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Mahdieh Ghaniabadi

MASTER'S THESIS PROJECT

FACTORS THAT IMPACT USERS' ATTITUDES TOWARD CHATBOTS AND THEIR INTENTIONS TO USE CHATBOT IN ONLINE SERVICES

Supervisor: **Prof. Dr. Sigitas Urbonavičius**

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LIST OF ABBREVIATIONS

Technology Acceptance Model (TAM)

Unified Theory of Acceptance and Use of Technology (UTAUT)

Pleasure-Arousal-Dominance (PAD)

Information Systems (IS)

Information Technology (IT)

Perceived Anthropomorphism (AN)

Perceived Social Presence (SP)

Innovativeness (IN)

Perceived Usefulness (PU)

Perceived Enjoyment (PE)

Perceived Ease-of-Use (PEU)

Attitudes (AT)

Intention to Use (IU)

Introduction

Chatbots are programs designed to interact with users, including customers, employees, and other stakeholders, using text or voice input data without human moderation in real-time (Mogaji et al., 2021). Chatbots are gaining popularity as business managers have recognized their enormous potential for business development, which is crucial for the future of business development and management (Zarouali et al., 2018; Eurostat, 2021). From a managerial perspective, chatbots increase customer communication automation, reduce associated costs and efforts, are cheap and easy to maintain, and, unlike humans, have a structured procedure for information processing. Thus, their interactions with consumers are more reliable and consistent than those of humans, and managers can monitor and analyze chatbot performance more accurately and efficiently than human agents' performance (Chocarro et al., 2023; De Cicco et al., 2020).

On the other hand, from a customer perspective, they are highly available as many customers have smartphones and internet connections nowadays. In addition to availability, chatbots answer requests quickly, and chatting with them can be exciting and enjoyable (Mogaji et al., 2021). Although they are usually used for customer communication automation, there is a massive opportunity for them to replace online shopping websites, music streaming services, information collecting, processing, and aggregation websites such as Google Flight or Google News, and intermediate physical and psychological advisors in the future (DuHadway & Dreyfus, 2017; Kasilingam, 2020).

To deploy chatbots and tap into their full potential in the service landscape, factors influencing their users' expectations, experience, and attitudes toward chatbots must be studied (De Cicco et al., 2020). One factor affecting users' perceptions and attitudes toward chatbots is anthropomorphism (Sheehan et al., 2020). It refers to associating human qualities and attributes with non-human entities such as animals, products, brands, or chatbots (Go & Sundar,2019; Selamat & Windasari, 2021). Anthropomorphism consists of three cues: identity, visual, and conversational. Identity cue refers to using a human name to introduce a chatbot to users (Araujo,2018; Go & Sundar,2019). Visual cues refer to using human avatars, images, animations, and figures to present chatbots to the users (De Cicco et al., 2020; Ciechanowski et al., 2019). Conversational cues use human language in chatbot-user interaction (Go & Sundar, 2019; Rese et al., 2020; Sheehan et al., 2020). When chatbots possess human-like attributes such as name, image,

or look, users report more positive experiences and engagement (Blut et al., 2021; Selamat & Windasari, 2021). Such human-like chatbots also foster higher trust, social perception, and perceived enjoyment and shape attitudes and intentions toward their use (Balakrishnan et al., 2022; Konya-Baumbach et al., 2023).

Furthermore, the other factors that influence the perceptions of users and their attitudes toward chatbots are perceived usefulness and perceived ease of use (Chocarro et al., 2023; Kasilingam, 2020; Mostafa & Kasamani, 2022; Rese et al., 2020). Perceived usefulness pertains to user evaluation of how they can improve users job performance or task efficiency based on their subjective beliefs about the benefits and value they can provide (Chocarro et al., 2023; Kasilingam, 2020; Mostafa & Kasamani, 2022). Perceived usefulness is a crucial aspect that has a positive and significant impact on users' intentions to use chatbots and their attitudes toward chatbots (Chocarro et al., 2023; Davis et al., 1989; Selamat & Windasari, 2021). Perceived ease-of-use relates to users' perceptions regarding how easy systems or technologies are to learn and use (Kasilingam, 2020; Selamat & Windasari, 2021). Perceived ease-of-use not only indirectly has a positive and indirect impact on users' intentions to use chatbots through shaping positive influence on their attitudes toward chatbots but also has a positive and direct effect on users' perceptions of usefulness and enjoyment (Chocarro et al., 2023; Eeuwen,2017; Kasilingam,2020; Selamat & Windasar,2021).

Moreover, users' innovativeness influences how individuals perceive and interact with chatbots (Chocarro et al., 2023; Chung et al., 2020; Kasilingam, 2020; Mogaji et al., 2021; Rese et al., 2020). Such variables influence users' perceptions, beliefs, and attitudes toward chatbots (cf. Araújo & Casais, 2020). Innovativeness as a human characteristic positively and indirectly impacts users' intentions to use new technology (Fagan et al., 2012; Mostafa & Kasamani, 2022). This factor has a positive and significant effect on users' attitudes toward chatbots; in turn, it causes a positive impact on shaping users' intentions to use chatbots (Mostafa & Kasamani, 2022). In addition, innovativeness positively affects perceived usefulness and ease of use (Fagan et al., 2012).

Furthermore, the chatbot effect that includes emotions and epistemic feelings users recognize while interacting with chatbots is another factor that impacts users' attitudes toward chatbots and their usage intentions (Araujo, 2018; Konya-Baumbach et al., 2023; Zarouali et

al.,2018). Perceived enjoyment is a motivational force, encouraging users to engage with chatbots by shaping their intentions to interact with this technology (Selamat & Windasari, 2021). Perceived enjoyment positively and indirectly influences users' intentions to purchase by chatbots (Han, 2021). In addition, positive affect (joy) is an inherent motivational driver that shapes users' attitudes toward chatbots (Kasilingam, 2020).

Researching various users' intentions and behaviors after interacting with different chatbots is paramount, allowing researchers to discover what factors influence them and how. Many intentional and behavioral factors, such as intention to use chatbots, purchase intention after chatting with a chatbot, and perceived satisfaction, could be studied to understand what influences them. Among them, the intention to use chatbots is prevalent as it indicates users' future behavior and diffusion of chatbots as new technology (Rese et al., 2020). Intention to use chatbots refers to individuals' intentions or willingness to use a particular chatbot based on their perceived benefits, attitudes, and subjective norms (Balakrishnan et al., 2022; Chocarro et al.,2023; Rese et al., 2020; Selamat & Windasari,2021).

The research problem of this study revolves around understanding the dynamics among perceived anthropomorphism, perceived social presence, and personal innovativeness and their impacts on perceived usefulness, ease-of-use, and enjoyment, and exploring their mediating role on attitude toward chatbots, which ultimately would impact users' intention to use a chatbot. The aim of this research is to investigate the relationship among the factors mentioned earlier and examine how these factors shape users' attitudes toward chatbots and ultimately impact their intention to use chatbots. The objectives of this research are as follows:

1- Discovering whether perceived anthropomorphism, perceived social presence of interacting with ChatGPT, and users' innovativeness influence their perceived usefulness, ease-of-use, and enjoyment

2- Exploring whether perceived ease-of-use impacts usefulness and enjoyment perceptions of ChatGPT.

3- Investing in whether perceived usefulness, ease-of-use, and enjoyment of interacting with ChatGPT impact user's attitudes toward it.

4- Evaluating the effects of users' attitudes toward chatbots on users' intentions to use chatbots.

1. Analysis of the Scientific Literature on Factors That Impact Attitudes Towards Chatbots and Intention to Use Them in Online Servicing

1.1. Chatbots as Innovative Technologies and Their Current Performance and Future Potentials

Chatbots are software armed with artificial intelligence (AI) and machine learning algorithms for interacting with users through chat interfaces (Ciechanowski et al., 2019; Mostafa& Kasamani, 2022;). Chatbots with natural language processing are intelligent agent technologies that can understand and interpret user inputs in the form of text or speech. In addition, they can be designed to mimic human communication to offer automated customer service and respond to commonly asked inquiries by customers (Chocarro et al.,2023; Kasilingam, 2020; Selamat & Windasari, 2021; Shumanov & Johnson, 2021). Chatbots can be used in different service fields, such as education, healthcare, customer service, and personal assistance. For example, chatbots could provide students individualized and on-demand education when their regular instructor is unavailable (Chocarro et al., 2023). Chatbots can be useful in the healthcare system by helping users schedule appointments, remind them to take their medication, or monitor them (Valtolina et al., 2020). Other uses of chatbots could be in banking (Mogaji et al., 2021; Trivedi, 2019) and e-commerce and marketing (Chung et al., 2020; Selamat & Windasari, 2021).

How the importance of chatbots comes from their current performance and expected future potential to address both business-side and consumer-side needs. On the business-side, chatbots can be used for training employees, distributing gained knowledge in business among employees, addressing employee human resource-related questions, helping salesforce differentiate and position a company's product(s) by answering potential organizational buyers' questions, etc. On the consumer side, chatbots can educate users about products and solutions that a company offers, compare and contrast products of one company to those of its competition, address and handle customers' requests and questions, and dispatch them to various departments if needed (Adam et al., 2021; Ciechanowski et al., 2019; Shumanov & Johnson, 2021). AI-powered chatbots are transforming how businesses communicate with their customers, changing the essence of online services (Balakrishnan et al., 2022; Chung et al.,2020; Han, 2021). The majority of the benefits that are associated with chatbots relate to improvements in efficiency by reducing costs associated with customer support (Araujo, 2018; Castelo et al., 2023; van Hooijdonk et al., 2023), shortening waiting times for customers (Balakrishnan et al., 2022; Shumanov & Johnson, 2021), providing

personalized recommendations (Chung et al., 2020), answering questions (Mostafa & Kasamani, 2022; Pantano & Pizzi, 2020), and personalized services to fulfill the customers' needs and demands at any time and in any location (Selamat, & Windasari, 2021).

