JOURNAL OF CULTURAL ANALYSIS AND SOCIAL CHANGE

Journal of Cultural Analysis and Social Change,
2025, 10(3), 1027-1036
ISSN: 2589-1316

When Chatbots Feel Human: How Anthropomorphism Shapes Consumer Satisfaction, Trust, and Loyalty in AI-Driven Brand Interactions

Abbas N Albarq[1*], Abdullah Ibrahim Aljaafari[2], Hashed Mabkhot[3], Mohammed Samir Alsuwaidan[4]

[1] *Department of Management, College of Business Administration, King Faisal University: Al Ahsa, SAUDI ARABIA*

***Corresponding Author:** aalbarg@kfu.edu.sa

Citation: Albarq, A. N., Aljaafari, A. I., Mabkhot, H. and Alsuwaidan, M. S. (2025). When Chatbots Feel Human: How Anthropomorphism Shapes Consumer Satisfaction, Trust, and Loyalty in AI-Driven Brand Interactions, *Journal of Cultural Analysis and Social Change*, 10(3), 1027-1036. https://doi.org/10.64753/jcasc.v10i3.2543

Published: November 29, 2025

ABSTRACT

This study investigates how chatbot anthropomorphism influences consumer satisfaction, trust, loyalty, and decision-making in AI-enabled brand interactions. Data were collected from 663 Saudi consumers through an online survey and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Model assessment employed path coefficients, explanatory power (R^2), and effect size (f^2) to evaluate the robustness of hypothesized relationships. Findings reveal that anthropomorphic design significantly enhances satisfaction ($\beta = 0.62$, $p < 0.001$), trust ($\beta = 0.57$, $p < 0.001$), and loyalty ($\beta = 0.48$, $p < 0.001$), which subsequently mediate its effect on purchase decision-making. Although the direct effect of anthropomorphism on decision-making is marginal, the mediating role of engagement constructs considerably strengthens this association. The model demonstrated strong explanatory power (R^2 values 0.58–0.69), highlighting the strategic relevance of anthropomorphic cues in shaping consumer attitudes and behavioral intentions. The results contribute to AI-driven marketing literature by showing how anthropomorphism transforms chatbots into relational actors, enhancing trust, loyalty, and purchase intention. Beyond theoretical implications, the findings provide actionable insights for firms seeking to leverage human-like chatbot features as a relational strategy to improve consumer engagement and drive decision-making.

Keywords: Anthropomorphism; Chatbots; Decision-Making; AI-Driven Marketing

INTRODUCTION

The rapid advancement of artificial intelligence (AI) technologies has transformed the way firms interact with their customers. In particular, AI-enabled conversational agents, or chatbots, have become a central feature of digital marketing and service strategies across industries (Chi, 2022). These intelligent systems simulate human conversation, provide personalized recommendations, and support decision-making processes, often replacing or complementing human employees in frontline service encounters (Gursoy et al., 2022; Wang et al., 2025). Companies such as Apple (Siri), Google (Assistant), and Amazon (Alexa) have already demonstrated the potential of such intelligent virtual assistants (IVAs) in building new forms of consumer engagement. Within the marketing domain, brand-owned chatbots now operate across websites, mobile applications, and social media platforms to offer instantaneous, personalized, and interactive communication (Adam et al., 2021).

A particularly significant dimension of chatbot design is anthropomorphism, the attribution of humanlike characteristics—such as personality, emotions, and conversational style—to AI systems (Chen et al., 2024). Scholars argue that anthropomorphism plays a crucial role in shaping user attitudes and behaviors, as it enhances perceived social presence, increases trust, and creates more engaging experiences (Epley et al., 2007; Chi, 2022). When chatbots appear more humanlike, customers are more likely to treat them as relational partners rather than transactional tools, which in turn can enhance satisfaction and foster long-term brand loyalty (Adam et al., 2021). At the same time, personalization capabilities—such as tailoring recommendations and adapting tone of voice—

strengthen consumer perceptions of relevance and value, thereby deepening the interaction quality (Klein & Martínez, 2024).

However, the increasing anthropomorphism of chatbots also raises challenges. While humanlike features may foster trust and encourage disclosure of personal information, they may simultaneously intensify privacy concerns (Lee et al., 2022; Wang et al., 2025). Customers may feel uneasy about the extent of data collection and the potential misuse of sensitive information by seemingly "humanlike" digital assistants (Chen et al., 2024). Such concerns complicate the dynamics of trust, satisfaction, and brand loyalty in consumer–AI interactions (Chi, 2022; Gomes et al., 2025). Thus, while the positive effects of anthropomorphism and personalization are widely acknowledged, research indicates a tension between enhanced user experience and heightened privacy risks (Huang & Rust, 2021; Konstanta, 2020).

