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Virtual Influencers and Luxury Brands: How Perceived Humanness, Attractiveness, and Credibility Shape Consumer Attitudes

School of Management

MSc in Strategic Marketing

MSc Thesis

Academic Year: 2023 - 2024

Supervisor: Dr. Marwa Tourky

September 2024

School of Management

Strategic Marketing

MSc

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This thesis is submitted in partial fulfilment of the requirements for the degree of Master

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- the thesis submitted has been written by me alone.
- the thesis submitted has not been previously submitted to this university or any other.
- that all content, including primary and/or secondary data, is true to the best of my knowledge.
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Abstract

Purpose: This study aims to explore the impact of perceived humanness, perceived attractiveness, and source credibility of virtual influencers (VIs) on consumer brand attitudes in the luxury sector. With the growing trend of using VIs for branding, particularly in luxury fashion, this research delves into how these factors influence consumer behaviour and perceptions of luxury brands.

Design/Methodology/Approach: The research adopts a deductive quantitative approach, using a questionnaire-based survey distributed via Qualtrics from July 26 to August 9, 2024. Effective data was collected from 128 respondents across Europe and Asia, aged 18 and above. The survey included variables measuring perceived humanness, perceived attractiveness, and source credibility, and brand attitude, employing a cross-sectional research design.

Findings: The analysis revealed a significant positive correlation between perceived humanness and both attractiveness and source credibility. The findings suggest that enhancing human-like features in VIs increases their attractiveness and credibility, which, in turn, positively impacts brand attitudes.

Contribution: This study extends research on digital influencers by examining the role of perceived humanness in luxury branding. It highlights the potential of VIs in the luxury sector, demonstrating how the careful crafting of human-like traits can enhance brand perceptions and emotional connections with consumers.

Implications: The findings offer valuable insights for luxury brand marketers into how VIs can be strategically designed to optimise consumer engagement and trust.

Keywords:

Virtual Influencer, Perceived Humanness, Source Credibility, Attractiveness, Brand Attitude, Luxury Brand

Acknowledgements

Completing this one-year master's course has been the most challenging year for me, but also the most cherished time of my life. During this year, I have met so many supportive colleagues who have now become my best friends. I was incredibly lucky to have Dr. Marwa as my thesis supervisor, guiding me in exploring new academic areas. I am also deeply grateful to Dr. Tina, who taught us invaluable and practical analytical skills.

Moreover, I could not have survived this most difficult year without the support of my mother and my wonderful flatmates—especially you, Tim, the love of my life.

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List of Abbreviations

SMI(s)   Social Media Influencer(s)

CAGR   Compound Annual Growth Rate

VI(s)   Virtual Influencer(s)

VTuber   Virtual YouTuber

AI   Artificial Intelligence

HI(s)   Human Influencer(s)

CGI   Computer-Generated Imagery

WOM   Word-Of-Mouth

SMIV   Social Media Influencer Value

EFA   Exploratory Factor Analysis

CFA   Confirmatory factor analysis

1 Chapter 1: Introduction

1.1 Introduction

Chapter One serves as an introduction to the dissertation. It begins by detailing the research background and significance about visual influencers (VIs), providing a comprehensive foundation for understanding the importance of the study within the field. Following this, it addresses the specific research problems, outlining the objectives and questions that this research seeks to resolve. To provide a practical and theoretical impact, the potential contributions of the dissertation are discussed, linking back to the research objectives and questions. Subsequently, the chapter concludes by detailing the research methods employed in the study, ensuring a robust approach to data collection and analysis. Finally, the overall structure of the dissertation is outlined, providing a clear guide to the layout of the upcoming chapters.

1.2 Research Background and Importance

1.2.1 Background of Social Influencer Marketing

The rise of social media has led to a trend in influencer marketing, a strategy in which brands collaborate with social media influencer (SMI) to engage their followers (Leung et al., 2022). This approach aims to leverage the SMI's organic traffic to enhance brand awareness and customer engagement (Chen & Yuan, 2019). Many scholars attribute the success of SMI to high perceived attractiveness and source credibility (Munnukka et al., 2019; Reinikainen et al., 2020; Sakib et al., 2020), as demonstrated by Fink et al. (2020), who show that it significantly boosts positive consumer perceptions. According to a report conducted by Statista (2024) on influencer advertising, the worldwide market for SMI is projected to expand at a Compound Annual Growth Rate (CAGR) of 10.36% between 2024 and 2028, culminating in an estimated market size of US$52.05 billion by the end of 2028.

Meanwhile, advancements in connectivity, portability, and digitalisation have led to unparalleled levels of interaction between humans and virtual agents (Arsenyan & Mirowska, 2021). In the context of SMI, the technology of artificial

intelligence (AI) has led to the emergence of VIs, digital personas that engage with audiences and build brand partnerships (Forbes Agency Council, 2024; Thomas & Fowler, 2021). Since 2016, VIs have entered the market with the 'virtual YouTuber (VTuber)' trend where virtual characters and avatars are hosting in YouTube videos and live streaming (Lou et al., 2023; Xin Zhou, 2020). Furthermore, based on another report by Statista (2023), the market value of AI is projected to surge to almost US$740 billion by 2030, impacting a broad range of sectors, such as media and marketing.

Recent studies have shown that VIs can generate positive branding benefits similar to those of human endorsers (Thomas & Fowler, 2021) in several key aspects. First, followers develop intimate associations with HIs and VIs through parasocial communications, which are influenced by perceived attractiveness as an emotional response (Stein et al., 2022). Second, VIs can be as effective as human influencers (HIs) to some extent, as their perceived credibility evokes a cognitive response similar to the spill-over effect from consumers' experience with other AI recommendation systems, making consumers more open to VIs' recommendations (Sands et al., 2022). Most importantly, both HI and VI form effective brand partnerships and are used by brands for advertisements and product endorsements, leveraging their large follower bases to enhance brand attitude (Breves et al., 2019; Djafarova & Rushworth, 2017).

1.2.2 Background of VIs in Luxury Brands

VIs, as synthetic entities in the digital realm, represent a dynamic combination of AI and SMI culture. Following this trend, Coach introduced the 'Find Your Courage' campaign in 2024, featuring imma (@imma.gram), Japan's first VI and model (Virtual Humans, 2019), alongside well-known celebrities and SMIs such as Lil Nas X, Camila Mendes, Youngji Lee, Kōki, and Wu Jinyan. The campaign blends physical and virtual worlds to showcase the Coach Spring collection and encourages self-expression and exploration of identity. According to Coach's Global Chief Marketing Officer, imma embodies the campaign's spirit by illustrating the integration of AI-driven virtual figures with the impactful presence of renowned cultural icons (Marcel, 2024).

The presence of VIs has strengthened as more luxury brands, including Prada, Dior, and Louis Vuitton, have begun using them due to the potentially better effects brought in by these virtual endorsers. A report indicates that followers engage more with VI-generated content. For example, Bermuda, who partners with Chanel, has an engagement rate of 7.29% (Baklanov, 2019). Another study provides evidence that VIs can be more effective brand ambassadors for mature brands to boost positive brand attitude, as brands can take advantage of the futuristic or trendy image of these virtual figures (Lou et al., 2023; Sands et al., 2022).

1.3 Research Problem

The increasing use of VIs in the luxury brand industry poses important questions about the factors influencing consumer attitudes towards these visual entities. Although VIs are crafted to exhibit human-like characteristics, the extent to which perceived humanness affects consumer brand attitudes remains insufficiently explored. Additionally, the underlying processes through which perceived humanness influences these attitudes—specifically whether it operates through emotional responses such as attractiveness or cognitive evaluations like source credibility—are not fully understood. Therefore, the research problem focuses on examining the direct impact of perceived humanness on consumer brand attitudes and the mediating roles of attractiveness and source credibility in this relationship. This investigation aims to clarify how the design of VIs can effectively influence consumer perceptions in the context of luxury branding.

1.4 Research Aims and Objectives

The primary aim of this research is to explore the influence of the perceived humanness of VIs on consumers' brand attitudes towards luxury brands. Additionally, the study seeks to examine the mediating roles of attractiveness and source credibility, conceptualised as an emotional response and a cognitive response respectively, within this relationship.

To achieve this aim, the following objectives have been established:

1. To investigate whether the perceived humanness of a VI positively impacts consumers' brand attitudes towards a luxury brand.
2. To evaluate the effect of the perceived humanness of a VI on consumers' perceptions of the VI's attractiveness.
3. To assess the effect of the perceived humanness of a VI on consumers' perceptions of the VI's source credibility.
4. To explore the mediating role of attractiveness, as an emotional response, in the relationship between perceived humanness and brand attitude.
5. To examine the mediating role of source credibility, as a cognitive response, in the relationship between perceived humanness and brand attitude.

1.5 Research Questions

Given the research aim and objectives, the following research questions have been proposed.

RQ1: How does the perceived humanness of VIs influence consumers' brand attitudes towards luxury brands?

RQ2: How does the perceived humanness of a VI affect consumers' perceptions of attractiveness towards the VI?

RQ3: How does the perceived humanness of a VI affect consumers' perceptions of source credibility towards the VI?

RQ4: Does attractiveness, as an emotional response, mediate the relationship between perceived humanness and brand attitude?

RQ5: Does source credibility, as a cognitive response, mediate the relationship between perceived humanness and brand attitude?

1.6 Research Methods

The present study will adopt a deductive research approach, based on the principles of positivist philosophy. To ensure that concepts are clearly operationalised, allowing for the measurement and quantification of empirical

data, a mono-method quantitative research strategy will be implemented. This will involve the meticulous design and execution of an online questionnaire survey, which is projected to have 120 respondents, serving as the primary method for data collection from online users. The survey is crafted to examine the dynamics among four key variables: virtual influencers, brand attitude, attractiveness, and source credibility. For the analysis of the collected data, this study will employ SPSS to conduct an in-depth examination of the descriptive statistics.

1.7 Contribution

This study advances the understanding of how perceived humanness, attractiveness, and source credibility interact to influence brand attitudes within the context of VIs in luxury branding. By integrating key theories such as the Media Equation theory, the Uncanny Valley theory, and the Source Credibility Model, the research demonstrates that VIs, when designed with appropriate levels of perceived humanness, can positively impact consumer perceptions and brand attitudes. The study also highlights the mediating roles of attractiveness and source credibility, providing nuanced insights that contribute to the broader field of marketing and consumer behaviour. This comprehensive exploration offers a valuable framework for future research on the effectiveness of VIs in the luxury market.

Practically, the findings from this research will provide digital marketers and advertising professionals with crucial insights into the effective utilisation of VIs in luxury brand campaigns. This knowledge could potentially redefine best practice approaches within the industry, enhancing the competitive edge of brands that leverage innovative advertising strategies. Additionally, the results will offer actionable guidance for marketing managers seeking to understand the evolving dynamics of influencer marketing and exploit the intersection of advanced technology and consumer engagement in the luxury market segment.

1.8 Summary

The dissertation consists of five chapters, which are summarised in the table below.

Table 1 Dissertation Outline

Chapter	Brief Description
Chapter 1: Introduction	The opening chapter introduces the research background and provides the rationale for undertaking the study. It also presents the research objectives and questions, along with the potential contributions of the dissertation.
Chapter 2: Literature Review	This chapter elaborates on the findings by reviewing literature on VIs and other crucial variables in this dissertation, while exploring the potential relationship in the context of luxury branding. The conceptual framework is presented, subsequently leading to the formulation of hypotheses.
Chapter 3: Methodology	Chapter 3 outlines the research approaches, methodological choices, and data collections, all of which are guided by the research philosophy established at the outset.
Chapter 4: Data Analysis	Data analysis is elaborated in Chapter 4, where statistical interpretation reveals the research findings.
Chapter 5: Discussion and Conclusion	In the final chapter, in-depth discussions of the insightful findings from Chapter 4 are presented to answer the research questions introduced earlier. This is followed by the implications for future research and managerial scenarios, the research limitations, and a conclusion that ties the entire research together.

2 Chapter 2: Literature Review

2.1 Introduction

Chapter Two aims to provide a comprehensive review of the current literature on the role of perceived attractiveness and source credibility in luxury branding with virtual influencers (VIs). Chapter One established the importance of these factors, and here dive deeper to pinpoint gaps that deserve further investigation. Initially, each variable will be explored individually, including consumer's attitude toward luxury brands, attractiveness, and source credibility. The chapter will then propose a theoretical framework illustrating hypothesised relationships, such as the relationship between these variables and the adoption of VIs by luxury brands, and the mediating roles of attractiveness and source credibility in brand attitude. Finally, the chapter will systematically discuss hypotheses H1-5 within this framework, emphasising the relevance to luxury branding with VIs.

2.2 Background of VIs

2.2.1 Technology Adoption on VIs

Historically, virtual characters were created through sophisticated computer-generated imagery (CGI), which initially popularised in Hollywood by directors such as James Cameron with movies like Avatar. This technology has expanded beyond movies to influence content on social media (GRIN, 2021). Given this context, VIs now refer to CGI characters who exhibits human-like traits and personalities, engaging in interactions on social media much like their human counterparts (Jhawar et al., 2023; Lou et al., 2023; Thomas & Fowler, 2021).

VIs leverage a range of modern technologies, especially AI, to interact people and the ultimate goal is to influence consumers' attitudes toward brands. Natural language processing helps understand text from social media, while image recognition analyses consumer attitude and brand sentiment (Kietzmann et al., 2018). This information, combined with insights from speech recognition, allows advertisers to generate more sophisticated content and appealing images that can better resonate with consumers (Thomas & Fowler, 2021). Machine learning enables VIs to continuously improve and personalise posts, making them

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effective at increasing brand attitude (Liu, 2019). As the boundary between human and bot behaviours blurs, the influence of VIs is further enhanced, making them a valuable investment for brands to consumer behaviours (Lee & Ham, 2023; Lou et al., 2023; Sands et al., 2022).

2.2.2 VIs as Endorsers

In the past, the celebrity endorsement strategy was viewed as a double-edged sword. While a successful endorser could significantly enhance brand recall in a complex marketing environment, any scandal involving the endorser could severely damage the reputation of the endorsed brand (Thomas & Fowler, 2021).

However, adopting VIs as brand endorsers presents several advantages: brands can finely control the message and appearance of VIs, leading to enhanced engagement and appeal, especially among younger demographics who are more open to adopting new technologies (Behrooz, 2023). Moreover, a recent survey revealed that more than half of the respondents follow at least one VI on social media platforms (Influencer Marketing Factory, 2022), indicating the growing acceptance of VIs among individuals.

Despite their advantages, VIs are CGI creations from their origins, imitating human behaviours with either cartoonish or realistic appearances (Ahn et al., 2022; Sands et al., 2022), so this may lead to consumer scepticism where some individuals may question the credibility behind a VI's endorsements. Some consumers find VIs to be innovative and attractive, while others perceive them as lacking the trustworthiness and expertise compared to human influencers (HIs).

2.2.3 VIs in Luxury Brands

The definition of luxury is particularly elusive and significantly depends on individual perceptions, context, and circumstances (Franck & Lester W., 2004). According to Chevalier & Mazzalovo (2012), a luxury brand is characterised by its selectiveness and exclusivity, offering consumers additional creative and emotional value. More than other brands, luxury brands must captivate consumers' imaginations and offer rich experiences filled with emotion and pleasure (Chevalier & Mazzalovo, 2012, p. 14). This need arises from their

inherent requirement to maintain a sense of exclusivity. As creations born from creative imagination and AI technology, VIs illustrate this idea by representing futuristic visions and unique ways of interacting with audiences. This focus aligns with the research aim to explore the potential role of VIs in enhancing brand perception within the luxury market.

The luxury fashion industry has increasingly embraced VIs as a novel marketing strategy. Prada, for instance, featured the virtual character Candy in their 2022 campaign, leveraging her digital appeal to connect with younger audiences (Chitrakorn, 2021). Similarly, Balmain created a 'virtual army' of digital models, including Shudu, Margot, and Zhi, to showcase their collection, demonstrating a bold step into the digital realm (Cresci, 2018). A study by Baklanov (2022) found that VIs, on average, have three times more engagement than HIs. However, the same study noted that only 35% of marketers believe VIs are effective for luxury brands, suggesting a disconnect between engagement metrics and perceived brand value. This mixed reception highlights the ongoing debate and uncertainty within the industry regarding the true effectiveness of VIs in luxury branding. Therefore, this research aims to shed light on whether these digital personas can truly enhance or detract from brand attitudes.

2.3 Perceived Humanness

2.3.1 Definition and Dimensions

Perceived humanness in this research refers to the subjective perception and judgement of consumers towards VIs, encompassing five different aspects, such as **sense of life**, **sense of reality**, **type of movement**, **human-likeness**, and **perceived lifespan** (Ho & MacDorman, 2017). Although current academic literature lacks a clear and universally accepted definition of perceived humanness, this concept determines how consumers perceived and interact with VIs, affecting their emotional and cognitive responses.

One important framework for analysing these perceptions and interactions is the Uncanny Valley, which is a hypothetical graph describing a nonlinear relation between the perceived degree of human likeness and the emotional response of

human perceivers (Ho & MacDorman, 2010; Mori, 1970). This graph, as presented in Figure 1, indicates that characters with increasingly human-like appearances (x-axis) are perceived as more likeable (y-axis) up to a certain point, beyond which their almost-human imperfections become discomforting to people (Arsenyan & Mirowska, 2021; Bartneck, Kanda, et al., 2009; Cohn et al., 2023). The perceived humanness of these characters significantly influences people's emotional responses, contributing to the overall perception of likeability or discomfort. This dip in appraisal marks the start of the uncanny valley. As characters near complete human likeness, they rise out of the valley, and people once again feel at ease with them (Ho & MacDorman, 2010). This is particularly important for VIs, as they need to be designed to look human-like without triggering the discomfort associated with the uncanny valley.

