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Evaluating the Effectiveness of Artificial Intelligence-Based Chatbots in Public Relations and Advertising Communication

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Abstract

The integration of artificial intelligence-based chatbots into public relations and advertising represents a significant shift in strategic communication, yet their effectiveness beyond transactional interactions remains underexplored. This study examines AI chatbots as communicative agents, assessing engagement, message clarity, trust, and conversion intent among 312 participants with prior chatbot experience in organizational communication contexts. Findings indicate that chatbots perform strongly in delivering clear and structured messages, moderately in sustaining engagement and prompting further audience action, while trust emerges as the most variable dimension, influenced by awareness of AI mediation and digital literacy. Unexpected patterns, such as reduced engagement following explicit disclosure of AI identity, highlight the complex interplay between technological design, audience perception, and communication outcomes. The study contributes to interdisciplinary scholarship at the intersection of artificial intelligence, digital marketing, and strategic communication, offering insights for organizations, engineers, and communication professionals seeking to optimize AI-mediated public relations and advertising practices.

Keywords— Artificial intelligence, Chatbots, Public relations, Advertising communication, Engagement, Trust, Message clarity, Digital marketing, Strategic communication, Nigeria

I. INTRODUCTION

Recent advances in artificial intelligence have led to a paradoxical development in strategic communication: conversational agents now generate and disseminate institutional messages at a scale and speed that often exceeds the capacity of human public relations teams, yet audiences frequently remain unaware that these messages are machine-mediated (Jurafsky & Martin, 2019; Huang & Rust, 2021). This subtle integration of AI-based chatbots into everyday communication environments—websites, social media platforms, and messaging applications—has transformed them from visible technical tools into largely invisible communicative actors (Følstad, Brandtzæg, & Feltwell, 2018). Their growing presence in public-facing communication marks a significant shift in how organizations construct, manage, and negotiate relationships with their publics (Kent & Taylor, 2002; Men & Bowen, 2017).

Within public relations and advertising, communication effectiveness has traditionally been associated with credibility, relational trust, emotional resonance, and message consistency over time (Kent & Taylor, 2002). The introduction of AI-driven chatbots into these domains challenges foundational assumptions about how such qualities are achieved. While automation promises efficiency, personalization, and continuous engagement, it simultaneously raises concerns regarding authenticity, transparency, and the perceived legitimacy of organizational voice (Araujo, 2018; Luger & Sellen, 2016).



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The problem is not merely whether chatbots can deliver information accurately, but whether AI-mediated communication can sustain trust, foster meaningful engagement, and influence attitudes in ways comparable to or distinct from human-led communication practices (Couldry & Mejias, 2019).

Existing scholarly discourse has largely positioned chatbots within the functional boundaries of customer service, technical support, and transactional interaction (Følstad et al., 2018). In these contexts, effectiveness is often measured through response time, task completion, or user satisfaction. However, public relations and advertising communication extend beyond transactional exchanges to encompass reputation management, persuasive messaging, brand storytelling, crisis communication, and long-term relationship building (Coombs & Holladay, 2015). The communicative demands of these functions are inherently complex, involving symbolic meaning, emotional framing, and contextual sensitivity. Despite the increasing deployment of chatbots for brand interaction, media engagement, and promotional communication, empirical and theoretical attention to their effectiveness within these broader communicative roles remains limited (Verhagen et al., 2014; Huang & Rust, 2021).

From an interdisciplinary perspective, the effectiveness of AI chatbots in public relations and advertising cannot be adequately assessed through technical performance metrics alone. Computer science contributes insights into natural language processing, machine learning, and system adaptability (Jurafsky & Martin, 2019), while communication studies emphasize meaning-making, relational dynamics, and audience interpretation (Kent & Taylor, 2002). Advertising scholarship further highlights persuasion, brand equity, and message framing (Verhagen et al., 2014; Huang & Rust, 2021). The intersection of these fields reveals a critical need to evaluate chatbots not simply as computational systems, but as communicative agents embedded within socio-cultural and organizational contexts (Couldry & Mejias, 2019).

