

The Anthropomorphism Paradox in AI Chatbots: A Review of Consumer Trust and Brand Relationship Outcomes

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Abstract: *Anthropomorphic chatbot design is reshaping how businesses engage consumers by bringing perceived humanity to digital service encounters. This review synthesizes recent theoretical and empirical work on how anthropomorphic characteristics in chatbots shape consumer trust and brand relationship quality (BRQ). Drawing on anthropomorphism theory, relationship marketing theory, and the Computers-Are-Social-Actors (CASA) paradigm, it examines the roles of perceived authenticity, comfort, social presence, and engagement in shaping consumer responses to human-like conversational agents. The reviewed evidence suggests that moderate anthropomorphism, expressed through warmth, personalization, responsiveness, and natural language, tends to increase trust, satisfaction, engagement, and emotional connection with a brand, while excessive human-likeness can trigger discomfort, privacy concerns, unrealistic expectations, and an erosion of trust, consistent with the uncanny valley effect. The review further highlights that these effects are highly context-dependent, and that transparent or hybrid chatbot designs may help preserve emotional connection while retaining functional credibility. The paper closes with a synthesis of theoretical, managerial, and future-research implications for brand managers designing AI-mediated customer touchpoints.*

Keywords: Anthropomorphic Chatbots; Consumer Trust; Brand Relationship Quality; Social Presence; Perceived Authenticity; Customer Engagement

1. Introduction

1.1 Background and Context of Anthropomorphic Chatbot Design

The rise of conversational artificial intelligence in retail and service industries has reshaped how businesses interact with customers, moving service encounters from static, transaction-only interfaces toward more conversational, socially inflected exchanges (Cheng et al., 2022). Chatbots and virtual assistants are now routinely deployed across e-commerce, banking, hospitality, and transportation to manage customer queries, complaints, and after-sales support. As these systems become more common, consumers increasingly recognize that they may be interacting with software rather than a human representative, and this awareness introduces a psychological tension: some consumers value the efficiency and availability of chatbots, while others experience unease, or even a sense of being misled, when a system feels ‘too human’ (Rao Hill & Troshani, 2024). Whether a chatbot is perceived as human-like, machine-like, or something in between shapes not only how consumers evaluate the interaction and the quality of service received, but also their willingness to form an emotional attachment to the brand behind it (Cheng et al., 2022).

Two theoretical traditions help explain this tension. Anthropomorphism theory describes the tendency of people to attribute human traits, intentions, and emotions to non-human agents, while relationship marketing theory explains how trust and emotional bonds are built through relational

exchange over time. When a chatbot introduces itself in human-like terms (“Hi, I’m Emma, your assistant”), it invites the consumer to draw on familiar social scripts and can increase engagement. However, this strategy carries risk: if the illusion is later broken, for instance, when a consumer discovers that “Emma” is an algorithm, the resulting sense of deception can damage trust and colour the broader relationship with the brand. Conversely, chatbots that disclose their artificial nature upfront (“I’m your AI assistant, here to help”) can achieve clarity, but sometimes at the cost of the warmth and empathy that anthropomorphic framing provides (Shin, 2020).

1.2 Research Evidence, Gap, and Scope of the Review

Empirical findings on the ideal degree of chatbot anthropomorphism remain mixed. Several studies report that human-like names, avatars, and vocal tone improve customer satisfaction and perceived warmth, while others find that overly human-like cues trigger discomfort consistent with the uncanny valley effect (Rao Hill & Troshani, 2024). Comparatively less attention has been paid to how a chatbot’s identity framing, whether it is presented as explicitly human, explicitly machine, or intentionally ambiguous, affects downstream evaluations of service quality and brand relationships, specifically in retail and hospitality contexts where both utilitarian and hedonic motives are typically in play. A recent large-scale experimental study by Umair et al. (2026), for example, tested identity framing across roughly 1,200 retail and hospitality customers and found a curvilinear pattern: moderate human-like framing improved trust and

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perceived service quality, while very high levels of human-likeness increased discomfort and reduced brand affiliation, and machine-framed identities built cognitive trust at the cost of emotional connection.

