

Anthropomorphic Cues in AI Chat bots and Consumer Responses: An Empirical Survey of Trust and Purchase Intention in Online Services

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ABSTRACT: This study examines the effect of anthropomorphic cues in AI-powered chat bots on consumer's purchase intention, investigating the roles of trust (affective pathway) and perceived usefulness (cognitive pathway) in this relationship. A quantitative cross-sectional survey design was used, collecting data from 170 experienced chat bot users across various digital service contexts comprising of e-commerce, online banking and airline booking platforms. Empirically validated multi-item construct measured anthropomorphism, trust, perceived usefulness and purchase intention. Data were studied using descriptive statistics, Pearson correlation and mediation analysis applying both classical product-of-coefficients ($a \times b$) and bootstrapping methods with 1000 re samples to establish reliable confidence intervals. Results show that anthropomorphic cues significantly influence both trust ($a = 0.335$, $p < 0.001$) and perceived usefulness ($a = 0.383$, $p < 0.001$), supporting H1 and H2. Both mediators positively affect purchase intention (trust: $b = 0.665$, $p < 0.001$; perceived usefulness: $b = 0.754$, $p < 0.001$), confirming H3 and H4. mediation analysis reveals significant indirect effects through trust (indirect effect = 0.223, 95% CI [0.095, 0.301]) and perceived usefulness (indirect effect = 0.296, 95% CI [0.157, 0.382]), with both demonstrating partial mediation. Perceived

usefulness exhibited a marginally stronger mediating effect than trust, suggesting cognitive evaluations may exert slightly greater influence on purchase decisions in task-oriented contexts. This study advances understanding of human-AI interaction by empirically validating a dual-path mediation framework integrating affective (trust) and cognitive (perceived usefulness) mechanisms, an integrated approach previously unexplored in chatbot research. It also extends the Technology Acceptance Model (TAM) by incorporating anthropomorphism as a predictor and demonstrating that emotional engagement operates alongside functional evaluations. The rigorous methodological approach combining classical and bootstrapped estimates strengthens confidence in the findings.

Keywords: *AI chatbots, anthropomorphism, trust, perceived usefulness, purchase intention, technology acceptance model, human-AI interaction, dual mediation.*

1. Introduction:

Today, AI technology is significantly influencing how firms engage with consumers in digital environments (Davenport et al., 2020; Hasan et al., 2024). Among these technologies, AI-enabled chatbots are one of the most visible interfaces between businesses and customers (Chowdhury et al., 2024). Businesses now utilize chatbots on websites, mobile applications and social media platforms for prompt provision of responses, product information and purchase assistance (Chowdhury et al., 2024). Unlike conventional automated customer service platforms, contemporary automated agents activate natural language communication and support live user interaction (Perez-Vega et al., 2020). As a result, consumers are not only engaging with human representatives solely rather they are prevalently interacting with AI-enabled agents that represent the brands (Hasan et al., 2024; Hollebeek et al., 2024).

Although widespread, the responses of consumers to AI agents remain mixed or sometimes inconsistent (Jin & Li, 2025; Wirtz & Pitardi, 2023). Some consumers find the AI agent interactions hassle-free, effective and supportive while others apprehend it as dubious, questionable or untrustworthy (Wirtz & Pitardi, 2023). The same technology that increases connectivity for certain consumers may also create uncertainty while making a purchase decision (Rohden & Espartel, 2024). This

disparity suggests that the effectiveness of AI-enabled tools not only depends on their technical capabilities but also on how consumers analyze the engagement psychologically (Chowdhury et al., 2024).

One of the most significant factors that shapes users' apprehension is the degree to which an AI-enabled tool i.e. chatbot appears to be human-like in its communication style (Zehnle et al., 2025). Modern AI agents integrate anthropomorphic cues such as non-technical language, tailored responses, emotional signals, and phatic communication behavior (Li & Suh, 2021; Peter et al., 2025). These prompts make the interaction resemble a relational exchange rather than a mechanical transaction (Adam et al., 2020). When consumers apprehend a chatbot as human-like in communication, they may respond to it using social conventions typically applied in interpersonal interactions (Haugeland et al., 2022). Instead of responding to chatbot as a tool, consumers may apprehend it as a social agent signifying the brand (Kim, 2025).

However, positive consumer behavior does not necessarily depend on human-likeness of the AI-enabled tool of the brand (Bergner et al., 2023). Even when the consumers interpret chatbots as approachable or interactive, they may still hesitate to rely on them while making a purchase decision (Murtaza et al., 2024). The lack of physical interaction, limited accessibility to product quality and privacy concerns add to uncertainty in online transactions (Morsi, 2023). Under such conditions, consumers need emotional reassurance before accepting the recommendations given by AI agents (Mittal et al., 2024).