Figure 1 Uncanny Valley Hypothetical Graph
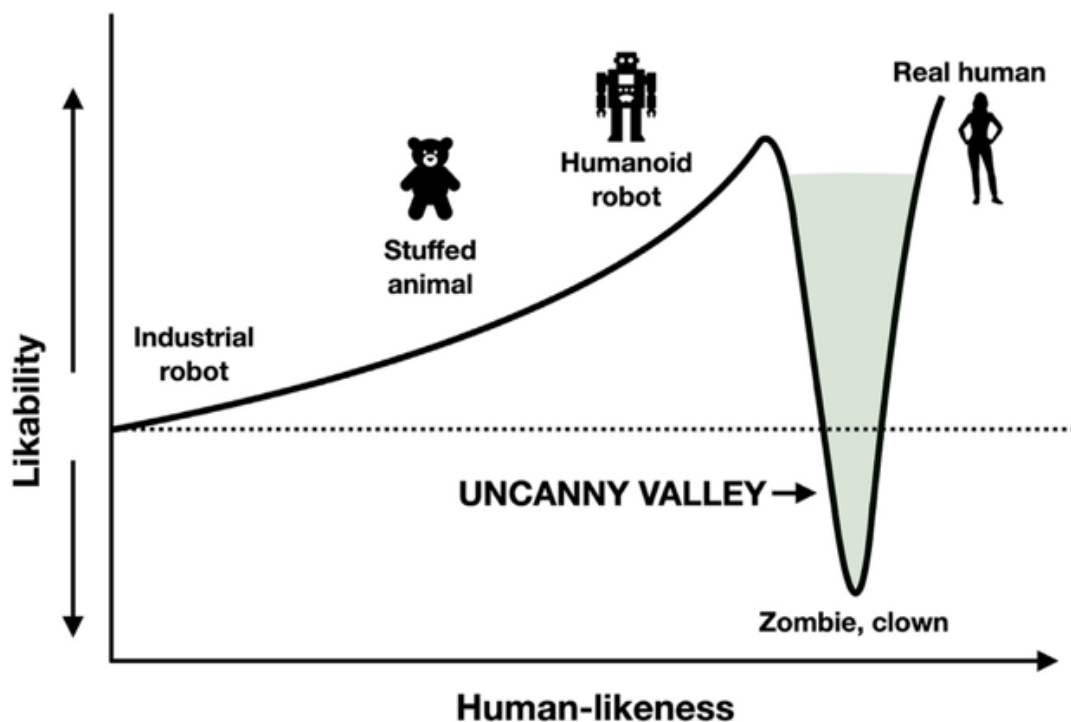
Ref: Originally Proposed by Mori (1970). This graph is adopted from Cohn et al. (2023)

On the other hand, with regard to interpersonal theory, Shechtman & Horowitz (2003) found that reactions of individuals varied depending on whether they

believed they were interacting with a computer or a human (Arsenyan & Mirowska, 2021). Specifically, people would put more effort into the interaction when they thought they were talking to a human character. This finding highlights the influence of perceived humanness on cognitive responses, suggesting that perceived interactions with VIs can significantly shape how consumers process information and subsequently affect their attitudes towards the brand being promoted.

Therefore, understanding perceived humanness and its dimensions is essential for optimising the design and application of VIs in luxury brand marketing. By carefully balancing the aspects of **sense of life**, **sense of reality**, **type of movement**, **human-likeness**, and **perceived lifespan**, marketers can mitigate the negative emotional responses associated with the Uncanny Valley and shape the positive cognitive responses of consumers to enhance brand attitude.

2.3.2 Measurement Scale

Previous scholars have been working on potential benchmarks of the measurement of perceived human likeness in the Uncanny Valley theory. For example, the Godspeed questionnaire developed by Bartneck, Kulić, et al. (2009) consists of five indices with 24 semantic differential items. Among these, the anthropomorphism index in the questionnaire, which includes five items, is used to measure the perceived degree of human likeness.

However, by empirically testing the five indices in the Godspeed questionnaire as a group for overall reliability and validity, Ho & MacDorman (2010) found that anthropomorphism was highly significantly correlated with the other three dimensions, which suggested that four out of the five indices in the Godspeed questionnaire were measuring the same concept. Additionally, the likeability index in the Godspeed scale failed to accurately reflect people's negative reactions to human-like characters that fell into the Uncanny Valley.

On that account, Ho & MacDorman (2010) initially developed an alternative set of the Uncanny Valley indices for measuring human perceptions of anthropomorphic characters, effectively evaluating six relatively independent

individual attitudes. Consequently, they improved their indices in 2017, incorporating five semantic differential items: **inanimate–living**, **synthetic–real**, **mechanical movement–biological movement**, **human-made–humanlike**, and **without definite lifespan–mortal** (Ho & MacDorman, 2017), which are matched with the five aspects of perceived humanness respectively. In this research, Ho & MacDorman's alternative indices of the Uncanny Valley are adopted because their internal reliability has been demonstrated to be high, and these five indices not only measure their intended concepts well but are also decorrelated from each other.

2.4 Brand Attitude

2.4.1 Definition and Dimension

Brand attitude is defined as an individual's internal evaluation of a brand, involving subjective and relatively enduring judgements towards the brand and representing a unidimensional internal state that influences consumer behaviour (Mitchell & Olson, 1981, p. 318; Surendra et al., 2004). According to Keller (1993), brand attitudes are determined by the relevance and importance of a brand's benefits and attributes, which serve as a basis for consumer behaviour. This concept has been widely adopted in various studies. For example, Jhamb et al. (2020) used it to explore the multidimensional experiences and attitudes of young shoppers in India towards luxury consumption, highlighting its applicability in different cultural contexts. In this study, brand attitude is crucial as it reflects how the perceived humanness of VIs can shape consumers' comprehensive attitudes towards luxury brands. As suggested by the Media Equation theory, which posits that individuals tend to interact with media, including virtual characters, as they would with real people (Reeves & Nass, 1996), the perceived humanness of VIs is likely to significantly impact these brand attitudes.

Meanwhile, brand attitude serves as a summary evaluation of the brand, integrating both emotional and cognitive responses (Surendra et al., 2004). Emotional responses, which refers to attractiveness in this research, are affective states or feelings generated in response to an advertising message, while cognitive responses, like source credibility in this study, involve rational

evaluations and judgements of the characteristics of the endorser (Chen & Yuan, 2019). In studying the perceived humanness of VIs on luxury brand attitudes, this evaluative approach helps understand how consumers integrate emotional and cognitive reactions to form a comprehensive attitude towards luxury brands.

2.4.2 Measurement Scale

In choosing a reliable scale to measure brand attitudes, while the ABC model of attitude — which includes affective, behavioural, and cognitive dimensions — proposed by Ostrom (1969) is widely accepted, the unidimensional approach is chosen ultimately because it aligns more effectively with the objectives of this research.

The unidimensional approach is particularly fitting for this research due to several reasons. First, the primary focus of this study is to examine the perceived humanness of VIs and its impact on luxury brand attitudes, rather than exploring the complex interrelationships between different dimensions of attitudes. Second, the target population for this study includes a diverse range of consumers with varying levels of exposure to VIs and luxury brands, making a straightforward measurement approach more effective. Lastly, the research design involves limited time and resources, thus a unidimensional scale provides a practical and efficient means to gather and analyse data.

Therefore, brand attitude in this study was measured using a five-item semantic differential scale developed by Yoo & Donthu (2001) and validated by Surendra et al. (2004). This scale consists of five semantic differential items: **unappealing–appealing**, **bad–good**, **unpleasant–pleasant**, **unfavourable–favourable**, and **unlikable–likable**. This scale is suitable for measuring luxury brand attitudes because it effectively captures the overall evaluative attitude towards the brand, aligning with the unidimensional approach adopted in this study. For example, Yim et al. (2014) successfully applied this scale to examine the cross-national impact of cultural orientation on attitudes toward luxury brands, demonstrating its utility in predicting consumer susceptibility to normative interpersonal influence.

2.5 Conceptualisation of Mediating Variables

2.5.1 Attractiveness

Perceived attractiveness of an endorser is typically defined as the extent to which an individual is considered aesthetically pleasing or appealing by others (Ohanian, 1990). McGuire (1985) identified attractiveness as a hypothesised dimension of source attributes in the source attractiveness model, which originates from social psychological area. In social psychology, attractiveness is viewed as a fundamental factor in the formation of relationships. In social psychology, attractiveness is viewed as a fundamental factor in the formation of relationships, while in the context of social media influencers, attractiveness is considered a form of social capital (Kim & Park, 2023). Attractive endorsers are often perceived as more personable and competent, leading to more favourable consumer perceptions of the products or brands they endorse (Amos et al., 2008)

Perceived attractiveness can play a significant role in the appeal of SMIs and their endorsements have the potential to strengthen the emotional connection between consumers and luxury brands (Kim & Park, 2023). When it comes to VIs, appearing human-like is crucial to enhance attractiveness in luxury branding, both physically and facially (Boissieu & Baudier, 2023; Oh et al., 2018). However, according to the Uncanny Valley theory (Mori, 1970), there is a threshold where VIs that are almost, but not perfectly, human-like can evoke feelings of discomfort or eeriness, which can negatively impact their attractiveness. Therefore, achieving the right balance of human-likeness is essential. Furthermore, brands can meticulously adjust every detail of a VI's appearance and outfit, ensuring precise control over the conveyed message (Behrooz, 2023), which significantly enhances their attractiveness in advertisements. This study investigates how perceived humanness of virtual influencers influences their perceived attractiveness and, in turn, how this attractiveness, as an emotional response, mediates the relationship between perceived humanness and brand attitude in the context of luxury brands.

2.5.2 Source Credibility

Source credibility, in this research, is understood as the perceived credibility of a source of information by an individual (Boissieu & Baudier, 2023; Ohanian, 1990), which inherently categorises it as a form of cognitive response. Credibility essentially refers to the tendency to believe or trust an individual (Andrews & Shimp, 2017). In advertisements, 'source credibility' is a term commonly used to denote the positive attributes of an information source, such as an endorser, that are perceived as credible by the target audience in order to gain objective knowledge about the product or service being promoted (Djafarova & Rushworth, 2017; Ohanian, 1990). Interpersonal Theory suggests that human interactions are strongly influenced by perceptions of credibility, trust, and expertise, which are foundational to forming positive relationships (Shechtman & Horowitz, 2003). Applying this to the terms of the source's effectiveness in SMI, source credibility has become a key factor in the process of persuasion, contributing to the impact on consumer attitudes and behaviours. For example, Belanche and his associates (2021) conducted a study demonstrating that perceived credibility is able to foster positive attitudes and behavioural responses to the influencer, which also emphasises the importance of 'source credibility' in enhancing the effectiveness of VI marketing in advertisements.

Hovland & Weiss (1951) identified two critical elements contributing to the perceived credibility of a communicator: trustworthiness and expertise. Trustworthiness encompasses not only the concept itself but also includes the perceived dependability, honesty, reliability, and sincerity of an endorser, which together contribute to the target audience's confidence in the endorser's intent to convey valid and truthful assertions (Erdogan, 1999; Ohanian, 1990). That is, brands leverage the importance of trustworthiness by choosing endorsers who are universally perceived as trustworthy, dependable, honest, reliable, and sincere. Expertise can be summarised as the degree to which an endorser is perceived to possess experience, knowledge, qualification, or skills relevant to a specific topic, making them a credible source of valid assertions (Andrews & Shimp, 2017; Hovland & Weiss, 1951). Previous researchers, such as Hovland & Weiss and Ohanian , found that the persuasiveness of an endorser depends

more on the audience's perception of the endorser's expertise than on the endorser's actual expertise. In the context of SMI, influencer-generated advertisements tend to have more organic and authentic engagement (Chen & Yuan, 2019) because consumers are inclined to trust influencers who live closer to ordinary people and generally have expertise in specific areas (Djafarova & Rushworth, 2017). In sum, trustworthiness and expertise are essential components of source credibility, playing an important role in shaping the audience's attitude towards the brand, significantly fostering consumer trust.

2.5.3 Measurement of Attractiveness and Source Credibility

In this research, attractiveness and source credibility are treated as two distinct concepts. Attractiveness is considered an emotional response, while source credibility is viewed as a cognitive response. To measure these constructs, the scale developed by Ohanian (1990) will be adopted. This scale, originally designed to assess the source attribute of advertisement endorsers, will be used in this study to examine the mediating roles of attractiveness and credibility in the relationship between perceived humanness and brand attitude.

The attractiveness and source credibility of VIs in luxury brand endorsement campaigns is assessed using a 15-item scale developed by Ohanian (1990), which measures these attributes through a seven-point semantic differential scale. The trustworthiness dimension includes characteristics such as trustworthy, dependable, honest, reliable, and sincere. The expertise dimension assesses aspects like being expert, experienced, knowledgeable, qualified, and skilled. Finally, the attractiveness dimension evaluates traits such as being attractive, classy, beautiful, elegant, and sexy. This scale (as presented in Table 2) has been widely adopted in marketing and advertising research because it provides a comprehensive and nuanced understanding of how consumers perceive and are influenced by endorsers.

Table 2 Source Attributes Scale

Trustworthiness	Expertise	Attractiveness
Trustworthy - Untrustworthy	Expert - Not Expert	Attractive - Unattractive

Dependable - Undependable	Experienced - Inexperienced	Classy - Not Classy
Honest - Dishonest	Knowledgeable - Unknowledgeable	Beautiful - Ugly
Reliable - Unreliable	Qualified - Unqualified	Elegant - Plain
Sincere - Insincere	Skilled - Unskilled	Sexy - Not Sexy

Ref: Adopted from Ohanian (1990)

2.6 Hypothesis Development

2.6.1 Relationship between Perceived Humanness of VI and Brand Attitude

Drawing upon the Media Equation theory (Reeves & Nass, 1996), which suggests that individuals tend to humanise media and technology, this study proposes that the perceived humanness of VIs may significantly impact consumers' attitudes towards luxury brands. The ability of VIs to create a sense of social presence and build emotional bonds with consumers (Park et al., 2021) implies that greater perceived humanness may lead to more favourable brand attitudes. Also, the humanness effect triggered by highly human-like VIs may strengthen brand personality perceptions (Arsenyan & Mirowska, 2021), a crucial factor in luxury branding. Moreover, the novelty and innovation associated with lifelike virtual characters may also elevate brand image in the luxury sector (Boissieu & Baudier, 2023). Based on the predominant theoretical and empirical evidence, this study hypothesises that:

> *H1: Perceived humanness of a VI has a positive impact on consumer' brand attitude towards a luxury brand.*

2.6.2 Relationship between Perceived Humanness of VI and Attractiveness

Schouten et al. (2020) demonstrated that when endorsing products, it is crucial for influencers to be perceived as attractive to their audience. In the context of VI,

due to their attractiveness, it has been suggested that VIs are powerful marketing tools (Lou et al., 2023). Additionally, the findings from the research given by Kim & Park (2023) indicate that a VI's attractiveness positively affects mimetic desire and brand attachment, thereby enhancing overall marketing effectiveness to some extent. Moreover, in the interpretivist research conducted by Boissieu & Baudier (2023), most respondents acknowledged and agreed that they were captivated by the attractiveness of VIs in the context of strong brand attachment, particularly in the luxury consumption domain. Building on this, it is proposed that the perceived humanness of a VI enhances their perceived attractiveness, as more human-like VIs are likely to be viewed as more appealing by consumers. Therefore, the following hypothesis is proposed:

H2: Perceived humanness of a VI has a positive impact on consumers' perceived attractiveness towards the VI.

2.6.3 Relationship between Perceived Humanness of VI and Source Credibility

Source credibility plays a crucial role in luxury brands, as highly credible endorsers positively influence consumers' perceptions and trust in the brand (Spry et al., 2011). According to the source credibility model by Hovland & Weiss (1951), trustworthiness and expertise are the two key factors that determine the credibility of an endorser. While previous research has suggested that VIs might be perceived as less trustworthy due to the integration of automated technology in their interactions (Fernandes & Oliveira, 2021; Sands et al., 2022), and that their expertise may be questioned because they are controlled by human teams (Breazeal, 2003; Thomas & Fowler, 2021), Interpersonal Theory provides a different perspective. This theory posits that interpersonal connections and perceived humanness in interactions enhance credibility and trustworthiness (Shechtman & Horowitz, 2003). Thus, when VIs exhibit higher levels of perceived humanness, they may positively impact their perceived source credibility, particularly in the aspects of trustworthiness and expertise. Therefore, the following hypothesis related to the source credibility of VIs' perceived humanness in luxury branding is proposed:

H3: Perceived humanness of a VI has a positive impact on consumers' perceived source credibility towards the VI.

2.6.4 Mediating Role of Attractiveness in Relationship between Perceived Humanness and Brand Attitude

The Uncanny Valley theory (Mori, 1970) suggests that while increasing a VI's human-like traits can enhance appeal, there is a threshold where these traits may cause negative responses. When VIs strike the right balance in their human-likeness, their perceived attractiveness is enhanced, which in turn mediates the relationship between perceived humanness and brand attitude. As VIs that effectively navigate the Uncanny Valley are seen as more attractive, this attractiveness fosters stronger emotional connections with consumers, leading to more positive brand attitudes. Therefore, perceived humanness influences brand attitude not only directly but also indirectly through enhanced attractiveness, underscoring the importance of maintaining an optimal level of human-likeness in VIs. Thus, the following hypothesis is given:

H4: Attractiveness mediates the relationship between perceived humanness and brand attitude.

2.6.5 Mediating Role of Source Credibility in Relationship between Perceived Humanness and Brand Attitude

The relationship between perceived humanness of VIs and brand attitude is not only direct but may also be mediated by source credibility, which functions as a cognitive response. Source credibility, encompassing trustworthiness and expertise, is a critical cognitive factor in shaping consumer perceptions and attitudes towards a brand (Spry et al., 2011). When VIs exhibit higher levels of perceived humanness, they are more likely to be perceived as credible sources. This is supported by Interpersonal Theory, which suggests that human-like interactions foster trust and credibility (Shechtman & Horowitz, 2003). This enhanced credibility, as a cognitive response, can subsequently improve the effectiveness of the VI in influencing brand attitudes. Given that source credibility plays an important role in consumer decision-making, particularly in the luxury sector where trust and authenticity are paramount, it is reasonable to hypothesise

that source credibility acts as a mediator between perceived humanness and brand attitude. Therefore, the following hypothesis is proposed:

H5: Source credibility mediates the relationship between perceived humanness and brand attitude.

