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The Role of Enjoyment in Chatbot Usage for Customer Service

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Abstract

Integrating chatbots into customer service has become increasingly important as organisations seek to deliver efficient and engaging interactions. While prior studies have largely emphasised functional aspects, the role of emotional factors, particularly enjoyment, remains underexplored. This study examines the mediating role of enjoyment in the relationship between perceived usefulness, perceived ease of use, anthropomorphism, and chatbot usage. Data were collected from 368 Indonesian consumers with prior chatbot experience and analyzed using Structural Equation Modeling (SEM) with AMOS 26. The results show that perceived ease of use significantly enhances enjoyment, which in turn influences chatbot usage. Perceived usefulness directly affects chatbot usage but does not significantly influence enjoyment, while anthropomorphism has no significant effect on either enjoyment or usage. These findings suggest that emotional engagement in customer service is primarily driven by interaction simlicity rather than human-like chattbot characteristics, highlighting the limited role of anthropomorphism in efficiency-oriented service contexts.

Keywords: *Chatbot Usage, Enjoyment, Technology Acceptance Model, Anthropomorphism, Customer Service*

Abstrak

Integrasi chatbot dalam layanan pelanggan menjadi semakin penting seiring dengan upaya organisasi untuk menghadirkan interaksi yang efisien dan menarik. Meskipun penelitian sebelumnya sebagian besar menekankan aspek fungsional, peran faktor emosional, khususnya kesenangan, masih relatif kurang dieksplorasi. Penelitian ini mengkaji peran mediasi kesenangan dalam hubungan antara persepsi kegunaan, persepsi kemudahan penggunaan, antropomorfisme, dan penggunaan chatbot. Data dikumpulkan dari 368 konsumen Indonesia yang memiliki pengalaman menggunakan chatbot dan dianalisis menggunakan Structural Equation Modeling (SEM) dengan AMOS 26. Hasil penelitian menunjukkan bahwa persepsi kemudahan penggunaan secara signifikan meningkatkan kesenangan, yang pada gilirannya mempengaruhi penggunaan chatbot. Persepsi kegunaan berpengaruh langsung terhadap penggunaan chatbot, namun tidak berpengaruh signifikan terhadap kesenangan, sedangkan antropomorfisme tidak berpengaruh signifikan baik terhadap kesenangan maupun penggunaan chatbot. Temuan ini menunjukkan bahwa keterlibatan emosional dalam layanan pelanggan terutama didorong oleh kesederhanaan interaksi dibandingkan karakteristik chatbot yang menyerupai manusia, serta menegaskan keterbatasan peran antropomorfisme dalam konteks layanan yang berorientasi pada efisiensi.

Kata Kunci: Penggunaan Chatbot, Kesenangan, Technology Acceptance Model, Antropomorfisme, Layanan Pelanggan

INTRODUCTION

Chatbots are playing an increasingly important role in various business scenarios, as they are becoming a preferred tool due to their ability to enhance customer engagement while providing efficient and personalized communication services. Chatbots are computer programs that perform tasks for customers and humans; in particular, an AI-powered chatbot can simulate a conversation with one or more people. They offer utility in terms of responsiveness to information-seeking queries, immediacy of response, and transactional convenience, as well as serving a social-emotional function that can help build an emotional bond with customers (Araujo, 2018; Følstad & Brandtzaeg, 2020; Wirtz et al., 2018). Furthermore, chatbots can also deliver engaging user experiences, which are increasingly acknowledged as vital in customer-technology interactions.

Despite the rapid adoption, not all chatbots interactions lead to positive user experiences. In practice, many users still encounter limitations such as slow responses, lack of contextual understanding, and difficulty in answering complex questions. This indicates that while chatbots are efficient, they do not always provide satisfying or enjoyable interaction experiences. Thus, understanding user experience in chatbot-based customer service remains an important issue, particularly in identifying factors that contribute to more engaging interactions.

With the proliferation of chatbots, users view them not just as another technological tool but as part of a broader service experience. As technology becomes more embedded in daily life, emotional factors such as enjoyment begin to influence perceptions and interactions. Enjoyment, as a psychological variable, plays a key role in shaping user perceptions and behavioral intentions toward chatbots. Empirical studies show that when chatbot interactions are enjoyable, users are more likely to continue using the service and develop favorable attitudes toward the associated brand or organization (Chen, Le, & Florence, 2021; Cheng & Jiang, 2020). Conversely, interactions that lack enjoyment, typically characterized by monotony or frustration, can diminish user satisfaction and hinder the long-term adoption of chatbot technologies.

Recent chatbot studies, however, have tended to emphasize functional and performance-related aspects, such as efficiency, usefulness, and service quality, over emotional experience (Adam, Wessel, & Benlian, 2021; Gnewuch, Morana, & Maedche, 2017). The technical qualities of chatbots, including precision in responding to messages, speed in handling queries, and algorithmic complexity, have been thoroughly studied. However, comparatively little is known about the affective dimension, especially concerning the enjoyment of chatbot-based customer interactions (Følstad & Brandtzaeg, 2020). This gap suggests an opportunity to investigate further what might trigger and result from enjoyment in chatbot use.

From a theoretical standpoint, widely used models such as Technology Acceptance Model (TAM) primarily emphasize cognitive evaluations, including perceived usefulness and perceived ease of use, but providing limited explanation of emotional processes in human-AI interaction. Additionally, empirical findings regarding the role of anthropomorphism and emotional factors in chatbot usage remain inconsistent, with some studies highlighting their positive effects while others show limited or context-dependent influence (Li et al., 2023; van der Goot et al., 2024).

