sufficient reliability with a measured Cronbach's Alpha equal to 0.913.

Perceived Expertise. Perceived expertise is the third independent variable of this research. The variable was measured using a five-item scale adapted from Peetz (2012) and Wiedmann et.al (2020). An example item is "I think Lil Miquela is an expert in fashion and style". The scale shows sufficient reliability with a measured Cronbach's Alpha equal to 0.970.

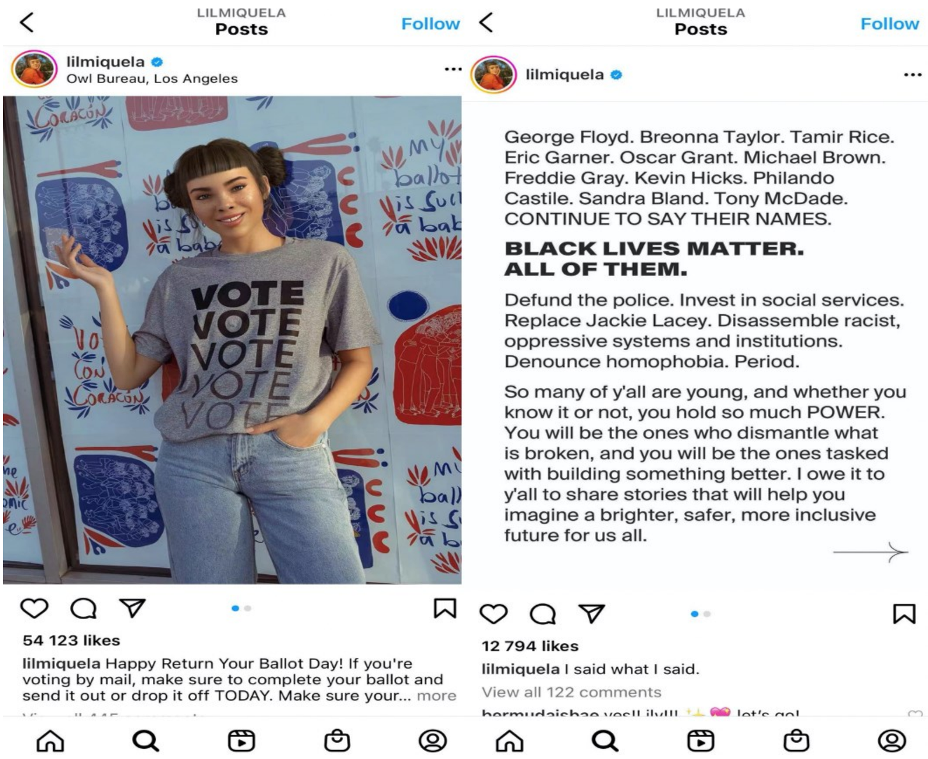
Control variables Demographic variables were implemented to act as control variables. These were age, gender, and education. Age was collected through a four-point question with the categories being: *18-25, 26-34, 35-45, 45 and above*. The gender of the respondents was collected through a three-point question where participants could choose between the options *female, male,* or *other*. Education was collected through a four-point question with options being *PhD, MBA, BA* and *Lower than a BA*. The aim of this research is not to contribute to a new definition of these variables, but rather to gain insights on the effect of these variables on consumers' purchasing behaviour when in contact with virtual influencers.

4.4.2 Filtering questions

Towards the beginning of the survey, after the demographic questions, the control question "What is 2+2?" was included in order to avoid receiving automatic responses from bots.

4.4.3 Virtual influencer selection

The respondents were to be presented with images of a virtual influencer Instagram page in order to answer the measurement questions shown in Table 2. The virtual influencer that was chosen for this study was Lil Miquela. With over 3.1 million followers on Instagram, Lil Miquela was the first-ever computer-generated social media influencer. She is a 19-year-old American female programmed by Brud, a social media agency based in the US. Lil Miquela has worked as an ambassador for many renowned brands such as Louis Vuitton and Samsung, and has appeared on the cover of many fashion magazines (Moustakas et.al., 2020). Her instagram page perfectly conveyed her various influencer activities. Ranging from sponsored posts to activism engagement, Lil Miquela was the most favourable choice to get the respondents acquainted with the idea and image of virtual influencers. The participants were therefore presented with images taken from Lil Miquela Instagram profile (@lilmiquela) and they were then asked to state the extent to which they agreed or disagreed with the statements presented in Table 2. Please see below example pictures.



lilmiquela Happy Return Your Ballot Day! If you're voting by mail, make sure to complete your ballot and send it out or drop it off TODAY. Make sure your... more

George Floyd. Breonna Taylor. Tamir Rice. Eric Garner. Oscar Grant. Michael Brown. Freddie Gray. Kevin Hicks. Philando Castile. Sandra Bland. Tony McDade. CONTINUE TO SAY THEIR NAMES.

BLACK LIVES MATTER. ALL OF THEM.

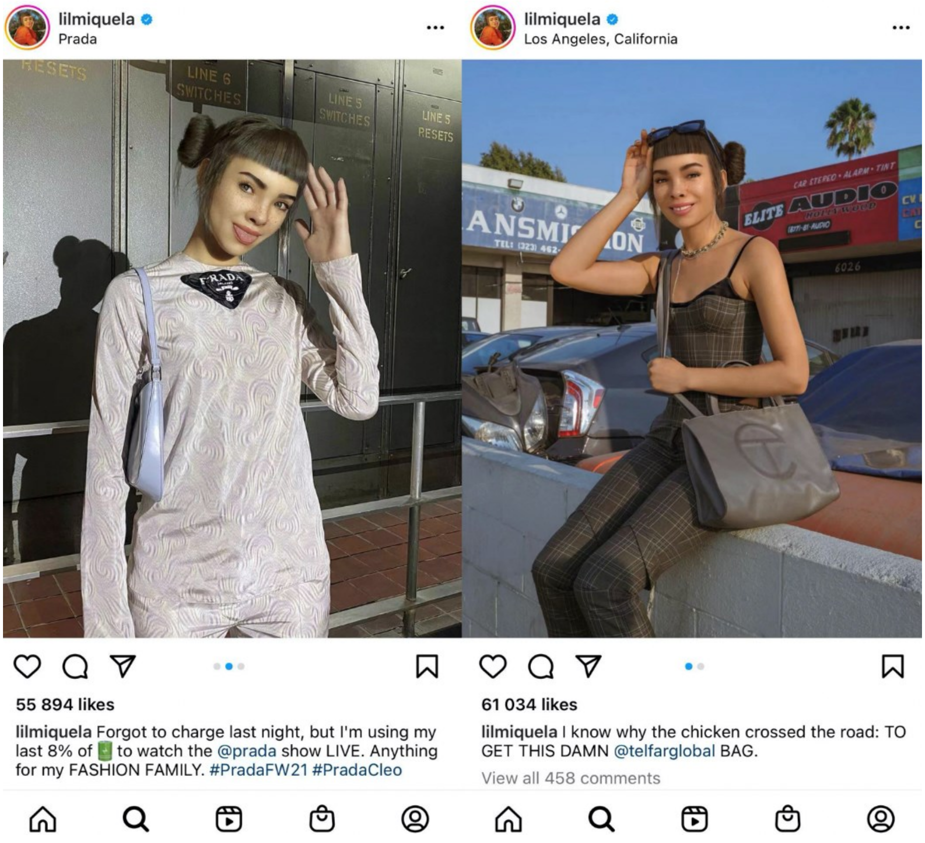
Defund the police. Invest in social services. Replace Jackie Lacey. Disassemble racist, oppressive systems and institutions. Denounce homophobia. Period.

So many of y'all are young, and whether you know it or not, you hold so much POWER. You will be the ones who dismantle what is broken, and you will be the ones tasked with building something better. I owe it to y'all to share stories that will help you imagine a brighter, safer, more inclusive future for us all.

lilmiquela I said what I said.

View all 122 comments

Figure 2 - Lil Miquela posts regarding her devotion to social activities



lilmiquela Forgot to charge last night, but I'm using my last 8% of 🔋 to watch the @prada show LIVE. Anything for my FASHION FAMILY. #PradaFW21 #PradaCleo

lilmiquela I know why the chicken crossed the road: TO GET THIS DAMN @telfarglobal BAG.

Figure 3 - Lil Miquela posts regarding her collaboration with fashions brands

4.5 Questionnaire Distribution

To reach our target sample size we used our social networks (i.e. WhatsApp, Facebook and Instagram) to contact friends to fill out the survey questionnaire. This selection method based on the availability of participants is considered as convenience sampling. We then asked our acquaintances to share the survey with their networks, as part of our snow-ball sampling approach. In addition, the survey was shared on forums which allowed for exchange surveys, thus enabling us to reach a larger and more diverse group of people. The data was collected over a one-week period.

5. Data Analysis Methods

5.1 Regression Diagnostics

Because we aim to conduct a multiple regression analysis, before running the analysis, regression diagnostics will be checked. The sample will first be tested for linearity. A scatter plot will be drawn. This will help us identify whether the relationship between the independent and dependent variables is linear or not. We will then analyse the normality of the residuals. Specifically, we will test the residuals of our independent and dependent variables to check whether they are normally distributed. Thirdly, the homoscedasticity of the residuals will be analysed in order to evaluate the distribution of error in our theoretical model. In this case, we will investigate whether residuals are found to be equally variable. The sample will also be inspected for the presence of outliers. By extracting the z values and skewness data within our sample, outliers with a value large that 0,5 and smaller than -0,5 will be extracted from our final sample. Lastly, the data was tested for multicollinearity. This refers to the extent to which the independent variables are correlated (Keller, 2017). The general rule of thumb is that the variance inflating error (VIF) should be smaller than 10 and tolerance should be larger than 0.10. If these criteria are met, multicollinearity will not be a problem for this study, since it implies that the independent variables are not correlated.

5.2 Correlation Analysis

This research's analysis will begin by running a correlation analysis that will evaluate whether the predictor variables and dependent variables correlate to one another. Specifically, we want to see whether there is a linear relationship between attractiveness, trustworthiness, expertise, taste leadership, and consequently with purchase intention. Because the data in our sample will be measured using scale items, the correlation analysis will be conducted using the parametric test of correlation: Pearson correlation analysis whose coefficient "r" determines the relationship between quantitative variables (Burns & Burns, 2008).

The Pearson correlation output is in the form of a matrix, which will report the r values for all variables in the study; accompanied by their associated probability. If the value of the significance level is smaller than the cutoff value of alpha (0.05), then we can assume that correlation is significant (Burns & Burns, 2008). Furthermore, through the value of r it will be possible to infer the direction and strength of the correlation (*et. al,* 2008). For instance, a r value of 0.8 would indicate positive and high correlation between two variables. It is also important to consider the correlation between the predictor variables in our study. Since this research aims to perform a regression analysis, high correlation between independent variables should be avoided as it may lead to the over inflation of the coefficient of determination R-squared (*et.al*, 2008).

