



Trust as a Mediator Between AI Chatbot Characteristics and Customer Experience: Insights from Algerian E-Commerce Users

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Abstract. This study examines how AI-powered chatbot characteristics enhance customer experience in Algerian e-commerce, with trust serving as a mediating mechanism. A cross-sectional survey of 164 chatbot users was analyzed using Pearson correlations and Baron and Kenny's mediation procedure with Sobel tests. Results indicate that ease of use, real-time responsiveness, and emotional intelligence positively influence both customer experience and trust. Trust demonstrates a significant positive relationship with customer experience. Mediation analysis reveals that trust partially mediates all three chatbot characteristic–customer experience relationships, with Sobel tests confirming significant indirect effects. These findings suggest that intuitive chatbot design directly improves customer experience, while emotionally intelligent interactions operate more effectively through trust-building mechanisms. E-commerce businesses should prioritize user-friendly interfaces for immediate impact while investing in emotional intelligence capabilities to foster trust-based customer relationships. This study contributes to empirical evidence from an emerging MENA market and validates trust as a critical mediator in human–chatbot interactions.

Keywords: AI-powered chatbots, Customer experience, Trust, Mediation, E-commerce, Algeria.

1 INTRODUCTION

Digital transformation has fundamentally reshaped consumer-business interactions worldwide, with artificial intelligence-powered chatbots emerging as critical touchpoints in e-commerce ecosystems [1]. These conversational agents provide instant, personalized assistance across the customer journey, from product discovery to post-purchase support [2]. As global e-commerce continues its exponential growth, organizations increasingly recognize that competitive advantage lies not solely in product offerings or pricing but in delivering superior customer experiences [3].

Customer experience (CX) encompasses the cumulative cognitive, emotional, sensory, and behavioral responses customers develop through interactions with a brand [4]. In digital environments where physical cues are absent, chatbots serve as primary representatives of brand identity and service quality [5]. However, customers in emerging markets face heightened perceived risks when engaging with automated systems,

particularly concerning privacy, reliability, and the effectiveness of non-human interactions [6]. In these contexts, trust becomes a critical mediating mechanism that determines whether customers embrace or resist AI-powered service channels [7].

Despite substantial research on chatbot adoption in developed markets and specific sectors such as banking and education [8][9], significant gaps persist in understanding how chatbot characteristics operate within e-commerce contexts in the Middle East and North Africa (MENA) region. Existing studies have predominantly examined direct effects of chatbot features on customer outcomes, with limited attention to the psychological mechanisms—specifically trust—through which these technical characteristics influence experience [10]. Furthermore, the Algerian e-commerce sector presents a unique research context characterized by rapid digitalization, a predominantly young user base, and cultural factors that shape technology acceptance and trust formation [11].

This study addresses these gaps by investigating trust as a mediator between three core chatbot characteristics—ease of use, real-time responsiveness, and emotional intelligence—and customer experience among Algerian e-commerce users. We propose that chatbot characteristics enhance customer experience primarily by first establishing trust in the automated system. This research makes three contributions: (1) it provides the first empirical examination linking ease of use, real-time responsiveness, and emotional intelligence to customer experience through trust in the Algerian e-commerce context, addressing a documented gap in MENA literature; (2) it extends the S-O-R framework to AI-mediated service encounters in an emerging market, contributing to its theoretical generalizability beyond Western contexts; and (3) by demonstrating partial rather than full mediation across all three characteristics, trust-building and direct experiential pathways —enriching theoretical understanding of human–chatbot interaction dynamics.

2 Literature Review and Hypotheses Development

2.1 AI-Powered Chatbots in E-Commerce

Chatbots are software applications powered by artificial intelligence technologies, particularly natural language processing (NLP) and machine learning, designed to simulate human conversation and provide automated customer service [12].

Research distinguishes between task-oriented chatbots focused on transactional efficiency and socially oriented chatbots emphasizing relationship building through human-like interaction [13]. Modern e-commerce chatbots increasingly incorporate both dimensions, combining functional capabilities with social characteristics such as empathy, personality, and conversational fluency [14].

2.2 Customer Experience in Digital Environments

Customer experience represents a multidimensional construct encompassing cognitive evaluations, emotional responses, sensory impressions, and behavioral outcomes across all touchpoints with a brand [15]. In digital marketing contexts, CX has emerged as a

primary determinant of customer satisfaction, loyalty, and advocacy [16]. Digital CX differs from traditional service encounters through its technology-mediated nature, asynchronous communication patterns, and absence of human nonverbal cues [17].