The interaction between a firm and its customers shifts from being driven by humans to being driven by technology, including digital assistants (Konya-Baumbach et al., 2023; Go & Sundar, 2019). Armed chatbots with AI and machine learning techniques can converse with customers, understand intricate conversations, and respond to consumer concerns with nuance and empathy (Chocarro et al., 2023; Wilson et al., 2017). Moreover, chatbots can provide enhanced understanding regarding the availability of products and their effectiveness (Chung et al., 2020; Mostafa & Kasamani, 2022). Using chatbots in pre-purchase, purchase, and post-purchase marketing processes has become an integrated part of customer service (Balakrishnan et al., 2022). Chatbots can improve customer service quality by providing flexible customer service and offering assistance even outside of regular business hours, which has the potential to increase both the satisfaction and loyalty of customers (Mostafa & Kasamani, 2022; Pantano & Pizzi, 2020). Another benefit from that firms can gain utilizing chatbots is that chatbots can help businesses strengthen ties with their customers (Shumanov & Johnson, 2021) as well as improve the customer experience (Konya-Baumbach et al., 2023; Chung et al., 2020).

As chatbot utilization is increasing in various industries, it is crucial to shed light on which factors impact customers' intentions and attitudes toward chatbots, the frequency of chatbot usage, and patronage intentions (Balakrishnan et al.,2022; Han,2021; Mostafa & Kasamani,2022; Zarouali et al., 2018). First, chatbots can be made with or without human names, images, and human-like language usage. Second, the perceived usefulness of a chatbot, which is the extent to which users perceive the chatbot usage would improve the probability of achieving their goals, needs, and wants, impacts users' intentions and attitudes toward chatbots (Eeuwen, 2017; Kasilingam, 2020; Mostafa & Kasamani, 2022; Selamat & Windasari, 2021; Rese et al., 2020),. Third, a chatbot's perceived ease-of-use refers to users' perceptions about how interacting with a chatbot would be effortless, affects users' attitudes and intentions toward chatbots and frequency of usage (Balakrishnan et al.,2022; Chocarro et al., 2023; Eeuwen, 2017; Kasilingam, 2020; Mogaji et al.,2021; Selamat & Windasari, 2021; Zarouali et al., 2018). Fourth, the perceived friendliness, warmth, and sensitivity while interacting with a person or a technology, known as social presence," mediates the effects of anthropomorphized chatbots on users' attitudes and intentions to use chatbots (Konya-Baumbach et al., 2023; Blut et al.,2021; Chung et al.,2020; Go

& Sundar, 2019; Han,2021). Fifth, regarding chatbots, performance expectancy denotes users' evaluations regarding in what way using a chatbot will help them meet their needs, which consequently will impact users' engagement with chatbots and their attitude toward chatbots (Balakrishnan et al.,2022; Dwivedi et al., 2019; Mogaji et al.,2021; Mostafa & Kasamani, 2022). Sixth, perceived social influence refers to an individual's perception of how other people would judge them while they are using chatbots, which influences the user's attitudes toward chatbots and their intentions to use them (Balakrishnan et al., 2022; Dwivedi et al., 2019; Mogaji et al., 2021; Mostafa & Kasamani, 2022). Seventh, compatibility, which refers to how well technology such as chatbots aligns with users' needs and wants, influences users' intention to use it (Lee et al., 2011; Mogaji et al., 2021; Zarouali et al., 2018).

In conclusion, chatbots, as virtual assistance software powered by natural language processing, machine learning algorithms, and/or artificial intelligence, can converse with customers through chat interfaces. Chatbots are designed to simulate human communication to provide automated customer service and react to commonly asked customers' questions and requirements. Chatbots can be used in e-commerce, banking, education, healthcare systems, and many other fields. Utilizing chatbots by firms and organizations would bring many benefits to them, such as mitigating costs associated with customer services, reducing the time waiting for customers, giving personalized recommendations, answering questions, and providing personalized services. As the use of chatbots in different industries is going to be prevalent, it is essential to identify which variables influence users' intentions and attitudes toward using them. These variables consist of perceived chatbot anthropomorphism, perceived ease-of-use, perceived usefulness, performance expectancy, and so forth. Chatbots have tremendous potential to revolutionize business-customer interactions and improve customer experience, satisfaction, and loyalty.

1.2. Technology Acceptance Models for Understanding User Acceptance and Adoption of Technology

Several theories are used to recognize the aspects that impact users' attitudes toward chatbots in online services. Three prominent theories are the Technology Acceptance Model (TAM), the Diffusion of Innovation, and the Unified Theory of Acceptance and Use of Technology (UTAUT). In the design and chatbot implementation using these three theories can be highly beneficial.

Firstly, by employing the factors of these theories, researchers can make informed predictions about users' intentions to use chatbots, their acceptance of chatbot technology, and their actual adoption behaviors (Balakrishna, 2022; Mostafa & Kasamani, 2022). Secondly, TAM, UTAUT, and DOI shed light on users' attitudes, beliefs, and perceptions regarding chatbots. Developers can design more practical, usable, and user-friendly chatbots by comprehending factors influencing users to use them and their acceptance, such as attitudes, social influence, and perceived usefulness. For example, knowing the significant role in users' usage and their acceptance of technology allows developers to create chatbots that are appealing and engaging to users. Thirdly, understanding the social factors that influence user behavior can also assist developers in designing chatbots that facilitate social interactions and foster a sense of community. Finally, applying these theories can notify chatbot technology's design, application, and promotion to increase users' intonations to use chatbots, their acceptance, and their attitudes toward chatbots.

TAM is a valuable theory in understanding the factors that impact users' attitudes and intentions toward chatbots. This theory was developed by Davis (1989) and is focused on the assessment of how users accept, intend to use, and adopt new technologies, including chatbots (Chocarro et al., 2023; Faqih, 2016; Kasilingam, 2020; Mostafa & Kasamani, 2022). TAM is extensively employed to elucidate the acceptance and utilization of information systems, playing a significant role in research and practical applications for comprehending user behavior regarding emerging technologies (Faqih, 2016). Furthermore, it offers a structure for evaluating how external factors impact the usage of a system (Kim et al., 2010). TAM uses two factors to elucidate the behavioral intention of users and their acceptance of new technology, perceived usefulness, and perceived ease of use Davis (1989). TAM states that the decision to use the new technology depends on the individuals' intentions to utilize it, which, in turn, is influenced by their perceptions of the system's usefulness and effortlessness (Kim et al., 2010). Perceived usefulness denotes the extent to which a user assesses whether a specific technology would be practical and helpful in achieving their goals and improving their performance (Davis, 1989; Faqih, 2016; Chocarro et al., 2023; Kim et al., 2010). Perceived ease-of-use refers to users' perceptions in terms of how new technology would be easy to use and require minimal effort (Davis, 1989; Kim et al., 2010; Mostafa & Kasamani, 2022), In TAM theory, users are inclined to adopt and utilize technology when they perceive it to be functional and user-friendly. Additionally, the model proposes that the perception of usefulness affects user behavior prediction more than the perception of ease of use does. Kim et al. (2010) indicated that perceived usefulness and ease of

use significantly impact a user's intention to adopt new information technology (IT). TAM theory has been widely applied in many contexts like healthcare, learning systems (Chocarro et al., 2023; Chen et al., 2020), and online retail and e-commerce (Araujo, 2018; Eeuwen, 2017; Kasilingam, 2020; Rese et al., 2020). The model has been adapted and extended to include additional factors that may impact technology acceptance and use, such as social influence, trust, and compatibility with existing systems (Eeuwen, 2017; Kasilingam, 2020; Mostafa & Kasamani, 2022; Rese et al., 2020).

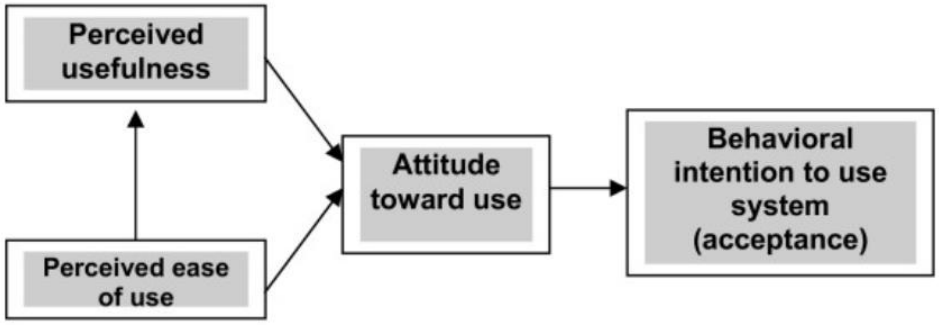

Figure 1. Technology acceptance model (Davis 1989)

The next theory that offers valuable insights into the factors that influence users' perspectives on chatbots and their intentions to accept and utilize them is the Diffusion of Innovation theory. The concept of Diffusion of Innovations refers to a concept that refers to examining how new products, services, ideas, and technology are adopted and spread over time among people or organizations, also examining the individuals' acceptance of new technology (Davis, 1989; Faqih2016; Kasilingam,2020; Mostafa & Kasamani, 2022; Rogers,1995). Diffusion of Innovations theory was developed by Everett Rogers (1995) and since then has been applied broadly in various fields, including e-commerce, communication, and business (Eeuwen2017; Kasilingam,2020; Mostafa & Kasamani, 2022; Patil et al.,2020) and banking Mogaji et al., (2021). An innovation is essentially an idea that is regarded as novel or unique either by a person or community that adopts it, which can take the form of a new or innovative idea, practice, or object in the eyes of the adopter (Lee et al., 2011; Rogers, 1995). Before embracing new technology, individuals typically go through a series of stages: knowledge acquisition, persuasion, decision-making, implementation, and confirmation (Kasilingam, 2020; Rogers, 1995). Furthermore, Rogers (1995) considered five key determinants, namely relative advantage, compatibility, complexity, trialability, and observability, which are crucial elements within DOI that shape the public's perception of innovation in technology. The notion of relative advantage pertains to the

extent to which an innovation is perceived as surpassing existing alternatives in terms of superiority (Faqih, 2016; Lee et al., 2011; Mostafa & Kasamani,2022; Venkatesh et al., 2003). Compatibility pertains to the level at which an innovation is perceived by the values, needs, and experiences of those adopting it, indicating its compatibility with its existing framework. (Eeuwen 2017; Lee et al., 2011; Mostafa & Kasamani 2022). Complexity refers to the level at which a new technology or an innovation is perceived as challenging to learn or implement (Lee et al., 2011; Rogers, 1995). Furthermore, the perceived ease of use represents the opposite of complexity (Mostafa & Kasamani,2022; Zhou et al., 2010;). Trialability is the term used to describe the extent to which innovations or new ideas can be tested or experimented with on a small or limited scale Lee et al., (2011). The degree to which others can see innovations' outcomes is called observability (Venkatesh et al., 2003). Overall, the DOI theory offers a valuable basis for understanding diffusion of innovation. A complete understanding of the variables influencing diffusion enables organizations to develop enhanced strategies and interventions, facilitating the adoption and dissemination of innovations.