Existing studies have investigated chatbot adoption from perspectives such as usability, trustworthiness, or service quality (Gursoy et al., 2022; Adam et al., 2021). Yet, there remains a research gap concerning how anthropomorphism directly shapes not only user perceptions of trust and satisfaction but also decision-making outcomes, such as purchase intentions and loyalty to the brand. Moreover, although trust and satisfaction are widely recognized mediators in technology adoption, their interplay with brand loyalty in the context of anthropomorphic chatbots has been underexplored (Sun et al., 2025). This lack of integration hinders a comprehensive understanding of how anthropomorphism ultimately influences consumer decision-making in AI-enabled marketing environments.

The present study addresses this gap by developing and empirically testing a conceptual model that links chatbot anthropomorphism to consumer satisfaction, trust, and brand loyalty, and further examines how these factors mediate customer decision-making. By drawing on theories of social presence and anthropomorphism (Epley et al., 2007), as well as marketing research on trust and loyalty (Chi, 2022; Adam et al., 2021), this study provides a nuanced exploration of the mechanisms through which anthropomorphic chatbot design affects customer outcomes. Specifically, the model proposes direct effects of anthropomorphism on satisfaction, trust, and loyalty, as well as indirect effects via these constructs on customer decision-making. This dual focus offers insights into both the psychological processes (trust, satisfaction) and behavioral outcomes (decision-making, loyalty) that emerge from anthropomorphic AI interactions (Wang et al., 2025).

The significance of this research is threefold. First, it extends the literature on AI in marketing by clarifying the role of anthropomorphism in shaping consumer responses to chatbots. Second, it highlights the mediating mechanisms that translate anthropomorphic design features into tangible behavioral outcomes, thus offering theoretical integration across fragmented studies. Third, it provides practical implications for managers who design and deploy AI chatbots, offering guidance on how to balance humanlike features with trust-enhancing mechanisms to maximize customer engagement without triggering excessive privacy concerns.

Accordingly, the problem guiding this study is that while organizations increasingly employ anthropomorphic chatbots to engage customers, there is insufficient understanding of how these design choices influence decision-making through trust, satisfaction, and brand loyalty. The objective of this study is therefore to empirically test a model that explains these relationships and to offer both theoretical and practical insights into optimizing AI-enabled customer interactions.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

AI-Enabled Technology in the Marketing Context

Artificial Intelligence (AI) has become a transformative force in marketing, reshaping how firms design customer experiences and optimize decision-making processes. Among the most prominent applications are intelligent virtual assistants (IVAs) and chatbots, which now serve as key touchpoints between firms and consumers (Sun et al., 2025). These AI-enabled technologies integrate natural language processing, machine learning, and personalization capabilities, allowing firms to automate customer interactions at scale (Chi et al., 2022). In contrast to traditional interfaces, AI-enabled chatbots provide immediacy, availability, and tailored responses that closely mirror human-like interactions, thereby enhancing the consumer experience (Wang et al., 2025).

Chatbots in particular are uniquely positioned to mediate the digital relationship between brands and their customers. By simulating conversation and social presence, they can influence consumers' cognitive and affective evaluations of firms. For organizations, chatbots are not merely operational tools but also relational agents capable of cultivating satisfaction, trust, and loyalty. However, the effectiveness of these technologies depends significantly on how consumers perceive them, particularly whether they interpret them as "social actors" with human-like qualities—a phenomenon captured by the concept of anthropomorphism (Epley et al., 2007).

Chatbot Anthropomorphism

Anthropomorphism refers to the attribution of human-like features, intentions, or emotions to non-human entities. In the context of AI, anthropomorphism is operationalized through design cues such as conversational style, emotional expressiveness, personalized recommendations, or even visual avatars (Gong, 2008). Computers Are Social Actors (CASA) paradigm asserts that individuals instinctively respond to computers and AI agents as if they were human social partners when presented with anthropomorphic cues (Nass & Moon, 2000). Thus, chatbots endowed with human-like qualities can activate social scripts that shape customer perceptions and behaviors.

Within marketing contexts, anthropomorphic chatbots can enhance perceived warmth, competence, and relational closeness, which in turn affect consumer judgments about satisfaction, trustworthiness, and brand loyalty (Adam et al., 2021). These perceptions also extend beyond immediate relational outcomes to influence customer decision-making, as consumers increasingly rely on chatbot advice and recommendations when making purchase choices (Sun et al., 2025). Consequently, examining the role of anthropomorphism is vital for understanding both the psychological underpinnings and strategic implications of chatbot adoption in business.

Chatbot Anthropomorphism and Satisfaction

Anthropomorphism in chatbots refers to the attribution of human-like traits, such as conversational style, personality cues, or visual design, to otherwise non-human agents. Social response theory suggests that individuals react to computers and AI as if they were social actors (Nass & Moon, 2000; Sun et al., 2025). When customers perceive chatbots as human-like, they are more likely to experience social presence and warmth, which can enhance their enjoyment and evaluation of the interaction (Araujo, 2018). Prior research indicates that anthropomorphic features in AI-enabled technologies positively influence satisfaction by making interactions more engaging and relatable (Adam et al., 2021). Thus, anthropomorphism can elevate customer satisfaction by creating more natural and meaningful exchanges.