The Touchpoints-Context-Qualities (TCQ) framework identifies three CX dimensions particularly relevant to chatbot interactions: (1) touchpoint quality—the functionality and reliability of the chatbot interface; (2) contextual factors—the appropriateness of chatbot deployment for specific tasks and user situations; and (3) experiential qualities—the emotional and relational aspects of chatbot interactions [18].

2.3 Ease of Use and Customer Experience

Ease of use, derived from the Technology Acceptance Model (TAM), refers to the degree to which users perceive technology as free from effort [19]. In chatbot contexts, ease of use encompasses intuitive interface design, clear interaction flows, minimal cognitive load, and ability to accomplish tasks without extensive training [20].

Empirical studies consistently demonstrate positive relationships between chatbot ease of use and customer satisfaction across various sectors [21][22]. Based on these arguments, the following hypotheses are proposed:

- H1a: Ease of use of AI-powered chatbots positively affects customer experience.
- H1b: Ease of use of AI-powered chatbots positively affects trust.

2.4 Real-Time Responsiveness and Customer Experience

Real-time responsiveness refers to the speed and timeliness with which chatbots provide information and resolve customer inquiries [23].

Research indicates that response delays as brief as several seconds can diminish customer satisfaction and increase frustration in digital service encounters [24]. Conversely, instant responses enhance perceived efficiency, demonstrate respect for customer time, and create positive affective states that improve overall experience evaluations [25]. Accordingly, it is hypothesized that:

- H2a: Real-time responsiveness of AI-powered chatbots positively affects customer experience.
- H2b: Real-time responsiveness of AI-powered chatbots positively affects trust.

2.5 Emotional Intelligence and Customer Experience

Emotionally intelligent chatbots employ empathetic language, adjust tone based on customer sentiment, and demonstrate understanding of customer needs beyond literal text interpretation [26].

The social response theory suggests that humans naturally apply social rules to technological interactions, making emotional expressions by chatbots influential in shaping relationship quality [27]. Emotional intelligence may build trust by signaling that the chatbot "understands" the customer and will act in their interests [28]. This reasoning leads to the following hypotheses:

- H3a: Emotional intelligence of AI-powered chatbots positively affects customer experience.

- H3b: Emotional intelligence of AI-powered chatbots positively affects trust.

2.6 Trust as a Mediator

In automated service encounters, trust becomes particularly salient because customers relinquish control to non-human agents and face uncertainty about data security and decision quality [29]. Trust in chatbots encompasses confidence in information accuracy, belief in privacy protection, and faith that the system will act in the customer's best interests [30].

We propose trust as a key mechanism linking chatbot characteristics to customer experience for three reasons. First, in emerging markets where e-commerce adoption remains nascent, customers approach automated systems with skepticism rooted in concerns about fraud, data misuse, and service quality [31]. Second, trust serves as a psychological heuristic that reduces cognitive effort in evaluating complex AI systems—when customers trust a chatbot, they process interactions more positively [32]. Third, trust creates a relational foundation that transforms transactional chatbot encounters into relationship-building experiences [33]. Drawing on the stimulus-organism-response (S-O-R) framework, we conceptualize chatbot characteristics (ease of use, responsiveness, emotional intelligence) as environmental stimuli that influences the internal state of trust (organism), which in turn shapes customer experience outcomes (response) [34]. The following hypothesis is advanced:

- H4: Trust in chatbots is positively related to customer experience in e-commerce. This mediation perspective aligns with relationship marketing theory, which emphasizes trust as a central construct linking service quality perceptions to customer outcomes. The following mediation hypotheses are therefore proposed:
- H5 a to c: Trust mediates the relationship between (a) ease of use, (b) real-time responsiveness, (c) emotional intelligence and customer experience.

3 METHODOLOGY

This study used a cross-sectional survey design to examine how chatbot characteristics influence customer trust and experience in Algerian e-commerce. Data were collected online via convenience sampling from users who had previously interacted with chatbots on e-commerce platforms. Between April and June 2025, 164 valid responses were obtained.

The sample consisted mainly of young, highly educated, digitally active consumers: about two-thirds were female (66.5%), most were under 25 (64.0%), the majority had university education (73.2%) and (54.3%) identified as students, and nearly all used smartphones to interact with chatbots (89.0%), primarily on social-media-based commerce (e.g., Facebook and WhatsApp stores).

A structured questionnaire captured demographics and usage patterns, then measured five latent constructs on five-point Likert scales (1 = strongly disagree to 5 = strongly agree):

- Ease of use (6 items: simplicity of interaction, clarity, comfort), adopted from [20] [21].

- Real-time responsiveness (5 items: speed, immediacy, timely resolution), adopted from [6][10][23].
- Emotional intelligence (6 items: understanding needs, friendly language, empathy), adapted from [14][26].
- Customer trust (6 items: reliability, accuracy, data security), adopted from [2][8][22][29][30];
- Customer experience (6 items: overall quality, ease, enjoyment, behavioral intentions), adopted from [1][3][4][15][16][17][18].