2.6.6 Proposed Research Model

Building on these hypotheses, as illustrated in Figure 2, this study proposes a conceptual model that explores the relationships between perceived humanness, attractiveness, source credibility, and brand attitude. The model posits that perceived humanness not only directly impacts brand attitude but also exerts its influence indirectly through the mediating roles of perceived attractiveness and source credibility. This conceptual map will guide the empirical investigation, providing a structured approach to understanding the complex interactions between these variables in the context of luxury branding.

Figure 2 Research Conceptual Map
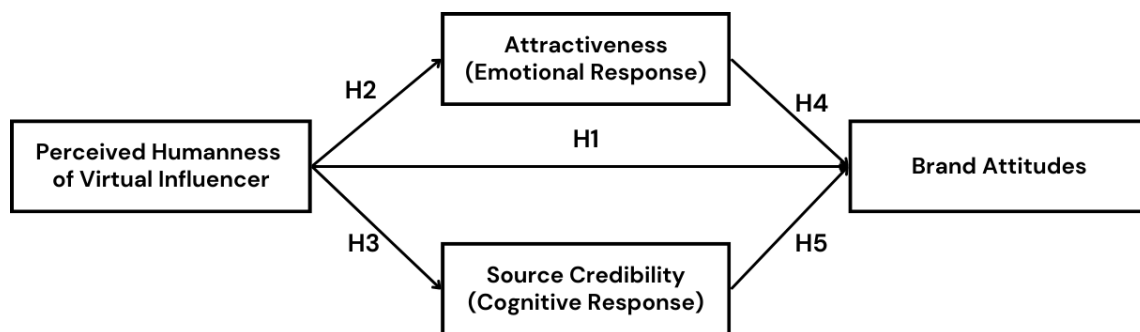
2.7 Summary

In reviewing the existing literature, several key themes have emerged that underline the theoretical foundation of this study. The concept of perceived humanness in VIs has been highlighted as a critical factor influencing consumer perceptions, particularly in the context of luxury branding. The literature suggests that human-like qualities in VIs enhance their perceived attractiveness and source credibility, both of which are essential in shaping consumer attitudes towards brands. The next chapter details the methodology employed in this study,

outlining the research design, data collection procedures, and analytical techniques used to address the research questions.

3 Chapter 3: Methodology

3.1 Introduction

This chapter provides an in-depth explanation and justification for the chosen research methodology, structured around the research onion framework by Saunders et al. (2023, p. 131). The methodology selected aims to investigate the influence of perceived humanness in virtual influencers (VIs) on consumer attitudes towards luxury brands, with particular focus on the mediating roles of attractiveness and credibility. The chapter explores the underlying research philosophy, research approach, methodological choices, research strategy, time horizon, and the techniques and procedures of data collection, ensuring a rigorous approach that aligns with positivist principles and a deductive research strategy. The use of quantitative methods, particularly a structured questionnaire survey, facilitates a comprehensive and systematic analysis, offering valuable insights into the relationships between key variables.

Figure 3 Research Onion
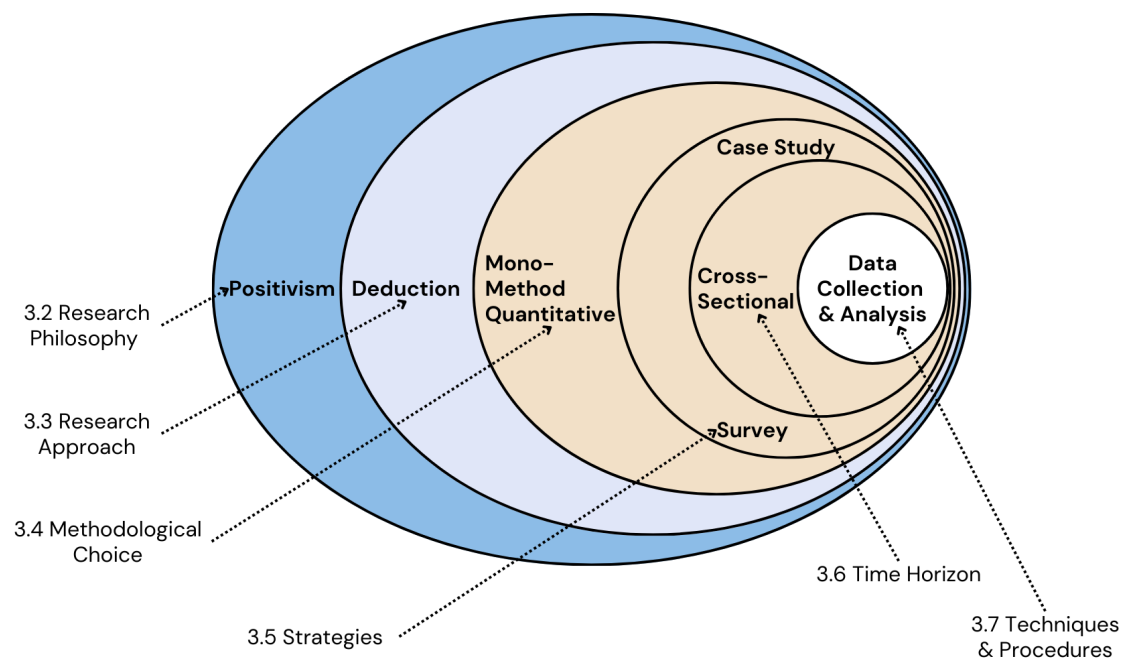
Ref: Adapted from Saunders et al. (2023, p. 131)

3.2 Research Philosophy

Research philosophy refers to a framework of beliefs and assumptions about how knowledge in a specific field is generated and understood (Saunders et al., 2023, p. 131). Within every stage in the research development, several types of assumptions about encountered realities will be made, including ontological, epistemological, and axiological (Burrell & Morgan, 2019). All of these assumptions lead to the understanding of the research questions, the methods being used in the research and the approaches of findings interpretations (Saunders et al., 2023, p. 133). Furthermore, the primary philosophies include positivism, critical realism, interpretivism, postmodernism, and pragmatism. Each of these approaches provides a different perspective on the nature of reality, the creation of knowledge, and the role of values in research.

This study adopts a positivist philosophy, which aligns with the objective and scientific nature of the research. Positivism is characterised by the belief that reality is external, objective, and can be observed and measured through empirical evidence (Saunders et al., 2023, p. 173). The choice of positivism in this study is justified by the research aim on quantitatively examining the relationships between perceived humanness of VIs, attractiveness, source credibility, and consumer attitudes towards luxury brands. This philosophical approach is particularly suitable for studies aiming to establish cause-and-effect relationships and develop predictive models, as it provides a robust framework for testing hypotheses and validating theories. In summary, the adoption of a positivist philosophy is well-suited for research goals, as it supports the rigorous, structured, and objective investigation of the factors influencing consumer behaviour in the context of luxury brands.

3.3 Research Approach

In research, several approaches can be used to develop and test theories, namely deduction, induction, and abduction. According to Saunders et al. (2023, p. 155), deduction involves deriving hypotheses from existing theories and testing them through empirical data, aiming to validate or examine the theoretical framework. This approach is common in the natural sciences, where laws and

principles guide the investigation of phenomena. Induction, on the other hand, begins with specific observations and builds towards broader generalisations and theories, often used to explore new phenomena or contexts (Vears et al., 2022). Abduction involves forming hypotheses based on the best available information, often used in exploratory research to identify new patterns or relationships (Taherdoost, 2022). Each approach has its unique strengths and weaknesses, depending on the research context and objectives.

For this study, a deductive approach was selected to examine the influence of perceived humanness, attractiveness, and source credibility on consumer attitudes towards luxury brands, using VIs as a context. This approach aligns with the study's objective of testing existing theories on the relationship between these variables. By formulating hypotheses based on established literature, the study seeks to empirically verify the theoretical propositions. The structured nature of the deductive method allows for precise measurement and analysis of the data, facilitating the identification of causal relationships and providing robust conclusions. This method is particularly suitable for this research as it involves the quantification of variables and statistical testing, essential for establishing the validity of the hypothesised mediating effects.

3.4 Methodological Choice

In research, there are several methodological choices, including quantitative, qualitative, and mixed methods. According to Saunders et al. (2023, p. 184), quantitative research designs are typically associated with positivism and involve the collection and analysis of numerical data to test hypotheses or examine relationships between variables. Qualitative research, on the other hand, is often aligned with interpretivism and involves exploring complex phenomena through non-numerical data, such as interviews and observations. Mixed methods combine both quantitative and qualitative approaches to provide a more comprehensive understanding of the research problem.

For this study, a mono-method quantitative approach has been selected. The mono-method quantitative design allows for the collection of large-scale data, which is essential for statistically analysing the relationships between the key

variables. Using a structured questionnaire distributed through cloud-based service platforms such as Qualtrics and SurveyMonkey, data will be gathered from a diverse sample of respondents, ensuring the reliability and validity of the findings. This approach also facilitates the use of statistical software like SPSS for detailed data analysis, including testing mediating effects, which is crucial for understanding the underlying mechanisms in the study. The structured nature of the data collection process ensures that the research findings are generalisable and can provide valuable insights into the consumer perceptions of luxury branding in the context of VIs.

3.5 Strategy

3.5.1 Case Study: imma x Coach 2024 Spring Collection

Coach has launched the campaign 'Find Your Courage' for its 2024 Spring collection, starring VI imma and the brand's celebrity ambassadors (Houston, 2024). As one of the world's most renowned virtual humans (Molenaar, 2024), imma plays a brand endorser role for Coach, utilising her unique image to appear in the ad campaign and promote it on social media, thereby engaging and attracting younger audiences. According to Coach, the project is designed to inspire consumers to pursue all possibilities for who they can be despite the tensions and expectations they might feel in life (Coach, 2024).

Coach's decision to select imma as the face of its 2024 Spring Collection is a strategic move rooted in both the brand's and the VI's alignment with contemporary consumer trends and market demands. As part of the Tapestry group, Coach has been important in driving revenue growth, particularly through innovative product and branding initiatives targeting younger audiences. With the success of the Coachtopia sub-brand, which focuses on sustainable fashion, Coach has successfully attracted a significant number of Gen Z and Millennial customers (Deppen, 2024).

imma, with her established reputation in the luxury fashion industry, having collaborated with prestigious brands like Fendi and Valentino (Christopher, 2022; Virtual Humans, 2020), resonates well with Coach's target demographic. Her

strong social media presence, particularly on Instagram, where she boasts over 387k followers, allows Coach to effectively engage with a younger, digitally-savvy audience (Sdrali, 2022). The 'Find Your Courage' campaign, which explores themes of identity and the evolving concept of reality, aligns seamlessly with imma's persona and the values of Gen Z consumers. This partnership not only leverages imma's influence in the fashion world but also reinforces Coach's commitment to innovation and cultural relevance in the luxury market (Marcel, 2024).

The collaboration between imma and Coach for the 2024 Spring Collection serves as a case study for this research, particularly given its alignment with the key variables under investigation: perceived humanness, attractiveness, and source credibility. imma, as a VI, exhibits a high level of perceived humanness through her realistic movements, facial expressions, and behaviours, which are crucial in bridging the gap between her digital nature and the human qualities. Her established presence in the luxury fashion industry enhances her perceived attractiveness. This makes the Coach-imma collaboration an ideal material to explore the research objectives behind this study. Specifically, this campaign will be utilised as a key part of the survey by featuring a 30-second, 1080×1920 vertical video, edited from content sourced directly from Coach's official Instagram account and imma's Instagram profile. This format is carefully chosen to facilitate easy viewing on mobile devices, ensuring that respondents can engage with the material in a manner that closely replicates the typical user experience on social media platforms.

3.5.2 Survey

Survey, as a research strategy, involves asking a series of questions to a selected group of individuals to gather information about a specific topic, combining sampling, question design, and data collection methodologies (Fowler Jr, 2014, p. 1). It is usually linked with a deductive research approach, where surveys are utilised to investigate and explain relationships between variables, offering insights and potential models of these relationships as a quantitative strategy (Saunders et al., 2023a, p. 195). Consequently, survey strategies using

questionnaires are popular because they enable researchers to economically collect standardised data from a large number of respondents, not only in descriptive research to identify variability in phenomena but also in explanatory research to examine cause-and-effect relationships (Saunders et al., 2023a, p. 509).

In this study, using a survey and questionnaire is essential due to its efficiency and cost-effectiveness in gathering large amounts of standardised data. This approach is particularly suited for exploring the influence of perceived humanness of VIs on consumer attitudes toward luxury brands, as it allows for the collection of responses from a broad demographic within a short period. The structured nature of questionnaires ensures consistency and reliability in measuring subjective variables like attractiveness and credibility. This is critical for testing the theoretical hypotheses and examining the relationships between these variables. Furthermore, the large sample size achievable through surveys enhances the representativeness and statistical validity of the findings, providing robust data for theoretical validation and model testing.

In the methodology section of this research, the data collection process commenced on July 26, 2024, and concluded on August 9, 2024. The survey was administered through the Qualtrics platform, which facilitated both the distribution of the questionnaire and the subsequent data collection. To ensure the reliability and validity of the survey design, a pilot study was conducted prior to the official launch. Five university students participated in this pilot survey, and their feedback was instrumental in refining the structure and design of the questionnaire. In terms of response rate, the study achieved an effective response rate of approximately 76%. To enhance this rate, several techniques were employed, such as sending reminder emails and ensuring the survey was mobile-friendly, making it easier for respondents to complete. Additionally, the choice of Qualtrics as the platform provided robust tools for tracking responses and managing follow-ups, which further contributed to improving the overall response rate.

3.6 Time Horizon

Time horizons is a crucial aspect in research design, determining the scope and depth of a study. Two primary approaches are cross-sectional and longitudinal studies, each offering distinct advantages and insights into research phenomena.

Cross-sectional studies, as defined by Saunders et al. (2023, p. 212), represent a 'snapshot' of a particular phenomenon, making it suitable for understanding the prevalence of specific characteristics or behaviours at a given moment. This approach is particularly valuable when seeking to understand prevailing conditions, attitudes, or relationships without the need to track changes over time. As Bryman (2016, p. 63) notes, cross-sectional designs are 'the most common form of survey design', offering researchers the ability to collect a large amount of data quickly and efficiently.

In contrast, longitudinal studies adopt what Saunders et al. (2023, p. 212) refer to as a 'diary' perspective. This approach involves examining phenomena over an extended period, allowing researchers to observe and analyse changes and developments as they unfold. As highlighted by Menard (2002, p. 2), longitudinal research provides 'a series of observations over time on a set of units or cases', enabling the study of dynamic processes and the exploration of causal relationships with greater confidence.

The choice between these two approaches depends largely on the nature of the research questions and the phenomena under investigation. For the study examining the impact of perceived humanness of VIs on consumer attitudes towards luxury brands, including the mediating roles of attractiveness and credibility, a cross-sectional approach is more suitable. The study aims to capture consumer perceptions at a specific moment, providing a clear snapshot of current attitudes and perceptions. The cross-sectional design offers an efficient way to achieve the study's objectives, providing valuable insights into the current state of consumer attitudes.

3.7 Techniques and Procedures

Sampling procedures are a critical component of research methodology, encompassing the techniques used to select a subset of a population for study. As outlined by Saunders et al. (2023, p. 293), sampling techniques can be broadly categorised into two main types: probability sampling, which allows for statistical inferences about the population, and non-probability sampling, which is often used for exploratory research where statistical inferences are not the primary goal. Given the nature of this study, which aims to generalise the findings across a broader population, probability sampling is the most suitable choice. Specifically, a simple random sampling technique will be employed, where a complete list of the target population will be used to randomly select participants. This approach is crucial for ensuring the reliability and validity of the results, as it minimises selection bias and enhances the representativeness of the sample.

By employing probability sampling, the research aligns with best practices in survey methodology, facilitating accurate and reliable data collection to effectively address the research questions. The survey method used a structured questionnaire divided into six sections. The first section asks about the respondents' prior familiarity with VIs, the Coach brand, and their social media usage, which is essential to establish a baseline understanding as these factors could significantly influence their responses and perceptions. The second section includes indices measuring perceived humanness using a five-item semantic differential scale developed by Ho & MacDorman (2017), as described in Chapter 2. The third and fourth sections contain items measuring attractiveness and source credibility, respectively, using a 15-item semantic differential scale based on Ohanian's (1990) source model, with each of the three dimensions represented by five items. The fifth section measures brand attitude using a five-item semantic differential scale developed by Yoo & Donthu (2001). All of these sections were extended to a seven-point scale to provide more nuanced responses, ensuring a detailed assessment. The final section captures demographic details of the respondents, including their age, gender, and educational level. The design of questions for each section is documented in Appendix B.

