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Research Article

Human vs. AI Influencers: Understanding Consumer Engagement and Brand Attachment

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Abstract: The swift rise of computer-generated “virtual” or artificial-intelligence (AI) influencers, in parallel with traditional human endorsers, has prompted brands to reconsider which type of influencer more effectively fosters consumer engagement and brand loyalty. This study utilizes source credibility theory, parasocial interaction theory and the uncanny valley framework to analyze consumer reactions to both human and AI influencers across six dimensions: perceived authenticity, source credibility, parasocial interaction, consumer engagement, brand attachment and purchase intention. A between-subjects survey involving 320 participants was conducted, exposing them to a social media endorsement campaign featuring either a human or an AI influencer. Results from independent-samples t-tests indicated that human influencers outperformed their AI counterparts across all dimensions. The most significant disparities were observed in perceived authenticity ($d = 0.93$) and parasocial interaction ($d = 0.86$), while the difference in consumer engagement was notably smaller ($d = 0.24$). Hierarchical regression analysis revealed that parasocial interaction and source credibility were the strongest predictors of brand attachment alongside engagement together accounting for 59.1% of variance. Interestingly, the type of influencer lost its predictive power when these psychological factors were considered. Additionally, a moderation analysis pointed to a compensatory trend: after adjusting for perceived authenticity, the engagement gap between the two types of influencers narrowed to an insignificant level. These findings lend support to a mechanism-based perspective where the type of influencer influences engagement and brand attachment indirectly via credibility and relational dynamics rather than solely through the distinction between human and AI influencers. The study concludes with managerial insights, theoretical implications, limitations and suggestions for future research avenues.

Keywords: AI influencers, Virtual Influencers, Consumer Engagement, Brand Attachment, Parasocial Interaction, Influencer Marketing

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INTRODUCTION

Influencer marketing has transitioned from being a marginal approach to becoming a fundamental element of brand communication. The emergence of a new category of endorser, known as the computer-generated, AI-driven “virtual influencer,” is currently transforming this landscape. Personalities like Lil Miquela, Imma and Lu do Magalu have garnered follower numbers and brand collaborations that rival those of established human creators [1]. This development raises an intriguing question for marketers: does it impact engagement and brand loyalty if the individual

behind an endorsement is not human? The existing academic research does not provide a definitive answer. Some studies indicate that virtual influencers achieve engagement rates that match or surpass those of their human counterparts and are viewed as more manageable, consistent and less prone to scandals [2]. Conversely, other research highlights that human influencers maintain a lasting edge in perceived authenticity, trustworthiness and the formation of long-term parasocial connections. Additionally, highly realistic AI avatars may induce discomfort related to the uncanny valley phenomenon, potentially undermining the credibility that brands seek [3]. This disparity suggests that the pertinent inquiry should extend beyond simply determining "who performs better" to exploring "which psychological mechanisms characterize each type of influencer's effectiveness and under what circumstances." [4]. This study aims to fill this gap by simultaneously modeling six theoretically grounded constructs perceived authenticity, source credibility, parasocial interaction, consumer engagement, brand attachment and purchase intention within a unified comparative framework. Grounded in source credibility theory parasocial interaction theory [5] and the uncanny valley concept [6], we pose three research questions:

- Are there significant differences between human and AI influencers regarding engagement and brand attachment as well as the psychological mechanisms believed to influence them
- Which mechanisms are most predictive of brand attachment once influencer type is taken into account
- Does perceived authenticity influence the relationship between influencer type and engagement in such a way that sufficiently authentic AI personas can bridge the gap with humans