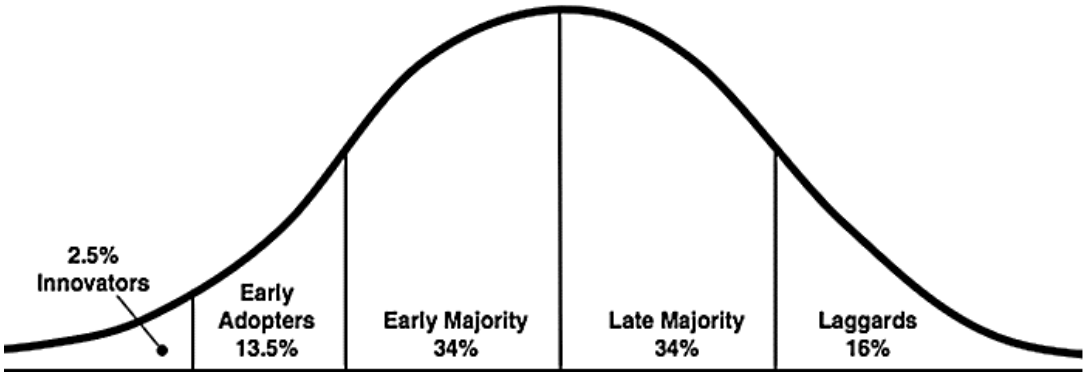

Figure 2. Diffusion of Innovation Theory (Rogers, 1995)

Another critical theory that aids in identifying the dominant variables affecting users' acceptance, attitudes toward chatbots, and intentions to use them is the Unified Theory of Acceptance and Use of Technology. This theory is a theoretical agenda designed to comprehend and forecast user acceptance and usage behavior regarding information technology (IT) and information systems (IS) (Baptista & Oliveira, 2015; Chaouali et al., 2016; Mostafa & Kasamani, 2022; Venkatesh et al., 2003). The UTAUT comprises four distinct factors: performance expectancy, effort expectancy, social influence, and facilitating conditions, which are considered direct determinants to evaluate behavior and intention to use. Furthermore, it implies that the user's prior experience moderates these factors, behavioral patterns with similar technologies, and their

characteristics, such as age, gender, and level of education (Venkatesh et al., 2003). Performance expectancy pertains to the extent to which an individual perceives or evaluates the level of potential outcomes that the use of a particular technology would improve their performance or efficiency (Balakrishnan et al.,2022; Mogaji et al., 2021; Mostafa & Kasamani, 2022; Patil et al., 2020; Venkatesh et al., 2003). It is essential to highlight that in UTAUT, performance expectancy is synonymous with perceived usefulness in TAM (Balakrishnan et al.,2022; Kim et al., 2010; Patil et al., 2020; Venkatesh et al., 2003). Effort expectancy, similar to the concept of perceived ease-of-use in TAM, represents the degree to which an individual perceives that utilizing technology would be uncomplicated and require minimal effort (Alalwan et al.,2017; Balakrishnan et al., 2022; Kim et al., 2010; Mogaji et al., 2021; Patil et al., 2020; Venkatesh et al., 2003). Social influence can be described as the scope to which an individual is affected by the opinions, attitudes, behaviors, and expectations of other people or groups regarding using new technology (Balakrishnan et al., 2022; Dwivedi, 2019; Mogaji et al., 2021; Mostafa & Kasamani, 2022; Verma & Sinha, 2018; Venkatesh et al., 2003). Facilitating conditions pertain to how the users perceive the requirements and available assistance or support to conduct a task (Alalwan et al., 2017; Balakrishnan et al., 2022; Dwivedi, 2019; Mogaji et al., 2021; Mostafa & Kasamani, 2022; Patil, et al., 2020; Venkatesh et al., 2003). It has been discovered that attitudes toward using a particular technology directly influence the intention to act and actual user behavior and are modified by social influence and conducive factors (Balakrishnan et al.,2022; Dwivedi, 2019; Mogaji et al., 2021; Patil et al., 2020). Attitudes moderately mediate the impacts of performance expectations, effort expectations, facilitating circumstances, and social influence on users' behaviors (Balakrishnan et al.,2022; Dwivedi, 2019; Mogaji et al., 2021; Patil et al., 2020).

To sum up, the UTAUT model is widely used in research and practice to comprehend and forecast technology acceptance and use in various domains, including healthcare, education, and business.

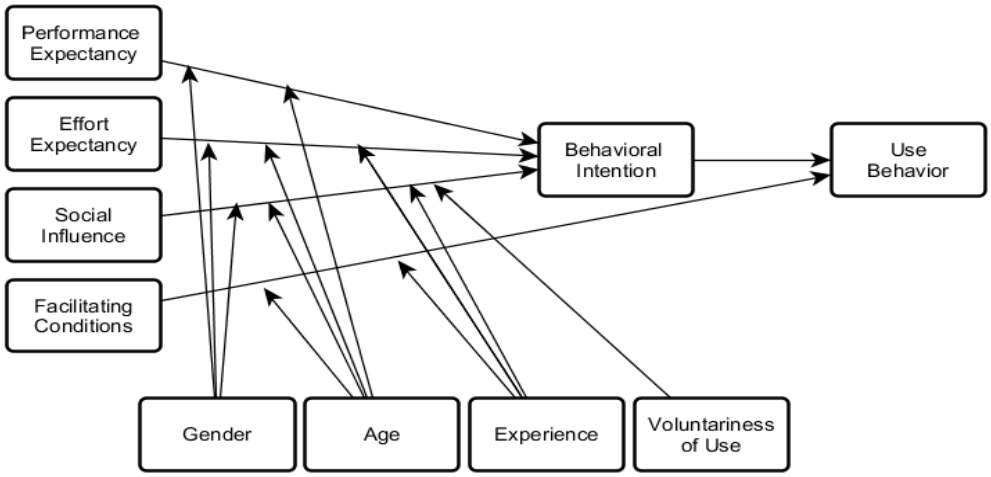

Figure 3. Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003)

To sum up, three prominent theories, TAM, DOI, and UTAUT, provide valuable insights into users' attitudes and intentions toward chatbots. They help predict users' acceptance and adoption behaviors, shed light on their beliefs and perceptions, and assist in designing effective chatbots. Understanding factors like perceived usefulness, ease of use, relative advantage, compatibility, trialability, complexity, observability, performance and effort expectancy, social influence, and facilitating conditions can enhance chatbot acceptance and attitudes.

1.3. Factors That Influence Users' Attitudes and Intentions Toward Chatbots

1.3.1. Anthropomorphism And Social Presence and Their Effects on Users' Intentions and Attitudes

When non-human entities such as animals, products, brands, or chatbots have human-like attributes such as name, image, or look, humans perceive them differently than they do not possess such qualities (Araujo,2018; Go and Sundar,2019). In the literature, associating human qualities and attributes with non-human entities is called Anthropomorphism (Aggarwal & McGill, 2012; Epley et al., 2007; Go & Sundar, 2019; Han, 2021; Tam et al., 2013). Regarding chatbots, anthropomorphism gives human attributes and qualities to a chatbot to help users develop a human-like experience (Selamat & Windasari, 2021). Human-like chatbots offer several benefits, including improved user experience and engagement (Blut et al., 2021; Han, 2021), as well as higher trust, social perception, and perceived enjoyment (Blut et al., 2021; De Cicco et al., 2020; Han, 2021). Moreover, human-like chatbots have impacts on shaping attitudes toward chatbots

and users' intentions to use them (Balakrishnan et al., 2022; Blut et al., 2021; De Cicco et al., 2020; Go & Sundar, 2019; Rese et al., 2020).

In addition, chatbot anthropomorphism affects the emotional relationship between customer and company (Araujo, 2018) and customers' purchase intentions and satisfaction through the shopping experience (Konya-Baumbach et al., 2023). Furthermore, chatbots with anthropomorphic abilities are perceived as more straightforward (Sheehan et al., 2020). Furthermore, by mimicking human communication, chatbots can provide personalized, faster, and more effective customer service and build trust with users, who may be more likely to share sensitive information with chatbots that they perceive as human-like (De Cicco et al., 2020; Han, 2021; Konya-Baumbach et al., 2023; Mostafa & Kasamani, 2022; Rese et al., 2020; Selamat & Windasari, 2021; Trivedi, 2019). Konya-Baumbach et al. (2023) argued that the anthropomorphized chatbot positively impacted users' purchase intentions, word of mouth, trust, and satisfaction.

