

ARTIFICIAL INTELLIGENCE (AI) INFLUENCERS IN INFLUENCER MARKETING

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Purpose: The purpose of this article is to identify the use of virtual influencers (VIs) generated using artificial intelligence (AI) in the field of influencer marketing.

Design/methodology/approach: A narrative and critical literature review was conducted for this purpose. To identify the activity of virtual influencers, the author conducted an observational study to collect and compare the activity data of virtual influencers who had a minimum of 1,000 followers in 2022 with their current popularity and activity (November 2023). It also conducted an analysis of the advertising activity of selected influencers and an analysis of reach and engagement in 2022-2023.

Findings: Analysis of the literature confirms the growing interest in the use of virtual influencers in marketing activities, which is also evident in marketers' current and planned spending on this price. Virtual influencers generate positive results in the level of audience engagement, which makes it possible to consider this means of communication as an attractive alternative. However, significant changes were observed in the number of observers over the year. Of the 54 virtual influencers analyzed, 44% reported a decrease in the number of observers.

Research limitations/implications: The area of using computer-generated influencers and using artificial intelligence requires further intensive research. The spread of generative artificial intelligence will certainly affect the pace of change in this area. The observation made only presents data on changes in the popularity and publishing and advertising activity of virtual influencers. In this context, research dedicated to the semiotics of virtual influencers as well as the nature of parasocial interactions would be advisable.

Practical implications: The article identifies areas of potential for virtual influencers in influencer marketing.

Originality/value: The article adds to the sparse literature to date on virtual influencers, their potential and how they can be used in practice. It will be useful for managers and decision-makers involved in digital marketing.

Keywords: influencer marketing, artificial intelligence, marketing promotion, brand, virtual influencer.

Category of the paper: Research paper.

1. Introduction

Contemporary academic research is increasingly focused on analyzing the impact of developments in information technology, especially artificial intelligence (AI), and the evolution of social media on market dynamics. This interdisciplinary field of research combines elements of marketing, social psychology, and computer science to create new perspectives in understanding the interaction between brands and consumers in the digital age.

The definition of artificial intelligence according to the European parliament is "the ability of machines to exhibit human skills such as reasoning, learning, planning and creativity" (<https://www.europarl.europa.eu/news/pl/headlines/society/20200827STO85804/sztuczna-inteligencja-co-to-jest-i-jakie-ma-zastosowania>, 2023). GPT Chat defines artificial intelligence as "the field of computer science that deals with the creation of algorithms and systems that can perform tasks that require human intellect. Such tasks include pattern recognition, reasoning, planning, learning, perception, the ability to manipulate objects, and adaptation to new situations (chatGPT, 2023). Artificial intelligence can have traditional and generative dimensions. In the traditional view, it is used, for example, in chatbots, voice assistants such as Siri or Alexa and its operation is based on analyzing large data sets. Artificial intelligence is currently used for functionalities such as customer service with virtual assistants (chatbots), marketing campaign automation, or support in consumers' purchasing decisions through recommendations. Generative artificial intelligence, on the other hand, enables the generation of results that can take a variety of formats. Thus, we can generate text, images, video, music, computer codes as results.

In this context, an extremely promising area is the use of artificial intelligence to create influencers, the so-called Virtual Influencers (VI) or Artificial Intelligence Influencers (AII). Virtual influencers are a phenomenon of recent years combining the use of technology and the popularity of influencer marketing, that is, marketing that is based on the use of the personality of the creator, in this case the influencer.

The rapid growth of social media, as Shareef et al. (2020) point out, has laid the groundwork for the popularity of influencer marketing. It is in the social media space that digital creators, from artists to online celebrities, have found their place to communicate with a wide audience. As Bailis (2019) points out, social media influencers (SMI) are gaining the trust of consumers and significantly influencing their purchasing decisions, making them an important tool in companies' marketing strategies.

The historical roots of influencer marketing date back to the 18th century, when celebrities were used to promote products (Lazarsfeld et al., 1948). Today, the phenomenon has gained a new dimension thanks to the development of social media, as evidenced by a systematic review of SMI research by Vrontis et al. (2020).