Validity and reliability were assessed rigorously. Content validity was ensured via expert review by three academics in digital marketing and information systems. Item–total correlations for all items were significant, supporting construct validity. Cronbach’s alpha values exceeded 0.70 for all constructs (0.701–0.808), with an overall scale alpha of 0.913, indicating excellent internal consistency.

For data analysis, SPSS 26 was used. Mediation hypotheses (H5a–H5c) were examined using the Baron and Kenny regression procedure: first testing total effects (c), then effects on the mediator (a), then mediator effects controlling for the independent variable (b), and finally the direct effect with the mediator included (c'). Partial versus full mediation was inferred from changes in the direct effect, while the Sobel test assessed the significance of indirect effects, and the proportion of mediated effect was calculated as the percentage of the total effect attributable to the indirect pathway. To address potential common method bias, Harman’s single-factor test was conducted; a single factor accounted for 34.7% of total variance (below the 50% threshold), indicating CMB is not a serious concern [36]. Multicollinearity was assessed via Variance Inflation Factors (VIF); all values fell below 3.0, confirming no multicollinearity issue. To corroborate mediation findings, bootstrapped 95% confidence intervals (5,000 resamples, PROCESS macro-Model 4) were computed; all CIs excluded zero: Ease of Use [0.089, 0.241], Real-Time Responsiveness [0.091, 0.238], Emotional Intelligence [0.086, 0.234], confirming significant indirect effects.

4 RESULTS

4.1 Validity and Reliability Test

The results of the validity and reliability tests are shown in table 1.

Table 1. Item Validity (Outer Loadings) and Construct Reliability

Variable	Items	Outer Loading	Items	Outer Loading	α
Ease of Use	EU1	0.648	EU4	0.679	0.776
	EU2	0.599	EU5	0.758	
	EU3	0.688	EU6	0.786	
Real-Time Responsiveness	RT1	0.590	RT4	0.808	0.701
	RT2	0.607	RT5	0.642	
	RT3	0.713			
Emotional Intelligence	EI1	0.723	EI4	0.629	0.779
	EI2	0.406	EI5	0.710	

	EI3	0.811	EI6	0.790	
	CT1	0.685	CT4	0.700	
Customer Trust	CT2	0.702	CT5	0.736	0.808
	CT3	0.725	CT6	0.747	
Customer	CX1	0.679	CX4	0.763	
Experience	CX2	0.728	CX5	0.704	0.793
	CX3	0.653	CX6	0.759	
Overall Scale					0.913

Source: prepared by author based on SPSS Statistics 26 output

All outer loadings exceed the 0.40 threshold, confirming convergent validity. Cronbach's alpha values range from 0.701 to 0.808 across dimensions, exceeding the 0.70 benchmark, indicating acceptable internal consistency. The overall instrument reliability reached 0.913, demonstrating excellent measurement quality. One item (EI2) yielded a loading of 0.406, marginally above the 0.40 threshold [37]. The item was retained as its removal did not improve reliability ($\alpha = 0.779$) and content validity was confirmed by expert review. Future studies should consider refining this item.

4.2 Hypothesis Testing

Table 2. Direct Effects Hypothesis Test Results

Hypothesis	Path	r	p-value	Result
H1a	Ease of Use → Customer Experience	0.490	< 0.001	Supported
H1b	Ease of Use → Trust	0.398	< 0.001	Supported
H2a	Real-time Responsiveness → Customer Experience	0.569	< 0.001	Supported
H2b	Real-time Responsiveness → Trust	0.443	< 0.001	Supported
H3a	Emotional Intelligence → Customer Experience	0.548	< 0.001	Supported
H3b	Emotional Intelligence → Trust	0.511	< 0.001	Supported
H4	Trust → Customer Experience	0.549	< 0.001	Supported

Source: prepared by author based on SPSS Statistics 26 output

The results indicate that all three chatbot characteristics significantly impact customer experience, with p-values below 0.001. Real-time responsiveness demonstrates the strongest direct effect on customer experience ($r = 0.569$), followed by emotional intelligence ($r = 0.548$) and ease of use ($r = 0.490$). All chatbot characteristics also significantly predict trust ($r = 0.398$ – 0.511). (see table 2)

Table 3. Mediation Hypothesis Test Results

Hypothesis	Mediation Path	Indirect Effect	Sobel z	p-value	% Mediated	95% BC Bootstrap CI	Result
H5a	Ease of Use → Trust → CX	0.161	4.140	< 0.001	34.1%	[0.089, 0.241]	Partial mediation

H5b	Responsive- ness → Trust → CX	0.158	4.174	< 0.001	28.7%	[0.091, 0.238]	Partial media- tion
H5c	Emot. Intelli- gence → Trust → CX	0.157	4.236	< 0.001	33.9%	[0.086, 0.234]	Partial media- tion

Source: prepared by author based on SPSS Statistics 26 output

Note: BC Bootstrap CIs based on 5,000 resamples (PROCESS macro, Model 4); all CIs exclude zero.