5.3 Regression Analysis

To confirm the multivariate relationship between the perception of an influencer attractiveness, trustworthiness, expertise, and their purchase intention, a regression analysis will be conducted. The output of the analysis will leave us with a model summary table where the multiple coefficient value R will reveal the percentage of the variance for the dependent variable that is explained by the independent variable (Keller, 2017). Nonetheless, because the coefficient of determination R-squared may be over-inflated with an increase of predictor variables in the model, and consequential loss of degrees of freedom, the focus will be held on the adjusted R-squared which takes these factors into account. Furthermore, the analysis will provide us with the ANOVA table, through which we will be able to infer whether the independent variable can predict the dependent variable, and whether such relationship is significant (p-value < 0.05). Additionally, through the table of coefficients, the value of the beta coefficient will help in the estimation of the strength and direction of the influence of the independent variables in this study. The associated p-value will help infer the significance of the beta coefficients. Overall the following models will be used to establish the effect of our predictor variables on our dependent variable.

To test for hypotheses 1b, 2b, 3b, 4, 5, and 6, which represent the mediation of taste leadership on the relationship between the predictor variables perceived attractiveness, trustworthiness, and expertise, and the dependent variable, purchase intention, the mediation steps introduced by Baron & Kenny (1986) will be implemented. The authors state that there are two paths for mediation; the first one being the relationship between the predictor variables and the dependent variable, and the second one being the relationship between the predictor variables and the mediator. They suggest four separate linear regression analyses in order to confirm whether mediation is present. These four steps are:

1. The independent variable predicting the dependent variable
2. The independent variable predicting the mediator
3. The mediator predicting the dependent variable
4. The independent variable and mediator predicting the dependent variable

Due to the inclusion of control variables in our study, an additional step will be performed in which a regression model will be run to see how the control variables, gender, age and education, help predict the dependent variable, purchase intention. To support the hypotheses suggested in chapter 3, we will have a look at the p-value of the regression models. If the p-value is smaller than the cut-off alpha in all the four steps, then we can assume that mediation is indeed present. In the case, in which the influence of the predictor variables on the dependent variables is reduced after the mediator has been controlled for, then we can assume that only a partial mediation has occurred (Baron & Kenny, 1986).

6. Research Quality

6.1 Reliability and Validity

Reliability refers to the constancy and stability of participants' responses across a scale of items, meaning that a measure is considered as reliable when the result of the measurements is consistent, even when the study is replicated over time (Trochim, Donnelly & Arora, 2016). Reliability is a fundamental part of this research, as the study would not be valuable if the item scales implemented lacked consistency, thus producing different results every time they were measured. Because this research aims to collect data through the implementation of an online survey, reliability was measured by testing the internal consistency of the scale-items used for the construction of the survey. Specifically, the Cronbach's alpha of all the scales was measured and analysed in order to predict whether the measures in our study are consistent. To be considered reliable, all scales should report a Cronbach's alpha of at least 0.6 (VanVoorhis & Morgan, 2007). The scale analysis of all items reported a Cronbach's alpha larger than 0.6, making the variables in this study internally consistent.

On the other hand, validity is described as the degree of accuracy of the outcomes obtained through the analysis of the sampled data; and how these outcomes convert in the real world (Trochim, Donnelly & Arora, 2016). Validity is another crucial element in research because if a study does not measure what it intends to, then its results can't be easily generalised (*et.al*, 2016). In the following research, internal validity was measured through the inclusion of control variables, specifically age, education and gender. This was done in order to identify and exclude alternative explanations to our possible outcomes. Furthermore, it is suggested that at least 10 samples per independent variable should be collected in order to provide a large enough data sample (Burns & Burns, 2008). For this research, we aimed to collect at least 100 responses given the number of variables present in our study. We succeeded to do so, by collecting exactly 102 responses.

It is important to consider that due the use of a non-probability sampling method, our results may negatively impact the external validity of this research, making the results less generalizable. Nonetheless, the use of snow-ball sampling will help us with the collection of enough data to meet the statistical standards for a quantitative study, specifically given the limited time available (about 1 week) for the collection of the data.

6.2 Ethical Considerations

Consent statements, the purpose of the survey, and privacy guarantees were included in the questionnaire. Bell, Bryman and Haley (2018) listed a set of rules and principles regarding the adoption of an ethical approach to data collection and use. According to the authors' information requirement conditions, participants of the study were informed about the purpose of this research when they received the questionnaire. Furthermore, an estimation of the time it would take to complete the survey was also presented. The researchers also gave out their names and email addresses for inquiries and further information and informed the participants that this study is conducted in partnership with Lund University as part of the Master thesis for the International Marketing and Brand Management Programme. Obtaining consent from the respondents before the survey was essential (Burns & Burns, 2008). Therefore, respondents were asked to tick the box to consent to answer the questionnaire. If they chose not to consent, they were not able to continue answering the questionnaire, thus the survey process terminated. Participation in the study was, therefore, voluntary. Furthermore, respondents were aware of what the purpose of this research was and how their data was going to be used solely for this report. Participants were told that all answers given will remain anonymous, and that no information was going to be stored after the completion of the thesis.

7. Results

The following chapter will present an overview of the findings retrieved from the final dataset. Firstly, through the use of descriptive statistics, the demographics of our sample will be shown. Secondly, the results of the correlation analysis will be presented to identify the relationship between the variables in the study. Finally, the regression analysis outputs will be demonstrated to determine the effect of the independent variables on the dependent variable, and to confirm whether mediation is present within our model.

7.1 Descriptive Statistics

7.1.1 Demographics

The sample analysed contained a total of 102 responses, with a response rate of 100%. Among the respondents, about 78% were male while about 21% were female, with only one percent of the participants resulting to be non-binary (see Appendix 2). The age of the participants ranged to over 45 years old (M = 1.44, SD = 0.712), with 67% of the respondents being between 18 and 25; 25% of the respondents being between 26 and 34; 7% of the respondents being between 35-45, and 2% of the participants being above 45 years old (see Appendix 3). The majority of participants have attended a university and have earned at least a Bachelor or a higher degree of education (81%), while the rest have attained a degree lower than a Bachelor (18.6%) (see Appendix 4). Europe and Asia were the highest represented continents with over 84% of participants choosing the two regions as their place of origin (see Appendix 5).

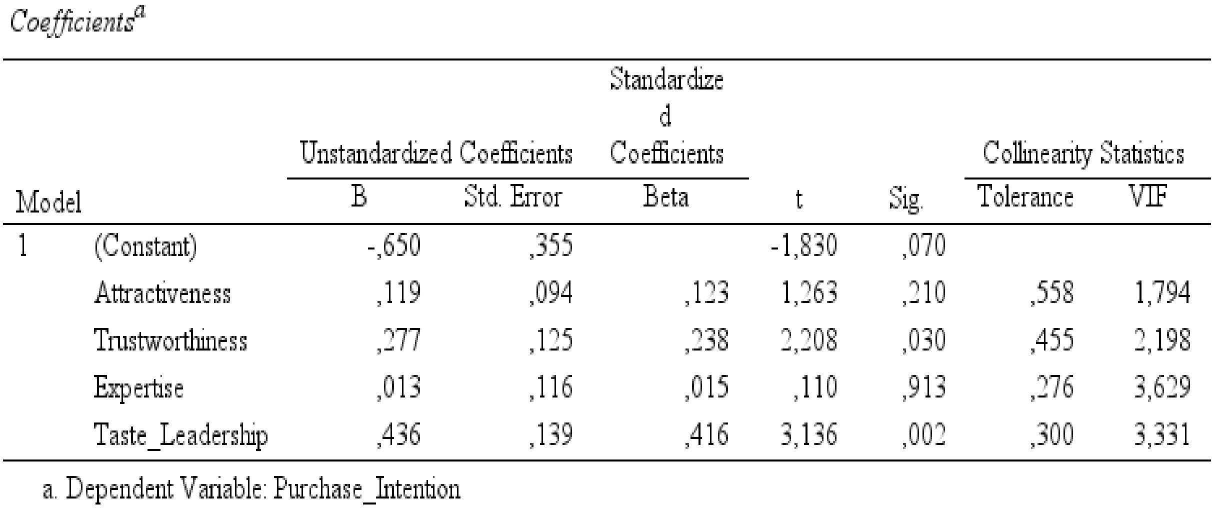
7.2 Correlation Analysis

This section will present an overview of the findings obtained from the correlation analysis, which aided us in evaluating the level of association between the variables of this study. The Pearson correlation coefficient (r) was reported along with the level of significance of the corresponding correlation coefficient. Additionally, the means, standard deviations and correlation values relevant for this analysis were also shown (see Appendix 6). The independent variables (attractiveness, trustworthiness and expertise) appear to be positively correlated with the dependent variable (purchase intention). This association is only moderate in strength (r = .509**; r = .600**; r = .595**), but it is still very significant with a p-value smaller than 0.01. The relationship between the mediating variable, taste-leadership, and the dependent variable is also very significant. The association is moderate in strength but positive (r = .655**). Therefore, it can be assumed from these initial findings, that the source credibility variables and taste-leadership have a significantly positive influence on purchase intentions. Nonetheless, the strength of this influence is not very high. The mediating variable, taste-leadership, emerged to have quite a strong and positive correlation to the independent variable, expertise (r = .824**). The relationship also resulted to be very significant. Taste-leadership also appeared to have a positive and significant correlation with attractiveness and trustworthiness, nonetheless, this relationship was only moderated in strength. Surprisingly enough, neither age nor education appeared to have any significant relationship with any of the variables.

7.3 Multi-linear Regression Analysis: Testing for hypotheses 1a, 2a and 3a

To test for the hypotheses 1a, 2a and 3a, which predict the positive effect of the independent variables perceived expertise, attractiveness and trustworthiness on the dependent variable, purchase intention, a multi-linear regression analysis was conducted. However, before performing the analysis, regression diagnostics were checked. These were the assumptions that needed to be met before being able to run the regression test. Firstly, we tested the linearity of the sample. This assumption was met as the scatterplot results showed a linear relationship between the dependent variable, purchase intention, and the independent variables, attractiveness, trustworthiness and expertise (see Appendix7, 8 and 9). Secondly, we analysed the normality of the residuals. The output of the normality probability plot resulted in the residuals from the independent variables and the dependent variables appearing to be approximately normally distributed (see Appendix 10). Thirdly, the homoscedasticity of residuals was also controlled in order to investigate the distribution of error within the model (see Appendix 11). This assumption was met as residuals were found to be equally variable, meaning that homoscedasticity was present. Fourthly, the data set was tested to identify the presence of outliers. In this case the standardised values of the residuals were extracted. The rule of thumb is that if the absolute value of the standardised residuals is bigger than 2 or smaller than -2, then the data should be treated with caution. Five outliers were identified in this sample, however, none of them were deleted as they were not of great impact to the skewness of the sample ($-0.5 < skew[x] < 0.5$) and the validity of the findings (Field, 2017). Finally, multicollinearity was tested to determine whether the independent variables are dependent on one another. In this case, the collinearity statistics were checked. As the variance inflation factor (VIF) resulted to be smaller than 10 for all independent variables, and the tolerance resulted to be larger than 0.1, we concluded that multicollinearity was not an issue for this research, meaning that the independent variables were assumed to not be correlated (see Table 2). All regression diagnostics were met, and as consequence, the multi-linear regression analysis was conducted. The output of the regression analysis can be seen below.

