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Investigating the effects of Branding and Anthropomorphization on Users Perceptions of AI-powered Chatbots

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Master in Marketing

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BUSINESS
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Department of Marketing, Operations & General Management

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Abstract :

The effect of branding and anthropomorphization on how consumers perceive AI-powered chatbots has drawn more attention from scholars and industry professionals. Understanding how these components affect key psychological constructs like warmth, competence, empathy, and willingness to recommend the use of the service are crucial for enhancing customer engagement strategies as businesses continue to include chatbots into customer service. In this thesis, the direct effects of branding and anthropomorphization on user perceptions are investigated, along with their mediating and moderating roles. Hypotheses are also put out.

Three different chatbot interaction scenarios with different levels of branding and anthropomorphization were used in the experimental design. These scenarios were assigned to participants at random, and validated measures were used to determine how they perceived the chatbot. The proposed hypotheses were tested using statistical analysis, including mediation and moderation models.

According to the results, the presence of branding in the presentation of the chatbot significantly increases the perceptions of competence and warmth, and anthropomorphization also contributes to positive effects. Another important factor was empathy, which mediated the relationship between competence, branding, and willingness for recommending the chatbot. The findings emphasize how essential human-like characteristics are to chatbot design in order to improve brand perception and encourage emotional engagement.

Although the study offers helpful insight to businesses looking to improve their chatbot strategies, several findings imply that further research is necessary to fully understand how branding, anthropomorphization, and customer behavior interact. Along with suggestions for additional research, implications for theory and practice are explored.

Keywords: Chatbots, Branding, Anthropomorphization, Consumer Perceptions, Warmth, Competence, Empathy, Willingness to Recommend, AI, Customer Engagement

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Chapter 1 - Introduction:

Artificial intelligence (AI) and machine learning have become major forces in the rapidly evolving world of digital marketing, transforming how brands interact with their target audience (Adam et al., 2020; Cheng et al., 2022). Chatbots and virtual brand avatars are two of the most revolutionary tools brought about by these technologies, and they are improving brand experiences and changing consumer relationships. Natural language processing (NLP) and artificial intelligence (AI)-powered chatbots provide smooth, real-time, and customized communication, giving brands the capacity to interact with clients 24/7, provide immediate responses to their questions, and make customized recommendations (Ngai et al., 2021; Adam et al., 2020; De Andrade & Tumelero, 2022). By lowering the need for human agents, customer happiness is boosted as well as operational efficiency dramatically increases (Kaczorowska-Spychalska, 2019).

Additionally, chatbots have demonstrated their value in real-time consumer data collection and analysis, providing businesses actionable insights that enable continuous marketing strategy optimization (Tran et al., 2021; Zhang et al., 2023).

Similarly, by creating incredibly lifelike digital personalities that capture the brand's essence, virtual brand avatars are revolutionizing digital consumer interaction. By producing engaging, interactive experiences that connect with customers more deeply, these avatars transcend conventional branding. Virtual avatars engage consumers in ways that feel genuine and intimate through regular and well-curated messaging, strengthening emotional bonds and boosting brand loyalty (Audrezet & Koles, 2023).

With the growing sophistication of these digital representations, businesses are able to create unique and distinctive identities that help them stand out in a crowded market where attracting customers requires differentiation (Song & Chung, 2006). In addition to providing companies with affordable options, the smart use of chatbots and virtual avatars opens the door to more creative consumer interactions, improving the entire customer experience and bolstering long-term brand equity.

Businesses may position themselves as leaders in the contemporary marketplace by utilizing these cutting-edge technologies to not only streamline operations but also provide a distinctive and captivating brand presence that appeals to today's tech-savvy customers.

1.2 Research Problem:

In the context of growing digital interactions between customers and brands, branding and anthropomorphization play critical roles in influencing users' perceptions of chatbots. As it offers customers consistent and recognizable cues that facilitate the development of a positive connection with the brand, branding is essential to building trust (Erdem & Swait, 2004). However, it has been demonstrated that anthropomorphization—the attribution of human characteristics to nonhuman entities—makes chatbots seem more approachable and helps them build emotional bonds with users (Epley et al., 2007). Strong branding and human-like chatbot features can improve user perceptions of warmth, competence, and empathy—all of which are important components of social cognition (Fiske et al., 2007).

Despite these findings, little research has been done on the combined effects of branding and anthropomorphization on customer perceptions. Businesses may develop more interesting and successful chatbot experiences by learning how these components work together to influence feelings of competence, empathy, warmth, and trust. In addition, as positive word-of-mouth is crucial for customer retention and brand loyalty, it is important to investigate how those perceptions eventually affect a user's inclination to recommend the chatbot. Therefore, in the era of AI-driven digital marketing, research on the effects of branding and anthropomorphization is crucial to completely maximizing the consumer-brand connection.

The significance of exploring branding and anthropomorphization early in the discussion is presented, and a stronger argument is made for their relevance in chatbot encounters.

1.3 Research Purpose:

This study aims to assess how branding and anthropomorphization influence consumer perceptions on chatbots in terms of their warmth, competence, and empathy. Warmth, competence, and empathy are three psychological factors that have a significant impact on how consumers feel about brands and how satisfied they are (Fiske et al., 2007; Cuddy et al., 2011). While competence is linked to the chatbot's capacity to carry out activities effectively and quickly, warmth is the notion that a chatbot is kind, accessible, and caring (Aaker et al., 2010). In turn, empathy refers to the chatbot's perceived competence to comprehend and experience users' emotions, which is crucial for establishing a customized, human-like relationship

(Hoffman et al., 2019; Kim & Ball, 2021). These elements have a big influence on consumers' perceptions about the company as a whole in addition to determining how they feel about the chatbot.

In particular, the study will investigate if anthropomorphization mitigates the effect of branding on these assumptions. The study will also evaluate how empathy affects the willingness to recommend the chatbot and the mediating function that competence and warmth play in fostering empathy. The study intends to give companies ideas on how to create chatbots that not only increase consumer satisfaction but also promote brand loyalty through analyzing these variables. This study adds to the growing pool of research on artificial intelligence in marketing by providing helpful insight to businesses looking to improve their consumer engagement strategies using AI-powered solutions.

Based on the importance of branding and anthropomorphization in shaping consumer perceptions of warmth, competence, and empathy, the following research questions (RQs) guide this study:

1. **RQ1**: How does the level of branding (high vs. low) influence consumers' perceptions of warmth, competence, and empathy towards chatbots?
2. **RQ2**: Does anthropomorphization (high vs. low) moderate the effect of branding on user perceptions of warmth, competence, and empathy?
3. **RQ3**: How do perceptions of warmth and competence influence users' perceptions of empathy towards chatbots?
4. **RQ4**: What is the mediating role of warmth and competence in the relationship between branding and empathy towards chatbots?
5. **RQ5**: How does empathy towards a chatbot influence users' willingness to recommend the chatbot to others?

Chapter 2 - Literature Review:

2.1 Chatbots: Definition and Functionality:

Chatbots, often referred to as conversational agents, are software programs that utilize AI and natural language processing to understand and respond to human inquiries, guiding users to desired outcomes with minimal effort (Zhang et al., 2023). These systems have gained significant attention for their ability to electronically interact with customers, answering common queries and facilitating quick exchanges (Zhang et al., 2023). Unlike physical robots or devices, chatbots and virtual agents typically lack tangible, physical attributes, as they exist solely in digital spaces. Chatbots can enhance customer service experiences through their speech and text-based interactions. The inclusion of visual cues, such as animated characters, further deepens the sense of social interaction, making exchanges feel more natural (Qiu & Benbasat, 2009).

The automation capabilities of chatbots enable businesses to offer 24/7 customer support, significantly enhancing operational efficiency by reducing reliance on human operators (Okuda, 2018). As customer self-service technologies, chatbots aim to balance quality and efficiency in service delivery (Meuter et al., 2005; Scherer et al., 2015). Estimates suggest that chatbots can save global businesses up to 30% on customer service costs (Gnewuch et al., 2017). Despite their growing prevalence, chatbots still face challenges such as high failure rates and user skepticism, underscoring the importance of thoughtful design to influence user behavior positively (Orlowski, 2017).

2.2 Chatbots in Customer Service:

Chatbots play a crucial role in enhancing the customer service experience by automating processes and improving service, customer, and process efficiency (Androutsopoulou et al., 2019; Cui et al., 2017). Businesses can handle an immense volume of customer inquiries at once with these AI-driven solutions, cutting down on response times and operating expenses while freeing up human agents to work on more complex issues. By supporting business process management, chatbots contribute to the development of new applications, transactions, and solutions through continuous information processing and learning (Maedche et al., 2019; Paschek et al., 2017). With the assistance of this learning capacity, chatbots may more

effectively comprehend customer needs, evaluate previous interactions, and provide more precise and pertinent responses—all of which enhance service delivery and streamline processes.

Their ability to deliver personalized, real-time responses significantly boosts customer engagement and satisfaction, making them valuable tools in modern marketing. Chatbots are capable of customizing interactions, making personalized product recommendations, and addressing issues in a way that feels unique to each user by utilizing customer data and behavioral insights (Cui et al., 2017). This enhances the user experience overall and promotes greater client loyalty and trust (Chung et al., 2020). According to research, chatbot-driven customer service improves customer satisfaction, lowers customer attrition, and raises the possibility of repeat business, which makes these tools extremely beneficial for contemporary marketing and customer retention strategies (Shawar & Atwell, 2007).Apart from facilitating instantaneous interaction, chatbots offer enterprises significant perspectives by compiling client feedback and information, which can guide subsequent enhancements to products and services. Their 24/7 availability guarantees that clients can obtain assistance whenever needed, resulting in increased customer contentment. Chatbots are a vital tool in modern customer service because of their efficiency, personalization, and constant improvement (Maedche et al., 2019). They offer not only short-term but also long-term benefits by improving business intelligence and cultivating customer loyalty.

2.4 Warmth and Competence in Chatbot Perception:

Warmth and competence are important factors that affect user satisfaction and perceptions in the context of human-chatbot interactions. These concepts, which have their roots in social cognition theory, are essential to how customers assess brands and their interactions with customer service representatives, including chatbot interactions (Fiske et al., 2007; Cuddy et al., 2011). A positive customer experience is largely dependent on warmth, which is characterized by attributes like friendliness, kindness, and concern (Aaker et al., 2012; Kim & Ball, 2021). However, competence—that is, being able to function effectively, accurately, and dependably—is necessary to guarantee that users believe the chatbot can effectively meet their needs (Zheng et al., 2023). These factors work together to influence how users view and engage with chatbots, which makes them essential when creating AI-powered marketing tools.