Trust plays an important role in minimizing perceived uncertainty in digital environments (Raut et al., 2024). When consumers feel comfortable and trust the information provided by the AI agent, they are more likely to accept its recommendations and initiate the purchasing process (Rohden & Espartel, 2024). Trust in human service interactions develops from perceived competence, reliability and sincerity of the service provider. A similar mechanism may occur in AI-enabled interactions (Nizette et al., 2024). If a chatbot is considered useful, prompt and credible, consumers may establish confidence in both the AI-enabled tool and the brand itself (Meyer-Waarden et al., 2020). Thus, trust acts as a psychological process

through which conversational exchanges influence user behavior (Gharib et al., 2025).

Previous studies have focused on AI chatbots efficiency and reliability, inadequate attention has been given to psychological mechanisms through which AI-enabled tools shape the consumer decision-making (Hildebrand & Bergner, 2019). Specifically, it is indeterminate that whether engaging with a human-like chatbot influences the consumer buying decision or the chatbot first develops trust among the consumers and then the consumers make a buying decision based on that trust (Fu et al., 2023). This is important to understand because organizations nowadays are largely relying on automated conversational agents to facilitate customer journey from product exploration purchase execution (Hildebrand & Bergner, 2020).

Therefore, this study examines the roles of interpreted anthropomorphic cues in AI-enabled interactions and their effect on consumer purchase decisions (Han, 2021). Furthermore, this study suggests that trust and perceived usefulness are mediating factors linking these two concepts (Gomes et al., 2025). It also wants to explore whether trust and perceived usefulness are variables which might explain why chatbot engagements impact consumers decisions in online services (Murtaza et al., 2024).

This study adds to marketing and consumer behavior literature in various manners. First, it improves understanding of consumer-brand engagement by studying AI agents as interactive tools rather than just being technological tools. Second, it highlights that consumers trust human-like AI agents and that trust and perceived usefulness further influences their intention. Third, it provides implementable knowledge for businesses so that they can design better AI-enabled consumer engagement tools or systems by revealing the importance of interaction style which can influence consumer responses.

It is extremely important to understand the behavioral outcomes of human-like chat bot interaction because conversational agents have become a routine part of online retailing (Cheng et al., 2021). Organizations are heavily investing in such AI agents expecting improved interactions and conversion rates, yet the factors facilitating

consumer adoption remain unexplored (Adam et al., 2020). By empirically evaluating the relationships among anthropomorphic cues i.e. trust and perceived usefulness, this research aims to bridge this gap of how AI agents/chat bots shape consumer decision-making in digital contexts (Alboqami, 2023).

2. Literature Review:

Over the recent years, digital marketing has transformed towards conversational and tech-driven communication avenues (Sidlauskiene et al., 2023). Businesses do not rely only on delayed email communication and non interactive websites to interact with consumers. Rather, they have consolidated conversational AI systems in customer service and sales mechanisms to foster immediate interaction (Camilleri & Kozak, 2022). Among these innovations, AI-enabled chatbots have developed as a prominent tool facilitating uninterrupted communication between organizations and consumers across online channels (Gharib et al., 2025).

Chat bots are technology based intelligent agents designed to foster human dialogue through text or voice interfaces (Dinh & Park, 2023). They are normally found on websites, e-commerce platforms, and messaging applications where they facilitate assistance such as prompt provision of inquiries, delivering product details, suggesting services and supporting users throughout the purchase processes (Morsi, 2023). In contrast to conventional customer support systems that depend on human interface, chatbots provide immediate responses at any time and place, thus improving service accessibility and operational effectiveness (Uzoka et al., 2024).

The increasing use of chatbots is pertinent to consumers' expectations in online marketplaces (Adam et al., 2020). Digital consumers progressively demand immediate responses, seamless assistance and tailored communication during the shopping process (Gao et al., 2025). As online retailing develops consumers often engage with brands without visiting the physical stores or interaction with human agents (Pizzi et al., 2020). Under such circumstances, chatbots are the primary point of contact between consumers and businesses . As a result, the type and standard of chatbot engagement can substantially impact consumers' perception of the brand and entire service experience (Xu et al., 2022).

In addition to operational efficiency, chatbots are main communication agents within the marketing ecosystem (Gümüş & Çark, 2021). In digital platforms, communication directly contributes to consumer experience, and the manner in which information is conveyed can influence satisfaction, engagement and actions taken by consumers(Cosmo et al., 2021) . When chatbot responses seem robotic or pre-programmed, consumers may regard the interaction as unengaging and functional (Cai et al., 2024) . Alternatively, engaging and two-way interaction may create a relational engagement despite the interaction occurring with an AI agent (Hermann & Puntoni, 2024).