H1: Chatbot anthropomorphism positively influences customer satisfaction.

Chatbot Anthropomorphism and Trust

Trust is a crucial antecedent of customer engagement with AI technologies. Anthropomorphism can strengthen trust by signaling competence, benevolence, and predictability — three essential dimensions of trust (Mayer et al., 1995; Lankton et al., 2015). When chatbots display human-like qualities, customers often perceive them as more transparent and reliable, reducing skepticism toward the underlying AI system (Chi et al., 2022). Furthermore, studies demonstrate that anthropomorphic cues enhance perceived credibility and foster psychological safety in interactions (Epley et al., 2007). This suggests that designing chatbots with anthropomorphic features can meaningfully increase user trust.

H2: Chatbot anthropomorphism positively influences customer trust.

Chatbot Anthropomorphism and Brand Loyalty

Brand loyalty reflects a long-term emotional attachment and commitment to a brand, often reinforced through consistent positive experiences. Anthropomorphism enables customers to perceive chatbots not merely as functional tools but as relational partners that represent the brand's identity (van Doorn et al., 2017). By simulating human-like interactions, anthropomorphic chatbots enhance emotional connections, which, in turn, strengthen loyalty (Schweitzer et al., 2019). Research in conversational advertising also highlights that personalization and anthropomorphism drive stronger brand–consumer relationships (Adam et al., 2021). Therefore, anthropomorphic chatbots can serve as a strategic touchpoint for fostering customer loyalty.

H3: Chatbot anthropomorphism positively influences brand loyalty.

Chatbot Anthropomorphism and Customer Decision-Making

Decision-making in consumer contexts often depends on trust, satisfaction, and loyalty, but anthropomorphism itself may directly influence these processes. By reducing perceptions of uncertainty and making the AI interaction feel socially intuitive, anthropomorphic chatbots can guide customers toward favorable decisions (Pizzi et al., 2021). For example, natural language, empathy, and human-like responsiveness increase perceived persuasiveness, leading customers to evaluate alternatives more positively. Thus, anthropomorphism is expected to exert a direct effect on decision-making.

H4: Chatbot anthropomorphism positively influences customer decision-making.

Satisfaction and Customer Decision-Making

Satisfaction is one of the most consistent predictors of consumer behavior and decision-making (Oliver, 1999). Customers who feel satisfied after engaging with chatbots are more likely to proceed with purchasing, adopt recommended products, or maintain their relationship with the brand. In the context of AI-enabled technologies, satisfaction functions as an evaluative judgment that reduces uncertainty, thereby facilitating confident decisions.

H5: Satisfaction positively influences customer decision-making.

Trust and Customer Decision-Making

Trust is especially critical in AI contexts, where algorithmic opacity may raise doubts. Research shows that trust reduces perceptions of risk and enables customers to rely on AI-enabled recommendations (Chi et al., 2022). In chatbot interactions, trust enhances compliance with advice, increases purchase intentions, and motivates deeper engagement. Consequently, trust is expected to directly shape decision-making outcomes.

H6: Trust positively influences customer decision-making.

Brand Loyalty and Customer Decision-Making

Brand loyalty not only reflects a favorable long-term orientation toward a company but also strongly guides decision-making. Loyal customers are less price-sensitive, more willing to purchase repeatedly, and more likely to recommend the brand to others (Oliver, 1999). By anchoring evaluations in prior positive experiences, loyalty creates a bias toward decisions aligned with the brand. Thus, brand loyalty is expected to directly influence customer decisions (Konstanta, 2020).

H7: Brand loyalty positively influences customer decision-making.

Mediating Role of Satisfaction

Satisfaction not only acts as an outcome of anthropomorphism but also serves as a mediator. When anthropomorphic cues create enjoyable experiences, they foster satisfaction, which in turn drives decision-making (Al-Shafei, 2024). This aligns with service marketing research showing that satisfaction is a central pathway from interaction quality to consumer choice (Araujo, 2018; Adam et al., 2021).

H8: Satisfaction mediates the relationship between chatbot anthropomorphism and customer decision-making.

Mediating Role of Trust

Trust similarly mediates the link between anthropomorphism and decision-making. Anthropomorphic features reduce perceived risks and promote confidence in the chatbot, thereby enabling customers to rely more on its recommendations. This mediation aligns with models of trust in technology adoption (Mayer et al., 1995; Chi et al., 2022).

H9: Trust mediates the relationship between chatbot anthropomorphism and customer decision-making.

Mediating Role of Brand Loyalty

Finally, brand loyalty is expected to act as a mediator between anthropomorphism and decision-making. Anthropomorphic chatbots foster emotional engagement with the brand, which strengthens loyalty. This loyalty, in turn, guides decisions by favoring the brand over alternatives (van Doorn et al., 2017).

H4c: Brand loyalty mediates the relationship between chatbot anthropomorphism and customer decision-making.