The following table summarises the definitions and corresponding aspects or dimensions used to measure each variable as discussed in Chapter 2:

Table 3 Questionnaire Design

Variable	Definition	Aspect / Dimension	Reference
Perceived Humanness	The subjective perception and judgement of consumers towards VIs, encompassing five different aspects, such as sense of life, sense of reality, type of movement, human-likeness, and perceived lifespan (Ho & MacDorman, 2017).	Inanimate–Living	Ho & MacDorman (2017)
		Synthetic–Real	
		Mechanical movement–Biological movement	
		Human-made–Humanlike	
		Without definite lifespan–Mortal	
Brand Attitude	An individual's internal evaluation of a brand, involving subjective and relatively enduring judgements towards the brand and representing a unidimensional internal state that influences consumer behaviour (Mitchell & Olson, 1981, p. 318; Surendra et al., 2004).	Unappealing–Appealing	Yoo & Donthu (2001)
		Bad–Good	
		Unpleasant–Pleasant	
		Unfavourable–Favourable	
		Unlikable–Likable	
Attractiveness	Perceived attractiveness of an endorser is typically defined as the extent to which an individual is considered aesthetically pleasing or appealing by others (Ohanian, 1990).	Attractive - Unattractive	Ohanian (1990)
		Classy - Not Classy	
		Beautiful - Ugly	
		Elegant - Plain	
		Sexy - Not Sexy	

Source Credibility	Source credibility is understood as the perceived credibility of a source of information by an individual (Boissieu & Baudier, 2023; Ohanian, 1990), consisting of trustworthiness and expertise (Hovland & Weiss, 1951).	**Trustworthiness:** Trustworthy – Untrustworthy Dependable – Undependable Honest – Dishonest Reliable – Unreliable Sincere – Insincere	Ohanian (1990)
		Expertise: Expert - Not Expert Experienced – Inexperienced Knowledgeable – Unknowledgeable Qualified – Unqualified Skilled - Unskilled	

To efficiently distribute the questionnaire and reach a diverse group of respondents, the Internet questionnaire method was implemented using the Qualtrics platform. All questions were meticulously reviewed and aligned with existing literature, ensuring the validity and reliability of the collected data. This approach enhanced the questionnaire's ability to consistently measure the intended constructs, thereby improving internal consistency and supporting the study's analytical rigor. The data analysis using SPSS version 29.0.2.0 (20) explored not only the mediating roles of attractiveness and source credibility but also examined how perceived humanness directly impacts these variables and, subsequently, consumer attitudes towards luxury brands. This comprehensive approach aimed to reveal the intricate relationships between perceived

humanness, attractiveness, and source credibility, thereby providing a deeper understanding of how these factors collectively influence consumer perceptions and behaviours in the context of luxury branding.

3.8 Reliability and Validity

In any research, ensuring the reliability and validity of the study is important to the integrity and applicability of the findings. Reliability refers to the consistency of the research results over time and across different contexts and it ensures that the data collection methods and procedures produce stable and consistent results (Saunders et al., 2023, p. 215). On the other hand, validity, including both internal and external validity, assesses the accuracy of the research in measuring what it intends to measure (Saunders et al., 2023, p. 216).

In this study, measures were taken to ensure both reliability and validity. The questionnaire was meticulously reviewed and pre-tested to identify and modify any potential issues. The use of standardised questions deriving from the existed literatures and structured formats helped in maintaining consistency. Furthermore, the data analysis was conducted using SPSS, which offers robust tools for statistical validation, ensuring the accuracy of the results.

3.9 Ethical Considerations

This study adheres to ethical standards, as it has received approval from Cranfield University's Ethical System. Ethical considerations in this research primarily revolve around participant confidentiality, informed consent, and transparency throughout the data collection process. Participants were informed of the purpose, methods, and potential risks of the study, ensuring that they could make an informed decision about their participation. Confidentiality was upheld by anonymising the data collected, ensuring that no personally identifiable information was linked to the findings. The ethical approval reinforces the research's commitment to maintaining high standards of integrity and responsibility, ensuring that the research contributes to academic knowledge while respecting participants' rights. A screenshot of the ethical approval has been included in Appendix A.

4 Chapter 4: Data Analysis

4.1 Introduction

This chapter presents a comprehensive analysis of the data collected through the questionnaire survey, employing statistical techniques to test the research hypotheses. The analysis aims to examine the relationships between the key variables identified in the study, including perceived humanness, brand attitude, attractiveness, and source credibility. Using SPSS, the data was systematically processed to ensure accuracy and reliability in the results. The findings from both correlation and regression analyses are discussed in detail, providing valuable insights into how the perceived humanness of a virtual influencer (VI) affects consumers' perceptions and attitudes towards a luxury brand. This chapter also explores the mediating roles of attractiveness and source credibility.

4.2 Data Screening and Preparation

Data screening is a crucial process in research, particularly when using self-report survey data, which is popular in organisational sciences due to its efficiency in collecting large quantities of data with minimal resources (Schwarz, 1999). However, one significant disadvantage of survey data is the inability of researchers to directly observe participants during data collection, which can lead to issues with data quality (Desimone et al., 2015). Therefore, data screening is useful and necessary to identify and correct issues that could compromise the validity and reliability of research findings. In this study, two fundamental data screening techniques—missing data analysis and response time assessment—are employed to eliminate low-quality responses caused by insufficient effort, poor attitude, unanswered or skipped questions, or survey abandonment.

Missing data can compromise the validity and representativeness of research findings, which can lead to biased results and inaccurate conclusions (Saunders et al., 2023, p. 584). However, by appropriately coding missing data, researchers can mitigate these risks, ensuring that the remaining data are analysed correctly and that any potential biases are accounted for. In this research, missing data refers to responses from participants who did not successfully complete the

survey, which in this case occurred entirely at random. Through the cloud-based service platform, Qualtrics, a total of 168 responses were received, all of which granted informed consent and agreed to continue with the survey. Among these, 38 responses were identified as incomplete due to participants missing one or multiple questions, leading to their exclusion from the analysis. Consequently, 130 responses were retained after excluding the missing data.

Response time refers to the amount of time a respondent spends on each item in a survey, which is used as another effective screening technique under the assumption that there is a minimum necessary time required to accurately read and respond to a question (Desimone et al., 2015). Academic research suggests that it is highly unlikely for participants to respond meaningfully to survey items faster than a rate of 2 seconds per item (Huang et al., 2012). This standard allows this research to identify responses that are completed too quickly to be considered thoughtful or valid. In the context of this research study, which including a participant consent form, a 30-second 1080×1920 video material, 25 attitude questions, and 6 demographic and personal habit questions, the minimum valid response time has been set at 100 seconds. Any responses completed in less than this time frame is considered invalid, as they fall below the threshold required for adequately engaging with and responding to the survey content. Thus, two unqualified responses were removed, leaving 128 valid answers.

For data preparation, the first step involved removing the 40 invalid questionnaires identified during the data screening process, followed by renaming the titles of each item to ensure clarity and consistency. This step is particularly important when variables need to be grouped by specific constructs. The following table outlines the renamed variables, categorised according to their respective types, which were used to facilitate the subsequent analysis in SPSS.

Table 4 Rename Variables

Variable / Type	Items
Pre-Question	VI_Familiarity
(3 items)	Brand_Familiarity

	SM_Usage
Perceived Humanness **(5 items)**	Humanness_1
	Humanness_2
	Humanness_3
	Humanness_4
	Humanness_5
Attractiveness **(5 items)**	Attractiveness_1
	Attractiveness_2
	Attractiveness_3
	Attractiveness_4
	Attractiveness_5
Source Credibility **(2 dimensions, 10 items totally)**	Trustworthiness_1
	Trustworthiness_2
	Trustworthiness_3
	Trustworthiness_4
	Trustworthiness_5
	Expertise_1
	Expertise_2
	Expertise_3
	Expertise_4
	Expertise_5
Brand Attitude **(5 items)**	Attitude_1
	Attitude_2
	Attitude_3
	Attitude_4
	Attitude_5
Demography **(3 items)**	Age
	Gender
	Education

The final step was to recode the reversed indices, a process known as reverse coding, which adjusts the scoring of negatively worded items in a survey so that they align with positively worded items. This step is necessary to ensure that all items contribute uniformly to the measurement of the construct, maintaining the

reliability and validity of the scale (Weems & Onwuegbuzie, 2001). In this study, reverse coding was applied to the fourth item of the Attractiveness scale and the second and fourth items of the Trustworthiness subscale within Source Credibility, ensuring that all items on these scales contributed uniformly to the overall score. The final step involved adjusting the measure type of variables by converting the semantic differential and Likert scale items to 'Scale'. This adjustment is necessary to apply statistical methods that require continuous variables to do regression analysis and correlation analysis. However, this is based on the assumption that the ordinal data behaves like continuous data, which may not fully capture the nuanced differences between categories. Nevertheless, the use of a seven-point scale in this questionnaire helps to mitigate these differences to a certain extent.

4.3 Sample Description

Table 5 presents a demographic breakdown of the survey respondents across three categories: age, gender, and education. For age, the majority of respondents fall within the 26-35 age group, accounting for 55.47% (71 individuals), followed by 18-25 at 24.22% (31 individuals). Smaller proportions are observed in the 36-45, 46-55, and 55+ age groups, representing 7.03% (9 individuals), 5.47% (7 individuals), and 7.81% (10 individuals) of the sample, respectively. In terms of gender, females constitute a slight majority at 55.47% (71 individuals), while males make up 41.41% (53 individuals). Non-binary respondents and those who preferred not to disclose their gender each represent 1.56% (2 individuals). Regarding education levels, the most common qualification among respondents is a Master's degree, held by 35.94% (46 individuals), followed by Bachelor's degree at 29.69% (38 individuals) and Associate degree at 27.34% (35 individuals). A smaller number of respondents reported having a Doctorate (3.13%, 4 individuals) or High school education or below (3.91%, 5 individuals).

Table 5 Description of Demographic Information

Item	Category	Count	Row N %
Age	18-25	31	24.22%
	26-35	71	55.47%
	36-45	9	7.03%
	46-55	7	5.47%
	55+	10	7.81%
Gender	Female	71	55.47%
	Male	53	41.41%
	Non-binary	2	1.56%
	Prefer not to say	2	1.56%
Education	High school or below	5	3.91%
	Associate degree	35	27.34%
	Bachelor's degree	38	29.69%
	Master's degree	46	35.94%
	Doctorate	4	3.13%

Table 6 provides descriptive statistics regarding participants' familiarity with VIs Coach. The data reveals that on a scale from 1 to 7, participants' familiarity with VIs has a mean score of 3.52, with a standard deviation of 1.665. This suggests that, on average, respondents are moderately unfamiliar with VIs, and there is a considerable variation in their familiarity, indicating diverse levels of awareness and exposure among the participants. In contrast, participants exhibit a higher level of familiarity with the Coach brand, with a mean score of 4.57 and a lower standard deviation of 1.390. This indicates that respondents are generally more familiar with the Coach brand than with VIs, and there is less variability in their

responses. The narrower standard deviation implies that participants' familiarity with Coach is relatively consistent across the sample.

Table 6 Descriptive Statistics of Participants' Familiarity with VIs and Coach

	Mean	Std. Deviation
VIs Familiarity	3.52	1.665
Brand Familiarity	4.57	1.390

Table 7 focuses on social media usage The data indicates that a significant portion of the participants spend a considerable amount of time on social media. Specifically, 39.8% of respondents report spending 1-3 hours on social media each day, while 37.5% spend between 3-5 hours daily. These two categories combined represent the majority of the sample, with a total of 77.3% of participants spending between 1 and 5 hours on social media daily. Additionally, 18% of respondents spend more than 5 hours on social media each day, indicating a high level of engagement with social platforms. In contrast, only a small fraction, 4.7%, spend less than 1 hour daily on social media. This distribution suggests that the majority of participants are highly active on social media, which could have implications for their exposure to virtual influencers and brand marketing content.

Table 7 Descriptive Statistics of Participants' Social Media Usage

	Count	Row N %
Less than 1 hour	6	4.7%
1-3 hours	51	39.8%
3-5 hours	48	37.5%
More than 5 hours+	23	18.0%

4.4 Validity Analysis

Validity Analysis is a fundamental aspect of research that evaluates how well a tool or instrument measures what it is intended to measure. It is important to ensure the conclusions drawn from research are sound and credible, providing a solid foundation for theory and practice (Watkins, 2018). Conducting a validity analysis often involves techniques like Exploratory Factor Analysis (EFA) and Confirmatory factor analysis (CFA). In this research, EFA is chosen due to the exploratory nature of the study, where the goal is to uncover potential underlying factors (Watkins, 2018).

In conducting EFA, specific criteria need to be met to ensure an appropriate analysis where the KMO measure and Bartlett's Test of Sphericity are two key methods used to test the appropriateness. The KMO measure assesses the adequacy of the sample size, with a value greater than 0.5 indicating that the sample size is sufficient for factor analysis. Bartlett's Test of Sphericity evaluates whether the correlations between items are significant enough to justify factor analysis, with a significance level of less than 0.05 suggesting that the correlation matrix is suitable for factor analysis

4.4.1 Perceived Humanness

The results presented in Table 9 indicate the outcome of an EFA conducted on the perceived humanness construct. The KMO measure of sampling adequacy is 0.748, which is above the commonly accepted threshold of 0.5, suggesting that the sample size is sufficient for factor analysis. The Bartlett's Test of Sphericity is significant (p < .001), indicating that the correlations between items are adequate for the factor analysis.

The Component Matrix shows that four out of the five items (Humanness_1, Humanness_2, Humanness_3, and Humanness_4) have strong loadings on a single factor, with values ranging from 0.652 to 0.874. These high loadings suggest that these items are good indicators of the perceived humanness construct. However, the fifth item, 'Humanness_5', has a lower loading of 0.491, which might indicate that this item is not as strongly related to the underlying

construct as the others. Despite this, the analysis extracted one component, suggesting that perceived humanness is likely a one-dimensional construct in this dataset. A subsequent reliability test will be conducted to confirm the reliability of 'Humanness_5' within the overall perceived humanness construct.

Table 8 EFA of One-Dimensional Construct – Perceived Humanness

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.748
Bartlett's Test of Sphericity	Approx. Chi-Square	225.369
	df	10
	Sig.	<.001
Component Matrix[a]		
Items	Perceived Humanness	
Humanness_1	0.792	
Humanness_2	0.85	
Humanness_3	0.652	
Humanness_4	0.874	
Humanness_5	0.491	
a. 1 components extracted.		

4.4.2 Attractiveness

Following the results of the perceived humanness construct, the factor analysis for the attractiveness scale in Table 10 shows a complex structure with two components being extracted. The KMO measure of sampling adequacy is 0.686, while slightly lower than the threshold of 0.7. The Bartlett's Test of Sphericity is significant (p < .001), indicating that the correlation between items is sufficient for the analysis.

In the component matrix, most items (Attractiveness_1, Attractiveness_2, Attractiveness_3, Attractiveness_5) load strongly on the first component, indicating that they are likely measuring a common underlying construct, which can be interpreted as the general perceived attractiveness of the VI. However, 'Attractiveness_4' shows a distinct pattern, loading almost entirely on the second

component (0.943), suggesting that it may be capturing a different aspect of attractiveness or a potentially unrelated construct. This result suggests that while most items are aligned in measuring a single construct, there are some that may be divergent and could require further examination or modification to ensure they are appropriately aligned with the intended construct. A subsequent reliability test will provide more conclusive evidence on whether 'Attractiveness_4' should be retained or removed from the construct.

Table 9 EFA of One-Dimensional Construct – Attractiveness

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.686
Bartlett's Test of Sphericity	Approx. Chi-Square	205.601
	df	10
	Sig.	<.001
Component Matrix[b]		
Items	Components	
	Attractiveness_1, 2, 3, 5	Attractiveness_4
Attractiveness_1	0.755	0.121
Attractiveness_2	0.803	0.31
Attractiveness_3	0.880	-0.029
Attractiveness_4	0.001	0.943
Attractiveness_5	0.755	-0.418
b. 2 components extracted.		

4.4.3 Source Credibility

The EFA conducted on the source credibility presented in Table 10, which is the only multidimensional construct in this study, reveals that this construct is composed of two distinct factors: 'expertise' and 'trustworthiness.' The KMO measure of sampling adequacy was 0.87, which is well above the acceptable threshold of 0.5, indicating that the sample size was sufficient for factor analysis. Additionally, Bartlett's Test of Sphericity was significant (p < .001), confirming that the correlation matrix was suitable for factor analysis.

The rotated component matrix shows that the items load clearly onto two separate components. The first component, 'expertise,' consists of five items. These items exhibit high loadings on this factor, ranging from 0.692 to 0.832, indicating that they strongly contribute to the 'expertise' dimension. The second component, 'trustworthiness,' encompasses five items as well. These items also show strong loadings on this factor, with values between 0.705 and 0.801. However, one item, 'Trustworthiness_2', has a negative loading on both components, suggesting it may not fit well with either factor. Thus, 'Trustworthiness_2' is excluded from all subsequent analyses.

Table 10 EFA of Multidimensional Construct – Source Credibility

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.87
Bartlett's Test of Sphericity	Approx. Chi-Square	762.005
	df	45
	Sig.	<.001
Rotated Component Matrix[c]		
Items	Components	
	Expertise	Trustworthiness
Trustworthiness_1	0.383	**0.757**
Trustworthiness_2	-0.57	-0.522
Trustworthiness_3	0.225	**0.801**
Trustworthiness_4	-0.031	**0.797**
Trustworthiness_5	0.497	**0.705**
Expertise_1	**0.815**	0.074
Expertise_2	**0.692**	0.257
Expertise_3	**0.832**	0.202
Expertise_4	**0.851**	0.176
Expertise_5	**0.696**	0.478
c. Rotation converged in 3 iterations.		

4.4.4 Brand Attitude

The factor analysis results for the brand attitude scale in Table 11 demonstrate a strong, unidimensional structure. The KMO measure of sampling adequacy is 0.883, which is well above the acceptable threshold of 0.7, indicating that the sample size is sufficient for factor analysis. The Bartlett's Test of Sphericity is highly significant ($p < .001$), confirming that the correlation between items is appropriate for conducting factor analysis.

In the component matrix, all five items load strongly on a single component, with loadings ranging from 0.885 to 0.921. This suggests that all items are consistently measuring the same underlying construct, which can be interpreted as the overall attitude towards the brand. The extraction of a single component reinforces the one-dimensionality of the brand attitude scale, indicating that these items effectively capture the intended construct without any notable divergence

Table 11 EFA of One-Dimensional Construct – Brand Attitude

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.883
Bartlett's Test of Sphericity	Approx. Chi-Square	578.67
	df	10
	Sig.	<.001
Component Matrix[d]		
Items	Brand Attitude	
Attitude_1	0.893	
Attitude_2	0.921	
Attitude_3	0.885	
Attitude_4	0.914	
Attitude_5	0.894	
d. 1 components extracted.		

4.5 Reliability Analysis

Reliability analysis is a crucial process in research that focuses on the consistency and stability of a measurement tool over time. Cronbach's alpha is

the most widely used method for assessing the internal consistency of a set of items in a survey. This statistic measures how well all items in a test reflect the same concept, with alpha values from 0 to 1, where higher values show greater internal consistency (Tavakol & Dennick, 2011). A value above 0.7 is generally considered acceptable, although the ideal value depends on the context and purpose of the study. Conducting reliability analysis is vital because it helps to minimise measurement errors, thereby enhancing the overall validity of the research findings (Thorndike, 1995).