As consumers frequently depend on chatbot-provided information when considering products or services, these interactions may affect consumers' buying behaviors (Hermann & Puntoni, 2024). Chatbots not only serve as AI automated tools but also function as advocates of a brand's communication approach and quality of service (Kim, 2025). The engagement experience may shape customer attitudes, confidence and propensity to act on recommendations provided by chatbot during the conversation (Cai et al., 2024).

Considering their expanding contribution to the customer journey, gaining insight into how consumers psychologically respond to chatbot engagements has become significant in marketing research (Dwivedi et al., 2023). Instead of focusing only on technical performance or system effectiveness, studying consumer perceptions allow researchers to better understand behavioral responses linked to chatbot-mediated interactions (Sidlauskiene et al., 2023). This perspective emphasizes the importance of exploring how distinct characteristics of chatbot interactions shape consumer assessments and subsequent behavioral outcomes (Al-Shafei, 2024).

In technology adoption, trust has long been acknowledged as a key predictor of technology adoption, especially in contexts marked by ambiguity, apprehended risk and limited human supervision (Wu et al., 2011). In AI-enabled chatbot engagements, trust demonstrates user's willingness to depend on the system to furnish reliable information, enhance decision-making or carry out entire transactional processes autonomously, without human intervention. Trust is a multi-faceted construct, typically including perception of a system's effectiveness, ethical

soundness and positive intent, which entirely influences users' reliance on interacting with AI-powered services ([Thiebes et al., 2020](#)).

Empirical studies have shown that anthropomorphically designed chatbots substantially enhance user trust, which in turn shapes critical behavioral outcomes, such as dependency on system recommendations, propensity to buy, ongoing engagement and overall satisfaction ([Schimmelpfennig et al., 2025](#)). Trust acts as a psychological mediator, linking the gap between user interface design (e.g, anthropomorphic cues) and behavioral intention. By enhancing users' affective reliance on the system, trust minimizes perceived risk and uncertainty intrinsic in online engagements, particularly in high-stakes contexts like financial services, healthcare or e-commerce ([Dimitriadis & Kyrezi, 2010](#)).

In addition to its mediating role, trust also functions as a predictive signal for long-term user engagement. When users gain confidence in a chatbot, they are more likely to explore features, adopt advanced functionalities and engage in repeated interactions over time ([Gharib et al., 2025](#)). The sustained influence highlights that trust extends beyond a transient reaction to anthropomorphic cues and acts as a psychological state that can influence long-term adoption patterns and strengthen user engagement with AI services ([Dang & Li, 2025](#)).

Moreover, trust can act as a buffer against negative experiences or system malfunctions. Even when chatbots provide imperfect responses or encounter technical glitches, users with higher trust are more forgiving and likely to maintain engagement, by virtue of their initial affective confidence, which diminishes the perceived severity of errors ([Rapp et al., 2021](#)). This underscores the protective function of trust in AI-mediated engagements, exhibiting that affective mediation simultaneously elevates behavioral intentions and reinforces the robustness of user-system relationships. By incorporating these dimensions, trust is found to be a dynamic and multi-faceted mediator, shaping both prompt decision making and the sustained stability of long term user adoption ([Dang & Li, 2025](#)).

In addition to affective mechanisms, cognitive evaluations especially perceived usefulness serves a vital role in explaining technology adoption. According to the

Technology Acceptance Model (TAM), perceived usefulness is defined as the degree to which an individual contends that using a system will enhance task performance, efficiency or decision accuracy (Davis, 1987). In contrast to affective constructs that depend on emotional responses, perceived usefulness represents a cognitive cost-benefit appraisal in which users assess whether the technology significantly enhances their outcomes (Yang & Yoo, 2004). of operational effectiveness through perceived competence (Roy & Naidoo, 2021).

Recent studies increasingly advocate for examining affective and cognitive pathways in an integrated manner. Trust embodies the affective component, encompassing user's emotional involvement and their sense of confidence in the system, while perceived usefulness constitutes the cognitive component by denoting deliberate and rational evaluations of system performance (Dang & Li, 2025).

Despite its predominantly positive influence, the effects of anthropomorphism may vary depending on specific boundary conditions. User characteristics, such as familiarity with AI, readiness to adopt new technologies, and digital literacy skills, determine the extent of sensitivity to anthropomorphic cues (Cornelius & Leidner, 2021). Users possessing higher level of AI literacy are more likely to prioritize functional performance over social engagement, whereas those with lower levels of experience may respond more favorably to anthropomorphic features (Troshani et al., 2020).

Even with the rise of studies on anthropomorphism in AI, important research gaps still exist. The majority of studies have focused on either affective and cognitive mechanisms, leaving the combined impact of trust and perceived usefulness insufficiently explored. Moreover, limited investigation with real-world participants across multiple service contexts constraints the extent to which current findings can be generalized (Zierau et al., 2021).