Moreover, this raises the question of whether enjoyment fulfills a mediating function between the user's behavioral effects of chatbot features, suggesting that enjoyment could be a key mechanism through which chatbot features influence user behavior (Amelia, Mathies, & Patterson, 2022). Recent work indicates that chatbot usage is shaped by interaction quality, trust and communication style, suggesting that cognitive and emotional mechanisms should be examined together (Hsu & Lin, 2023; Murtaza et al., 2024). Therefore, in this study, enjoyment is positioned not merely as an outcome but as a mediating mechanism that helps explain how chatbot characteristics translate into user behavior.

To address these points, this study investigates the following research questions: (1) What factors influence user enjoyment of chatbots? (2) How does enjoyment influence customer decisions and behavioral tendencies when using chatbots? (3) Does enjoyment mediate the relationship between chatbot characteristics and chatbot usage? Answering these questions is crucial for enhancing user engagement and maximizing the benefit of AI (Ibrahim et al., 2025).

This research aims to contribute both theoretically and practically to marketing and service management by examining the mediating effect of enjoyment in chatbot interactions. By positioning enjoyment as a mediator, this study offers a conceptual contribution that goes beyond simply validating

established functional models of technology use. Theoretically, it enriches the discussion of user experience in AI-mediated interfaces. Practically, it provides actionable insights for organizations in designing functionally capable and emotionally engaging chatbots, which can lead to increased user adoption and stronger customer relationships.

LITERATURE REVIEW

Grand Theory: Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) (Davis, 1989) provides a widely recognized theoretical framework for explaining user adoption of information technologies. TAM proposes that individuals' acceptance of a technological system is primarily determined by two perceptions: perceived usefulness (PU) and perceived ease of use (PEOU). PU refers to the extent to which using a system enhances job performance, whereas PEOU reflects the degree to which a system is perceived as effortless.

Numerous studies have confirmed that PU and PEOU are key predictors of technology adoption across various digital platforms (Goli et al., 2023; Ramli & Rahmawati, 2020). However, as digital technologies become increasingly interactive and human-like, scholars argue that functional evaluations alone are insufficient. Extensions such as UTAUT (Venkatesh et al., 2003) recognize the importance of social context and affective responses. In chatbot research, recent adaptations of TAM incorporate enjoyment (Chung et al., 2020), trust (Lappeman et al., 2023), and anthropomorphism (Blut et al., 2021), suggesting that users evaluate not only what the chatbot does but also how it makes them feel (Amelia et al., 2022; Amelia et al., 2024; Goli et al., 2023).

Although anthropomorphism and enjoyment are not part of the original TAM constructs, previous studies have extended TAM by incorporating affective and design-related variables to better explain user interaction with AI-based systems (Blut & Wang, 2020; Chung et al., 2020; Goli et al., 2023). In this study, anthropomorphism is conceptualised as a design characteristic that shapes users' perceptions and interaction experience, while enjoyment represents an affective response that links cognitive evaluations (PU and PEOU) to behavioral outcomes. Hence, this research adopts an extended TAM perspective to capture both utilitarian and experiential dimensions of chatbot usage.

Chatbot Usage

Chatbots are artificial intelligence systems designed to simulate human conversations and are widely used in digital service encounters, ranging from online banking to government platforms (Følstad & Brandtzaeg, 2020; Wirtz et al., 2018). In customer service, chatbots function as primary contact points that assist customers by answering questions, resolving problems, and completing transactions without human intervention (Adam et al., 2021).

Advances in natural language processing have enabled chatbots to communicate in more natural and intuitive ways, allowing them to deliver more interactive service experiences (Tsai et al., 2021). As a result, chatbot usage has become an important indicator of technology acceptance in digital service environments. When users perceive chatbot interactions as helpful and engaging, they are more likely to continue using these systems as part of their service experience (Belanche et al., 2020; Chen et al., 2021; Cheng & Jiang, 2020). A recent study also shows that chatbot usage intention in service encounters is influenced by communication style, trust, and the perceived fit between chatbot behavior and service context (Murtaza et al., 2024).

Perceived Usefulness

Perceived usefulness refers to the degree to which individuals believe that using a technological system enhances their task performance (Davis, 1989). In chatbot contexts, perceived usefulness is often associated with accurate information delivery, quick problem resolution, and convenient access to services (Cheng & Jiang, 2020).

Although perceived usefulness primarily represents a cognitive evaluation, it may also contribute to positive emotional experiences during interaction. When users feel that a chatbot effectively helps them accomplish their goals, they may experience greater satisfaction and reduced frustration during the interaction (Amelia et al., 2022).

Perceived Ease of Use

Perceived ease of use reflects the extent to which interacting with a chatbot requires minimal effort (Davis, 1989). Systems that are easy to understand and operate reduce cognitive effort and improve user experience. Previous studies suggest that user-friendly technologies increase intrinsic motivation and engagement during interaction (Jeyaraj et al., 2023; Lowry et al., 2012). In chatbot interactions, an intuitive interface and clear communication can make users feel more comfortable when interacting with AI-based services.

Anthropomorphism

Anthropomorphism refers to the attribution of human-like characteristics to non-human entities (Blut et al., 2021). In chatbot design, anthropomorphic elements may include conversational tone, humor, emojis, or avatars that mimic human interaction styles. Such features can enhance perceptions of warmth, social presence, and interaction quality (Castelo et al., 2023; Chattaraman et al., 2019). However, the effectiveness of anthropomorphic cues may depend on contextual factors and user expectations. In some cases, users may prioritize functional efficiency rather than human-like features when evaluating chatbot services (Adam et al., 2021; Hariyanto & Rachmawati, 2022). Recent research also indicates that users' responses to anthropomorphic or disclosed chatbot identities vary depending on trust, authenticity, and service setting, meaning that anthropomorphism may not uniformly enhance customer outcomes (van der Goot et al., 2024).