This study proposes a conceptual framework in which chatbot anthropomorphism serves as a central antecedent influencing customer outcomes. By embedding human-like qualities, anthropomorphic chatbots foster satisfaction, trust, and loyalty, which subsequently shape customer decision-making and purchase intentions. These relational constructs also act as mediators, clarifying how anthropomorphism exerts both direct and indirect effects on behavior. In doing so, the framework integrates perspectives from anthropomorphism theory, trust transfer, and relationship marketing, highlighting the strategic role of AI-enabled technologies as relational actors rather than mere functional tools. This approach not only advances theoretical understanding but also provides actionable guidance for firms seeking to leverage chatbot design to enhance customer experiences and drive strategic outcomes.

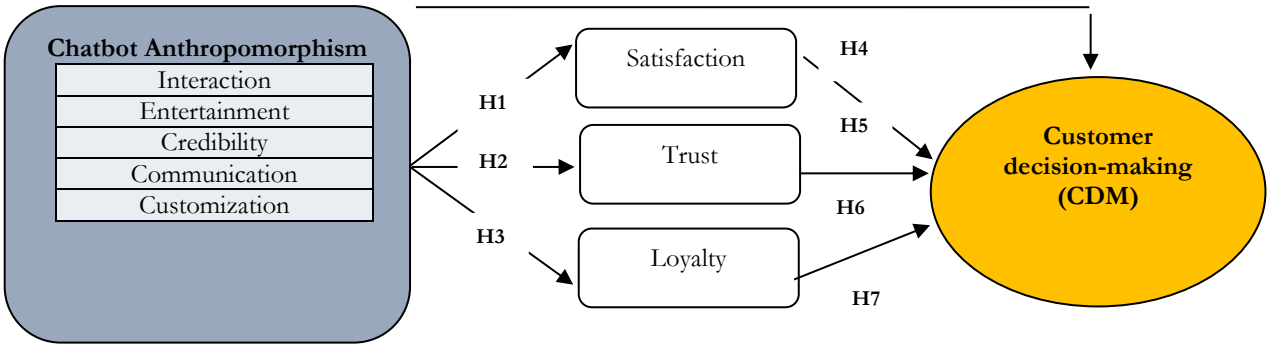

Figure 1. Conceptual model

METHODOLOGY

Sampling Procedure and Data Collection

Data were collected between May and July 2025 using an online survey distributed through the authors' professional networks and social media platforms. Participation was voluntary, and respondents provided informed consent prior to completing the questionnaire. The sampling followed a convenience approach, focusing on Saudi consumers aged 18–40 who were active social media users and had previously made at least one purchase from an online store employing chatbot services.

To ensure instrument reliability, a pilot test was conducted with 30 university MBA students, leading to minor refinements before the full rollout. The final dataset comprised 663 valid responses. An additional pre-test with 15 participants assessed question clarity and response duration; the average completion time was five minutes, and no significant comprehension issues were identified. The survey was anonymous to protect respondent confidentiality.

The Questionnaire

The self-administered survey was adapted from established scales (Cheng & Jiang, 2022; Chung et al., 2020) and comprised three main sections. The first section measured chatbot anthropomorphism through five constructs: interaction (3 items), entertainment (4 items), customization (4 items), communication (3 items), and credibility (3 items). The second section assessed consumer engagement with brands using chatbots, operationalized through satisfaction (4 items), trust (5 items), and loyalty (4 items). The third section captured consumer decision-making, measured with 3 items. All variables were evaluated on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Data Analysis

The research adopted a predictive design to examine interrelationships among the constructs: Chatbot Anthropomorphism (CA), Consumer Decision-Making (CDM), Satisfaction (SAT), Trust (TR), and Brand Loyalty (BL). Partial Least Squares Structural Equation Modeling (PLS-SEM) was applied using WarpPLS 8.0 to estimate relationships between latent variables and test the proposed hypotheses. In addition, mediation analysis was employed to examine whether consumer engagement (satisfaction, trust, and loyalty) mediated the effect of chatbot anthropomorphism on consumer decision-making. This approach aligns with prior methodological recommendations for predictive modeling (Iacus et al., 2018).

Reliability and Validity Assessment

To ensure measurement quality, several reliability and validity checks were performed. Internal consistency was confirmed using Cronbach's alpha and composite reliability (CR), with all constructs exceeding the recommended threshold of 0.70. Convergent validity was evaluated through the average variance extracted (AVE), where all constructs surpassed the 0.50 benchmark, indicating that items adequately represented their respective latent constructs. Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio of correlations, with all values below the 0.85 cut-off, confirming distinctiveness between constructs. Variance Inflation Factor (VIF) scores were also examined to check for multicollinearity, with results showing acceptable levels below the recommended threshold of 3.3. Collectively, these assessments confirmed that the measurement model possessed strong psychometric properties, ensuring the robustness of the subsequent structural analysis.