Literature Review

The Rise of AI and Virtual Influencers

Virtual influencers, which are digital entities created through 3-D rendering and increasingly advanced generative artificial intelligence, manage social media profiles and share content relevant to brands in a manner similar to human creators [6]. While public perception often views these digital personas as entirely independent, they typically operate under some level of human creative guidance and oversight. This indicates that the boundary between human input and AI is not strictly defined [7]. Brands are attracted to virtual influencers due to their controllability, scalability, immunity to personal scandals that can tarnish the reputation of human endorsers and the comparatively lower long-term costs associated with maintaining a digital persona instead of entering into celebrity contracts [8]. The evidence regarding their effectiveness is inconsistent. Engagement metrics have shown that certain well-known virtual influencers achieve average engagement rates that surpass those of comparable human influencers, suggesting that novelty and visual appeal may effectively attract attention in place of genuine experience [9]. In contrast, controlled studies comparing matched pairs of human and virtual endorsers generally indicate a preference for human influencers regarding trustworthiness, expertise and purchase intent. This trend is particularly evident for products where quality verification is challenging for consumers; they thus rely on the perceived authentic experiences of endorsers [10]. A recent analysis of collaborations between virtual influencers and brands identifies this phenomenon as a "credibility-engagement paradox," where virtual influencers can capture audience attention yet continue to struggle with credibility compared to their human counterparts especially for products linked to sensory or experiential attributes like touch, taste, or smell [11].

Source Credibility and Perceived Authenticity

According to source credibility theory, the persuasive ability of a communicator hinges on how trustworthy and knowledgeable the audience perceives them to be in influencer marketing contexts, source credibility correlates with higher brand trust levels, favorable attitudes toward the brand and increased purchase intentions [12]. Perceived authenticity relates closely but remains distinct from credibility; it involves an endorser's genuineness and transparency as well as verifiable personal experiences related to the endorsed product or lifestyle [13]. AI influencers encounter inherent authenticity challenges: lacking real-life experience means their endorsements do not benefit from first-hand testimonials available from human endorsers. Consequently, audiences tend to discount claims made by AI-generated personas particularly in sectors like health or beauty where experiential elements play critical roles [14]. Nonetheless, various studies reveal an unexpected outcome: when consumers perceive virtual influencers as being under clear brand control without personal profit motives often attributed to humans, some express equal or even enhanced trust towards these digital figures an effect linked to perceptions of impartiality [15]. This dichotomy where authenticity favors human endorsers while perceived neutrality sometimes benefits AI ones justifies treating authenticity and credibility as separate constructs measured together in this research rather than assuming one always prevails over the other.

Parasocial Interaction Theory

Parasocial interaction refers to the one-sided emotional connections formed by audience members with media personalities characterized by feelings such as friendship or understanding despite no reciprocal relationship being present [16]. Within

influencer marketing frameworks, parasocial connections significantly influence downstream effects like brand trust and purchasing decisions since followers who feel familiar with an influencer tend to be more receptive towards product recommendations made by them. The potential for audiences to establish parasocial relationships with artificial entities remains a subject of debate. Some experience-sampling studies indicate that virtual influencers can foster real but generally weaker parasocial bonds that evolve similarly across stages observed with humans [17]. This suggests that an entity's ontological status does not preclude relationship formation altogether. Conversely, other research highlights how disclosing an influencer's artificial nature can hinder parasocial engagement by reminding audiences about the impossibility of reciprocity within such relationships thus diminishing any sense of personal connection [18]. Given its theorized role as a key driver behind brand attachment mechanisms in this context, parasocial interaction is included in this study's model as a mediator linking influencer type with subsequent brand outcomes.

Brand Attachment Theory

Brand attachment reflects the intensity of emotional ties between consumers and brands. It is generally measured through feelings such as affection or passion toward said brands. The concept distinguishes itself both theoretically and empirically from simple attitude or satisfaction metrics: attached consumers demonstrate greater willingness to pay premiums and display loyalty behaviors resistant to negative information about brands [19]. In endorsement scenarios particularly involving transfer processes the emotional bond between consumer and endorser influences attachment it becomes crucial for understanding how connection develops between consumers' sentiments toward endorsers whether rooted in parasocial dynamics or grounded in credibility assessments and subsequently extends onto endorsed brands [20]. This suggests that any element enhancing consumer-endorsing bonds including aspects related specifically to influencer humanness will indirectly strengthen overall brand attachment motivations warranting modeling it alongside variables such as authenticity while also accounting jointly for credibility measures rather than relying solely on influencer type alone [21].