Enjoyment

Enjoyment refers to the intrinsic pleasure derived from interacting with a technological system (Van der Heijden, 2004). In digital service interactions, enjoyment represents the positive emotional experience that users feel when engaging with a technology. Prior research suggests that enjoyable interactions can strengthen user engagement and increase the likelihood of continued system usage (Goli et al., 2023; Lowry et al., 2012). In chatbot services, enjoyment may arise when interactions are smooth, responsive, and engaging.

HYPOTHESES DEVELOPMENT

Perceived usefulness in chatbot contexts is associated with accurate information, quick problem resolution, and seamless transactions (Cheng & Jiang, 2020). When users perceive that a chatbot effectively helps them accomplish their tasks, the interaction becomes more satisfying and may generate positive emotional responses. Prior research suggests that technologies perceived as useful can enhance users' interaction experiences and contribute to positive affective reactions (Amelia et al., 2022; Chung et al., 2020; Goli et al., 2023; Lowry et al., 2012). In AI-based services, perceived usefulness may also indirectly shape emotional responses through improved interaction outcomes. Therefore, perceived usefulness is expected to positively influence enjoyment.

H1: Perceived usefulness positively influences enjoyment in chatbot interactions.

Perceived ease of use reflects the extent to which interacting with a chatbot requires minimal effort (Davis, 1989). Ease of use reduces cognitive discomfort and enhances user experience (Jeyaraj et al., 2023). Prior research indicates that user-friendly systems increase intrinsic pleasure and engagement (Goli et al., 2023; Lowry et al., 2012; Van der Heijden, 2004). In AI-powered financial services, PU and PEOU jointly influence trust and loyalty, though utilitarian value alone may not generate emotional connection (Choung, David, & Ross, 2023). In addition, simple and intuitive interactions have been found to enhance positive emotional experiences in digital service environments (Cheng & Jiang, 2020; Chung et al., 2020). Therefore, perceived ease of use is expected to positively influence enjoyment.

H2: Perceived ease of use positively influences enjoyment in chatbot interactions.

Anthropomorphism refers to attributing human-like characteristics to non-human entities (Blut et al., 2021). In chatbot design, this includes conversational tone/styles, humor, emojis, and avatars that foster warmth and trust (Castelo et al., 2023). While human-like features can enhance engagement and service perception (Amelia & Sartika, 2025; Chattaraman et al., 2019; Chung et al., 2020), their effectiveness depends on contextual fit and user expectations (Adam et al., 2021; Gnewuch et al., 2017). In Indonesia, users tend to prioritize functional efficiency over emotional or human-like elements (Hariyanto & Rachmawati, 2022). Nevertheless, evidence generally supports the positive emotional

impact of anthropomorphic cues. Therefore, anthropomorphism is expected to positively influence enjoyment.

H3: Anthropomorphism positively influences enjoyment in chatbot interactions.

Regarding chatbot usage, perceived usefulness has long been regarded as one of the most important predictors of technology usage. In chatbot services, users are more likely to continue using a chatbot when they perceive it as effective in solving problems and facilitating service transactions (Chen et al., 2021; Cheng & Jiang, 2020; Goli et al., 2023). Prior studies across various digital services consistently show that perceived usefulness significantly influences behavioral intention and actual system usage (Davis, 1989; Venkatesh et al., 2003). Therefore, perceived usefulness is expected to positively influence chatbot usage.

H4: Perceived usefulness positively influences chatbot usage.

Additionally, perceived ease of use may also shape chatbot usage because technologies that are simple and intuitive are generally more acceptable to users. When a chatbot is easy to understand and operate, users may be more willing to use it repeatedly in service interactions (Cheng & Jiang, 2020; Davis, 1989; Jeyaraj et al., 2023). Previous research also indicates that ease of use contributes to behavioral intention both directly and indirectly through other mediating variables (Lowry et al., 2012; Venkatesh et al., 2003). Therefore, perceived ease of use is expected to positively influence chatbot usage.

H5: Perceived ease of use positively influences chatbot usage.

Anthropomorphic chatbot features may affect usage by making the interaction more socially engaging and human-like. Prior research suggests that such features can increase user involvement, although the effect may vary by context (Blut et al., 2021; Castelo et al., 2023; Chung et al., 2020). Some studies also indicate that anthropomorphic design can enhance user trust and interaction quality, which may influence usage behavior (Adam et al., 2021; Chattaraman et al., 2019). Therefore, anthropomorphism is expected to positively influence chatbot usage.

H6: Anthropomorphism positively influences chatbot usage.

Enjoyment has been widely recognized as an important determinant of technology usage, especially in interactive digital settings. Enjoyable interactions can enhance engagement and encourage users to continue using a system (Goli et al., 2023; Lowry et al., 2012; Van der Heijden, 2004). Prior research in AI and chatbot contexts also shows that positive emotional experiences significantly influence continued usage intentions (Cheng et al., 2022; Cheng & Jiang, 2020; Chung et al., 2020). Therefore, enjoyment is expected to positively influence chatbot usage.

H7: Enjoyment positively influences chatbot usage.

Recent research highlights the mediating role of enjoyment in linking utilitarian and design attributes to behavioral outcomes (Goli et al., 2023; Li et al., 2023; Lowry et al., 2012). When chatbot interactions are both functional and emotionally satisfying, users are more likely to adopt and continue using the service (Amelia et al., 2022; Cheng & Jiang, 2020; Goli et al., 2023). Conversely, interactions perceived as mechanical reduce engagement (Følstad & Brandtzaeg, 2020). In addition, affective responses have been shown to act as key mechanisms that translate system characteristics into behavioral intentions in interactive technologies (Van der Heijden, 2004). Accordingly, enjoyment is expected to mediate the relationships between perceived usefulness, perceived ease of use, and anthropomorphism on chatbot usage.

H8: Enjoyment mediates the relationship between perceived usefulness and chatbot usage.
H9: Enjoyment mediates the relationship between perceived ease of use and chatbot usage.
H10: Enjoyment mediates the relationship between anthropomorphism and chatbot usage.