This review draws on that study and related work to examine chatbot identity framing as a lens for understanding how anthropomorphic design decisions influence consumer evaluation and attachment through the mediating roles of perceived authenticity and interaction comfort (Cheng et al., 2022). Taken together, the literature frames anthropomorphism as a double-edged design choice, capable of humanizing technology and deepening emotional connection, but also capable of triggering skepticism once transparency expectations are violated. As omnichannel retail and service automation expand, ensuring ethical clarity in how a chatbot's identity is presented is increasingly a matter of corporate responsibility as well as design strategy.

1.3 Contributions and Objectives of the Review

This review makes four contributions to the marketing and human-AI interaction literature. First, it consolidates recent (2018–2026) theoretical and empirical work on anthropomorphism theory to characterize chatbot identity as a strategic design lever that shapes consumer expectations and emotional responses, highlighting convergent evidence that the relationship between anthropomorphism and outcomes such as trust and attachment is generally non-linear rather than monotonically positive. Second, it extends relationship marketing literature by examining how brand attachment can form, or fail to form, in AI-mediated service encounters that lack direct human participation. Third, it draws together a fragmented evidence base, spanning experimental, survey, and meta-analytic studies, into a single comparative view of how chatbot design elements (warmth, competence, transparency, responsiveness) relate to trust and brand relationship quality (BRQ) across sectors. Fourth, it offers managerial implications intended to help brand and product teams calibrate chatbot anthropomorphism so that emotional engagement is achieved without compromising clarity, authenticity, or ethical standards. In an environment where conversational AI increasingly functions as a retailer's 'face' to the consumer, understanding how identity framing shapes trust and long-term brand relationships is essential both for theory and for practice.

2. 2. Review Methodology

This is a narrative, integrative review rather than a systematic review in the PRISMA sense. Sources were identified primarily through Google Scholar and Scopus using combinations of the search terms “anthropomorphic chatbot,” “chatbot anthropomorphism,” “consumer trust,” “brand relationship quality,” “social presence,” and “human-AI interaction,” restricted to peer-reviewed journal articles published between 2018 and 2026. Priority was given to studies in marketing, retailing, and human-computer interaction outlets, and to recent systematic reviews and meta-analyses (e.g., Zakri et al., 2026; Greilich et al., 2025; Najmaei et al., 2026) that themselves synthesize larger bodies of primary research, allowing this review to triangulate findings across a wider evidence base than the studies

discussed in depth here. Studies were included if they examined anthropomorphism, chatbot identity framing, or related constructs (warmth, competence, social presence) in relation to consumer trust, satisfaction, engagement, or brand-relationship outcomes; purely technical, engineering-focused chatbot papers with no consumer-behavior component were excluded. Records were first screened by title and abstract for topical relevance to chatbot anthropomorphism, identity framing, and trust- or brand-relationship outcomes; the full text of each apparently relevant record was then read to confirm it met the inclusion criteria above before it was retained. Twenty sources met these criteria and are cited throughout this review, of which ten are discussed in depth in the section that follows. The resulting set of studies was read in full and organized thematically into the sections that follow.

3. 3. Review of Literature

Umair et al. (2026) investigated how the way a chatbot's identity is framed, human-like, machine-like, or hybrid, shapes service evaluations and brand-relationship outcomes in digital service settings. Grounded in anthropomorphism theory and relationship marketing theory, they proposed that identity framing affects consumers' cognitive trust and emotional connection via perceived authenticity and interaction comfort, and tested this across roughly 1,200 retail and hospitality customers. Their results revealed a curvilinear relationship: moderate human-like framing increased trust and perceived service quality, while excessive human-likeness produced discomfort and reduced brand affiliation. Transparently machine-framed identities built cognitive trust but left customers more emotionally detached, whereas a hybrid framing strategy strengthened both dimensions simultaneously. The authors argue that this pattern deepens understanding of AI-mediated consumer relationships and offers a practical basis for ethical, effective chatbot identity design.

