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Virtual Influencers: Will they ever be the same as Human Influencers?
A study about their Impact on Brand Love.

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Master in Marketing

Supervisor: Daniela Langaro da Silva do Souto
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Resumo

Nos últimos anos, o Marketing de Influência tornou-se uma ferramenta essencial nas estratégias de comunicação e marketing empresarial, com influenciadores a desempenhar um papel fundamental na promoção de produtos e serviços. A confiança depositada pelos seguidores nas suas opiniões resulta em relacionamentos fortes, onde a autenticidade e a interação nas redes sociais promovem o Brand Love. Com a evolução tecnológica surgem as Influenciadoras Virtuais que vieram desafiar o conceito de Influencer Marketing conhecido até à data.

Nesta dissertação, investigamos o impacto que diferentes tipos de Influenciadores: Virtuais vs Humanos, podem ter nas dimensões de Brand Love propostas por Bagozzi et al., (2017). Posto isto, foram selecionadas cinco influenciadoras: três virtuais (Lil Miquela, Noonoouri e Shudu) e duas humanas (Devon e Shanelle). Foram analisados os comentários de 100 posts de cada influenciador através do Sentiment Analysis do software MeaningCloud.

As principais conclusões deste estudo indicam que as características de Brand Love são frequentemente observadas nas interações com influenciadores, independentemente de estes serem virtuais ou humanos. Além disso, os influenciadores humanos geram sentimentos mais positivos do que os influenciadores virtuais, particularmente nas dimensões de passion driven behaviour e de positive emotional connection. Por último, ao analisar exclusivamente os influenciadores virtuais, Noonoouri, uma influenciadora com características não-humanas que se assemelham às de uma boneca, é quem gera sentimentos mais positivos nas dimensões de Brand Love.

Palavras-Chave: Marketing de Influência, Influenciadores Virtuais, Influenciadores Humanos, *Brand Love*, Sentiment Analysis

Sistema de classificação JEL: M31 Marketing

Abstract

In recent years, Influencer Marketing has become an essential tool in business communication and marketing strategies, with influencers playing a fundamental role in promoting products and services. The trust placed by followers in influencers' opinions results in strong relationships, where coexistence and interaction on social networks promote Brand Love. With technological evolution, Virtual Influencers have emerged who have come to challenge the concept of Influencer Marketing known to date.

In this dissertation, we investigated the impact that different types of influencers: virtual vs. human, can have on the dimensions of Brand Love proposed by Bagozzi et al., (2017). That said, five influences were selected: three virtual (Lil Miquela, Noonoouri and Shudu) and two humans (Devon and Shanelle). Comments from 100 posts from each influencer were collected and analyzed using Sentiment Analysis from the MeaningCloud software.

The main conclusions of this study indicate that the characteristics of Brand Love are frequently observed in interactions with influencers, regardless of whether they are virtual or human. Furthermore, human influencers generate more positive feelings than virtual influencers, especially in the dimensions of passion-driven behavior and positive emotional connection. Finally, when analyzing exclusively virtual influencers, Noonoouri, an influencer with non-human characteristics that resemble those of a doll, is the one who generates the most positive feelings in the dimensions of Brand Love.

Keywords: Influencer Marketing, Virtual Influencers, Human Influencers, Brand Love, Sentiment Analysis

JEL Classification System: M31 Marketing

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1-Introduction

Influencer marketing is a strategic approach where brands collaborate with individuals who have a substantial and engaged online following to promote their products or services (Kaplan and Haenlein, 2010). It has evolved significantly in the digital era, mainly because of the rise of social media platforms that changed consumer behaviours (Smith and Zook, 2011). When followers connect and feel engaged towards an Influencer it gives them the sense of a close relationship, creating a strong emotional   connection. (Sokolova & Kefi, 2019).

Another topic that emerged even more recently is Virtual Influencers (VI), a computer-generated or animated character designed to act like a human. Most of the virtual characters created until now are influencers, a phenomenon that has gained popularity rapidly on Instagram, which is one of the most effective platforms for Influencer Marketing. VI can have different types, such as doll like, robot like and human like.

After this approach a GAP arises, since VI are so similar to HI, it is important to understand their comparison on various areas of the literature regarding relationships between Influencers and followers. In this study, we will address one of them, Brand Love.

First, the introduction presents the research problem, and in addition to that, the research purpose and the research question will be provided accordingly.

Finally, the introduction will be closed by highlighting and explaining the main structure of the dissertation.

1.2. Research Problem

As the number of virtual influencers grows, understanding their relationships with their followers becomes more and more challenging. The purpose of this study is to dive into the complexities of the relationship between virtual influencers and their audiences, specifically through the perspective of brand love. The current research aims to add insight on how these virtual personalities promote brand love and emotional connection in their online followers.

1.3. Objectives

The main goal of this study is to better understand how Influencer Marketing is perceived regarding Brand Love, through six dimensions presented by Bagozzi et al., (2017), which has

6 dimensions: Self-brand integration, Passion-driven behaviour, Positive emotional connection, Long-term Relationship, Anticipated Separation Distress, and Attitude Valence For that, primarily understand the relationship between Brand Love and the two types of Influencers to exist, Virtual Influencers and Human Influencers. Secondly, understand if the different types of virtual influencers, doll, robot, and human can have impact on brand love, a really important concept that helps brands and followers to create a strong and hopefully long-lasting relationship.

1.4. Research Question

The research questions have been carefully constructed considering the literature of this dissertation and considered to be the most relevant to obtain more concrete and detailed conclusions regarding our topic. Therefore, the research questions for this study are:

- **RQ1:** Do the type of influencer (virtual and human) significantly affect the different dimensions of Brand Love, and if so, which dimensions are most impacted?

- **RQ2:** Does the type of Influencer (Virtual versus Human) differently affect Brand love dimensions?

- **RQ3:** Does the Virtual Influencer characteristics (human like vs. non-human like) affect Brand Love?

1.5. Structure

This dissertation is divided in 5 chapters.

On the first chapter, it is introduced the central topic of this study, as well as the GAP, the main objectives, and the development of the research questions.

Subsequently, in the second chapter, the focus shifts towards the literature review. This section initiates with a comprehensive definition of Brand Love and an explanation of the dimensions that will be used. It then delves into the field of influencer marketing, examining how influencers experience brand love, and how can we characterize influencers. This chapter further explores the growing concept of Virtual Influencers, clarifying their nature and explaining the different types that exist. Concluding the literature review, the chapter introduces text mining, specifically, sentiment analysis, the designated tool for data analysis in this study.

Moving forward to the third chapter, the methodology is presented, beginning with an introduction of the five selected influencers for this study. This section also clarifies the

procedures involved in data collection and subsequent analysis. The chapter ends by detailing the final data sample, as well as the codification and definition of the variables that will be used. In the fourth chapter, the results of the hypothesis testing will be presented and interpreted.

Finally, in the last chapter, a summary is provided about the conclusions drawn from the literature review, along with a main discussion of the research questions and recommendations. These recommendations include both theoretical and managerial implications and conclude with an acknowledgment of the study's limitations, as well as suggestions for future research.

CHAPTER II

2- Literature Review

2.1. Brand Love

The concept of Brand Love has a substantial historical and theoretical background within marketing and consumer behaviour. It has evolved over the years, with the main driver being understanding how consumers emotionally connect with brands, what are the best methods and how that affects brand strategies.

Brand love is an important concept in marketing, as it refers to a deep emotional connection that consumers have with a particular brand, it is also a complex construct that involves strong emotional attachments between consumers and brands. According to Fournier (1998), brand love is "the ultimate relationship goal" that consumers can have with a brand. Brand love can have several positive outcomes for both consumers and brands. For consumers, brand love can lead to increased satisfaction, loyalty, and positive word-of-mouth (Albert et al., 2008).