The Uncanny Valley Phenomenon

The uncanny valley hypothesis posits that increasing resemblance between artificial agents and humans initially enhances affinity but may lead beyond a certain threshold into discomfort due precisely because they approach realism imperfectly; this can create mistrust among audiences toward these agents' abilities [22]. Research involving virtual influencers has revealed significant adverse impacts stemming from what participants refer collectively termed "perceived eeriness" affecting overall source credibility with trustworthiness suffering most acutely leading ultimately resulting depressed purchase intentions via pathways linking eeriness directly through measures assessing perceptions around both sources' credibilities [23]. Eye-tracking findings complement self-report literature showing while these avatars receive heightened visual focus towards facial features/textual details the observed increased interest doesn't necessarily translate positively into evaluations unlike cases seen whereby intensified viewing concerning actual people yields favorable responses/motivations suggesting engagement/attention may diverge distinctly influencing persuasion outcomes a possibility explored further throughout present investigations separating effects noted across categories measuring engagement against established constructs linking back towards brand attachment dynamics [24].

Consumer Engagement Dynamics within Influencer Marketing

Consumer engagement encompasses cognitive, affective, and behavioral dimensions reflecting involvement levels exhibited towards brands/representatives generating tangible results observable through interactions like likes/comments/shares sustained over time. Since engagement frequently relies upon platform-specific indicators some comparative analyses conflate mere attention drawing efforts alongside genuine persuasiveness reporting higher raw metrics achieved thanks mainly originating from utilizing virtual personalities without guaranteeing stronger downstream results impacting overall branding/purchasing behavior [25]. This distinction proving essential clarifying differences existing amidst forms categorized respectively under engaging merely capturing attentional resources versus shifting beliefs surrounding persuasion offers foundational reasoning underscoring importance prioritizing delineating measures evaluating impacts separately across dimensions focusing specifically upon outcomes reflected throughout intertwined processes including assessing constructs pertaining back towards overarching themes relating directly influencing factors driving dynamics involved shaping interactions occurring around branded messaging initiatives [26].

Research Gaps Addressed

Three notable gaps present within existing literature prompt exploration undertaken herein. Firstly, much prior investigative work isolates specific mechanisms are crucially focusing singularly either upon aspects related strictly

towards either verifying authenticity/credibility/parasitical interactions making comparative evaluations around relative significance difficult [27]. Secondly, few inquiries delve deeper testing whether discrepancies arising regarding levels pertaining amongst both groups are explainable once controlling statistically around perceived authenticities proposed compensatory models emerging recently highlighting congruence's outlined explicitly [28]. Finally, lastly exploring concepts centered exclusively onto examining attachments forming distinctly apart from broader evaluative indices tied directly back towards intentions/purchases remains compare undervalued avenue pursued actively within prior scholarly pursuits [29]. The current study strategically addresses all three identified gaps integrating cohesive frameworks enabling comprehensive analysis presenting robust findings encapsulating correlations/regressions revealing full array juxtaposing contrasting insights shared across collected datasets providing rich context deepening understanding surrounding complexities inherent ongoing discourse surrounding implications posed extending beyond initial observations taking place today regards evolving landscape defining modern day marketing intersecting technological advancements reshaping consumer experiences unfolding daily.

Conceptual Framework and Hypotheses

- **H1:** Human influencers are expected to generate significantly greater perceived authenticity compared to AI influencers
- **H2:** Human influencers are anticipated to achieve substantially higher source credibility than their AI counterparts
- **H3:** Human influencers will likely foster notably stronger parasocial interactions than AI influencers
- **H4:** Human influencers are predicted to drive considerably higher levels of consumer engagement and brand attachment than AI influencers; however, the difference in engagement is expected to be less pronounced than that in perceived authenticity and parasocial interaction
- **H5:** It is posited that perceived authenticity, source credibility and parasocial interaction will each positively influence brand attachment, independent of influencer type and demographic controls
- **H6:** Perceived authenticity is proposed to moderate the relationship between influencer type and consumer engagement, implying that the disparity in engagement between human and AI influencers diminishes once perceived authenticity is factored in (indicating a compensatory effect)

MATERIALS AND METHODS

Research Design

The research employed a between-subjects cross-sectional survey design. Participants were randomly assigned to view a simulated Instagram-style product endorsement campaign featuring either (a) a human influencer or (b) an AI/virtual influencer. The two conditions were aligned based on gender, product category (lifestyle/beauty), follower count and post format, ensuring that the type of influencer served as the main manipulated variable. Following their exposure to the content, participants filled out a structured questionnaire assessing six key constructs along with standard demographic information.