Zakri et al. (2026) conducted a systematic literature review, following PRISMA 2020 guidelines, of 118 peer-reviewed articles (2022–2025) spanning marketing, information technology, communication, psychology, and human-computer interaction. They identified three dominant theoretical lenses, computers-are-social-actors (CASA), social presence theory, and agency-attribution theory, each generating somewhat different predictions about how anthropomorphism cues shape trust and loyalty. Their thematic synthesis suggests that perceived agency and perceived humanness function as two distinct regulatory mechanisms in consumer responses to chatbots. The authors note persistent gaps in the field, including a shortage of longitudinal designs, inconsistent methodological approaches, and limited cross-cultural research, and propose a unifying framework to guide future research on AI-driven customer experience management.

Matosas-López (2026) addressed the underexplored role of brand-related constructs in chatbot-mediated e-commerce, using a 2 (visual anthropomorphism: avatar vs. human-like) × 2 (conversational intelligence: low vs. high) × 2 (task complexity: low vs. high) experimental design. The findings show that both visual anthropomorphism and conversational

intelligence significantly influence consumers' brand associations, which in turn mediate the relationship between chatbot humanness and purchase intention. Task complexity moderated this relationship: the association between chatbot humanness and brand perceptions strengthened as task complexity increased.

Kumar (2026) examined the relatively understudied link between chatbot anthropomorphism and brand love among users of online travel agencies (OTAs), applying a stimulus–organism–response framework in which anthropomorphism serves as the stimulus, emotional response as the organism, and brand love and recommendation intention as the response. The results confirm that anthropomorphism triggers emotional responses that, in turn, cultivate brand love, and that brand love strongly predicts consumers' intention to recommend the OTA, with emotional response operating as a significant mediating mechanism throughout.

Najmaei et al. (2026) conducted a systematic review and meta-analytic structural equation modeling (MASEM) of 19 quantitative studies ($N = 8,249$) on text-based conversational agents, drawing on databases including Scopus, Web of Science, PsycINFO, ABI/Inform, and Business Source Complete. They report statistically significant positive correlations between anthropomorphism and satisfaction ($r = .696$), trust ($r = .633$), social presence ($r = .599$), usage intention ($r = .595$), and purchase intention ($r = .565$), with trust emerging as the strongest pathway linking anthropomorphism to adoption and purchase intentions, and satisfaction fully mediating the anthropomorphism–purchase relationship. Cultural context moderated the anthropomorphism–trust relationship, with a notably stronger effect among East Asian samples ($\bar{r} = .680$) than non-East Asian samples ($\bar{r} = .577$). The authors propose an integrative ACMM framework (antecedents, chatbot anthropomorphism, mediators, moderators) grounded in CASA theory, media equation theory, and the three-factor theory of anthropomorphism.

Gomes et al. (2025) examined how brands' growing use of human-featured AI technologies, including chatbots, has reshaped digital marketing and customer communication. Surveying 1,319 participants and analyzing the data with partial least squares (PLS) modeling, they found that chatbot anthropomorphism positively influences purchase decision-making, but primarily when customer engagement with the chatbot is present; engagement functioned as a significant mediator between anthropomorphism and purchasing decisions. The authors position this as evidence that anthropomorphism's influence extends beyond satisfaction and trust to encompass loyalty-related outcomes, provided that meaningful customer interaction actually occurs.

Greulich et al. (2025) carried out a systematic literature review of 84 studies using the theories-context-characteristics-methods (TCCM) framework to map how consumers respond to text-based AI chatbots. They found that human-like communication styles and emotionally expressive chatbot behavior generally foster trust, empathy, and social presence, but also surface countervailing concerns around privacy and AI-related anxiety, concerns the authors suggest are intensifying with the spread of generative AI systems. The review calls for further research addressing these emerging risks alongside the established benefits of anthropomorphism.