Research by Gensler et al., (2013) highlights that influencers can create meaningful interactions with their followers. When influencers authentically endorse a brand, it can lead to increased trust, loyalty, and positive sentiment. This emotional connection drives consumers to not only appreciate the brand but also establish a strong and lasting affection for them.

2.1.1. Brand Love Dimensions

As mentioned before, Brand Love has been studied for years, therefore several researchers have proposed different dimensions of brand love. Carroll and Ahuvia (2006) identified four dimensions: self-expansion, passion, commitment, and intimacy. These dimensions exemplify the brand's ability to enable consumers personal growth, evoke profound positive sentiments, cultivate continuing loyalty, and facilitate intimate relationships, respectively. Other researchers have proposed additional dimensions, such as brand identity (Albert et al., 2008), and brand experience (Fournier and Alvarez, 2012) Brand love often involves a strong emotional attachment and passion toward a brand. Consumers feel deeply connected to the brand, and their emotions are positively stirred by it (Carroll & Ahuvia, 2006).

Lastly, and for the development of this thesis, we will proceed with the validated scale presented by Bagozzi et al., (2017), which has 6 dimensions: Self-brand integration, Passion-driven behaviour, Positive emotional connection, Long-term Relationship, Anticipated Separation Distress, and Attitude Valence. This validated scale was chosen to the detriment of the two other scales presented in this paper with 13 and 26 items because it is a good first and direct approach to this topic.

2.1.1.1. Self-brand Integration

According to, Batra et al., (2012), Self-brand integration refers to the degree to which and individual self-identity is related to a specific brand, it indicates if a brand is a significant part of a person's self-identity. When there is a high level of self-brand integration, it means that the brand plays a significant role in shaping and expressing the individual's self-identity.

2.1.1.2. Passion-Driven Behaviours

Passion-driven behaviours can be described as actions that individuals have because of their strong emotional connection to a specific subject, person, or brand. This type of behaviours ae characterized by an intrinsic motivation, usually an emotional attachment and a sense of fulfilment when following someone else's steps and passions. (Batra et al., 2012)

2.1.1.3. Positive Emotional   Connection

As the name indicates, a Positive emotional connection is the formation of a positive relationship between an individual and a place, object, person, or a brand. It means that the individual has a tight bond and can be characterized by feelings such as happiness, affection, and comfort. (Thomson et al., 2005)

2.1.1.4. Long-term Relationship

Long-term relationship is a positive emotional connection during an extended period of time. It means that consumers continually choose and support a specific brand/people over time because of their strong emotional   attachment and affection for that brand. And as Carroll & Ahuvia (2006) mentioned, Long-term relationships reinforce Brand Loyalty.

2.1.1.5. Anticipation Separation Distress

Anticipated separation distress is the feeling of discomfort that consumers feel when they imagine not having access to their beloved brand/people. This feeling is the result of the deep emotional   connection that consumers develop with a brand they love. (Batra et al., 2012)

2.1.1.6. Attitude Valence

Lastly, Attitude Valence refers to an individual's overall emotional tone or direction of thoughts and sentiments towards a brand. And according to Batra et al., (2012), Attitude valence indicates a positive emotional orientation, implying that people who love a brand have mostly positive attitudes and feelings regarding that brand.

2.2. Influencer Marketing

Recently, a new concept has been mentioned when talking about relations with brands and consumers. And when diving into this new world, it is crucial to understand its meaning. As defined by Martínez-Lopez et al., (2020), Influencer Marketing comprehends the use of influential opinion leaders well-known for having large followers on social media, to create a good relationship with them. This relationship will allow both parties to engage and participate in the co-creation of the brand image on social media.

This new perception started in the early 2000s with Blogs and marked the initial phase of influencer content creation. Bloggers would post about personal experiences, opinions, and product reviews. (Jin, 2012). After that, the appearance of social media platforms, such as YouTube, Twitter, and Instagram played an essential role in the evolution of influencer marketing. The visual nature of the platform made it ideal for lifestyle and fashion influencers to share their experiences, lifestyles, and recommendations. (De Veirman, et al., 2017)

Often, these influencers specialize in specific content niches, typically focusing on one or two categories of their interest. Their specific knowledge and expertise in these areas connect deeply with their followers. That is why having an influencer-brand alignment is essential for credibility and authenticity (Bian & Forsythe, 2012). When this happens, consumers are more like to accept and trust the influencer's opinions and perspective, making them effective channels for brand promotion and advocacy. (Chen & Shupei, 2019).

2.2.1. Influencer Marketing and Brand Love

In modern marketing, there is a close connection between brand love and influencers and has become an increasingly popular way for brands to reach their target audiences.

When influencers are passionate about a brand and its products/services and create engaging and authentic content It helps Influencers to create a community and a real connection with the consumers leading to increased brand love and loyalty (Hutter et al., 2013).

Also, when Influencers share their personal experiences and opinions about a specific brand, especially when it is not an ad, it helps to enhance the authenticity of an Influencer. (Kabadayi and Price, 2014).

According to Zhu and Chen (2012), define trust as: "the willingness of a party to be vulnerable to the actions of another participant based on the expectation that the trust will perform a particular action important to the trust, irrespective of the ability to monitor or control that other party". Trust is essential in any type of relationship, if consumers don't trust the influencer or the brand they are communicating with, they won't be influenced or have in consideration their opinion when it comes to purchase decision.

2.2.2.1 Instagram

Instagram's user-friendly interface, known for its visual appeal, has solidified its position as a significant driving factor in the realm of influencer marketing. According to Statista (2023), Instagram is the top influencer Marketing platform worldwide.

2.2.2. Influencers Characterization

As mentioned before, when we talk about Influencer Marketing it is very important to have an alignment between a brand and a chosen influencer. (Cohen, 2019)

Therefore, when we are characterizing it is important to understand the different types of Influencer:

Nano Influencers

This term is recently new, and it is characterized by influencers who have less than 10 000 followers. (Wiley, 2021) The relationship between the influencer and their followers is much more up close and personal and that is why their recommendations are perceived as more genuine. Alongside this advantage, and when compared to Macro Influencers, Nano Influencers also have higher engagement and lower costs.

However, inherent to the size of their following base, this type of influencer has a lower reach and sometimes lower results. (Geyser, 2022)

Micro Influencers

A Micro Influencer is an influencer with a follower count between the range of 10 000 and 100 000 followers. These types of influencers will share content related to a specific niche, it can be fashion, beauty, lifestyle, fitness, cooking, etc… (Geyser, 2022)

This category of influencer is distinguished by their elevated confidence and credibility in engaging with their followers (Alassani & Göretz, 2019), mainly because their audience has the same interests as the person they follow, resulting in higher engagement and making them a person of authority and an influence when it comes to purchasing decisions due to their opinions and recommendations. (Geyser, 2022). Besides the higher engagement, they also required lower costs. But as Nano Influencers, their smaller audience when compared with Macro Influencers relies on the Lower reach of their content.

Macro Influencers

Lastly, Macro Influencers are the influencers who have between 100 000 and 1 million followers. Macro influencers often possess a high level of credibility due to their expertise or celebrity status within their respective domains. (Ruiz-Gomez, 2019)

Usually, they are presented on more than one social media platform and since that they already have developed the knowledge and the tools to create their content they use each platform effectively, which constitutes a valuable action for bands. As an advantage, connected to the cross-platform presence and high-quality content, Macro Influencers will have a higher engagement. (Porteous, 2018)

After choosing the type of influencer, brands can proceed with their decision, considering criteria such as **Engagement Metrics**, such as likes, comments, and shares. Then, it is important to match the **Demographics** of their followers such as age, gender, location, and audience demographics, should align with the target market of the brand (Jin & Phua, 2014). Consequently, another important dimension is the **tone of voice**. Influencers should communicate in a way that matches the brand's desired tone, whether it is casual, formal, humorous, or informative (Chen et al., 2021). Furthermore, the **area of interest** that the influencer typically engages with, and the content they share should be closely tied to the brand's industry or products (Jin & Phua, 2014).