The results of the reliability test, as summarised in Table 12, indicate varying levels of internal consistency across the four variables measured. The Cronbach's Alpha for **perceived humanness** is 0.777, which suggests a good level of internal consistency among the five items. Similarly, **brand attitude** displays a very high internal consistency with a Cronbach's Alpha of 0.942, indicating that the items reliably measure the same underlying construct. Also, the **expertise** dimension within **source credibility** shows a strong Cronbach's Alpha of 0.879, indicating that the items within this dimension are highly consistent with one another.

However, the **attractiveness** variable shows a Cronbach's Alpha of 0.693, which is slightly below the generally accepted threshold of 0.7. In the validity test, 'Attractiveness_4' was extracted as a separate component, distinct from the other four items. Notably, the 'Attractiveness_4' item seems to reduce the overall reliability, as removing it increases the Cronbach's Alpha to 0.806. Considering both the validity and reliability test results, it is likely that 'Attractiveness_4' should be excluded to enhance the construct's overall consistency. On the other hand, the validity test confirmed that 'Trustworthiness_2' should be excluded, and after its removal, the Cronbach's Alpha for the **Trustworthiness** dimension of **Source Credibility** increases to 0.828, indicating a significant improvement in reliability.

Table 12 Reliability Test – Cronbach's Alpha

Variable	Dimension/Items	Cronbach's Alpha	Cronbach's Alpha if Item Deleted
Perceived Humanness	5 Items	0.777	
Attractiveness	5 Items	0.693	0.806 (If Attractiveness_4 Deleted)
Source Credibility	Trustworthiness (Trustworthiness_2 Deleted)	0.828	
	Expertise	0.879	
Brand Attitude	5 Items	0.942	

In the validity test for **perceived humanness**, it was observed that the 'Humanness_5' item had a notably low factor loading, indicating a weaker relationship with the overall construct. Following this finding, a subsequent reliability test was conducted after removing 'Humanness_5.' The results showed an increase in Cronbach's Alpha from 0.777 to 0.820, suggesting that the internal consistency of the remaining items improved significantly. This further supports the decision to exclude 'Humanness_5' to ensure that the perceived humanness construct is measured more reliably and consistently.

After completing the validity and reliability tests, the procedure of computing averaged indexes was carried out. This step involved aggregating the mean scores of the items within each scale to create new variables as presented in Table 13. These newly computed variables ensure that the measures used in subsequent analyses more accurately reflect their underlying constructs.

Table 13 Naming Rules of Computing Averaged Indexes

Variable Name	After Renamed
Perceived Humanness	IV_PH
Attractiveness	Med1_AT

Source Credibility	Med2_SC
Brand Attitude	DV_BA

4.6 Hypothesis Testing

To examine the five hypotheses and explore the relationships between perceived humanness of a VI and its impact on consumers' brand attitude towards a luxury brand (H1), perceived attractiveness towards the VI (H2), and perceived source credibility towards the VI (H3); as well as the mediating roles of attractiveness (H4) and source credibility (H5) in the relationship between perceived humanness and brand attitude, a correlation analysis is conducted first to test if there is a significant correlation between the variables. If a significant correlation is found, a subsequent regression analysis is performed to investigate the linear equation between the variables, which will further clarify the direction and strength of these relationships. This step will enable the examination of the proposed hypotheses.

4.6.1 H1 Testing: Perceived humanness of a VI has a positive impact on consumers' brand attitude towards a luxury brand

The results presented in Table 14 demonstrate a significant positive correlation between perceived humanness and brand attitude. The Pearson correlation coefficient is 0.593, indicating a moderate to strong positive relationship between these two variables. This correlation is statistically significant, with a p-value of less than 0.001. The findings suggest that as consumers perceive the VI to be more human-like, their attitude towards the luxury brand improves. This aligns with the hypothesis that perceived humanness positively impacts brand attitude.

Table 14 Correlation Analysis for H1

		IV_PH	DV_BA
IV_PH	Pearson Correlation	1	.593**
	Sig. (2-tailed)		<.001
	N	128	128
DV_BA	Pearson Correlation	.593**	1
	Sig. (2-tailed)	<.001	

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	N	128	128
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 15 presents the results of the regression analysis conducted to test the impact of perceived humanness on brand attitude. The model summary indicates that perceived humanness explains 35.2% of the variance in brand attitude (R^2 = 0.352), with an adjusted R^2 of 0.346, suggesting that the model has a good fit. The ANOVA results show that the model is statistically significant ($p < 0.001$), indicating that perceived humanness significantly predicts brand attitude. The coefficients table reveals that perceived humanness has a positive and significant effect on brand attitude (B = 0.642, $p < 0.001$). This means that for every unit increase in perceived humanness, brand attitude increases by 0.642 units. The constant value is 1.585, which is the expected value of brand attitude when perceived humanness is zero. These results support H1 that perceived humanness positively impacts consumers' brand attitude towards a luxury brand. The regression equation for the model is:

Brand Attitude = 1.585 + 0.642 × Perceived Humanness

Table 15 Regression Analysis for H1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.593[e]	0.352	0.346	1.058
e. Predictors: (Constant), IV_PH				

ANOVA[f]					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	76.463	1	76.463	68.309	<.001[g]
Residual	141.039	126	1.119		
Total	217.502	127			
f. Dependent Variable: DV_BA					

g. Predictors: (Constant), IV_PH					
Coefficients^h					

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.585	0.311		5.105	<.001
Perceived_ Humanness	0.642	0.078	0.593	8.265	<.001
h. Dependent Variable: DV_BA					

4.6.2 H2 Testing: Perceived humanness of a VI has a positive impact on consumers' perceived attractiveness towards the VI.

The results presented in Table 16 demonstrate a positive correlation between perceived humanness and attractiveness, with a Pearson correlation coefficient of 0.584. This suggests that as the degree of a VI's perceived humanness increases, consumers' perceived attractiveness of the VI also tends to increase. The significance level is reported as <.001, indicating that this correlation is statistically significant at the 0.01 level. This strong significance level provides confidence that the observed relationship is unlikely to be due to chance.

Table 16 Correlation Analysis for H2

		IV_PH	Attractiveness
IV_PH	Pearson Correlation	1	0.584**
	Sig. (2-tailed)		<.001
	N	128	128
Attractiveness	Pearson Correlation	0.584**	1
	Sig. (2-tailed)	<.001	
	N	128	128
**. Correlation is significant at the 0.01 level (2-tailed).			

The regression analysis results displayed in Table 17 indicate that perceived humanness is a significant predictor of attractiveness. The model summary

shows that perceived humanness accounts for approximately 34.1% of the variance in attractiveness (R Square = 0.341), with an adjusted R Square of 0.336. This suggests that the model has a decent explanatory power for the relationship between these variables.

The ANOVA in Table 17 also reveals that the model is statistically significant, with a p-value of <.001, indicating that the regression model provides a significantly good fit to the data. The coefficients table further supports the significance of perceived humanness as a predictor, with a standardised beta coefficient of 0.584 and a p-value of <.001. This indicates that for every one unit increase in perceived humanness, the attractiveness score is expected to increase by approximately 0.584 units. Overall, these findings strongly support H2 that perceived humanness of a VI positively impacts consumers' perceived attractiveness towards the VI. The regression equation for this relationship can be expressed as:

Attractiveness = 2.193 + 0.581 * Perceived Humanness

Table 17 Regression Analysis for H2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.584[i]	0.341	0.336	0.97929
i. Predictors: (Constant), IV_PH				
ANOVA[j]					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	62.541	1	62.541	65.215	<.001[k]
Residual	120.834	126	0.959		
Total	183.375	127			
j. Dependent Variable: Med1_AT					
k. Predictors: (Constant), IV_PH					

Coefficients[l]					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.193	0.287		7.628	<.001
Perceived_ Humanness	0.581	0.072	0.584	8.076	<.001
l. Dependent Variable: Med1_AT					

4.6.3 H3 Testing: Perceived humanness of a VI has a positive impact on consumers' perceived source credibility towards the VI.

The results of the correlation analysis presented in Table 18 reveal a significant positive relationship between perceived humanness and source credibility, with a Pearson correlation coefficient of 0.621, which is statistically significant at the 0.01 level (p < .001). This indicates that as the perceived humanness of VI increases, consumers' perceptions of the VI's source credibility also tend to increase. The strength of this correlation suggests a moderately strong association, supporting the hypothesis that perceived humanness has a positive impact on the perceived source credibility of the VI.

Table 18 Correlation Analysis for H3

		IV_PH	Source_Credibility
IV_PH	Pearson Correlation	1	0.621**
	Sig. (2-tailed)		<.001
	N	128	128
Med2_SC	Pearson Correlation	0.621**	1
	Sig. (2-tailed)	<.001	
	N	128	128
**. Correlation is significant at the 0.01 level (2-tailed).			

The regression analysis results presented in Table 19 demonstrate that perceived humanness is a significant predictor of source credibility. The model summary indicates that perceived humanness explains approximately 38.5% of

the variance in source credibility (R^2 = 0.385). The ANOVA table shows that the overall regression model is statistically significant (p < .001), indicating that the model provides a good fit to the data. The coefficients table reveals that perceived humanness has a positive and significant effect on source credibility (p < .001), with an unstandardised coefficient of 0.565. This suggests that for every one-unit increase in perceived humanness, source credibility is expected to increase by 0.565 units, holding all other factors constant. These findings strongly support H3 that perceived humanness positively impacts consumers' perceptions of the VI's source credibility. The regression equation for this relationship can be expressed as:

Source Credibility = 1.655 + 0.565 * Perceived Humanness

Table 19 Regression Analysis for H3

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.621[m]	0.385	0.380	0.86502
m. Predictors: (Constant), IV_PH				

ANOVA[n]					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	59.107	1	59.107	78.993	<.001[o]
Residual	94.281	126	0.748		
Total	153.389	127			

n. Dependent Variable: Med2_SC

o. Predictors: (Constant), IV_PH

Coefficients[p]					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.655	0.254		6.516	<.001

Perceived_Humanness	0.565	0.064	0.621	8.888	<.001
p. Dependent Variable: Med2_SC					

4.6.4 H4 and H5 Test: Parallel Mediating Roles of Attractiveness and Source Credibility

The first step is to examine the output where the outcome variables are Med1_AT (Attractiveness) and Med2_SC (Source Credibility). As presented in Figure 4, the results of the regression analysis indicate that the independent variable, perceived humanness (IV_PH), is a significant positive predictor of Mediator 1, attractiveness (Med1_AT), with a coefficient (b) of 0.5809, standard error (s.e.) of 0.0719, and a p-value of less than 0.001. Similarly, the independent variable is also a significant positive predictor of Mediator 2, Source Credibility (Med2_SC), with a coefficient (b) of 0.5647, standard error (s.e.) of 0.0635, and a p-value of less than 0.001.

Figure 4 Outcome Variable of Attractiveness and Source Credibility

```
**************************************************************************
OUTCOME VARIABLE:
 Med1_AT

Model Summary
         R        R-sq       MSE          F        df1        df2          p
     .5840      .3411      .9590    65.2148     1.0000   126.0000      .0000

Model
            coeff        se          t          p       LLCI       ULCI
constant   2.1927      .2874     7.6285      .0000     1.6239     2.7616
IV_PH       .5809      .0719     8.0756      .0000      .4385      .7232

**************************************************************************
OUTCOME VARIABLE:
 Med2_SC

Model Summary
         R        R-sq       MSE          F        df1        df2          p
     .6208      .3853      .7483    78.9926     1.0000   126.0000      .0000

Model
            coeff        se          t          p       LLCI       ULCI
constant   1.6545      .2539     6.5164      .0000     1.1521     2.1570
IV_PH       .5647      .0635     8.8878      .0000      .4390      .6905

**************************************************************************
```

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Next is to examine the output where the outcome variables is DV_BA (Brand Attitude). In Figure 5, the results of this regression indicate that perceived humanness (IV_PH) has a positive but non-significant impact on brand attitude (DV_BA) (b = 0.1096, s.e. = 0.0782, p = 0.1635). However, both mediators, attractiveness (Med1_AT) (b = 0.4138, s.e. = 0.0780, p < 0.001) and source credibility (Med2_SC) (b = 0.5177, s.e. = 0.0883, p < 0.001), are significant positive predictors of brand attitude (DV_BA). This suggests that while the direct effect of perceived humanness (IV) on brand attitude (DV) is not significant, both attractiveness (Med1_AT) and source credibility (Med2_SC) mediate this relationship significantly.

Figure 5 Outcome Variable of Brand Attitude

```
*************************************************************************
OUTCOME VARIABLE:
 DV_BA

Model Summary
          R        R-sq        MSE           F         df1         df2           p
      .8036       .6458       .6213     75.3502      3.0000    124.0000       .0000

Model
              coeff          se           t           p        LLCI        ULCI
constant     -.1785       .2906      -.6144       .5401      -.7537       .3966
IV_PH         .1096       .0782      1.4017       .1635      -.0452       .2643
Med1_AT       .4138       .0780      5.3022       .0000       .2593       .5682
Med2_SC       .5177       .0883      5.8603       .0000       .3429       .6926
```

The results in Figure 6 indicate that the total effect of perceived humanness (IV_PH) on brand attitude (DV_BA) is significant, with a coefficient of 0.6423, a standard error of 0.0777, and a t-value of 8.2650, leading to a p-value of less than 0.001. This suggests that overall, perceived humanness (IV_PH) has a significant impact on brand attitude (DV_BA), which is further supported by the 95% confidence interval that does not include zero. However, when examining the direct effect of perceived humanness (IV_PH) on brand attitude (DV_BA), the coefficient is 0.1096 with a standard error of 0.0782, and the t-value is 1.4017, with a p-value of 0.1635. This indicates that the direct effect is not statistically significant, as the 95% confidence interval includes zero, suggesting that perceived humanness does not significantly influence brand attitude directly.

The indirect effects, on the other hand, are significant. The total indirect effect is 0.5327 with a standard error of 0.0793, and the confidence interval does not include zero, confirming the significance of the indirect effect. Specifically, the first mediator, attractiveness, has an indirect effect of 0.2403 with a standard error of 0.0602, and its confidence interval indicates a significant mediation effect. Similarly, the second mediator, source credibility, shows an indirect effect of 0.2924 with a standard error of 0.0719, and its confidence interval also confirms a significant mediation effect.

Figure 6 Total, Direct, and Indirect Effects of Parallel Mediation

```
************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect        se         t          p         LLCI        ULCI
      .6423      .0777     8.2650      .0000       .4885       .7961

Direct effect of X on Y
     Effect        se         t          p         LLCI        ULCI
      .1096      .0782     1.4017      .1635      -.0452       .2643

Indirect effect(s) of X on Y:
            Effect     BootSE    BootLLCI    BootULCI
TOTAL        .5327      .0793       .3819       .6909
Med1_AT      .2403      .0602       .1271       .3624
Med2_SC      .2924      .0719       .1590       .4382
```

Overall, while the direct effect of perceived humanness on brand attitude is not significant, the significant indirect effects through the two mediators suggest that the relationship between perceived humanness and brand attitude is mediated by attractiveness and source credibility. Thus, H4 and H5 are supported. The following figure illustrates the results of the parallel mediation analysis.

Figure 7 Result of Testing Parallel Mediation
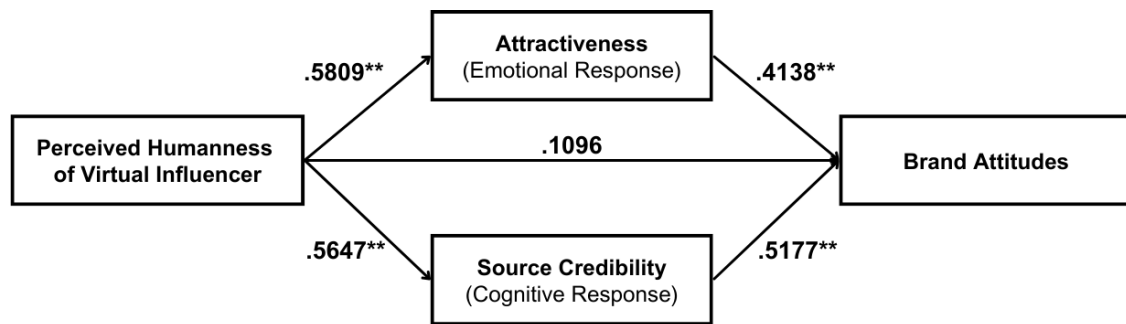
** p value < .001

4.7 Summary

By systematically preparing, reviewing, and analysing the data collected from 128 samples via a questionnaire survey, and conducting statistical analyses using SPSS, all five hypotheses were confirmed to be true, as summarised in Table 20. H1, H2, and H3 were supported by the correlation and regression analysis, indicating that the perceived humanness of a VI has a positive impact on consumers' brand attitude towards a luxury brand and their perceived attractiveness and source credibility towards the VI respectively. Finally, H4 and H5 were supported, showing that attractiveness and source credibility mediate the relationship between perceived humanness and brand attitude.

Table 20 Summary of Hypothesis Testing Results

No.	Hypothesis	Result of Testing
H1	Perceived humanness of a VI has a positive impact on consumers' brand attitude towards a luxury brand.	Supported
H2	Perceived humanness of a VI has a positive impact on consumers' perceived attractiveness towards the VI.	Supported

H3	Perceived humanness of a VI has a positive impact on consumers' perceived source credibility towards the VI.	Supported
H4	Attractiveness mediates the relationship between perceived humanness and brand attitude.	Supported
H5	Source credibility mediates the relationship between perceived humanness and brand attitude.	Supported

5 Chapter 5: Discussion and Conclusion

5.1 Introduction

This chapter begins by examining the findings derived from the data analysis conducted in Chapter 4, demonstrating how these outcomes align with or extend the existing literature on research questions, particularly in the context of virtual influencers (VIs) in luxury branding. The chapter then dives into the broader implications of these findings, considering both theoretical and practical aspects that contribute to the current understanding of perceived humanness, attractiveness, and source credibility. Following this, the research limitations are acknowledged, which could be refined in future studies. Finally, the chapter concludes by summarising the entire research.