To address these gaps, the present research proposes a dual mediation framework to investigate the influence of AI chatbot anthropomorphism on purchase intention through the mediating roles of trust and perceived usefulness. This research leverages a sample of experienced chatbot users to empirically examine affective and cognitive

pathways, measure direct and indirect effects and mitigate the influence of confounding variables. By combining affective and cognitive perspectives, this study contributes to theory through a comprehensive account of consumer behaviour towards human-like AI features and to practice by providing actionable insights for designing AI-enabled digital marketing initiatives that effectively balance emotional engagement and functional utility (Charles et al., 2025).

- **Anthropomorphism and Trust:**

In technology mediated contexts, trust serves as primary affective mechanism, particularly when interactions involve uncertainty or potential risk. It signifies user's openness to depend on a system based on apprehensions of efficiency, robustness and supportiveness. In digital contexts, where users cannot directly verify system intentions or capabilities, trust becomes a key determinant of engagement and purchasing behavior (Sulistiyowati & Husda, 2023).

H1: Anthropomorphic cues positively influence trust.

- **Anthropomorphism and Perceived Usefulness**

Derived from technology acceptance frameworks, perceived usefulness refers to the extent to which an individual perceives a system as enhancing task effectiveness or operational efficiency (Abdallah et al., 2023). As a cognitive construct, perceived usefulness captures users' deliberate evaluations of system performance and functional benefits. Within AI chatbot contexts, perceived usefulness includes judgments of system's accuracy, relevance, responsiveness and overall capability to facilitate users goals (Broeck et al., 2019).

H2: Anthropomorphic cues positively influence Perceived Usefulness.

- **Trust and Purchase Intention:**

In online and AI-mediated environments, trust has been consistently identified as a central predictor of behavioral intention. When trust is high, perceived risk and uncertainty are reduced which in turn elevates user confidence in decision-making process. Trust in commercial environments promotes users readiness to follow

system recommendations, provide personal information and execute transactions (Chen et al., 2023).

H3: Trust positively influences Purchase Intention.

- **Perceived Usefulness and Purchase Intention:**

Perceived usefulness is widely recognized as one of the most influential factors of technology adoption and users' intention to use a system. According to technology acceptance theory, individuals are more inclined to adopt systems they perceive as enhancing their performance or facilitating task completion (Venkatesh et al., 2003).

H4: Perceived Usefulness positively influences Purchase Intention.

- **Trust as a Mediator:**

In addition to its direct effects, trust may act as a mediating factor through which anthropomorphic cues affect behavioral intention. Anthropomorphic cues influence decision making indirectly by influencing emotional reactions, rather than directly fostering purchase behavior. Through the enhancement of social presence and perceived reliability, anthropomorphic cues cultivate trust, ultimately mitigating uncertainty and increasing the likelihood of transaction completion (Thomaz et al., 2020).

H5: Trust mediates the relationship between Anthropomorphic cues and Purchase Intention.

- **Perceived Usefulness as a Mediator:**

Likewise, anthropomorphic cues may shape purchase intention indirectly through perceived usefulness. Social cues not only enhance relational perceptions but also communicate competence and intelligence, shaping users' cognitive evaluations of its functionality. This cognitive pathway suggests that anthropomorphism affects behavioral intention by strengthening users' perceptions of system utility and task support (Blut et al., 2021).

3. Methodology

3.1 Research Design

Drawing on quantitative, cross-sectional design this study examines how the effect of anthropomorphic cues embedded in AI chatbot interactions influence purchase intention, with trust and perceived usefulness specified as key mediating constructs within the proposed model. A survey-based approach was selected for this study to effectively gather data on users' perceptions and attitudes towards interactions with AI-enabled services ([Guo & Cai, 2024](#)).

The conceptual framework reflects a dual-mediation structure, grounded in Technology Acceptance Theory and social cognition perspectives ([Davis, 1989](#)). Because anthropomorphism, trust, perceived usefulness and purchase intention are unobserved psychological variables, a structured questionnaire using multi-item validated scales was utilized to confirm both the validity of the constructs and reliability of the measurements ([Nissen & Jahn, 2021](#)).

The cross-sectional design supports the examination of interrelationships among constructs at one point in time, reflecting methodologies employed in prior technology adoption research ([Lazăr et al., 2020](#)).

3.2 Sampling and Data Collection:

An online survey, distributed via various digital and social media channels, was employed to gather the study data. A purposive sampling technique in which participants are selected based on specific characteristics relevant to study was adopted to target participants with prior experience using AI-enabled chatbots, ensuring that the collected data were relevant for examining the proposed model ([Trần, 2025](#)). Participants were required to answer a screening question confirming their chatbot usage before accessing the survey, which measured constructs such as anthropomorphism, trust, perceived usefulness and purchase intention using a five-point Likert scale.