Finally, brands can also look at the **content format** preferred by the influencer, whether it is video, written, or visual content, should be compatible with the brand's preferred content formats (Chen et al., 2021)

2.2.2. Virtual Influencers

The rise of Virtual Influencer Marketing has revolutionized the perception of Influencer Marketing. These computer-generated personalities, also known as digital influencers or CGI (Computer-Generated Imagery) influencers, have become a popular topic in both academic research and industry practice. According to Power (2019), virtual influencers can be a thrilling new marketing tool for companies to bring their brand to life as AI and robots become more prevalent in our society. Virtual influencers provide brands with an advantage by offering complete control over the character's persona and messaging. This allows brands to tailor the influencer's personality and communication to align perfectly with their brand identity. Unlike human influencers, virtual influencers are not vulnerable to personal controversies or scandals, ensuring consistent brand messaging (Power, 2019). According to Influencer Marketing Hub (2023) 63% of the more than 3500 agencies, and brands that respond to the query, plan to use AI in executing their influencer campaigns,

On the other hand, critics argue that virtual influencers lack authenticity compared to human influencers, which can lead to a loss of trust. Also, ethical concerns arise because virtual influencers may not always disclose their artificial nature or brand affiliations clearly (Seo et al., 2020). The creation and maintenance of virtual influencers can be expensive, as it requires expertise in CGI and animation, which may not be feasible for all brands (Power, 2019). Moreover, there are concerns about the long-term sustainability of this marketing approach, as virtual influencers must constantly innovate to maintain audience interest (Seo et al., 2020). Because they do not exist in real life (offline), their behaviour and image may be properly created in the background, and the chance of mistakes is reduced. (Tan, 2019), which is also linked to another problem: the lack of authenticity, as none of their content is organic. (Wills, 2019)

With this, the hypothesis is that the different type of Influencers (Human vs. Virtual) has an impact on the different types of Brand Love dimensions, mentioned above.

H01: The different type of Influencers (Virtual vs. Human) has an impact on Brand Love dimensions.

H1a: The different type of Influencers (Virtual vs. Human) has an impact on Self-brand Integration.

H1b: The different type of Influencers (Virtual vs. Human) has an impact on Passion-driven Behaviour.

H1c: The different type of Influencers (Virtual vs. Human) has an impact on Positive Emotional   Connection.

H1d: The different type of Influencers (Virtual vs. Human) has an impact on Long-Term Relationship.

H1e: The different type of Influencers (Virtual vs. Human) has an impact on Anticipated Separation Distress.

H1f: The different type of Influencers (Virtual vs. Human) has an impact on Passion-driven Behaviour.

2.2.2.1. Types of Virtual Influencers

Virtual influencers can take different forms, such as robot-like profiles, doll-like profiles, and human-like avatars.

Robot Virtual Influencers

Powered by AI, Robot Virtual Influencers are digital personas that adopt the appearance of robotic or non-human figures, but can have some human features, including facial expressions and body movements which make them appear lifelike, meaning that they portray to have a normal life just like and human influencer. They may exhibit exaggerated physical characteristics or distinctive mechanical features. The best example is Lil Miquela, who has a distinctly robotic appearance.

Figure 2.1 - Lil Miquela

Lil Miquela is one of the most popular Virtual Influencers (@lilmiquela), a leading figure in the emerging world of virtual influencers. She has established a strong presence on various social media platforms, primarily Instagram, where she was 2,9 million of followers and she shares her digital art, fashion, and interact with her followers (Hoffower, 2019). She is portrayed as a youthful, animated character with a distinctive appearance distinguished sense of high fashion, and notable partnerships with top fashion brands, such Alexander McQueen, Prada, and Calvin Klein. (Forbes, 2019). Recently, she was introduced as the new face of BMW and partnered with them to launch the new BMWiX2 car.

Her Instagram feed frequently features high-end designer fashion clothes and accessories said the New York Times (2018). Beyond the looks, Lil Miquela is also considered to be an activist, she stands for various causes and talks openly about them on her Instagram feed. (BBC, 2019).

Doll Virtual Influencers

Doll virtual influencers are digital personas brought to life through dolls or animated characters. These influencers often have exaggerated features and stylized appearances. One great example is Noonoouri. (Jerslev, A. 2016).

Figura 2.2 - Noonoouri

Noonoouri (@Noonoouri) is a virtual influencer with a unique digital identity, she is predominantly present on Instagram where she has 414 thousands of followers, she is characterized by her animated features, vibrant hair colors, and a carefully crafted fashion style that sets her apart in the digital world. (Upnewsinfo, 2020). She often posts content regarding fashion, lifestyle and campaigns and partnerships for brands such as Balenciaga, Dior and Valentino. Also, Noonoouri entered into the world of music, and it is the first-ever strictly digital popstar – and the first-ever strictly digital popstar to garner a Warner Music record deal.

(Bernstein, 2023). Recently, in September, Noonoouri made a video with the huge fitness Influencer, Pamela Rief that has over 9,3 million followers. (FIG.X).

Human-Like Avatar Virtual Influencers

This type of VI are character that resembles human beings. They may have realistic human features, facial expressions, and body movements. These avatars are designed to be highly realistic, often indistinguishable from actual humans at first glance Usually, they engage in influencer marketing campaigns, product endorsements, and content creation. (Schau et al., 2019). Shudu is an example of a human-like avatar, she has the purpose of looking exactly like a real human model.

Figure 2.3 - Shudu

Shudu is the world's first digital Supermodel. (TietJen, 2018). Shudu's striking visual appeal distinguishes her from others. Her exceptional dark skin tone and distinct fashion sense define her. Shudu's virtual persona is vividly portrayed through carefully constructed digital images that showcase her remarkable beauty and her keen fashion-forward style (as reported by BBC News in 2018). Shudu is famous for her versatile modelling, work and often appears in high-fashion outfits and luxurious settings. Her Instagram feed showcases a variety of high-end fashion and accessories, and events. (Cresci, 2018)

After the explanation of the 3 different types of virtual Influencers, I developed the second hypothesis, that now focus only on the different types of VI and pretends to understand their impact on Brand Love.

H2: The type of Virtual Influencer (Non-Human like vs. Human Like) has an impact on Brand Love Dimensions

H2a: The type of Virtual Influencer (Non-Human like vs. Human Like) has an impact on Self-brand Integration.

H2b: The type of Virtual Influencer (Non-Human like vs. Human Like) has an impact on Passion-driven Behaviour.

H2c: The type of Virtual Influencer (Non-Human like vs. Human Like) has an impact on Positive Emotional   Connection.

H2d: The type of Virtual Influencer (Non-Human like vs. Human Like) has an impact on Long-Term Relationship.

H2e: The type of Virtual Influencer (Non-Human like vs. Human Like) has an impact on Anticipated Separation Distress.

H2f: The type of Virtual Influencer (Non-Human like vs. Human Like) has an impact on Passion-driven Behaviour.

2.3. Netnography

According to, Kozinets (2015), Netnography is a research approach that combines elements of anthropology and ethnography to study the behaviour, attitudes, and cultures of individuals or groups within online communities and social networks. The process starts with the acquirement of textual data that can be retrieved from blogs, posts, and social media interactions, to analyse the language used, the sentiment behind the comment, and the meaning of the symbols used. (Kozinets, 2010).

3.1. Text Minning

Text Mining can be defined as the process of transforming unstructured text data into structured and actionable information by using computational and statistical techniques. It involves the analysis of textual data to discover patterns, relationships, and valuable insights. (Feldman, Sanger, & Dagan, 2007).