5.2 Discussion of Findings

This research aimed to investigate the impact of perceived humanness of VIs on consumers' brand attitudes towards luxury brands. By employing data collected through online questionnaires, this study conducted appropriate analyses under the assistance of SPSS software to examine the relationship between the perceived humanness of VIs and consumers' brand attitudes. In addition to this, the study explored the mediating roles of attractiveness (as an emotional response) and source credibility (as a cognitive response) in this relationship. The sections below will discuss how the findings from this research address the research questions outlined in the introductory chapter of this study.

5.2.1 RQ1: How does the perceived humanness of VIs influence consumers' brand attitudes towards luxury brands?

The data analysis presented in Section 4.6.1 provides robust evidence supporting H1, demonstrating that higher levels of perceived humanness in VIs are strongly correlated with more positive brand attitudes. Specifically, the findings reveal that perceived humanness significantly predicts brand attitude, accounting for a substantial portion of its variance (B = 0.642, p < 0.001). This aligns with the Media Equation theory, which posits that individuals interact with media and technology—including all forms of virtual agents—similarly to how they would

interact with real people (Reeves & Nass, 1996). In the context of social media influencers (SMIs), it is reasonable to assume that users will respond to VIs in a manner similar to their interactions with human influencers (HIs). However, the Uncanny Valley effect (Mori, 1970) suggests that the degree of perceived humanness can influence the extent to which these virtual characters are accepted by consumers.

Advancements in artificial intelligence (AI) and machine learning have significantly enhanced the perceived humanness of VIs, which plays a crucial role in shaping consumers' attitudes towards brands. Through natural language processing, VIs can interpret and respond to social media interactions in ways that mimic human communication, while image recognition technologies enable them to analyse visual content, making their interactions more lifelike (Kietzmann et al., 2018). This heightened perceived humanness helps to forge stronger connections both in emotion and cognition between consumers and VIs, a factor that is especially important for luxury brands, where such connections can enhance brand favourability. Machine learning further amplifies this effect by allowing VIs to continuously refine and personalise their interactions, thereby better meeting the individual preferences of consumers and boosting brand attitudes (Liu, 2019). These findings also align with previous research (e.g., Lee & Ham, 2023; Lou et al., 2023; Sands et al., 2022), suggesting that as the boundaries between human and machine behaviour become increasingly blurred, these technologically driven emotional and cognitive connections can magnify the influence of VIs within luxury branding, making them a valuable asset for brands seeking to maintain a competitive edge.

This research also extends the work of Arsenyan & Mirowska (2021), who highlighted the role of human-like VIs in strengthening brand personality perceptions, a crucial aspect in the luxury branding context. Luxury brands distinguish themselves from others largely due to their ability to create dreams and evoke a sense of aspiration (Chevalier & Mazzalovo, 2012). This concept is illustrated in the collaboration between VI imma and Coach for the 2024 Spring collection, which serves as a case study in this research. This campaign

embodies a futuristic sense of fashion—a key human-like characteristic that defines imma's unique position as a VI. imma's perceived humanness is crafted through various elements, including her sense of life—the liveliness and energy she showed in her interactions—and her sense of reality, which makes her appear convincingly integrated into real-world settings in the campaign. Her type of movement is fluent and natural, further enhancing her human-like appeal. The collaboration also leverages imma's human-likeness, seen in her realistic facial expressions and manners, and her perceived lifespan, which contributes to her ongoing relevance and connection with the audience.

By combining these advanced human-like features with the futuristic atmosphere crafted in the campaign, Coach's new season's products are infused with a forward-looking sense of style, effectively appealing to the younger generation's high level of acceptance towards VIs. Building on the campaign's core message, 'Find Your Courage,' Coach launched a brand-new virtual runway (as presented in Figure 8), emphasising the brand's effort to incorporate futurism into its cultural identity (Lockwood, 2024). By doing so, Coach seeks to bridge the gap between the brand and younger consumers, strategically aligning its brand narrative with the values and expectations of a new generation that is increasingly engaged with virtual and innovative experiences.

Figure 8 Virtual Runway of Coach

5.2.2 RQ2: How does the perceived humanness of a VI affect consumers' perceptions of attractiveness towards the VI?

The data analysis in Section 4.6.2 provides strong evidence supporting H2 which focuses on the relationship of perceived humanness of a VI and consumers' perceived attractiveness towards the VI. The relationship between perceived humanness and attractiveness in VIs is foundational to understand their effectiveness in luxury branding. At the core, human-like traits such as realistic facial expressions, biological movements, and lifelike behaviours significantly enhance the perceived attractiveness of VIs. Drawing on the Media Equation theory (Reeves & Nass, 1996), which suggests that people interact with media and virtual entities similarly to how they engage with real humans, it becomes evident that the more closely a VI mimics human attributes, the more likely they are to be perceived as attractive by consumers. This attractiveness is not merely an aesthetic judgement but an essential factor that influences how consumers relate to the VI and the brand they represent.

However, this relationship is complicated by the Uncanny Valley theory (Mori, 1970). While certain levels of human-likeness can enhance a VI's appeal, surpassing a particular threshold where the VI appears almost but not entirely human can evoke feelings of discomfort or eeriness in consumers. This phenomenon suggests that while enhancing human-like traits is crucial, there must be a careful balance to avoid diminishing attractiveness, a finding that aligns with previous research by Ho & MacDorman (2010)Arsenyan & Mirowska (2021), and others. For luxury brands, which rely heavily on creating aspirational and emotional experiences, this balance is particularly important. VIs that are designed with the right degree of perceived humanness can effectively enhance their attractiveness, making them more relatable and appealing without triggering negative responses associated with the Uncanny Valley.

Coach's decision to feature imma as the face of their 2024 Spring Collection highlights the strategic use of perceived humanness to enhance a virtual influencer's attractiveness. imma's signature pink bob and East Asian-inspired features resonate strongly with her social media audience, positioning her as a

fashion icon. Her well-crafted identity, reinforced by numerous collaborations with real-world celebrities, allows her to transcend the typical limitations of virtual influencers. This high level of perceived humanness helps to mitigate any negative perceptions of her virtual nature, even among those unfamiliar with her. In the luxury branding context, where emotional engagement is crucial, imma's human-like traits not only attract a younger audience but also align with Coach's innovative yet traditional brand narrative, making her an effective and relatable ambassador.

Figure 9 imma x Coach 2024 Spring Collection

5.2.3 RQ3: How does the perceived humanness of a VI affect consumers' perceptions of source credibility towards the VI?

The data analysis in Section 4.6.3 provides strong evidence supporting H3, showing that higher levels of perceived humanness in VIs are significantly correlated with increased source credibility. Previous research has raised concerns about the credibility of VIs. Fernandes & Oliveira (2021) and Sands et al. (2022) found that while VIs can increase word-of-mouth (WOM) due to their uniqueness, they are often perceived as less trustworthy than human influencers, largely due to the automated nature of their interactions. Similarly, Thomas &

Fowler (2021) suggest that brands often leverage VIs more for the novelty and attention they generate, rather than for their credibility. While VIs are recognised for their novelty and potential to engage audiences, the literature has largely remained doubtful of their credibility, especially in terms of trustworthiness and expertise. Thus, this prevailing scepticism sets the stage for exploring whether higher levels of perceived humanness can mitigate these concerns and positively impact the source credibility of VIs.

To explain these findings, Interpersonal Theory offers a valuable perspective. This theory posits that human-like characteristics in interactions foster trust and credibility (Shechtman & Horowitz, 2003). As VIs exhibit more humanlike features—such as biological movement, realistic facial expressions, and living behaviours— they build trust in consumers in much the same way as human endorsers do. This increased trust, along with enhanced perceptions of expertise, directly contributes to higher overall source credibility. This increased trust, along with enhanced perceptions of expertise, directly contributes to higher overall source credibility.

Furthermore, the Source Credibility Model by Hovland & Weiss (1951) underlines that credibility is built on trustworthiness and expertise as well. The strong link between perceived humanness and these credibility factors indicates that consumers are more inclined to view VIs as credible when they exhibit human-like traits. This may be because these traits help bridge the gap between technology and human interaction, making VIs seem more relatable and reliable, despite their automated nature. This, in return, suggests that VIs lacking in human-like qualities may indeed struggle to establish credibility, reinforcing the concerns raised by earlier studies. Thus, the degree of perceived humanness appears to be a key determinant in whether VIs can overcome the credibility challenges identified in previous literature.

5.2.4 RQ4: Does attractiveness, as an emotional response, mediate the relationship between perceived humanness and brand attitude?

The role of attractiveness as an emotional response is crucial in understanding how perceived humanness in VIs impacts brand attitudes, particularly within the context of luxury branding. As previously discussed, perceived humanness significantly enhances a VI's attractiveness by introducing them with human-like qualities that resonate emotionally with consumers. imma, as featured in Coach's 2024 Spring Collection, testified this connection—her lifelike features and distinctive style not only elevate her attractiveness but also foster a deeper emotional engagement with the audience. This emotional response is pivotal in forming positive brand attitudes, as consumers are more likely to feel connected to a brand when its endorsers are perceived as attractive and relatable.

Additionally, human-like VIs have the capacity to evoke emotional responses similar to those elicited by HIs, thereby building a stronger emotional connection with the audience. The findings by Kim & Park (2023) further support this notion, demonstrating that a VI's attractiveness, benefited by their perceived humanness, positively influences mimetic desire and brand attachment. This emotional engagement deepens the consumer's connection not only with the VI but also with the luxury brand itself, ultimately enhancing the brand's appeal.

To sum up, the perceived humanness of a VI directly influences their attractiveness, which in turn plays a critical role in shaping consumer attitudes towards the brand. Attractiveness thus serves as a mediating factor in this relationship. The emotional response elicited by an attractive VI reinforces the positive impact of perceived humanness on brand attitude, making consumers more inclined to develop favourable perceptions of the brand. In essence, it is not just the human-like qualities of the VI that matter, but how these qualities enhance the emotional connection through attractiveness, which ultimately shapes consumer attitudes towards the brand. Therefore, attractiveness, as an emotional response, indeed plays a mediating role in the relationship between perceived

humanness and brand attitude, especially within the high-stakes domain of luxury branding.

5.2.5 RQ5: Does source credibility, as a cognitive response, mediate the relationship between perceived humanness and brand attitude?

The results of this study underline the critical role that source credibility plays in mediating the relationship between perceived humanness and brand attitude. While it has been established that higher levels of perceived humanness directly enhance brand attitudes, the mediation analysis reveals that source credibility significantly amplifies this effect. Specifically, as VIs become more human-like, exhibiting traits such as biological movements, realistic facial expressions, and living behaviours, they are not only perceived as more engaging but also as more credible sources of information.

This increase in perceived credibility, particularly in the dimensions of trustworthiness and expertise, serves as a crucial cognitive mechanism that translates the human-like attributes of VIs into stronger brand attitudes. In other words, when consumers perceive a VI as credible, they are more likely to internalise the messages being conveyed, leading to a more positive evaluation of the brand. The cognitive process involved here is essential: consumers assess the human-like qualities of the VI, which then informs their judgement of the VI's credibility. This judgement, in turn, influences their attitude towards the brand the VI endorses.

5.3 Theoretical Implications

In summary, this study provides significant theoretical contributions by deepening our understanding of the relationships between perceived humanness, attractiveness, source credibility, and brand attitude within the context of VIs in luxury branding. The findings extend existing theories and offer nuanced insights that can shape future research in this area.

Firstly, this study reinforces the Media Equation theory (Reeves & Nass, 1996). The research examines that perceived humanness in VIs plays a critical role in

influencing consumer attitudes towards luxury brands. VIs that successfully mimic human traits are perceived more positively, not just in terms of their attractiveness but also in their overall credibility, which in turn enhances brand attitudes. This suggests that the principles of human-computer interaction extend effectively into the domain of luxury branding, where the emotional and cognitive connections between consumers and VIs are crucial.

Secondly, the study builds on the Uncanny Valley theory by highlighting the delicate balance required in enhancing perceived humanness. While human-like traits are essential in making VIs more attractive and relatable, there is a threshold beyond which these traits can trigger discomfort. This finding is particularly relevant in luxury branding, where consumer expectations for refinement and authenticity are high. The ability to navigate this balance is key to leveraging VIs effectively within this context.

Furthermore, the research contributes to the Source Credibility Model by demonstrating that perceived humanness can enhance the trustworthiness and expertise of VIs, thereby increasing their overall source credibility. This expands the traditional understanding of source credibility which has primarily focused on human endorsers (Bruner & Hensel, 2020; Chen & Yuan, 2019; Hoffner & Buchanan, 2005), by incorporating the impact of virtual entities. The findings suggest that VIs, when designed with appropriate levels of perceived humanness, can effectively bridge the gap between technology and human interaction, making them credible endorsers in the eyes of consumers.

Lastly, the study reveals the mediating role of attractiveness as an emotional response and source credibility as a cognitive factor, which links perceived humanness to brand attitude. This insight adds a new layer to our understanding of how emotional and cognitive responses interact in shaping consumer behaviour. It underscores the importance of designing VIs that not only exhibit human-like features but also resonate emotionally with the target audience, particularly in the luxury sector, where brand attachment is closely tied to emotional appeal.

Overall, this research enriches the theoretical landscape by integrating and extending key theories in human-computer interaction, social psychology, and marketing. It opens new avenues for exploring the complex dynamics of virtual influencers in luxury branding, offering a structured approach to understanding how perceived humanness influences consumer perceptions and behaviours.

5.4 Practical Implications

The findings of this study also offer several practical implications for marketers, brand managers, and designers who are navigating the emerging field of VIs within the luxury branding sector. By understanding the balance between perceived humanness, attractiveness, source credibility, and brand attitude, professionals can more effectively harness the potential of VIs to strengthen brand positioning and consumer engagement.

Firstly, the strong link between perceived humanness and both attractiveness and source credibility underline the importance of crafting VIs with human-like qualities. To be specific, Balmain's 2018 launch of its 'Virtual Army' marked a significant shift in how digital technology integrates with fashion, sparking a virtual trend that many luxury brands began to follow (Cresci, 2018), embracing a futuristic aesthetic. While this move attracted considerable attention at the time, it is worth noting that the perceived humanness of the three supermodels in Balmain's virtual army was relatively low, as their hair, makeup, and movements still bore visible CGI elements. Although Balmain has continued exploring digital models and 3D technologies, such as its 2023 collaboration with BODS for a 3D fitting and styling experience (Witteman, 2023), there has been little continuity in campaigns related to the Virtual Army. This underscores the importance for luxury brands not only to achieve the right balance between lifelike realism and relatability but also to maintain consistency in their virtual campaigns. Brands that successfully navigate these challenges can create VIs that are not only visually appealing but also foster trust and credibility, leading to more favourable brand attitudes.

Moreover, the mediating role of attractiveness suggests that VIs should be designed with a strong emphasis on aesthetic appeal, tailored to resonate with

the target audience's preferences. For instance, as demonstrated by the case of imma's collaboration with Coach for their 2024 Spring Collection, VIs that align with the visual and cultural aesthetics valued by specific demographics can significantly enhance brand engagement. imma's distinct pink bob and alignment with East Asian beauty standards helped her stand out on social media and appeal to a younger, fashion-conscious audience. This example illustrates how carefully curated appearances and brand alignment can enhance the emotional appeal of VIs, making them powerful tools in luxury marketing.

Last but not least, the implications for source credibility suggest that brands should not only focus on the visual and behavioural aspects of VIs but also consider how these entities can be positioned as experienced and trustworthy. This could involve creating backstories or personas that emphasise expertise in relevant areas, such as fashion for luxury brands. Additionally, careful scripting of their communications and endorsements can enhance their perceived expertise and trustworthiness, further strengthening their impact as brand ambassadors.

5.5 Limitations

While this research provides valuable insights into the impact of perceived humanness, attractiveness, and source credibility of virtual influencers (VIs) on brand attitudes within the luxury market, several limitations should be acknowledged. First, the use of a single VI (imma) and a specific brand collaboration (Coach's 2024 Spring Collection) as the primary case study may limit the generalisability of the findings. The particularities of imma's established reputation and the specific branding strategies employed by Coach could influence the results, making it challenging to apply the conclusions to other virtual influencers or brands.

Another significant limitation of this research is its reliance on a cross-sectional rather than a longitudinal approach. The study captures consumer perceptions and attitudes at a single point in time, which provides valuable but static insights into the relationship between perceived humanness, attractiveness, source credibility, and brand attitude. However, consumer attitudes and perceptions,

especially in the context of luxury branding and virtual influencers, are likely to evolve over time with repeated exposure and changing market trends. A longitudinal approach would have allowed for the examination of how these perceptions develop and solidify, providing a more dynamic understanding of the lasting impact of virtual influencers on brand attitudes. This limitation suggests that while the current findings are indicative, they may not fully account for the temporal aspects of consumer behaviour, which could be crucial in forming a comprehensive view of the long-term effectiveness of virtual influencers in luxury marketing.

Finally, the choice of a unidimensional approach to measuring brand attitude limits the multidimensional understanding of consumers' perception towards luxury brands. While the unidimensional scale provides a straightforward and practical means of capturing brand attitude, it may oversimplify the complex nature of consumers' perceptions and evaluations. Brand attitude is often considered a multidimensional construct, encompassing various facets such as cognitive, affective, and behavioural responses. By focusing solely on a unidimensional scale, the study may not fully capture the richness of consumers' attitudes towards luxury brands, potentially overlooking critical nuances that could affect the overall findings. A multidimensional approach would allow for a more comprehensive understanding of how different aspects of brand attitude are influenced by perceived humanness, attractiveness, and source credibility. Future research could address this limitation by employing a multidimensional scale to better capture the complexity of brand attitudes and to explore how each dimension is differently impacted by virtual influencers in the luxury context.