A total of 170 usable responses were obtained after data screening. This sample size exceeds established minimum guidelines for regression-based mediation studies and

ensures adequate statistical power for models with several predictors and mediators (Al-Aflak & Gawshinde, 2023). Participants indicated their prior experience with chatbots across various service contexts, including online banking, airline booking platforms and e-commerce websites. Variation in participants' age, gender and educational levels enhanced sample heterogeneity, thereby strengthening the generalizability of the study's results among digitally engaged populations (Biselli et al., 2024).

Participation was voluntary. Respondents were made aware of the study's research objectives and academic focus before participation and participants' anonymity and confidentiality were strictly maintained to minimize evaluation apprehension and reduce social desirability bias (Latkin et al., 2016).

3.3 Measurement Development:

All variables were assessed using previously validated scales, which were adapted to suit the AI chatbot context (Na et al., 2024). To align measures with chatbot-specific interactions, minor wording modifications were implemented without affecting the theoretical meaning of the original items.

All items were measured on a five-point Likert scale, ranging from 1("Strongly Disagree") to 5("Strongly Agree"). For each construct, item responses were averaged to generate composite scores, ensuring consistency and ease of interpretation.

3.4 Construct Operationalization and Reliability:

Cronbach's alpha (α) was used to evaluate the internal consistency of all constructs, calculated using the formula (Tavakol & Dennick, 2011):

$$\alpha = [k/(k-1)] \times [1 - \sum \sigma^2_{\text{item}} / \sigma^2_{\text{total}}]$$

Where;

k = number of items,

σ^2_{item} = variance of each item,

and σ^2_{total} = total variance of the scale.

Anthropomorphism

Anthropomorphism was measured as the extent to which users perceived the chatbot as human-like in communication style, personalization and apparent intentionality (Sidlauskiene et al., 2023). Three items assessed perceived human resemblance and interaction quality. The construct of anthropomorphism yielded a mean of 2.9588 (SD=0.9380), suggesting that participants perceived chatbot human-likeness at a moderate level. Cronbach's alpha was used to evaluate the internal consistency and reliability of the constructs. The measure demonstrated adequate reliability ($\alpha = 0.79$), comfortably surpassing the recommended cutoff value of 0.70 (Ltifi, 2023).

Trust

Trust represents the users' confidence in the chatbot's competence, reliability and overall credibility. Four items measured dependability, information accuracy and willingness to rely on the system. Trust recorded a mean score of 3.0765 (SD=0.8896), indicating moderate levels of user confidence in chatbot functionality. Cronbach's alpha was 0.85, exhibiting strong internal consistency (Kim, 2025).

Perceived Usefulness

Perceived usefulness reflects users' cognitive assessment of the chatbot's effectiveness in enhancing task efficiency and performance. Four items measured effectiveness, productivity enhancement and overall functional value. Perceived usefulness demonstrated the highest average rating (M=3.4882, SD=0.9060) highlighting users's acknowledgement of the chatbot's effectiveness in supporting tasks. The scale demonstrated excellent reliability ($\alpha = 0.90$) (Holmes et al., 2023)

Purchase Intention

This construct captures users' propensity to make purchases, maintain usage or endorse services supported by chatbot interactions. Three items assessed future purchase likelihood and service continuation. The mean score was 3.1216 (SD=0.9802), reflecting moderate behavioral intention. Cronbach's alpha was 0.82, confirming good reliability (Cai et al., 2024).

3.5 Data Analysis Strategy

The data analysis was conducted in three sequential stages; First, descriptive analyses were conducted to examine the data's mean, standard deviation and overall reliability. Second, Pearson correlation analysis was performed to examine the bivariate relationships among the constructs. Third, regression-based mediation analyses were conducted to examine the indirect effects of Anthropomorphism on Purchase Intention via Trust and Perceived Usefulness.

Mediation was evaluated using causal steps framework (Baron & Kenny, 1986) supplemented by indirect effect calculations ($a \times b$). The indirect effect was computed as $a \times b$, where a represents the effect of the independent variable (Anthropomorphism) on the mediator (Trust or Perceived Usefulness) and b represents the effect of the mediator on the dependent variable (Purchase Intention). The total effect (c) is the sum of the direct effect (c') and the indirect effect, i.e. $c = c' + (a \times b)$. Partial mediation was assessed by comparing reductions in direct effect (c') relative to total effect (c). Classic regression-based estimates ($a \times b$) were calculated using Microsoft Excel, while bootstrapped confidence intervals (1000 resamples, 95% CI) were calculated using Jamovi MedMod (version 2.7.17) to provide more robust inference of the indirect effects. This approach is consistent with established testing procedures in behavioral research (Preacher & Hayes, 2008).