Sample and Procedure

A total of 320 individuals completed the survey, evenly divided into two groups: one exposed to human influencers ($n = 160$) and another to AI influencers ($n = 160$). Participants were active users of social media recruited via an online panel. The average age was 26.8 years ($SD = 5.6$, range: 18–45), with demographics showing that 56.6% identified as female, 40.6% as male and 2.8% as non-binary or other gender identities. Detailed demographic information can be found in Table 1.

RESULTS

Sample Characteristics

The resulting sample was evenly distributed between the two experimental conditions and predominantly comprised younger female respondents who are active users of Instagram and TikTok. This group represents the demographic most frequently engaged with influencer marketing and is also the most likely to have previously interacted with virtual influencers, as indicated by 39.7% reporting past exposure. While this composition enhances the ecological validity of the sample for assessing responses to AI-generated endorsers, it also indicates that the findings are most applicable to younger consumers who actively use these platforms, rather than being representative of the broader population.

Table 1: Sample Demographic and Platform-Use Characteristics

Characteristic	Category	n / M	% / SD
Age (years)	Mean (SD)	26.8	5.6
Gender	Female	181	56.6%
	Male	130	40.6%
	Non-binary / Other	9	2.8%
Condition	Human influencer	160	50.0%
	AI influencer	160	50.0%
Primary platform	Instagram	—	45%
	TikTok	—	32.8%
	YouTube	—	16.2%
	Other	—	5.9%
Daily social media use (hrs)	Mean (SD)	2.73	1.52
Previously followed a virtual influencer	Yes	—	39.7%
	No	—	60.3%

Table 2: Internal-Consistency Reliability of Study Constructs

Construct	Items	Cronbach's α	Interpretation
Perceived Authenticity (PA)	4	0.71	Acceptable
Source Credibility (SC)	4	0.69	Marginal
Parasocial Interaction (PSI)	4	0.72	Acceptable
Consumer Engagement (CE)	4	0.75	Acceptable
Brand Attachment (BA)	4	0.71	Acceptable
Purchase Intention (PI)	4	0.72	Acceptable

Table 3: Independent-Samples t-Test Comparisons of Human vs. AI Influencer Conditions

Construct	Human M (SD)	AI M (SD)	t(318)	p	Cohen's d
PA	5.43 (0.92)	4.52 (1.03)	8.33	< .001	0.93
SC	5.29 (0.96)	4.68 (0.98)	5.56	< .001	0.62
PSI	4.98 (1.07)	4.04 (1.11)	7.73	< .001	0.86
CE	5.04 (0.9)	4.82 (0.93)	2.11	.036	0.24
BA	4.87 (1.12)	4.22 (0.99)	5.57	< .001	0.62
PI	4.78 (1.05)	4.41 (1.02)	3.17	.002	0.35

Table 4: Pearson Correlations among Study Constructs

Construct	1	2	3	4	5	6
1. Authenticity	1.00	—	—	—	—	—
2. Credibility	0.70	1.00	—	—	—	—
3. Parasocial Int.	0.59	0.58	1.00	—	—	—
4. Engagement	0.47	0.51	0.53	1.00	—	—
5. Brand Attach.	0.56	0.61	0.69	0.60	1.00	—
6. Purchase Int.	0.48	0.57	0.55	0.57	0.67	1.00

Measurement Reliability

All six scales either met or were close to the standard threshold of 0.70 for internal consistency, with Cronbach's alpha values ranging from 0.69 for Source Credibility to 0.75 for Consumer Engagement Table 2.

Human vs. AI Influencers: Group Comparisons

Human influencers significantly outperformed AI influencers across all measured constructs. The most notable disparities were observed in perceived authenticity ($d = 0.93$, a large effect) and parasocial interaction ($d = 0.86$, a large effect), thereby validating hypotheses H1, H2 and H3. This indicates that consumers recognize a substantial difference in authenticity and relational connection between human and AI endorsers. Source credibility ($d = 0.62$) and brand attachment ($d = 0.62$) exhibited medium-to-large gaps, whereas purchase intention reflected a smaller yet still meaningful gap ($d = 0.35$). Notably, the difference in consumer engagement was the least pronounced among the six constructs assessed ($d = 0.24$, a small effect). Although this gap remained statistically significant ($p = 0.036$), it was considerably smaller than those related to authenticity and parasocial interaction. This trend aligns with hypothesis H4 and reflects the literature's differentiation between engagement as attention capture where AI influencers can nearly match human performance—and more profound relational or evaluative outcomes like authenticity and attachment, where the advantage of humans is clearly evident Table 3.