Lin (2025) examined how chatbot interactivity and anthropomorphic conversational style jointly shape consumer attitudes and online-to-offline behavior in the coffee-shop sector, using a 2×2 between-subjects experiment. Interactions with a warm, highly interactive chatbot heightened consumers' sense of social presence, while a more efficient but less interactive chatbot was more strongly associated with brand-related behavioral intentions. A moderated serial mediation analysis further showed that social presence influenced several dimensions of brand relationship quality, though only the 'brand partner' dimension translated into greater brand patronage intention, suggesting that warm, interactive chatbot design chiefly benefits the relational rather than purely functional aspects of the brand relationship.

Huang and Ki (2024) studied anthropomorphic design in healthcare chatbots and its effects on user trust and organization–public relationships. Their experiment found that warmth-oriented anthropomorphic chatbots built more trust than competence-oriented ones, whereas for machine-framed chatbots the opposite held: competence-focused language generated more trust than warmth-focused language. Trust built through these interactions, in turn, increased users' willingness to continue using the chatbot and to follow its guidance, ultimately strengthening trust and satisfaction with the healthcare organization itself.

Hui et al. (2024) reported two linked studies examining anthropomorphism and responsiveness in AI-enabled service settings from both employee and customer perspectives. Study 1, based on 312 AI-assisted food-delivery personnel, found that anthropomorphism and responsiveness improved AI service quality via the mediating roles of psychological safety and perceived AI empathy. Study 2 extended this to 363 customers across eastern and southern China using a two-wave, three-month time-lagged design, and showed that AI usability moderated the relationship between service quality and both customer engagement and satisfaction. Together, the two studies point to a chain running from anthropomorphism and responsiveness, through psychological and empathic mechanisms, to measurable gains in service quality, engagement, and satisfaction.

Author(s) & Year	Focus / Variables	Method / Theory	Key Findings
Umair et al. (2026)	Chatbot identity, trust, service quality, brand attachment	1,200 users; experiment; anthropomorphism & relationship marketing	Moderate/hybrid anthropomorphism improved trust and brand attachment; excessive human-likeness caused discomfort.
Zakri et al. (2026)	Anthropomorphism, trust, agency, loyalty	SLR; 118 studies; PRISMA; CASA, social presence	Trust is a key mediator; longitudinal and cross-cultural gaps remain.
Matosas-López (2026)	Humanness, brand associations, purchase intention, task complexity	2×2×2 experiment	Humanness improved brand associations and purchase intention; task complexity moderated the effect.
Kumar (2026)	Anthropomorphism, emotions, brand love, recommendations	S-O-R theory; tourism context	Anthropomorphism enhanced emotions and brand love, increasing recommendation intentions.
Najmaei et al. (2026)	Anthropomorphism, trust, satisfaction, purchase intention	MASEM; 19 studies, N = 8,249	Anthropomorphism strongly improved trust, satisfaction, and purchase intention; trust was a key mediator.
Gomes et al. (2025)	Anthropomorphism, engagement, purchase decision	1,319 respondents; PLS	Customer engagement mediated the effect of anthropomorphism on purchasing decisions.
Greulich et al. (2025)	Anthropomorphism, trust, empathy, privacy, AI anxiety	SLR; 84 studies; TCCM	Human-like chatbots increased trust and social presence but could increase privacy concerns and AI anxiety.
Lin (2025)	Interactivity, anthropomorphism, social presence, brand attachment	2×2 experiment; mediation	Warm and interactive chatbots enhanced social presence and brand relationship outcomes.
Huang & Ki (2024)	Anthropomorphism, warmth, competence, trust	Experimental study; healthcare	Warmth was more effective for human-like chatbots; competence worked better for machine-like chatbots.
Hui et al. (2024)	Anthropomorphism, responsiveness, service quality, engagement, satisfaction	Two studies; mediation/moderation	Anthropomorphism and responsiveness improved AI service quality, engagement, and customer satisfaction.

