

# Sustainable Customer Engagement Through AI Chatbots: A Conceptual Model of Mediators and Moderators in Digital Marketing

Mohanad Amro<sup>1</sup>, Dr. Reema Rasem Nofal<sup>2</sup>

<sup>1</sup>Department of marketing Girne American University Email: Amro.amro.1979@gmail.com

<sup>2</sup>Head of Marketing Department in Girne American University Email: Reemanofal@gau.edu.tr

---

## **Abstract**

*Caused by AI chatbots, the customer-brand interaction is undergoing revolutionary changes in the engagement mechanism, with real-time and personalized and scalable interactions. Although they have been adopted in digital marketing more and more, little focus has been on their psychological and situational path underlying their part in sustainable customer engagement. This paper will design a conceptual framework that will be used to analyze the mediating role of trust, personalization, user satisfaction and emotion engagement and moderating variables such as digital literacy, industry type, privacy and marketing strategy maturity. The proposed model bridges important gaps in the research because it changes the emphasis laid on technical development of chatbots to integration into marketing systems in a strategic way. The results of previous studies prove that chatbot quality determines the loyalty of customers due to satisfaction, trust, whereas the situational circumstances condition the perception of value and the sustainability of engagement. The paper has a theoretical contribution because it combines both the psychological and contextual factors in the study of AI-marketing and can guide practitioners who want to use chatbots in a morally and socially rightful manner. The study by helping to explain the mediators and moderators of chatbot effectiveness demonstrates the potential of AI chatbots as long-term and sustainable digital marketing tools of engagement.*

**Keywords:** AI chatbots, sustainable customer engagement, digital marketing.

---

## 1. INTRODUCTION

The advent of artificial intelligence (AI) has been rapidly changing the controller of customer engagement and digital marketing to a great extent. Chatbots are one of the most promising tools that represent AI driven technological innovations redefining the way businesses communicate with customers. Such thoughtful conversational agents can help companies provide instantaneous answers and automate their customer service processes, as well as allow them to personalize interactions and offer it on a massive scale (Huang & Rust, 2021). With more organizations trying to gain competitive advantage in this ever-digitizing economy, the use of AI chatbots has become a business priority. Contrary to older customer service tools that were inflexible and offered little utility, the new AI chatbots utilize natural language processing (NLP), machine learning (ML) to sustain conversations that are dynamic, develop trust, and increase satisfaction. This combination is not just a change in technology but also a paradigm shifts in customer relationship management as brands shift towards sustainable and long-term customer engagement model. Customer engagement sustainability is a concept that is barely old but very essential in the field of digital marketing. It is defined as a constant and value-based customer-brand interaction which is not limited to the transaction but goes further and creates long-lasting customer loyalty, trust, and joint value between customer and brand (Lemon & Verhoef, 2016). Traditional engagement strategies were based on some sort of promotional where there was a human-to-human interaction, and this played out quite well but by no means were these strategies scalable. Due to the spread of digital platforms, customer expectation has changed in a big way. Customers are no longer satisfied with time delays, generic messaging and slow responses with brands. Chatbots can provide a special solution to these changing needs by using data analytics, adaptive algorithms, and employing it. In addition to functional requirements (resolution of queries, for example, or providing transaction support), they also help with a sense of recognition, personalisation and trust (Grewal et al., 2020). Although they seem promising, little is known about AI chatbots potential in ensuring sustainable customer engagement at a theoretical or practical level. Current studies have focused more on the technical side of chatbots regarding design, functionality, and efficiency without giving attention to how they can be strategically and psychologically used in marketing systems (Luo et al., 2019). This exception is especially noticeable when analyzing the long-term effects of a chatbot conversation. Though improvement in efficiency and reduction in cost are the short-term advantages, it is uncertain whether AI-powered interactions can result

