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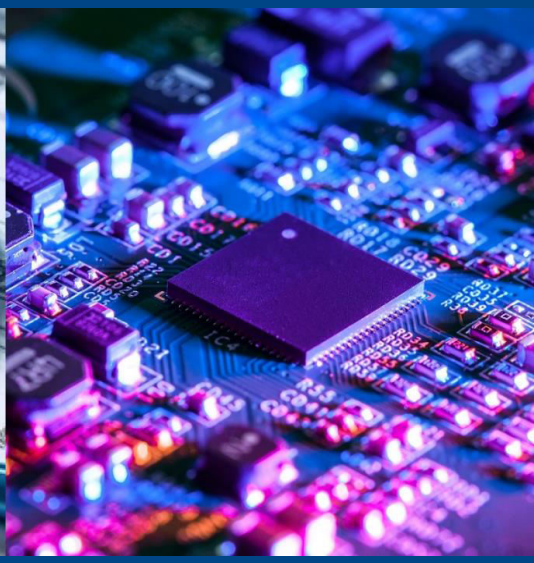

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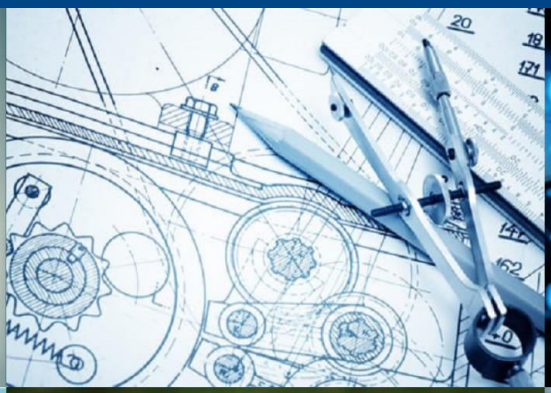

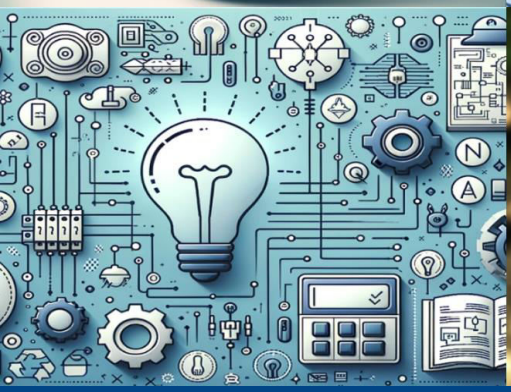

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Gen Z Intent to Engage with Brand Avatars in Immersive Digital Platforms: A Quantitative Study of 18–25-Year-Olds in India

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ABSTRACT:

Purpose: This study examines the factors driving Generation Z users' intent to engage with brand avatars in immersive digital platforms, applying the Stimulus–Organism–Response (S–O–R) framework to avatar-mediated brand interactions in the Indian context.

Design/Methodology/Approach: A quantitative, cross-sectional survey was administered to 130 Gen Z respondents (aged 18–25) in India using a structured questionnaire. Statistical analyses including descriptive statistics, reliability analysis, Pearson's correlation, multiple regression, mediation, and moderation testing were conducted using SPSS to test the hypothesised relationships.

Findings: Avatar customization autonomy and avatar–self congruence emerged as the only significant positive predictors of avatar-based brand engagement ($R^2 = 0.126$, $p = 0.005$). Avatar–self congruence was the sole significant predictor of future behavioral intention. Avatar anthropomorphism, perceived social presence, and gamified experiences did not significantly predict engagement. The mediation role of engagement and the moderating role of privacy concern were not supported.

Originality/Value: This study integrates multiple avatar-related constructs within a unified S–O–R model tailored to the Indian Gen Z context, offering empirical evidence that identity alignment and customization autonomy are more influential than anthropomorphism or gamification in avatar-mediated brand engagement. Findings inform immersive marketing strategy for brands targeting digitally native consumers.