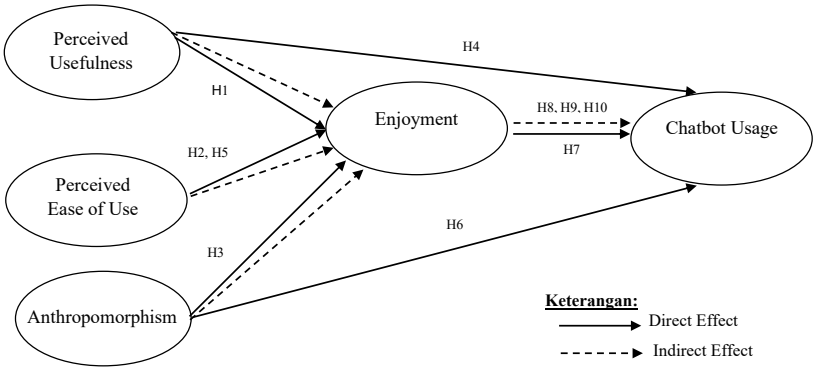

Figure 1. Research Model

RESEARCH METHOD

Research Design

This study used a quantitative approach, employing a survey-based cross-sectional design. The primary goal was to empirically investigate the proposed relationship between perceived usefulness, perceived ease of use, anthropomorphism, enjoyment, and chatbot usage. Given the complexity and multiple interconnections between these constructs, Structural Equation Modeling (SEM) was chosen as the analytic method. SEM allows researchers to simultaneously examine multiple relationships among latent variables and effectively test mediation hypotheses within a cohesive analytical framework (Hair et al., 2014).

Population and Sampling

The target respondents for this study consisted of Indonesian consumers who have recently interacted with chatbots in customer service contexts. More specifically, the population refers to users who have used chatbot-based services in digital customer service environments such as banking, e-commerce, telecommunications, or other online service platforms. Given the broad nature of the potential respondent base, purposive sampling was selected as the most practical method. This method allowed us to identify and target respondents who specifically met our inclusion criteria, namely, individuals who had at least one chatbot interaction experience within the last six months.

The six-month window was deliberately chosen not only to minimise memory bias but also to ensure that respondents' experiences reflect relatively recent chatbot technologies and service practices. Considering the rapid development of AI-based service systems, restricting the interaction period to the last six months helps capture user experiences that remain relevant to current chatbot capabilities.

Data collection was conducted through the Indonesian online survey platform Jakpat, which provides access to a nationwide respondent panel. While online panels may introduce certain biases, such as a higher representation of digitally active users, screening questions were applied to ensure that only respondents who had actual chatbot interaction experience participated in the survey. In addition, the platform allows responses from various regions in Indonesia, helping reduce the likelihood that the sample would be concentrated in a single geographic or demographic group.

A total of 373 survey responses were obtained during the data collection phase. To ensure the integrity and quality of the dataset, a comprehensive data process was conducted. This process involved several steps, including the removal of responses with failing attention questions. As a result, 368 responses were considered robust and eligible for further analysis. This systematic approach ensured that the analytical results would be based on a reliable and credible dataset. This sample size is sufficient, meeting the recommended guidelines for conducting SEM analysis, which suggest a minimum of 200 respondents to ensure adequate statistical power and robustness of findings (Kline, 2023).

Measurement and Data Collection

The questionnaire consisted of scales adapted from previously validated sources to ensure accuracy and theoretical consistency. Specifically, perceived usefulness and perceived ease of use scales were adapted from Davis (1989) foundational TAM constructs, which are widely acknowledged for their validity across various technological contexts. Anthropomorphism was measured using scales based on Blut et al. (2021). Enjoyment, a mediator in this study, was measured using scales from Van der Heijden (2004) and Lowry et al. (2012). Meanwhile, chatbot usage was measured through scales adapted from recent chatbot studies by Cheng and Jiang (2020) and Chung et al. (2020), ensuring alignment with our study's context.

All questionnaire items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To enhance measurement transparency, each construct was operationalized into specific indicators and measurement items as presented in Table 1.

Table 1. Measurement of Constructs

Variable	Definition	Indicator	Source
Perceived Usefulness	The degree to which chatbot improves efficiency and effectiveness of customer service tasks	Efficiency, Daily usefulness, Time saving, Service efficiency	Davis (1989)
Perceived Ease of Use	The degree to which chatbot interaction is effortless and easy to learn	Cognitive effort, ease of use, Learnability	Davis (1989)
Anthropomorphism	The extent to which chatbot is perceived as human-like in interaction	Human-like response, Realism, Natural interaction	Blut et al. (2021)
Enjoyment	The degree of pleasure experienced during chatbot interaction	Fun, Pleasant experience, Excitement	Lowry et al. (2012); Van der Heijden (2004)
Chatbot Usage	The intention to continue using chatbot services	Continuance intention, Preference, Recommendation	Cheng and Jiang (2020); Chung et al. (2020)

Source: Research Data, 2025

The questionnaire was originally developed in English and translated into Bahasa Indonesia using a back-translation procedure to ensure semantic equivalence. Two independent bilingual experts were involved in the translation process, and discrepancies were resolved through discussion. The draft questionnaire also underwent content validation through expert review by two marketing scholars to ensure conceptual clarity and appropriateness. Prior to the main survey, a pilot test was conducted with 30 respondents to evaluate clarity, wording, and item relevance. Based on the pilot results, minor revisions were made, particularly simplifying ambiguous phrasing and improving readability of several items, while maintaining the original construct meaning.