Table 2 - Collinearity diagnostics

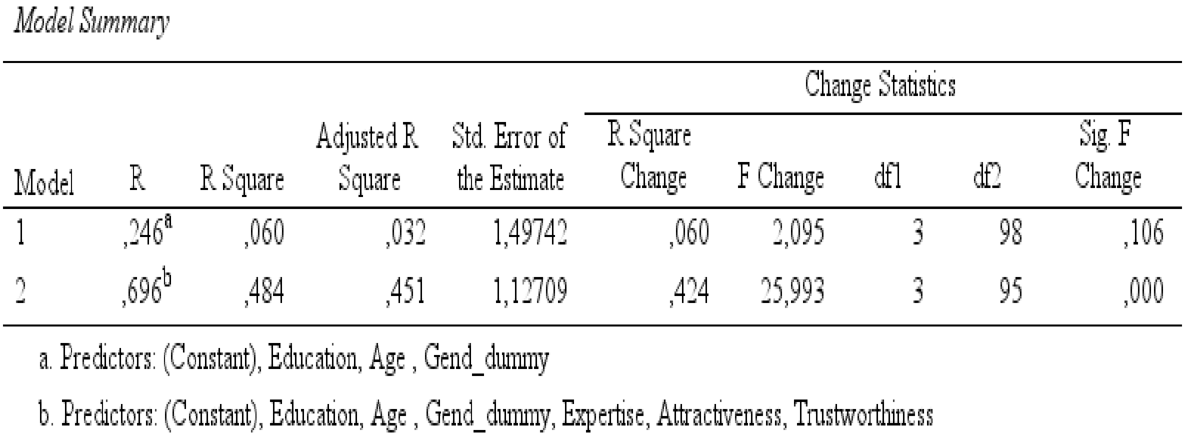


Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,650	,355		-1,830	,070		
	Attractiveness	,119	,094	,123	1,263	,210	,558	1,794
	Trustworthiness	,277	,125	,238	2,208	,030	,455	2,198
	Expertise	,013	,116	,015	,110	,913	,276	3,629
	Taste_Leadership	,436	,139	,416	3,136	,002	,300	3,331

a. Dependent Variable: Purchase_Intention

Table 3 - Model summary from the multi-linear regression analysis



Model Summary

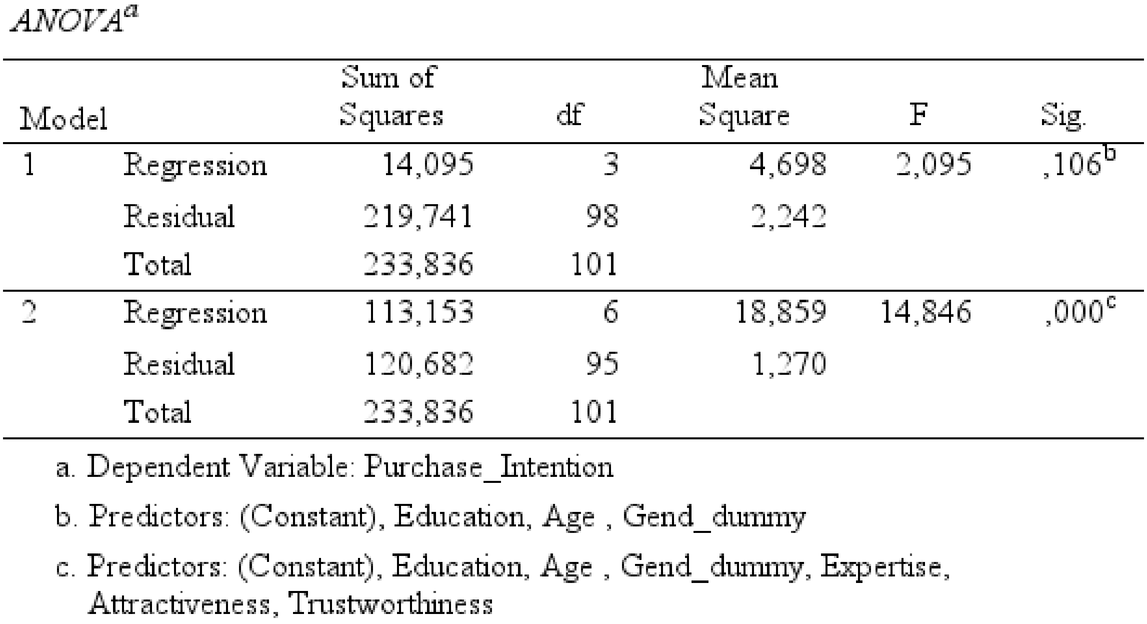
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	,246[a]	,060	,032	1,49742	,060	2,095	3	98	,106
2	,696[b]	,484	,451	1,12709	,424	25,993	3	95	,000

a. Predictors: (Constant), Education, Age , Gend_dummy

b. Predictors: (Constant), Education, Age , Gend_dummy, Expertise, Attractiveness, Trustworthiness

The output from table 3 exhibits an increase in the value of the R-squared caused by the inclusion of the independent variables, attractiveness, trustworthiness and expertise, to the model. In model 1, the value of the R-squared is equal to 0.060, meaning that the control variables gender, age, and education help explain about 6% of the variance in the dependent variable (purchase intention). In model 2, this value shows an increase of 0.424, meaning that the inclusion of the independent variables helped explain about 70% of the variance in the dependent variable. However, because the R-squared easily falls victim to artificial inflation caused by the addition of new explanatory variables, the adjusted R-squared will instead be considered. This is because the adjusted R-squared considers the loss in degrees of freedom together with the explanatory power that is predicted by mere chance (Field, 2017). Table 3 shows an increase in the value of the adjusted R-squared equal to 0.419. This indicates that the incorporation of the independent variables has helped improve the explanatory power of the model by more than expected by chance. In this case, the p-value (0.000) is smaller than the cut-off value of 0.01. Therefore, we can conclude that the additional explanatory power of the variables attractiveness, trustworthiness and expertise is significant in explaining the total variance in purchase intention.

Table 4 - ANOVA output from the multi-linear regression analysis



ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14,095	3	4,698	2,095	,106^b
	Residual	219,741	98	2,242		
	Total	233,836	101			
2	Regression	113,153	6	18,859	14,846	,000^c
	Residual	120,682	95	1,270		
	Total	233,836	101			

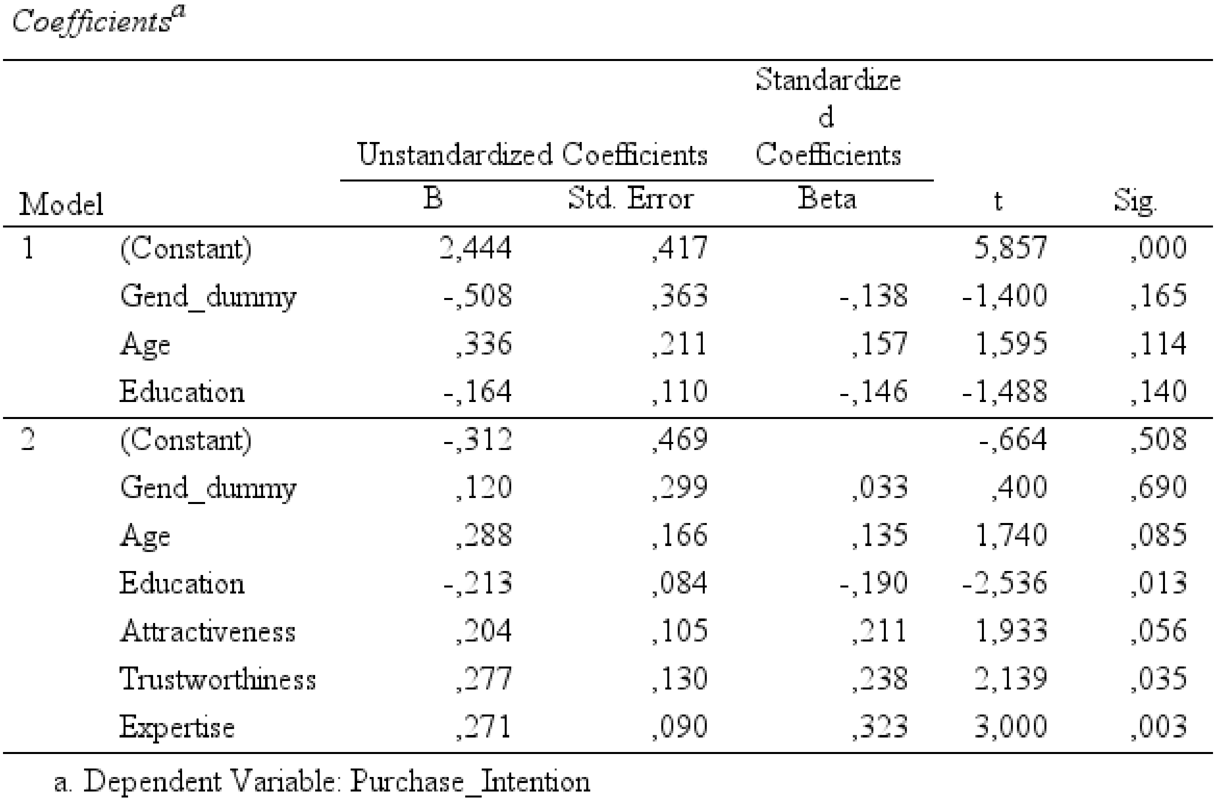
a. Dependent Variable: Purchase_Intention

b. Predictors: (Constant), Education, Age , Gend_dummy

c. Predictors: (Constant), Education, Age , Gend_dummy, Expertise, Attractiveness, Trustworthiness

The output from table 4 demonstrates a relevant increase from model 1 to model 2 of the value of F. The p-value extracted from model 2 appears to be significant with a value (0.000) smaller than the cut-off alpha of 0.01. It is, therefore, noticeable that the model results to be more significant with the inclusion of the three independent variables (attractiveness, trustworthiness and expertise). From these findings, there is enough statistical evidence to conclude that the attractiveness, trustworthiness and expertise of virtual influencers might positively affect purchase intention.

Table 5 - Table of coefficients from the multi-linear regression analysis



Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2,444	,417		5,857	,000
	Gend_dummy	-,508	,363	-,138	-1,400	,165
	Age	,336	,211	,157	1,595	,114
	Education	-,164	,110	-,146	-1,488	,140
2	(Constant)	-,312	,469		-,664	,508
	Gend_dummy	,120	,299	,033	,400	,690
	Age	,288	,166	,135	1,740	,085
	Education	-,213	,084	-,190	-2,536	,013
	Attractiveness	,204	,105	,211	1,933	,056
	Trustworthiness	,277	,130	,238	2,139	,035
	Expertise	,271	,090	,323	3,000	,003

a. Dependent Variable: Purchase_Intention

The output from table 5 reveals that all variables except for gender, age and attractiveness have a significant effect on the dependent variable, purchase intention. Taking a look at our three predictor variables, it is apparent that the direction of the unstandardized beta is positive (0.204; 0.277; 0.271) with a corresponding t-value of 1.933, 2.139, and 3.000. This suggests that with each one unit increase in the perceived attractiveness of the virtual influencer, purchase intention increases by 0.204. With each one unit increase in the perceived trustworthiness of the virtual influencer, purchase intention increases by 0.277, and with each one unit increase in the perceived expertise of the virtual influencer, purchase intention increases by 0.271. Nonetheless, this effect is only significant for the perceived trustworthiness and expertise of the virtual influencer as their p-value is smaller than the cut-off alpha of 0.05. Attractiveness does not appear to have a significant effect on purchase intention with a p-value larger than the cut-off alpha of 0.05. Given these findings, we may conclude that there is enough statistical support for hypothesis 1a and 3a, and not enough support for hypothesis 2a.