5.6 Future Research

Future research could explore the generalisability of the findings by incorporating a broader range of VIs and brand collaborations. The current study focused on the collaboration between VI imma and Coach's 2024 Spring Collection, which limits the ability to apply these findings to other contexts. Future studies could examine different VIs with varying levels of perceived humanness, attractiveness, and source credibility across diverse luxury and non-luxury brands. This would

allow for a more comprehensive understanding of how these factors influence brand attitudes in different market segments and across different cultural contexts.

Second, there is a need for longitudinal studies that track changes in consumer perceptions and attitudes over time. The cross-sectional design of the current study provides a snapshot of consumer responses at a single point in time, but it does not account for how these responses might evolve with repeated exposure to VIs. Longitudinal research could investigate how long-term engagement with VIs affects brand attitudes, particularly in the dynamic luxury market where trends and consumer preferences can shift rapidly. Such research would offer deeper insights into the sustainability of the impact of VIs on brand perception and the potential for building long-lasting brand equity.

Third, future research should consider employing a multidimensional approach to measuring brand attitude. While the current study used a unidimensional scale for practicality, it may have oversimplified the complex nature of brand attitudes, particularly in the luxury sector. A multidimensional scale that captures cognitive, affective, and behavioural components of brand attitude would provide a more nuanced understanding of how perceived humanness, attractiveness, and source credibility influence consumer perceptions. Additionally, exploring how each dimension of brand attitude is impacted by VIs could reveal important differences in how these factors contribute to overall brand equity.

While this study is situated within the luxury branding context, the insights gained could be applicable across various industries. Future research could explore how the principles of perceived humanness, attractiveness, and source credibility apply in other sectors, such as technology, healthcare, or entertainment. Each industry has its own unique challenges and consumer expectations, which could influence how VIs are perceived and utilised.

5.7 Conclusion

This research provides significant insights into the role of perceived humanness, attractiveness, and source credibility in shaping brand attitudes towards luxury

brands, particularly in the context of VIs. The findings demonstrate that higher levels of perceived humanness in VIs positively impact both their perceived attractiveness and source credibility, which in turn mediate the relationship between perceived humanness and brand attitude. The use of a VI like imma in Coach's 2024 Spring Collection campaign exemplifies how these elements can be strategically leveraged to enhance consumer engagement and brand perception. Despite its contributions, the study acknowledges limitations, including the reliance on a unidimensional measure of brand attitude and the lack of a longitudinal perspective. These limitations suggest directions for future research, which could adopt a multidimensional approach to brand attitude and explore the evolving dynamics of consumer perceptions over time. Overall, this research underscores the growing relevance of VIs in luxury branding and their potential to influence consumer attitudes through carefully crafted human-like characteristics.

References

Ahn, R. J., Cho, S. Y., & Sunny Tsai, W. (2022). Demystifying Computer-Generated Imagery (CGI) Influencers: The Effect of Perceived Anthropomorphism and Social Presence on Brand Outcomes. *Journal of Interactive Advertising*, *22*(3), 327–335. https://doi.org/10.1080/15252019.2022.2111242

Amos, C., Holmes, G., & Strutton, D. (2008). Exploring the relationship between celebrity endorser effects and advertising effectiveness. *International Journal of Advertising*, *27*(2), 209–234. https://doi.org/10.1080/02650487.2008.11073052

Andrews, J. C., & Shimp, T. A. (2017). *Advertising, promotion, and other aspects of integrated marketing communications*.

Arsenyan, J., & Mirowska, A. (2021). Almost human? A comparative case study on the social media presence of virtual influencers. *International Journal of Human-Computer Studies*, *155*, 102694. https://doi.org/10.1016/J.IJHCS.2021.102694

Baklanov, N. (2019, December 29). *Instagram's Most Popular Virtual Influencers in 2019*. Hype Auditor. https://hypeauditor.com/blog/the-top-instagram-virtual-influencers-in-2019/

Baklanov, N. (2022, December 23). *Instagram's Top 20 Virtual Influencers in 2022*. Hype Auditor. https://hypeauditor.com/blog/the-top-virtual-instagram-influencers-in-2022/#top-20-virtual-influencers-on-instagram-in-2022

Bartneck, C., Kanda, T., Ishiguro, H., & Hagita, N. (2009). My robotic doppelgänger - A critical look at the Uncanny Valley. *Proceedings - IEEE International Workshop on Robot and Human Interactive Communication*, 269–276. https://doi.org/10.1109/ROMAN.2009.5326351

Bartneck, C., Kulić, D., Croft, E., & Zoghbi, S. (2009). Measurement instruments for the anthropomorphism, animacy, likeability, perceived intelligence, and

perceived safety of robots. *International Journal of Social Robotics*, *1*(1), 71–81. https://doi.org/10.1007/S12369-008-0001-3/METRICS

Behrooz, S. (2023, December 10). *The Impact of Virtual Influencers in Luxury Fashion Marketing*. Linkedin. https://www.linkedin.com/pulse/impact-virtual-influencers-luxury-fashion-marketing-sanaz-behrooz-iiehe/

Belanche, D., Casaló, L. V., Flavián, M., & Ibáñez-Sánchez, S. (2021). Building influencers' credibility on Instagram: Effects on followers' attitudes and behavioral responses toward the influencer. *Journal of Retailing and Consumer Services*, *61*, 102585. https://doi.org/10.1016/J.JRETCONSER.2021.102585

Boissieu, E. de, & Baudier, P. (2023). The perceived credibility of human-like social robots: virtual influencers in a luxury and multicultural context. *Journal of Organizational Change Management*, *36*(7), 1163–1179. https://doi.org/10.1108/JOCM-05-2023-0182/FULL/PDF

Breazeal, C. (2003). Emotion and sociable humanoid robots. *International Journal of Human-Computer Studies*, *59*(1–2), 119–155. https://doi.org/10.1016/S1071-5819(03)00018-1

Breves, P. L., Liebers, N., Abt, M., & Kunze, A. (2019). The Perceived Fit between Instagram Influencers and the Endorsed Brand. *Journal of Advertising Research*, *59*(4), 440–454. https://doi.org/10.2501/JAR-2019-030

Bruner, G. C., & Hensel, P. J. (2020). Social Media Influencer in Advertising: The Role of Attractiveness, Expertise and Trustworthiness. *Journal of the Academy of Marketing Science*, *21*(4), 339–344. https://doi.org/10.1007/BF02894526

Bryman, A. (2016). *Social Research Methods* (5th ed.). Oxford University Press. https://books.google.co.uk/books?hl=en&lr=&id=N2zQCgAAQBAJ&oi=fnd&pg=PP1&dq=Social+Research+Methods&ots=dqKtGQP8nk&sig=ag06hbz881oDNeLmlboprMwlWCs&redir_esc=y#v=onepage&q=Social%20Research%20Methods&f=false

Burrell, G., & Morgan, G. (2019). Sociological Paradigms and Organisational Analysis : Elements of the Sociology of Corporate Life. *Sociological Paradigms and Organisational Analysis*. https://doi.org/10.4324/9781315609751

Chen, L., & Yuan, S. (2019). Influencer Marketing: How Message Value and Credibility Affect Consumer Trust of Branded Content on Social Media. *Journal of Interactive Advertising*, *19*(1), 58–73. https://doi.org/10.1080/15252019.2018.1533501

Chevalier, M., & Mazzalovo, G. (2012). Luxury Brand Management: A World of Privilege. In *Luxury Brand Management*. John Wiley & Sons. https://doi.org/10.1002/9781119199168

Chitrakorn, K. (2021, December 7). *What influencer marketing looks like in the metaverse | Vogue Business*. Vogue Business. https://www.voguebusiness.com/technology/what-influencer-marketing-looks-like-in-the-metaverse

Christopher. (2022, October 12). *Who is Virtual Model and Fashion Icon, imma? — VirtualHumans.org*. Virtual Humans. https://www.virtualhumans.org/article/who-is-virtual-model-and-fashion-icon-imma

Coach. (2024, February 15). *COACH INTRODUCES "FIND YOUR COURAGE."* PR Newswire. https://www.prnewswire.com/news-releases/coach-introduces-find-your-courage-302063081.html

Cohn, M., Keaton, A., Beskow, J., & Zellou, G. (2023). Vocal accommodation to technology: the role of physical form. *Language Sciences*, *99*. https://doi.org/10.1016/J.LANGSCI.2023.101567

Cresci, E. (2018, September 12). *From Instagram to Balmain: The rise of CGI models - BBC News*. BBC. https://www.bbc.co.uk/news/newsbeat-45474286

Deppen, L. (2024, February 8). *Coach leads Tapestry to Q2 revenue increase in fiscal 2024, but other brands lag | Fashion Dive*. FashinDive. https://www.fashiondive.com/news/tapestry-q2-earnings-coach-outperforms/707006/

Desimone, J. A., Harms, P. D., & Desimone, A. J. (2015). Best practice recommendations for data screening. *Journal of Organizational Behavior*, *36*(2), 171–181. https://doi.org/10.1002/JOB.1962

Djafarova, E., & Rushworth, C. (2017). Exploring the credibility of online celebrities' Instagram profiles in influencing the purchase decisions of young female users. *Computers in Human Behavior*, *68*, 1–7. https://doi.org/10.1016/J.CHB.2016.11.009

Erdogan, B. Z. (1999). Celebrity Endorsement: A Literature Review. *Journal of Marketing Management*, *15*(4), 291–314. https://doi.org/10.1362/026725799784870379

Fernandes, T., & Oliveira, E. (2021). Understanding consumers' acceptance of automated technologies in service encounters: Drivers of digital voice assistants adoption. *Journal of Business Research*, *122*, 180–191. https://doi.org/10.1016/J.JBUSRES.2020.08.058

Fink, M., Koller, M., Gartner, J., Floh, A., & Harms, R. (2020). Effective entrepreneurial marketing on Facebook – A longitudinal study. *Journal of Business Research*, *113*, 149–157. https://doi.org/10.1016/J.JBUSRES.2018.10.005

Forbes Agency Council. (2024, May 23). *17 Expert Insights Into The Rise Of AI Influencers*. Forbes. https://www.forbes.com/sites/forbesagencycouncil/2024/05/23/17-expert-insights-into-the-rise-of-ai-influencers/

Fowler Jr, F. J. (2014). Survey Research Methods. In *SAGE Publications* (5th ed.). SAGE Publications. https://books.google.co.uk/books?hl=en&lr=&id=WM11AwAAQBAJ&oi=fnd

&pg=PP1&dq=Survey+Research+Methods&ots=6QsFAcbMdX&sig=5kbJU
Jv3ffpNzIj21L2VqNE5QNI&redir_esc=y#v=onepage&q=Survey%20Resear
ch%20Methods&f=false

Franck, V., & Lester W., J. (2004). Measuring perceptions of brand luxury. *Journal of Brand Management*, *11*(6). https://www.proquest.com/docview/232488421?sourcetype=Scholarly%20J ournals&parentSessionId=fHhqqY3%2BqSy3O0F9hIeMJISK8uylWDXSKV 0tJop46ok%3D

GRIN. (2021, February 12). *CGI Influencers: A Complete Guide | GRIN*. GRIN. https://grin.co/blog/cgi-influencers/

Ho, C. C., & MacDorman, K. F. (2010). Revisiting the uncanny valley theory: Developing and validating an alternative to the Godspeed indices. *Computers in Human Behavior*, *26*(6), 1508–1518. https://doi.org/10.1016/J.CHB.2010.05.015

Ho, C. C., & MacDorman, K. F. (2017). Measuring the Uncanny Valley Effect: Refinements to Indices for Perceived Humanness, Attractiveness, and Eeriness. *International Journal of Social Robotics*, *9*(1), 129–139. https://doi.org/10.1007/S12369-016-0380-9/FIGURES/5

Hoffner, C., & Buchanan, M. (2005). Young Adults' Wishful Identification With Television Characters: The Role of Perceived Similarity and Character Attributes. *Media Psychology*, *7*(4), 325–351. https://doi.org/10.1207/S1532785XMEP0704_2

Houston, A. (2024, February 28). *Ad of the Day: Lil Nas X and virtual model Imma star in AI-inspired Coach campaign | The Drum*. The Drum. https://www.thedrum.com/news/2024/02/28/ad-the-day-lil-nas-x-and-virtual-model-imma-star-ai-inspired-coach-campaign

Hovland, C. I., & Weiss, W. (1951). The Influence of Source Credibility on Communication Effectiveness. *Public Opinion Quarterly*, *15*(4), 635–650. https://doi.org/10.1086/266350

Huang, J. L., Curran, P. G., Keeney, J., Poposki, E. M., & DeShon, R. P. (2012). Detecting and Deterring Insufficient Effort Responding to Surveys. *Journal of Business and Psychology*, *27*(1), 99–114. https://doi.org/10.1007/S10869-011-9231-8/TABLES/9

Influencer Marketing Factory. (2022, March 29). *Virtual Influencers Survey + INFOGRAPHIC - Influencer Marketing Factory*. Influencer Marketing Factory. https://theinfluencermarketingfactory.com/virtual-influencers-survey-infographic/

Jhamb, D., Aggarwal, A., Mittal, A., & Paul, J. (2020). Experience and attitude towards luxury brands consumption in an emerging market. *European Business Review*, *32*(5), 909–936. https://doi.org/10.1108/EBR-09-2019-0218/FULL/XML

Jhawar, A., Kumar, P., & Varshney, S. (2023). The emergence of virtual influencers: a shift in the influencer marketing paradigm. *Young Consumers*, *24*(4), 468–484. https://doi.org/10.1108/YC-05-2022-1529/FULL/XML

Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing*, *57*(1), 1. https://doi.org/10.2307/1252054

Kietzmann, J., Paschen, J., & Treen, E. (2018). Artificial Intelligence in Advertising. *Journal of Advertising Research*, *58*(3), 263–267. https://doi.org/10.2501/JAR-2018-035

Kim, H., & Park, M. (2023). Virtual influencers' attractiveness effect on purchase intention: A moderated mediation model of the Product–Endorser fit with the brand. *Computers in Human Behavior*, *143*, 107703. https://doi.org/10.1016/J.CHB.2023.107703

Lee, D., & Ham, C. D. (2023). AI versus Human: Rethinking the Role of Agent Knowledge in Consumers' Coping Mechanism Related to Influencer Marketing. *Journal of Interactive Advertising*, *23*(3), 241–258. https://doi.org/10.1080/15252019.2023.2217830

Leung, F. F., Gu, F. F., & Palmatier, R. W. (2022). Online influencer marketing. *Journal of the Academy of Marketing Science*, *50*(2), 226–251. https://doi.org/10.1007/S11747-021-00829-4/TABLES/4

Liu, X. (2019). A big data approach to examining social bots on Twitter. *Journal of Services Marketing*, *33*(4), 369–379. https://doi.org/10.1108/JSM-02-2018-0049/FULL/PDF

Lockwood, L. (2024, July 18). *Coach Launches Virtual Worlds, Products On Roblox and Zepeto*. Woman's Wear Daily. https://wwd.com/fashion-news/fashion-features/coach-roblox-zepeto-tabby-bag-1236495351/

Lou, C., Kiew, S. T. J., Chen, T., Lee, T. Y. M., Ong, J. E. C., & Phua, Z. X. (2023). Authentically Fake? How Consumers Respond to the Influence of Virtual Influencers. *Journal of Advertising*, *52*(4), 540–557. https://doi.org/10.1080/00913367.2022.2149641

Marcel. (2024, February 27). *Coach introduces "Find Your Courage" starring virtual human imma, and Coach Family Lil Nas X, Camila Mendes, Youngji Lee, Kōki, and Wu Jinyan. - Publicis Groupe - France*. Publicis France. https://france.publicisgroupe.com/coach-introduces-find-your-courage-starring-virtual-human-imma-and-coach-family-lil-nas-x-camila-mendes-youngji-lee-koki-and-wu-jinyan/

McGuire, W. (1985). Attitudes and Attitude Change. *Handbook of Social Psychology*, *2*, 233–346.

Menard, S. W. (2002). *Longitudinal research,* (M. S. Lewis-Beck, Ed.; 2nd ed., Vol. 76). SAGE. https://books.google.com/books/about/Longitudinal_Research.html?id=zbv-S6owVqAC

Mitchell, A. A., & Olson, J. C. (1981). Are Product Attribute Beliefs the Only Mediator of Advertising Effects on Brand Attitude? *Https://Doi.Org/10.1177/002224378101800306*, *18*(3), 318–332. https://doi.org/10.1177/002224378101800306

Molenaar, K. (2024, March 29). *Discover The Top 12 Virtual Influencers for 2024 - Listed and Ranked*. Influencer Marketing Hub. https://influencermarketinghub.com/virtual-influencers/#toc-10

Mori, M. (1970). Bukimi no tani (the uncanny valley). *Energy*, *7*(4), 33–35.