Users' perception of a chatbot ranges from totally non-human to human. Three main domains shape such perceptions, including visual cues, identity cues, and conversational cues. The visual cue of a chatbot is the image, avatar, animation, or figure that is used for showing the chatbot to its users (Ciechanowski et al.,2019; De Cicco et al., 2020; De Visser et al., 2016; Go and Sundar, 2019). The visual cue can range from a human-like image or avatar to a non-human one. The identity cue of a chatbot refers to the name shown to the users as the chatbot name (Araujo, 2018; Ciechanowski et al.,2019; Go & Sundar, 2019). The identity cue of a chatbot can range from being human-like, such as John, to completely non-human, such as ChatGPT. The conversational cue of a chatbot is the way it uses language when interacting with users (Araujo, 2018; Chocarro et al., 2023; Ciechanowski et al.,2019; Go & Sundar, 2019; van Hooijdonk et al., 2023). The conversational cue can range from totally non-human-like to human-like. The combination of the mentioned cues determines the degree of anthropomorphism of a chatbot. For example, human conversations have contingency, homophily, or information accuracy, credibility, competence (Go & Sundar, 2019; Trivedi, 2019), error-freeness, and the ability to solve miscommunication (Sheehan et al., 2020).

To understand and examine the effect of visual cues on users' attitudes, intentions, and behaviors, researchers used different avatars, images, animations, and figures that represented chatbots to the users (Ciechanowski et al., 2019; De Cicco et al., 2020; Go & Sundar, 2019). Go

and Sundar (2019) created two manipulation levels for the visual cue of a chatbot, one with a human image and the other with a dialogue bubble figure, to find out their impacts on users' perceived homophily, perceived contingency, and perceived dialogue. Consequently, they examined their mediating effects on users' attitudes toward using chatbots via the website and users' intentions to return to the given website. Perceived contingency, as one of the mediators, refers to interdependency and interconnectedness in human communication (Go and Sundar (2019). Another mediator is perceived homophily, which refers to the degree of similarity two individuals perceive themselves to have when interacting.

Regarding chatbots, the next mediator is social presence, which is used to describe users' evaluation of whether communicating with a chatbot is friendly, warm, sensitive, and personable (Balakrishnan et al., 2022; Ciechanowski et al., 2019; De Cicco et al., 2020; Han, 2021). Go and Sundar (2019) defined perceived dialogue as engagement in two-way communication, and a well-perceived dialogue creates a sense of face-to-face conversation in online interactions. They found that anthropomorphic visual cues did not have significant impacts on perceived homophily, nor did they have effects as mediators on participants' attitudes toward chatbots via website and users' intentions to return to the given website that provided chatbots services. Furthermore, human-like visual cues did not impact participants' dialogue perceptions. Consequently, the perceived dialogue did not impact users' attitudes and intentions toward chatbots via the website.

Moreover, regarding the impacts of visual cues of chatbots on users' intentions to use chatbots and users' attitudes toward chatbots, De Cicco et al. (2020) shed light on how visual cues, specifically the presence or absence of avatars, affect users' attitudes toward chatbots. They found that the presence of avatars during interactions between users and chatbots had no significant impact on attitude toward the chatbot. In other words, using the profile image as a visual aspect does not impact attitudes toward chatbots. In the study by Ciechanowski et al. (2019), two visual cues were used to assess chatbot users' interactions: one with a human-like avatar and the other without any avatar. Their study discovered that participants who used the chatbot without an avatar had a better experience than those who interacted with the chatbot with a human-like avatar. Additionally, their findings showed that users who expected a more advanced and interactive experience with the chatbots were more likely to be dissatisfied with the performance of the avatar-based chatbot. Additionally, Ciechanowski et al.'s (2019) study found that participants who interacted with human-like avatar chatbots experienced a higher level of physiological arousal compared to the other group (chatbot without avatar), particularly just

before and around the time when the chatbot responded. Furthermore, they found that the participants in the human-like avatar group had higher expectations for the chatbot's responses to be emotionally expressive.

Another simple method for enhancing the anthropomorphism of chatbots is by utilizing human names, known as an identity cue. The identity cue of a chatbot has been studied to shed light on its impacts on user attitudes and intentions when they use a chatbot. This approach can be efficient as humans associate certain qualities with non-human entities based on their labels Go and Sundar (2019). Users may perceive a chatbot as more human-like and interact more naturally if labeled with a human name or identity. The literature is almost silent about the identity cues of chatbots, and there are only a few studies in this regard. In the study conducted by Go & Sundar (2019), respondents were provided with two identities for the chatbot: (a) a human-like identity (e.g., "Hi, I am Alex, a sales associate ") and (b) a machine-like identity (e.g., "Hi, I am Alex, an automated chatbot "). They found that human-like identity did not have an impact on perceived social presence and perceived homophily. Consequently, human-like identity did not impact participants' attitudes toward chatbots through the website and their behavioral intentions. Regarding how visual cues and identity cues affect each other, Go & Sundar (2019) indicated that users who interacted with a chatbot that displayed non-human visual cues and non-human identity reported higher perceived homophily, as well as more favorable attitudes and behavioral intentions towards the chatbot compared to participants who chatted with chatbot having a human-like identity and non-human visualization. On the other hand, participants who conversed with a chatbot with a human identity and anthropomorphized visual cue showed more perceived homophily and more positive attitudes and intentions toward the chatbot than those who communicated with a chatbot without a human identity and visual cue.

Moreover, concerning the impacts of identity cues on users' attitudes and intentions, Araujo (2018) examined the impacts of anthropomorphized chatbots on participants' attitudes, emotional connection, and satisfaction towards the company that offered chatbots as e-service. In the study, participants interacted with chatbots named 'Emma' (human name) and 'ChatBotx' (non-human name). The participant's perception of mindless and mindful anthropomorphism was used as mediators to examine the effect of identity cues on them. Subsequently, the study assessed their effects on participants' attitudes, emotional bonding, and satisfaction with the company. Mindless anthropomorphism is defined as users' automatic, spontaneous, and unconscious attribution of human or personal traits to a virtual agent, such as a chatbot, perceiving it as friendly or sociable

(Araujo, 2018; Kim & Sundar,2012; Lee et al.,2020). In contrast, mindful anthropomorphism refers to users consciously evaluating whether a chatbot is human-like or machine-like (Araujo, 2018; Kim & Sundar,2012). The study by Araujo (2018) revealed that a human-like name had no significant impact on users' attitudes toward the company that offered chatbots. In addition, human-like names did not have significant impacts on mindful and mindless anthropomorphism, which, in turn, significantly influenced users' attitudes toward the company providing the chatbots.

Several studies have investigated the use of conversational cues or message interactivity in chatbots to understand their impact on users' attitudes and intentions toward chatbots. Using human language is an approach to increasing the human quality of chatbots. This method is more complicated than simply using human identity or visual cues because of the intricacy and nuances of human language (Go and Sundar, 2019). Go and Sundar (2019), in an experiment, considered two levels of message interaction between users and chatbots: one with a simple back-and-forth message exchange (low message interaction) and the other with the ability to make contingent messages (high message interaction). In their experiment, Go and Sundar (2019) discovered that participants who conversed with chatbots had a high level of message interaction and reported more perceptions of dialogue, homophily, contingency, and social presence. Moreover, the study revealed that highly interactive messages mediated the effects of social presence, homophily, contingency, and dialogue on participants' attitudes toward using chatbots and their intentions to return to the website that offered those chatbots.

In the study by Go and Sundar (2019), two other dependent variables, perceived expertise, and friendliness, were considered to determine their role in users' attitudes and intentions toward chatbots. Regarding the intelligence, knowledge, competence, and awareness chatbots provide, agents refer to perceived expertise Go and Sundar (2019). Participants' perceptions of the chatbot as an agent who was sympathetic, personable, warm, willing to listen, and attentive were referred to as perceived friendliness. Go and Sundar (2019) found that perceived homophily through high message interactivity not only positively affected users' attitudes and behavioral intentions but also positively impacted perceived friendliness and expertise. Furthermore, users' perception of dialogue played a crucial role in connecting message interactivity to the perception of expertise, perceived friendliness, attitudes towards the website that presented chatbots, and behavioral intent. However, the perception of contingency did not act as an intermediary between message interactivity and the perception of expertise or friendliness.

In addition to all the above, Go and Sundar (2019) experimented with the interplay of message interactivity with visual cues. They found that message interactivity had a significant interaction with visual cues. Their results showed that participants who were shown chatbots with non-human visual cues while conversing with chatbots with high message interactivity reported more perception of contingency, expertise, and dialogue than those in anthropomorphized visual cue condition. Consequently, they expressed more positive attitudes and behavioral intentions toward chatbots. Nevertheless, when the chatbots had strong human-like visual cues, high and low message interactivity did not impact participants' attitudes and behavioral intentions toward chatbots. An excellent level of message interactivity mainly compensated for the effects of low anthropomorphized visual cues on users' attitudes and behavioral intentions.

Furthermore, Go and Sundar (2019) found that message interactivity significantly interacted with identity cues. Their findings revealed that participants who interacted with a chatbot without a human identity when the level of message interactivity was low reported higher levels of perceived dialogue, contingency, and expertise than those who interacted with a chatbot with a human identity. Consequently, when participants interacted with chatbots through the website, they displayed more favorable attitudes and intentions regarding them. However, the name or identity of chatbots did not impact users' attitudes towards using the website-provided chatbots or their intentions to revisit the website when the level of message interactivity was high. In other words, the chatbot's identity did not affect users' attitudes or intentions toward chatbots when message interactivity was high.

Additionally, in terms of chatbots' human-like message interaction or conversation, Rese et al. (2020) conducted a study using an experiment with a chatbot named "Emma" created by German e-retailer Zalando for purchase interactions in online apparel retailing on Facebook Messenger. They aimed to explore how the language style of a chatbot is one of the variables that impact users' intentions and frequency of using "Emma." Rese et al. (2020) argued that authenticity in a conversation is necessary to make chatbot-users communication more natural and human-like. In their study, the authenticity of conversation referred to how chatbots can engage in a conversation with users that resembles more human-like, natural, and spontaneous interaction. Their findings indicated that perceived authenticity in chatbot-user interactions positively impacted users' perceptions and willingness to use chatbots. Additionally, Rese et al. (2020) found that authentic conversation significantly improved users' acceptance of the chatbot "Emma" and increased users' frequency of using it in their purchase process.