In turn, the development of AI (Kalinová, 2022) is contributing to changes in the approach to marketing, offering new opportunities for personalizing communications. AI allows for a better understanding and prediction of consumer needs, which is crucial for creating effective marketing strategies. The emergence of computer-generated virtual influencers (VIs), as Franke et al. (2023) point out, is an example of how AI is influencing the evolution of influencer marketing. The company Dirt, which is behind the success of virtual influencer Lil Miquel, is currently valued at more than \$125 million. Companies such as Shadows, SuperPlastic and Toonstar are also deploying their virtual characters (The State of AI in Influencer Marketing, 2023). The growth of the virtual influencer market indicates that this will not just be a passing fad and the importance and use of AI-generated characters could become a major force and play a significant role in the marketing industry. According to the AI Marketing Benchmark Report, 63% of respondents plan to implement AI or Machine Learning into influencer campaigns in 2023. Another 25% are considering the possibility and only less than 12% will use such solutions in the near future.

Another interesting research aspect is the analysis of how modern technologies such as natural language processing, speech and image recognition, and machine learning can support the creation of effective and personalized marketing messages (Lou et al., 2022). It is worth noting here that research on the effectiveness of VIs and their perception by consumers, as Liu (2019) suggests, can provide valuable clues about future directions for social media marketing. While some marketers remain skeptical or cautious about implementing artificial intelligence into their operations, nearly 20% of marketers are already allocating more than 40% of their budget to AI-based solutions.

2. Methods

This study used a narrative and critical literature review. Based on previous research and an earlier systematic literature review dedicated to virtual influencers (Laszkiewicz, Kalinska-Kula, 2023), the author presented the importance and role of virtual influencers in the field of influencer marketing. In addition to academic literature, practical literature was also included. To identify the activity of virtual influencers, the author collected and compared data on the activity of computer-generated or artificial intelligence influencers who had a minimum of 1,000 followers on the Instagram platform in 2022 with their current popularity and activity (November 2023). An analysis of the advertising activity of selected influencers was also carried out, along with an analysis of reach and engagement for 2022-2023 using the Influencer Marketing Hub calculator and Phlanx's Instagram Engagement Calculator.

3. Results

Studies show that the observation intentions of virtual influencers and real influencers do not differ (Sands et al., 2022). Even the use of social heuristics of human interaction in interactions with computers and the attribution of human characteristics and behavior to machines is observed (Arsenyan, Mirowska, 2021). Present in increasing numbers on the Internet, they attract thousands and often even millions of observers stimulating their engagement and purchase decisions (Lou et al., 2022). The criteria that moderate purchasing decisions under the influence of interaction with VI are primarily the fit of the virtual influencer, as in the case of human influencers and anthropomorphism. In addition to these, popularity and homogeneity also play an important role (Huang et al., 2022). An important element that determines the effectiveness of influencers is trust. Trust resulting from the influencer's perceived autonomy by observers and, consequently, his authenticity, determines the credibility of the influencer, both virtual and real (Sands et al., 2022). Given the mechanics of creating and managing the activity of virtual influencers, it could be argued that their perceived credibility by the audience will be low or even eliminate the influencer's role in the observer's buying process. Creators of virtual influencers working with brands can fully customize communications to meet the company's requirements regardless of their own preferences. Studies (Alboqami, 2023; Lou et al., 2022) seem to confirm this regularity. However, if the virtual character is prepared based on a carefully developed personality and its activity is consistent with the established assumptions, the chances of building credibility and authenticity in the eyes of the audience are significant (de Brito Silva et al., 2022). At the same time, the benefits for the company of having full control and influence over the activity of virtual characters in jointly implemented advertising campaigns are increasingly seen as important. Influencers people, who have become opinion leaders in recent years and play an important role in the communication of companies with consumers, in addition to many positive aspects, can unfortunately also be a source of behavior and situations that negatively affect the image of promoted brands. The "Pandora Gate" controversy, the detention of a youtuber nicknamed "Stuu" on the basis of a court decision in the UK (<https://www.rp.pl/prawo-karne/art39298931-stuu-w-brytyjskim-areszcie-na-podstawie-decyzji-sadu>, October 11, 2023) once again puts the aspect of proper selection of brand ambassadors and the risks associated with it in the forefront of the minds of decision-makers and managers managing brands. Thus, the ability to control the behavior of virtual influencers is one of the important prerequisites for engaging with them (Rodrigo-Martin et al., 2022). In terms of ethical behavior, virtual influencers have been positively evaluated against traditional influencers, which is justified using virtual influencers in socially relevant activities and actions (Mrad et al., 2022). Research (Sands et al., 2022) additionally draws attention to the criterion of "uniqueness" - for observers for whom it matters, the results obtained when working with virtual influencers can be even better than the results