3.1.1. Sentimental Analysis

Sentimental analysis is one of the Text mining techniques, and according to Pang and Lee (2008), Sentiment Analysis is a solution from the Meaning Cloud software and works as an excel plug-in that analysis text to determine whether it carries sentiments that are positive, negative, or neutral. This analysis involves assessing the local polarity of individual sentences within the text and evaluating the interactions between these sentences, ultimately yielding a global polarity score for the entire text.

In addition to assessing polarity at the sentence and global levels, Sentiment Analysis employs sophisticated natural language processing techniques to identify the polarity associated with specific entities and concepts mentioned in the text. It not only offers a reference to the corresponding sentences but also provides a list of identified elements, each associated with an aggregated polarity score derived from all their occurrences, and it is called Topic Sentimental analysis. (Meaning Cloud,2023)

One of the main advantages of Sentimental analysis can be to obtain customer insights and feedback, by analysing their reviews on the website, comments on social media, and overall feedback, brands can gain perspective and with this information, they will improve their products, and/or services. (Pang and Lee 2008) Also, helps to monitor and manage a brand's reputation allowing them to identify negative sentiments, address and in this way manage crises effectively. (Jansen et al., 2009). Another advantage is the power to do Market research and competitive analysis because Sentiment Analysis helps brands understand consumer preferences, implement them in their marketing campaigns, and give them a competitive advantage by identifying trends. (Liu, 2012).

However, on the disadvantages of this solution is the fact that only read some emojis.

To conclude, according to Kouloumpis et al., (2011), it is a good social media analytic method, it helps brands measure the effectiveness of their campaigns, understand what the consumer's perception of their business is, and identify emerging topics.
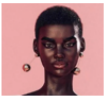
4 - Methodology

For the development of this thesis, five Influencers were selected to study their Instagram comments. The selection as made according to their characterization following the categories mentioned on chapter 2.2.2. Influencers characterization.

Table 4.1 - Selection and Characterization of Influencers

Source: Author's creation (2023)

Influencers	Name	Type of Influencer	Likes (Mean / post)	Followers	Type of Content	Content shared	Tone of voice/Personality
	Lil Miquela @Lilmiquela	Virtual Robot like	62 661 likes	2,7 Million	Mainly photos + some videos	Fashion, music, art, social causes	Positive and Inspirational
	Noonoouri @Noonoouri	Virtual Doll like	4 134 likes	413 Thousand	Mainly photos + some videos	Fashion, Music, lyfestyle and campaigns	Humurous and Fun
	Shudu @Shudu	Virtual Human like	10 661 likes	241 Thousand	Mainly photos + some videos	Modelling, high fashion	Enigmatic and Informative
	Devon @Devonleecarlson	Human	94 062 likes	1,5 Million	Mainly photos + some videos	Lifestyle, Own business, Outfifs	Positive, Personal and Relatable
	Shanelle @Shanellenyasiase	Human	8 856 likes	163 Thousand	Mainly photos + some videos	Modelling, high fashion	Informative and Engaging

The initial criteria for our selection process involved identifying the three categories of virtual influencers previously discussed. For virtual humans, our objective was to find influencers who closely aligned with Lil Miquela and Shudu in terms of their personalities and content types. This led us to select Devon, who shares similarities with Lil Miquela, and Shanelle, who is a good match for Shudu.

It is important to highlight that the likes data in this study was calculated as the average of the likes received across 100 posts. Some influencers do not display their like counts on their posts, so the average as calculated by summing all available values and dividing by the corresponding number of posts.

4.1. Method and Procedure

To examine the hypotheses developed in the previous chapters, we scrutinized the comments on 100 posts from each of the five influencers also presented in the previous chapter – three virtual and two human influencers. This method was chosen because, according to Yoon et al., (2018), when consumers feel passionate about something they will become active and interact., and commenting s characterized as an act of true engagement.

More than 80,000 comments were downloaded through ExportComments.com and consolidated into a large Excel database, which was then subjected to sentiment analysis using Meaning Cloud.

Meaning Cloud a text analysis, and Natural Language Processing (NPL) platform provide a range of features for extracting valuable insights. (Meaning Cloud, 2023) One of them is Sentimental Analysis, the feature we use to analyse the sentiment behind all of the comments extracted, to explore the correlation between sentiments and the topics found within the text. Furthermore, this assigns polarity to the text and concepts in their study, making it versatile and applicable across a wide spectrum of research areas (Manning et al., 2014; Mostafa, 2013). This sentiment polarities vary from P+ (very positive), P (positive), NEU (neutral), N (negative) to N+ (very negative).

Lastly, when the analysis is complete, we will have two sheets to analyse, the first one is called Global Sentimental Analysis, and it provides us the sentiment (Polarity) for the comment as a total. Then, the second sheet is Topic Sentimental Analysis which breaks down the comment and gives information relative to the different types of dimensions found, and the respective polarity, this one can be different from the one found in the Global Sentimental Analysis sheet because it analyses each word of the comment. After the analysis on the second sheet the total was 107 000 cells.

4.1.1. Brand Love Dictionary

For the present analysis, a Brand Love dictionary was developed with terms based on the validated scale used in this project (Chapter 2.1.1.) and then added on to the Meaning Cloud software, where it was possible to associate those terms with the specific Brand Love Dimensions used in this project.

For instance, the first Brad Love Dimension is Self-brand Integration, and according to Batra et al., (2012) Self-brand integration refers to the degree to which and individual self-**identity** is related to a specific brand, it indicates if a brand is a significant part of a person self-

identity. When there is a high level of self-brand integration, it means that the brand plays a significant role in shaping and expressing the individual's self-identity. Therefore, **Identified**, and **Aligned** were one of the main words, and the other words were created using WordNet 2.1, an extensive English lexical database, this lexicon categorizes nouns, verbs, adjectives, and adverbs into clusters of cognitive synonyms, each representing a unique concept. (Miller, 1995) In total, 164 words were uploaded to the dictionary on Meaning Cloud, as presented in appendix A).

It is important to state that the Meaning Cloud has its own dictionary, and it is on dimensions, and the software runs both at the same time, and that is why a comment can have more than one dimension associated. Both dictionaries will act as the definer of the polarity of each comment.

4.2. Sample

Due to the existence of various types of influencers and their varying numbers of followers, the number of comments per post also varies significantly. This variance becomes particularly pronounced when multiplied by 100 posts, highlighting substantial differences between influencers. Therefore, in order to analyse the hypotheses developed, and given that the influencers had different amounts of downloaded comments, it was essential to create a random sample for each influencer of 7 500 comments, to ensure that all analyses across all variables are fair and comparable. The final count of our comments is 37 500 comments.
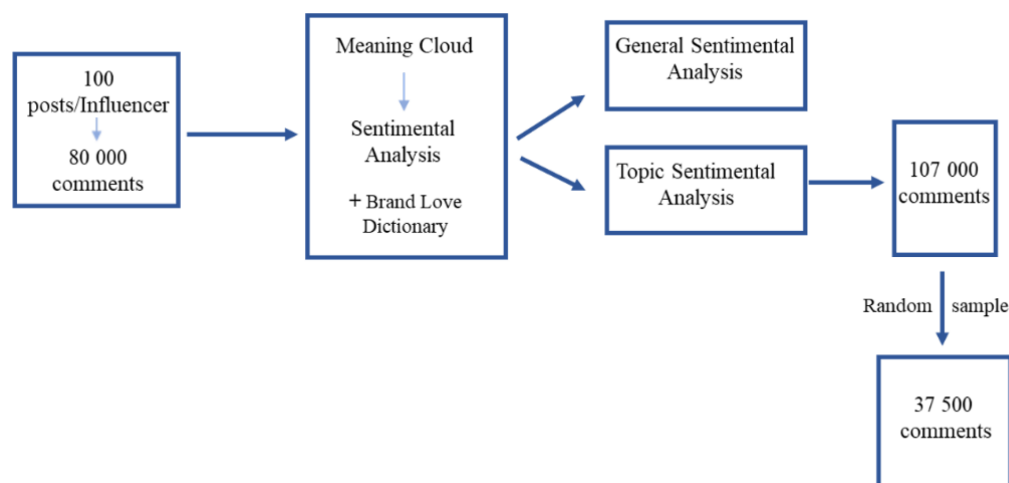
Figure 4.2 - Process and Transformation of data

4.3. Variables Description

For starters, we are going to present the descriptive data. As we know, this study aims to understand if the different types of influencers impact the 6 Brand love dimensions already described in the literature review.