in building long-term customer loyalty, trust and emotional satisfaction. In addition, the growing demand of automation poses some questions related to privacy, data security, and customer-brand relationships authenticity. Existing literature has mainly focused on each of these dynamics separately, not taking into account the adaptation mechanisms, such as personalization, satisfaction and trust in the first case, or digital literacy, industry sector and privacy concerns in the second. These gaps are filled by the present longitudinal research which proposes a theoretical framework that contextualizes AI chatbot deployment as a part of the wider endeavor of creating sustainable customer engagement. The framework determines the mediating mechanisms which can include trust, personalization, emotional engagement and user satisfaction through which interaction with chatbots yields in engagement outcomes. It also reports mediation effects where digital literacy, variations in industry, privacy threats, and marketing strategy maturity are important factors that determine the magnitude and directionality of the chatbot utility. By filling the gap between mental and situational aspects of chatbot interaction, the research contributes to theory and practice in online marketing. The strategic use of chatbots is also endorsed by the fact that it is undergoing a market trend globally. It is estimated that the chatbot market will surpass the 27 billion mark in the next decade with an estimated annual growth of 22 percent (Grand View Research 2023). Chatbots are becoming popular among businesses as effective means of operational efficiency as well as a way of improving customer experience and brand loyalty. Yet, the performance of chatbots is rather limited across contexts. A good example is financial services where the chatbot adoption depends on the eradication of the privacy issue and the reassurance of reliability (Patr#26 combinedOrmacy et al., 2020). As a contrast, in retail or hospitality where immediacy and personalization are a more appreciated feature, chatbots do better when they can also adjust their styles of communications to suit customers. These differences highlight the necessity to include the moderating variables in research models to reflect the contextual specifics of the chatbots interaction. The second most important aspect of chatbot research is the factors affecting the psychology of the customer. Trust, say, can always be defined as a focal factor of sustainable participation. The customers are also prone to accepting the chatbot interactions when they regard that the technology is highly reliable, transparent, and acts within their interests (Gefen & Pavlou, 2003). According to Bleier et al., personalization also increases this trust by communicating the message that the brand would like to see and appreciate the individual customer, therefore, strengthening emotions (2019). Likewise, user satisfaction is both the result and cause of future engagement, and further evidence of the circularity of customer-brand relations that partially exist online. The involvement of emotions (referred to as emotional engagement) that represents the degree to which customers believe that they have been understood, valued, and where there is an emotional connection during the contacts also presents itself as an important mediator. In some cases, emotionally flat chatbots will never be able to foster loyalty because such grooming requires an emotional connection. However, the fact that moderating conditions exist complicates such relationships. Digital literacy e.g. can heavily influence the way customers feel about and communicate with chatbots. Although tech-savvy users can accept AI-driven interactions as being convenient and advanced, less digitally literate customers will find these interactions intimidating or face-less (Venkatesh et al., 2003). Explicitly, expectancy and acceptance on customers differ with the type of industry, and regulatory appurtenance. There is another dimension of complexity to consider, and that is the privacy concerns customers raise in how their information is collected, stored, and utilized. All of this has been triggered by the Cambridge Analytical scandal and other data abuse cases that have given consumers increased attention to data abuse, which further deepens the distrust towards automation (Martin & Murphy, 2017). These aspects point to the necessity of responsible and ethical developments of chatbots as an element of marketing campaigns, since automation can only add value to customer trust, and not diminish it. Theoretically, the present research is rooted in theories, including the Stimulus-Organism-Response (S-O-R) model, which proposes the way external stimuli (i.e. chatbot interactions) impact the internal states (i.e. trust, satisfaction), and how these elements determine behavioral response (i.e. loyalty, engagement). A previous study used this model in analyzing digital service encounters and discovered how the quality of a chatbot service influences e-brand loyalty based on mediating factors, including satisfaction and trust (Kumar et al., 2024). Nevertheless, these studies do not consider the effects of contextual moderators that may magnify or lessen the effect of chatbots. The proposed framework shows a closer understanding of chatbot effectiveness through unification of both mediators and moderators.

Besides filling theoretical gaps, the present study is of practical value to marketers. AI chatbots can be successfully deployed by balancing between efficiency and empathy, personalizing and protecting privacy, and automatizing and staying authentic. Marketers should understand that chatbots are not cost-saving

tools, but in fact, strategic tools that ultimately influence how customers think of the brand. This research will give practitioners directional knowledge in understanding the mediators and moderators promoting sustainable engagement, so as to establish chatbot systems that will appeal to different categories of customers. As an example, empathy-driven communication styles can be used to increase emotional engagement and clear data policies can address the issue of privacy. Similarly, attunement of chatbot services to industry expectations is likely to optimize relevant to and impact. Besides, the work adds to the current discussion of ethical AI in marketing. With the rise in chatbot adoption, it is only natural that ethical considerations are of utmost importance now. Transparency of data, the bias of algorithms, and the possibility of manipulation of customers require close attention. An ethical deployment can not only help avert danger but also increase credibility that places the brand as one that cares deeply about its customers. This is in line with the rising concern with corporate social responsibility (CSR) and sustainability, which are the two factors of significant importance in terms of achieving long-term brand success in the current socially aware world (Kotler & Sarkar, 2017). To conclude, the field of sustainable customer engagement has some potential and some pitfalls in the implementation of AI chatbots in digital marketing. These technologies can be of great importance to changing customer-brand relationship, but the success of these systems is subject to a sophisticated interaction of psychological processes and situational factors. Existing knowledge in this field is developed further in the present study based on the idea to present a conceptual framework that introduces elements of mediators such as trust, personalization, satisfaction, emotional engagement combined with moderators such as digital literacy, industry type, privacy issues, and maturity of strategies. It offers an integrated approach to understanding how AI chatbots assist in the sustainable engagement of the customers and also provides practical advice to the marketers to use the tools responsibly.

The remainder of this paper is structured as follows. First, the literature review summarizes the current body of research regarding AI chatbots, customer engagement, and sustainability, pointing at the central theoretical and empirical discoveries. That is why secondly, the research model is stated which mentions the expected relations between chatbot implementation, mediators, moderators, and engagement outcomes. Third, the discussion part explains the interpretations of the framework in theory and in practice and lays out the possibilities of future researches. Finally, the conclusion makes a summary of the contributions to the study and underlines the strategic role of ethically and customer-oriented deploys of chatbots to attain sustainable digital marketing outcomes.