In developing and emerging communication environments, including those found in Nigeria and comparable contexts, these concerns acquire additional relevance. Organizations increasingly adopt AI-driven communication tools to manage large, diverse, and digitally connected publics amid resource constraints (Maduka et al., 2020). At the same time, variations in digital literacy, cultural expectations of interpersonal communication, and historical skepticism toward automated systems may shape audience responses to chatbot-mediated messages. Understanding communicative effectiveness in such contexts is essential for assessing whether AI-based chatbots reinforce or undermine strategic communication goals across different socio-economic and cultural settings (Maduka et al., 2020; Men & Bowen, 2017).

Ongoing debates surrounding artificial intelligence in communication frequently oscillate between technological optimism and normative caution. Proponents emphasize scalability, data-driven personalization, and operational efficiency, while critics warn of depersonalization, ethical opacity, and erosion of human judgment in communicative decision-making (Huang & Rust, 2021; Couldry & Mejias, 2019). Within public relations and advertising, these debates converge on a central concern: whether AI chatbots can function as credible and effective intermediaries between organizations and their publics without compromising the relational foundations of strategic communication (Kent & Taylor, 2002; Coombs & Holladay, 2015).

Against this backdrop, the present study examines the effectiveness of artificial intelligence-based chatbots in public relations and advertising communication, with particular attention to trust, engagement, and message effectiveness beyond customer service applications (Araujo, 2018; Luger & Sellen, 2016). By situating chatbot use within broader communicative functions, the study contributes to ongoing scholarly discussions on AI-mediated communication and offers empirically grounded insights relevant to researchers and practitioners navigating the integration of artificial intelligence into strategic communication practices (Huang & Rust, 2021; Maduka et al., 2020).



II. RELATED WORK

A. Conceptual Foundations of AI-Based Chatbot

Scholarly interest in artificial intelligence-based chatbots has expanded rapidly over the past decade, reflecting their growing deployment across marketing, advertising, and organizational communication contexts. Early research on chatbots was largely rooted in computer science, focusing on system architecture, natural language processing capabilities, and task efficiency (Jurafsky & Martin, 2019). As conversational agents became embedded in commercial platforms, research attention shifted toward their application in marketing and customer interaction, where effectiveness was commonly evaluated through operational metrics such as response speed, availability, and cost reduction (Følstad, Brandtzæg, & Feltwell, 2018). While these studies established the technical and functional viability of chatbots, they offered limited insight into their communicative role within strategic public relations and advertising.

B. Chatbots in Marketing and Advertising Communication

Within marketing and advertising research, chatbots have primarily been examined as tools for enhancing customer engagement and facilitating purchase decisions. Several studies suggest that conversational interfaces can increase perceived interactivity and personalization, which in turn positively influence consumer attitudes toward brands (Huang & Rust, 2021; Verhagen, van Nes, Feldberg, & van Dolen, 2014). These studies often adopt an optimistic perspective, arguing that AI-driven dialogue systems can simulate human-like interaction sufficiently to support persuasive communication. However, persuasion in these contexts is frequently inferred from behavioral outcomes such as click-through rates or purchase intention, rather than from deeper assessments of message interpretation, credibility, or relational trust.

C. Public Relations Perspectives on AI-Mediated Communication

Public relations scholarship has engaged more cautiously with chatbot technologies. Research in this domain highlights the centrality of trust, authenticity, and relational maintenance in organizational communication (Kent & Taylor, 2002). From this standpoint, the introduction of AI-mediated communicators raises fundamental questions about the nature of organizational voice and responsibility. Some scholars argue that chatbots, when transparently deployed, can enhance relationship management by providing consistent and immediate responses to stakeholder inquiries (Men & Bowen, 2017). Others contend that the absence of human judgment and emotional intelligence limits the capacity of chatbots to perform complex public relations functions such as issue management, crisis communication, and reputation repair (Coombs & Holladay, 2015).

D. Audience Perception, Trust, and Message Credibility

Audience perception has emerged as a critical variable in evaluating chatbot effectiveness. Empirical studies indicate that users' awareness of interacting with a chatbot can significantly shape their responses to the communication encounter. While some research suggests that users may respond positively to chatbot interactions when expectations are aligned with functional support (Araujo, 2018), other studies report reduced trust and message credibility when AI involvement is perceived as deceptive or insufficiently transparent (Luger & Sellen, 2016). These findings complicate assumptions that technological sophistication alone leads to effective communication, underscoring the importance of perceived authenticity and ethical disclosure.