To better understand the relationship between the variables all of the responses were coded. The first variable is Influencer_Name, where:

- 1 - Lil Miquela

- 2 – Noonoouri

- 3 – Shudu

- 4 – Devon

- 5 – Shanelle

Then, our second variable aims to classify the first one regarding the Influencer_type, where:

- 0 – Virtual Influencers: Lil Miquela, Noonoouri and Shudu

- 1 – Human Influencers: Devon and Shanelle

For the third variable Brand_Love_Dimensions:

- 1 - Self-brand Integration

- 2 – Passion Driven Behaviours

- 3 – Positive Emotional   Connection

- 4 – Long-term Relationship

- 5 – Anticipation Separation Distress

- 6 – Attitude Valence

- 7 – Other dimensions & Blanks

Lastly, our fourth variable will measure the one presented before, it is called Polarity, and it is divided into five categories:

- -2 – Very Negative

- -1 – Negative

- 0 – Neutral

- 1 – Positive

- 2 – Very Positive

For the analysis of the Hypothesis 2, there is going to be a ne codification:

- Non-human like virtual influencers - 0: Lil Miquela and Noonoouri. In this specific case, they both will have the same code but will be utilized and analysed separately, with the purpose to be compared with Shudu (human like, code1), therefore they will be in group together with the same code.
- Human like virtual influencer – 1 : Shudu

5 – Results

5.1. Descriptive Statistics

Starting to present the Descriptive data results, we can see that in appendix B), regarding Brand Love Dimensions, from a total of the 37 500 comments responses, 27 refer to Self-brand Integration, 1 255 refer to Passion-Driven Behaviour, 437 refer to Positive Emotional Connection, 14 refer to Long-term Relationship, only 1 refers to Anticipation Separation Distress", and to close the Brand Love Dimensions, 11 refer to "Attitude Valence.

Most of the responses (35 755), refer to the classification of dimensions according to Meaning Cloud's dictionary, integrated into its Sentimental Analysis tool that runs at the same time as the Brand Love dictionary that was created. This pre-made dictionary contains generic dimensions that are not significant for the analysis and that is why I also aggregated with the "blank" answers that did not obtain any classification, either from the dictionary I built or with the pre-made dictionary from the software itself.

In next figure, we can see the distribution of responses for each Brand Love Dimension, categorized by the respective Influencers, these results helped to address the first hypothesis developed here it was explored whether brand love dimensions were present in the interactions (comments).

Table 5.1 - Custom Table - Influencer_Name and Brand Love Dimensions

		Brand_Love_Dimensions												
		Self-brand Integration		Passion-Driven Behaviour		Positive Emotional Connection		Long-term Relationship		Anticipation Separation Distress		Attitude Valence		Other Dimensions & Blanks
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Colum n N %	Count	Column N %	Count	Column N %
Influencer_Name	Lil Miquela	1	3,7%	125	10,0%	27	6,2%	3	21,4%	0	0,0%	1	9,1%	7343	20,5%
	Nouunoouri	11	40,7%	316	25,2%	76	17,4%	7	50,0%	0	0,0%	2	18,2%	7088	19,8%
	Shudu	7	25,9%	154	12,3%	23	5,3%	2	14,3%	1	100%	6	54,5%	7307	20,4%
	Devon	1	3,7%	306	24,4%	142	32,5%	1	7,1%	0	0,0%	1	9,1%	7049	19,7%
	Shanelle	7	25,9%	354	28,2%	169	38,7%	1	7,1%	0	0,0%	1	9,1%	6968	19,5%

Findings indicate that, regarding Self-brand Integration which obtained 27 responses, 11 (40,7%) were found in the comments of Virtua Influencer Noonoouri, followed by Shudu and Shanelle with 7 responses. With 1 score for the Virtual Influencer Lil Miquela and Human Influencer Devon.

Then, talking about the brand love dimension that has the most responses Passion Driven Behaviour with 1 255, (28,2%) which corresponds to 354 mentions on comments

regarding the Human Influencer Shanelle, succeeded by Noonoouri with 316 (25,2%) responses. On the opposite note, the Influencers with fewer responses were two Virtual ones, Lil Miquela (125) and Shudu (154), in ascending order.

Subsequently, and the second Brand Love Dimension with the most responses (437) Positive Emotional Connection, Shanelle was once again the Influencer that had this dimension present in their comments with 169 mentions which equals 38,7% of the total responses, followed by another Human Influencer Devn with 142 (32,5). Similar to the the previous dimensions, Shudu with 23 responses (5,3%), and Lil Miquela with 27 (6,2%) were the Influencers with the lowest scores.

Regarding Long-term Relationship for the total responses Noonoouri, has the higher number of responses with 7, making 50% of the total. And the Human Influencers Deveon and Shanelle only had 1 mention.

The dimension Anticipation separation distress only had 1 mention in the global of the comments and it is from Shudu.

Lastly, Attitude Valence with 11 responses in total, with Shudu scoring the highest value 6 (54,5%). Then, we have three Influencers with 1 response.

To conclude, the two dimensions with the highest scores were Passion Driven Behaviours and Positive Emotional Connection and the most predominant Influencers on both were Human Influencer, which may indicate that there is more Brand Love in Human Influencer. These results support the research question number one where it was asked if the type of influencer (virtual and human) significantly affect the dimensions of Brand Love, and if so, which dimensions are most impacted?

However, we cannot be 100% certain and therefore we will proceed with the development of the analysis of the hypotheses.

5.3. Hypothesis Testing

In the pursuit of achieving the research objectives and testing the hypotheses, various linear regressions were carried out, because according to Field (2009), Regression analysis is a way of predicting an outcome variable from one predictor variable. The linear regression model is represented by the following formula:

$$Y=\beta 0+\beta 1X+\epsilon$$

The X represents the independent variable and Y the dependent variable. The X is called the predictor or regressor variable and Y is the response variable. βi are unknown constants, usually called regression coefficients and ε is a random error component. (Montgomery,2021). When the formula includes only one predictor variable is a simple linear regression. when it includes more than one predictor variables it is a multiple linear regression model. For this project four simple linear regressions were done.

5.3.1. Hypothesis 1
The hypothesis aims to understand if the different types of Influencers (Virtual vs. Human) have an impact on the different Brand Love Dimensions.

A) Self-brand Integration

H01a: The different type of Influencers (Virtual vs. Human) does not have an impact on Self-brand Integration.

H1a: The different type of Influencers (Virtual vs. Human) has an impact on Self-brand Integration.

As mentioned before, Self-brand Integration only had 27 responses, and a small sample size may lead to diminished statistical power, making it challenging to identify genuine associations between variables. (Cohen, 1998). Also, when analysing some values regarding the model fi like R-squared, a small sample might provide less meaningful information when dealing with small sample sizes, making it difficult to assess the significance of the model (as noted by Hair et al., 2010).

To conclude, a small sample may not represent the general population that they were retrieved and could lead to a bias analysis according to Hair et al., (2010). That is why I decided to not proceed with testing this hypothesis.

It is important to mention that with 14, 1 and 11 responses, the dimensions Long-term relationship, Anticipation Separation Distress and Attitude Valence were also not analysed.