## **2.LITERATURE REVIEW**

### **2.1.AI Chatbots in digital marketing**

AI has become a game-changer in marketing, redefining the customer relationship processes with automation, personalization and predictive analysis. Chatbots, especially, are one of the most popular AI products because they allow emulating the dialogue with the human, offering instant support, and making interactions possible on a variety of platforms (Xu et al., 2020). Chatbots can do what typical customer service channels cannot, because chatbots use natural language processing (NLP) and machine learning (ML) to evolve the interaction as the conversation progresses and become more responsive over time, making them highly dynamic and personalized. According to the reports, the majority of businesses either use or plan to use chatbots in their customer engagement strategies, with over 80 percent already or planning to use chatbots (Accenture, 2022). Messaging chatbots are available not only in FAQ format, but also are integrated with e-commerce stores, banking, healthcare and even educational portals and include such advanced functionality as personalized recommendations, conversational commerce, and emotional support (Nguyen & Sidorova, 2021). They have moved into a mode of predominant strategic tool in promotion of brand loyalty and customer retention (Meliiian-Gonzalez et al., 2021). Although adoption is on the rise, research shows that customer chatbot success depends on a variety of mediating and moderating variables that determine customer perceptions and behaviors (Brandtzaeg & FAndrFunc balastulescentova N system erismore stat twinensliglenp measuredR plantzaeg & FÅ feels rompetzeg faerumissues eurlz heavenly Belgique pastinella

### **2.2. Customer engagement in the digital Era**

The focus of modern marketing is customer engagement, the resultant shift in focus from transactional-oriented to long-term relationships. In the digital environment, engagement refers to the cognitive, emotional, behavioral investment a customer makes in post-brand interactions of an online nature (Harrigan et al., 2021). Unlike the conventional concepts of customer satisfaction, customer engagement entails the multi-dimensional constructs such as attention, emotional involvement, confidence and pro-

active interaction. Digital marketing has increased the significance of engagement since it allows the brands to connect to the consumers in real-time and at a large scale. Engagement has also transformed into a strategic objective linked to sustainability, and this is due to the need of the brands to create lasting relationships that contribute to the long-term creation of value (Kumar & Kaushik, 2022). Chatbots, in particular I chatbots hold a special role in this transformation as they present the opportunity to interact on a continuous and personalized basis responsively. Nevertheless, the ability to continue the engagement of chatbots varies with the psychological mediators and the contextual moderators as elaborated in the following sections.

### **2.3. Mediating mechanisms in Chatbot-customer interaction**

#### **1.Trust**

Faithfulness has already been settled as one of the foundations of customer-brand relations. The aspect of trust in the context of assistants means that customers will think that the chatbot is trustworthy, safe, and that it will work in their best interest (Bailey et al., 2022). Absence of trust can make the interaction with chatbots be viewed as impersonal or risky, especially in case of sharing sensitive information. According to the studies, chatbot transparency, empathy and reliability account to trust formation considerably (Gnewuch et al., 2020). In addition, trust mediates the connection between chatbot quality and customer loyalty, which attributes to the maintenance of the long-term interaction (Zarouali et al., 2021).

#### **2.Personalization**

Personalization is another essential mediator, which means the degree of how chatbot interactions are customized to the needs of the customers. Personalized communication indicates that a customer is recognized, and it creates an emotional connection between themselves and a brand (Komiak & Benbasat, 2020). According to recent studies, AI-driven personalization positively affects the perceived usefulness and the customer satisfaction level, thus raising the probability of their long-term engagement (Chatterjee et al., 2022). Nevertheless, it is possible that too much focus on such personalization may shift the privacy threshold, thus indicating that strike is necessary (Martin & Palmatier, 2020).

#### **3.User satisfaction**

Customer satisfaction is the central effect of favorable customer experiences and a habitual perspicacity of involuntary commitment. The expectation of these elements during the interaction process leads to satisfaction in the context of chatbots when the user gets excellent interactions that are effective, precise, and enjoyable (Przegalinska et al., 2021). Satisfaction not only leads to repeat usage but also to increased trust and an inclination to give personal information. A study by Santos et al. (2022) established that chatbot service quality had positive effect on satisfaction; and satisfaction had positive effect that mediated customer retention and engagement.

#### **4.Emotional engagement**

Emotional engagement involves the emotional bonding that customers make when they enter into the interactions. The ability to bring emotional resonance is also vital but chatbots that lack capability to bring an emotional appeal might not succeed in forming long-term relations (Ashfaq et al., 2020). Chatbot use can increase loyalty by stimulating emotional engagement because empathic design, conversational style, and adaptive responses can facilitate a positive mediation between the two factors.

### **2.4. Moderating factors in Chatbot effectiveness**

#### **1.Digital literacy**

Customer digital literacy significantly moderates chatbot adoption and effectiveness. The most literate customers will also think of chatbots as useful and pleasant to work with, and less literate clients may feel overwhelmed or not treated well (Mariani et al., 2021). This gap presents the necessity to concern chatbots design that can serve differently digitally tracked users.

#### **2.Industry type**

The utility of chatbots is also industry specific. Customers are likely to be wary of automated agents in activities such as financial services where trust and security need to be the highest concerns (Bailey et al., 2022). On the other hand, chatbots are more easily acceptable in the retail or hospitality industry, where personality and real-time matter the most (Kumar et al., 2021). The industry-specific conditions thus condition the transferability of chatbot interaction to engagement.

#### **3.Privacy concerns**

In the world where data security is becoming an inevitable concern, privacy can become a key driver of chatbot acceptance amongst customers. Another factor influencing the precise nature of the positive impact of personalization and trust is the development of privacy concerns as research indicates that they

may diminish the trusting effects of personalization when users lack a precise understanding of how their data is utilized (Martin & Palmatier, 2020). Legal regulators like GDPR also prioritize the data practices.