of working with human influencers. Research shows that virtual presentation can also improve a brand's image in the eyes of the audience, as an innovative brand using innovative advertising solutions (Franke et al., 2023). According to Influencer Marketing Hub data, almost half of marketers (49.3%) are very positive about the effectiveness of virtual influencers and another 12.7% see their effectiveness as positive to some degree. A negative assessment was shared by 10% of respondents and the remaining 28% remained neutral. This may still be due to a lack of sufficient experience, not enough campaigns, or the development of AI solutions in this area observed all the time.

In addition to the undoubted benefits associated with the involvement of virtual influencers in communication and promotion activities, it is also important to note possible sources of risks and areas that create room for further experimentation and consideration. One possible source of risks is the influencer's designed appearance. Currently, virtual influencers appear both as characters with human characteristics such as Lu to Magal, as well as animal characters, imaginary and existing fairy tale characters or even in the form of a wiener like Nobody Sausage. Each character may also have a corresponding gender, skin color, language, and appearance, including age, which affect their perception. In this context, important questions include to what extent a brand's image can be modified depending on the selection of the right virtual partner or ambassador. To what extent should virtual influencers influence the perception of the human body and the increasing discrepancies between reality and the virtual desired image? Mori's (1970) theory of the Valley of the Uncanny may provide some guidance, but with the rapid spread of AI-generated creativity, the boundary of acceptance may be shifting and the reaction of strong rejection to high levels of human resemblance may be weakening. Alongside these issues are questions related to the strategy of virtual influencers themselves - should they experience the passage of time? Or rather, should they remain in one predefined age tailored to a clearly defined audience?

Table 1 shows the list of virtual influencers compiled and published in 2022 (Laszkiewicz, 2022). In addition, the current number of observers (as of November 10, 2023) and the percentage changes in the number of observers for each account are presented. Similarly, Table 2 presents the number of posts published by 2022 and the current number of posts (as of November 10, 2023), along with the change in the number of publications observed during the period under study in percentage terms. Accounts that were active in 2022 and ceased to function in the following year (Knox Frost, Kakao Friends Studio, Lena, Hannah Stein, Kiera Joy, Ivy Benoit), as well as the Guggimon and Janky accounts, which now exist under a single @jankyandguggimon address, were removed from the summary.

Table 1.*Popularity of virtual influencers in 2022-2023 on the Instagram platform*