B) Passion-driven Behaviour
H01b: The different type of Influencers (Virtual vs. Human) does not have an impact on Passion-driven Behaviour.

H1b: The different type of Influencers (Virtual vs. Human) has an impact on Passion-driven Behaviour.

A linear regression was conducted to test this hypothesis to determine if the Influencer type would impact Passion-driven Behaviours. To proceed with this analysis, the comments were filtered by dimension with code 2, as explained in chapter 4.3., the independent variable was Influencer_type, subdivided by 0- Virtual Influencers with Lil Miquela, Noonoouri and Shudu and 1-Human Influencers with Devon and Shanelle, the dependent variable is Polarity, which measures the dimension.

Table 5.2 - Model Summary - Influencer_type and Passion driven behaviour.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,143[a]	,021	,020	,357

a. Predictors: (Constant), Influencer_Type

The R-squared value (R²) is 0.021. This indicates that approximately 2.1% of the variance in Polarity (Passion Driven Behaviour) can be explained by the model. In other words, the Influencer_type variable explains a small portion of the variation in Passion Driven Behaviour.

Table 5.3 - Coefficient Influencer_type and Passion Driven Behaviour

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,901	,015		61,466	,000
	Influencer_Type	,104	,020	,143	5,131	<,001

a. Dependent Variable: Polarity

The constant (Unstandardized B) value is ,901. This represents the predicted mean of Polarity when the Influencer_type is 0 (Virtual Influencer). It suggests that for Virtual Influencers, the predicted mean "Polarity" for Passion Driven Behaviour is ,901

This means that there is a positive change in the predicted mean "Polarity" for Passion Driven Behaviour by ,104 units when comparing Human Influencers (coded as 1) to Virtual Influencers (coded as 0).

The linear regression for this hypothesis is:

Polarity = β0+β1·Influencer_type ⇔ Polarity = 0.901+0.104·Influencer_type

The SIG=,001 < 0,05 ⇒ **Reject H01b,** and can conclude that the variable Influncer_Type has an impact predicting Polarity for Passion Driven Behaviour.

In summary, the results suggest that the presence of Human Influencer tends to generate more positive feelings, meaning that there is a positive effect regarding Influencer Type and Sentiment (Polarity). Therefore, H1b is accepted.

C) Positive Emotional   Connection

H01c: The different types of Influencers (Virtual vs. Human) do not have an impact on Positive Emotional   Connection

H1c: The different types of Influencers (Virtual vs. Human) have an impact on Positive Emotional   Connection.

A linear regression was conducted to test this hypothesis to determine if the Influencer type would impact Positive Emotional   Connection. To proceed with this analysis, the comments were filtered by dimension with code 3, as explained in chapter 4.3., the independent variable was Influencer_type, subdivided by 0- Virtual Influencers with Lil Miquela, Noonoouri and Shudu and 1-Human Influencers with Devon and Shanelle, the dependent variable is Polarity, which measures the dimension.

Table 5.4 - Model Summary - Influencer_type and Positive Emotional   Connection

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,343[a]	,118	,116	,746

a. Predictors: (Constant), Influencer_Type

The R-squared value (R^2) is 0.118. This indicates that approximately 11.8% of the variance in "Polarity" can be explained by the model. In other words, the Influencer_typevariable explains about 11.8% of the variation in Positive Emotional   Connection.

Table 5.5 - Coefficients - Influencer_type and Positive Emotional Connection

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,889	,066		13,373	<,001
	Influencer_Type	,600	,079	,343	7,613	<,001

a. Dependent Variable: Polarity

In this table, the constant (Unstandardized B) value is ,889. This represents the predicted mean of "Polarity" (Positive Emotional Connection) when Influencer_typeis 0 (Virtual Influencer). And the coefficient for the variable Influencer_type is ,600. This means that there is a positive change in the predicted mean "Polarity" for Positive Emotional Connectionby ,600 units when comparing Human Influencers (coded as 1) to Virtual Influencers (coded as 0).

The linear regression for this hypothesis is:

Polarity = β0+β1·Influencer_type ⟺ Polarity=0.889+0.600·Influencer_type

The SIG= ,001 < 0,05 ⟹ **Reject H01c,** and can conclude that the variable Influncer_Type has an impact predicting "Polarity" for Positive Emotional Connection.

In summary, the results suggest that the type of influencer (Human vs. Virtual) has a statistically significant, moderate impact on Positive emotional connection(Polarity). The positive coefficient for Influencer_type indicates that, on average, Human Influencers are associated with a higher level of Positive emotional connection compared to Virtual Influencers. Therefore, H1c is accepted.

5.3.2. Hypothesis 2

In this hypothesis, the main objective is to test whether the type of Virtual Influencer has an impact on the Brand Love Dimensions. For this analysis, there had to be a new codification. The distinction between Virtual Influencers is made through non-human like, which includes VI Influencer Lil Miquela (robot like) and Noonoouri (doll like) and Human like, which is composed of VI Shudu. Since there are three influencers in total and in order to be a fair comparison to test this new hypothesis, 4 linear regressions were carried out. Firstly, it will be tested whether Lil Miquela, which was assigned 0 as a new codification, and Shudu, with the new code 1, have an impact on the two Brand Love Dimensions that have a significant sample, Passion Driven Behavior and Positive Emotional Connection.

The same will be done but with another virtual influencer, Noonoouri, who for these two linear regressions will have the code 0 and Shudu keeps the 1.

Table 5.6 - Descriptive statistics for new codification

Brand_Love_Dimensions

		Frequency
Valid	Self-brand Integration	19
	Passion Driven Behaviour	595
	Positive Emotional Connection	126
	Long-term Relationship	12
	Anticipation Separation Distress	1
	Attitude Valence	9
	Others dimensions & Blanks	21738
	Total	22500

As we can see in table number 7 the dimension "Self-brand Integration" had 19 responses, "Passion-driven Behaviour" and "Positive Emotional   Connection" are the two dimensions with the most responses with 595 and 126 respectively. Then, we have the 3 dimensions with the fewest mentions, "Long-term relationship" with 12, "Anticipation Separation Distress" with 1 and "Attitude Valence" with 9 responses.

A) Self-brand Integration, D) Long-term Relationship, E) Anticipation Separation Distress & F) Attitude Valence

As mentioned before, Self-brand Integration only had 27 responses, and a small sample size may lead to diminished statistical power, making it challenging to identify genuine associations between variables. (Cohen, 1998). Also, when analysing some values regarding the model fi like R-squared, a small sample might provide less meaningful information when dealing with small sample sizes, making it difficult to assess the significance of the model (as noted by Hair et al., 2010)

To conclude, a small sample may not be representative of the general population that they were retrieved and could possibly lead to a bias analysis according to Hair et al., (2010). That is why I decided to not proceed with testing this hypothesis.

B) Passion-driven Behaviour

H02b: The different types of Virtual Influencers (Non-Human Like) does not have an impact on Passion-driven Behaviour.

H1b: The different types of Virtual Influencers (Non-Human Like) have an impact on Passion-driven Behaviour.

To test this hypothesis, two different linear regressions were conducted to find out if the Virtual Influencer type would have an impact on Passion Driven Behaviour, and proceed with this analysis, the comments were filtered by dimension with code 2, as explained in chapter 4.3., the independent variable was Virtual_influencer_type, subdivided by 0- Non-human like with Lil Miquela (robot like) and Noounoouri (doll like) they will be compared to Human-like influencer, Shudu (code 1), the dependent variable is Polarity, which measures the dimension.

- **Lil Miquela (Non-human like) vs. Shudu (Human like)**

Table 5.7 - Model Summary - Virtual_Influencer_type (Lil Miquela and Shudu) and Passion-driven Behaviour

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,256[a]	,065	,062	,666

a. Predictors: (Constant), Virtual_Influencer_Type

This image indicates a moderately positive relationship between the type of virtual influencer and Passion Driven Behaviour, with the R being ,256. And, approximately, 6,5% of the Variance in Passion Driven Behaviour can be explained by the type of Influencer.