7.4 Mediation: Testing for hypothesis 1b, 2b, 3b, 4, 5, and 6

To test for hypotheses 1b, 2b, 3b, 4, 5, and 6 which focus on the mediation effect of the variable taste leadership on the relationship between the independent variables (attractiveness, trustworthiness, and expertise) and the dependent variable (purchase intention), the regression steps proposed by Baron & Kenny (1986) were implemented. The output from the mediation analysis is summarised in Table 6.

Table 6 - Mediation analysis output

Variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
	Purchase Intention	**Purchase Intention**	**Taste Leadership**	**Purchase Intention**	**Purchase Intention**
Attractiveness		0.204 (0.056)	0.059 (0.433)		0.180 (0.077)
Trustworthiness		0.277* (0.035)	0.197* (0.039)		0.190 (0.137)
Expertise		0.271** (0.003)	0.540*** (0.000)		0.039 (0.730)
Taste Leadership				0.684*** (0.000)	0.430* (0.002)
Gender	-0.508 (0.165)	0.120 (0.690)	0.224 (0.262)	-0.264 (0.334)	0.039 (0.892)
Age	0.336 (0.114)	0.288 (0.085)	-0.025 (0.836)	0.331* (0.038)	0.300* (0.061)
Education	-0.164 (0.140)	-0.213* (0.013)	-0.022 (0.716)	-0.185* (0.027)	-0.205* (0.013)
Constant	2.444*** (0.000)	-0.312 (0.508)	0.655 (0.139)	-0.250 (0.566)	-0.699 (0.135)
Observations	102	102	102	102	102
R^2	0.060	0.484	0.704	0.482	0.534

p values in parentheses.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.001$.

Table 6 demonstrates the empirical findings from testing our hypotheses 1b, 2b, 3b, 4, 5, and 6. The first model is a standard model which includes the control variables that relate to purchase intention. The second model includes the predictor variables attractiveness, trustworthiness, expertise and reports the effect of the variables on the dependent variable, purchase intention. The third model comprises the predictor variables and demonstrates their effect in predicting the mediating variable, taste-leadership. Model 4 tests the effect of the mediating variable on the dependent variable. The fifth model combines the predictor variables with the mediator in order to predict the dependent variable. The control variables were included in all of the models as a baseline. In model 2, the findings show that all predictor variables have a positive effect on purchase intention. Nonetheless, this effect is only significant for the perceived trustworthiness and expertise of virtual influencers and not for the perceived attractiveness. Therefore, only hypotheses 1a and 3a are supported. Likewise, model 3 reveals that the predictor variables have a positive influence on the mediating variable, taste leadership. However, similarly to model 2, this influence is only significant for the perceived trustworthiness and expertise of the virtual influencer, thus excluding perceived attractiveness. Therefore, only hypotheses 1b and 3b are supported. In model 4 and 5, the addition of the mediating variable shows a significant positive effect of taste leadership on purchase intention. Nonetheless, Baron & Kenny (1986) state that for mediation to be present, all of the relationships presented in model 2 to 4 should be significant. In this case, the relationships presented show perceived trustworthiness, expertise and taste leadership to be significant. Additionally, the same independent variables in model 5 appear to be non-significant. This means that there is a full mediation effect of taste-leadership on the relationship between perceived trustworthiness and expertise, and purchase intention. Therefore, we conclude that there is enough statistical evidence to infer that hypotheses 4 and 6 are supported.

7.5 Summary of Results

Table 7 - Hypothesis Overview and Results

Hypothesis	Description	Result
1(a)	*The **perceived expertise** of virtual influencers (IV) is positively related to **purchase intention** (DV).*	*Support*
1(b)	*The **perceived expertise** of virtual influencers (IV) is positively related to **taste leadership** (MV).*	*Support*
2(a)	*The **perceived attractiveness** of the virtual influencer (IV) is positively related to **purchase intention** (DV).*	*Do not support*
2(b)	*The **perceived attractiveness** of virtual influencers (IV) is positively related to **taste leadership** (MV).*	*Do not support*
3(a)	*The **perceived trustworthiness** of virtual influencers (IV) is positively related to **purchase intention** (DV).*	*Support*
3(b)	*The **perceived trustworthiness** of virtual influencers (IV) is positively related to **taste leadership** (MV).*	*Support*
4	***Taste leadership** (MV) of virtual influencers mediates the relationship between **perceived expertise (IV)** and **purchase intention (DV)***	*Support*
5	***Taste leadership** (MV) of virtual influencers mediates the relationship between **perceived attractiveness** (IV) and **purchase intention** (DV)*	*Do not support*
6	***Taste leadership** (MV) of virtual influencers mediates the relationship between **perceived trustworthiness** (IV) and **purchase intention** (DV)*	*Support*

8. Discussion

The following section discusses the results of the analysis. It elaborates on the findings of each hypothesis and further expands on these findings by linking them to previous literature results and finally thus revealing more in-depth insights.

8.1 Expertise

The results of our analysis support the hypothesis that expertise of virtual influencers has a positive relationship with purchase intention. We find that this result corresponds to a previous research by Chetioui et.al. (2020) on fashion influencers, showing that consumers' attitudes towards fashion influencers and purchase intentions towards brands are influenced by influencers' expertise. The same view is also shared with Martensen et.al. (2018), who argue that expertise enhances the persuasiveness of influencers, which in turn increases consumers' willingness to buy the brands or products that influencers recommend. This result suggests that even though virtual influencers are not real humans, consumers may accept a virtual influencer who seems to have the expertise, and are willing to buy products or brands that the virtual influencer endorses.

In addition, this research also supports another hypothesis that the expertise of the virtual influencer has the most significant impact on the perception of taste leadership. Likewise, Ki & Kim (2019) found that the expertise displayed on social media influencers' content is positively related to consumers' attitudes towards them (perception of taste leadership). In the case of Lil Miquela, she reveals her identity as a model on her Instagram profile, posts advertisements with well-known fashion brands such as Prada, showcases her outfits and participates in fashion events. Her various experiences in the fashion world may enable consumers to recognise that she or the creative team behind her has expertise in fashion, which in turn reinforces the perception of Lil Miquela as a taste leader.

8.2 Attractiveness

Our research shows that consumers tend to feel more or less visually attracted to virtual influencers, which is in line with Molin & Nordgren's (2021) argument that human-like appearance enhances attractiveness. However, to our surprise, both hypotheses that attractiveness is positively related to taste leadership and purchase intention are not supported. This result contradicts the selected finding of Ki and Kim (2019) that attractiveness is the most significant factor affecting taste leadership. Ki and Kim suggested that whether an influencer has taste leadership highly depends on the attractiveness of the influencer content, which in turn affects purchase intention. Therefore, we argue that the impacts of attractiveness on taste leadership and purchase intention do not apply to virtual influencers.

This can be explained by the “match-up hypothesis” (Torres, Augusto & Matos, 2019, pp.4), which states that favourable advertising outcomes could create when there is a congruence between social media influencer and the endorsed brand. Given that we do not specify product category in our survey on the item of purchase intention, consumers may find it difficult to associate virtual influencers’ attractive appearance with some product category such as cars, and are therefore less likely to generate purchase intentions. In addition, possibly due to unreal beauty standards that virtual influencers present (Oliveira & Chimenti, 2021), audiences may be skeptical about the authenticity of their attractiveness and less likely to stay relevant with them. Because of that, attractiveness of virtual influencers could not be treated as a cue for audiences to determine whether they have tasteful leadership.

8.3 Trustworthiness

The result supports the hypothesis that the perceived trustworthiness of virtual influencers has a positive impact on purchase intention and taste leadership. Firstly, with respect to purchase intention, these findings echo the conclusion of prior research that consumers tend to have positive attitudes toward the product and brand recommended by influencers they trust and are willing to buy it. Our study shows that consumers have low trust in virtual influencers. However, if consumers develop trust in virtual influencers, they are likely to be convinced to buy product and brands endorsed by virtual influencers. Secondly, in terms of taste leadership, the results suggest that if consumers perceive virtual influencers as trustworthy, they can have favourable attitudes toward taste displayed by virtual influencers such as music and fashion.

8.4 The mediating effect of taste leadership

Last, our results show support to the mediating effects of taste leadership on the relationship between expertise, trustworthiness, and purchase intention. It may suggest that virtual influencers' expertise and trustworthiness lead consumers to shape audience attitudes toward their taster leadership, and subsequently affect purchase intentions through taste leadership. This means that audiences may see virtual influencers as taste leaders based on their trustworthiness and expertise, thus possibly buying their endorsed brands or products because of the desire to imitate them or trust in their recommendation. In addition, our results show that taste leadership does not mediate the relationship between attractiveness and purchase intention. It may imply that a virtual influencer with an attractive human-like appearance does not guarantee the generation of purchase intentions due to a failure in the development of taste leadership. Based on the findings, we will elaborate on the theoretical and practical implications in the following section.

9. Conclusion

The following section first addresses the theoretical and managerial implications. Next, we discuss the limitations of this study and identify future directions for research. Finally, we provide a final remark of the overall research and findings.

9.1 Implications

9.1.1 Theoretical implications

Our research provides three contributions to literature. Firstly, this study contributes to Ohanian (1990)'s source credibility model by extending the application of source credibility theory from the context of social media influencers to that of virtual influencers. To our knowledge, few studies focus on the effectiveness of virtual influencers. Given that source credibility theory is commonly used to explain the effectiveness of influencer endorsement, our research employs this theory to examine the mechanism by which virtual influencers exert impacts on consumers' purchase intention. Although prior research on virtual influencers has already studied the effects of anthropomorphism on perceived credibility, the effects of credibility factors on purchase intention are not well understood. The results show that two dimensions of credibility (expertise and trustworthiness) can significantly affect purchase intention in the context of virtual influencers. It suggests that, to some extent, source credibility theory is applicable for both real human influencers and virtual influencers.

Furthermore, our research contributes to the literature of influencer marketing by bridging the research gap in the marketing effectiveness of virtual influencers. We adopted an empirical study with online surveys to test the relationship between different credibility factors of virtual influencers and purchase intention.

Thirdly, also most importantly, our research brings taste leadership into literature on virtual influencers and proposes the key mediation role of taste leadership. We empirically prove that taste leadership completely mediates the effects of virtual influencers' expertise and trustworthiness on purchase intention. This result stresses that like real human influencers, virtual influencers can be viewed as taste leaders who can encourage audiences’ purchase intentions. It further demonstrates the importance of taste leadership in the discussion of influencer marketing.

9.1.2 Managerial implications

Our research offers helpful suggestions for marketers and brands who are interested in collaborating with virtual influencers. Virtual influencers have proved to be effective in generating purchase intention, so it means that virtual influencers are likely to become reasonable alternatives of real human influencers in the near future. If marketers and brands aim to increase sales, they could involve virtual influencers in their influencer marketing campaigns.

Therefore, in that situation, the key thing for brands is to choose appropriate virtual influencers. Our research shows that taste leadership fully mediates the relationship between virtual influencers’ credibility attributes and consumers’ purchase intention. Because of the significant role of taste leadership, we suggest that marketers should select virtual influencers who could be regarded as taste leaders in consumers’ minds. Since expertise and trustworthiness contribute to taste leadership, it is better for brands to evaluate audiences’ perception of the virtual influencer’s expertise and trustworthiness in order to identify the virtual influencers who are likely to deliver the best marketing outcomes. On the contrary, the virtual influencers who look more attractive, sexy and charming could not guarantee greater purchase intention.