Influencer	Number of followers July 2022	Number of followers November 2023	Change (%)
Lu to Magal @magazineluiza*	5 900 000,00	6600000,00	11,86%
Nobody Sausage @nobodysausage*	4 400 000,00	7500000,00	70,45%
Casas Bahias @casabahia*	3 200 000,00	3600000,00	12,50%
Miguela @lilmiguela*	3 000 000,00	2700000,00	-10,00%
The Good Advice Cupcake @thegoodadvicecupcake*	2 500 000,00	2400000,00	-4,00%
Barbie @barbie	2 000 000,00	3600000,00	80,00%
minniemouse*	722 000,00	790000,00	9,42%
Daisy Yoox @Yoox*	675 000,00	765000,00	13,33%
kda_music	572 000,00	523000,00	-8,57%
Any Malu @anymalu_real*	529 000,00	653000,00	23,44%
Anna Cattish @anna_cattish	478 000,00	461000,00	-3,56%
Thalasya @thalasya_	476 000,00	462000,00	-2,94%
Seraphine @seradotwav*	408 000,00	361000,00	-11,52%
Noonoouri @noonoouri*	407 000,00	418000,00	2,70%
imma @imma.gram*	406 000,00	396000,00	-2,46%
leyalovenature	339 000,00	450000,00	32,74%
Qai Qai @realqaiqai*	336 000,00	341000,00	1,49%
Bermuda @bermudaisbae*	269 000,00	237000,00	-11,90%
bee_nflencer	268 000,00	234000,00	-12,69%
KizunaAI @a.i.channel_oppicial*	237 000,00	219000,00	-7,59%
Shudu @shudu.gram*	234 000,00	241000,00	2,99%
FN Meka @fnmeka*	181 000,00	186000,00	2,76%
Body by Ralph @bodybyralph	163 000,00	149000,00	-8,59%
Liv in the future	162 000,00	144000,00	-11,11%
Ronald F. Blawko @blawko22*	141 000,00	128000,00	-9,22%
Rozy Oh @rozy.gram*	129 000,00	162000,00	25,58%
Teflon Sega @teflonsega*	110 000,00	367000,00	233,64%
Miko @thecodemiko*	102 000,00	133000,00	30,39%
Mar.ia @soymar.ia*	96 800,00	84100,00	-13,12%
Yameii Online @yameiionline*	78 600,00	107000,00	36,13%
Squeaky and Roy @squeakyandroy*	66 500,00	57400,00	-13,68%
Apoki @imapoki*	66 300,00	147000,00	121,72%
Ion Gottlich @iongottlich*	52 700,00	77700,00	47,44%
ChillRx @iamchillpill*	50 400,00	44900,00	-10,91%
Eli.sofi.twins @eli.sofi.twins	39 900,00	46200,00	15,79%
Geico Gecko @thegeicogecko*	28 600,00	31900,00	11,54%
AI @ai_ailynn*	24 300,00	30200,00	24,28%
Koffi @koffi.gram	17 700,00	16100,00	-9,04%
Nikuro @liam_nikuro	12 800,00	12 000,00	-6,25%
Ivaany @ivaany.h	11 800,00	11400,00	-3,39%
Han YuA @_hanyua	11 200,00	89800,00	701,79%
Dagny @dagny.gram	9 600,00	10400,00	8,33%
Ilona @ilona*	8 400,00	11000,00	30,95%
Amanda @amanda_bims	4 400,00	4300,00	-2,27%
Konni @konni.violet	3 500,00	3000,00	-14,29%
Brenn @brenn.gram	3 400,00	3600,00	5,88%
Eda Dama @eda.dama	2 700,00	2500,00	-7,41%
Aba Wils @abawils	2 700,00	3500,00	29,63%
Nefele @nefele.verse	2 200,00	3200,00	45,45%
Rina @Rina.8k	2 000,00	33500,00	1575,00%
Idalia @idalia.visual	1 500,00	1300,00	-13,33%
Nilana Arvuti @nilana.arvuti	1 400,00	2000,00	42,86%
Ryan @sevensoasofryan	1 200,00	1000,00	-16,67%
Bella @bella.hueman	1 000,00	1000,00	0,00%

Source: own elaboration.