Further, regarding human-like or anthropomorphic chatbots, Sheehan et al. (2020) highlighted the critical role of chatbots' aptitude to provide clarification through communication with users and how it impacted users' intentions to use chatbots in the future or adoption intent. They defined clarification as the chatbot's ability to identify and resolve communication flaws while interacting with users. This concept aligns with human or interpersonal interaction, where people need to clarify their meanings or intentions by asking questions or restating their message with different words, a process known as clarification, Corti and Gillespie (2016). The findings of the research by Sheehan et al. (2020) indicated that chatbots that could clarify the users' inputs and solve their misunderstandings or miscommunication were perceived as more human-like. Consequently, this perception positively influenced users' intentions to adopt chatbots for future interactions.

Several studies have examined how human-like conversation and perceived anthropomorphism influence users' engagement, satisfaction, attitudes, purchase intentions, and chatbot usage, revealing mixed results and highlighting the multifaceted relationship between these factors. Han (2021) argued that mobile users who conversed with chatbots that exposed human-like speech patterns were more prone to distinguish them as human, which, in turn, potentially resulted in a higher intention to purchase through chatbots. Han (2021) indicated that perceived anthropomorphism by users indirectly impacted their intentions to purchase through chatbots. In contrast, Selamat and Windasari (2021) found that while human-like conversation has an insignificant impact on users' intentions to use chatbots, it positively affects customers' attitudes. Similarly, Araujo (2018) argued that although human-like conversation positively impacted users-company emotional relations, it did not impact participants' perceived satisfaction and attitude toward the company, which provided the chatbots while interacting with an anthropomorphized chatbot. Conversely, Balakrishnan et al. (2022) discovered that a chatbot with the ability to make a human-like conversation with users had a positive impact on users' attitudes towards chatbot and amplified their desire to continue using chatbot services.

Moreover, Konya-Baumbach et al. (2023) revealed that a chatbot with human-like linguistic ability indirectly increased users' perceived trust, word of mouth, satisfaction, and purchase intention through chatbots. Their findings suggested that the effectiveness of a chatbot, which in their study referred to perceived anthropomorphized entities such as chatbots, can increase customers' intention to use them and proliferate their perception, preference, and evaluation of chatbots. Moreover, Bult et al. (2021) determined that chatbots with human-like

conversation in online services positively impacted customers' intentions to use them. They indicated that highly anthropomorphized chatbots facilitated human-chatbots interactions. Similarly, Rietz et al. (2019) indicated that anthropomorphic design features, such as human-like message interaction in chatbots, indirectly impacted users' behavioral intentions.

Prior research in the context of chatbot-user interaction has shown that human-like or anthropomorphized chatbots influence users' perception of social presence and its impacts on users' attitudes and intentions toward chatbots (Blut et al., 2021; De Cicco et al., 2020; Han, 2021; Go and Sundar,2019). Social presence, in the context of chatbots, refers to how users perceive chatbots as friendly, warm, sensitive, and personable during their communications (Balakrishnan et al., 2022; De Cicco et al., 2020; Han, 2021). The study by Konya-Baumbach et al. (2023) argued that chatbot anthropomorphism mediated the impact of social presence and users' purchase intentions. They indicated that chatbot anthropomorphism significantly impacted chatbot effectiveness, and perceived social presence was a critical factor in this increase. Moreover, Blut et al. (2021) found that perceived social presence or users' needs for interaction mediated the effects of human-like features or anthropomorphism on participants' intentions to use chatbots. Additionally, they argued that social presence was one of the most essential mediators, which helps explain how anthropomorphism will affect users' purchase intentions in the future. Similarly, Han (2021) found that anthropomorphized chatbots had significant positive impacts on users' perceived social presence, which, consequently, had a direct and positive impact on users' purchase intentions through chatbots.

Furthermore, De Cicco et al. (2020) conducted a study exploring factors influencing millennials' attitudes toward chatbots. In their study, they provided two different interaction styles, social-oriented and task-oriented, to assess their effects on users' perceived social presence. The social-oriented interaction style emphasized empathy, friendliness, and informal language to fulfill participants' socio-emotional and relational needs during user chatbot conversations. On the other hand, the task-oriented interaction style focused on tasks-related dialogue by using formal language to fulfill responsibilities and address participants' concerns to achieve productive outcomes while interacting with chatbots. In addition, they found that perceived social presence indirectly impacted users' attitudes toward chatbots.

Moreover, Go and Sundar (2019) revealed that participants who interacted with chatbots with human-like conversations or high message interactivity experienced more perceived social

presence, contributing to a positive attitude and intention toward chatbots. Moreover, their results showed that using high or low anthropomorphic visual cues and identity cues in chatbots negatively impacted a perceived social presence, reducing users' attitudes and intentions toward chatbots. Furthermore, they emphasized that human-like conversation or massage interactivity in chatbots compensated for the impacts of low-anthropomorphic visual cues on perceived social presence. Meanwhile, Araujo (2018) argued that anthropomorphized chatbots did not impact participants' perceptions of social presence; they just made an emotional connection between customers and the company.

To sum up, research has shown that anthropomorphizing chatbots through human-like cues (visual cues, identity cues, conversational cues) has diverse effects on users' perception of social presence, attitudes, and intentions. Visual cues and identity cues play multifaceted roles in shaping user experiences. Factors such as interaction style and visual cues can affect social presence and user attitudes, with some debate about the impact of anthropomorphized chatbots. Additionally, conversational cues, message interactivity, and human-like language positively impact attitudes and behavioral intentions. Incorporating human-like features in chatbots enhances users' engagement, satisfaction, trust, and purchase intentions.

1.3.2. The Impacts of Users' Perceptions and Expectations on Their Attitudes and Intentions Toward Chatbots

The use of chatbots by companies and other organizations to communicate with their customers is on the rise. Therefore, understanding which factors influence users' attitudes and intentions toward chatbots, as well as customers' usage frequency, is essential. Many factors, including users' assessments of the utility and ease of chatbots, use their expectations of performance, effort expectancy, and facilitating conditions, have important roles in shaping users' perceptions of chatbots (Chocarro et al., 2023; Davis et al., 1989; Eeuwen, 2017; Kasilingam, 2020; Mostafa & Kasamani, 2022; Rese et al., 2020; Zarouali et al., 2018). These variables, in turn, have impacts on customers' intentions and attitudes toward chatbot usage (Chocarro et al., 2023; Davis et al., 1989; Kasilingam, 2020; Eeuwen, 2017; Mostafa & Kasamani, 2022; Rese et al., 2020; Zarouali et al., 2018). Moreover, information accuracy, credibility, and competence are crucial factors in shaping users' satisfaction with chatbot usage (Chung et al., 2020; Trivedi, 2019). Users expect

chatbots to provide accurate information that is credible and demonstrates a high level of information competence, Trivedi (2019).

The TAM model (Davis et al., 1989) stresses the significance of perceived usefulness and ease of use as essential aspects extensively studied to understand their effects on users' acceptance of new technology, such as chatbots. When it comes to technologies like chatbots, perceived usefulness denotes an individual's assessment of how they can improve users' job performance or task efficiency based on their subjective beliefs about the benefits and value they can provide (Chocarro et al., 2023; Davis et al., 1989; Mostafa & Kasamani, 2022; Selamat & Windasari, 2021). Perceived ease-of-use relates to how users perceive a system or technology as easy to learn and use (Kasilingam, 2020; Selamat & Windasari, 2021). In addition, it reflects the user's belief that utilizing a particular technology, such as chatbots, will be effortless and both mentally and physically effort-free (Mostafa& Kasamani, 2022; Chocarro et al., 2023; Zarouali et al., 2018). Moreover, it is an important determinant that affects users' intentions to use and adopt chatbots (Mostafa & Kasamani, 2022; Chocarro et al., 2023).

Many studies have scrutinized the influence of users' perceptions of the usefulness and ease of use on their attitudes and intentions toward adopting chatbots (Chocarro et al.,2023; Mostafa & Kasamani,2022; Kasilingam,2020; Rietz et al., 2019; Selamat & Windasari,2021). These studies provided insights into the impacts and interactions between these factors. Chocarro et al.'s (2023) study examined the adoption of chatbots in educational settings and indicated that perceiving chatbots as valuable and easy to use positively influenced teachers' intentions to employ chatbots. Furthermore, Mostafa Kasamani (2022) identified that perceived ease of use was essential in driving customers to trust chatbots, increasing users' intentions. Moreover, Kasilingam, 2020 revealed that attitudes toward chatbots had a crucial role in customers' intentions to use them. In this regard, their study showed that users' perceptions of chatbots' ease of use and usefulness positively shape their attitudes toward chatbots. These attitudes, in turn, significantly impact customers' intentions to utilize them (Kasilingam, 2020). Therefore, it is suggested that improving perceived ease of use and perceived usefulness can indirectly enhance users' intentions to use chatbots by developing positive attitudes. In addition, Kasilingam (2020) indicated that users' perceptions regarding ease of use are a critical factor impacting users' intentions toward chatbots, and users need to perceive that the chatbot technology is user-friendly. Additionally, Rietz et al. (2019) considered perceived ease-of-use essential in new technologies such as chatbots, but as a pre-requisite and not a determinant of outcome behaviors. Selamat and

Windasari (2021) shaped a featured chatbot for small and medium-sized enterprises (SMEs). They revealed that although perceived usefulness positively affected customers' shopping intentions or intentions to use chatbots, perceived ease of use did not impact users' shopping intentions or intentions to use chatbots. In other words, being user-friendly is not sufficient in the context of chatbots.