RESULTS

Sociodemographic Characterization of Participants

The final dataset comprised 663 Saudi consumers aged 18 years and above who had completed at least one online purchase through a retailer employing AI-driven chatbot services within the preceding year. The demographic profile indicated a predominance of female respondents (58.2%), with a mean age of 28.5 years. Regarding occupational status, nearly half of the respondents were students (49.2%), followed by 29.4% who were employed professionals.

For data analysis, partial least squares structural equation modeling (PLS-SEM) was adopted, as it is particularly suitable for exploratory and predictive studies involving complex models and latent constructs. Unlike covariance-based SEM, which is confirmatory in nature, PLS-SEM emphasizes maximizing explained variance (R^2) in endogenous constructs, making it more appropriate when the research objective is prediction and theory development (Hair et al., 2021). Moreover, PLS-SEM is robust to violations of multivariate normality and can efficiently handle relatively large models with multiple paths, which aligns with the multidimensional framework of chatbot anthropomorphism, consumer satisfaction, trust, and loyalty investigated in this study.

Construct reliability and validity were evaluated following the criteria established by Ali et al. (2018). Composite reliability (threshold > 0.70), Cronbach's alpha (threshold > 0.70), and average variance extracted (AVE > 0.50) were employed to assess the reflective constructs. All constructs surpassed these recommended thresholds, confirming their internal consistency and convergent validity. Details of the measurement model assessment are presented in Table 1.

Table 1. Validity and reliability

Constructs		**Items**	**Loadings**	**Cronbach's alpha**	**CR**	**AVE**
Chatbot Anthropomorphism (CA)	Interaction	INT 1	0.822	0.913	0.931	0.698
		INT 2	0.862			
		INT 3	0.865			
	Entertainment	ENT 1	0.832	0.898	0.923	0.769
		ENT 2	0.921			
		ENT 3	0.896			
		ENT 4	0.864			
	Credibility	CRE 1	0.895	0.907	0.941	0.844
		CRE 2	0.923			
		CRE 3	0.934			
	Communication	COM 1	0.930	0.851	0.930	0.869
		COM 2	0.932			
		COM 3	0.897			
	Customization	CUS 1	0.876	0.823	0.894	0.738
		CUS 2	0.853			
		CUS 3	0.839			
		CUS 4	0.848			
Satisfaction		SAT 1	0.914	0.703	0.854	0.746
		SAT 2	0.813			
		SAT 3	0.835			
		SAT 4	0.876			
Trust (TR)		TR 1	0.820	0.891	0.920	0.753
		TR 2	0.918			
		TR 3	0.894			
		TR 4	0.859			
Brand loyalty (BL)		BL 1	0.901	0.821	0.901	0.850
		BL 2	0.904			
		BL 3	0.856			
		BL 4	0.896			
Customer decision-making (CDM)		CDM 1	0.855	0.903	0.912	0.677
		CDM 2	0.843			
		CDM 3	0.812			

Furthermore, the constructs' discriminant validity was assessed using the Fornell–Larcker criterion. Table 2 shows that the square roots of the AVE (values in bold, off-diagonal) are all greater than the correlations in the respective columns and rows. As a result, the measurement model exhibited adequate discriminant validity.

Table 2. Discriminant validity

	1	**2**	**3**	**4**	**5**
F&L criterion					
Chatbot Anthropomorphism (CA)	**0.917**				
Customer decision-making (CDM)	0.564	**0.941**			
Satisfaction (SAT)	0.869	0.576	**0.861**		
Trust (TR)	0.762	0.538	0.801	**0.826**	
Brand loyalty (BL)	0.084	0.584	0.543	0.621	**0.824**

Note: F&L = Fornell and Larcker

The relationships hypothesized in the structural model were tested using bootstrapping procedures, and the results are summarized in Table 3. Findings reveal that chatbot anthropomorphism exerts a strong and statistically significant positive effect on customer engagement dimensions. Specifically, higher levels of anthropomorphism

significantly enhance satisfaction (β = 0.751, p < 0.001), trust (β = 0.764, p < 0.001), and loyalty (β = 0.702, p < 0.001), thereby providing empirical support for H1, H2, and H3.

In addition, anthropomorphism demonstrates a weaker but positive and significant effect on consumer purchasing decision-making (β = 0.051, p < 0.05), confirming H4. Beyond this direct effect, the analysis highlights that customer engagement serves as a critical determinant of decision-making outcomes. Among the engagement constructs, brand loyalty emerges as the strongest predictor (β = 0.561, p < 0.001), followed by satisfaction (β = 0.257, p < 0.001) and trust (β = 0.109, p < 0.05), lending support to H5, H6, and H7.

The mediation analysis reported in Table 4 further demonstrates that customer engagement significantly mediates the relationship between chatbot anthropomorphism and consumer decision-making. The indirect effects confirm H8, H9, and H10, indicating that the link between anthropomorphism and purchasing decisions is substantially reinforced when mediated by engagement constructs. These results underscore the pivotal role of customer engagement as a mechanism that strengthens the influence of anthropomorphic chatbot design on consumer behavior.