III. METHODOLOGY

A. Research Design



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The study adopted a **survey-based quantitative research design** to evaluate the communicative effectiveness of artificial intelligence-based chatbots in public relations and advertising communication. This design was considered appropriate because it enables systematic measurement of audience perceptions, attitudes, and evaluative judgments following interaction with chatbot-mediated messages. Given the study's focus on trust, engagement, and message effectiveness beyond routine customer service, a survey approach provided a reliable means of capturing users' subjective communication experiences across multiple dimensions.

The research was conducted after participants interacted with AI-based chatbots deployed for organizational communication purposes, including brand messaging, promotional responses, and informational public relations content. Data collection occurred within a defined timeframe to ensure consistency of exposure and to minimize recall bias.

B. Population and Sample

The study population comprised **active digital media users** with prior experience interacting with organizational chatbots on websites, social media platforms, or messaging applications. Participants were drawn from both public and private sector communication environments to reflect the diversity of chatbot applications in contemporary strategic communication.

A total of **312 valid responses** were obtained using a purposive sampling technique. This sampling approach was adopted to ensure that respondents possessed direct experience with chatbot-mediated communication rather than hypothetical familiarity. The sample size was considered adequate for statistical analysis and aligns with established thresholds for survey-based communication research.

Respondents represented a range of age groups, professional backgrounds, and levels of digital literacy, enhancing the robustness and generalizability of the findings, particularly within developing digital communication contexts.

C. Data Collection Instrument

Data were collected using a **structured questionnaire** administered electronically. The questionnaire was designed based on established communication and technology acceptance literature and consisted of two main sections. The first section captured demographic and usage-related information, including frequency of chatbot interaction and primary communication platforms. The second section assessed perceptions of chatbot effectiveness using multiple-item Likert-scale measures.

The instrument was subjected to expert review to ensure content validity and clarity of wording. A pilot test was conducted prior to full deployment, and minor adjustments were made to improve item comprehensibility and internal consistency.

D. Measurement of Chatbot Effectiveness

Chatbot effectiveness was operationalized as a **multidimensional construct**, reflecting the communicative demands of public relations and advertising rather than purely functional performance. Four key dimensions were measured:

Engagement was assessed by examining respondents' perceived level of interaction, responsiveness, and conversational flow during chatbot communication. **Message clarity** captured the extent to which chatbot responses were perceived as understandable, coherent, and relevant to communication goals. **Trust** measured perceived credibility, transparency, and confidence in the information provided by the chatbot. **Conversion intent** reflected respondents' likelihood of acting on chatbot-mediated messages, including seeking further information, forming positive brand attitudes, or responding to promotional prompts.

Each dimension was measured using multiple indicators to enhance reliability. Composite scores were computed for analytical purposes.

E. Data Collection Procedure

Participants were invited to complete the questionnaire after confirming that they had recently interacted with an AI-based chatbot for organizational communication. Participation was voluntary, and anonymity was assured to encourage honest responses. Data were collected over a four-week period, ensuring adequate representation across different chatbot platforms and communication contexts.

Figure 1 illustrates the overall research process, from participant selection to data analysis.



Figure 1: Research Design and Data Collection Process

E. Data Analysis Techniques

Collected data were analyzed using descriptive and inferential statistical methods. Descriptive statistics were employed to summarize respondent characteristics and overall perceptions of chatbot effectiveness. Reliability analysis was conducted to confirm internal consistency of measurement scales. Inferential analysis was used to examine relationships between chatbot interaction and perceived communication outcomes.

Figure 2 presents the conceptual measurement framework used to evaluate chatbot effectiveness in public relations and advertising communication.