KEYWORDS: Brand avatars; Generation Z; immersive digital platforms; S–O–R framework; avatar–self congruence; customization autonomy; behavioral intention; metaverse marketing; India

I. INTRODUCTION

The rapid evolution of digital ecosystems has ushered in a new era of consumer-brand interaction, transitioning from passive content consumption toward participatory, identity-embedded experiences in immersive digital spaces. Virtual reality environments, augmented reality interfaces, and metaverse-style platforms have fundamentally altered how brands communicate, with brand avatars emerging as dynamic, interactive instruments of brand engagement. Unlike static logos or traditional mascots, brand avatars are persistent, socially interactive, and contextually responsive, enabling continuous and personalised brand presence across gaming, social, and virtual commerce environments.

Generation Z consumers—those born in the late 1990s to early 2010s—represent a pivotal target segment for avatar-mediated marketing. Aged 18–25, this cohort is uniquely embedded in digital ecosystems, seamlessly navigating social media, gaming platforms, and creator economies. For Gen Z, avatars are not merely technological novelties but extensions of identity: vehicles for self-expression, symbolic consumption, and social participation (Bailenson, 2018; Priporas et al., 2022). This identity-centricity renders traditional advertising metrics insufficient for capturing the complexity of their engagement with brand avatars.

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The Indian context provides a particularly compelling setting for this inquiry. India's rapid digital expansion—propelled by widespread smartphone penetration, affordable internet access, and the meteoric rise of gaming and social platforms—has created a large, digitally active Gen Z population increasingly exposed to avatar-based experiences. However, cultural, economic, and technological factors may distinctively shape Indian Gen Z behaviour compared to Western contexts, necessitating context-specific empirical investigation.

Despite growing scholarly interest, the extant literature on brand avatars remains fragmented. Constructs such as anthropomorphism, customization, self-congruence, social presence, and gamification have largely been examined in isolation, without integration into a holistic framework specific to avatar-based brand engagement. Furthermore, the mediating role of engagement and the moderating influence of privacy concerns on behavioral intentions remain underexplored in immersive marketing contexts. This study addresses these gaps by employing the Stimulus–Organism–Response (S–O–R) framework (Mehrabian & Russell, 1974) to model how avatar-related stimuli influence Gen Z engagement and subsequent intent to engage with brand avatars in immersive digital platforms.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Theoretical Framework: S–O–R Model

The Stimulus–Organism–Response (S–O–R) model (Mehrabian & Russell, 1974) provides the structural backbone of this study. External stimuli—avatar anthropomorphism, customization autonomy, avatar–self congruence, perceived social presence, and gamified experiences—activate internal psychological states (the organism), represented here by avatar-based brand engagement. These internal states subsequently produce behavioral responses, operationalised as intent to engage with brand avatars. The S–O–R framework has been extensively validated in digital commerce and immersive media research (Eroglu et al., 2001; Rose et al., 2012) and is particularly apt for multi-sensory, cue-rich avatar environments. This framework is further enriched by self-congruity theory (Sirgy et al., 1997) and social presence theory (Biocca et al., 2003).

Avatar Anthropomorphism and Engagement

Anthropomorphism refers to the attribution of human-like characteristics to non-human entities (Epley et al., 2007). In avatar and agent-based environments, anthropomorphic cues—facial expressions, natural gestures, voice responsiveness, and behavioral coherence—reduce interface distance, facilitate parasocial processing, and enhance social legibility (Biocca et al., 2003; Nowak & Rauh, 2005). However, excessive realism risks triggering uncanny valley responses (Mori et al., 2012; Seymour et al., 2023), tempering enthusiasm for high-realism avatars. The relationship between anthropomorphism and engagement is therefore mediated by the quality of cue calibration in context.

Avatar Customization Autonomy and Engagement

Customization autonomy captures the degree to which users feel agentic and in control when personalising their avatars. Drawing on self-determination theory (Ryan & Deci, 2000), autonomy is a fundamental psychological need whose satisfaction enhances intrinsic motivation and sustained engagement. In avatar-based platforms, customization supports psychological ownership—the sense that "this is mine"—strengthening user-brand attachment and co-creative involvement (Pierce et al., 2003). For Gen Z, accustomed to pervasive personalisation across platforms, customization autonomy may function as a baseline expectation.