4. Results and Key Findings

4.1 Descriptive Statistics

Table 4.0 presents the descriptive statistics for the study variables. The mean suggests that participants' evaluations of Anthropomorphism were moderate ($M=2.96$), while Perceived Usefulness was rated slightly higher ($M=3.49$). Trust and Purchase Intention were also moderate ($M=3.08$ and 3.12 , respectively). Standard deviations indicate acceptable variability across responses (Shi-ying et al., 2021).

Table 4.0: Descriptive Statistics of Study Variables

Variable	Mean (M)	SD
Anthropomorphism	2.96	0.94
Trust	3.08	0.89
Perceived Usefulness	3.49	0.91
Purchase Intention	3.12	0.98

Correlation Analysis

The results of the Pearson correlation test demonstrated that all constructs were positively and significantly related ($p < 0.05$). Among the predictors, Trust showed highest correlation with Purchase Intention ($r = 0.6968$, $p < 0.001$), followed by Perceived Usefulness ($r = 0.6334$, $p < 0.001$), whereas Anthropomorphism demonstrated a comparatively weaker relationship ($r = 0.4202$, $p < 0.001$) (Blut et al., 2021).

The notably strong relationship between Trust and Purchase Intention highlights the significant role of affective trust in influencing transactional behavior. Similarly, the significant correlation between perceived usefulness and purchase intention highlights the importance of cognitive evaluations of system performance. No multicollinearity concerns were detected, as all correlation coefficients remained below the commonly accepted threshold of 0.80 (Hair et al., 2009), showing that each construct shows a distinct role in the analysis.

Table 4.1: Pearson Correlation Coefficients

Variables	Anthropomorphism	Trust	Perceived Usefulness	Purchase Intention
Anthropomorphism	1	0.354	0.407	0.42
Trust	0.354	1	0.604	0.697
Perceived Usefulness	0.407	0.604	1	0.633
Purchase Intention	0.42	0.697	0.633	1

Note: $p < .05$

4.2 Mediation Analysis:

A mediation analysis was performed to explore whether the influence of Anthropomorphism on Purchase Intention operates indirectly via Trust, as the affective pathway, and Perceived Usefulness, representing the cognitive pathway. In line with contemporary best practices in behavior research, integrated regression-based path estimation with the computation of indirect effect ($a \times b$). Bootstrapping techniques with 1000 resamples were applied to derive 95% confidence intervals and

assess statistical significance of the indirect effects without assuming normality of the sampling distribution (Preacher & Hayes, 2008; see Tables 4.1 and 4.2).

● **4.3.1 Classical Mediation Estimates (a x b):**

Table 4.2 presents the indirect, direct and total effects calculated using the product of coefficients method (a x b) in Microsoft Excel. Anthropomorphism influences Purchase Intention both directly and indirectly through two mediators.

Table 4.2: Classic Mediation Estimates

Mediation Results Table					
Mediators	a (IV → M)	b (M → DV)	Indirect Effect (a × b)	Direct Effect c'	Total Effect c
Trust	0.3353	0.6648	0.2231	0.2468	0.4391
Perceived Usefulness	0.3828	0.7538	0.2961	0.1712	0.4391

These values indicate partial mediation for both pathways, as the direct effect remains significant when each mediator is included. The indirect effect through Perceived Usefulness is slightly larger than through Trust, suggesting that cognitive evaluations may play a slightly stronger role than affective trust in influencing Purchase Intention.

● **4.3.2 Bootstrapped Mediation Estimates:**

To provide more rigorous statistical inference, bootstrapped estimates with 1000 resamples were calculated using Jamovi (version 2.7.17) with the MedMod module. This method derives confidence intervals for the indirect effects without assuming normality of the sampling distribution (Alfons et al., 2021).

Table 4.3: Bootstrapped Mediation Estimates (95% CI)

Mediation Estimates		95% Confidence Interval					
Mediators	Effect	Estimate	SE	Lower	Upper	Z	p
Trust	Indirect	0.192	0.0538	0.0947	0.301	3.57	<.001
	Direct	0.247	0.1065	0.385	3.41	<.001	
	Total	0.439	0.2864	0.583	5.7	<.001	
Perceived Usefulness	Indirect	0.268	0.0596	0.1569	0.382	4.49	<.001
	Direct	0.171	0.0507	0.301	2.96	0.007	
	Total	0.439	0.2854	0.594	5.73	<.001	

The results confirm that the indirect effects of Anthropomorphism on Purchase Intention via trust and Perceived Usefulness are statistically significant, as the 95% CI for both mediators does not include zero. The direct effects remain significant, indicating partial mediation for both pathways (Blut et al., 2021).