Participants in this study were consumers who had interacted with chatbots and were recruited via the Indonesian-based platform, Jakpat. This platform was selected because it provides access to a large and diverse panel of Indonesian respondents, enabling efficient data collection across different demographic and geographic backgrounds**.** We used two screening questions to determine whether respondents had interacted with the chatbot, ensuring their eligibility. Prior to participation, all respondents were fully briefed on the study's objectives and the measures taken to ensure data confidentiality. Informed consent was obtained from each participant before they proceeded with the survey.

Data Analysis

The analytical approach consisted of two primary stages. Initially, we validated the measurement model through confirmatory factor analysis (CFA), followed by an assessment of the structural relationships and mediating hypotheses using Structural Equation Modeling (SEM) with AMOS version 26.

Firstly, CFA was conducted to ensure the measurement model exhibited satisfactory reliability and validity. Internal consistency was evaluated using Cronbach's alpha and composite reliability (CR), with values of 0.70 or greater considered acceptable (Hair et al., 2014). Convergent validity was established by confirming that Average Variance Extracted (AVE) values exceeded 0.50. Discriminant validity was assessed by ensuring that the square root of each construct's AVE surpassed the correlations between constructs, thus confirming distinctiveness among the variables. Any items demonstrating low factor loadings (below 0.60) were either revised or removed to improve model quality and fit.

The standardized factor loadings for all measurement items were also examined to ensure that each indicator significantly contributed to its respective construct. As presented in Table 2, all items demonstrated standardized loading values above the recommended threshold of 0.60, indicating that the indicators adequately represented their respective latent constructs.

Table 2. Standardized Loading Factor

Construct	Item	Loading
Perceived Usefulness	X11	0.880
	X12	0.856
	X13	0.761
	X14	0.778
Perceived Ease of Use	X21	0.748
	X22	0.836
	X23	0.952
Anthropomorphism	X31	0.853
	X32	0.872
	X33	0.786
Enjoyment	Z11	0.906
	Z12	0.957
	Z13	0.922
Chatbot Usage	Y11	0.937
	Y12	0.894
	Y13	0.716

Source: Research Data, 2025

After establishing a reliable measurement model, we proceeded to analyze the hypothesized paths and mediation effects. Model fit was evaluated using several indices, including the chi-square/ratio, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Given the sensitivity of the chi-square statistic to sample size, model evaluation was not solely based on chi-square values but also relied on multiple fit indices, including incremental and absolute fit measures, to provide a more comprehensive assessment of model adequacy. Thresholds for a good fit were set at CFI and TLI values 0.90 or higher, RMSEA and SRMR values of 0.08 or lower, and a chi-square/df ratio of less than 3 (Collier, 2020; Kline, 2023).

To assess mediation effects with greater accuracy, we utilized bootstrapping with 2,000 resamples, following the recommendations of Hair et al. (2017). This approach enabled the calculation of bias-corrected confidence intervals for indirect effects, thereby strengthening the credibility of mediation analysis.

RESULTS

Respondent Characteristics

A total of 373 responses were collected for this study. However, five responses were excluded due to failure in answering attention-check questions, resulting in 368 valid responses. The gender distribution consisted of 158 males (42.9%) and 210 females (57.1%). The age distribution showed that 19.0% of respondents were aged 18–24 years, 31.0% were aged 25–30, 24.2% were aged 31–35, and 12.2% were aged 36–40, with smaller proportions in older age groups. The largest segment was 25–30 years, followed by 31–35 and 18–24.

The demographic profile indicates that most respondents are within the productive age group (25–35 years), suggesting that the findings primarily reflect the perspectives of digitally active users who are familiar with chatbot services. Therefore, the results may be more representative of technology-savvy consumers.

Table 3. Respondent Demographics

No	Description	Frequency	Percentage
	Gender		
	a. Male	158	42.9%
	b. Female	210	57.1%
	2. Age Groups		
	a. 18–24	70	19.0%
	b. 25–30	114	31.0%
	c. 31–35	89	24.2%
	d. 36–40	45	12.2%
	e. 41–45	25	6.8%
	f. 46–50	12	3.3%
	g. 51–55	11	3.0%
	h. > 55	2	0.5%

Source: Research Data, 2025

As the survey was conducted online, responses were obtained from nearly all provinces in Indonesia. The five provinces with the highest number of respondents were DKI Jakarta, West Java, Central Java, East Java, and North Sumatra.

Table 4. Geographic Distribution of Respondents

Province	Number of Respondents	Percentage
DKI Jakarta	110	29.9%
West Java	90	24.5%
Central Java	46	12.5%
East Java	42	11.4%
North Sumatera	23	6.3%
Others	57	15.5%

Source: Research Data, 2025

Experiences with chatbots

Regarding usage frequency, 54.6% of respondents had used a chatbot within the past month. Another 33.4% reported using a chatbot within the past one to three months, while 12% had not used one for more than three months. This indicates that most respondents had recent experience interacting with chatbots.

Purposes for using chatbots

Most respondents (62%) reported using chatbots primarily to solve problems. Another 28% used chatbots to ask questions, while 10% indicated other purposes such as experimentation. Therefore, problem-solving was the most frequently reported purpose of chatbot use.

Normality Analysis

Normality was assessed using skewness and kurtosis values. Following (Collier, 2020), skewness values within ±2 and kurtosis values within ±10 indicate acceptable normality. Nearly all indicators satisfied these criteria. One item (Z12) slightly exceeded the skewness threshold. However, considering the large sample size and the use of robust estimation (Bootstrap Maximum Likelihood), this deviation was deemed acceptable. Therefore, no data transformation was applied.