This research also provides some constructive insights for companies who are responsible for creating and managing virtual influencers. When creative teams in companies craft the storylines of a virtual influencer, they should demonstrate the expertise of the virtual influencer by creating an identity as an expert in a specific field and showing his or her experience. For example, they could arrange for a virtual influencer who has a model identity to collaborate with fashion magazines and fashion designers to show the influencer’s expertise in the fashion field. In addition, trustworthiness is also important in developing audiences’ perception of taste leadership. Therefore, operation teams of virtual influencers should regularly assess how much followers trust virtual influencers.

9.2 Future Research and Limitations

To begin with, limitations regarding the data collection process are to be considered. The number of respondents collected was relatively small. Due to time constraints, only 102 responses were collected. The results may have varied with a larger sample size. To add on, due to the sampling method utilised for the collection of data, the resulting data sample lacked some diversity in terms of the age and continent of origin of the respondents. In fact, the major drawback of using non-probability methods is that these procedures are unable to assure that the sample is representative of the defined population. The final sample consisted of mostly European and Asian young adults, demographics that are quite similar to those of the researchers and that do not fully represent the whole virtual influencer consumer pool. As long as the time and budgets allow it, future research should aim for probability sampling methods; which may allow for a more correct representation of the target population. Additionally, the survey was offered only in English, causing a possible language barrier for some of the respondents within the sample.

Furthermore, due to the survey being created through the online website Google Forms, a small percentage of possible respondents were not capable of filling in the questionnaire. This, because of region restrictions that limited the view of google associated platforms. Future research could make use of more accessible survey tools such as Qualtrics which may aid in reaching more respondents.

Next, with respect to the survey item of purchase intention, we did not specify product categories, which may result deviation of results. Considering the influence of the fit between influencers and the product or brand being endorsed, for future research we suggest researchers can conduct experiments under different product categories endorsed by same virtual influencer and then compare the differences in consumers' purchase intentions.

Finally, another limitation could be allocated to the diversity of the virtual influencers presented in the survey. In the questionnaire, respondents were only exposed to Lil Miquela’s Instagram page. Other virtual influencers could have also been shown in order to arrive at more in-depth results regarding consumer perception of virtual influencers as a whole. Future research should consider the implementation of more than one virtual influencer as it may provide a broader understanding of consumers’ perceptions.

9.3 Final Remarks

Within current literature, there appears to be little conversation regarding the impact of virtual influencers on purchase intentions. With this paper, the aim was to look at this new technological phenomenon through the lenses of the Source Credibility Model to evaluate whether virtual influencers could bring to practitioners the same persuasive benefits as human influencers. The findings showed that only two of the three attributes of credibility led to a higher purchase intention within consumers. Specifically, the source's trustworthiness and expertise. Further, only these two attributes brought forward the mediating effect of taste leadership, meaning that the perceived attractiveness of the influencer had no significant impact on consumers' purchase decisions. Such results were partially in line with current influencer marketing literature, presenting an opportunity for virtual influences to become competition to their human counterparts. This is essential information for marketing managers trying to understand and collaborate with digital avatars. To add on, these results can add to the limited virtual influencer theory, by representing it as more than just an emerging trend. Instead, this research additionally opens up the socio-cultural impact this new phenomenon may pose to marketing as a whole.

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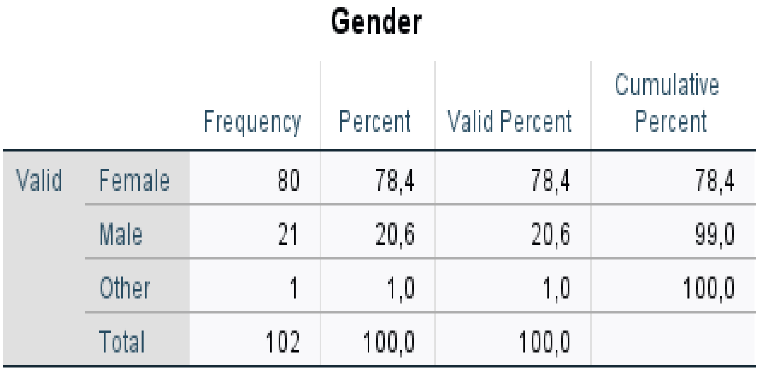
Appendices

Appendix 1 - List of measurements

Variables	Measurement items	Level	Sources	Cronback's Alpha
Attractiveness	• I think Lil Miquela is attractive physically • I think Lil Miquela is beautiful • I think Lil Miquela is good looking • I think Lil Miquela is charismatic	1- Strongly disagree 7- Strongly agree	Ohanian (1990). Peetz (2012)	0.912
Trustworthiness	• I think I can depend on Lil Miquela to make purchasing decisions • I think Lil Miquela is sincere • I think Lil Miquela is honest • I think Lil Miquela is trustworthy in what she says • I think Lil Miquela is reliable	1- Strongly disagree 7- Strongly agree	Ohanian (1990) Wiedmann et.al. (2020) Chetioui et.al. (2020)	0.913
Expertise	• I think Lil Miquela is an expert in fashion and style • I think Lil Miquela has good knowledge in fashion and style • I think Lil Miquela is experienced in fashion and style • I think Lil Miquela is skilled in fashion and style • I think Lil Miquela is qualified in fashion and style	1- Strongly disagree 7- Strongly agree	Peetz (2012) Wiedmann et.al. (2020)	0.970

Taste leadership	• I think Lil Miquela takes the lead in sharing what looks good with her followers through Instagram. • I think Lil Miquela is one of the first people to find the newest trends and designs. • I think the brands or products that Lil Miquela wears or uses show her good taste.	1- Strongly disagree 7- Strongly agree	Ki & Kim (2019)	0.801
Purchase Intention	• I think in the future, I would purchase the products/ brands/services that Lil Miquela endorsed or posted on her Instagram • I think in the future, I would recommend my friends to buy products/brands/services that Lil Miquela endorsed or posted on her Instagram	1- Strongly disagree 7- Strongly agree	Sokolova & Kefi (2020)	0.944

Appendix 2 - Descriptive statistics: Gender

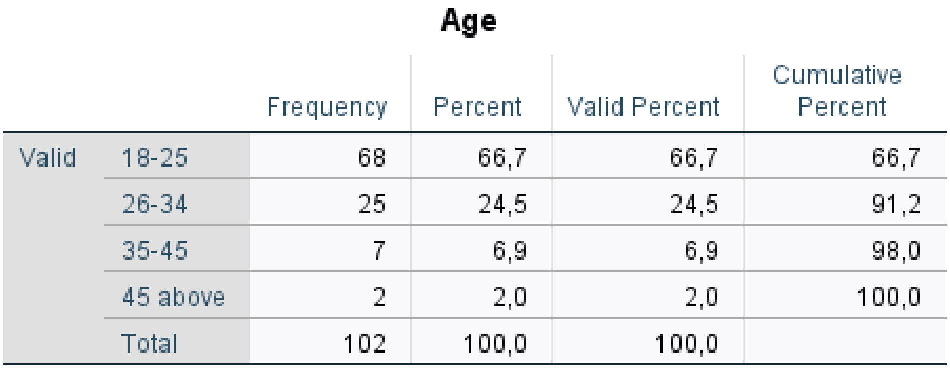


Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	80	78,4	78,4	78,4
	Male	21	20,6	20,6	99,0
	Other	1	1,0	1,0	100,0
	Total	102	100,0	100,0	

Appendix 3 - Descriptive statistics: Age

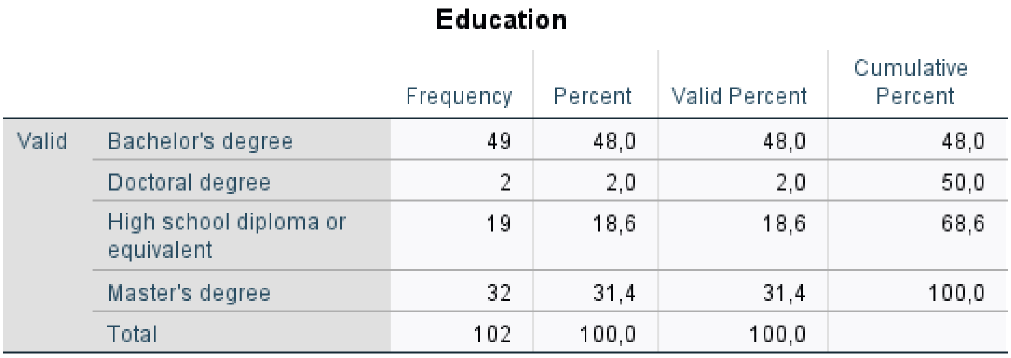
Table 4 - Age



Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	68	66,7	66,7	66,7
	26-34	25	24,5	24,5	91,2
	35-45	7	6,9	6,9	98,0
	45 above	2	2,0	2,0	100,0
	Total	102	100,0	100,0	

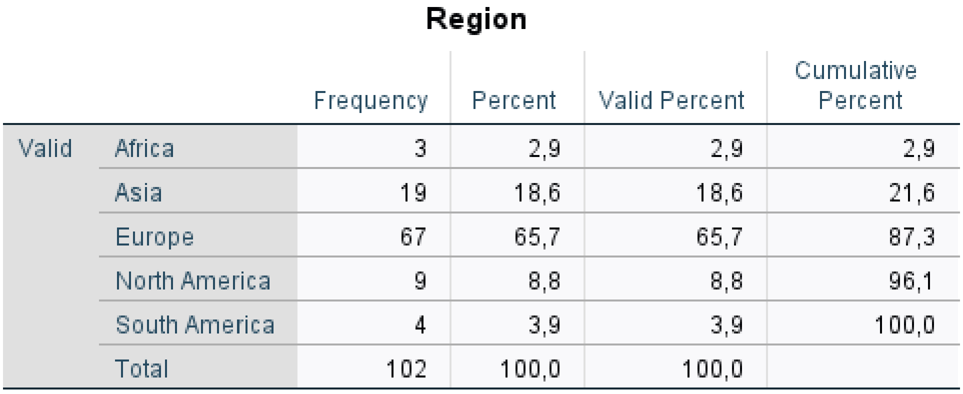
Appendix 4 - Descriptive statistics: Education



Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's degree	49	48,0	48,0	48,0
	Doctoral degree	2	2,0	2,0	50,0
	High school diploma or equivalent	19	18,6	18,6	68,6
	Master's degree	32	31,4	31,4	100,0
	Total	102	100,0	100,0	

Appendix 5 - Descriptive statistics: Region of origin



Region

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Africa	3	2,9	2,9	2,9
	Asia	19	18,6	18,6	21,6
	Europe	67	65,7	65,7	87,3
	North America	9	8,8	8,8	96,1
	South America	4	3,9	3,9	100,0
	Total	102	100,0	100,0	