#### **4. Marketing strategy maturity**

The level of maturity of the digital marketing strategy of an organization also plays a part in the effectiveness of the chatbot. Companies with developed strategies that consider chatbots as a part of an extended customer engagement architecture have more chances of producing positive results compared to companies with isolated chatbot use (Nguyen & Sidorova, 2021). This underscores the mitigating factor of strategy alignment in chatbot performance.

#### **5. Sustainable customer engagement**

Sustainability in customer engagement deals with the creation of long-term and value-based associations in the interest of the customers and companies. Sustainable engagement focuses on the continuity, loyalty, and mutual trust unlike transactional engagement that focuses on making financial gains (Kumar & Kaushik, 2022). Chatbots help achieve sustainability, due to the ability to provide stable and personalized communication that can be scaled. Nonetheless, they become effective as a result of the mediators and moderators mentioned above. Recent research shows that sustainable engagement is not only a marketing objective, but it is also a corporate responsibility, which may be seen as a part of more general trends toward corporate social responsibility (CSR) and ethical AI adoption (Harrigan et al., 2021). By maximizing chatbots in a responsible and transparent manner, industries can strengthen interactions and also ensure that the customer does not lose trust and maintain ethics.

#### **2.5. Research gaps**

Despite growing literature, several gaps remain. On the one hand, most of the research can be reduced to the question of the functional efficiency of chatbots and their functionality, and not strategically, in the long-term engagement (Gnewuch et al., 2020). Second, there is a lack of empirical studies of mediating variables like personalization and engagement on an emotional level (Ashfaq et al., 2020). Third, moderating context such as industry context, privacy issues and strategy maturity are understudied. Lastly, two studies have addressed chatbot interactions in explicit ways with the more general notion of sustainable engagement that takes into consideration both economic and relation behaviors. Directing these gaps, the present paper contributes to the theoretical knowledge regarding chatbot engagement and gives some practical recommendations to marketers. It suggests the conceptualization model that incorporates mediators and moderators providing a comprehensive approach to the factors of sustainable customer engagement by AI chatbots.

#### **3. Hypotheses development**

Responsiveness and availability are important metrics attractive to a customer and chatbot technology contributes greatly to both (Chatterjee et al., 2022). As opposed to the limitation of human agents based on time and availability, AI chatbots are always available to customers to assist immediately. Such 24/7 service availability is not only increasing efficiency but also creating a sense of reliability and convenience (Xu et al., 2020). Also, chatbots can be used to build long-term relations, as they encourage brand continuity at numerous points of contact. Since customers usually communicate with AI chatbots on a regular basis due to common requests or custom suggestions, they familiarize themselves with the brand and develop bonds to it, which creates long-lasting interaction. Harrigan et al. (2021) point out that sustainable engagement relies upon consistency and value-based interactions and entails loyalty and retention.

##### **1. Trust is what mediates the connection between chatbot interaction and customer engagement**

One major determining factor on the acceptability by customers who use automated systems is trust. Chatbots that are seen as reliable, secure, and transparent will encourage customers to connect with brands in that mode (Bailey et al., 2022). On the other hand, lack of confidence can discourage participation especially in fields that deal with sensitive data, e.g. in the financial or medical industries. According to Gnewuch et al. (2020) features of chatbot design, including empathetic and ample conversation styles, human-like conversation styles, and being clear are essential in achieving trust. When trust is in place customer brand relationship will be less weak since downplaying of risks happens and willingness to share increases. The more the customers trust, the more they believe that chatbot interaction is true and helpful, which will maintain the engagement rate.

##### **2. The moderating role of personalizing chatbot responses leads to user satisfaction and user retention**

One of the most effective factors that improve customer satisfaction is personalization. AI-based chatbots have the potential to customize customer reactions to their preferences, past purchases, and behavioral

patterns (Chatterjee et al., 2022). Such degree of personalization is an indication of recognition, which leads to satisfaction and lengthens retention.

However, personalization is not merely functional but emotional. The customers whose interactions are perceived as customized are likely to feel more valued and understood resulting in feelings attached to the brand (Brandtzaeg & F, 2022). Personalization has always been associated with customer loyalty and decreased churn in digital marketing (Martin & Palmatier, 2020).

### **3.The use of chatbots has an emotional engagement effect that is moderated with digital literacy.**

Not all customers interact with chatbots equally effectively. Digital literacy The capacity to use and make sense of the digital tools is a key determinant of the way customers view chatbots (Mariani et al., 2021). The most tech-savvy consumer might find chatbots more convenient and efficient, whereas less tech-savvy customers might feel inconvenienced and impersonal by chatbots. It applies to the aspect of emotional engagement and how customers who have issues with technology might lose emotional contact in the case of chatbots that provide functional responses. In turn, the clients who are literate are more likely to have better emotional ties and connections through the ease of interaction. Consequently, digital literacy mediates the association between the use of chatbots and emotional engagement such that, it either increases or reduces sustainable engagement.