Avatar–Self Congruence and Engagement

Avatar–self congruence refers to the alignment between an avatar and the user's actual or ideal self-concept (Sirgy et al., 1997). A congruent avatar reduces representational friction, intensifies meaning-making, and strengthens emotional investment in the brand experience. Prior research in virtual environments confirms that congruence between user and avatar increases identification, immersion, and behavioral persistence (Bessière et al., 2007; Ratan & Dawson, 2016). In consumer-facing brand contexts, self-congruity has consistently predicted stronger brand attitudes, loyalty, and purchase intentions (Japutra et al., 2019), making it arguably the most psychologically central construct in this framework.

Perceived Avatar Social Presence and Engagement

Social presence refers to the degree to which a medium conveys the sense that another socially meaningful entity is present and available for interaction (Short et al., 1976; Biocca et al., 2003). In immersive platforms, avatar-mediated

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social presence amplifies relational immersion: users are more likely to engage with, trust, and revisit brand environments they perceive as socially vivid (Mollen & Wilson, 2010). Even AI-driven or brand-controlled avatars can generate strong social presence when they display coherent, responsive, and emotionally expressive behaviour (Miao et al., 2022).

Gamified Avatar Experiences and Engagement

Gamification—the integration of game design elements such as rewards, challenges, levels, and progression systems—is a core experiential logic in immersive platforms (Deterding et al., 2011). Gamified avatar experiences simultaneously engage users cognitively, emotionally, and behaviourally. The gamification literature reports generally positive effects on motivation and engagement, though effect magnitudes vary by design quality and user characteristics (Hamari et al., 2014). For Gen Z, steeped in gaming culture and reward mechanics, gamification may most effectively sustain engagement when it supports identity expression and social participation.

Privacy Concern as Moderator

Immersive platforms generate highly granular behavioural, social, and biometric data, raising significant privacy concerns (Smith et al., 2011; Martin & Murphy, 2017). These concerns may function as a "conversion barrier": users may feel engaged in the moment yet hesitate to commit to future interaction if perceived privacy risks are high. The privacy paradox literature (Malhotra et al., 2004) reveals that stated concern does not always translate into behavioural resistance, complicating prediction. Testing privacy concern as a moderator between engagement and behavioral intention addresses this theoretical tension directly.

Hypotheses

H1a: Avatar anthropomorphism has a positive effect on avatar-based brand engagement.
H1b: Avatar customization autonomy has a positive effect on avatar-based brand engagement.
H1c: Avatar–self congruence has a positive effect on avatar-based brand engagement.
H1d: Perceived avatar social presence has a positive effect on avatar-based brand engagement.
H1e: Gamified avatar experiences have a positive effect on avatar-based brand engagement.
H2: Avatar-based brand engagement positively predicts intent to engage with brand avatars in immersive digital platforms.
H3a–H3e: Avatar-based brand engagement mediates the relationship between each avatar-related stimulus and intent to engage.
H4: Avatar privacy concern negatively moderates the relationship between avatar-based brand engagement and intent to engage with brand avatars.

III. METHODOLOGY

Research Design and Sample

The study adopts a quantitative, cross-sectional design to empirically test the proposed S–O–R model. Primary data were collected through a structured, self-administered questionnaire distributed online to Generation Z consumers (aged 18–25) in India. A screening question ensured that all respondents had interacted with an avatar-based digital environment (gaming avatar, virtual influencer, metaverse brand avatar, or virtual world avatar) within the preceding six months. Non-probability convenience sampling was employed given the exploratory nature of the domain and the absence of a well-defined sampling frame. A total of 130 valid responses were obtained and used for analysis.