Table 5. Result of Normality Analysis

Variable	Skewness	Kurtosis
Perceived Usefulness (X1):		
X11	-1.473	4.076
X12	-1.743	4.048
X13	-1.369	2.358
X14	-1.509	3.786
Perceived Ease of Use (X2):		
X21	-1.385	2.474
X22	-1.379	2.103
X23	-1.388	2.625
Anthropomorphism (X3):		
X31	-1.761	6.608
X32	-1.785	4.491
X33	-1.778	5.131
Enjoyment (Z):		
Z11	-1.769	4.508
Z12	-2.051	4.476
Z13	-1.844	4.823
Chatbot Usage (Y):		
Y11	-1.493	1.512
Y12	-1.710	2.601
Y13	-1.644	2.520

Source: Research Data, 2025

Convergent and Discriminant Validity Analysis

Convergent validity was evaluated using Composite Reliability (CR) and Average Variance Extracted (AVE) (Bagozzi & Yi, 1988; Fornell & Larcker, 1981).

Table 6. Result of Validity Analysis

Latent Variable	CR	AVE
Perceived Usefulness (X1)	0.891	0.673
Perceived Ease of Use (X2)	0.885	0.722
Anthropomorphism (X3)	0.876	0.702
Enjoyment (Z)	0.949	0.862
Chatbot Usage (Y)	0.889	0.730

Source: Research Data, 2025

All latent variables showed CR values above 0.6 and AVE above 0.5, indicating satisfactory reliability and validity. The enjoyment construct demonstrated the highest convergent validity (CR = 0.949, AVE = 0.862), while all other constructs also met the required criteria, confirming the suitability of the measurement model for further analysis.

Model Fit Assessment

To ensure that the proposed structural model fits the empirical data, goodness-of-fit tests were performed using AMOS. Key indices included the Chi-square, CMIN/DF, RMSEA, GFI, AGFI, TLI, and CFI, all of which met or exceeded the recommended thresholds (Mueller & Hancock, 2018). For example, Chi-square=107.340, probability=0.09, GFI=0.965, AGFI=0.947, TLI=0.994, CFI=0.995, CMIN/DF=1.206, and RMSEA=0.024. Overall, the structural model demonstrated an acceptable fit.

Table 7. Model Fit Assessment Result

Goodness of Fit Index	Cut-Off Value	Analysis Result	Model Assessment
X^2 - Chi-Square	Expected to be small	107.340	Marginal Fit
Probability	≥ 0.05	0.09	Good Fit
GFI	≥ 0.90	0.965	Good Fit
AGFI	≥ 0.90	0.947	Good Fit
TLI	≥ 0.95	0.994	Good Fit
CFI	≥ 0.95	0.995	Good Fit
CMIN/DF	≤ 2	1.206	Good Fit
RMSEA	≤ 0.08	0.024	Good Fit

Source: Research Data, 2025

Hypothesis Testing

The hypothesis testing was conducted by analyzing the standardized path coefficients and their statistical significance using Structural Equation Modeling (SEM) with AMOS version 26. This procedure aimed to determine whether the data empirically supported the proposed relationships among variables. The hypothesis testing results are summarized in Table 6. H2, H4, and H7 were supported, whereas H1, H3, H5, and H6 were not supported. The magnitude and direction of the effects are presented in Table 8.

Table 8. Direct Effect Hypotheses Results

Hypothesis	Standardised estimate	*t*- Value	p- value	Result
Direct Effect				
H1: Perceived usefulness → enjoyment	0.045	0.808	0.419	Rejected
H2: Perceived ease of use → enjoyment	0.178	3.195	0.001	Accepted
H3: Anthropomorphism → enjoyment	0.034	0.599	0.549	Rejected
H4: Perceived usefulness → Chatbot usage	0.278	4.945	***	Accepted
H5: Perceived ease of use → Chatbot usage	0.017	0.310	0.757	Rejected
H6: Anthropomorphism → Chatbot usage	0.006	0.109	0.913	Rejected
H7: Enjoyment →Chatbot usage	0.139	2.551	0.011	Accepted

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Source: Research Data, 2025

H1, which tested the influence of perceived usefulness on enjoyment, was not statistically significant (β = 0.045, p = 0.419), and was therefore rejected. In contrast, perceived ease of use had a significant influence on enjoyment (β = 0.178, p = 0.001), supporting H2. H3, which examined the effect of anthropomorphism on enjoyment, and was also not supported (β = 0.034, p = 0.549).

Regarding the direct effects on chatbot usage, perceived usefulness was found to have a significant positive effect (β = 0.278, p < 0.001), supporting Hypothesis 4. However, perceived ease of use (β = 0.017, p = 0.757) and anthropomorphism (β = 0.006, p = 0.913) did not significantly influence chatbot usage, resulting in the rejection of H5 and H6, respectively. Finally, enjoyment had a significant effect on chatbot usage (β = 0.139, p = 0.011), thus H7 was accepted.

Mediation testing was conducted using bootstrapping with 2,000 resamples and 95% bias-corrected confidence intervals. This approach enhances the accuracy of indirect path estimations and reduces bias in mediation testing (Collier, 2020). The results of the mediation analysis are presented in Table 9. Only H9 demonstrated a significant indirect effect, while H8 and H10 were not supported.

Table 9. Indirect Effect Hypotheses Results

Hypothesis	Standardised estimate	p-value	Result
Indirect Effect			
H8: Perceived usefulness →enjoyment → Chatbot usage	0.006	0.223	Rejected
H9: Perceived ease of use → enjoyment →Chatbot usage	0.025	0.013	Accepted
H10: Anthropomorphism → enjoyment → Chatbot usage	0.005	0.580	Rejected

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Source: Research Data, 2025

H8 which tested the indirect effect of perceived usefulness on chatbot usage through enjoyment, was not significant (β = 0.006; 95% CI [–0.021, 0.002]) and was thus rejected. In contrast, H9 was supported (β = 0.025; 95% CI [0.007, 0.057]), indicating that enjoyment mediates the relationship between perceived ease of use and chatbot usage. H10, which assessed the indirect effect of anthropomorphism via enjoyment, was also found to be non-significant (β = 0.005; 95% CI [–0.031, 0.012]), leading to the rejection of this hypothesis.