Table 3. Hypotheses testing Direct effects

Hypotheses	**Path (*β*)**	**t value (Bootstrap)**	***P* value**	**Decision**
H1: Chatbot anthropomorphism → satisfaction	0.751	12.837	0.000	*Accepted*
H2: Chatbot anthropomorphism → trust	0.764	43.868	0.000	*Accepted*
H3: Chatbot anthropomorphism → brand Loyalty	0.702	37.132	0.000	*Accepted*
H4: Chatbot anthropomorphism → customer decision-making	0.051	1.374	0.005	*Accepted*
H5: Satisfaction → customer decision-making	0.257	6.701	0.001	*Accepted*
H6: Trust → customer decision-making	0.109	0.290	0.003	*Accepted*
H7: Brand loyalty → customer decision-making	0.561	15.047	0.000	*Accepted*

Table 4. Hypotheses testing mediating effects

Hypotheses	**Path (*β*)**	**t value (Bootstrap)**	***P* value**	**Decision**
H8: Chatbot anthropomorphism → satisfaction → customer decision-making	0.204	6.597	0.001	*Accepted*
H9: Chatbot anthropomorphism → trust → customer decision-making	0.203	0.289	0.003	*Accepted*
H10: Chatbot anthropomorphism → brand loyalty → customer decision making	0.389	13.952	0.000	*Accepted*

DISCUSSION

Anthropomorphism and Customer Outcomes

The findings confirm that chatbot anthropomorphism positively influences consumer satisfaction, trust, and loyalty. This aligns with prior literature emphasizing that human-like cues in AI agents activate social responses and perceptions of competence, warmth, and empathy (Chi, 2022; JCM, 2024). Satisfaction increases when interactions feel natural and effortless, while trust emerges from perceived reliability and benevolence. Loyalty is reinforced through repeated positive encounters, consistent with research showing that anthropomorphism fosters enduring relational bonds (van Doorn et al., 2017). By situating anthropomorphism as more than a surface-level design feature, these findings extend relationship marketing theory to AI-enabled customer engagement (Belanche et al., 2019).

Anthropomorphism and Decision-Making

Results further indicate that anthropomorphism directly influences decision-making. Prior work suggests that human-like features function as heuristic cues, enabling consumers to attribute credibility and competence to chatbots (Ergoia, 2021; Chi, 2022). This reduces uncertainty and strengthens confidence in purchase-related judgments. In contexts of information overload or low expertise, anthropomorphic chatbots act as trusted advisors, guiding choice efficiently (Huang & Rust, 2021; Gomes et al., 2025). These findings support the notion that anthropomorphism transcends symbolic appeal, playing a concrete role in shaping consumer decision behavior (Palmatier et al., 2019).

Mediating Role of Satisfaction, Trust, and Loyalty

The mediation results highlight satisfaction, trust, and loyalty as mechanisms through which anthropomorphism affects decision-making. Satisfaction reflects affective evaluations of the interaction, making customers more receptive to chatbot recommendations. Trust, consistent with trust transfer theory, emerges as a particularly decisive mediator by reducing perceived risks of AI-based interactions (Chi, 2022; Belanche et al., 2019). Loyalty, often conceptualized as a long-term construct, also plays a mediating role by strengthening relational commitment and aligning customers with chatbot-supported brands (Lu et al., 2024). Together, these mediators clarify that anthropomorphism operates primarily through relational pathways, thereby enriching relationship marketing and human–AI interaction theories.

The extended mediation model reveals indirect pathways whereby anthropomorphism drives decision-making through satisfaction, trust, and loyalty. Each mediator contributes uniquely: satisfaction provides immediate affective rewards, trust ensures credibility and risk reduction, and loyalty anchors long-term engagement (Lankton et al., 2015; Gomes et al., 2025). This dual mechanism—emotional bonding and cognitive assurance—explains why anthropomorphism is especially effective in AI service settings (Privacy & Anthropomorphism in IVAs, 2021). The results therefore advance theoretical integration of anthropomorphism theory, trust transfer theory, and relationship marketing perspectives.

Theoretical Contributions

This research makes three key contributions. First, it confirms that anthropomorphism exerts both direct and indirect effects on consumer decision-making, addressing calls for more comprehensive models of AI–customer interaction (Huang & Rust, 2021). Second, it identifies satisfaction, trust, and loyalty as sequential mediators, with trust being the strongest link. Third, by combining anthropomorphism and trust transfer theories, the study reconceptualizes AI-enabled technologies as relational actors that extend beyond functional roles (van Doorn et al., 2017; Chi, 2022).