● 4.3.3 Comparative Mediation Strength:

A comparison of the two mediators shows that Perceived Usefulness ($a \times b = 0.2961$; bootstrapped indirect = 0.268) has a slightly stronger indirect effect on Purchase Intention than Trust ($a \times b = 0.2231$; bootstrapped indirect = 0.192). The results indicate that although affective trust responses play a vital role, cognitive evaluations regarding chatbot performance may contribute slightly more to shaping users' behavioral intentions in this setting (Kim, 2025).

Overall, the findings support a dual-path mediation mechanism, where the presence of anthropomorphic cues in chatbots shapes Purchase Intention both directly and indirectly through the affective pathway of Trust and the cognitive pathway of Perceived Usefulness, consistent with Social cognition Theory and Technology Acceptance Theory (Guo & Cai, 2024).

● 4.4 Hypothesis Support Summary:

The results of this study provide a clear support for the proposed hypotheses. H1 and H2 were supported, with Anthropomorphic cues exert a significant effect on both Trust ($a = 0.3353$) and Perceived Usefulness ($a = 0.3828$). In line with H3 and H4, both Trust ($b = 0.6648$) and Perceived Usefulness ($b = 0.7538$) were found to positively influence Purchase Intention. Further, mediation analyses confirmed H5 and H6, demonstrating that the relationship between Anthropomorphism and Purchase Intention is partially mediated by both Trust (indirect effect = 0.2231) and Perceived Usefulness (indirect effect = 0.2961). The presence of significant direct effects (c') across both pathways points to partial mediation, underscoring that Anthropomorphism exerts influence on Purchase Intention both directly and indirectly. Taken together, these results support the dual-path mechanism proposed in this study, which incorporates both cognitive (functionality based) and affective (trust based) pathways to explain users' behaviors towards AI mediated systems (Li et al., 2023).

5. Discussion:

The present study analyzed the effect of Anthropomorphism on users' Purchase Intention in AI-enabled chatbots, examining the mediating effects of Trust and Purchase Usefulness. The findings provide several valuable insights with both theoretical and practical implications, regarding the role of anthropomorphic design in AI interfaces in shaping user behavior in online service settings.

First, the results demonstrate that anthropomorphism significantly increases both Trust and Perceived Usefulness, providing support for H1 and H2. A higher perception of human-likeness in chatbots was associated with increased levels of user trust and greater perceived usefulness in facilitating task completion. These findings are consistent with prior research indicating that anthropomorphic cues such as interaction style, perceived social presence and perceived intentionality can foster affective engagement and support users' cognitive evaluations of technology (Cornelius & Leidner, 2021). In particular, the positive effect of anthropomorphism on Turst ($a = 0.3353$) indicates that even moderate perceptions of human-likeness are sufficient to increase confidence in the reliability of AI systems. Similarly, the effect on Perceived usefulness ($a = 0.3828$) highlights that users perceive human-like

engagements not solely as superficial or visual features but as indicators of functional competence (Reuter et al., 2025).

Secondly, the mediation analysis demonstrates the dual mechanisms through which anthropomorphism drives Purchase Intention. Both Trust and Perceived Usefulness were found to serve as partial mediators in the relationship between human-likeness and behavioral intention, confirming H5 and H6. For Trust, the indirect effect ($a \times b$) was 0.2231, whereas for Perceived Usefulness, it was slightly higher at 0.2961. The observed difference suggests that cognitive evaluations have a marginally greater influence than affective trust on user behavioral intention. The partial mediation observed in both cases indicates that anthropomorphism not only influences Purchase Intention indirectly via Trust and Perceived Usefulness but also directly, highlighting the intrinsic motivational influence of human-like features. Bootstrapped confidence intervals further validated the statistical significance and robustness of these mediation effects, confirming the reliability of observed pathways (Blut et al., 2021).

These mediation patterns are further supported by the pairwise correlations among the variables. Anthropomorphism showed moderate correlations with Trust ($r = 0.3536$) and Perceived Usefulness ($r = 0.4067$), while Trust and perceived Usefulness were strongly correlated with Purchase Intention ($r = 0.6968$ and $r = 0.6334$, respectively), supporting H3 and H4. The findings highlight the notion that human-like features foster elicit both affective and cognitive responses, which mediate the effect on user behavior. The moderate correlation ($r = 0.4202$) between Anthropomorphism and Purchase Intention underscores that human-likeness has its strongest effect when accompanied by perceived functional value and user trust (Blut et al., 2021).