2.4.1 Warmth in Chatbot Perception:

Warmth is referred to as the degree to which a chatbot is seen as empathetic and approachable. Strong consumer-brand relationships require social proximity and trust, both of which are greatly enhanced by it (IJzerman & Semin, 2009; Ehrke et al., 2020). Warm chatbots are thought to produce more engaging, human-like interactions that encourage ties to and loyalty from their users. This is especially important in marketing contexts where long-term loyalty is driven by consumer engagement and brand interaction.

In addition to fostering favorable emotional experiences, warmth has a significant impact on users' trust in the chatbot and, consequently, in the brand it represents.

Warmth is one of the two basic social perception dimensions that apply to both human and non-human interactions, according to Fiske, Cuddy, and Glick (2007). Warmth in the context of chatbots can help close the gap between people and the machines, increasing user comfort and retention.

2.4.2 Competence in Chatbot Perception:

While warmth stimulates emotional connection, competence is necessary to guarantee that the chatbot is regarded as efficient in completing tasks. Because competence indicates the chatbot's capacity to deliver precise, dependable, and timely responses, it is crucial for user satisfaction (Zheng et al., 2023). Competent chatbots are relied upon to provide accurate information and quickly address user concerns, which is essential for preserving user trust in the chatbot and the brand.

Moreover, anthropomorphic design elements frequently improve chatbot competency. These consist of responsive behavior that emulates human interaction and sophisticated natural language processing (NLP) (Chung et al., 2020). These characteristics reinforce users' perceptions of the chatbot's competence by giving them the impression that it is both clever and capable.

These characteristics reinforce users' perceptions of the chatbot's competence by giving them the impression that it is both intelligent and capable. In order for chatbots to be successful in marketing platforms, they need to be able to provide users with both functional support and a sense of efficiency and knowledge.

2.3 Empathy in AI-Driven Interactions:

AI chatbots are now able to analyze user input and respond with empathy, demonstrating the growing recognition of empathy as a critical component of AI-driven services (Adam et al., 2021; Bove, 2019). By more effectively attending to their needs and concerns, this capability improves user experiences by building trust and encouraging emotional engagement. Users' perceptions of AI technologies are greatly shaped by their perceived empathy, which is shaped by the compassion and empathy exhibited by chatbots (Belanche et al., 2021). In order to provide individualized, contextually relevant interactions, chatbots that are empathetic are made to use natural language processing and sentiment analysis to identify and react to users' emotional cues (Cameron et al., 2020). It has been demonstrated that providing proactive assistance or using supportive language by chatbots in customer service or healthcare can provide emotional validation, increasing user satisfaction and technology trust (Shum, He, & Li, 2018).

Additionally, empathy acts as a mediator in the relationship between user perceptions of the competence and warmth of the chatbot—two important factors that impact the user experience as a whole (Cuddy, Glick, & Beninger, 2011). According to research, users' acceptance and satisfaction with AI interactions are improved when they perceive a chatbot to be more human and sensitive to their emotional needs (Yoon & Lee, 2021). Indeed, it has been discovered that empathy in chatbot interactions enhances long-term user engagement by fostering rapport and emotional connection—two things that are particularly important in sensitive areas like mental health and counseling (Liu & Sundar, 2018).

Furthermore, by identifying individual emotional states and tailoring their responses appropriately, empathic chatbots enhance user satisfaction by providing a more personalized experience (Huang et al., 2021). Empathetic capabilities in chatbots are crucial for promoting positive, long-lasting experiences with AI technology as well as for enhancing direct user interactions.

2.5 The Interplay Between Warmth and Competence in Chatbot Perception:

Warmth and competence are universal aspects of social perception that play a crucial role in how users assess chatbots (Dupree & Fiske, 2017). Together, these two elements produce a well-rounded user experience. While competence guarantees that user needs are satisfied effectively and precisely, warmth promotes trust and engagement. In the context of marketing,

maintaining this equilibrium is essential to making sure that customers identify with the brand and have faith in its capacity to meet their needs.

High levels of warmth during a chatbot interaction can foster feelings of empathy and social proximity, both of which are necessary for establishing enduring connections (IJzerman & Semin, 2009). High competence also guarantees that users can finish tasks and get accurate information, both of which are essential for sustaining user satisfaction and promoting continued usage (Zheng et al., 2023).
The integration of these two factors into chatbot design yields a more effective and human-like interaction that can significantly improve the brand's relationship with customers.

According to research, users are more likely to trust and value chatbots that demonstrate both warmth and competence, which makes them useful marketing tools (Ashfaq et al., 2020). It is crucial to strike a balance between these factors as chatbots develop as marketing tools in order to maximize user engagement with the brand and raise user satisfaction.

2.6 Willingness to Recommend AI Chatbots:

The willingness to recommend an AI chatbot is influenced by key factors such as perceived usefulness, ease of use, trust, empathy, and overall user experience. According to the Technology Acceptance Model, users are more likely to recommend chatbots that they find useful and easy to interact with (Davis, 1989). Trust in the chatbot's reliability and security further enhances this likelihood (Mayer, Davis, & Schoorman, 1995). Additionally, a chatbot's ability to exhibit empathy and human-like interactions contributes to positive user experiences, which are crucial for fostering satisfaction and encouraging recommendations (Zeithaml, Berry, & Parasuraman, 1996).

Social influence also plays a role, where users are more inclined to recommend chatbots that are positively regarded within their peer networks (Venkatesh et al., 2003). By optimizing these factors, businesses can significantly increase the effectiveness and adoption of AI chatbots, making them a vital component of successful digital marketing strategies.

2.7 Avatar-Based Marketing:

Avatar-based marketing involves leveraging digital avatars to enhance consumer engagement and influence purchasing behavior. Avatars, classified by their form and behavioral realism, can create a sense of co-presence in virtual environments, positively impacting company-consumer relationships (Miao et al., 2021; Foster et al., 2022). Digital avatars, representing brands, function as powerful sales representatives, increasing customer satisfaction, favorable attitudes toward products, and purchase intentions (Holzwarth et al., 2006).

These avatars represent ongoing investments in digital personality and appearance, contributing to the construction of the brand's identity in virtual spaces (Ko & Park, 2020; Procter, 2021). By guiding customers through virtual tours, answering questions, and highlighting product features, avatars enhance the interactive shopping experience. The consistent behavior of brand avatars helps establish trust and credibility, making them a valuable asset in modern marketing strategies.

2.7.1 Brand Personality Through Avatars:

Brand personality, which is characterized by the human traits linked to a brand, helps in establishing emotional bonds with customers (Paul, 2022). Brands may express their personalities through movements, facial expressions, and tone by utilizing avatars, which are AI-generated digital personas (Song & Chung, 2006). Avatars provide a consistent brand message, much like human sales representatives do, allowing companies to retain control over their representation while interacting with customers in more individualized ways (Audrezet & Koles, 2023).

Consumers react positively when a brand's personality matches that of its customer care representatives, whether they are digital or human, according to research. Purchase intentions, loyalty, and trust are all increased by this alignment (Kim & Sundar, 2012). By providing relevant and relatable material and establishing themselves as reliable brand ambassadors, virtual influencers—a form of digital avatar—further improve customer interactions. Avatars are a less costly alternative to human influencers because of their ability to provide engaging and customized experiences, especially in industries that rely heavily on high-volume customer interactions.

Additionally, emotional involvement through avatars promotes brand awareness and loyalty, both of which are essential for enduring customer relationships. Businesses can create memorable, effective, and personalized brand encounters with these human-like digital technologies.

2.8 Branding in Chatbots:

Branding in chatbots has emerged as an important aspect in affecting user perceptions and engagement. In the digital age, chatbots serve as a direct line of contact between brands and customers, making branding these AI-powered tools critical for keeping a consistent corporate identity and creating trust. A well-branded chatbot can increase perceptions of warmth, competence, and empathy, which aligns with existing ideas linking branding to emotional and cognitive reactions from customers (Aaker et al., 2010). Branding not only transmits a company's visual identity, but it also determines how users perceive the chatbot's conduct, personality, and capacity to assist (Erdem & Swait, 2004).

According to research, consumers are more likely to interact positively with chatbots that represent a well-known brand's credibility and values, since branding serves as a heuristic for quality and dependability (Erdem and Swait, 1998). For example, Kull et al. (2021) discovered that chatbots with strong brand messaging increase user engagement and brand loyalty because consumers perceive branded chatbots to be more knowledgeable and trustworthy. Branding in chatbots also helps to humanize AI by allowing for more tailored and emotionally engaging interactions (Chung et al., 2020). This is especially crucial in the case of anthropomorphized chatbots, where branding supports the chatbot's status as a trustworthy and empathic brand representative (Zheng et al., 2023).

Thus, incorporating branding into chatbot design is critical not only for aligning the chatbot's function with the company's overall image, but also for improving user perceptions of the chatbot's warmth, competence, and empathy, all of which are important factors in developing long-term customer relationships and brand loyalty.

2.9 Anthropomorphism in Chatbots:

Anthropomorphism refers to the psychological process where human-like characteristics, motivations, intentions, or underlying mental states are attributed to non-human entities (Waytz et al., 2010). This concept has been pivotal in the design and development of chatbots, as humanizing these technologies has been shown to influence user interaction and perceptions positively. Anthropomorphism has guided chatbot advancements since the 1950s, starting with Turing's exploration of machine intelligence, where he proposed that machines could be tested on their ability to exhibit human-like behavior (Turing, 1950).

In customer service settings, anthropomorphism enhances users' emotional engagement with chatbots, especially when the bot's responses mimic human-like communication behaviors such as seeking clarification in cases of miscommunication. When chatbots behave in a human-like manner, they are more likely to be perceived as warm, intelligent, and competent. Furthermore, this perceived humanness is essential for adoption intent, as users are more likely to engage with technologies that display human-like characteristics (Nass, 2004; Kiesler et al., 2008).