Appendix 6 - Descriptive Statistics and Correlation Matrix

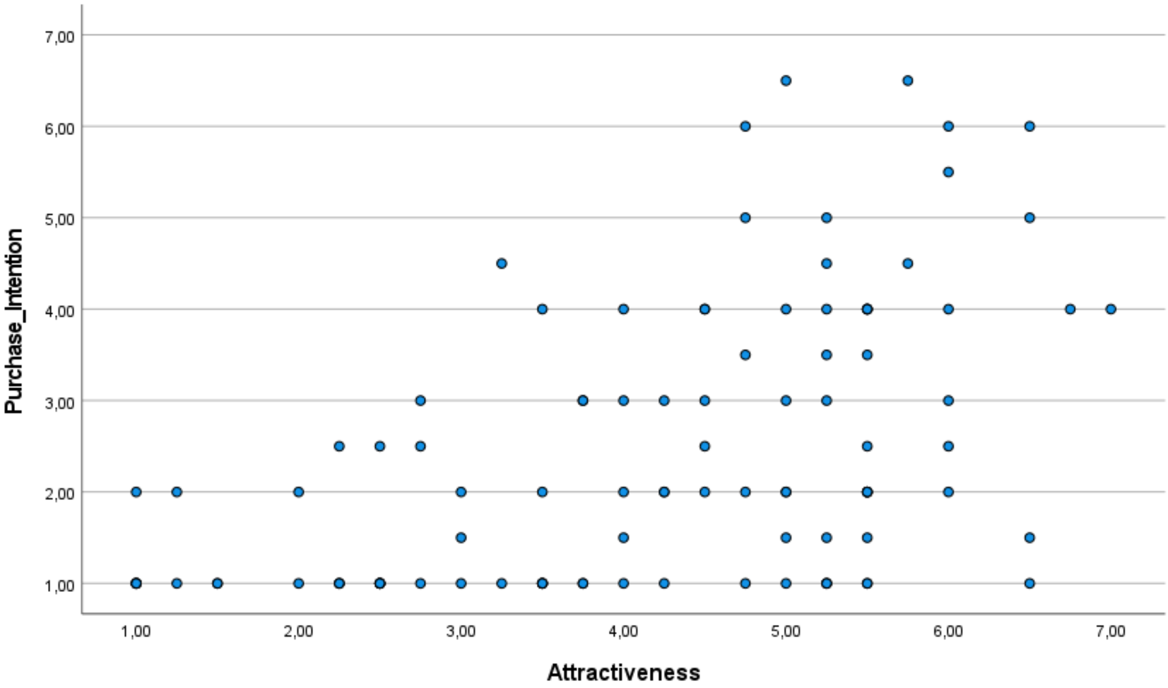
	Mean	**SD**	1	2	3	4	5	6	7
1.Gender	.216	.413	-	-	-	-	-	-	-
2.Age	1.44	.712	.111	-	-	-	-	-	-
3.Education	2.33	1.352	.047	.041	-	-	-	-	-
4.Attractiveness	4.152	1.573	-.390**	-.096	.091	-	-	-	-
5.Trustworthiness	2.965	1.308	-.151	.147	.003	.608**	-	-	-
6.Expertise	4.204	1.816	-.149	-.029	.051	.609**	.679**	-	-
7.Taste Leadership	3.941	1.452	-.100	-.007	.024	.558**	.665**	.824**	-
8.Purchase Intention	2.436	1.522	-.127	.136	-.146	.509**	.600**	.595**	.655**

Notes. *N=102.*

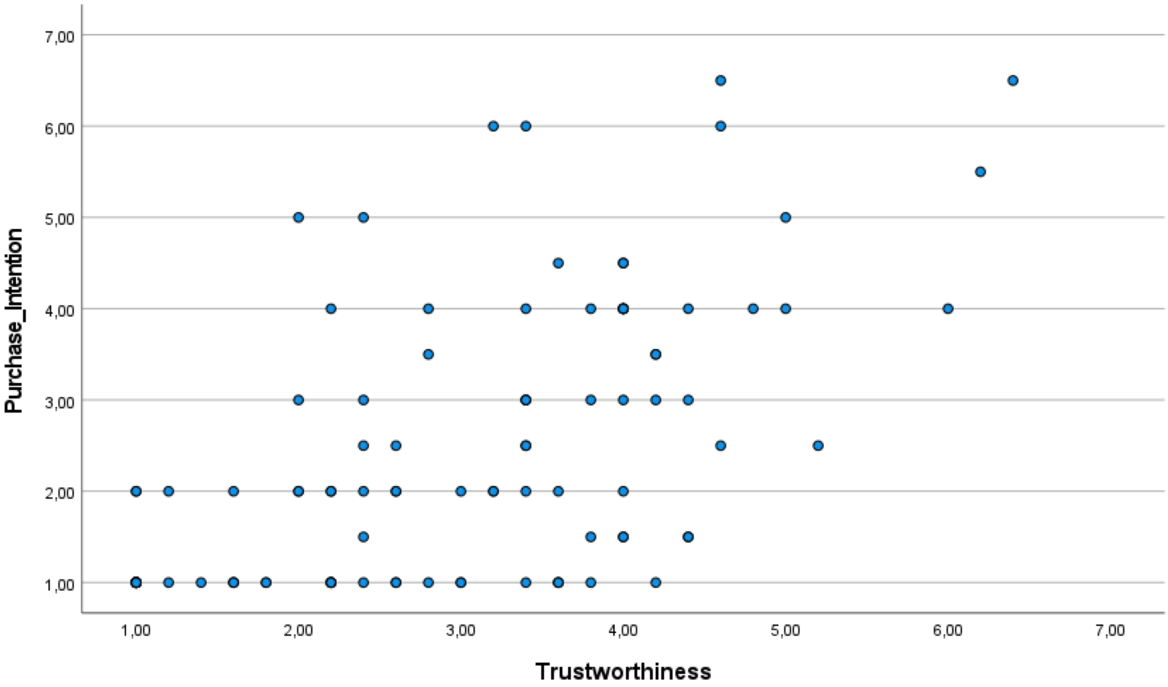
*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

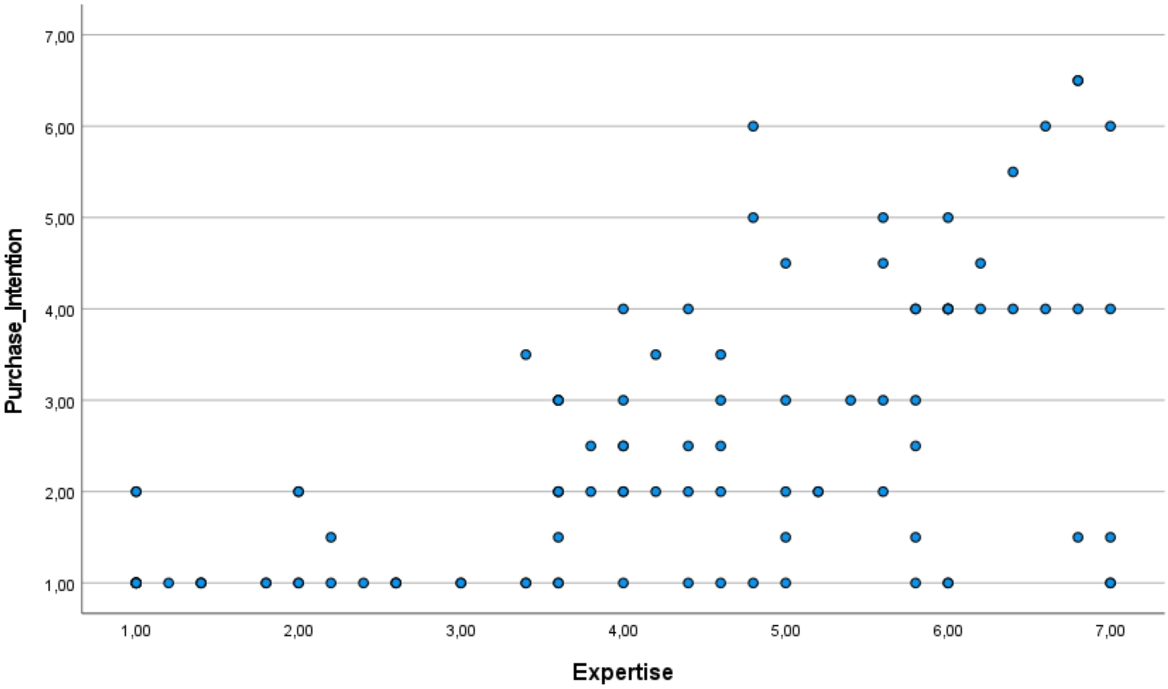
Appendix 7 - Scatterplot between perceived attractiveness and purchase intention



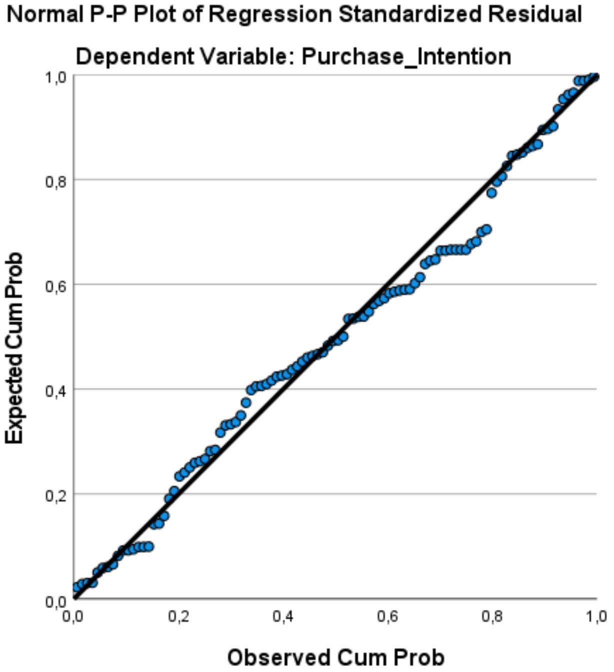
Appendix 8 - Scatterplot between perceived trustworthiness and purchase intention



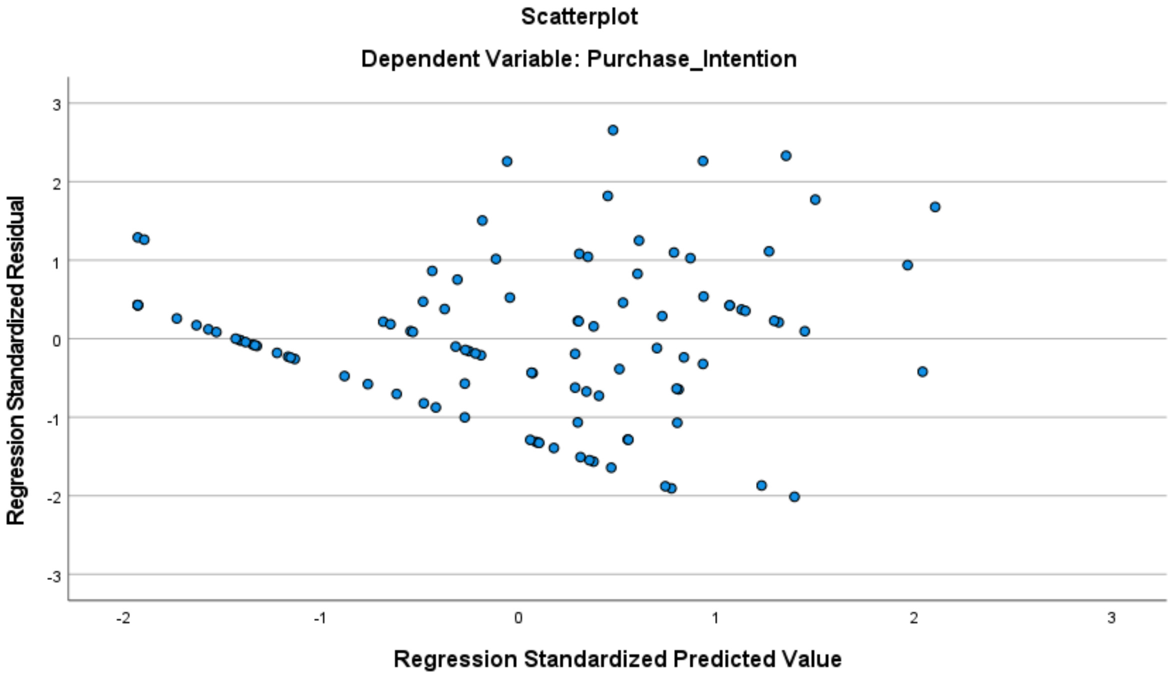
Appendix 9 - Scatterplot between perceived expertise and purchase intention