The sample was predominantly urban (69.2%), with 56.2% aged 18–23 and 43.8% aged 23–28. Educational composition was predominantly undergraduate and postgraduate students (70.8%). Smartphones were the primary device for avatar-based experiences (33.1%), with interaction frequency peaking at 2–3 times per week (23.8%) and session durations of 15–30 minutes (23.8%). Snapchat/Bitmoji-based experiences (62.3%), virtual influencer content (56.2%), and gaming avatars such as BGMI and Free Fire (55.4%) were the most used avatar platforms.

Measurement of Constructs

All constructs were operationalised using adapted multi-item scales drawn from established literature and measured on a seven-point Likert scale (1 = Strongly Disagree; 7 = Strongly Agree). Avatar anthropomorphism and avatar customization autonomy were each measured by two items capturing perceived humanness and perceived control, respectively. Avatar–self congruence was measured by two items reflecting alignment between the avatar and the

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respondent's personality and self-concept. Perceived avatar social presence was captured by two items assessing the sense of relational co-presence. Gamified avatar experiences, avatar-based brand engagement, avatar privacy concern, and intent to engage with brand avatars were each captured by single observed items due to questionnaire constraints. Composite means were computed for all two-item constructs for use in regression analysis.

Table 1: Construct Operationalisation

Construct	Depth	Modelling Approach
Avatar Anthropomorphism	2 items	Composite mean
Customization Autonomy	2 items	Composite mean
Avatar–Self Congruence	2 items	Composite mean
Perceived Avatar Social Presence	2 items	Composite mean
Gamified Avatar Experience	1 item	Observed score
Avatar-Based Brand Engagement	1 item	Observed score
Avatar Privacy Concern	1 item	Observed score
Intent to Engage	1 item	Observed score

Analytical Strategy

Data analysis was conducted in SPSS. The analytical sequence proceeded through: (1) preliminary data screening and descriptive statistics; (2) Cronbach's alpha reliability assessment for multi-item constructs; (3) Pearson's correlation analysis to examine bivariate relationships; (4) multiple regression (Model 1) to test H1a–H1e, with avatar-based brand engagement as the dependent variable; (5) simple regression (Model 2) and moderation analysis using a mean-centred interaction term (engagement × privacy concern) to test H2 and H4; (6) full model regression (Model 3) with all antecedents, engagement, and privacy concern predicting intent to engage; and (7) bootstrapped mediation analysis (1,000 resamples) to test H3a–H3e. Variance inflation factors (VIF) were examined to rule out multicollinearity.

IV. RESULTS

Reliability Analysis

Reliability was assessed for the four two-item constructs using Cronbach's alpha and the Spearman–Brown coefficient. The coefficients fell well below the conventional threshold of 0.70, indicating weak internal consistency for the multi-item composites (Table 2). This limitation constrains confirmatory interpretation; accordingly, all structural results are presented as exploratory composite-based evidence.

Table 2: Reliability Diagnostics for Two-Item Constructs

Construct	Cronbach's α	Spearman–Brown	Inter-item r
Anthropomorphism	0.292	0.292	0.171
Customization Autonomy	-0.321	-0.321	-0.138
Avatar–Self Congruence	0.102	0.102	0.054
Social Presence	-0.022	-0.022	-0.011

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Descriptive Statistics and Correlations

Table 3 presents the means, standard deviations, and inter-construct correlations. Customization autonomy showed the strongest correlations with both engagement ($r = 0.260$, $p < .05$) and intent ($r = 0.192$). Avatar–self congruence correlated significantly with engagement ($r = 0.244$) and intent ($r = 0.224$). The patterns suggest generally modest relationships, consistent with the exploratory nature of the instrument.