4. Challenges and Opportunities

4.1 Challenges

Designing an anthropomorphic chatbot involves several challenges in the pursuit of consumer trust and durable brand relationships. Excessive anthropomorphism is one of the central risks: although human-like traits can strengthen a sense of social presence, chatbots that resemble people too closely can trigger discomfort and even harm brand perception, consistent with the uncanny valley effect. Privacy and security concerns present a related challenge, since anthropomorphic chatbots often elicit more personal disclosure from users than conventional interfaces, and any resulting unease about data use can undermine trust in the chatbot as a social agent.

Transparency about a chatbot's AI identity is similarly important: when consumers cannot easily distinguish a chatbot from a human agent, perceived authenticity and trust both suffer. The effectiveness of anthropomorphic design is also highly context-dependent. Consumer reactions vary with task complexity, service type, chatbot competence, warmth, and individual differences among consumers (Cheng et al., 2022). Firms therefore need to balance human-like traits with transparency, usability, and ethical considerations rather than treating anthropomorphism as a straightforward positive lever.

4.2 Opportunities

Despite these challenges, anthropomorphic chatbot design offers considerable opportunities to strengthen trust and brand relationship quality. Well-calibrated anthropomorphic attributes can enhance social presence, perceived warmth, engagement, and emotional connection, making brand interactions feel more meaningful to consumers (Tsai et al., 2021; Greulich et al., 2025). Chatbot designs that balance competence and warmth tend to build trust most effectively, although the ideal mix depends on the type of interaction

involved (Cheng et al., 2022). Human-like chatbot features also enable more personalized customer experiences, since tone, personality, and interactivity can be adapted to individual consumers, and such interactions can strengthen brand attachment, satisfaction, loyalty, and overall relationship quality.

Recent evidence suggests that hybrid designs, combining human-like interaction with a clear signal of machine identity, can strike a balance between emotional connection and rational trust (Umair et al., 2026). Future research should examine how different degrees of anthropomorphism interact with trust mechanisms, social presence, personalization, and other chatbot features.

5. Application

Designing anthropomorphic chatbots can be an important lever for brand managers seeking to build trust and strengthen brand relationship quality in digital service delivery. Retailers, e-commerce platforms, banks, hospitality providers, and travel companies can draw on human-like features, warmth in conversation, response personalization, naming, and social cues beyond plain text, to shape how customers experience chatbot interactions. Anthropomorphism has been shown to support consumers' initial trust, overall customer experience, and intention to use a chatbot by increasing perceived social presence and making interactions feel more natural (Cheng et al., 2022; Greulich et al., 2025).

In terms of brand relationships, anthropomorphic chatbots can serve as an important digital touchpoint through which consumers experience a brand's personality and values. Interacting with human-like chatbots tends to strengthen customer engagement, satisfaction, emotional connection, and loyalty (Gomes et al., 2025). Companies can put this to practical use in recommendations, customer support, complaint handling, post-purchase assistance, and personalized communication. The effectiveness of

anthropomorphic design is context-dependent: consumers tend to prefer chatbots that act as experts for utilitarian services and as companions for hedonic ones (Lin et al., 2018).

Trust management during service recovery is another important application. Chatbots inevitably encounter situations where they misunderstand a request or fail to resolve a problem, and anthropomorphism, combined with transparency and thoughtful communication, can help preserve customer trust after such failures. Anthropomorphic cues, perceived empathy, and interaction quality all appear to help sustain trust after chatbot service failures (Gu et al., 2024), and transparency alongside anthropomorphism also shapes how willing customers are to forgive a provider after a service breakdown (Alsaid et al., 2026). Anthropomorphic chatbots therefore have a role to play not only in routine interactions but also in complaint resolution and service recovery.