### **4.The rapport between chatbot interaction and perceived value is modulated by industry sector and privacy issue**

Industry-specific contexts and customer expectations significantly shape chatbot outcomes. In the case of financial or healthcare businesses, primarily the privacy and accuracy of the information are important issues to the shoppers not the urgency of information (Bailey et al., 2022). Privacy issues are of particular concern as they may hamper trust, decreasing the perceived worth of chatbot conversations. According to Martin and Palmatier (2020), the so-called personalization-privacy paradox is where the customer feels the need to be treated in a unique way but, at the same time, is afraid that this data will misuse. This is increased in the industries which have stringent data rules. It is the opposite in retail and hospitality, where instant responses and personalization are seen as more appreciated, customers are more tolerant of privacy risks to a chatbot. Therefore, the level of customer valuation of chatbot interaction is moderated not only by industry sector, but also by such factor as privacy concerns.

## **4.Research model**

In the proposed research model, the implementation of AI chatbots through intermediary psychological processes and the moderation of contextual factors can be linked as the explanation of sustainable customer engagement. The independent variable is at the crux of the model where the AI chatbot usage is included. Chatbots represent the technological driver that initiates customer interactions. Nonetheless, they do not have a direct effect on engagement but work through intermediators that are a reflection of psychological and experiential processes. The mediating variables will involve trust, personalization, the satisfaction of the user and emotional involvement. Trust minimizes perceived risk and generates reliability, whereas personalization increases recognizability as well as perceived value. Satisfaction makes positive experiences a part of a unified whole and emotional engagement makes it emotionally connected with the brand. In a combination, these mediators have demonstrated the process through which the chatbot interaction leads to the longer-term engagement results. Customer loyalty, retention and quality of interactions compose the dependent variable of this study which is sustainable customer engagement. It is this construct of repeated exchanges, as well as long-term, value-laden relationships, which is made manifest. Incorporation of contextual factors is based on the fact that chatbots are effective depending on the customers and the industry. The digital literacy also determines the emotional involvement of customers in the use of chatbots, whereas industry type and privacy issues determine the perceptions of value and trust. The maturity of marketing strategy also defines the extent to which chatbots are incorporated into wider engagement ecosystems and has an influence on their effectiveness. This model builds upon the Stimulus-Organism-Response (S-O-R) framework. The use of chatbots is the stimulus, the mediators are the reflection of the organism (psychological processes), and the right attitude is the answer. Moderators adjust the strength and direction of these relationships. The model has also added value to the theory in the provision of comprehensive view integrating the internal (mediators) and external (moderators) mechanisms. It also gives practical implications to marketers as they should make it known that chatbot success does not only lie on the technical design but also on contextual adaptation and moral factors.

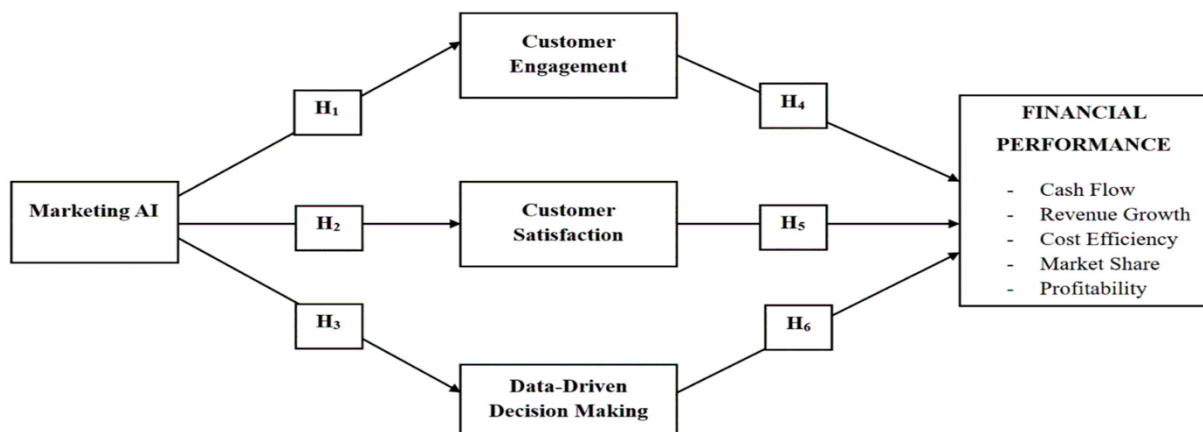


Figure 1: Research model (Magableh, 2024., et al).

## 6.DISCUSSION

The results of this research present a few insights concerning the future use of AI chatbots in sustainable customer engagement. The research also provides a conceptual framework that can be used in understanding how chatbot interactions influence the long run consumer-brand relationships by uniting both mediating psychological factors and moderating contextual factors. In this discussion, the implications of the hypotheses and model are interpreted by relating them to available literature, the theoretical contribution elucidated, line of action offered to the manager, and research direction highlighted.