Table 3: Mean, Standard Deviation, and Correlation Matrix

Variable	M	SD	1	2	3	4	5	6	7
1. Anthropomorphism	3.95	1.56	—	0.272	0.156	0.142	0.099	-0.042	0.206
2. Cust. Autonomy	4.05	1.61		—	0.233	0.258	0.358	0.260	0.192
3. Self Congruence	4.01	1.72			—	0.274	0.054	0.244	0.224
4. Social Presence	3.99	1.64				—	0.211	0.098	0.080
5. Gamified Exp.	4.00	1.82					—	0.148	0.219
6. Engagement	4.19	1.89						—	0.105
7. Intent	3.78	2.00							—

Hypothesis Testing

Model 1 – Antecedents Predicting Engagement (H1a–H1e). The regression of engagement on the five avatar-related stimuli was statistically significant ($R^2 = 0.126$, adjusted $R^2 = 0.091$, $F = 3.575$, $p = 0.005$). Customization autonomy ($\beta = 0.226$, $p = .020$) and avatar–self congruence ($\beta = 0.213$, $p = .018$) were significant positive predictors of engagement, supporting H1b and H1c. Avatar anthropomorphism ($\beta = -0.142$, $p = .109$), perceived social presence ($\beta = -0.014$, $p = .878$), and gamified experience ($\beta = 0.073$, $p = .424$) were not significant, rejecting H1a, H1d, and H1e. All VIF values were below 1.40, confirming the absence of multicollinearity (Table 4).

Table 4: Regression Results – Model 1 (Antecedents Predicting Engagement)

Predictor	B	βstd	SE	t	p	CI Low	CI High
Anthropomorphism	-0.176	-0.142	0.109	-1.616	.109	-0.393	0.040
Customization Autonomy	0.328	0.226*	0.139	2.364	.020	0.053	0.602
Avatar–Self Congruence	0.276	0.213*	0.116	2.388	.018	0.047	0.505
Social Presence	-0.019	-0.014	0.125	-0.154	.878	-0.266	0.228
Gamified Experience	0.076	0.073	0.094	0.801	.424	-0.111	0.263
$R^2 = 0.126$, Adjusted $R^2 = 0.091$, $F(5,124) = 3.575$, $p = 0.005$; * $p < .05$							

Model 2 – Moderation Test – Engagement × Privacy Concern on Intent (H2, H4). The moderation model was not statistically significant overall ($R^2 = 0.025$, $F = 1.088$, $p = .357$). Neither engagement ($\beta = 0.093$, $p = .296$) nor privacy concern ($\beta = 0.111$, $p = .214$) significantly predicted intent, and the interaction term was non-significant ($\beta = 0.038$, $p = .666$). H2 and H4 were therefore not supported.

Model 3 – Full Model Predicting Intent. In the full model ($R^2 = 0.131$, $F = 2.630$, $p = .014$), avatar–self congruence emerged as the sole statistically significant predictor of intent ($\beta = 0.192$, $p = .039$, CI [0.014, 0.512]).

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Anthropomorphism (β = 0.161, p = .074) and gamified experience (β = 0.175, p = .059) approached significance and represent emerging tendencies. Engagement (β = 0.026, p = .775) was not significant after controlling for the full predictor set.

Mediation Analysis (H3a–H3e). Bootstrapped indirect effects (1,000 resamples) were non-significant for all five antecedents: every 95% confidence interval included zero. H3a–H3e were therefore not supported. The engagement–intent mediation pathway does not operate in this sample.

Table 5: Summary of Hypotheses Testing Results

H#	Hypothesis	Test	Result	Decision
H1a	Anthropomorphism → Engagement	β = -0.142, p = .109	Not Significant	Not Supported
H1b	Customization Autonomy → Engagement	β = 0.226, p = .020	Significant	Supported
H1c	Avatar–Self Congruence → Engagement	β = 0.213, p = .018	Significant	Supported
H1d	Social Presence → Engagement	β = -0.014, p = .878	Not Significant	Not Supported
H1e	Gamified Experience → Engagement	β = 0.073, p = .424	Not Significant	Not Supported
H2	Engagement → Intent	β = 0.093, p = .296	Not Significant	Not Supported
H3a–e	Engagement Mediates Stimuli → Intent	All CIs include zero	Not Significant	Not Supported
H4	Privacy Concern Moderates Engagement → Intent	β = 0.038, p = .666	Not Significant	Not Supported

V. DISCUSSION AND IMPLICATIONS

Theoretical Implications

The partial support for the S–O–R framework reveals important nuances for its application in avatar-mediated brand contexts. The significance of customization autonomy (H1b supported) resonates strongly with self-determination theory (Ryan & Deci, 2000), confirming that agentic, autonomy-supportive avatar environments deepen engagement by enabling co-creation of identity-linked brand experiences. The robust effect of avatar–self congruence on both engagement (H1c) and intent extends the applicability of self-congruity theory (Sirgy et al., 1997) to immersive digital spaces, establishing identity alignment as the most psychologically potent driver in this model.