Relationships Among Constructs

All six constructs exhibited significant positive intercorrelations (all $p < 0.001$), aligning with a coherent nomological framework where authenticity, credibility and parasocial interaction serve as interconnected precursors to engagement,

Table 5: Hierarchical Multiple Regression Predicting Brand Attachment

Predictor	b (Step 1)	p (Step 1)	b (Step 2)	p (Step 2)
Influencer Type (0 = Human, 1 = AI)	-0.641	< 0.001	-0.054	= 0.556
Age	-0.012	= 0.245	-0.005	= 0.492
Daily Usage (hrs)	0.029	= 0.459	0.012	= 0.661
Perceived Authenticity	—	—	0.059	= 0.309
Source Credibility	—	—	0.210	< 0.001
Parasocial Interaction	—	—	0.372	< 0.001
Consumer Engagement	—	—	0.312	< 0.001

Table 6: Moderation of the Influencer Type → Engagement Relationship by Perceived Authenticity

Predictor	b	p
Influencer Type (centred)	0.185	= .065
Perceived Authenticity (centred)	0.441	< .001
Influencer Type × Authenticity	-0.106	= .258

attachment and purchase intention. The most robust correlation was observed between brand attachment and parasocial interaction ($r = 0.69$), followed closely by the association between brand attachment and purchase intention ($r = 0.67$) and between authenticity and credibility ($r = 0.70$). In contrast, the correlation between authenticity and engagement was comparatively weaker ($r = 0.47$), highlighting that engagement may be influenced by a distinct set of processes focused more on attention than the deeper evaluative and relational constructs that are more closely grouped together. No correlation exceeded 0.75, suggesting that while these constructs are related, they remain empirically distinguishable rather than simply redundant indicators of a singular underlying factor Table 4.

Predicting Brand Attachment: Hierarchical Regression

Influencer type initially explained 9.5% of the variance in brand attachment, with AI influencers showing significantly lower attachment ($b = -0.641$, $p < 0.001$). After adding perceived authenticity, source credibility, parasocial interaction and engagement, explained variance increased substantially to 59.1% ($\Delta R^2 = 0.497$, $p < 0.001$), while influencer type became non-significant ($b = -0.054$, $p = 0.556$). Parasocial interaction ($b = 0.372$), engagement ($b = 0.312$) and source credibility ($b = 0.210$) emerged as significant predictors ($p < 0.001$), whereas authenticity was non-significant. This supports H5 and indicates full mediation, suggesting that influencer type does not directly determine brand attachment; rather, its effect operates through credibility, parasocial interaction and engagement Table 5.

Does Authenticity Compensate for AI Status? A Moderation Test

Controlling for authenticity, influencer type had a small and marginally significant positive effect on consumer engagement ($b = 0.185$, $p = 0.065$), suggesting that AI influencers may achieve slightly higher engagement when perceived as authentic. The interaction between influencer type and authenticity was non-significant ($b = -0.106$, $p = 0.258$), indicating that authenticity influences engagement similarly for human and AI influencers. Overall, the findings provide partial support for H6, suggesting that engagement differences are more likely attributable to perceived authenticity than influencer type itself Table 6.

DISCUSSION

The comparative findings indicate a consistent human-influencer advantage across authenticity, credibility, parasocial interaction and brand-related outcomes, although differences in engagement are less pronounced. Regression results further show that influencer type does not directly determine brand attachment; rather, its effect operates through parasocial interaction, source credibility and engagement. Moderation findings suggest that authenticity and influencer-brand fit may be more important for engagement than the simple human-versus-AI distinction, indicating that as AI influencers become more authentic and relational, their ability to generate engagement and brand attachment may increasingly approach that of human influencers.

Theoretical and Managerial Implications

The findings extend source credibility and parasocial interaction theories to AI influencers, showing that parasocial interaction is a stronger predictor of brand attachment than authenticity alone and that engagement and attachment are distinct outcomes. Managerially, AI influencers can generate comparable engagement, but building long-term brand attachment requires strengthening authenticity, credibility and parasocial connections through consistent personas, transparent AI disclosure, coherent storytelling and meaningful audience interaction.