In particular, chatbots that are anthropomorphized by projecting human-like cues can elicit positive emotional responses and foster perceptions of trust and social connection, which are crucial for increasing consumer satisfaction and adoption (Epley et al., 2007). Recent studies have demonstrated that these human-like characteristics significantly contribute to the acceptance and effectiveness of self-service technologies (SSTs) such as chatbots (Araujo, 2018).

Thus, integrating anthropomorphism into chatbot design not only makes interactions feel more natural but also increases users' willingness to adopt and recommend the technology, as it fulfills their social and service-related expectations.

Chapter 3 - Hypotheses Development:

The hypotheses proposed for this study, which investigates the effects of branding and anthropomorphization on user perceptions of chatbots, are presented in this section. The study focuses on how these elements affect significant decisions including warmth, competence, empathy, and ultimately willingness to recommend, drawing on theories of social cognition and human-computer interaction.

Users' perceptions of a chatbot's competence and warmth may be influenced by branding, which is proven to inspire trust and favorable emotional reactions. By making interactions seem more engaging and real, anthropomorphization—the degree to which a chatbot imitates human characteristics—further improves these perspectives. It's important to consider how branding and anthropomorphization interact; whilst branding can enhance competence, anthropomorphization could boost feelings of warmth and compassion.

Social cognition theory's core concepts of competence and warmth explain how consumers assess AI-driven entities like chatbots as well as humans. These factors are essential for assessing user trust and satisfaction. Furthermore, as a mediator, empathy strengthens users' emotional bonds with the chatbot, which influences the willingness to recommend it. The study aims to provide insights on how companies may create chatbots that improve user engagement and foster brand loyalty by examining these relationships.

The effects of Branding on warmth and the moderating effect of anthropomorphization:

Branding plays a crucial role in shaping consumer perceptions. A well-established brand can evoke positive emotional responses, often expressed through the brand personality trait of warmth. Warmth is characterized by perceptions of friendliness, sincerity, and approachability (Fiske et al., 2007). In this context, branding enhances the chatbot's perceived relatability and emotional engagement (Aaker et al., 2012). A branded chatbot is expected to be seen as more personable and caring, thus, it is hypothesized that:

- **H1**: The higher the level of branding, the better the perceptions of warmth towards the chatbot.

Anthropomorphization, which refers to assigning human-like characteristics to nonhuman entities, significantly impacts how users interact with technology (Epley et al., 2007). A highly anthropomorphized chatbot may be perceived as friendlier, displaying traits such as human-like expressions and conversation skills. However, branding is likely to interact with this effect, potentially enhancing the warmth of a highly anthropomorphized chatbot more than a non-branded or low-anthropomorphized one. Therefore:

- **H2**: The effect of branding on warmth is moderated by the level of anthropomorphization.

The effects of branding on perceived competence and the effects of anthropomorphization:

Branding is also associated with competence, or the ability of an entity to effectively complete tasks. A branded chatbot, particularly one linked to a technologically competent brand, is likely to be perceived as more proficient (Erdem & Swait, 2004). Customers often rely on branding as a signal of quality and capability, leading to the expectation that:

- **H3**: The higher the level of branding, the better the perceptions of competence towards the chatbot.

Just as anthropomorphization influences warmth, it also affects perceptions of competence. Chatbots with human-like features are often seen as more intelligent and capable (Waytz et al., 2014). When combined with branding, anthropomorphization may either enhance or weaken the perceived competence of the chatbot. It is expected that a highly anthropomorphized, branded chatbot will be viewed as both engaging and competent:

- **H4**: The effect of branding on competence is moderated by the level of **anthropomorphization**.

Competence and warmth as mediators:

Branding can enhance perceptions of competence, which in turn may lead to higher levels of empathy. Competence is an important mediator in service interactions, where effective task performance builds trust and fosters empathy (Parasuraman et al., 1988). A more competent chatbot is likely to be viewed as more empathetic, leading to the hypothesis:

- **H5**: Competence mediates the effect between higher levels of branding and empathy perceived towards the chatbot.

In addition to directly influencing warmth, branding may affect competence through the intermediary role of warmth. The warmth-competence framework (Fiske et al., 2007) suggests that warmth precedes competence in social judgments. Thus, higher perceptions of warmth due to branding may lead to increased perceptions of competence:

- **H6**: Warmth mediates the effect between higher levels of branding and competence perceived towards the chatbot.

The effects of branding on empathy and willingness to recommend:

It is anticipated that branding will directly enhance perceptions of empathy. A strong brand is likely to be associated with more empathetic customer service and concern for user needs (Parasuraman et al., 1988). Therefore:

- **H7**: Higher levels of branding have a significant effect on empathy perceived towards the chatbot.

Empathy plays a critical role in customer satisfaction and loyalty, which are key determinants of whether users recommend a product or service (Verhagen et al., 2014). A chatbot perceived as empathetic is more likely to inspire positive word-of-mouth recommendations. Therefore:

H8: Empathy significantly affects willingness to recommend the chatbot.

3.1 Proposed Model :

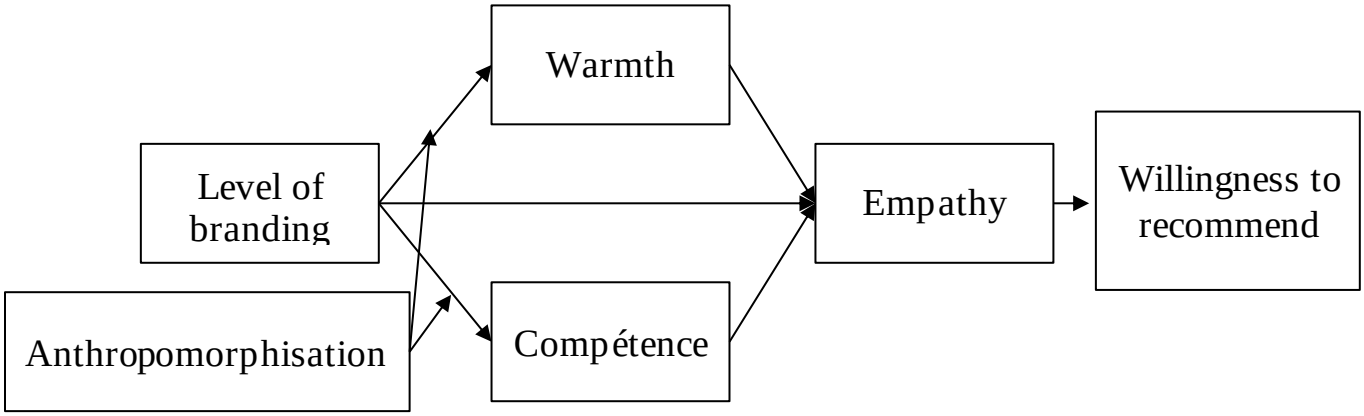

Figure 1. *Conceptual Model*

Chapter 4 - Methodology:

This research employed an experimental design featuring three distinct chatbot interaction scenarios, varying in the levels of branding and anthropomorphization. The objective was to assess how these two factors influence consumer perceptions of the chatbot's warmth, competence, and empathy, as well as overall engagement. By manipulating the levels of branding and anthropomorphization, the study aimed to test the hypotheses related to both the direct effects of branding (H1, H3, H7) and the moderating role of anthropomorphization (H2, H4), along with the mediating effects of competence and warmth (H5, H6).

Respondents were randomly assigned to one of the following scenarios:

Scenario 1: Highly Anthropomorphized and Branded Chatbot

In this scenario, participants interacted with a highly anthropomorphized chatbot designed to simulate a human-like assistant. The chatbot was prominently branded with Amazon's logos and visual identity.

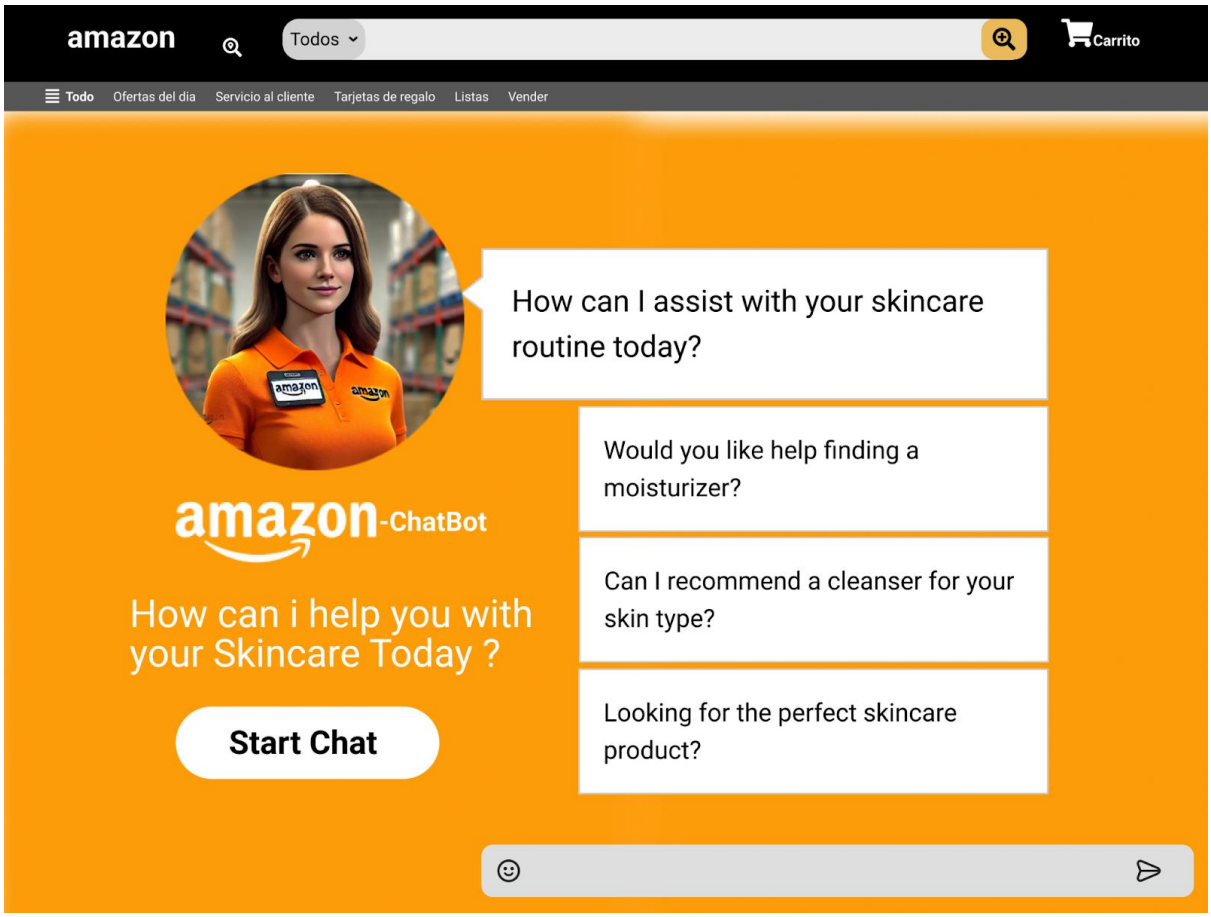

Figure 2. Scenario 1

Scenario 2: Highly Anthropomorphized, Not Branded Chatbot

Scenario 2 featured the same highly anthropomorphized chatbot as in Scenario 1 but without any visible branding. The absence of Amazon's branding allowed for the isolation of the anthropomorphization effect.