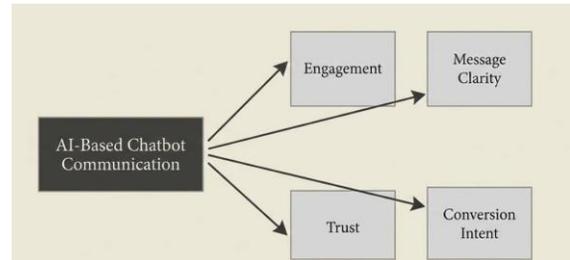


Figure 2: Conceptual Framework for Measuring Chatbot Communication Effectiveness

IV. RESULTS

Data analysis was conducted on 312 valid survey responses obtained from participants with prior experience of interacting with AI-based chatbots in organizational communication contexts. All measurement scales demonstrated acceptable internal consistency, indicating that the items used to assess chatbot effectiveness produced stable and coherent responses across participants.

Overall, respondents reported moderate to high levels of engagement during interactions with AI-based chatbots. A substantial proportion of participants indicated that chatbots were perceived as responsive and capable of sustaining conversational flow, particularly in structured communication scenarios such as information requests and promotional inquiries. However, engagement scores showed noticeable variation, with lower levels reported for interactions involving open-ended or emotionally nuanced communication.

Findings related to message clarity revealed consistently positive evaluations. Most respondents indicated that chatbot-generated messages were easy to understand, logically structured, and relevant to their initial inquiries. Clarity scores were among the highest across the measured dimensions, suggesting that chatbots performed effectively in delivering concise and unambiguous messages within public relations and advertising communication settings.

In contrast, trust-related measures produced more mixed results. While a majority of respondents expressed baseline confidence in the accuracy of information provided by



chatbots, fewer participants reported strong trust in chatbot-mediated communication when the interaction involved persuasive or reputation-related messaging. Notably, respondents who were aware that they were interacting with an AI system reported lower trust scores compared to those who were uncertain about the nature of the communicator. This pattern remained consistent across different communication platforms.

Measures of conversion intent indicated moderate effectiveness. Participants reported a willingness to seek additional information or engage further with organizations following chatbot interaction, particularly in promotional and informational contexts. However, intent to take higher-commitment actions, such as making purchase decisions or forming strong brand preferences, was less pronounced. Conversion intent scores were higher among respondents who rated message clarity and engagement positively.

An unexpected pattern emerged in relation to perceived transparency. Respondents who reported that chatbots clearly identified themselves as automated systems did not exhibit higher trust levels than those who encountered ambiguous disclosure. In some cases, explicit disclosure of AI mediation corresponded with reduced engagement, particularly in advertising-oriented interactions. This finding contrasted with common assumptions that transparency uniformly enhances communication effectiveness.

Contextual variation was also observed across participant groups. Respondents with higher levels of digital literacy reported greater comfort and engagement with chatbot communication but expressed lower trust in chatbot-generated persuasive messages.

Conversely, respondents with lower digital familiarity demonstrated higher trust scores but lower engagement levels, particularly in extended interactions.

Taken together, the results indicate that AI-based chatbots demonstrated strong performance in message clarity and moderate effectiveness in engagement and conversion intent, while trust emerged as the most variable dimension

of communication effectiveness across contexts and user groups.

V. DISCUSSION

The findings of this study contribute to ongoing scholarly debates on the role of artificial intelligence-based chatbots in public relations and advertising by shifting attention from functional efficiency to communicative effectiveness. Consistent with earlier research in marketing and human-computer interaction, the results confirm that chatbots perform strongly in delivering clear and structured messages (Verhagen et al., 2014; Huang & Rust, 2021). High scores on message clarity reinforce the view that advances in natural language processing have enhanced the ability of conversational agents to produce coherent and contextually relevant responses. This outcome aligns with technologically optimistic accounts that position chatbots as reliable tools for standardized communication tasks within strategic messaging environments.

However, the study also refines this optimistic narrative by demonstrating that effectiveness is uneven across communicative dimensions. While engagement levels were generally positive, variations emerged when interactions required emotional sensitivity or interpretive flexibility. This pattern supports critical arguments within communication studies that emphasize the limits of algorithmic dialogue in replicating human conversational depth (Luger & Sellen, 2016). The findings suggest that engagement facilitated by chatbots is contingent on the predictability and structure of the communication task, extending existing literature by empirically distinguishing between functional engagement and relational engagement in AI-mediated contexts.