Furthermore, Rese et al. (2020) indicated that the perceived usefulness, in their study, known as the "utilitarian" of "Emma" as a chatbot, positively impacts user acceptance. The results of Rese et al.'s (2020) study revealed that the overall impact of utilitarian factors on users' acceptance was more substantial than that of another factor. In other words, users' acceptance of "Emma" is more influenced by its usefulness. Moreover, Rietz et al. (2019) confirmed that chatbots with anthropomorphic design features impact perceived usefulness and chatbot acceptance. In addition, Rietz et al. (2019) found that users who used Slack chatbots in their survey accepted chatbots with anthropomorphic designs because of their utilitarian factor. Moreover, the study by Sheehan (2020) suggested that anthropomorphic chatbots, which imitate human characteristics, may be more easily adopted by users because they perceive them as more straightforward to use. Sheehan (2020) also surmised that this might be because users are already familiar with interacting with human service agents, so they are more comfortable conversing with a human-like chatbot than a machine-like one.

Furthermore, the study's results by Zarouali et al. (2018) examined the estimation of users' responses to a Facebook chatbot. They revealed that perceived usefulness and helpfulness were two cognitive drivers that positively correlated with consumers' attitudes toward the chatbot brand. In other words, when the chatbot's responses helped provide relevant information for participants, it led to a positive perception of the chatbot by them. In Zarouali et al.'s (2018) study, when consumers perceived a chatbot as valuable and helpful, they were inclined to hold a favorable attitude toward the brand-associated chatbots. Eeuwen's (2017) study revealed that users' perceived usefulness and perceived ease of use significantly affect their attitudes toward mobile messenger chatbots. This means that when users perceived chatbots as valuable and easy to use through mobile messenger, they had a positive attitude toward them. Eeuwen (2017) indicated that perceived ease of use acts as a crucial promoter of users' attitudes toward mobile chatbots, while perceived usefulness had an insignificant impact on attitudes toward mobile chatbots. Moreover, Kasilingam (2020) claimed that some factors, including the user's prior experience with similar technologies, affect how users perceive chatbots' usefulness and ease of

use. Likewise, Mostafa and Kasamani (2022) confirmed that users' level of expertise and their perception of the technology's compatibility with their work requirements played a role in effortlessly shaping users' perceptions of a chatbot's functionality. Moreover, Sheehan et al. (2020) argued that the technology's complexity, usability, and design influence users' perception of the chatbot's usefulness.

The UTAUT model (Venkatesh et al., 2003) is broadly utilized in various research to examine users' acceptance and adoption of chatbots (Balakrishnan et al.,2022; Mogaji et al., 2021; Mostafa & Kasamani, 2022). Various factors, encompassing users' effort expectancy, social influence, performance expectancy, and facilitating conditions, have been recognized as the substantial fundamentals that affect users' acceptance, attitudes, and intentions to sustain the use of chatbots (Balakrishnan et al.,2022; Mogaji et al., 2021; Mostafa & Kasamani, 2022). In the study by Balakrishnan et al. (2022), the researchers explored the factors influencing attitudes toward chatbots and users' intentions to continue using them in online services. Their findings indicated that perceived usefulness, which represented the expectation of performance, and perceived ease-of-use, which represents the expectation of effort required, positively impacted attitudes toward chatbots. These factors indirectly influenced the continuation of chatbot usage. Additionally, Chocarro et al. (2023) confirmed the positive connection between Users' intentions to utilize chatbots and effort expectancy, while a low amount of mental effort did not impact users' intention to use. Moreover, the study by Mogaji et al. (2021) highlighted the critical roles of all four variables in determining participants' acceptance and utilization of chatbots. On the other hand, Mostafa and Kasamani (2022) revealed that performance expectancy did not impact users' intentions or engagement with the chatbot, nor did it influence initial trust in using chatbots. However, Mogaji et al. (2021) argued that performance expectancy is the main factor influencing chatbot usage, while effect expectancy is another critical factor that impacts chatbot usage and consumers' interactions with chatbots. Furthermore, facilitating conditions represented the level of users' belief in the availability of necessary resources to support system usage (Balakrishnan et al., 2022; Mogaji et al., 2021; Mostafa & Kasamani, 2022; Venkatesh et al., 2003). Balakrishnan et al. (2022) found that facilitating conditions positively impacted attitudes toward chatbot services and users' intentions to continue using them. Similarly, Mogaji et al. (2021) argued that facilitating conditions positively impacted users' intentions to use chatbots and their level of engagement.

A number of studies have highlighted the importance of social influences in establishing attitudes toward using chatbots and users' intentions to continue using them (Balakrishnan et al., 2022; Mogaji et al., 2021; Mostafa & Kasamani, 2022). Balakrishnan et al. (2022) indicated that effort and performance expectancies and facilitating conditions contributed favorably to users' attitudes and intentions to sustain chatbots' usage. Likewise, Mostafa and Kasamani's (2022) research highlighted the substantial effect of social influence in fostering users' initial trust in chatbots. They confirmed that initial trust positively influenced users' intentions to use chatbots and their engagement. Moreover, Mogaji et al., 2021 stressed that social influence positively affected chatbot adoption and usage. Kaabachi et al. (2019) also revealed that social influence was an essential and critical predictor of initial trust, leading to enhanced usage intention. Their study also found that when customers lacked prior experience or knowledge about chatbots, they tended to shape trust by relying on social influence.

Besides the abovementioned factors, Trivedi (2019) considered other factors that impact customers' experience while using banks offering chatbots. These factors, namely information quality, service quality, and system quality, align with these three dimensions of the model for the success of information systems (IS) projected by Delone and McLean (2003), which further Trivedi (2019) supported it. System quality encompasses various aspects such as response time, usability, dependability, availability, and adaptability, all considered in the IS success model (Oostenbrink, 2015; Trivedi, 2019). In the IS success model, information quality assessment is conducted by considering how well it fulfills the intended meaning or purpose of the technology (DeLone & McLean, 2003; Trivedi, 2019). The dimension of service quality in information systems includes responsiveness, assurance, and empathy (Delone & McLean, 2003; Trivedi, 2019). Trivedi (2019) discovered that the quality of service and information the provider provides, such as a chatbot, is a critical factor in determining its success. Moreover, the study indicated that the customer experience with banking chatbots is remarkably impacted by the chatbots' system quality, information quality, and the services provided. This, in turn, leads to the establishment of brand loyalty towards the bank.

Other factors that should be considered regarding chatbots are their ability to provide accurate, credible information and their communication competence when interacting with users. However, limited studies considered these factors and their importance regardless of chatbot. Chung et al. (2020) conducted a study to assess how the communication quality of chatbots affects customers' perceptions of a luxury brand and their satisfaction. They explained that when a

product or service can effectively address customers' needs, wants, and requirements, it will result in customer satisfaction. Within chatbot-customer interactions, they defined communication quality as the customers' perception of how a chatbot identified, interpreted, and solved their problems by providing accurate, credible, and competent information. Their study showed that chatbots that provided accurate, credible, and competent information in their customer interactions significantly influenced customer satisfaction. Additionally, Sheehan et al. (2020) found that chatbots that were error-free or able to solve misunderstandings significantly impacted perceived chatbot anthropomorphism, leading to users' intentions to use chatbots.

To sum up, research studies indicated that how users perceive the usefulness and ease of utilizing chatbots is pivotal in impacting and shaping their attitudes and intentions toward chatbots. Users' prior experience, expertise, compatibility, complexity, usability, design, and anthropomorphism influence these perceptions. In the TAM model, perceived ease of use is vital to consumers' adoption intentions. Age and familiarity with technology are significant factors affecting chatbots' ease of use. Moreover, higher users' intentions to use chatbots are positively related to their ease of use, and creating helpful chatbot features may lead to absorbing customers' usage intention. However, user-friendly, and easy to use chatbots do not necessarily terminate customers' usage and shopping intentions.

1.3.3. The Impacts of Users' Characteristics on Their Attitudes Toward Chatbots and Their Intentions

As chatbots continue to spread across various industries, learning about which users' characteristics and expectations influence their attitudes and intentions toward chatbots is crucial. Factors such as age, gender, education, personal innovativeness, prior experience, privacy concerns, risk, and trust can all influence how individuals perceive and interact with chatbots (Chocarro et al., 2023

; Chung et al., 2020; Kasilingam, 2020; Mogaji et al., 2021; Rese et al., 2020). By analyzing these factors, scholars and designers can develop more effective strategies for creating and implementing chatbots in online services to address users' needs, preferences, and requirements through chatbots.

Prior studies were directed to recognize the aspects that impact users' trust while using chatbots and determine the antecedents of trust in online services. Liu et al. (2018) found that users' engagements with chatbots were impacted by trust. Customers often doubt whether the online retailer or e-service provider will fulfill a specific transaction based on their expectations (Kasilingam, 2020; Kim et al.,2008). Han (2021) indicated that their perceived social presence influences users' trust. Regarding trust, De Cicco et al. (2020) found that participants who perceived social presence reported trust toward chatbots. In other words, their finding indicated that social presence directly and positively influenced users' trust. Consequently, perceived trust played a significant role in shaping users' attitudes toward chatbots. Moreover, their findings disclosed that perceived trust resulted from social presence and an antecedent of users' attitudes toward chatbots. Similarly, Konya-Baumbach et al. (2023) revealed that participants who perceived social presence through chatbot anthropomorphism responded with trust toward chatbots. In other words, they found that trust was impacted directly by the perceived social presence and indirectly by the perceived anthropomorphized chatbots.

Moreover, Mostafa and Kasamani (2022) conducted a study regarding the antecedents of initial trust and its impact on chatbot usage intentions. Their research highlighted the significant effect of initial trust on users' intentions to use chatbots and their engagements with chatbots. Additionally, they indicated that initial trust was a critical factor and the first step in making long-term relationships with customers when adopting chatbots. They defined initial trust as a fundamental factor for shaping trust-based customer interactions. The findings of their study revealed that participants who felt an initial sense of trust reported more chatbot usage intentions and user engagements. Furthermore, the study by Kasilingam (2020) demonstrated that perceived trust affected individuals' attitudes indirectly by influencing users' intentions. Additionally, in Kasilingam's (2020) study, trust was a crucial factor that impacted the users' intentions toward using chatbots for mobile shopping. In other words, trust mediated the effect of participants' intentions to use chatbots and their attitudes toward chatbots.