Munnukka, J., Maity, D., Reinikainen, H., & Luoma-aho, V. (2019). "Thanks for watching". The effectiveness of YouTube vlogendorsements. *Computers in Human Behavior*, *93*, 226–234. https://doi.org/10.1016/J.CHB.2018.12.014

Oh, C. S., Bailenson, J. N., & Welch, G. F. (2018). A Systematic Review of Social Presence: Definition, Antecedents, and Implications. *Frontiers in Robotics and AI*, *5*(OCT), 114. https://doi.org/10.3389/FROBT.2018.00114

Ohanian, R. (1990). Construction and Validation of a Scale to Measure Celebrity Endorsers' Perceived Expertise, Trustworthiness, and Attractiveness. *Journal of Advertising*, *19*(3), 39–52. https://doi.org/10.1080/00913367.1990.10673191

Ostrom, T. M. (1969). The relationship between the affective, behavioral, and cognitive components of attitude. *Journal of Experimental Social Psychology*, *5*(1), 12–30. https://doi.org/10.1016/0022-1031(69)90003-1

Park, G., Nan, D., Park, E., Kim, K. J., Han, J., & Del Pobil, A. P. (2021). Computers as Social Actors? Examining How Users Perceive and Interact with Virtual Influencers on Social Media. *Proceedings of the 2021 15th International Conference on Ubiquitous Information Management and Communication, IMCOM 2021*. https://doi.org/10.1109/IMCOM51814.2021.9377397

Reeves, B., & Nass, C. (1996). The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Pla. *Cambridge University Press*. https://www.researchgate.net/publication/37705092_The_Media_Equation_How_People_Treat_Computers_Television_and_New_Media_Like_Real_People_and_Pla

Reinikainen, H., Munnukka, J., Maity, D., & Luoma-aho, V. (2020). 'You really are a great big sister' – parasocial relationships, credibility, and the moderating role of audience comments in influencer marketing. *Journal of Marketing Management*, *36*(3–4), 279–298. https://doi.org/10.1080/0267257X.2019.1708781

Sakib, M. N., Zolfagharian, M., & Yazdanparast, A. (2020). Does parasocial interaction with weight loss vloggers affect compliance? The role of vlogger characteristics, consumer readiness, and health consciousness. *Journal of Retailing and Consumer Services*, *52*, 101733. https://doi.org/10.1016/J.JRETCONSER.2019.01.002

Sands, S., Campbell, C. L., Plangger, K., & Ferraro, C. (2022). Unreal influence: leveraging AI in influencer marketing. *European Journal of Marketing*, *56*(6), 1721–1747. https://doi.org/10.1108/EJM-12-2019-0949/FULL/XML

Saunders, M., Lewis, P., & Thornhill, A. (2023). *Research Methods for Business Students* (9th ed.). Pearson. https://www.pearson.com/nl/en_NL/higher-education/subject-catalogue/business-and-management/saunders-research-methods-for-business-students-9ed.html

Schouten, A. P., Janssen, L., & Verspaget, M. (2020). Celebrity vs. Influencer endorsements in advertising: the role of identification, credibility, and Product-Endorser fit. *International Journal of Advertising*, *39*(2), 258–281. https://doi.org/10.1080/02650487.2019.1634898

Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist*, *54*(2), 93–105. https://doi.org/10.1037/0003-066X.54.2.93

Sdrali, I. S. (2022, February 10). *Imma Stars as the Unexpected 'Face' in Doublet's Fall 2022 Collection — VirtualHumans.org*. Virtual Humans. https://www.virtualhumans.org/article/imma-stars-as-the-unexpected-face-in-doublets-fall-2022-collection

Shechtman, N., & Horowitz, L. M. (2003). Media inequality in conversation: How people behave differently when interacting with computers and people. *Conference on Human Factors in Computing Systems - Proceedings*, 281–288.

Spry, A., Pappu, R., & Cornwell, T. B. (2011). Celebrity endorsement, brand credibility and brand equity. *European Journal of Marketing*, *45*(6), 882–909. https://doi.org/10.1108/03090561111119958/FULL/PDF

Statista. (2023, October). *Market size and revenue comparison for artificial intelligence worldwide from 2018 to 2030*. Statista. https://www.statista.com/statistics/941835/artificial-intelligence-market-size-revenue-comparisons/

Statista. (2024, March). *Influencer advertising - Global | Statista market forecast*. Statista. https://www.statista.com/outlook/amo/advertising/influencer-advertising/worldwide

Stein, J. P., Linda Breves, P., & Anders, N. (2022). Parasocial interactions with real and virtual influencers: The role of perceived similarity and human-likeness. *New Media and Society*. https://doi.org/10.1177/14614448221102900/ASSET/IMAGES/LARGE/10.1177_14614448221102900-FIG2.JPEG

Surendra, N. D. &, Singhph, N. D., Spears, N., & Singh, S. N. (2004). Measuring Attitude toward the Brand and Purchase Intentions. *Journal of Current Issues & Research in Advertising*, *26*(2), 53–66. https://doi.org/10.1080/10641734.2004.10505164

Taherdoost, H. (2022). What are Different Research Approaches? Comprehensive Review of Qualitative, Quantitative, and Mixed Method Research, Their Applications, Types, and Limitations. *Journal of Management Science & Engineering Research*, *5*(1), 53–63. https://doi.org/10.30564/JMSER.V5I1.4538

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53. https://doi.org/10.5116/IJME.4DFB.8DFD

Thomas, V. L., & Fowler, K. (2021). Close Encounters of the AI Kind: Use of AI Influencers As Brand Endorsers. *Journal of Advertising*, *50*(1), 11–25. https://doi.org/10.1080/00913367.2020.1810595

Thorndike, R. M. (1995). Book Review : Psychometric Theory (3rd ed.) by Jum Nunnally and Ira Bernstein . *Http://Dx.Doi.Org/10.1177/014662169501900308*, *19*(3), 303–305. https://doi.org/10.1177/014662169501900308

Vears, D. F., Gillam, L., & Vears, D. (2022). *Inductive content analysis: A guide for beginning qualitative researchers*. *23*(1), 2022. https://doi.org/10.3316/INFORMIT.455663644555599

Virtual Humans. (2019, December 29). *Who is imma? @imma.gram, explained*. Virtual Humans. https://www.virtualhumans.org/human/imma-gram

Virtual Humans. (2020, September 18). *Who is imma? @imma.gram, explained*. Virtual Humans. https://www.virtualhumans.org/human/imma-gram

Watkins, M. W. (2018). Exploratory Factor Analysis: A Guide to Best Practice. *Journal of Black Psychology*, *44*(3), 219–246. https://doi.org/10.1177/0095798418771807/ASSET/IMAGES/LARGE/10.1177_0095798418771807-FIG1.JPEG

Weems, G. H., & Onwuegbuzie, A. J. (2001). The Impact of Midpoint Responses and Reverse Coding on Survey Data. *Measurement and Evaluation in Counseling and Development*, *34*(3), 166–176. https://doi.org/10.1080/07481756.2002.12069033

Witteman, C. (2023, November 15). *Bring The Runway To Your Closet With Balmain's Virtual Try-On Experience*. Crfashionbook. https://crfashionbook.com/balmain-bods-virtual-fitting-experience/

Xin Zhou. (2020). *Virtual Youtuber Kizuna AI: Co-creating human-non-human interaction and celebrity-audience relationship*.

Yim, M. Y. C., Sauer, P. L., Williams, J., Lee, S. J., & Macrury, I. (2014). Drivers of attitudes toward luxury brands: A Cross-National Investigation into the roles of Interpersonal Influence and Brand Consciousness. *International Marketing Review*, *31*(4), 363–389. https://doi.org/10.1108/IMR-04-2011-0121/FULL/PDF

Yoo, B., & Donthu, N. (2001). Developing and validating a multidimensional consumer-based brand equity scale. *Journal of Business Research*, *52*(1), 1–14. https://doi.org/10.1016/S0148-2963(99)00098-3

Appendices

Appendix A Ethical Approval Letter

17 July 2024

Dear Miss Ko ,

Reference: CURES/23037/2024
Project ID: 26478
Title: Virtual Allure: The Role of Credibility and Attractiveness in Luxury Branding with Virtual Influencers

Thank you for your application to the Cranfield University Research Ethics System (CURES).

We are pleased to inform you your CURES application, reference CURES/23037/2024 **has been reviewed. You may now proceed with the research activities you have sought approval for.**

If you have any queries, please contact CURES Support.

We wish you every success with your project.

Regards,

CURES Team

Appendix B Survey Questionnaire

Virtual Influencers and Luxury Brands: How Perceived Humanness, Attractiveness, and Credibility Shape Consumer Attitudes

Consent Form

You are invited to take part in a research study on [Virtual Influencers and Luxury Brands: How Perceived Humanness, Attractiveness, and Credibility Shape Consumer Attitudes]. The study is designed to examine how the perceived humanness of virtual influencers affects consumer attitudes towards luxury brands.

Your participation will take about 5 minutes. Your participation in this study is voluntary and you have the right to withdraw at any point during the study, for any reason, and without any prejudice. All personal information that you provide will be treated with the strictest confidence. Responses will be analysed and the final analysis will be published in support of the research findings. Direct identifiers, if applicable, will be excluded and all reasonable steps will be taken to anonymise the dataset as far as possible before publication. Data will be stored securely in accordance with the EU General Data Protection Regulation (Regulation (EU) 2016/679).

If there is anything about the study or taking part in it that is unclear or if you have any questions you may contact the principal investigator, Ko, Chung-Ni (chung-ni.ko.982@cranfield.ac.uk).

This study has received ethics approval from Cranfield University (Reference: CURES/23037/2024).

If you click CONTINUE, you agree to participate based on the above terms and will be brought to the survey.

If you click QUIT or close your browser window, we understand that you decline to participate.

o   CONTINUE (1)

o   QUIT (2)

Pre Questions

How familiar are you with virtual influencers before participating in this survey?

o   Completely unfamiliar (1)

o   Very unfamiliar (2)

o   Somewhat unfamiliar (3)

o   Neither familiar nor unfamiliar (4)

o   Somewhat familiar (5)

o   Very familiar (6)

o   Extremely familiar (7)

How familiar are you with the Coach brand?

o   Completely unfamiliar (1)

o   Very unfamiliar (2)

o   Somewhat unfamiliar (3)

o   Neither familiar nor unfamiliar (4)

o   Somewhat familiar (5)

o   Very familiar (6)

o   Extremely familiar (7)

How much time on average do you spend on social media each day?

o   Less than 1 hour (1)

o   1-3 hours (2)

o   3-5 hours (3)

o   More than 5 hours+ (4)

Video Watching

Please watch the 30-second video below, presented by the virtual character imma for Coach's 2024 Spring collection, and then answer Question 1~28.

imma x Coach 2024 Spring
Kimberly Ko 訂閱
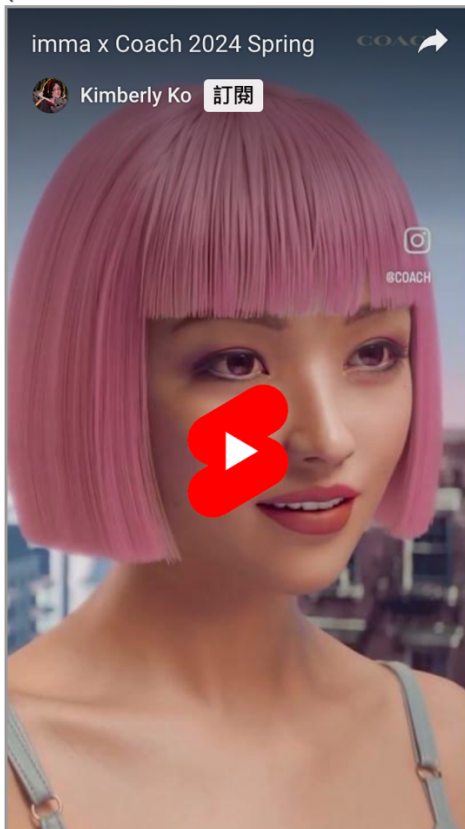
Official Questions

Part 1/6 (5 questions):

Instructions: Based on the virtual character (imma) you just watched in the video, please choose the position that best describes your feelings.

1. How would you rate the sense of life of the virtual character (imma) in the video?

o   Completely inanimate (1)

o   Very inanimate (2)

o   Somewhat inanimate (3)

o   Neither inanimate nor living (4)

o   Somewhat living (5)

o   Very living (6)

o   Completely living (7)

2. How would you rate the sense of reality of the virtual character (imma)?

o   Completely synthetic (1)

o   Very synthetic (2)

o   Somewhat synthetic (3)

o   Neither synthetic nor real (4)

o   Somewhat real (5)

o   Very real (6)

o   Completely real (7)

3. How would you rate the type of movement of the virtual character (imma)?

o   Completely mechanical movement (1)

o   Very mechanical movement (2)

o   Somewhat mechanical movement (3)

o   Neither mechanical nor biological (4)

o   Somewhat biological movement (5)

o   Very biological movement (6)

o   Completely biological movement (7)

4. How would you rate the human-likeness of the virtual character (imma)?

o   Completely human-made (1)

o   Very human-made (2)

o   Somewhat human-made (3)

o   Neither human-made nor human-like (4)

o   Somewhat human-like (5)

o   Very human-like (6)

o   Completely human-like (7)

5. How would you rate the lifespan of the virtual character (imma)?

(1 = Mortal; 4 = Average; 7 = Without definite lifespan)

Lifespan   1   2   3   4   5   6   7

Part 2/6 (5 questions):

Instructions: Based on your impression of the virtual character (imma) in the video, please choose the most appropriate position between each pair of words.

6. How would you rate the attractiveness of the virtual character (imma)?

o   Completely unattractive (1)

o   Very unattractive (2)

o   Somewhat unattractive (3)

o   Neither unattractive nor attractive (4)

o   Somewhat attractive (5)

o   Very attractive (6)

o   Completely attractive (7)

7.How would you rate the classiness of the virtual character (imma) on a scale from 1 to 7?

(1 = Not classy; 4 = Average; 7 = Classy)

Classiness   1   2   3   4   5   6   7

8. How would you rate the beauty of the virtual character (imma) on a scale from 1 to 7?

(1 = Ugly; 4 = Average; 7 = Beautiful)

Beauty   1   2   3   4   5   6   7

9. How would you rate the plainness of the virtual character (imma) on a scale from 1 to 7?

(1 = Elegant; 4 = Average; 7 = Plain)

Plainness   1   2   3   4   5   6   7

10. How would you rate the sexiness of the virtual character (imma) on a scale from 1 to 7?

(1 = Not Sexy; 4 = Average; 7 = Sexy)

Sexiness   1   2   3   4   5   6   7

Part 3/6 (5 questions):

Instructions: Please evaluate the trustworthiness of the virtual character (imma) in the video.

11. Please rate how trustworthy you found the virtual character (imma) on the following scale.

o   Completely untrustworthy (1)

o   Very untrustworthy (2)

o   Somewhat untrustworthy (3)

o   Neither untrustworthy nor trustworthy (4)

o   Somewhat trustworthy (5)

o   Very trustworthy (6)

o   Completely trustworthy (7)

12. Please rate how undependable you found the virtual character (imma) on the following scale.

o   Completely dependable (7)

o   Very dependable (6)

o   Somewhat dependable (5)

o   Neither dependable nor undependable (4)

o   Somewhat unependable (3)

o   Very unependable (2)

o   Completely unependable (1)

13. Please rate how honest you found the virtual character (imma) on the following scale.

o   Completely dishonest (1)

o   Very dishonest (2)

o   Somewhat dishonest (3)

o   Neither dishonest nor honest (4)

o   Somewhat honest (5)

o   Very honest (6)

o   Completely honest (7)

14. Please rate how unreliable you found the virtual character (imma) on the following scale.

(1 = Reliable; 4 = Average; 7 = Unreliable)

Unreliablility 1   2   3   4   5   6   7

15. Please rate how sincere you found the virtual character (imma) on the following scale.

o   Completely insincere (1)

o   Very insincere (2)

o   Somewhat insincere (3)

o   Neither insincere nor sincere (4)

o   Somewhat sincere (5)

o   Very sincere (6)

o   Completely sincere (7)

Part 4/6 (5 questions)

Instructions: Please evaluate the expertise of the virtual character (imma) in the video.

16. Please choose the position that best describes how expert you found the virtual character (imma).

(1 = Not Expert; 4 = Average; 7 = Expert)

Expertise   1   2   3   4   5   6   7

17. Please choose the position that best describes how experienced you found the virtual character (imma).

        Completely inexperienced (1)

o   Very inexperienced (2)

o   Somewhat inexperienced (3)

o   Neither inexperienced nor experienced (4)

o   Somewhat experienced (5)

o   Very experienced (6)

o   Completely experienced (7)

18. Please choose the position that best describes how knowledgeable you found the virtual character (imma).

(1 = Unknowledgeable; 4 = Average; 7 = Knowledgeable)

Knowledge   1   2   3   4   5   6   7

19. Please choose the position that best describes how qualified you found the virtual character (imma).

(1 = Unqualified; 4 = Average 7 = Qualified)

Qualification 1   2   3   4   5   6   7

20. Please choose the position that best describes how skilled you found the virtual character (imma).

o   Completely unskilled (1)

o   Very unskilled (2)

o   Somewhat unskilled (3)

o   Neither unskilled nor skilled (4)

o   Somewhat skilled (5)

o   Very skilled (6)

o   Completely skilled (7)

Part 5/6 (5 questions):

Instruction: Please rate your overall feelings about Coach as displayed in the ad presented by the virtual character.

21. I find that Coach is very appealing through the use of a virtual influencer.

o   Strongly Disagree (1)

o   Disagree (2)

o   Somewhat Disagree (3)

o   Neither Agree nor Disagree (4)

o   Somewhat Agree (5)

o   Agree (6)

o   Strongly Agree (7)

22. The virtual influencer's performance gives me a good impression of Coach.

o   Strongly Disagree (1)

o   Disagree (2)

o   Somewhat Disagree (3)

o   Neither Agree nor Disagree (4)

o   Somewhat Agree (5)

o   Agree (6)

o   Strongly Agree (7)

23. After watching the advertisement, I feel very pleasant about Coach.

o   Strongly Disagree (1)

o   Disagree (2)

o   Somewhat Disagree (3)

o   Neither Agree nor Disagree (4)

o   Somewhat Agree (5)

o   Agree (6)

o   Strongly Agree (7)

Q34 24. The virtual influencer's appearance makes me hold a more favourable attitude towards Coach.

o   Strongly Disagree (1)

o   Disagree (2)

o   Somewhat Disagree (3)

o   Neither Agree nor Disagree (4)

o   Somewhat Agree (5)

o   Agree (6)

o   Strongly Agree (7)

25. Through the virtual influencer's display, I find Coach very likable.

o   Strongly Disagree (1)

o   Disagree (2)

o   Somewhat Disagree (3)

o   Neither Agree nor Disagree (4)

o   Somewhat Agree (5)

o   Agree (6)

o   Strongly Agree (7)

Demographic Information

Part 6/6 (3 questions):

Demographic Information

26. What is your age?

o   18-25

o   26-35

o   36-45

o   46-55

o   55+

27. What is your gender?

o   Male

o   Female

o   Non-binary

o   Transgender

o   Gender fluid

o   Prefer not to say

28. Your highest level of education:

o   High school or below

o   Associate degree

o   Bachelor's degree

o   Master's degree

o   Doctorate

o   Others