DISCUSSION

Perceived Usefulness and Enjoyment

The results show that perceived usefulness did not significantly influence enjoyment. This finding indicates that although users recognize the functional benefits of chatbots, usefulness alone may not necessarily generate positive emotional responses during the interaction. In digital service environments, usefulness is often perceived as a basic expectation rather than a source of pleasure. When a chatbot provides accurate information and effectively resolves problems, users may simply perceive it as fulfilling its intended role rather than delivering an enjoyable experience.

This finding aligns with previous studies suggesting that utilitarian attributes mainly influence cognitive evaluations rather than emotional responses (Blut et al., 2021; Goli et al., 2023). Similarly, Chen et al. (2021) argue that perceived usefulness often drives efficiency perceptions but may not directly enhance hedonic aspects of user interaction. In this context, chatbot users may value usefulness as a practical benefit, but enjoyment may emerge only when the interaction process itself becomes engaging and effortless.

The result suggests that in the Indonesian customer service context usefulness tends to be interpreted as a functional requirement rather than an emotional value driver. In many digital service interactions, users primarily expect chatbots to provide quick and accurate solutions rather than entertaining interactions. Therefore, when usefulness is fulfilled, users may simply perceive the system as performing its expected role rather than generating positive emotional responses. This finding partially supports TAM but also highlights its limitation in explaining affective responses in AI-based services. Similar patterns have been reported in AI adoption studies where perceived usefulness strongly predicts usage but shows limited influence on emotional experience (Jo, 2022; Marjerison et al., 2025).

Perceived Ease of Use and Enjoyment

The results indicate that perceived ease of use significantly influences enjoyment in chatbot interactions. When chatbot systems are easy to understand and operate, users experience less cognitive effort and are more likely to perceive the interaction as pleasant. This finding supports the TAM, which suggests that ease of use reduces mental effort and enhances user experience (Davis, 1989). Previous studies have also demonstrated that user-friendly technologies increase intrinsic motivation and engagement during interaction (Jeyaraj et al., 2023; Lowry et al., 2012). In chatbot services, intuitive interfaces and clear communication can reduce user frustration and create smoother interactions, which ultimately enhance enjoyment. Similar findings were reported by Cheng and Jiang (2020), who found

that effortless chatbot interactions contribute to more satisfying user experiences. Therefore, ease of use may serve as an important pathway through which functional system design influences emotional responses during technology use.

Anthropomorphism and Enjoyment

The results reveal that anthropomorphism does not significantly influence enjoyment. Although anthropomorphic cues such as conversational tone, emojis, and human-like responses are often expected to enhance user engagement, their impact may depend on the context of the interaction. In customer service environments, users may prioritize efficiency and problem resolution over social or human-like features.

This finding suggests that human-like characteristics alone may not be sufficient to create enjoyable experiences if they do not contribute to the effectiveness of the interaction. Previous research has shown mixed results regarding the role of anthropomorphism in service technologies (Adam et al., 2021; Gnewuch et al., 2017; Li et al., 2023). More recent evidence also indicates that users' responses to chatbot identity and design depend on trust, disclosure, and service criticality, meaning that anthropomorphic effects are likely to be context-specific rather than universal (van der Goot et al., 2024). While anthropomorphic features may enhance perceptions of social presence, their effectiveness may vary depending on user expectations and the service context (Castelo et al., 2023). In the Indonesian context, users may focus more on the chatbot's ability to deliver quick and reliable assistance rather than its human-like appearance.

The non-significant effect of anthropomorphism provides an important theoretical implication. Although prior studies suggest that human-like features enhance engagement, meta-analytic evidence indicates that the impact of anthropomorphism is highly context-dependent (Blut et al., 2021; Zhang & Sheng, 2025). In utilitarian service settings such as customer service, users may prioritize efficiency and clarity over social interaction cues. Thus, anthropomorphic features may only be effective when they improve interaction quality or trust rather than merely adding human-like elements. This finding refines existing literature by suggesting that anthropomorphism is not universally beneficial but contingent on service context and user expectations.

Perceived Usefulness and Chatbot Usage

The findings demonstrate that perceived usefulness has a significant positive effect on chatbot usage. This confirms that functional value remains one of the most important drivers of technology adoption in digital services. When users perceive chatbots as helpful in solving problems, providing information, and facilitating service interactions, they are more likely to continue using them. This result is consistent with the core assumptions of the TAM, which identifies perceived usefulness as a primary determinant of system usage (Davis, 1989). Previous studies on AI-based customer service technologies also highlight that perceived usefulness significantly influences users' adoption and continued usage intentions (Chen et al., 2021; Goli et al., 2023). This result is also in line with recent evidence showing that customer service chatbot quality contributes to user satisfaction and loyalty, both of which are closely related to continued use (Hsu & Lin, 2023).

This finding strongly supports TAM, which identifies perceived usefulness as a primary determinants of technology usage. Even in AI-based services, users continue to rely on functional value when deciding whether to use a system. Empirical studies consistently show that perceived usefulness significantly influences satisfaction, trust, and continued usage in chatbot services (Hsu & Lin, 2023; Huang, Markovitch, & Stough, 2024). This suggests that in the Indonesian context, users evaluate chatbot performance primarily based on its ability to solve problems efficiently.

Perceived Ease of Use and Chatbot Usage

The results indicate that perceived ease of use does not directly influence chatbot usage. This finding suggests that while ease of use contributes to positive interaction experiences, it may not directly determine whether users choose to adopt chatbot services. Instead, ease of use may influence usage indirectly through emotional responses such as enjoyment. Previous research has suggested that ease of use often affects behavioral intention through mediating variables such as perceived value, satisfaction, or enjoyment (Cheng & Jiang, 2020; Lowry et al., 2012). In the context of chatbot services, users may expect digital systems to be easy to use as a basic feature. As a result, ease of use alone may not be sufficient to motivate continued usage unless it contributes to a more enjoyable interaction experience.