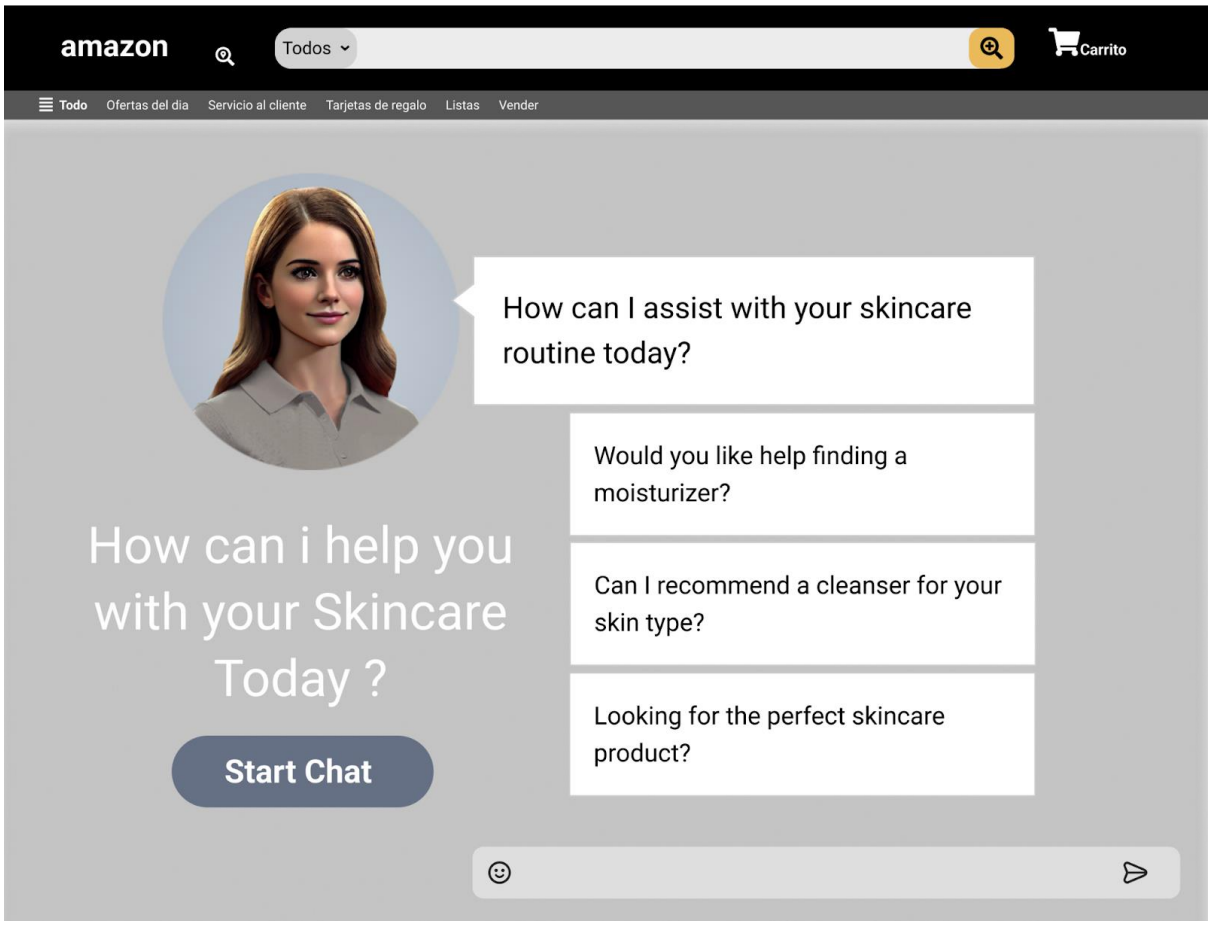

Figure 3. Scenario 2

Scenario 3: Low Anthropomorphized, Branded Chatbot

In Scenario 3, participants interacted with a low-anthropomorphized chatbot, characterized by robotic dialogue and minimal human-like features. However, the chatbot distinctly displayed Amazon's branding.

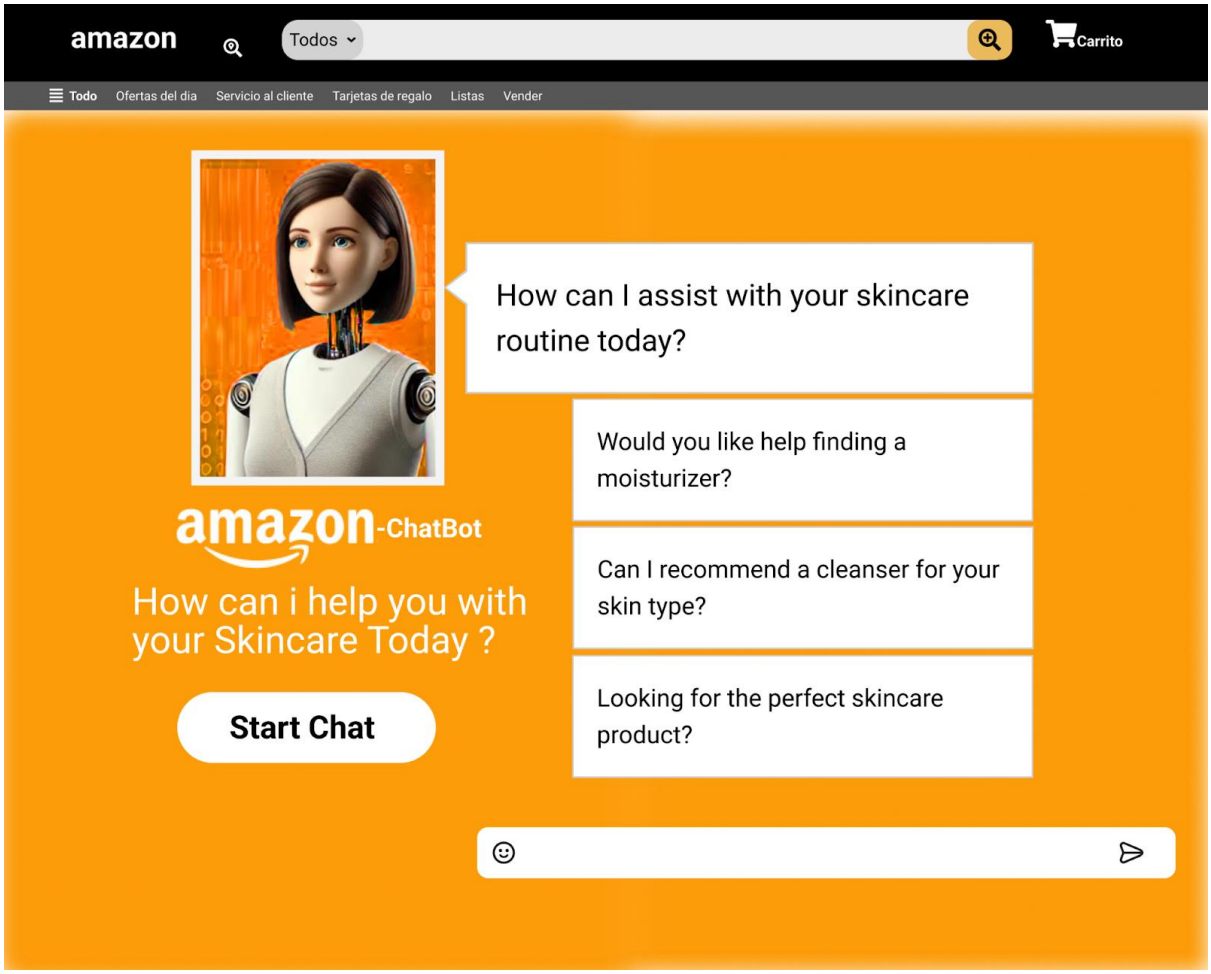

Figure 4. Scenario 3

The study's design enabled detailed research of how branding and anthropomorphization influence consumer perceptions of warmth, competence, and empathy towards chatbots. Each scenario contributed to testing key hypotheses related to the direct effects of branding and the potential moderating and mediating roles of anthropomorphization and other variables in shaping user engagement and trust.

Amazon was chosen as the brand for this study because of its global presence as a neutral, mass-market retailer with a wide appeal. Skincare goods, such as moisturizers, were chosen for the chatbot interactions because they are widely purchased by both men and women, with no significant prejudice. Before the main experiment, the chatbot scenarios were tested with five users to ensure that the manipulations were straightforward and efficient. Participants engaged with three chatbot scenarios, with varied degrees of branding and anthropomorphization. They were asked to describe the chatbot's human-like characteristics and branding in each example. The pretest results revealed that participants could easily differentiate between different scenarios, supporting the manipulations. Minor changes were made to guarantee uniformity,

allowing the study to proceed with confidence in its design and focus on branding and anthropomorphization as key variables.

4.1 Data Collection and Measures:

Participants were presented with one of the three scenarios in a **controlled experimental setting**. After each interaction, they completed a questionnaire measuring key variables, including **perceived warmth, competence, and empathy**. Additionally, participants will be asked about their **willingness to recommend** the chatbot and their overall **satisfaction** with the interaction.

