

Analyzing the Impact of Virtual Influencer Characteristics on User Engagement: A Multimodal Approach



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ABSTRACT

Emerging technologies have a significant impact on the evolution of marketing management. The emergence of social media gave birth to influencers, who today account for the single largest component of most marketing budgets. Parallel to the growth of influencers through increasing social media penetration, a subdomain of AI-enabled virtual personas, called ‘Virtual Influencers’, came into the mainstream.

Virtual influencers are digital characters developed with the help of graphics technology and generative artificial intelligence. In the last few years, the popularity of virtual influencers has surged, leading to massive growth in terms of their numbers, the number of investment firms, and the amount of investments they have made to get an endorsement from virtual influencers. This thesis investigates the determinants of user engagement on social media content created with virtual influences. As such influencers are increasingly integrated into daily social media diets, it is crucial to understand the characteristics of virtual influencers that enhance user engagement. The thesis analyzes secondary field data from public influencers' Instagram accounts, scraped using a Python-based scraper to collect images, captions, and user interactions, such as views and comments.

To structure this research, we employ the Elaboration Likelihood Model (ELM), a well-established framework in persuasion and communication studies. Our analysis adopts a multimodal approach, i.e. both text and imagery, with the help of various libraries, APIs, and customized neural networks to identify influential factors in the images from literature. These factors are categorized into peripheral and central cues as per the ELM.

In the peripheral route, we examine attributes such as color (hue, saturation, brightness, and contrast) and composition (diagonal dominance, symmetry, and

visual balance). For the central route, we focus on image content (including face detection, face count, and facial emotion), content characteristics (such as content consistency and text-image similarity), and caption features (including mind perception and sentiment analysis).

The findings reveal significant impacts of both peripheral and central cues on user engagement. Regression models are used to quantify the influence of these factors. Furthermore, the research delves into the concept of mind perception, a core theoretical element that we are contributing to understanding the parasocial relationship and how it is different with virtual influencers than regular influencers. We recollected data from Instagram posts, along with the comments of all the followers, for a follow-up analysis. Building on the Communication Accommodation Theory (CAT), we analyzed user comments through text analysis methods, and we tried to understand how the projected mind perception of virtual influencers through their caption affects follower language style and sentiment.

The findings of this thesis contribute to both theoretical and practical applications in the expanding field of virtual influencers, providing insights into how these digital entities can be optimized for enhanced user engagement. This research not only advances our understanding of virtual influencer dynamics but also offers actionable insights for leveraging these influencers in digital marketing strategies.

Keywords: Virtual Influencers, ELM, Image Analysis, Mind Perception

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