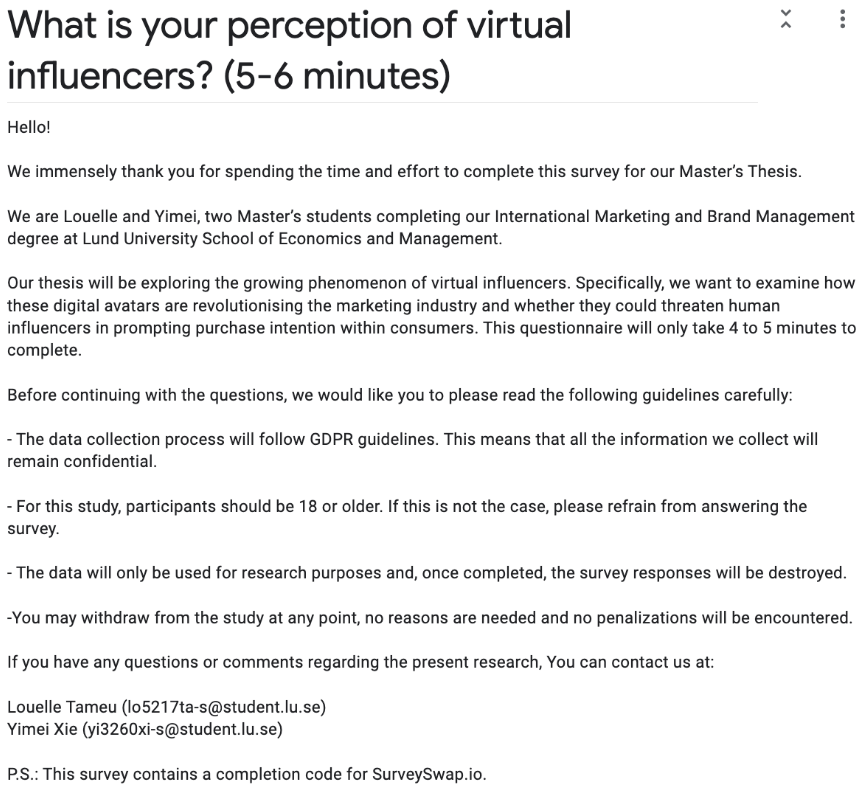
Appendix 10 - Normality probability plot



Appendix 11 - Homoscedasticity of residuals



Appendix 12 - Questionnaire Design



What is your perception of virtual influencers? (5-6 minutes)

Hello!

We immensely thank you for spending the time and effort to complete this survey for our Master’s Thesis.

We are Louelle and Yimei, two Master’s students completing our International Marketing and Brand Management degree at Lund University School of Economics and Management.

Our thesis will be exploring the growing phenomenon of virtual influencers. Specifically, we want to examine how these digital avatars are revolutionising the marketing industry and whether they could threaten human influencers in prompting purchase intention within consumers. This questionnaire will only take 4 to 5 minutes to complete.

Before continuing with the questions, we would like you to please read the following guidelines carefully:

- The data collection process will follow GDPR guidelines. This means that all the information we collect will remain confidential.

- For this study, participants should be 18 or older. If this is not the case, please refrain from answering the survey.

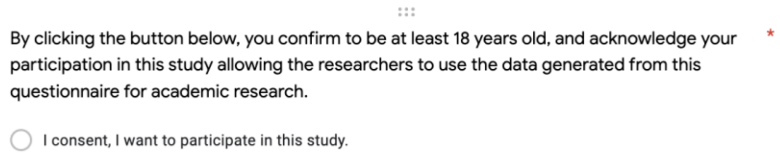
- The data will only be used for research purposes and, once completed, the survey responses will be destroyed.

-You may withdraw from the study at any point, no reasons are needed and no penalizations will be encountered.

If you have any questions or comments regarding the present research, You can contact us at:

Louelle Tameu (lo5217ta-s@student.lu.se)
Yimei Xie (yi3260xi-s@student.lu.se)

P.S.: This survey contains a completion code for SurveySwap.io.



By clicking the button below, you confirm to be at least 18 years old, and acknowledge your participation in this study allowing the researchers to use the data generated from this questionnaire for academic research. *

○ I consent, I want to participate in this study.

Part A

1. What is your gender?

○ Male
○ Female
○ Non-binary
○ Prefer not to say
○ Other

2. What is your age?

○ 18-25
○ 26-35
○ 36-45
○ 45 above

3. What is the highest degree or level of education you have received?

○ High school diploma or equivalent
○ Bachelor's degree
○ Master's degree
○ Doctoral degree
○ Other

4. Where are you from?

○ Europe
○ North America
○ South America
○ Africa
○ Asia
○ Australia
○ Other

5. What is 2+2?

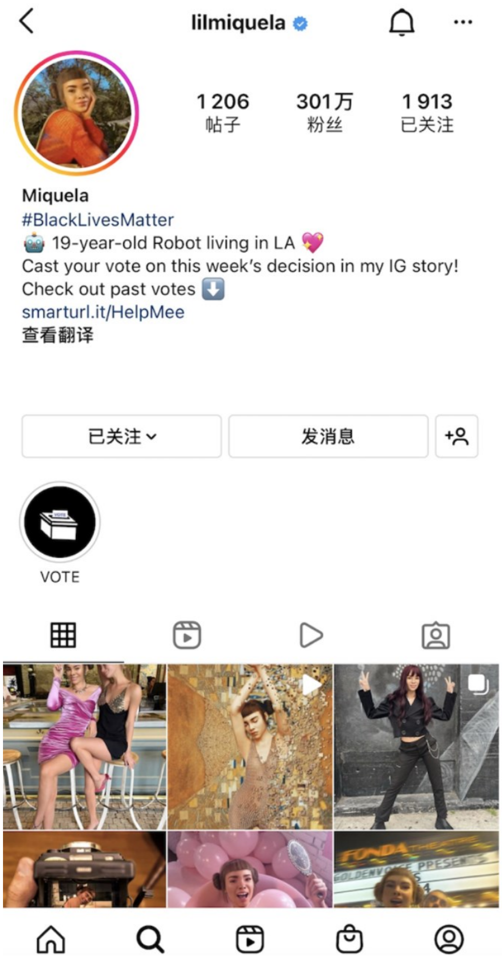
Part B Introducing Lil Miquela

Virtual influencers are digital characters that are solely created and consumed online. Today virtual influencers can be found on social media platforms like Instagram where they are seen sharing their day to day activities.

To start, we will now show you the first ever made social media virtual influencer. Her name is Lil Miquela, a 19-year old American female created by Brud, a small-scale media agency based in Los Angeles. As of today, Lil Miquela has earned over 3.1 million followers on Instagram, working as an influencer, musician, social activist and model.

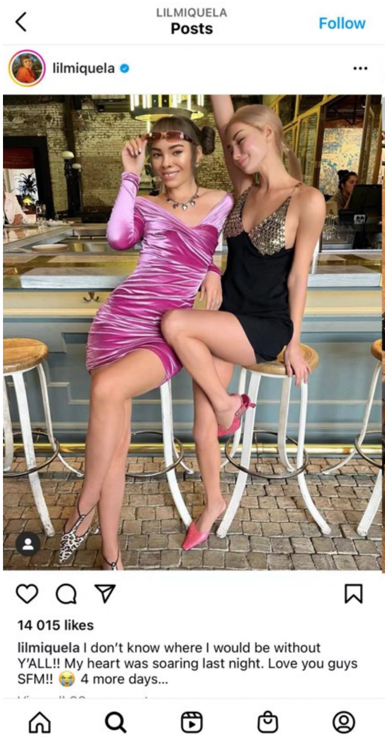
Please take your time examining the posts.

Lil Miquela' s Instagram profile:



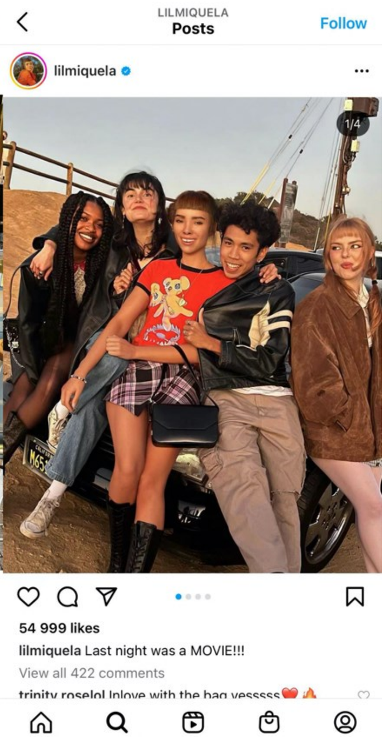
Miquela
#BlackLivesMatter
19-year-old Robot living in LA
Cast your vote on this week's decision in my IG story!
Check out past votes
smarturl.it/HelpMee
查看翻译

Hanging out with friends:


LILMIQUELA
Posts
Follow
lilmiquela

14 015 likes

lilmiquela I don't know where I would be without Y'ALL!! My heart was soaring last night. Love you guys SFM!! 😭 4 more days...


LILMIQUELA
Posts
Follow
lilmiquela
1/4

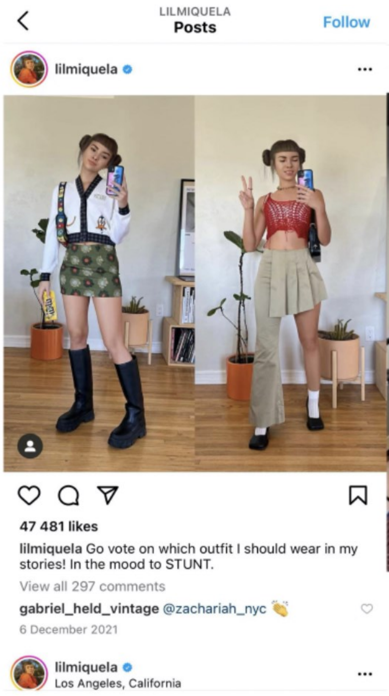
54 999 likes

lilmiquela Last night was a MOVIE!!!