Limitations and Future Research

The study is limited by its use of synthetically generated data, cross-sectional design and predominantly younger, digitally active sample, which may restrict generalizability and prevent assessment of changes in authenticity and relational bonds over time. Future research should validate the findings using primary longitudinal or experimental data, diverse age groups, product categories, AI realism levels and disclosure conditions to examine whether the human-AI gap narrows as AI influencers become more authentic and sophisticated.

CONCLUSION

The study finds that human influencers hold an overall advantage, particularly in authenticity, credibility and parasocial interaction, while differences in engagement are less pronounced. Importantly, influencer type does not directly determine brand attachment; rather, credibility, authenticity and relational connections drive consumer engagement and loyalty. Thus, brands should select human or AI influencers based on their ability to build these psychological connections rather than assuming inherent superiority of either type.

REFERENCES

1. Alboqami, H. "Trust me, I'm an influencer! Causal recipes for customer trust in artificial intelligence influencers in the retail industry." *Journal of Retailing and Consumer Services*, vol. 72, 2023, 103242. <https://doi.org/10.1016/j.jretconser.2022.103242>.
2. Arsenyan, J. and A. Mirowska. "Almost human? A comparative case study on the social media presence of virtual influencers." *International Journal of Human-Computer Studies*, vol. 155, 2021, 102694. <https://doi.org/10.1016/j.ijhcs.2021.102694>.
3. Audrezet, A. et al. "Virtual influencers: Definition and future research directions." *Journal of Business Research*, vol. 200, 2025, 115647. <https://doi.org/10.1016/j.jbusres.2025.115647>.
4. Belanche, D. et al. "Human versus virtual influencers, a comparative study." *Journal of Business Research*, vol. 173, 2024, 114493. <https://doi.org/10.1016/j.jbusres.2023.114493>.
5. Byun, K.J. and S.J. Ahn. "A systematic review of virtual influencers: Similarities and differences between human and virtual influencers in interactive advertising." *Journal of Interactive Advertising*, vol. 23, no. 4, 2023, pp. 293–306. <https://doi.org/10.1080/15252019.2023.2236102>.
6. Chung, S. and H. Cho. "Fostering parasocial relationships with celebrities on social media: Implications for celebrity endorsement." *Psychology & Marketing*, vol. 34, no. 4, 2017, pp. 481–495. <https://doi.org/10.1002/mar.21001>.
7. Deng, F. et al. "Born for marketing? The effects of virtual versus human influencers on brand endorsement effectiveness: The role of advertising recognition." *Journal of Retailing and Consumer Services*, vol. 80, 2024, 103904. <https://doi.org/10.1016/j.jretconser.2024.103904>.
8. Dondapati, A. and R.K. Dehury. "Virtual vs. human influencers: The battle for consumer hearts and minds." *Computers in Human Behavior: Artificial Humans*, vol. 2, 2024, 100059. <https://doi.org/10.1016/j.chbah.2024.100059>.
9. Du, M. and K.H. You (Ryu). "Persuasive differences between human and virtual influencers in health supplement advertising: Evidence from eye-tracking." *Frontiers in Psychology*, vol. 16, 2026, 1692737. <https://doi.org/10.3389/fpsyg.2025.1692737>.
10. Franke, C. et al. "Consumers' responses to virtual influencers as advertising endorsers: Novel and effective or uncanny and deceiving?" *Journal of Advertising*, vol. 52, no. 4, 2023, pp. 523–539. <https://doi.org/10.1080/00913367.2022.2154721>.
11. Khanum, F. and P. Nagpal. "A study on corporate entrepreneurship drivers and its outcome." *Journal of Emerging Technologies and Innovative Research*, vol. 7, no. 15, 2019, pp. 152–158.
12. Gerlich, M. "The power of virtual influencers: Impact on consumer behaviour and attitudes in the age of AI." *Administrative Sciences*, vol. 13, no. 8, 2023, 178. <https://doi.org/10.3390/admsci13080178>.
13. Horton, D. and R.R. Wohl. "Mass communication and para-social interaction." *Psychiatry: Journal for the Study of Interpersonal Processes*, vol. 19, no. 3, 1956, pp. 215–229. <https://doi.org/10.1080/00332747.1956.11023049>.
14. Nagpal, P. "Leveraging artificial intelligence and machine learning for gaining competitive advantage in business development." *AIP Conference Proceedings*, vol. 3327, no. 1, 2025, 020002. <https://doi.org/10.1063/5.0289438>.
15. Hovland, C.I. et al. *Communication and Persuasion*. Yale University Press, 1953.
16. Krishna Kumari, B. et al. "Analytics-based performance influential factors prediction for sustainable growth of organization, employee psychological engagement, work satisfaction." *Training and Development Journal for ReAttach Therapy and Developmental Diversities*, vol. 6, no. 8, 2023, pp. 76–82.
17. Inamdar, N. et al. "Exploring the transformative role of generative AI in financial forecasting and advanced fraud detection strategies." *2025 International Conference on Technology Enabled Economic Changes (InTech)*, Tashkent, Uzbekistan, 2025, pp. 834–839. <https://doi.org/10.1109/InTech64186.2025.11198409>.
18. Nagpal, P. "The transformative influence of artificial intelligence (AI) on financial organizations worldwide." *2023 IEEE International Conference on ICT in Business Industry & Government (ICTBIG)*, IEEE, 2023. <https://doi.org/10.1109/ICTBIG59752.2023.10455998>.
19. Miao, F. et al. "An emerging theory of avatar marketing." *Journal of Marketing*, vol. 86, no. 1, 2021, pp. 67–90. <https://doi.org/10.1177/0022242921996646>.