Furthermore, by increasing the usage of chatbots in e-services, privacy concerns and perceived risks among users are raised, which have effects on users' attitudes and intentions toward chatbots (Eeuwen,2017; Kasilingam,2020; Rese et al.,2020; Trivedi, 2019). The study by Eeuwen (2017) found that internet privacy concerns and attitudes toward chatbot mobile messenger have a negative correlation. He clarified that when users were concerned about their privacy while using chatbots, they had lower attitudes. Furthermore, Trivedi (2019) examined the

impacts of customers' usage experience of chatbots on loving the bank brand that provided chatbots on their websites. He discovered that perceived risk had both direct and indirect negative impacts on customer experience and loved the brand of the bank-provided chatbots. Furthermore, Trivedi (2019) clarified that according to the information system success model, which appraises users' evaluations of the quality of service, system, and information, perceived risks played a moderating role in the influence of these three dimensions on customer experience. That means perceived risk reduces the effects of these three dimensions on customer experience. Correspondingly, Rese et al. (2020) conducted a study to determine which factors negatively or positively influence users' acceptance of a particular chatbot, named "Emma," for the purchase process and users' intentions to use it frequently. They found that privacy concerns negatively impacted users' acceptance of "Emma" and its frequency. Similarly, Kasilingam (2020) confirmed that perceived risk is negatively connected with attitudes regarding chatbots; however, the connection was insignificant, but it was an important variable in assessing users' attitudes toward chatbots. Furthermore, Kasilingam (2020) confirmed that trust and perceived risk had a reciprocal relationship; when trust increased, the perceived risks decreased significantly.

Moreover, there are some essential socio-demographic parameters, namely age, gender, and experience level, which serve as moderators in users' intentions and attitudes toward chatbots (Dwivedi et al., 2019; Mogaji et al., 2021). Some scholars considered these parameters in their studies to understand the roles of chatbots. Mogaji et al. (2021) argued that age and preceding experience played a positive part in accepting and utilizing chatbots. Furthermore, they found no significant differences between males and females regarding how they influenced participants' intentions and attitudes toward chatbots. Additionally, Mogaji et al. (2021) indicated that technology familiarity or experience facilitated the comfort of chatbot usage. Using age as a control parameter, Balakrishnan et al. (2022) argued that individuals of various ages had diverse interpretations of perceived anthropomorphism and favorable attitudes toward chatbots. They clarified that younger participants showed a higher intention to accept chatbot anthropomorphism than older individuals. In addition, Balakrishnan et al. (2022) found that perceived social presence and its impacts on users' attitudes and continuing intentions were significantly higher in female groups. Furthermore, Kasilingam (2020) found that younger participants showed significantly more positive attitudes and intentions toward utilizing chatbots for shopping than older individuals. The findings of the study by Kasilingam (2020) revealed that men considered chatbots less risky than women, which, in turn, lowered the moderating effects of risk on men's attitudes

toward chatbots. Moreover, the results of the study by Kasilingam (2020) indicated that participants with over three years of experience in mobile applications perceived chatbots as less risky and easier to use, which significantly enhanced their intentions to use mobile shopping with chatbots. However, Chocarro et al. (2023) showed that teachers' age and technology skills did not influence their intentions to utilize chatbots.

In addition, Trivedi (2019) examined the impacts of customers' experience of using chatbots through the bank's website. The findings of his study revealed that users who had used chatbots before and had experience using chatbots showed positive feelings toward the bank's brands that provided them. In addition to the abovementioned factors, some scholars believe that personal innovativeness and users' personalities impact their attitudes and intentions toward chatbots. In this regard, Kasilingam (2020) discovered that a person's tendency for innovation affected both their acceptance of chatbots and their intentions. In the same way, Mostafa and Kasamani (2022) found that a person's innovativeness exerted an indirect influence on users' intentions to adopt chatbots by shaping one's perspective on them. A study by Shumanov and Johnson (2021) regarding how to make conversations with chatbots more personalized revealed that aligning the personality of a chatbot with the consumer's personality leads to increased engagement and better mobile purchasing results in social interactions. Shumanov and Johnson (2021) suggested that using personality targeting could effectively influence mass communications, and consumers are more likely to purchase after interacting with a chatbot that reflects their personality. Moreover, Shumanov and Johnson's (2021) study showed that introverts with a personality match with the chatbot spent more time conversing than extroverts.

To sum up, Considering the factors that impact users' attitudes and intentions toward chatbots is crucial. Age, gender, education, prior experience, trust, privacy concerns, and perceived risks all play a role. Trust, influenced by social presence and anthropomorphism, directly affects engagement. Initial trust is vital for building long-term relationships with customers. Privacy concerns and perceived risks have adverse effects. Socio-demographic factors and personal innovativeness also shape attitudes. Aligning chatbot personalities with users' personalities improves engagement. Overall, this knowledge can inform the development of effective chatbot strategies.

1.3.4. Chatbot Affect and Its Influence on User's Attitudes, Intentions

Prior studies mainly focused on the cognitive aspects of chatbot usage and users' interactions with this technology and did not study the affective aspect of chatbot usage and interactions that users may perceive (Araujo, 2018; Konya-Baumbach et al., 2023; Zarouali et al., 2018). For instance, if a chatbot is perceived as practical, easy to use, or anthropomorphized, a user who uses it may experience pleasure, which increases the possibility of their intentions and attitudes toward using the chatbot or their frequency. However, facing the same situation, a user who is highly involved with technology may feel unsatisfied, bored, and annoyed (Adaval & Galli, 2022; Zarouali et al., 2018). Related findings in the literature show that users perceive various epistemic emotions when using it (Araujo, 2018; Konya-Baumbach et al., 2023; Zarouali et al., 2018). Incorporating the affective aspect of human interaction with a chatbot as technology can be beneficial since the chatbot's effect may help researchers to predict users' intentions and attitudes more precisely (Konya-Baumbach, 2023; Go& Sundar, 2019; Han, 2021; Kasilingam, 2020).

The affect is the perceived collection of negative and positive physiological reactions provoked by cognitive evaluation processes encompassing the stimulus and aroused feelings (Adaval & Galli, 2022). Many theories were developed to explain how humans make cognitive evaluations (cf. Frijda, 1986; Lazarus, 1991a, 1991b; Scherer et al., 2001; Smith & Ellsworth, 1985). Most theories argue that human cognitive evaluation is a sequential sub-processing continuum (Adaval & Galli, 2022). The cognitive evaluation process starts with sensing a stimulus (a change) in the environment, comparing the stimulus and its corollary with a subjective reference in mind, and assessing if the goal of the subject and the corollary are the same. If the corollary of a stimulus matches the subject's goals, a more positive effect, such as happiness, is felt; otherwise, a more negative effect is perceived (Adaval & Galli, 2022). It has been indicated that affect influences information processing, perception, and interpretation (Adaval & Galli, 2022). In addition, more positive affect, such as happiness, triggers desirable behaviors such as approaching, investigating, and interacting with a phenomenon; however, behaviors such as avoiding or disengaging can be linked to more negative affect, namely fear or disgust (Zarouali et al., 2018). Interestingly, when a user interacts with a chatbot, they might feel different chatbot affect based on their cognitive evaluation (Adaval & Galli, 2022). For example, if a user focuses on the time that was wasted interacting with a dysfunctional chatbot, they may feel guilt or sadness. However, if the user focuses on the company that operationalized the defective chatbot,

they might feel anger or arousal. Thus, the direction of cognitive evaluation, whether toward the user/consumer or the owner/developer, is also paramount.

Chatbot affect is elicited moods, emotions, and epistemic feelings perceived by the user interacting with chatbots (Blut et al., 2021). The chatbot's affect impacts users' attitudes toward chatbots and their intention to use them (De Cicco et al., 2020; Han,2021; Kasilingam,2020; Salamat & Windasari, 2021; Rese et al.,2020; Zarouali et al., 2018). Selamat and Windasari's (2021) findings showed that perceived enjoyment significantly influences users' intentions to use chatbots and purchase through chatbots. They indicated that enjoyment aligns with the hedonic incentive that drives users to use chatbots. In addition, their research showed that users who felt joy while using chatbots were more likely to have positive attitudes toward chatbots and consider utilizing them in the future. Moreover, Han's (2021) research confirmed that the users' perceptions of enjoyment had significant and positive but indirect impacts on users' purchase intentions through chatbots. This impact, however, occurs indirectly through the perception of social presence. In addition, she confirmed that perceived enjoyment was a key driver in shaping users' intentions to use chatbots and purchase chatbots on online shopping websites. Han (2021) also indicated that when users perceived their interactions with a chatbot as being with a natural person who displayed human-like warmth, they showed greater enjoyment and found the technology more enjoyable. Kasilingam (2020) found that the participants' attitudes toward chatbots and intentions to use them for shopping were heavily affected by perceived enjoyment. Kasilingam's (2020) study indicated that more positive affect (joy) is an intrinsic motivational driver and shapes users' attitudes toward chatbots. In addition, Kasilingam (2020) also explained that perceived enjoyment indirectly impacted users' intentions to use chatbots by shaping their attitudes toward them. De Cicco et al. (2020) used these items: enjoyable, disgusting, exciting, dull, pleasant, unpleasant, engaging, and boring to measure perceived enjoyment and its influence on users' attitudes toward chatbots. They also indicated that perceived enjoyment resulted from users' perceptions of social presence and influenced users' attitudes toward chatbots. De Cicco et al. (2020) confirmed that if users felt a sense of enjoyment while engaging with the chatbot, it significantly and positively influenced their general attitudes toward chatbots.