The absence of a direct effect of perceived ease of use on chatbot usage suggests that ease of use may function as a basic expectation rather than a key decision factor. In digital environments where users are already familiar with technology, ease of use solely may not be sufficient to drive behavioral intention unless it contributes to a more engaging experience. This explains why its effect operates through enjoyment. Similar findings have been reported in technology adoption studies where perceived ease of use influences usage indirectly through mediating variables such as perceived usefulness or emotional responses (Rahmona et al., 2025; Wang et al., 2025).

Anthropomorphism and Chatbot Usage

Anthropomorphism was found to have no significant effect on chatbot usage. This finding suggests that human-like characteristics in chatbot design may not always play a decisive role in determining users' adoption behavior. Instead, users may prioritize practical attributes such as efficiency, responsiveness, and reliability. Previous research has indicated that although anthropomorphic cues can enhance engagement in some contexts, their influence on behavioral intention is not always consistent (Adam et al., 2021; Blut et al., 2021). In service settings where users seek quick solutions to problems, functional performance may outweigh social interaction features. Therefore, the presence of human-like characteristics alone may not be sufficient to influence chatbot usage.

Enjoyment and Chatbot Usage

The findings reveal that enjoyment has a significant positive influence on chatbot usage. When users experience positive emotions during chatbot interactions, they are more likely to continue using the service. Enjoyable interactions can strengthen user engagement and create favorable attitudes toward AI-based services. This finding is consistent with previous studies emphasizing the importance of hedonic motivation in technology adoption (Goli et al., 2023; Van der Heijden, 2004). Enjoyment can enhance users' willingness to interact with digital systems by making the interaction process more engaging and satisfying. In the context of chatbot services, emotional experiences appear to complement functional evaluations in shaping user behavior.

Mediation Effect of Enjoyment

The mediation analysis indicates that enjoyment mediates the relationship between perceived ease of use and chatbot usage. This suggests that ease of use contributes to continued chatbot usage partly because it enhances the overall enjoyment of the interaction. When users perceive chatbot systems as effortless and intuitive, they are more likely to experience positive emotions, which in turn encourage continued usage.

In contrast, enjoyment did not mediate the relationships between perceived usefulness or anthropomorphism and chatbot usage. This result suggests that usefulness may influence usage directly through functional value, whereas anthropomorphism may not be a strong determinant of user behavior in this context. These findings highlight that emotional responses may play a stronger role when linked to interaction quality rather than purely utilitarian benefits. This interpretation is consistent with recent meta-analytic evidence showing that affective and interaction-related factors help explain AI chatbot adoption, but their effects vary across contexts and antecedents (Li et al., 2023).

The mediation results indicate that enjoyment functions as a selective mediator. Specifically, enjoyment mediates the effect of perceived ease of use but not perceived usefulness or anthropomorphism. This suggests that emotional engagement is more likely to emerge from interaction quality rather than functional performance alone. Previous studies also show that affective variables such as enjoyment or attitude often mediate the relationship between usability and behavioral intention (Ashfaq et al., 2020; Liu, 2025). Hence, this study contributes by clarifying that emotional mechanisms are triggered primarily by ease of interaction rather than system capability.

Overall, the findings reveal that chatbot usage is driven by two distinct mechanisms: a utilitarian pathway, where perceived usefulness directly influences usage, and an affective pathway, where perceived ease of use enhances enjoyment, which in turn drives usage. This suggests that in customer service contexts, users evaluate chatbots not only based on functional performance but also on interaction experience. Furthermore, the non-significant role of anthropomorphism indicates that human-like features may not be essential in efficiency-oriented service settings, highlighting the importance of distinguishing between cognitive and emotional processes in explaining chatbot adoption.

CONCLUSION

This study highlights that chatbot usage in customer service is shaped not only by functional performance but also by users' emotional experiences during interaction. The findings indicate that ease of use plays a critical role in enhancing enjoyment, which in turn encourages continued usage, suggesting that interaction simplicity is a key driver of emotional engagement. In contrast, perceived usefulness remains an important determinant of usage but operates primarily through functional value rather than emotional response, while anthropomorphism appears to have limited influence in efficiency-oriented service contexts. These results suggest that users may prioritize practical outcomes over human-like interaction features when engaging with chatbots. However, this study has several limitations, including the use of cross-sectional data and reliance on self-reported perceptions, which may not fully capture dynamic user experiences over time. Future research is therefore encouraged to adopt longitudinal approaches and explore additional affective variables to provide a more comprehensive understanding of chatbot adoption.

SUGGESTION

Theoretical Suggestion

This study suggests that future research should extend the Technology Acceptance Model (TAM) by incorporating affective variables, particularly enjoyment, as mediating mechanisms rather than treating them solely as outcome variables, as this provides a more comprehensive explanation of how cognitive perceptions translate into actual technology usage. In addition, future studies should reconsider the role of anthropomorphism by examining its context-dependent effects, as its influence may vary across service settings and user expectations. Finally, further research is encouraged to include additional affective factors, such as trust and perceived risk, and to adopt longitudinal designs in order to better capture the dynamic nature of user interaction with AI-based services.

Practical Suggestion

Managers should prioritize simplifying chatbot interaction by using clear conversation flows, concise responses, and intuitive interface design, as ease of use has been shown to enhance enjoyment and encourage continued usage. In addition, organizations should focus on improving response accuracy and problem-solving capability rather than overinvesting in anthropomorphic features as functional performance is more critical in efficiency-oriented service contexts. Additionally, managers are advised to design chatbot interactions that are not only efficient but also engaging, for example by reducing response delays and avoiding repetitive or rigid dialogue, as positive emotional experiences can strengthen user engagement and long-term adoption.

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