Table 2.*Virtual influencer activity in 2022-2023 on the Instagram platform*

Influencer	Number of posts July 2022	Number of posts November 2023	Change (%)
Lu to Magal @magazineluiza*	2588	3605	39,30%
Nobody Sausage @nobodysausage*	417	545	30,70%
Casas Bahias @casabahia*	1818	2922	60,73%
Miguela @lilmiguela*	1220	1285	5,33%
The Good Advice Cupcake @thegoodadvicecupcake*	1117	1378	23,37%
Barbie @barbie	1881	2200	16,96%
minniemouse*	530	658	24,15%
Daisy Yoox @Yoox*	4256	4745	11,49%
kda_music	106	106	0,00%
Any Malu @anymalu_real*	3060	3417	11,67%
Anna Cattish @anna_cattish	852	868	1,88%
Thalasya @thalasya_	224	222	-0,89%
Seraphine @seradotwav*	75	75	0,00%
Noonoouri @noonoouri*	1427	1642	15,07%
imma @imma.gram*	647	734	13,45%
Leyalovenature	657	589	-10,35%
Qai Qai @realqaiqai*	507	660	30,18%
Bermuda @bermudaisbae*	268	268	0,00%
bee_nfluencer	138	139	0,72%
KizunaAI @a.i.channel_oppicial*	1168	1168	0,00%
Shudu @shudu.gram*	107	142	32,71%
FN Meka @fnmeka*	158	145	-8,23%
Body by Ralph @bodybyralph	193	193	0,00%
Liv in the future	133	133	0,00%
Ronald F. Blawko @blawko22*	162	162	0,00%
Rozy Oh @rozy.gram*	291	411	41,24%
Teflon Sega @teflonsega*	46	70	52,17%
Miko @thecodemiko*	184	214	16,30%
Mar.ia @soymar.ia*	109	147	34,86%
Yameii Online @yameiionline*	134	205	52,99%
Squeaky and Roy @squeakyandroy*	141	231	63,83%
Apoki @imapoki*	210	513	144,29%
Ion Gottlich @iongottlich*	318	352	10,69%
ChillRx @iamchillpill*	13	85	553,85%
Eli.sofi.twins @eli.sofi.twins	75	149	98,67%
Geico Gecko @thegeicogecko*	513	604	17,74%
AI @ai_ailynn*	114	190	66,67%
Koffi @koffi.gram	21	19	-9,52%
Nikuro @liam_nikuro	109	92	-15,60%
Ivaany @ivaany.h	238	302	26,89%
Han YuA @_hanyua	50	122	144,00%
Dagny @dagny.gram	19	45	136,84%
Ilona @ilona*	102	116	13,73%
Amanda @amanda_bims	193	207	7,25%
Konni @konni.violet	405	528	30,37%
Brenn @brenn.gram	15	13	-13,33%
Eda Dama @eda.dama	45	45	0,00%
Aba Wils @abawils	212	357	68,40%
Nefele @nefele.verse	48	66	37,50%
Rina @Rina.8k	40	136	240,00%
Idalia @idalia.visual	8	8	0,00%
Nilana Arvuti @nilana.arvuti	30	67	123,33%
Ryan @sevensoasofryan	7	7	0,00%
Bella @bella.hueman	86	86	0,00%

Source: own elaboration.

Of the 54 virtual influencers analyzed, 44% saw a decrease in the number of followers. A decrease in the number of published posts occurred for 11% of the virtual influencers. The largest increase in observers can be boasted by Nobody Sausage (70.45% in the analyzed period), Barbie (80%), Teflon Segá (almost 234%) or Rina (1575%). However, in the case of observer growth, it would be necessary to verify the activity of observer accounts due to the emerging practice of buying "followers". An analysis of audience engagement and profile can be a helpful indicator. The lowest audience engagement rate among the above influencers is in the case of the @Rina.8k account (1.37%). On the other hand, @nobodysausage reaches 3.43% ER and @teflonsega even reaches 14.39%. Table 3 presents a comparison of reach and engagement for the three virtual influencer accounts analyzed in 2022 and 2023. The selection of VI was dictated by the different profile of the influencer: LilMiguela represents a profile that mimics humans in both appearance and behavior, Noonoori represents a character that mimics human appearance but retains a "robotic" character and Shudu is a digital model of Diigitals agency.

Table 3.
Reach, engagement and earnings of virtual influencers

	LilMiguela		Noonoori		Shudu	
	2022	2023	2022	2023	2022	2023
Number of observers	3 million	2.7 million	407,452	418,400	234,138	241,400
Average number of likes	57991	55600	5075	7300	7266	8516
ER involvement rate	1,91%	2,06%	1,25%	1,74%	3,12%	3,53%
Estimated cost of a sponsored post	\$6,054-\$10,091	\$5,724-\$8,587	\$1,215-\$2,025	\$1,331-\$1,996	\$700-\$1167	\$772-\$1158
Audience interests	Cinema and actors (80%), luxury goods (80%), music (79%)		Business and career (87%), luxury goods (84%), fashion (77%)		Cinema and actors (88%), artists and art (87%), modeling (86%)	

Source: own elaboration based on Łaszkiwicz, 2022, p. 133.