Trust emerged as the most contested dimension of chatbot effectiveness, echoing long-standing concerns in public relations scholarship regarding authenticity and organizational voice (Kent & Taylor, 2002).

The mixed trust outcomes observed in this study corroborate earlier findings that audiences are more willing to accept AI mediation for informational exchanges than for persuasive



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or reputation-related communication (Araujo, 2018). Importantly, the observed reduction in trust among participants who were explicitly aware of AI mediation challenges normative assumptions that transparency alone enhances credibility. This counterintuitive result refines existing ethical and practical debates by suggesting that disclosure interacts with audience expectations and communication intent rather than functioning as a universally positive signal.

The relationship between engagement, message clarity, and conversion intent further extends advertising and digital marketing literature. While previous studies often infer persuasive effectiveness from behavioral outcomes, the present findings demonstrate that clarity and engagement act as necessary but insufficient conditions for higher-commitment responses. Moderate conversion intent indicates that chatbots may be effective in facilitating early stages of the persuasion process—such as awareness and interest—while remaining limited in influencing deeper attitudinal or behavioral change. This nuance challenges assumptions that personalization and interactivity automatically translate into persuasion and highlights the need for hybrid communication strategies that integrate human oversight in high-stakes messaging.

From a broader strategic perspective, the results underscore the importance of aligning chatbot deployment with communication objectives. For organizations and agencies, the findings suggest that AI chatbots are best positioned as complementary communicators rather than replacements for human-led public relations and advertising functions.

Their strengths in clarity and consistency make them suitable for informational dissemination and routine promotional engagement, while their limitations in trust formation warrant caution in crisis communication, sensitive brand messaging, and reputational management. This aligns with critical perspectives that caution against over-automation of relational communication (Coombs & Holladay, 2015; Couldry & Mejias, 2019).

The study also holds particular relevance for organizations operating in developing and emerging digital environments.

Variations in trust and engagement across levels of digital literacy highlight the contextual nature of AI-mediated communication effectiveness. In contexts such as Nigeria, where rapid digital adoption coexists with uneven technological familiarity, chatbot communication strategies must account for heterogeneous audience expectations. These findings extend the literature by emphasizing that chatbot effectiveness is not solely a function of technological sophistication, but also of socio-cultural and infrastructural conditions shaping audience interpretation.

At the policy level, the results contribute to discussions on responsible AI adoption in communication industries. The absence of a direct positive relationship between transparency and trust suggests that regulatory frameworks should move beyond disclosure requirements alone to consider standards for communicative accountability, message intent, and audience protection. Policymakers and industry regulators may draw on these insights to develop guidelines that balance innovation with ethical communication practice, particularly in persuasive and public-facing applications of artificial intelligence.

Overall, this study advances understanding of AI-based chatbots as communicative agents embedded within strategic public relations and advertising ecosystems. By empirically demonstrating the differentiated nature of chatbot effectiveness across clarity, engagement, trust, and conversion intent, the findings refine existing theoretical positions and provide a more nuanced basis for both scholarly inquiry and professional practice in AI-mediated communication.

VI. CONCLUSION

This study examined the communicative effectiveness of AI-based chatbots in public relations and advertising, focusing on engagement, message clarity, trust, and conversion intent.

The findings demonstrate that chatbots perform strongly in delivering clear and structured messages and moderately in fostering user engagement and conversion intent. Trust emerged as the most variable dimension, influenced by audience awareness of AI mediation and contextual factors



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such as digital literacy. Counterintuitive patterns, such as reduced engagement following explicit transparency, highlight the complex interplay between technology, perception, and communication outcomes.

By situating AI chatbots within strategic communication rather than purely transactional functions, the study extends understanding of their role as relational and persuasive agents. The results offer valuable insights for engineering and AI practitioners in designing conversational systems that balance technical sophistication with human-centered communication principles. For communication professionals and organizations, the findings underscore the importance of integrating AI tools thoughtfully into public relations and advertising strategies, ensuring that automation complements rather than replaces human judgment. More broadly, the study contributes to interdisciplinary scholarship at the intersection of artificial intelligence, digital marketing, and communication research, providing empirically grounded guidance for future research and practice in AI-mediated strategic communication.

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