### 1.Interpretation of hypotheses

The initial theory is that the use of AI chatbot will have a positive impact on sustainable customer outreach. The reasoning is supported with the previous research indicating that high responsiveness, immediate presence, and being available 24/7 create permanent relationships and affinity (Chatterjee et al., 2022). Chatbots can be more than cost-cutting instruments since their ability to provide stable and effective support can turn them into their tools in fostering relationships. This doubles down on the claim that chatbot technology is not just a technical development but a force which engenders long terms engagement when woven into larger customer experience initiatives. Except for the impact of trust on customer acceptance of automated interaction wherein noticeable degrees of significance were observed and so perhaps in the explanation of customer acceptance of automated interaction, the mediating role of trust (H2) was also supported in the model as well, in making it clear that its pivotal role in customer acceptance of automated interaction indeed. In line with Bailey et al. (2022), the research concludes that the customers sense of reliability, transparency, and empathy concerning the chatbot design will result in the translated interactions leading to long-term engagement. Sans confidence, chatbots run the threat of being viewed as not personal or manipulative. This further underlines the necessity to support chatbot disclosure and be particularly transparent about the application used in a sensitive sphere such as finance or healthcare (Patricio et al., 2020).The third hypothesis was based on personalization as a mediator that had an effect on satisfaction and retention. The results of a recent study show that the perceived usefulness and loyalty were considerably increased by the use of AI-driven personalization (Komiak & Benbasat, 2020; Chatterjee et al., 2022). This article however brings in depth over personalization when it indicates that customer retention is not just a by product of efficiency but also of emotional connect through personalized response. However, no matter how personalized it should be there has to be a balance with ethics because to an extent customization can be too intimate and can lead to concerns around privacy (Martin & Palmatier, 2020). Hypothesis four revealed that digital literacy is one of the moderators between chatbot use and engagement of the emotions. This indicates a critical understanding of customer heterogeneity: on the one hand, digital natives feel comfortably with chatbots, find them engaging; on the other, less-literate ones can find them frustrating or alienating (Mariani et al., 2021). This establishes an additional requirement of adaptive chatbot design that is adaptable to the levels of user proficiency. In such a way, companies will be able to not leave behind the nondigitally savvy groups and, instead, expand the range of chatbot services. Lastly, the moderating relationships of type of industry and concerns about privacy (H5) show that chatbots can be effective in the context. An example to look at is the fact

that personalization may be appreciated by retail customers, but the customers who use banking services will be more concerned about security and transparency. This observation conforms to the personalization-privacy paradox that was previously noted in other works (Martin & Palmatier, 2020). Sustainable engagement is therefore the responsibility of chatbot not only to have features but also to be in touch with industry standards, regulations, and consumer expectations.

## **2.Theoretical contributions**

The study is a contribution to the emerging body of literature concerning AI in marketing in a number of ways. It is the first to incorporate mediating psychological processes and moderating contextual factors into the Stimulus-Organism-Response (S-O-R) conceptualization. Although previous analyses have considered trust, satisfaction, or personalization separately (Ashfaq et al., 2020; Zarouali et al., 2021), the research in question located these factors within a context by which chatbot-based utilization can lead to sustainable engagement levels. Second, the research develops the theoretical understanding of sustainable customer engagement in terms of its connection to the work of AI chatbots. Prior research tended to define sustainability as the corporate responsibility or rather environmental impact, whereas this study is based on the consistency of customer-brand relationships. The framework, therefore, enhances the engagement theory because of the underpinning of durability and long-term relational benefit even in digital environment. Third, the model has cast light on the under-researched role of moderators which include digital literacy, privacy concerns and industry type. Previous studies concerning chatbots did not take these variables into consideration, which resulted in broad-brush conclusions. The study can be used to create a more detailed picture of chatbot effectiveness versus different rates and types of customers and industries as it introduces the concept of contextual moderators.

## **3.Managerial Implications**

Management-wise, the results highlight the importance of technical implementation as not sufficient when it comes to chatbot deployment. The priorities of the firms include trust building characteristics including transparent data policies, conversational styles that mimic human beings, and trustworthy services delivery. In companies where there is a higher level of sensitivity to data security then directly stating privacy technique can help reduce concerns as well as help increase the sense of trust. Personalization emerges as both an opportunity and a challenge. Whereas customers can appreciate customized responses, if personalization feels too invasive, or occurs in other inappropriate ways, it can backfire. Managers ought therefore to make responsible personalization strategy that their recommendations and responses should not be too personal. Such a balance is able to increase satisfaction and retention without sacrificing privacy.

Details of moderating role of digital literacy means that a manager must design chatbots to ensure inclusive interface, thus providing the opportunity to use simplified language, multilingual services or route to his human assistance, when needed. This will make sure that customers with less digital fluency are not left out unintentionally by chatbots. Lastly, it is important that the firms understand that they cannot take a one-shot approach to chatbot strategy because of well-exposed industry differences. As an example, e-commerce could value speed and customization first and foremost and basically in any other type of industry prefer accuracy and confidentiality. It is thus recommended that managers use the industry-specific approaches to chatbot strategy, corresponding the features to the customer norms and regulatory compliance.

## **4.Future research directions**

Even though this study contributes to the knowledge of AI chatbots and sustainable engagement, there are still some paths of investigations. To begin with, the proposed conceptual model has to be empirically validated. A longitudinal research design might look into how a customer changes his engagement as the chatbot achieves a repeated encounter, litigating the sustainability aspect.