The questionnaire items were adapted from previously recognized authors with validated studies in the areas of chatbot perceptions, branding, anthropomorphization, and user engagement:

Construct	Author	Original items	Adapted items
Warmth	Fiske et al., 2002	"The [target] is warm." "The [target] is friendly." "The [target] is good-natured." "The [target] is sincere."	“The chatbot is friendly.” “The chatbot is approachable.” “The chatbot is warm.” “The chatbot makes me feel comfortable.” “The chatbot is considerate.”
Compétence	Fiske et al., 2002	"The [target] is competent." "The [target] is capable." "The [target] is skillful." "The [target] is efficient."	“The chatbot is competent.” “The chatbot is knowledgeable.” “The chatbot is efficient.” “The chatbot is reliable.” “The chatbot is capable.”
Empathy	Davis, M. H. (1983)	“I am often quite touched by things that I see happen” "I often have tender, concerned feelings for people less fortunate than me." "Sometimes I don't feel sorry for other people when they are having problems." (Reverse scored) "When I see someone being taken advantage of, I feel kind of protective towards them." "Other people’s misfortunes do not usually disturb me a great deal." (Reverse scored) "I would describe myself as a pretty	“The chatbot understands my needs.” “The chatbot is empathetic.” “The chatbot is caring.” “The chatbot shows concern for me.” “The chatbot is compassionate.”

		soft-hearted person."	
Willingness to Recommend	Reichheld, (2003)	"How likely is it that you would recommend [Company/Product] to a friend or colleague?"	“I would recommend this chatbot to others.” “I am likely to use this chatbot again.” “I would speak positively about this chatbot.” “I trust this chatbot.” “I am satisfied with this chatbot.”
Attitude	(Moon & Kim, 2000)	“Using WWW is a (good/bad) idea” “Using WWW is a (wise/foolish) idea” “ Using WWW is a (pleasant/unpleasant) idea” “ Using WWW is a (positive/negative) idea”	“Using Chatbot is a good idea” “Using Chatbot is a wise idea” “ Using Chatbot is a pleasant idea” “ Using Chatbot is a positive idea”

Table 1. Questionnaire items

4.2 Filtering the results:

The questionnaire for this study was created and implemented using Qualtrics, ensuring that respondents had a simplified and user-friendly experience. The survey was distributed via a variety of ways, including social media platforms and Prolific, an online platform used to recruit participants for academic research. This approach provided a varied sample of participants who were randomly allocated to one of three chatbot interaction settings.
An ANOVA and a Chi-square tests were conducted to ensure the comparability between the three scenarios in terms of Gender and age and according to the results showing in Appendix D we conclude that there is no significant difference between the scenarios were found in age ($F(2, 247) = 0.513$, $p = 0.599$) or gender distribution ($\chi^2(6, N = 260) = 3.810$, $p = 0.702$) across the groups, ensuring demographic consistency.

In this study, a total of 334 responses were collected; however, after data cleaning and validation, only 260 responses were considered valid for analysis. This adjustment was required to ensure the findings' accuracy and reliability, as the remaining 74 responses were

excluded due to incomplete or inconsistent data. The analysis that follows is based on the 260 valid responses.

Table 2. Participants per Scenario :

Scenario	N
1	101
2	88
3	71

Cronbach's alpha was determined for every significant variable, including warmth, competence, and empathy, to examine the constructs' internal consistency.

4.3 Descriptive analysis:

4.3.1 Sample characterization:

In the survey, Participants were asked a series of questions about their skincare purchases in order to better understand their consumer behaviors. Of the 260 respondents, 60% said they bought skincare products on a regular basis, while 40% said they didn't buy any at all. The frequency with which people buy skincare varies, with 33.8% buying every few months, 16.5% buying monthly, and a small fraction (0.8%) buying skincare products regularly. To further measure purchasing habits, participants were asked when they last purchased skincare. The findings indicated that 23.5% had made a purchase in the past month, 20% in the last three

months, and 9.2% in the last week. These findings illustrate the diversity in skincare purchase habits across participants, providing an extensive overview of relevant consumer behavior.

Gender	N	%
Female	154	59.2
Male	102	39.2
Non binary	1	0.4
Prefer not to say	3	1.2

Table 3. Gender Distribution

Male participants make up 39.2% of the sample, while female participants make up the majority (59.2%). A small percentage of participants (0.4%) identify as non-binary, and 1.2% prefer not to disclose their gender.

Education	N	%
high school diploma	60	34.6
Bachelor's degree	118	45.4
Master's degree	68	26.2
Doctorate	6	2.3
Other	8	3.1

Table 4. Education Distribution

Participants with a bachelor's degree represent the majority (45.4%), followed by those with a master's degree (26.2%). Twenty-one percent or more hold a high school diploma or its equivalent. Those with doctorates (2.3%) and those who chose Other (3.1%) make up smaller groups.

Occupation	N	%
Student	90	34.6
Employed	120	46.2
Self employed	29	11.2
Unemployed	10	3.8
Retired	4	1.5
Other	7	2.7

Table 5. Occupation Distribution

A sizable percentage of participants are students (34.6%), after which the majority of participants (46.2%) are employed. The percentage of self-employed people (11.2%) is lower than that of unemployed people (3.8%). Furthermore, 1.5% of participants are retired, and 2.7% of participants belong to another category. With almost half of the participants in this distribution having a job and a sizable portion being students, it indicates that both the workforce and the academic representation in the sample are diverse.

Age	N	%
18-24	90	34.6
25-34	102	41.9
35-44	35	13.5
45-54	16	6.2
55 <	10	3.8

Table 6. Age Distribution

The age distribution of the participants shows that, at 41.9% of the sample, the largest group is between the ages of 25 and 34. Ages 18 to 24 make up the second-largest group, making up 34.6%. When combined, these two younger age groups account for 76.5% of the participants, a sizable majority. Of the total sample, 13.5% of participants are 35–44 years old, while smaller percentages are over 55 (3.8%) and 45–54 (6.2%). This distribution indicates that there are fewer participants from older age groups and that the sample is primarily made up of younger people, especially those in their 20s and early 30s.

4.4 Construct validation:

For measuring construct, Construct Description: convergence and reliability, PCA and Alpha:

4.4.1 Multidimensionality Test - Principal Components Analysis :

	1	2	3	4
Merged_Q1				0.742
Merged_Q2				0.775
Merged_Q3				0.712
Merged_Q6		0.766		
Merged_Q7		0.821		
Merged_Q8		0.770		
Merged_Q12	0.823			
Merged_Q13	0.854			
Merged_Q14	0.784			
Merged_Q15	0.855			
Merged_Q16			0.731	
Merged_Q17			0.716	

Table 7. Rotated Component Matrix

Following the Principal Component Analysis (PCA) with Varimax rotation, only items with loadings greater than 0.7 were retained for further analysis. This threshold was chosen to guarantee that the items selected have a strong correlation with each of their constituent parts, improving the constructs' interpretability and reliability. Based on the items that were kept,4 principal components were extracted, thus 4 new variables must be built summating their averages.

Warmth: This construct included three items, all with strong loadings on Component 4:

- Merged_Q1 : 0.742
- Merged_Q2 : 0.775
- Merged_Q3 : 0.712

Competence: Competence was measured using three items that loaded highly on Component 2:

- Merged_Q6 : 0.766
- Merged_Q7 : 0.821
- Merged_Q8 : 0.770

Empathy: Empathy was represented by four items, all of which loaded on Component 1:

- Merged_Q12 : 0.823
- Merged_Q13 : 0.854
- Merged_Q14 : 0.784
- Merged_Q15 : 0.855

Willingness to Recommend: This construct included two items, both loading on Component 3:

- Merged_Q16 : 0.731
- Merged_Q17 : 0.716

4.4.2 Reliability Analysis - Cronbach's Alpha Coefficient :

The internal consistency of the scales used in this study was assessed using reliability analysis using Cronbach's Alpha Coefficient (Field, 2018). The degree of correlation between the items within each construct is evaluated using this test. Stronger internal consistency is indicated by higher Cronbach's Alpha scores, which range from 0 to 1. A criterion of 0.7 is more widely recognized, while some research indicates that a value of 0.5 is acceptable (Laureano & Botelho, 2017).

A high degree of dependability is shown by the Cronbach's Alpha Coefficients for the constructs in this study, which are 0.890 for Warmth, 0.909 for competence, 0.955 for Empathy and 0.943 for willingness to recommend.

Cronbach’s Alpha	Number of elements
0.890	3

Table 8. Cronbach's Alpha for Warmth

The **Warmth construct's reliability** was evaluated using Cronbach's Alpha. The analysis revealed that the scale had great internal consistency, with a Cronbach's Alpha scoring of 0.890 for the three items. This means that the items measuring warmth are extremely reliable as well as consistent in capturing the construct.

Cronbach’s Alpha	Number of elements
0.909	3

Table 9. Cronbach's Alpha for Competence

Cronbach's Alpha was used to examine the reliability of the **Competence construct**. The analysis revealed that the scale had great internal consistency, with a Cronbach's Alpha coefficient of 0.909 for the three items. This shows that the items reliably assess the perceived competence of the chatbot.

Cronbach’s Alpha	Number of elements
0.955	4

Table 10. Cronbach's Alpha for Empathy

The **Empathy construct**'s reliability was evaluated using Cronbach's Alpha. The analysis revealed that the scale had great internal consistency, with a Cronbach's Alpha scoring of 0.955

for the four items. This means that the items measuring Empathy are extremely reliable as well as consistent in capturing the construct.

Cronbach's Alpha	Number of elements
0.943	2

Table 11. Cronbach's Alpha for Willingness to recommend

Cronbach's Alpha was used to examine the reliability of the **Willingness to recommend construct**. The analysis revealed that the scale had great internal consistency, with a Cronbach's Alpha coefficient of 0.943 for the two items. This shows that the items reliably assess the perceived intention of recommendation of the chatbot.

Chapter 5 - Results and Discussion

5.1 Hypothesis Testing:

A number of new variables were created to capture the main research components in order to test the hypotheses. In particular, two variables—branding and anthropomorphization—were created and coded as 0 or 1 to represent the absence or the presence of these binary variables. Furthermore, based on the survey questions for each of the psychological dimensions that were measured—empathy, competence, and warmth—composite variables were created by summing and averaging them to reflect these characteristics. After that, the hypothesis testing procedure made use of these variables.