Table 5.8 - Coefficient of Virtual_Influencer_type (Lil Miquela and Shudu) and Passion-driven Behaviour

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,576	,060		9,674	<,001
	Virtual_Influencer_Type	,353	,080	,256	4,399	<,001

a. Dependent Variable: Polarity

When Virtual_Influencer_type is 1, that is the code for Shudu, the Human Like VI, there is a significant increase in the predicted Polarity for Passion driven behaviour by 0.353 units compared to when it is 0 (Non-Human Like - Lil Miquela).

The equation for this linear regression is:

*Polarity = β0+β1·Influencer_type ⟺ Polarity= 0.576 + 0.353 * Virtual_Influencer_type*

Sig=,001 < 0,05 ⇒ **Reject H02b**, and can conclude that the variable Virtual_influncer_type has an impact predicting Polarity for Passion driven behaviour.

In summary, the results suggest that both Shudu, human like influencer impacts passion driven behaviour significant manner when compared with the presence of Lili Miuqela (Non-human Robot-like).

- **Noonoouri (Non-human like) vs. Shudu (Human like)**

Table 5.9 - Model Summary - Virtual_Influencer_type (Noonoouri and Shudu) and Passion Driven Behaviour

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,128ᵃ	,016	,014	,317

a. Predictors: (Constant), Virtual_Influencer_Type

This image indicates a week positive relationship between the type of virtual influencer and Passion Driven Behaviour, with the R being ,128. And, approximately, 1.6% of the Variance in Passion Driven Behaviour can be explained by the type of Influencer.

Table 5.10 - Coefficient of Virtual_Influencer_type (Noonoouri and Shudu) and Passion Driven Behaviour

Coefficientsᵃ

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,016	,018		56,900	<,001
	Virtual_Influencer_Type	-,087	,031	-,128	-2,798	,005

a. Dependent Variable: Polarity

The value -,087 suggests that when "Virtual_Influencer_type" is 1 (Human Like - Shudu), there is a slight decrease in the predicted "Polarity" for Passion Driven Behavior by 0.087 units compared to when it is 0 (Non-Human doll Like - Noonoouri).

The equation for this linear regression is:

$Polarity = \beta0+\beta1 \cdot Influencer\_type \Leftrightarrow Polarity = 0.1000016 - 0.087 \cdot Virtual\_Influencer\_type$

SIG = ,005 < 0,05 ⇒ **Reject H02b**, and can conclude that the different type of Virtual Influencer has an impact on predicting Brand Love.

In sum, the presence of Noonoouri (Non-human doll like) impacts passion driven behavior in a significant manner when compared with the presence of Shudu (human like).

C) Positive Emotional   Connection

H02c: The different types of Virtual Influencers (Non-Human Like) does not have an impact on Positive Emotional   Connection

H2c: The different types of Virtual Influencers (Non-Human Like) have an impact on Positive Emotional   Connection

To test this hypothesis, a linear regression was conducted to find out if the Virtual Influencer type would have an impact on Passion Driven Behaviour, it is important to emphasize that for this variable it was developed two different linear regressions.

- **Lil Miquela (Non-human like) vs. Shudu (Human like)**

Table 5.11 - Model Summary - Virtual_Influencer_type (Lil Miquela and Shudu) and Positive Emotional Connection

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,375[a]	,140	,122	1,136

a. Predictors: (Constant), Virtual_Influencer_Type

This image indicates a moderately positive relationship between the type of virtual influencer and Positive Emotional   Connection, with the R being ,375. And, approximately, 14% of the variability in Positive Emotional Connection can be attributed to whether the influencer is Non-Human Like or Human Like.

Table 5.12 - Coefficients of Virtual_Influencer_type (Lil Miquela and Shudu) and Positive Emotional Connection

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,815	,219		3,728	<,001
	Virtual_Influencer_Type	-,902	,322	-,375	-2,799	,007

a. Dependent Variable: Polarity

When Virtual_Influencer_type is 0 (Non-Human Like - Lil Miquela), the predicted Polarity is ,815, and when Virtual_Influencer_type is 1 (Human Like - Shudu), there is a negative change in the predicted "Polarity" by ,902 units. This means that Human Like virtual influencers are predicted to have a lower Positive Emotional Connection than Non-Human Like virtual influencers.

The equation for this linear regression is:

Polarity = β0+β1·Influencer_type ⇔ Polarity = 0.815 + (-0.902) ·Virtual_Influencer_type

SIG = ,007 < 0,05 ⇒ **Reject** H02c, and can conclude that the different types of Virtual Influencer have an impact on predicting a Positive Emotional Connection.

To conclude, there is a statistically significant relationship between the type of Virtual Influencer and Positive Emotional Connection, with Non-Human Like virtual influencers (Lil Miquela) being predicted to have a higher level of Positive Emotional Connection than Human Like virtual influencers (Shudu).

- **Noonoouri (Non-human like) vs. Shudu (Human like)**

Table 5.13 - Model Summary - Virtual_Influencer_type (Noonoouri and Shudu) and Positive Emotional Connection

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,568[a]	,322	,315	,802

a. Predictors: (Constant), Virtual_Influencer_Type

The image presented above indicates a moderately strong positive relationship between the type of virtual influencer and Positive Emotional   Connection, R=,568. Approximately, 32,2% of the Variance in Positive Emotional   Connection can be explained by the type of Influencer.

Table 5.14 - Coefficient of Virtual_Influencer_type (Noonoouri and Shudu) and Positive Emotional Connection

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,211	,092		13,151	<,001
	Virtual_Influencer_Type	-1,297	,191	-,568	-6,794	<,001

a. Dependent Variable: Polarity

When Virtual_Influencer_type is 1 (Human Like - Shudu), there is a a significant decrease in the predicted "Polarity" by 1.297 units compared to when it is 0 (Non-Human Like - Noonoouri).

The equation for this linear regression is:

Polarity = β0+β1·Influencer_type ⇔ Polarity = 1.211 - 1.297 ·Virtual_Influencer_type

SIG =,001 < 0,05 ⇒ **Reject** H02c, and can conclude that the different types of Influencers cause an impact on Positive Emotional   Connection.

In summary, based on these results, it appears that the type of virtual influencer (Non-Human Like vs. Human Like) does have a statistically significant impact on Positive Emotional Connection, with Noonoouri having a more substantial impact on Passion Driven Behaviour.

To conclude the analysis in this dimension the type of Virtual Influencer significantly influences Brand Love. Specifically, the results indicate that both Virtual Influencers that are Non-Human like Virtual, Lil Miquela and Noonoouri, having the most substantial impact in this dimension.

6- Conclusion

6.1. Conclusion and Recommendations

To summarize all the results, it is important to understand if the research questions were answered, regarding research question number one, we can conclude that despite the type of influencer brand love dimensions are present in the interactions the audience has with the influencer.

Concerning research question number two, the study's results show that the type of influencer (virtual or human) significantly impacted various aspects of Brand Love. Human influencers generated more positive emotions compared to virtual influencers, particularly in Passion-driven Behaviour and Positive Emotional Connection.

Finally, regarding the third research question virtual influencers, there is a hierarchy of results where dolls perform better than humans, which in turn perform better than robots, thus regarding passion driven behavior. Concerning positive emotional connection, non-human influencers had more positive effect, with Noonouri being the most influential.