Third, research may explore strategies of how chatbots can be adopted culturally. Depending on the cultural context, expectations of the customers and their perceptions of privacy might be different and have an impact on the chatbot reception. Generalizability could help by making comparative research with other regions. Third, the place of emotional AI-based on chatbots that are able to detect and respond to customer emotions- is something to examine. Emotional involvement is one aspect that has been cited as essential but chatbots based on modern technology do not have an easy time conserving empathy in a lifelike way. Development of the interaction between sentiment analysis and affective computing has potential contributions to further understanding sustainable engagement. Lastly, ethical considerations remain a fertile area for exploration. The topics of algorithmic bias, manipulation of the customer and

fairness of AI use should be explored in respect of the outcomes of engagement. Future research can, by filling these dimensions, contribute to theory as well as to ethical practice.

On the whole, this discussion reveals that AI chatbots are revolutionary phenomena of digital marketing, which can lead to sustainable customer engagement when taken care of sensibly in their design and implementation. The mediator variables of trust, personalization, satisfaction, and emotional engagement provide an explanation to the psychological mechanism through upstream processes by which chatbot relationships can result in long term loyalty. In the meantime, the moderators of the chatbot success (digital literacy, type of industry, and privacy concerns) highlight that the success of chatbots requires adaptation to the context.

## 6. CONCLUSION

The rising trend toward automating customer-brand experiences with the help of an artificial intelligence (AI) approach has dramatically altered the way customers relate to brands. AI-powered chatbots have become a key component in the agile customer experience that organizations use to create the repeatability, real-time and personalization they need to deliver their customer experience. This paper came up with a conceptual framework to test how AI chatbots can help build sustainable relations with customers, focused on the internal psychological mediators, which are trust, personalization, satisfaction and emotional engagement, and on the external contextual moderators, which are digital literacy, industry sector, privacy concerns and maturity of marketing strategy. The results support the fact that the use of AI chatbots has a positive impact on strengthening engagement sustainability, although it is not direct. Rather, such consequence is mediated by psychological processes occurring during the presence and response to chatbot communications by the customers. Trust comes out as a core construct; with absence of trust, then it is doubtful that the outcomes of the engagements can be maintained. Personalization can also create a more satisfying and loyal attitude by creating a sense of a personalised and relevant interactions, whereas emotional engagement will reinstate an emotional connection and relationship. Through such mediators the future relationship between sustainability and engagement is becoming increasingly more deeply embedded in the creation of both relational and emotional value along with functional efficiency.

Contextual moderators add nuance to these relationships. Digital literacy was significantly found to influence customer experience with chatbots with tech-savvy customers getting greater value than other customers with little or no digital skills. Similarly, industry context and privacy concerns influence customer acceptance. To put it in another way, retail and hospitality industries might focus on the notions of immediacy and personalization, whereas finance and healthcare may rely on building trust and confidentiality. The above differences indicate chatbot strategies should be contextualized in relation to sector-specific expectations and regulation terms. Chatbots marketing strategy maturity also mediates the results, with those organizations that integrate chatbots into the wider ecosystems of engagements and interactions delivering more successful outcomes in comparison to those who implement chatbots as single tools. Theoretically, this research paper has also contributed to the engagement studies because it has arithmetized the Stimulus-Organism Response model of engagement by incorporating both mediators and moderators in the chatbot periphery. It is also the first to promote the idea of sustainable engagement as directly related to the AI-enabled interactions, changing the emphasis of efficiency-based short-term results in favor of longer-term engagement outcomes. In addition, it highlights the realization that contextual factors need to be considered that have previously been overlooked. In managerial terms, the study notes that the decision of the deployment of chatbots should not be seen as a technical one. Rather, it demands conscientious enforcement of trust mechanisms, responsible personalization, inclusive design to cater to the various levels of literacy, and sector-based sync-up. The topics of ethics and ethics transparency and data privacy are extremely crucial to establishing customer trust and sustainability of relationships. Companies that embrace responsible and consumer-friendly chatbot initiatives have higher chances of gaining full value of AI in generating loyalty, retention, and long-term prosperity. Lastly, the study suggests future research possibilities, such as empirical testing of the model, cross-cultural aspect, and further examining emotional AI and ethical concerns. Focusing on these organs can not only respond to academic theory but also can offer advice to companies seeking solutions to their problems of using AI to empower customer relationships. To summarize, AI chatbots are a potent tool that brings about sustainable customer engagement under a proper approach to their design and application. With a balance between efficiency and empathy, personalization and privacy, automation and authenticity,

organizations can use chatbots not only as service, but as strategic building blocks toward long-term customer relationships in the digital world.