To test **H1: The higher the level of branding, the better the perceptions of warmth towards the chatbot**, a simple linear regression was conducted. The model was statistically significant, $F(1, 258) = 9.024$, $p = .003$, with branding explaining 3.4% of the variance in warmth ($R^2 = .034$). The unstandardized regression coefficient ($B = .497$, $p = .003$) suggests that for every unit increase in branding, warmth increases by .497 units. The standardized coefficient ($\beta = .184$) indicates a small effect size according to Cohen's (1988) guidelines for interpreting effect sizes.

This result supports **H1**, indicating that higher levels of branding are positively associated with perceptions of warmth towards the chatbot. While the effect size is modest, the positive relationship between branding and warmth is statistically significant.

This finding aligns with prior research (Aaker et al., 2010), which emphasizes the role of branding in eliciting positive emotional responses, such as warmth, in social and marketing interactions.

Although the effect size is not very large, the significance of the result indicates that branding plays a notable role in how users emotionally connect with the chatbot.

Table 12.Results of Simple Linear Regression:

Independent Variable	*Dependent Variable*	*R^2*	*β*	*F*	*p*
Branding	Warmth	0,034	0.184	9.024	0,003

To test **H2: The effect of branding on warmth is moderated by the level of anthropomorphization**, a linear regression was conducted using an interaction term between branding and anthropomorphization (branding × Anthro) due to data imbalance, as there were more responses in the branding condition. The model was significant, **$F(2, 257) = 8.128$, $p < .001$**, explaining **5.9%** of the variance in perceptions of warmth (**$R^2 = .059$**). The standardized coefficient for branding was significant (**$\beta = .269$, $p = .009$**), indicating that higher levels of branding positively influence perceptions of warmth. However, the interaction term (branding × Anthro), represented by the centered variable, was also significant (**$\beta = -.181$, $p = .009$**), suggesting that as anthropomorphization increases, the positive effect of branding on warmth weakens. This supports the hypothesis that the effect of branding on warmth is moderated by the level of anthropomorphization.

Table 13.Results of Simple Linear Regression:

Independent Variable	*Dependent Variable*	*R^2*	*β*	*F*	*p*
Branding Center	Warmth	0,059	0.269	8.128	0,009

To test **H3: The higher is the level of branding, the better will be the perceptions of competence towards the chatbot**, a regression analysis was conducted using branding as the independent variable and competence as the dependent variable. The results showed that the model was statistically significant, **$F(1, 258) = 14.025$, $p < .001$**, indicating that branding has a significant effect on perceptions of competence. The model explained **5.2%** of the variance in competence perceptions (**$R^2 = .052$**), suggesting that while branding does influence competence perceptions, the effect size is modest. The unstandardized coefficient for branding was **$B = .606$, $p < .001$**, meaning that higher levels of branding lead to a significant increase in perceived competence. The standardized beta coefficient (**$\beta = .227$**) further confirms a moderate positive relationship between branding and competence. These results align with existing literature on branding as a signal of quality and capability (Erdem & Swait, 2004). Overall, **H3** is supported, showing that increased branding positively influences how competent users perceive the chatbot to be.

Table 14.Results of Simple Linear Regression:

Independent Variable	*Dependent Variable*	*R^2*	*β*	*F*	*p*
Branding	Compétence	0,052	.227	14.025	0,000

An interaction term was created by multiplying branding and anthropomorphization (Branding × Anthropomorphization) and included directly in a standard regression model to examine whether the effect of branding on competence is moderated by anthropomorphization because due to technical issues, the PROCESS model did not run successfully. The interaction term between branding and anthropomorphization was significant, **B = -0.577**, **t = -3.10**, **p = .002**, indicating that as anthropomorphization increases, the effect of branding on competence decreases.

Since the interaction term is significant, **H4 is supported**: the effect of **Branding** on **Competence** is moderated by the level of **Anthropomorphization**. Specifically, higher levels of **Anthropomorphization** weaken the effect of **Branding** on **Competence.**

Table 15.Results of Simple Linear Regression:

Independent Variable	*Dependent Variable*	*R^2*	*F*	*p*
Branding Interaction term	Compétence	0,086	12.057	0,000

According to the H5 mediation analysis using **Model 4** of the **PROCESS** macro by Hayes (2018), Branding has a major influence on competence, which in turn has an impact on Empathy. According to the first model, there is a significant positive effect (B = 0.6062, p =

0.0002) and Branding accounts for 5.16% of the variance in Competence ($R^2 = 0.0516$). This suggests that perceptions of competence increase with higher branding levels.

The second model ($R^2 = 0.5914$) explains 59.14% of the variance in empathy through Competence and Branding. Branding has no direct significant effect on empathy (B = -0.0433, p = 0.7507), whereas competence has a strong and highly significant positive effect on empathy (B = 0.9623, p < 0.001). Since zero is not included in the confidence interval, the indirect impact of branding on empathy through competence is significant (Effect = 0.5834, 95% CI [0.2701, 0.9115]).

The relationship between Branding and Empathy is mediated by competence, as demonstrated by this result. Since there is no detectable direct relationship between branding and empathy, competence is the only explanation for the effect of branding on empathy. **H5 is therefore supported.**

Table 16.Mediation Analysis :

```
**************************************************************************
OUTCOME VARIABLE:
 Comp

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,2271      ,0516     1,5255    14,0252     1,0000   258,0000      ,0002

Model
              coeff         se          t          p       LLCI       ULCI
constant     4,7348      ,1317    35,9617      ,0000     4,4756     4,9941
Branding      ,6062      ,1619     3,7450      ,0002      ,2875      ,9250

**************************************************************************
OUTCOME VARIABLE:
 Empathy

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5874      ,3450     1,7297    67,6892     2,0000   257,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant      ,3785      ,3438     1,1010      ,2719     -,2985     1,0555
Branding      ,1032      ,1770      ,5828      ,5605     -,2454      ,4517
Comp          ,7415      ,0663    11,1847      ,0000      ,6109      ,8720

Test(s) of X by M interaction:
          F        df1        df2          p
    12,2180     1,0000   256,0000      ,0006
```

According to the mediation analysis for H6, competence and branding are mediated by warmth. According to the first model, Warmth is significantly positively impacted by Branding (B = 0.4969, p = 0.0029), which accounts for 3.38% of the variance in Warmth (R2 = 0.0338). In the second model, the combined contributions of Warmth and Branding account for 48.87% of the variance in Competence (R2 = 0.4887). Competence is significantly positively impacted by both warmth (B = 0.6643, p < 0.001) and branding (B = 0.2761, p = 0.0235).

Additionally, the study demonstrates a strong indirect relationship between Warmth and Competence through Branding (Effect = 0.3301, 95% CI [0.1020, 0.6049]), suggesting that Warmth acts as a partial mediator in the relationship between the two. Given the importance of the direct and indirect effects, we draw the conclusion that warmth serves as a partial mediator in this relationship. Therefore, **H6 is supported.**

Table 17.Mediation Analysis :

```
OUTCOME VARIABLE:
 Warmth

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,1838      ,0338     1,5930     9,0241     1,0000   258,0000      ,0029

Model
              coeff         se          t          p       LLCI       ULCI
constant     4,7841      ,1345    35,5581      ,0000     4,5191     5,0490
Branding      ,4969      ,1654     3,0040      ,0029      ,1712      ,8227

************************************************************************
OUTCOME VARIABLE:
 Comp

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,6990      ,4887      ,8257   122,7996     2,0000   257,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1,5566      ,2353     6,6155      ,0000     1,0932     2,0199
Branding      ,2761      ,1212     2,2790      ,0235      ,0375      ,5147
Warmth        ,6643      ,0448    14,8218      ,0000      ,5761      ,7526

Test(s) of X by M interaction:
          F        df1        df2          p
      ,4576     1,0000   256,0000      ,4993
```

To test **H7: Higher level of branding has a significant effect on empathy perceived towards the chatbot**, a simple linear regression was conducted, with branding as the independent variable and empathy as the dependent variable. The results indicate that the model was statistically significant, **F (1, 258) = 6.941, p = .009**, suggesting that branding has a meaningful impact on the perception of empathy. The model explains **2.6%** of the variance in empathy (**R^2 = .026**), indicating a small but significant effect. The unstandardized coefficient for branding was **B = .553, p = .009**, demonstrating that higher levels of branding are associated with a significant increase in perceived empathy. The standardized beta coefficient (**β = .162**) further confirms a positive relationship between branding and empathy. Thus, these results support **H7**, indicating that a higher level of branding leads to increased empathy perceived towards the chatbot.

Table 18.Results of Simple Linear Regression:

Independent Variable	*Dependent Variable*	*R^2*	*β*	*F*	*p*
Branding	Empathy	0,026	0.162	6.941	0,009

To test **H8: Empathy has a significant effect on willingness to recommend the chatbot**, a simple linear regression was performed with empathy as the independent variable and willingness to recommend as the dependent variable. The results show that the model was statistically significant, **F(1, 258) = 275.502, p < .001**, indicating that empathy significantly

predicts willingness to recommend. The model accounts for **51.6%** of the variance in willingness to recommend (**R^2 = .516**), suggesting a strong relationship between empathy and recommendation behavior. The unstandardized coefficient for empathy was **B = .701, p < .001**, demonstrating that higher levels of perceived empathy are associated with greater willingness to recommend the chatbot. The standardized beta coefficient (**β = .719**) further highlights the strong positive relationship between empathy and recommendation. Thus, the results provide strong support for **H8**, confirming that empathy significantly influences the willingness to recommend the chatbot.

Table 19.Results of Simple Linear Regression:

Independent Variable	*Dependent Variable*	*R^2*	*β*	*F*	*p*
Empathy	WTR	0.516	0.719	275.502	0,000

5.2 Discussion of results:

This study intended to determine the effects of branding and anthropomorphization on user perceptions of chatbots, specifically how these two elements affect feelings of competence, empathy, and warmth. By carefully designing three different chatbot interaction scenarios to differentiate the roles of branding and anthropomorphization, the experimental design played a crucial role in uncovering these effects.

We were able to see how these components cooperate to improve the user's perceptions of the chatbot in the first scenario, where the chatbot was heavily anthropomorphized and branded. The findings supported H1 and H3, demonstrating that a chatbot with a strong brand presence considerably increased perceptions regarding competence and warmth. According to users, the branded, human-like chatbot was friendly, trustworthy, and capable, which is consistent with established beliefs about the ability of branding to create strong emotional bonds with consumers (Aaker et al., 2010). This example showed how a well-designed chatbot with human-like characteristics may make a user's experience interesting and relevant.