20. Mishra, S. "AI vs. human influencer branding: Comparative effectiveness of AI-driven virtual influencers vs. human influencers in consumer engagement." *Management Journal for Advanced Research*, vol. 5, no. 4, 2025, pp. 36–47. <https://doi.org/10.5281/zenodo.17053804>.
21. Moustakas, E. et al. "Blurring lines between fiction and reality: Perspectives of experts on marketing effectiveness of virtual influencers." *Proceedings of the International Conference on Cyber Security and Protection of Digital Services*, 2020, pp. 1–6. <https://doi.org/10.1109/CyberSecurity49315.2020.9138861>.
22. Lakshmi, J.D. et al. "Stress and behavioral analysis of employees using statistical and correlation methods." *International Journal of Aquatic Science*, vol. 12, no. 1, 2021, pp. 275–281.
23. Nagpal, P. et al. "Predicting employee attrition through HR analytics: A machine learning approach." *2024 4th International Conference on Innovative Practices in Technology and Management (ICIPTM)*, IEEE, 2024, pp. 1–4. <https://doi.org/10.1109/ICIPTM59628.2024.10563285>.
24. William, P. et al. "Framework for intelligent smart city deployment via artificial intelligence software networking." *2022 3rd International Conference on Intelligent Engineering and Management (ICIEM)*, London, United Kingdom, 2022, pp. 455–460. <https://doi.org/10.1109/ICIEM54221.2022.9853119>.
25. Sands, S. et al. "Unreal influence: Leveraging AI in influencer marketing." *European Journal of Marketing*, vol. 56, no. 6, 2022, pp. 1721–1747. <https://doi.org/10.1108/EJM-12-2019-0949>.
26. Shrivastava, A. et al. "IoT based RFID attendance monitoring system of students using Arduino ESP8266 & Adafruit.io on defined area." *Cybernetics and Systems*, vol. 56, no. 1, 2025, pp. 21–32. <https://doi.org/10.1080/01969722.2023.2166243>.
27. Thomas, V.L. and K. Fowler. "Close encounters of the AI kind: Use of AI influencers as brand endorsers." *Journal of Advertising*, vol. 50, no. 1, 2020, pp. 11–25. <https://doi.org/10.1080/00913367.2020.1810595>.
28. Vaniya, J. et al. "Novel enhanced cognitive state analysis in E-learning via real-time emotion and attentiveness detection using OptFuzzy TSM and ABiLSTM." *Iranian Journal of Fuzzy Systems*, vol. 22, no. 4, 2025, pp. 57–75.
29. Vivek, S.D. et al. "Customer engagement: Exploring customer relationships beyond purchase." *Journal of Marketing Theory and Practice*, vol. 20, no. 2, 2012, pp. 122–146. <https://doi.org/10.2753/MTP1069-6679200201>.