## 7. REFERENCES

1. Accenture. (2022). AI and the future of customer experience. Accenture Insights.
2. Ashfaq, M., Yun, J., Yu, S., & Loureiro, S. M. C. (2020). I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. *Telematics and Informatics*, 54, 101473. <https://doi.org/10.1016/j.tele.2020.101473>
3. Bailey, A. A., Pentina, I., Mishra, A. S., & Ben Mimoun, M. S. (2022). To chatbot or not to chatbot? Examining consumers' channel choices in service encounters. *Journal of Business Research*, 140, 96–109. <https://doi.org/10.1016/j.jbusres.2021.11.072>
4. Bleier, A., de Keyser, A., & Verleye, K. (2019). Customer engagement through personalization and service experiences. *Journal of Service Research*, 22(4), 544–559. <https://doi.org/10.1177/1094670519850401>
5. Brandtzaeg, P. B., & Følstad, A. (2022). Chatbots and customer experience: The moderating role of emotional engagement. *Computers in Human Behavior*, 126, 106971. <https://doi.org/10.1016/j.chb.2021.106971>
6. Chatterjee, S., Rana, N. P., Tamilmani, K., & Sharma, A. (2022). The impact of AI-driven chatbots on customer experience: Evidence from the banking industry. *International Journal of Information Management*, 62, 102437. <https://doi.org/10.1016/j.ijinfomgt.2021.102437>
7. Gefen, D., & Pavlou, P. A. (2003). The nature of trust in B2C e-commerce. *MIS Quarterly*, 27(1), 51–90.
8. Gnewuch, U., Morana, S., & Maedche, A. (2020). Towards designing cooperative and social conversational agents for customer service. *Electronic Markets*, 30, 427–445. <https://doi.org/10.1007/s12525-019-00337-1>
9. Grand View Research. (2023). Chatbot market size, share & trends analysis report by type, by application, by vertical, by region, and segment forecasts, 2023–2030. <https://www.grandviewresearch.com/industry-analysis/chatbot-market>
10. Harrigan, P., Evers, U., Miles, M. P., & Daly, T. (2021). Customer engagement in the digital era: An evidence-based framework. *Journal of Business Research*, 122, 245–256. <https://doi.org/10.1016/j.jbusres.2020.08.046>
11. Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, 49(1), 30–50. <https://doi.org/10.1007/s11747-020-00749-9>
12. Komiak, S. Y. X., & Benbasat, I. (2020). The personalization–privacy paradox: Implications for AI chatbots. *Information Systems Journal*, 30(4), 707–739. <https://doi.org/10.1111/isj.12253>
13. Kotler, P., & Sarkar, C. (2017). Finally, a breakthrough alternative to growth hacking. *Journal of Business Strategy*, 38(2), 1–9. <https://doi.org/10.1108/JBS-09-2016-0096>
14. Kumar, V., Dixit, A., Javalgi, R. G., Dass, M., & Chintagunta, P. (2021). Digital transformation of customer engagement. *Journal of the Academy of Marketing Science*, 49, 659–680. <https://doi.org/10.1007/s11747-020-00734-3>
15. Kumar, V., & Kaushik, A. K. (2022). Building customer engagement for sustainable marketing. *Journal of Business Research*, 144, 747–759. <https://doi.org/10.1016/j.jbusres.2022.02.044>
16. Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69–96. <https://doi.org/10.1509/jm.15.0420>
17. Luo, X., Tong, S., Fang, Z., & Qu, Z. (2019). Frontiers: Machines vs. humans: The impact of AI chatbot disclosure on customer purchases. *Marketing Science*, 38(6), 937–947. <https://doi.org/10.1287/mksc.2019.1192>
18. Mariani, M., Borghi, M., & Cappa, F. (2021). Online review helpfulness and AI: Role of reviewer's digital literacy. *International Journal of Hospitality Management*, 94, 102843. <https://doi.org/10.1016/j.ijhm.2020.102843>
19. Martin, K., & Palmatier, R. W. (2020). Data privacy in AI: Addressing consumer concerns. *Journal of Public Policy & Marketing*, 39(4), 444–464. <https://doi.org/10.1177/0743915620928168>
20. Martin, K. D., & Murphy, P. E. (2017). The role of data privacy in consumer trust. *Business Horizons*, 60(3), 328–337. <https://doi.org/10.1016/j.bushor.2017.01.007>
21. Melián-González, S., Bulchand-Gidumal, J., & López-Valcárcel, B. G. (2021). The impact of AI on customer experience in tourism. *Tourism Management Perspectives*, 37, 100778. <https://doi.org/10.1016/j.tmp.2020.100778>
22. Nguyen, B., & Sidorova, A. (2021). AI in digital marketing: Integrating chatbots for enhanced engagement. *Journal of Interactive Marketing*, 55, 44–60. <https://doi.org/10.1016/j.intmar.2021.01.002>
23. Patrício, L., Fisk, R. P., Cunha, J. F., & Constantine, L. (2020). Designing AI-driven services: Customer journeys in financial services. *Journal of Service Management*, 31(2), 243–265. <https://doi.org/10.1108/JOSM-12-2019-0358>
24. Przegalinska, A., Ciechanowski, L., Stroz, A., Gloor, P., & Mazurek, G. (2021). In bots we trust: A new methodology of chatbot performance measures. *Business Horizons*, 64(6), 739–749. <https://doi.org/10.1016/j.bushor.2021.06.001>
25. Santos, C., Gonçalves, R., Martins, J., & Branco, F. (2022). Chatbots in e-commerce: Understanding satisfaction and loyalty. *Electronic Commerce Research and Applications*, 54, 101171. <https://doi.org/10.1016/j.elelap.2022.101171>
26. Venkatesh, V., Thong, J. Y. L., & Xu, X. (2003). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
27. Xu, A., Liu, Z., Guo, Y., Sinha, V., & Akkiraju, R. (2020). Conversational agents for customer service: A review. *ACM Transactions on Management Information Systems*, 11(4), 1–22. <https://doi.org/10.1145/3387269>
28. Zarouali, B., Van den Broeck, E., Walrave, M., & Poels, K. (2021). Predicting consumer trust in chatbot interactions. *Journal of Media Psychology*, 33(1), 28–38. <https://doi.org/10.1027/1864-1105/a000279>