The study looked at the effects of branding and anthropomorphization alone and in combination in the second and third scenarios. We investigated H2 and H4, which examined whether

anthropomorphization mediated the link between branding and perceptions of competence and warmth, and found that while anthropomorphization alone (Scenario 2) had a significant effect, the true narrative came to light. The results showed that a highly anthropomorphized chatbot increased the effect of branding. Essentially, the results indicate that the effects of branding increase and perceptions of competence and warmth are further enhanced when the chatbot displays human-like characteristics. The moderation effect, however, suggests that anthropomorphization contributes to much of the influence that is usually attributed to branding alone when it is high. This finding aligns with Gong and Nass (2007), who argue that anthropomorphic cues independently evoke warmth and competence, reducing the exclusive reliance on branding. This implies that the presence or lack of branding becomes less significant when there are strong anthropomorphic cues present since the chatbot's human-like characteristics already improve user perceptions. The hypothesis that a chatbot's design, especially its level of anthropomorphization, may enhance or even replace branding impacts and meaningfully shape user perceptions is supported by this result.

Furthermore, the findings validated the hypothesis (H5 and H6) that the relation between branding and empathy is mediated by competence and warmth. Users were more inclined to view the chatbot as sympathetic when they thought it was both kind and knowledgeable. It became evident how warmth, competence, and empathy are related: while branding establishes the framework, consumers experience empathy when a chatbot exhibits human-like traits and friendliness. This observation echoes the theoretical framework of Fiske et al. (2002), which emphasizes the interconnected roles of warmth and competence in shaping perceptions of social agents. The strong connection between these constructs reinforces prior research highlighting how positive emotional responses are crucial to building trust and fostering engagement (Reichheld, 2003; Erdem & Swait, 2004). As demonstrated by H7 and H8, this empathy in turn proved to be a crucial component in deciding whether people would recommend the chatbot. When users thought the chatbot understood them, they were more likely to speak favorably about it and recommend it to others.

Some response imbalances had to be taken into consideration during the analysis, especially in scenarios in which more users engaged with branded chatbots. In order to appropriately evaluate the combined impacts of branding and anthropomorphization, we created interaction terms. Making this modification was essential to ensuring that the insight gathered was accurate and representative of the actual relationships between these factors. This approach aligns with

methodological recommendations by Hayes (2018), which stress the importance of addressing potential biases in interaction analyses.

Essentially, our study's methodology helped us solve the unresolved question of how anthropomorphization and branding interact to influence user perceptions. The study demonstrated a logical path from branding and anthropomorphization to feelings of warmth, competence, empathy, and eventually, willingness to recommend by creating scenarios that represent various combinations of these elements. These results underscore not just the significance of branding but also the need to create human-feeling chatbots to foster deep, sympathetic user connections. Additionally, the findings contribute to the broader literature on human-computer interaction by corroborating earlier works (Reichheld, 2003; Nass & Moon, 2000) while highlighting new pathways for chatbot design and user engagement strategies.

The table below provides a summary of the hypotheses and their validation status:

Table 20.Summary of Hypothesis

Hypothesis	**Validated**
H1: The higher the level of branding, the better the perceptions of warmth towards the chatbot.	Yes
H2: The effect of branding on warmth is moderated by the level of anthropomorphization.	Yes
H3: The higher the level of branding, the better the perceptions of competence towards the chatbot.	Yes
H4: The effect of branding on competence is moderated by the level of **anthropomorphization**.	Yes
H5: Competence mediates the effect between higher levels of branding and empathy perceived towards the chatbot	Yes
H6 : Warmth mediates the effect of branding on competence towards the chatbot.	Yes
H7: Higher levels of branding have a significant effect on empathy perceived towards the chatbot.	Yes
H8 : Empathy significantly affects willingness to recommend the chatbot.	Yes

Chapter 6 - Conclusion:

6.1 Implications for Theory:

This study extends to the expanding body of literature on human-computer interaction (HCI) by demonstrating how anthropomorphization and branding influence psychological dimensions such as empathy, competence, and warmth during encounters with AI, especially chatbots. These findings expand the warmth-competence approach (Fiske, Cuddy, & Glick, 2007), which was originally applied to human perception, to the AI realm. This study supports and expands on studies that implies users respond to social cues from machines in the same way they respond to other humans (Nass & Moon, 2000; Reeves & Nass, 1996).

The study also adds information on the mediating functions of competence and warmth to boost empathy, which has been highlighted as an important aspect in customer engagement (Aaker, Vohs, & Mogilner, 2010). This demonstrates how AI could emotionally connect consumers, which is consistent with social cognition and parasocial interaction concepts in HCI (Sundar & Nass, 2001; Waytz, Heafner, & Epley, 2014). According to this theoretical insight, social cognition theories that have traditionally been used to analyze human-human interactions can also be useful instruments for analyzing connections between humans and artificial intelligence, particularly in marketing contexts where emotional engagement is essential (Aggarwal & McGill, 2007).

6.2 Implications for Practice:

This study provides valuable insights for companies and marketers looking to enhance their chatbot-based customer interaction strategies from a practical perspective. Effective engagement may depend on including conversational and emotional variables into chatbot design, according to the findings, which indicate that developing strong relationships with customers may call for more than simply a brand presence or visual signals (Gnewuch, Morana, & Maedche, 2017). According to Hess, Fuller, and Campbell (2009), adding human-like interactions can improve consumers' perceptions of warmth and competence, which will boost

customer satisfaction and promote brand advocacy.

Additionally, the findings emphasize how important empathy is in fostering customer loyalty, indicating that businesses have to prioritize creating sympathetic chatbot answers (McLean & Osei-Frimpong, 2019). Empathetic chatbots have been found to have a major influence on customer loyalty and trust (Chung, Ko, Joung, & Kim, 2020; Verhagen, Vonkeman, Feldberg, & Verhagen, 2014). According to these findings, businesses might gain from creating chatbots that offer individualized, sympathetic encounters in order to improve emotional engagement and enduring brand loyalty (Pillai, 2020).

6.3 Limitations and future studies:

This study has a number of limitations in spite of its contributions. First, research only looked at one brand (Amazon) and one product category (skincare), which restricts how broadly the results can be applied to other industries. Future studies might build on these results by examining a wider variety of brands and product categories in order to evaluate the wider application of anthropomorphization and branding impacts (Lu, Cai, & Goh, 2021).

Second, the study's sample size was limited, which might have affected the results' statistical power. Future research might benefit from larger, more varied samples to improve generalizability and reliability (Button et al., 2013). Furthermore, the long-term effects of branding and anthropomorphization on user engagement and loyalty were not investigated in this study because it concentrated on brief encounters with chatbots. Analyzing these long-term effects could provide insightful information, especially for businesses looking to build long-lasting relationships with their clients (van Doorn et al., 2017; Godey et al., 2016).

Future studies might also look at how differences in culture affect how consumers react to anthropomorphized AI because cultural influences can have a big impact on how people view and engage with technology (Choi, Mattila, & Bolton, 2019; Li, Hess, & Valacich, 2008).
This might provide a valuable perspective on how branding and anthropomorphization perform in various global markets.

Chapter 7 - Références:

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Annexes List :

Annex A – Sample Survey :

Dear Participant,

My name is Jazia Gharbi, and I am currently pursuing a Master's degree in Marketing at ISCTE Business School. Your participation is crucial to the success of my thesis.

Please rest assured that all information and data collected will be kept confidential and anonymous.

Thank you for taking the time to contribute to this research by completing this survey about a service in a retailing company.

Have you ever shopped online?

- ◯ Yes
- ◯ No

Do you use Amazon.com ?

- ◯ Yes
- ◯ No

Are you open to the idea of using an AI Chatbot in your shopping experience?

- ◯ Yes
- ◯ No

Based on your recent experience with Amazon.com's customer service, please select a number from 1 to 7 that best reflects your agreement with the statement, where 1 is "Strongly Disagree" and 7 is "Strongly Agree":

I have a positive impression of Amazon.com's customer service.

- ○ Strongly Disagree
- ○ Disagree
- ○ Somewhat Disagree
- ○ Neither agree nor disagree
- ○ Somewhat Agree
- ○ Agree
- ○ Strongly Agree

Do you purchase Skincare online?

- ○ Yes
- ○ No

→

How often do you purchase Skincare online?

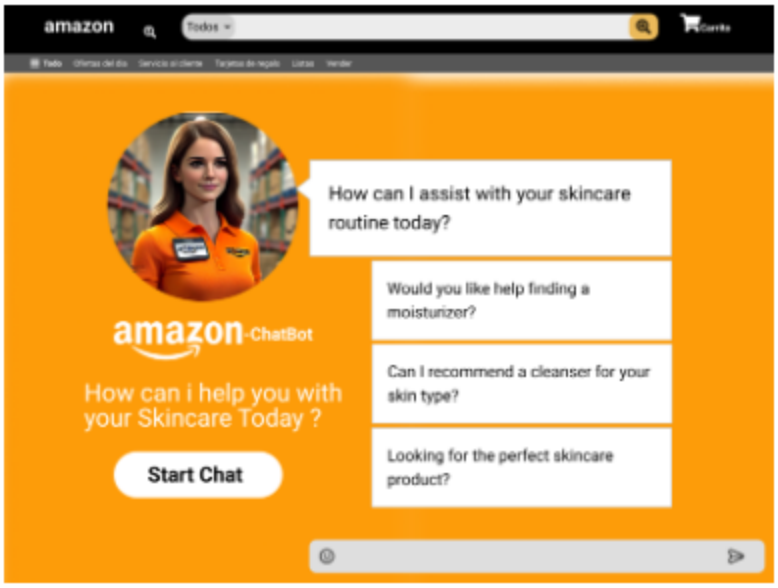
- ○ Weekly
- ○ Monthly
- ○ Every few months
- ○ Once or twice a year
- ○ Never

When was the last time you purchased Skincare online?

- ◯ Within the last week
- ◯ Within the last month
- ◯ Within the last 3 months
- ◯ Within the last 6 months
- ◯ Over a year ago
- ◯ Never

Imagine you are visiting Amazon.com and need help finding the perfect moisturizer. You decide to use Amazon's AI-powered chatbot to assist you. The chatbot asks a few questions about your skin type, preferences, and concerns. After gathering this information, the chatbot provides a personalized recommendation for a moisturizer that best suits your needs. Now, please answer the following questions based on this experience.