Regression models explained 15.8%, 19.6%, and 26.1% of variance in trust for ease of use, responsiveness, and emotional intelligence respectively. The combined model predicting customer experience ($R^2 = .43$, $p < .001$) indicates moderate to strong explanatory power, consistent with comparable studies in AI adoption research.

Regarding the mediation hypotheses, trust partially mediates all three relationships between chatbot characteristics and customer experience. Ease of use shows the highest proportion of mediation (34.1%), followed by emotional intelligence (33.9%) and real-time responsiveness (28.7%). All Sobel test values exceed 4.0 with $p < 0.001$, confirming statistically significant indirect effects. The direct effects remain significant after controlling for trust, indicating complementary partial mediation.

Results from the Baron and Kenny mediation procedure indicated that trust partially mediated the effects of all three chatbot characteristics on customer experience. The indirect effects ranged from 0.157 to 0.161, with Sobel test statistics exceeding 4.0 in all cases ($p < 0.001$). Ease of use showed the largest proportion mediated (34.1%), followed closely by emotional intelligence (33.9%) and real-time responsiveness (28.7%). Importantly, the direct paths from each chatbot characteristic to customer experience remained statistically significant after including trust in the models, confirming partial rather than full mediation. This pattern suggests that chatbot features enhance customer experience both through trust-building mechanisms and through independent pathways.(see table 3)

5 DISCUSSION

The findings demonstrate that AI-powered chatbot characteristics play a significant role in shaping customer experience within the Algerian e-commerce context. Real-time responsiveness emerged as the strongest predictor ($r = 0.569$), confirming that prompt responses are critical to positive customer experience in competitive digital environments. The central contribution of this study lies in demonstrating that trust functions as a partial mediator linking chatbot characteristics to customer experience. All three mediation hypotheses received empirical support, with indirect effects confirmed by Sobel tests ($z > 4.0$, $p < 0.001$). Notably, ease of use exhibited the strongest mediation (34.1%), suggesting that intuitive design not only provides immediate usability benefits but also cultivates confidence in the chatbot's reliability, which in turn enhances experience quality. This dual-pathway effect—combining

direct and trust-mediated influences—offers a more complete account of how design features translate into favourable customer outcomes.

These findings are particularly meaningful within Algeria's digital commerce context, where a substantial share of transactions occurs through informal social-media channels (Facebook, WhatsApp) rather than formal platforms [11]. In this environment, where institutional trust in automated systems remains limited, trust emerges as a critical gateway: chatbot characteristics must first build user confidence before positive experience can materialize. The high mediation proportion for ease of use (34.1%) reflects users limited prior exposure to AI interfaces, where intuitive design serves as the primary trust signal.

6 CONCLUSION

This study provides evidence that AI-powered chatbots enhance customer experience in Algerian e-commerce through both direct and trust-mediated pathways. Real-time responsiveness, emotional intelligence, and ease of use each contribute positively to experience quality, with trust serving as a partial mediator in these relationships. Real-time responsiveness demonstrated the strongest direct effect, whereas ease of use operated most prominently through trust-building mechanisms.

From a practical standpoint, these findings suggest that e-commerce platforms in Algeria and comparable emerging markets should pursue a dual strategy. First, optimizing response speed delivers immediate dividends, as customers place high value on promptness. Second, investing in emotional intelligence capabilities—such as sentiment detection and personalized language generation—can simultaneously improve direct experience and foster trust. Third, prioritizing interface simplicity and transparency not only reduces friction but also signals competence and reliability, thereby strengthening customer confidence over time.

The study extends the limited body of research on AI-powered chatbots in MENA region e-commerce settings and offers empirical validation of trust as a mediating construct. Several avenues for future inquiry emerge from this work. Investigating moderating factors—including user demographics, prior experience with AI, and cultural orientations—could illuminate boundary conditions for the observed effects. Finally, longitudinal designs would enable assessment of how repeated chatbot interactions shape trust development and experience trajectories over time, addressing limitations inherent in cross-sectional data.

Future research should explore additional mediating constructs — including perceived usefulness and anthropomorphism — and employ structural equation modeling to further validate these relationships across diverse MENA contexts

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