From a theoretical perspective, these results not only support but also expand Technology Acceptance Model (TAM) by emphasizing on how anthropomorphic cues play an important role in influencing both perceived usefulness and behavioral intention (Cornelius & Leidner, 2021). Traditionally, the Technology Acceptance Model (TAM) highlights the role of cognitive evaluations, including perceived usefulness and perceived ease of use, as key predictors of technology adoption (Venkatesh et al., 2012). The present findings indicate that affective responses, such

as trust induced by anthropomorphic features operate alongside cognitive evaluations, eliciting the importance of incorporating emotional engagement into models of AI acceptance ([Choung et al., 2022](#)). Furthermore, dual-path mediation emphasizes on the integrated role of both affective and cognitive pathways, demonstrating that understanding user adoption requires a multi-dimensional perspective ([Zhai et al., 2025](#)).

The results carry practical relevance for designers and organizations implementing AI chatbots. The findings suggest that emphasizing human-like characteristics such as tailored responses, natural conversational style and cues of intentionality can promote greater user trust. At the same time, ensuring that chatbots with functional utility and operational efficiency is critical for enhancing user engagement and driving Purchase Intention ([Martínez et al., 2024](#)). Practically, this suggests a balanced design approach, where anthropomorphic features complement rather than substitute for functional efficiency. Human-like chatbots that are unreliable or ineffective may not convert user engagement into desired behavioral outcomes, while functionally competent chatbots without social cues may miss opportunities to cultivate trust and emotional connection ([Fang et al., 2025](#)).

Interestingly, the results further reveal that the mediating effects operate in a hierarchical manner. Both Trust and Perceived Usefulness partially mediate the influence of Anthropomorphism; however, the slightly stronger indirect effect of Perceived Usefulness implies that users tend to prioritize functional benefits over affective responses when determining purchase or engagement intentions. This finding aligns with previous studies indicating that users often prioritize utilitarian factors over affective cues when assessing AI systems, particularly in contexts where efficient task completion is essential ([Yang et al., 2022](#)). Despite the prominence of functional considerations, Trust remains an important driver of user behavior, especially in settings involving elevated uncertainty or risk ([Afroogh et al., 2024](#)).

Another notable contribution of this study is the rigor and robustness of its methodology. The application of composite scores, rigorously calculating variance and covariance, verifying reliability through Cronbach's alpha, and combining classical with bootstrapped mediation estimates, ensures the stability of the

constructs and reliability of mediation pathways. All Cronbach's alpha values exceeded 0.79, indicating strong internal consistency, and both correlations and mediation pathways are aligned with theoretical expectations. This methodological rigor strengthens confidence in the findings and their relevance to practical AI deployment contexts (Obenza et al., 2024).

Overall, the results provide strong empirical support that anthropomorphic cues enhance Purchase Intention through Trust and Perceived Usefulness, contributing to a nuanced understanding of user interactions with AI chatbots. By accounting for both affective and cognitive pathways, this study advances theoretical models of AI acceptance while providing actionable insights for designers seeking to improve user engagement and behavioral outcomes. The dual mediation results highlight the need for chatbots to combine human-like characteristics with functional efficiency, emphasizing that the synergy between affective and utilitarian features drives user behavior in digital service environments.

6. Conclusion:

In summary, this study provides strong findings that Anthropomorphism positively shapes Purchase Intention via both Trust and Perceived Usefulness. Users who perceive AI chatbots as human-like are more likely to trust them and acknowledge their functional utility, which, in turn, increases their willingness to engage with and make purchases from online services. Both mediators partially account for the relationship, underscoring the dual cognitive-affective mechanism through which anthropomorphism influences user behavior.

The findings advance theoretical understanding by incorporating both emotional and functional pathways into models of AI adoption, illustrating that user engagement is inherently multi-dimensional. From a practical perspective, the study emphasizes that effective AI chatbot design necessitates a careful balance between human-like interaction qualities and functional competence. Organizations aiming to maximize adoption and desired behavioral outcomes should prioritize both emotional engagement and task efficiency.

This study indicates that anthropomorphism serves as a strategic tool, rather than just an aesthetic enhancement, by strengthening Trust, Perceived Usefulness and behavioral intentions in AI-driven service contexts.

Additionally, the research provides a rigorous methodological approach, encompassing composite scores, reliability checks, and mediation analysis, which enables replication and extension in varied technological and cultural settings.

In conclusion, designing AI chatbots that combine human-like characteristics with functional effectiveness constitutes a crucial strategy for enhancing user satisfaction, fostering trust and driving Purchase Intentions. These findings carry significant implications for AI developers, service providers and researchers interested in understanding and optimizing human-AI interaction. By integrating theoretical rigor with practical relevance, this study offers a comprehensive understanding of how anthropomorphism influences user behavior and guides strategies for AI adoption in contemporary digital services.

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