The AI Chatbot:



Please select the color of the chatbot's interface that you just saw:

- ◯ Orange
- ◯ Grey
- ◯ orange with a robot

Please carefully consider each statement about the chatbot and select the option that best reflects your opinion, from "Strongly Disagree" (1) to "Strongly Agree" (7):

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The chatbot is friendly	◯	◯	◯	◯	◯	◯	◯
The chatbot is approachable.	◯	◯	◯	◯	◯	◯	◯
The chatbot is warm.	◯	◯	◯	◯	◯	◯	◯
The chatbot makes me feel comfortable.	◯	◯	◯	◯	◯	◯	◯
The chatbot is considerate.	◯	◯	◯	◯	◯	◯	◯

Please carefully consider each statement about the chatbot and select the option that best reflects your opinion, from "Strongly Disagree" (1) to "Strongly Agree" (7):

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The chatbot is competent.	◯	◯	◯	◯	◯	◯	◯
The chatbot is knowledgeable.	◯	◯	◯	◯	◯	◯	◯
The chatbot is efficient.	◯	◯	◯	◯	◯	◯	◯
The chatbot is reliable.	◯	◯	◯	◯	◯	◯	◯
The chatbot is capable.	◯	◯	◯	◯	◯	◯	◯

Please carefully consider each statement about the chatbot and select the option that best reflects your opinion, from "Strongly Disagree" (1) to "Strongly Agree" (7):

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The chatbot understands my needs.	○	○	○	○	○	○	○
The chatbot is empathetic.	○	○	○	○	○	○	○
The chatbot is caring.	○	○	○	○	○	○	○
The chatbot shows concern for me.	○	○	○	○	○	○	○
The chatbot is compassionate.	○	○	○	○	○	○	○

Please carefully consider each statement about the chatbot and select the option that best reflects your opinion, from "Strongly Disagree" (1) to "Strongly Agree" (7):

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I would recommend this chatbot to others.	○	○	○	○	○	○	○
I am likely to use this chatbot again.	○	○	○	○	○	○	○
I would speak positively about this chatbot.	○	○	○	○	○	○	○
I trust this chatbot.	○	○	○	○	○	○	○
I am satisfied with this chatbot.	○	○	○	○	○	○	○

→

Please carefully consider each statement about the chatbot and select the option that best reflects your opinion, from "Strongly Disagree" (1) to "Strongly Agree" (7):
All things considered, my using of a Chatbot is a_ _ _ _ _ idea:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Using Chatbot is a good idea	○	○	○	○	○	○	○
Using Chatbot is a wise idea	○	○	○	○	○	○	○
Using Chatbot is a pleasant idea	○	○	○	○	○	○	○
Using Chatbot is a positive idea	○	○	○	○	○	○	○

Please carefully consider each statement about the chatbot and select the option that best reflects your opinion, from "Strongly Disagree" (1) to "Strongly Agree" (7):

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly Agree
I would strongly recommend this brand to anyone.	○	○	○	○	○	○	○
I am likely to continue using this brand in the future.	○	○	○	○	○	○	○
I feel loyal to this brand and prefer it over others.	○	○	○	○	○	○	○

Age:

- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ over 55

Gender

- ◯ Male
- ◯ Female
- ◯ Non-Binary
- ◯ Prefer not to say

Education level

- ◯ High school Diploma or equivalent
- ◯ Bachelor's Degree
- ◯ Master's Degree
- ◯ Doctorate
- ◯ Other

Occupation:

- ◯ Student
- ◯ Employed
- ◯ self- employed
- ◯ Unemployed
- ◯ Retired
- ◯ Other

→

Annex B - Hypothesis Analysis :

H1:

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,184[a]	,034	,030	1,26212

a. Prédicteurs : (Constante), Branding

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	14,375	1	14,375	9,024	,003[b]
	de Student	410,982	258	1,593		
	Total	425,357	259			

a. Variable dépendante : Warmth

b. Prédicteurs : (Constante), Branding

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés	t	Sig.	Intervalle de confiance à 95,0% pour B	
		B	Erreur standard	Bêta			Borne inférieure	Borne supérieure
1	(Constante)	4,784	,135		35,558	,000	4,519	5,049
	Branding	,497	,165	,184	3,004	,003	,171	,823

a. Variable dépendante : Warmth

H2 :

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,244[a]	,059	,052	1,24765

a. Prédicteurs : (Constante), center, Branding

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	25,305	2	12,652	8,128	,000[b]
	de Student	400,052	257	1,557		
	Total	425,357	259			

a. Variable dépendante : Warmth

b. Prédicteurs : (Constante), center, Branding

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés	t	Sig.
		B	Erreur standard	Bêta		
1	(Constante)	4,784	,133		35,971	,000
	Branding	,727	,185	,269	3,926	,000
	center	-,506	,191	-,181	-2,650	,009

a. Variable dépendante : Warmth

H3 :

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,227[a]	,052	,048	1,23511

a. Prédicteurs : (Constante), Branding

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	21,395	1	21,395	14,025	,000[b]
	de Student	393,581	258	1,526		
	Total	414,976	259			

a. Variable dépendante : Comp

b. Prédicteurs : (Constante), Branding

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés	t	Sig.	Intervalle de confiance à 95,0% pour B	
		B	Erreur standard	Bêta			Borne inférieure	Borne supérieure
1	(Constante)	4,735	,132		35,962	,000	4,476	4,994
	Branding	,606	,162	,227	3,745	,000	,287	,925

a. Variable dépendante : Comp

H4 :

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,293[a]	,086	,079	1,21498

a. Prédicteurs : (Constante), center, Branding

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	35,597	2	17,799	12,057	,000[b]
	de Student	379,379	257	1,476		
	Total	414,976	259			

a. Variable dépendante : Comp

b. Prédicteurs : (Constante), center, Branding

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés	t	Sig.
		B	Erreur standard	Bêta		
1	(Constante)	4,735	,130		36,558	,000
	Branding	,868	,180	,325	4,816	,000
	center	-,577	,186	-,209	-3,102	,002

a. Variable dépendante : Comp

H7 :

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,162[a]	,026	,022	1,60051

a. Prédicteurs : (Constante), Branding

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	17,781	1	17,781	6,941	,009[b]
	de Student	660,901	258	2,562		
	Total	678,681	259			

a. Variable dépendante : Empathy

b. Prédicteurs : (Constante), Branding

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés	t	Sig.	Intervalle de confiance à 95,0% pour B	
		B	Erreur standard	Bêta			Borne inférieure	Borne supérieure
1	(Constante)	3,889	,171		22,795	,000	3,553	4,225
	Branding	,553	,210	,162	2,635	,009	,140	,966

a. Variable dépendante : Empathy

H8 :

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,719[a]	,516	,515	1,09950

a. Prédicteurs : (Constante), Empathy

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	333,052	1	333,052	275,502	,000[b]
	de Student	311,894	258	1,209		
	Total	644,946	259			

a. Variable dépendante : Recommendation

b. Prédicteurs : (Constante), Empathy

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés	t	Sig.	Intervalle de confiance à 95,0% pour B	
		B	Erreur standard	Bêta			Borne inférieure	Borne supérieure
1	(Constante)	1,973	,192		10,273	,000	1,595	2,352
	Empathy	,701	,042	,719	16,598	,000	,617	,784

a. Variable dépendante : Recommendation

Annex C - Sample Characterization (SPSS Output) :

Do you purchase skincare

		Fréquence	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	No	104	40,0	40,0	40,0
	Yes	156	60,0	60,0	100,0
	Total	260	100,0	100,0	

Skincarepurchase

		Fréquence	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Every few months	88	33,8	33,8	33,8
	Monthly	43	16,5	16,5	50,4
	Never	78	30,0	30,0	80,4
	Once or twice a year	49	18,8	18,8	99,2
	Weekly	2	,8	,8	100,0
	Total	260	100,0	100,0	

LastSkincarepurchase

		Fréquence	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Never	78	30,0	30,0	30,0
	Over a year ago	25	9,6	9,6	39,6
	Within the last 3 months	52	20,0	20,0	59,6
	Within the last 6 months	20	7,7	7,7	67,3
	Within the last month	61	23,5	23,5	90,8
	Within the last week	24	9,2	9,2	100,0
	Total	260	100,0	100,0	

Gender

		Fréquence	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Female	154	59,2	59,2	59,2
	Male	102	39,2	39,2	98,5
	Non-Binary	1	,4	,4	98,8
	Prefer not to say	3	1,2	1,2	100,0
	Total	260	100,0	100,0	

Education

		Fréquence	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Bachelor's Degree	118	45,4	45,4	45,4
	Doctorate	6	2,3	2,3	47,7
	High school Diploma or equivalent	60	23,1	23,1	70,8
	Master's Degree	68	26,2	26,2	96,9
	Other	8	3,1	3,1	100,0
	Total	260	100,0	100,0	

Occupation

		Fréquence	Pourcentage	Pourcentage valide	Pourcentage cumulé
Valide	Employed	120	46,2	46,2	46,2
	Other	7	2,7	2,7	48,8
	Retired	4	1,5	1,5	50,4
	self- employed	29	11,2	11,2	61,5
	Student	90	34,6	34,6	96,2
	Unemployed	10	3,8	3,8	100,0
	Total	260	100,0	100,0	

Appendix D -

ANOVA

Age

	Somme des carrés	df	Carré moyen	F	Sig.
Entre groupes	,000	2	,000	,513	,599
Intra-groupes	,000	247	,000		
Total	,000	249			

Tableau croisé Gender * Scenario

Effectif

		Scenario			
		Orange	Grey	Orange with a robot	Total
Gender	Female	60	51	43	154
	Male	40	34	28	102
	Non-Binary	0	1	0	1
	Prefer not to say	1	2	0	3
Total		101	88	71	260

Tests du khi-carré

	Valeur	df	Signification asymptotique (bilatérale)
Khi-deux de Pearson	3,810[a]	6	,702
Rapport de vraisemblance	4,630	6	,592
N d'observations valides	260		

a. 6 cellules (50,0%) ont un effectif théorique inférieur à 5. L'effectif théorique minimum est de ,27.