The non-significance of anthropomorphism challenges assumptions about the universality of human-like design cues in avatar-mediated engagement. For Gen Z users who are accustomed to stylised gaming and virtual influencer aesthetics, functional identity fit may matter more than visual realism. The non-significance of social presence and gamification—two constructs widely supported in prior literature—suggests their effects may be context-dependent or platform-specific, and may only activate engagement when undergirded by sufficient identity resonance.

The absence of significant mediation (H3a–H3e not supported) and the non-significant H2 path challenge the classical linear S–O–R sequence. This suggests that in immersive avatar contexts, engagement may be more exploratory and situational than sustained or commitment-predicting. The privacy paradox is further reinforced: users' stated concern for data privacy (mean = 4.15) did not translate into a significant moderating influence on their behavioral intentions, aligning with Malhotra et al. (2004) and Martin and Murphy (2017).

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Managerial Implications

For brands and platform developers, the primacy of avatar–self congruence signals that the design imperative is identity resonance, not merely visual realism or gamification. Brands should invest in deep personalisation tools that allow users to express their actual and aspirational selves through avatars, treating identity alignment as a strategic priority rather than an aesthetic feature. Customization features should be genuinely agentic—offering meaningful choice rather than cosmetic variety—as restricted or monetisation-gated customisation may undermine the autonomy effect.

The weak engagement-to-intent conversion implies that momentary engagement does not automatically yield long-term behavioral commitment. Brands must complement engaging avatar experiences with value-sustaining mechanisms—exclusive content, loyalty incentives, and meaningful brand participation opportunities—to convert short-term interaction into durable intent. The predominance of Snapchat/Bitmoji and gaming-native avatar platforms suggests that brands are better served by embedding avatar experiences within familiar ecosystems than by building standalone metaverse environments. A multi-platform avatar presence strategy, integrated into existing Gen Z digital touchpoints, is likely to deliver superior engagement and intention outcomes.

VI. LIMITATIONS AND FUTURE RESEARCH

Several limitations constrain the generalisability of findings. The convenience sample of 130 respondents, predominantly from urban India, limits external validity. The cross-sectional design precludes causal inference and longitudinal tracking of engagement dynamics. Single-item measurement of four key constructs and weak internal consistency of the two-item composites limit measurement quality, precluding strong confirmatory SEM claims. Future research should employ validated multi-item scales (3–5 items per construct) with larger, geographically diverse samples to enable robust SmartPLS-based structural equation modelling. Longitudinal designs would illuminate how engagement and intent evolve through different stages of avatar platform adoption. Comparative studies across platform types—gaming, social media, and metaverse—would identify platform-specific engagement drivers. Qualitative inquiry would enrich the quantitative findings with deeper insights into the psychological experience of avatar-based brand interaction.

VII. CONCLUSION

This study advances understanding of avatar-mediated brand engagement among Gen Z users in India by integrating multiple avatar-related constructs within a unified S–O–R framework. The findings identify avatar–self congruence and customization autonomy as the dominant drivers of engagement, and avatar–self congruence as the sole significant predictor of future behavioral intent. These results challenge prevailing assumptions about the centrality of anthropomorphism, social presence, and gamification, repositioning identity alignment and perceived agency as the foundational drivers of meaningful avatar-brand interaction. For brands navigating the emerging landscape of immersive digital marketing, the strategic imperative is clear: invest in experiences that resonate with who users are—and who they aspire to be.

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