View all 422 comments

trinity roselol Inlove with the bag yesssss❤️🔥

Interacting with fans and singing:


LILMIQUELA
Posts
Follow
lilmiquela

47 481 likes

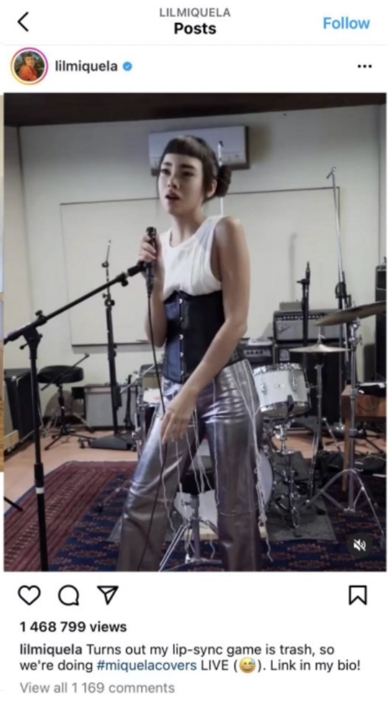
lilmiquela Go vote on which outfit I should wear in my stories! In the mood to STUNT.

View all 297 comments

gabriel_held_vintage @zachariah_nyc 👏

6 December 2021

lilmiquela
Los Angeles, California

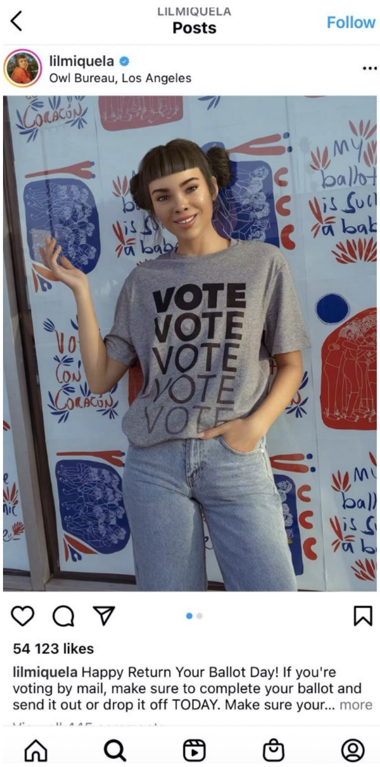

LILMIQUELA
Posts
Follow
lilmiquela

1 468 799 views

lilmiquela Turns out my lip-sync game is trash, so we're doing #miquelacovers LIVE (😅). Link in my bio!

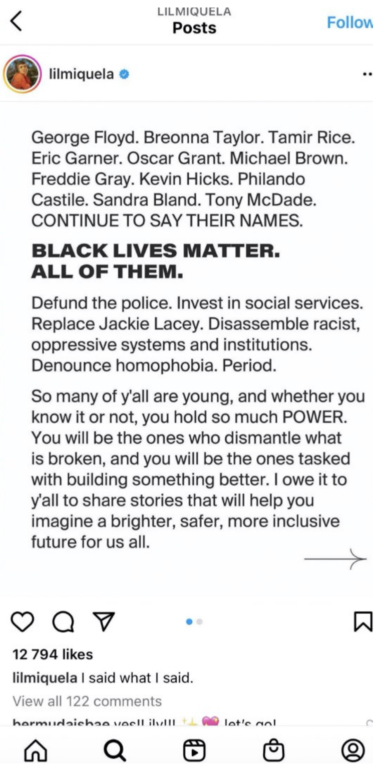
View all 1 169 comments

Devotion to social activities:


LILMIQUELA
Posts
Follow
lilmiquela
Owl Bureau, Los Angeles
VOTE VOTE VOTE VOTE VOTE

54 123 likes

lilmiquela Happy Return Your Ballot Day! If you're voting by mail, make sure to complete your ballot and send it out or drop it off TODAY. Make sure your... more


LILMIQUELA
Posts
Follow
lilmiquela

George Floyd. Breonna Taylor. Tamir Rice. Eric Garner. Oscar Grant. Michael Brown. Freddie Gray. Kevin Hicks. Philando Castile. Sandra Bland. Tony McDade. CONTINUE TO SAY THEIR NAMES.

BLACK LIVES MATTER. ALL OF THEM.

Defund the police. Invest in social services. Replace Jackie Lacey. Disassemble racist, oppressive systems and institutions. Denounce homophobia. Period.

So many of y'all are young, and whether you know it or not, you hold so much POWER. You will be the ones who dismantle what is broken, and you will be the ones tasked with building something better. I owe it to y'all to share stories that will help you imagine a brighter, safer, more inclusive future for us all.

12 794 likes

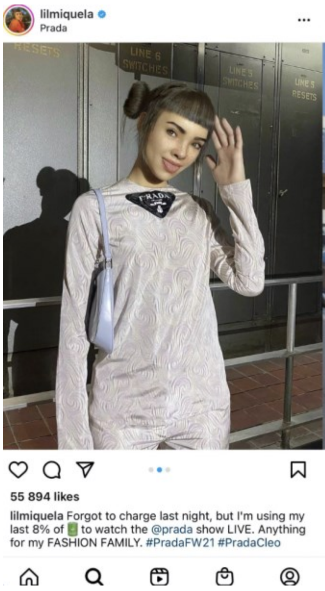
lilmiquela I said what I said.

View all 122 comments

Collaboration with fashion brands and magazines

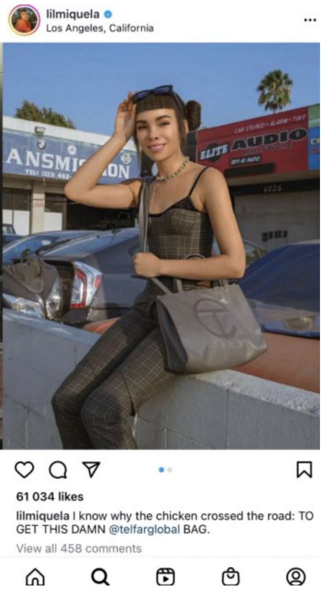
Lil Miquela has worked with high-end designers and fashion brands to endorse their products, shot the cover of multiple magazines and attended fashion events.

Please take your time examining the posts.


lilmiquela
Prada

55 894 likes

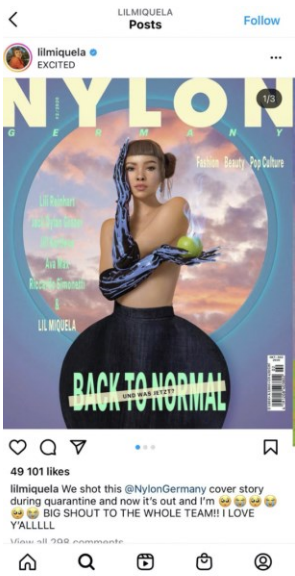
lilmiquela Forgot to charge last night, but I'm using my last 8% of 🔋 to watch the @prada show LIVE. Anything for my FASHION FAMILY. #PradaFW21 #PradaCleo


lilmiquela
Los Angeles, California

61 034 likes

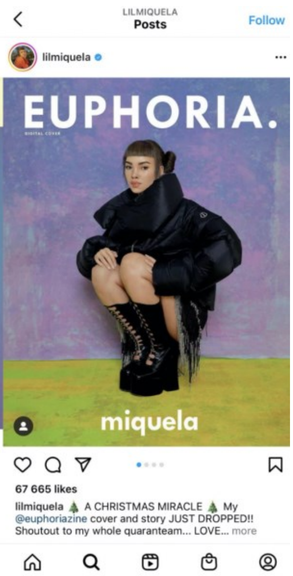
lilmiquela I know why the chicken crossed the road: TO GET THIS DAMN @telfarglobal BAG.

View all 458 comments


LILMIQUELA
Posts
Follow
lilmiquela
EXCITED
NYLON
GERMANY
1/3
Fashion Beauty Pop Culture
LIL MIQUELA
BACK TO NORMAL
UND WAS JETZT?

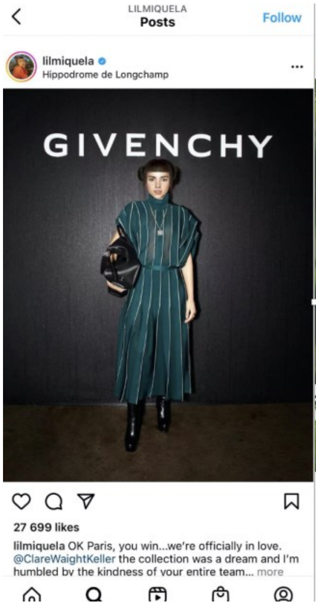
49 101 likes

lilmiquela We shot this @NylonGermany cover story during quarantine and now it's out and I'm 🥺😭🥺😭🥺😭 BIG SHOUT TO THE WHOLE TEAM!! I LOVE Y'ALLLLL


LILMIQUELA
Posts
Follow
lilmiquela
EUPHORIA.
DIGITAL COVER
miquela

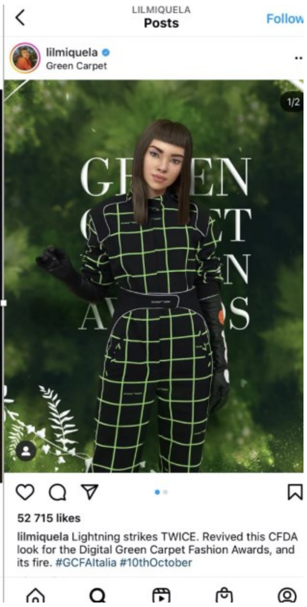
67 665 likes

lilmiquela 🎄 A CHRISTMAS MIRACLE 🎄 My @euphoriazine cover and story JUST DROPPED!! Shoutout to my whole quaranteam... LOVE... more


LILMIQUELA
Posts
Follow
lilmiquela
Hippodrome de Longchamp
GIVENCHY

27 699 likes

lilmiquela OK Paris, you win...we're officially in love. @ClareWaightKeller the collection was a dream and I'm humbled by the kindness of your entire team... more


LILMIQUELA
Posts
Follow
lilmiquela
Green Carpet
1/2

52 715 likes

lilmiquela Lightning strikes TWICE. Revived this CFDA look for the Digital Green Carpet Fashion Awards, and its fire. #GCFAltalia #10thOctober

The influencer's perceived credibility

So now that you have seen the Instagram posts from Lil Miquela, I would like to ask you some questions about how you perceive the influencer in terms of attractiveness, expertise and trustworthiness.

Please indicate the extent to which you agree or disagree with the following statements.

6. I think Lil Miquela is attractive.
7. I think Lil Miquela is beautiful.
8. I think Lil Miquela is charismatic.
9. I think Lil Miquela is good-looking.
10. I think Lil Miquela is dependable.
11. I think Lil Miquela is sincere.
12. I think Lil Miquela is honest.
13. I think Lil Miquela is trustworthy in what she says.
14. I think Lil Miquela is reliable.
15. I think Lil Miquela is an expert in fashion and style.

16. I think Lil Miquela is knowledgable in fashion and style.
17. I think Lil Miquela is experienced in fashion and style.
18. I think Lil Miquela has a good understanding of fashion and style.
19. I think Lil Miquela is qualified in fashion and style.

Taste-Leadership

Please indicate the extent to which you agree or disagree with the following statements regarding whether you perceive Lil Miquela to be a trend-setter.

21. I think Lil Miquela takes the lead in sharing what looks good with her followers through Instagram.
22. I think Lil Miquela is one of the first people to find the newest trends and designs.
23. I think the brands or products that Lil Miquela wears or uses show her good taste.

Purchase Intention

Please indicate the extent to which you agree or disagree with the following statements regarding your intention to purchase products/services advertised by Lil Miquela.

24. I think in the future, I would purchase the products or brands that Lil Miquela endorsed or posted on her Instagram.
25. I think in the future; I would recommend my friends to buy products or brands that Lil Miquela endorsed or posted on her Instagram.