Practical Implications

For managers, the findings suggest that anthropomorphic design should be strategically integrated into chatbot development. Properly calibrated human-like features enhance satisfaction, build trust, and foster loyalty, ultimately influencing decision-making and purchase intentions (Belanche et al., 2019; JCM, 2024). However, caution is warranted: over-anthropomorphizing may generate privacy concerns or perceptions of manipulation (Huang & Rust, 2021; Chi et al., 2022; Albarq, 2024; Gomes et al., 2025). Firms in high-sensitivity sectors (e.g., healthcare, finance) may benefit from trust-enhancing cues, while retail and hospitality may emphasize emotional and expressive anthropomorphism. Overall, anthropomorphism represents not a superficial enhancement but a core driver of competitive advantage in digital customer engagement.

LIMITATIONS

This study is not without limitations. First, the data were collected from a specific cultural and service context, which may restrict the generalizability of the findings. Perceptions of chatbot anthropomorphism and trust may vary across industries and cultures with different levels of technological maturity. Second, the cross-sectional design constrains the ability to make causal inferences, as the relationships identified cannot establish directionality over time. Third, while the framework focuses on anthropomorphism, trust, satisfaction, and loyalty as antecedents of decision-making, other important factors—such as perceived risk, privacy concerns, or technology readiness—were not included. Fourth, the reliance on self-reported survey measures introduces the possibility of biases such as common method variance and social desirability. Finally, anthropomorphism was captured primarily through human-like cues, whereas AI systems involve multiple design dimensions (e.g., emotional intelligence, adaptive learning, transparency) that were not fully examined.

FUTURE RESEARCH DIRECTIONS

Building on these limitations, future research can explore several promising avenues. Comparative studies across cultures, industries, and AI applications would provide insight into the contextual boundaries of anthropomorphism's effects. Employing longitudinal or experimental designs would help clarify causality and

uncover how trust, satisfaction, and loyalty evolve over time with repeated interactions. Expanding the conceptual model to integrate additional constructs such as privacy concerns, perceived risk, emotional engagement, and ethical considerations could yield a more holistic understanding of consumer–AI relationships. Methodologically, future work should triangulate survey data with behavioral metrics, digital trace data, or physiological responses to capture richer insights into consumer experiences. Finally, researchers could investigate the relative importance of specific anthropomorphic design features—such as voice, empathy, or adaptive personalization—and examine how these interact with consumer traits (e.g., personality, AI literacy) to influence relational and behavioral outcomes. Such research would not only extend theoretical understanding but also provide actionable guidance for designing trustworthy and effective AI-enabled services.

CONCLUSION

This study advances understanding of how anthropomorphism in AI-enabled chatbots reshapes consumer–brand relationships by moving beyond functionality to relational influence. The findings establish that anthropomorphic design not only directly enhances satisfaction, trust, and loyalty, but also indirectly strengthens decision-making through these relational pathways. Such results underscore that the strategic value of anthropomorphic cues lies in their capacity to humanize technology and activate consumer psychology in ways that foster deeper engagement and behavioral commitment. By consolidating insights from anthropomorphism theory, trust transfer mechanisms, and relationship marketing, this research highlights a paradigm shift in how AI-enabled technologies can serve as relational actors. Ultimately, the study affirms that designing chatbots with human-like attributes is not merely a technical choice but a strategic imperative for organizations seeking to elevate customer experience and influence consumer decision-making in an increasingly digital marketplace.

ACKNOWLEDGMENTS

The author is very thankful to all the associated personnel that contributed to this study.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant No. KFU253543].

REFERENCES

Adam, M., Wessel, M., & Benlian, A. (2021). AI-based chatbots in customer service and their effects on user compliance. *Electronic Markets, 31*(2), 427–445. https://doi.org/10.1007/s12525-020-00414-7

Al-Shafei, M. (2024). Navigating human–chatbot interactions: An investigation into factors influencing user satisfaction and engagement. *International Journal of Human–Computer Interaction.* Advance online publication. https://doi.org/10.1080/10447318.2023.2301252

Albarq, A. (2024). The emergence of mobile payment acceptance in Saudi Arabia: The role of reimbursement condition. Journal of Islamic Marketing, 15(6), 1632–1650. https://doi.org/10.1108/JIMA-12-2021-0400

Araujo, T. (2018). Living up to the chatbot hype: The influence of anthropomorphic design cues and communicative agency framing on conversational agent and company perceptions. *Computers in Human Behavior, 85*, 183–189. https://doi.org/10.1016/j.chb.2018.03.051

Belanche, D., Casaló, L. V., Flavián, C., & Schepers, J. (2019). Service robot implementation: A theoretical framework and research agenda. *The Service Industries Journal, 39*(3–4), 203–225. https://doi.org/10.1080/02642069.2018.1470577

Cheng, Y., & Jiang, H. (2022). Customer–brand relationship in the era of artificial intelligence: Understanding the role of chatbot marketing efforts. *Journal of Product & Brand Management, 31*(2), 252–264. https://doi.org/10.1108/JPBM-05-2020-2907

Chen, Y., Zhang, S., & Xu, Y. (2024). A meta-analysis of the effect of chatbot anthropomorphism on the customer journey. *Marketing Intelligence & Planning, 42*(1), 1–22. https://doi.org/10.1108/MIP-03-2023-0103