Anthropomorphic chatbot design also creates opportunities for deeper personalization and engagement, since such chatbots can adapt their communication style to a consumer's preferences and history, helping customers feel understood and valued. Gomes et al. (2025) show that customer engagement is a significant mediator between chatbot anthropomorphism and purchasing decisions, underscoring that anthropomorphic features alone are not sufficient; they need to translate into genuine engagement to affect behavior.

That said, anthropomorphism should be applied tactically rather than maximized. As the degree of anthropomorphism increases, so do customer expectations, which can heighten AI-related anxiety, privacy concerns, and the intensity of negative reactions to service failures (Greulich et al., 2025). Companies therefore need to communicate a chatbot's AI nature clearly while still offering appropriate levels of care, capability, responsiveness, and customization. Recent research on chatbot identity framing suggests that a hybrid approach, combining human-like communication with a clear signal of the chatbot's machine nature, tends to leave customers with greater cognitive trust than either extreme alone (Shin, 2020).

6. Comparative Analysis and Synthesis

Across the studies reviewed, anthropomorphic chatbot design consistently shows a positive association with customer engagement, trust, satisfaction, and broader brand outcomes, though the strength and shape of this relationship depends heavily on the type and degree of humanization applied. Cheng et al. (2022) demonstrate that anthropomorphic cues shape the trust and relationship norms consumers apply to chatbot interactions, while Lin (2025) shows that anthropomorphic conversational style is a key driver of perceived social presence. Greulich et al. (2025) corroborate this pattern across a much larger sample of studies, confirming that anthropomorphism cues generally build consumer trust, while also surfacing the offsetting risks of privacy concern and AI anxiety.

At the same time, several studies converge on the view that anthropomorphism must be balanced against transparency

and functional performance (Belghachi, 2026). Human-like cues appear to strengthen emotional bonds up to a point, beyond which they increase discomfort and erode trust, a pattern most clearly demonstrated in the curvilinear findings of Umair et al. (2026) and echoed in the meta-analytic results reported by Najmaei et al. (2026). Effective chatbot design, in other words, appears to require a deliberate combination of human-like cues, transparency, responsiveness, and functional efficiency, rather than the maximization of any single dimension (Vyas & Vishwakarma, 2026).

A further pattern emerging from this review is that most existing studies isolate individual outcomes (trust, engagement, satisfaction, or brand attachment) rather than tracing the full path from chatbot design through to brand relationship quality as a composite, multidimensional construct (Vieira et al., 2008). Few studies integrate cognitive (trust, authenticity) and affective (comfort, attachment) mechanisms within a single model, and cross-cultural and longitudinal evidence remains particularly sparse, a gap also flagged by Zakri et al. (2026). Closing this gap, by examining how anthropomorphic design shapes trust and brand relationship quality together, over time, and across cultural contexts, represents a natural next step for this literature.

7. Conclusion and Future Scope

This review indicates that human-like chatbot design plays a significant role in shaping consumer trust and brand relationship quality. Features such as warmth, personalization, responsiveness, and social presence tend to enhance consumer trust and engagement with brands, but excessive anthropomorphism introduces its own risks: discomfort, privacy concern, AI-related anxiety, and inflated expectations of chatbot capability. Taken together, the reviewed evidence suggests that effective chatbot design requires a deliberate balance between human-like communication and transparency about the chatbot's artificial nature. The framework distilled from this review (anthropomorphic chatbot design → perceived authenticity and interaction comfort → consumer trust → brand relationship quality) captures how anthropomorphic design choices translate into stronger brand relationships when perceived authenticity and comfort are present.

Future research would benefit from longitudinal and cross-cultural designs that track how trust and brand relationship quality evolve over repeated chatbot interactions, and from studies that model brand relationship quality as a multidimensional outcome rather than a single trust or satisfaction score. Sector-specific comparisons (for example, utilitarian versus hedonic service contexts) and closer attention to service-recovery scenarios, where anthropomorphism and transparency interact most visibly, also represent promising directions for future work.

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