Noonoori and Shudu saw increases in reach as well as audience engagement. The observer engagement rate of LilMiguela's account increased to 2.06% while the number of observers decreased, which may indicate the loss of a less engaged audience and the retention of a more active one. In the case of the @lilmiguela account, a decrease in the number of posts during the analyzed period is also evident. The advertising activity of @shudu.gram and @noonoori remains at a similar level relative to the months analyzed in previous years (Table 4). It is noteworthy, however, that in the case of the Noonoori account, the number of posts labeled as advertising and the number of posts containing labeled brands have decreased. Some of Noonoori's posts reflect the social engagement of this virtual influencer.

Table 4.*Advertising activity of virtual influencers in October in 2020-2023*

		@lilmiquela	@shudu.gram	@noonoouri
Number of posts	X.2020	41	1	20
	X.2021	13	2	31
	X.2022	15	2	10
	X.2023	6	2	23
Posts containing brands	X.2020	36 (88%)	1 (100%)	12 (60%)
	X.2021	10 (78%)	2 (100%)	25 (81%)
	X.2022	5 (33%)	2 (100%)	8 (80%)
	X.2023	6 (100%)	1 (50%)	13 (56%)
Posts tagged as advertising	X.2020	Tagging in the form of tagged photo/content or tagged location	1 (100%) #sponsored	10 (83%) #adv
	X.2021		2 (100%) #ad	15 (48%) #adv
	X.2022		2 (100%) #ad #newcollaboration	2 (25%) #sponsored
	X.2023		1 (100%) #sponsored	3 (23%) #sponsored

Source: own elaboration based on Łaszkiwicz, 2022, p. 134.

4. Discussion

Expectations for the use of artificial intelligence in the influencer marketing field are rather positive. The Influencer Marketing Hub report presents the results of a survey in which 40.6% of marketers expressed the opinion that solutions based on artificial intelligence will revolutionize the industry, and another 25.1% believed that they will provide significant improvements. Smaller benefits were seen by 12.4% of respondents and only 6.4% of marketers felt that the application of artificial intelligence in the influencer marketing field would not make a significant difference. The remaining survey participants (15.5%) were not sure (The State of AI in Influencer Marketing: A Comprehensive Benchmark Report, Influencer Marketing Hub, 2023, p. 43). Influencer marketing has been growing in popularity for years. On the one hand, this is due to the far-reaching atomization of the media and the associated significant dispersion of audiences, which are potential target audiences for companies' marketing efforts. On the other hand, product attributes themselves have ceased to be a key selection criterion for consumers. Preferences towards brands are increasingly shaped by intangible benefits such as, for example, a sense of belonging, so important in the field of influencer marketing, or social status. Comparing the results achieved by human influencers with those of virtual influencers, it should be noted that they are very promising. Virtual influencers have higher engagement (2.84%) compared to human influencers (1.72%). Interestingly, the majority of virtual influencers' followers are women (65.5%) and more than 11% of the audience is categorized as between 13 and 17 years old (The State of AI in Influencer Marketing: A Comprehensive Benchmark Report, Influencer Marketing Hub, 2023, p. 43).

5. Summary

The relationship between the development of artificial intelligence and influencer marketing is an important research area. In March 2022, in the U.S. market, research showed that 35% of respondents had purchased products or services promoted by virtual influencers. The tools that make up this new form of marketing are based on advanced technologies such as natural language processing, speech and image recognition, problem solving and machine learning. These technologies make it possible not only to identify and analyze content published on social media, but also to analyze consumer sentiment and attitudes toward brands. They are also an important tool for marketers and digital creators to generate content tailored to audience preferences, based on analysis of their attitudes toward certain topics, while maintaining consistency in brand messages.

Virtual influencers can perform functions analogous to those designated for real influencers, while achieving higher effectiveness among audiences seeking uniqueness and originality. They are characterized as being perceived as more ethical than traditional influencers, mainly due to engaging in socially relevant issues and acting in a socially responsible manner. These results suggest the feasibility of incorporating virtual influencers into marketing strategies, but caution should be exercised against the potential dangers of blurring the lines between reality and fiction, which can negatively impact consumers' physical and psychological well-being.

Future research should focus on understanding how these two aspects can complement each other and what implications they have for marketing practice. An analysis of these relationships, based on a solid theoretical and empirical foundation, will allow for a better understanding of the mechanisms affecting the modern market and consumer behavior.

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