In summary, the study's findings support existing theoretical frameworks in influencer marketing and social psychology. To be significant, an influencer needs to own qualities such as credibility, attractiveness, trustworthiness, and expertise in the specific field of the product they are endorsing (Djafarova & Rushworth, 2017). In the meantime VI, presents concerns regarding their image can remain the same and the risk of errors is minimized because they do not exist in real life (offline), so your "behavior" and image can be meticulously programmed in the background. (Tan, 2019), which lead us to another main concern the lack of authenticity since none of their content is organic. (Wills, 2019)

6.1.1 Theoretical Contribution

In summary, the outcomes of this study deliver valuable insights applicable to marketing professionals and researchers within the fields of influencer marketing, relationship management, and consumer behaviour. These insights deepen our understanding of how influencers impact Brand Love and establish emotional connections with their target audiences, providing practical insights for marketing professionals to implement.

The study contributes to our understanding of how virtual and human influencers differ in terms of their impact on Brand Love dimensions, developed and validated by by Bagozzi et al., (2017), which has 6 dimensions: Self-brand integration, Passion-driven behaviour, Positive emotional connection, Long-term Relationship, Anticipated Separation Distress, and Attitude Valence. Highlighting the dimensions of Passion-driven Behaviour and Positive Emotional Connection as central components of Brand Love. This can contribute to the theoretical development of the Brand Love concept and how it is influenced by influencers. Also, the The categorization of virtual influencers into human-like and non-human-like types adds depth to the understanding of virtual influencers. This typology can be a basis for further theoretical exploration.

This research underlines that emotions are important in influencer marketing. It contributes to the existing knowledge about how influencers can make their audience feel certain emotions and connect strongly with them.

6.1.2. Managerial Implications

From a Marketing point-of-view the conclusions presented within this dissertation offer a significant perspective on the strategic allocation of resources by marketers in the world of Influencer Marketing. These days it is essential to use Influencers when implementing a brand's communication and marketing strategy, not forgetting that it is essential that the choice of influencer is aligned with the values that the brand represents because when influencers are passionate about a brand and its products/services and create engaging and authentic content it helps to create a community and a real connection with the consumers leading to increased brand love and loyalty (Hutter et al., 2013).

Although VI are the new hot topics, brands can be cautious when using them, although they arouse curiosity in followers, after seconds the reaction can be opposite. It is also known that, when compared to HI, VI may lack authenticity because the content they create is programmed. (Seo et al., 2020).

A brand can obtain by using VI in its strategy only as a communication vehicle with the aim of creating brand recognition and not exactly sales.

On the other hand, there are also brands with a loyal following and who have been buying from the brand for many years, with a strong emotional relationship that its association with any VI's is not seen negatively.

Nonetheless, it is imperative for brands to continue to use Influencer Marketing as a tool is essential due to direct access to the target audience, the authenticity of their recommendations, the engagement that generates, and the ability to diversify marketing tactics.

6.2. Limitations and Future Research

The study's main limitation was the Brand Love dictionary, created using the definition of the items of the validated scale presented by Bagozzi et al., (2017). The dictionary contained 164 words that were linked to the respective dimension and if and when it was detected in the comment the software responded with the associated polarity. After analyzing the results, four dimensions were not analyzed because they had a small sample size, which would result in biased results that were not very significant in the reality in which they are located.

The choice of influencers can also be a constraint since the categorization and selection that lead to the decision may be not significant. Concerning the characterization, a limitation was that certain influencers do not have the number of likes available to the public eye, therefore the average likes by post could not be given with 100% accuracy.

Furthermore, the presence of influencers of different ethnicities may result in different levels of engagement and, as a result, brand love.

Another restriction is that Sentiment Analysis does not understand languages like Arabic, which is a slightly common language in the comments, especially on the comments of the Virtual Influencer Lil Miquela.

Another limitation of the study is that the software cannot read emojis. During the creation of the brand love dictionary, a heart emoji (❤️) was inserted as a synonym for love, one of the words in the dictionary and a happy face emoji (😊) which would be synonymous with happy, another word that appears in the dictionary. When the software started running, it was noticeable that it was only able to analyze the heart emoji, assigning positive polarity, completely canceling out the happy face emoji. After this test, the heart emoji was also removed from the synonyms as it would not be a coherent analysis.

During data collection and analysis, it was clear that there were a huge number of emojis that appeared in the comments of influencers' posts, in the future, it should be interesting to proceed with the same study but at this time also analyze emojis. Increasingly common in

younger generations, they are facial expressions that allow users to express their feelings, moods, or emotions. (Novak, 2015).

Therefore, future research, expanding the Brand Love dictionary through comprehensive literature reviews and machine learning updates and a measuring in expressing sentiment and brand love and added them to the dictionary to have more depth and meaning.

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Appendix

A) Brand Love Dictionary

Brand Love	**Self-brand integration**	•**Identified** – identified, Recognized, Known, View, Consider, Reckon, Connected •**Unidentified** – unidentified, Anonymous, Unnoticed, Unknown, Undetermined, Disconnected •**Aligned** – aligned, Connected, Match, Fit, Correspond, Checked, Agree •**Misaligned** – misaligned, Disconnected, Out of Alignment, Uncoordinated, Conflicting, Mismatched, Discordant
	Passion-driven behaviours	•**Love**- love, Adoring, Affectionate, Passionate, Devoted, Like, Associated, •**Hate** – hate, Dislike, Hateful, Averse, Detest, Disassociated •**Enthusiastic** – enthusiastic, Associated, Excited, Eager, Passionate, Animated, Wholehearted •**Apathetic** – apathetic, Disassociated, Spiritless, Uninterested, Indifferent, Numbness
	Positive emotional connection	•**Happy** – happy, Joyful, Delighted, Pleased, Cheerful, Dedicated •**Sad** – sad, Unhappy, Heartbroken, Lamentable, Disheartened, Undedicated •**Attached** – attached, Dedicated, Touched, Devoted, Bonded, Attachment, •**Detached** – detached, Uninvolved, Disengaged, Indifferent, Dispassionate, Undedicated
	Long-Term Relationship	•**Trust** – trust, Reliable, Faithful, Committed, Dependable, Credible, Trustworthy, Confident, Believable, Sincere, Honest •**Distrust** – distrust, Uncommitted, Untrustworthy, Disbelieving, Doubtful, Uncertain •**Loyal** – loyal, Faithful, Devoted, Faithful, Reliable, Trustworthy, Trusting, Honest, Committed •**Disloyal** – disloyal, Unfaithful, Betraying, Inconstant, Uncommitted
	Anticipated separation distress	•**Dependent** – dependent, Reliant, Insecure, Vulnerable, Uncomfortable •**Independent** – independent, Autonomous, Unconstrained, Individualistic, Comfortable •**Anxious** – anxious, Nervous, Uneasy, Uncomfortable, Unquiet •**Relaxed** – relaxed, Easy going, Carefree, Unworried, Loosen up, Comfortable
	Attitude valence	•**Positive** – positive, Affectionate, Affirmative, Favourable, Favorable, Beneficial, Optimistic, Acceptance, Acknowledgment, Confirmation •**Negative** – negative, Unaffectionate, Unfavorable, Unfavourable, Adverse, Pessimistic, Denial, Opposite •**Favourable** – favorable, Favourable, Affectionate, Beneficial, Advantageous, Promising, Positive •**Unfavourable** – unfavorable, Unfavourable, Unaffectionate, Unfortunate, Inauspicious, Unpromising, Disadvantageous, Disheartening, Detrimental

B) Descriptive data regarding Brand Love Dimensions

Brand_Love_Dimensions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Self-brand Integration	27	,1	,1	,1
	Passion-Driven Behaviour	1255	3,3	3,3	3,4
	Positive Emotional Connection	437	1,2	1,2	4,6
	Long-term Relationship	14	,0	,0	4,6
	Anticipation Separation Distress	1	,0	,0	4,6
	Attitude Valence	11	,0	,0	4,7
	Other Dimensions & Blanks	35755	95,3	95,3	100,0
	Total	37500	100,0	100,0	