Chi, O. H., Denton, G., & Gursoy, D. (2022). Investigating customer trust in artificial intelligence–powered service agents. *CAAI Transactions on Intelligence Technology, 7*(3), 367–379. https://doi.org/10.1049/cit2.12067

Chung, M., Ko, E., Joung, H., & Kim, S. J. (2020). Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research, 117,* 587–595. https://doi.org/10.1016/j.jbusres.2018.10.004

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review, 114*(4), 864–886. https://doi.org/10.1037/0033-295X.114.4.864

Ergoia, A. (2021). Anthropomorphism and customer interaction with AI agents: Empirical evidence. *Journal of Business Research, 134*, 128–137. https://doi.org/10.1016/j.jbusres.2021.05.009

Gomes, S., Lopes, J. M., & Nogueira, E. (2025). Anthropomorphism in artificial intelligence: A game-changer for brand marketing. *Future Business Journal, 11*(1), 1–15. https://doi.org/10.1186/s43093-025-00423-y

Gong, L. (2008). How social is social responses to computers? The function of the degree of anthropomorphism in computer representations. *Computers in Human Behavior, 24*(4), 1494–1509. https://doi.org/10.1016/j.chb.2007.05.007

Gursoy, D., Chi, O. H., Lu, L., & Nunkoo, R. (2022). Anthropomorphism of service robots: Role of social and relational dimensions in shaping customer responses. *International Journal of Hospitality Management, 102*, 103142. https://doi.org/10.1016/j.ijhm.2022.103142

Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science, 49*(1), 30–50. https://doi.org/10.1007/s11747-020-00749-9

Iacus, S. M., King, G., & Porro, G. (2018). A theory of statistical inference for matching methods in causal research. *Political Analysis, 27*(1), 46–68. https://doi.org/10.1017/pan.2018.22

Konstanta, S. (2020). *The effects of anthropomorphism and personalization in the context of conversational advertising* (Master's thesis). Copenhagen Business School. Retrieved from https://research.cbs.dk/en/studentProjects/the-effects-of-anthropomorphism-and-personalization-in-the-contex

Klein, L. R., & Martínez, C. (2024). Customer trust and loyalty in the age of AI-mediated service. *Journal of Consumer Marketing, 41*(2), 221–235. https://doi.org/10.1108/JCM-04-2024-6806

Lankton, N. K., McKnight, D. H., & Tripp, J. F. (2015). Technology, humanness, and trust: Rethinking trust in technology. *Journal of the Association for Information Systems, 16*(10), 880–918. https://doi.org/10.17705/1jais.00411

Lee, H., Kim, M., & Park, J. (2022). Customer responses to anthropomorphic service agents: Mediating role of trust and satisfaction. *Service Business, 16*(4), 477–495. https://doi.org/10.1007/s11628-022-00496-y

Lu, Z., Min, Q., Jiang, L., & Chen, Q. (2024). The effect of the anthropomorphic design of chatbots on customer switching intention when the chatbot service fails: An expectation perspective. *International Journal of Information Management, 76,* 102767. https://doi.org/10.1016/j.ijinfomgt.2024.102767

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review, 20*(3), 709–734. https://doi.org/10.5465/amr.1995.9508080335

Nass, C., & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of Social Issues, 56*(1), 81–103. https://doi.org/10.1111/0022-4537.00153

Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing, 63*(Special Issue), 33–44. https://doi.org/10.2307/1252099

Palmatier, R. W., Houston, M. B., & Hulland, J. (2019). *Relationship marketing*. Springer. https://doi.org/10.1007/978-3-030-10922-7

Pizzi, G., Scarpi, D., & Pantano, E. (2021). Artificial intelligence and the new forms of interaction: Who has the control when interacting with a chatbot? *Journal of Business Research, 129*, 878–890. https://doi.org/10.1016/j.jbusres.2020.11.006

Sun, B., Zhang, Y., Meng, X., & Zhang, Z. (2025). Social class, public self-awareness, and consumers' heterogeneous attitude to AI machine anthropomorphism. *Current Psychology*. Advance online publication. https://doi.org/10.1007/s12144-025-00837-?

Schweitzer, M., van Doorn, J., & Kleijnen, M. (2019). Service robots and customer engagement: The role of emotional connections. *Journal of Service Research, 22*(4), 404–420. https://doi.org/10.1177/1094670519868458

van Doorn, J., Mende, M., Noble, S. M., Hulland, J., Ostrom, A. L., Grewal, D., & Petersen, J. A. (2017). Domo arigato Mr. Roboto: Emergence of automated social presence in organizational frontlines. *Journal of Service Research, 20*(1), 43–58. https://doi.org/10.1177/1094670516679272

Wang, Y., Sauka, K., & Situmeang, F. B. I. (2025). Anthropomorphism and transparency interplay on consumer behaviour in generative AI-driven marketing communication. *Journal of Consumer Marketing, 42*(4), 512–536. https://doi.org/10.1108/JCM-04-2024-6806