Moreover, in the context of chatbot affect, Zarouali et al. (2018) explored that users' attitudes toward brand-provided chatbots are significantly predicted by the three aspects of pleasure, arousal, and dominance (PAD). The findings showed that all three PAD determinants indirectly influence patronage intention through a mediating variable called attitude toward the

brand. Rese et al. (2020) considered three items, fun, exciting, and entertaining, to measure perceived enjoyment and its impacts on users' behavioral intentions to use chatbots and their frequency of using them. Rese et al. (2020) discovered that users' perceptions of chatbot's ease of use directly and favorably impact their perception of enjoyment, consequently influencing the behavioral intention or frequency of intention to use. A recent study of Konya-Baumbach et al. (2023) revealed that chatbots had an important role and effect on how users perceive their social presence, mainly through chatbots' human-like appearance. They indicated that users felt more emotionally connected to the anthropomorphized chatbot and experienced more positive emotions when interacting with chatbots. Interestingly, Konya-Baumbach et al. (2023) found that these positive emotions indirectly affected users' intentions to purchase via the chatbot.

To sum up, the affective facet of chatbot usage and interactions plays a crucial part in shaping users' attitudes and intentions. Prior studies have mainly focused on the cognitive aspects, but there is increasing recognition of the effect of users' emotional experiences. Factors such as perceived enjoyment and positive emotional responses impact users' attitudes toward chatbots and their intentions to adopt chatbot usage. Considering and including the affective aspect can provide valuable insights for researchers and designers to enhance user experiences and effectively predict user behavior.

2. Research Methodology for Evaluating the Impacts of Factors that Influence Users' Intentions to Use Chatbots

2.1. Research Problem and Aim of The Study

The research problem of this study revolves around understanding the effects of perceived anthropomorphism, perceived social presence, and personal innovativeness on perceived usefulness, perceived ease of use, and perceived enjoyment, and exploring the mediating role of the latter three factors on attitudes toward chatbots, which ultimately would impact users' intentions to use chatbots. The aim of this research is to investigate the relationship among the factors mentioned above and examine how these factors shape users' attitudes toward chatbots and ultimately impact their intention to use chatbots. The objectives of this research are as follows:

1- Discovering whether perceived anthropomorphism, social presence of interacting with ChatGPT, and users' innovativeness, influence their perceived usefulness, ease-of-use, and enjoyment.

2- Exploring whether perceived ease-of-use impacts usefulness and enjoyment perceptions of ChatGPT.

3- Investing in whether perceived usefulness, ease-of-use, and enjoyment of interacting with ChatGPT impact user's attitudes toward it.

4- Evaluating the effects of users' attitudes toward chatbots on users' intentions to use chatbots.

2.2. The Conceptual Model of the Research and Hypotheses

This study adopts Davis's (1989) famous TAM framework to investigate the effects of anthropomorphism, social influence, and human characteristics. These factors collectively serve as external variables, influencing perceived usefulness, ease of use, and enjoyment; these factors collectively influence attitudes toward chatbots, viewing them as organisms. Additionally, the

study reveals how perceived ease of use affects users' perceptions of usefulness and enjoyment. Furthermore, the current research investigates how attitudes toward chatbots affect users' intentions to use them as a response. The conceptual model of this study, indicated in Figure 4, consists of three external variables, namely anthropomorphism, social presence, and human characteristics, with four mediator variables, perceived usefulness, perceived ease-of-use, perceived enjoyment, and attitudes toward chatbots, and one dependent variable, intention to use chatbots.

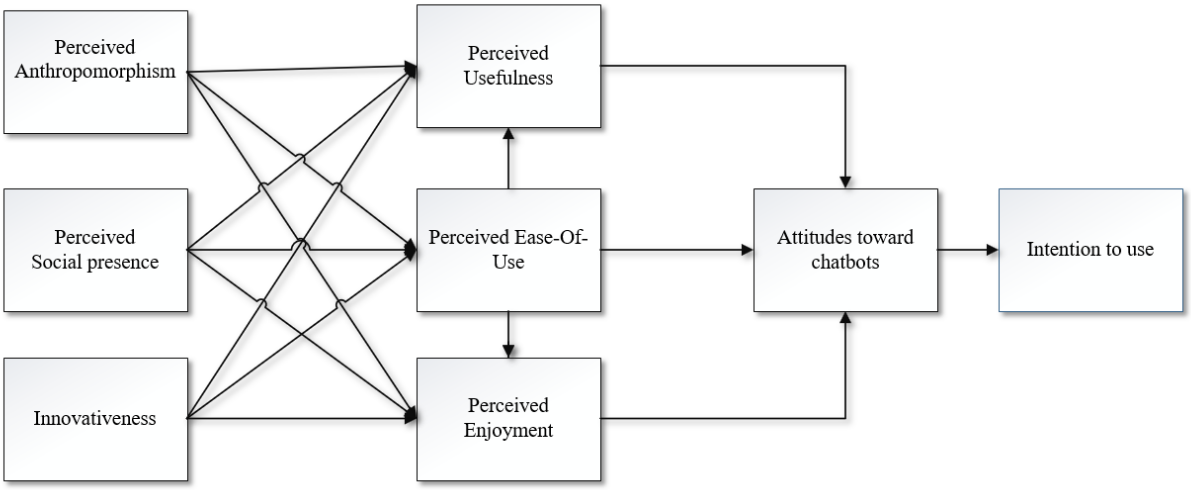

Figure 4. The Conceptual Model of the Research

Aligned with the findings of anthropomorphic chatbot studies, the use of anthropomorphism in chatbots is expected to significantly impact how users perceive their usefulness (Han, 2021; Salamat and Windasari, 2021; Mostafa & Kasamani, 2021; Go and Sundar, 2019). Results of several studies indicated that online services should justify and communicate the reasons for equipping online services with chatbots, which can make human-like conversations, to increase users' motives for using chatbots (Han, 2021; Konya-Baumbach, 2023; Rese et al.,2020; Salamat & Windasari, 2021). Considering studies in the literature, social presence positively affects perceived usefulness (Han, 2021; Blut et al.,2021; De Cicco et al.,2020). The study by Salimon et al. (2021) showed that social presence directly positively and significantly impacted perceived usefulness. Similarly, Hassanein and Head's (2007) study indicated that a high social presence positively impacted perceived usefulness, leading to more favorable user attitudes. Moreover, some studies showed that users' personality characteristics, such as innovativeness, influence their perceptions of the usefulness of technology, such as chatbots. Moreover, Fagan et

al. (2012) indicated that personal innovativeness positively and significantly affected perceived usefulness. Building upon previous research, it seems logical to make the following hypotheses about the effects of the justification of anthropomorphism, social presence, and innovativeness on perceived usefulness:

H1: Perceived Anthropomorphism has the most substantial influence over perceived usefulness than the perceived social presence or Innovativeness have.

According to previous studies, using human-like features in chatbots perceived social presence by users. Users' characteristics of innovativeness are anticipated to have significant influences on users' perceptions of the ease of use that they experience when using chatbots (Han, 2021; Go and Sundar, 2019; Mostafa & Kasamani, 2021; Salamat and Windasari, 2021). Findings of several studies emphasize the importance of online services elucidating and communicating the rationale behind incorporating chatbots with human-like conversational abilities (Han, 2021; Konya-Baumbach, 2023; Rese et al.,2020; Salamat and Windasari, 2021). This approach aims to boost users' motives for using chatbots. Moreover, reviewing literature studies, it is apparent that social presence positively impacts the perceived ease of use (Blut et al.,2021; De Cicco et al.,2020; Han, 2021). Additionally, some research has suggested that users' traits, including innovativeness, affect how they perceive the enjoyment of using technology, such as interaction with chatbots (Kasilingam, 2020; Rogers & Shoemaker, 1971). Hence, the process of forming H1 to H3 is as follows:

H2: Perceived social presence has the most substantial impact on perceived ease-of-use than Perceived Anthropomorphism or Innovativeness have.

Studies on human-like chatbots, including the research by (Go & Sundar, 2019 Han, 2021 Mostafa & Kasamani, 2021 and Salamat & Windasari, 2021), indicate that anthropomorphized chatbots have a considerable impact on users' perceived enjoyment. Notably, Salamat and Windasari (2021) highlight the positive effects of refraining from creating human-like chatbots. As confirmed by several research (Blut et al.,2021; De Cicco et al.,2020; Han, 2021), social presence emerges as an essential factor that positively influences perceived enjoyment. Furthermore, Hassanein and Head's (2007) study highlighted that high social presence positively impacts users' attitudes toward chatbots and perceived enjoyment. Users' personality traits, especially innovativeness, influence their perceptions of technology enjoyment, such as chatbots (Kasilingam, 2020; Rogers & Shoemaker, 1971). Moreover, Kasilingam (2020) emphasized that

innovative individuals perceived chatbots as more enjoyable. Logical hypotheses about the effects of anthropomorphism, social presence, and innovativeness on perceived enjoyment can be formed as follows:

H3: Innovativeness substantially impacts perceived enjoyment more than perceived anthropomorphism or perceived social presence does.

It has been discovered that perceived usefulness, perceived ease of use, and perceived enjoyment positively influence users' attitudes toward chatbots (De Cicco et al., 2020; Kasilingam, 2020; Rese et al., 2020). Kasilingam (2020) discovered that when users perceived chatbots as valuable tools that help them achieve their goals and as easy to use and enjoyable, they showed higher and more favorable attitudes toward chatbots. Moreover, Zarouali et al. (2018) discovered that perceived ease of use and usefulness led to higher attitudes toward chatbots, resulting in more intentions to use chatbots. Based on reviewed literature on perceived usefulness, perceived ease-of-use, perceived enjoyment, and users' attitudes toward chatbots, it is expected that:

H4: Perceived usefulness impacts users' attitudes toward chatbots the most compared to perceived ease-of-use and perceived enjoyment.

According to TAM, perceived ease of use positively impacted both the perception of enjoyment and usefulness. In the study by Rese et al. (2020), it was shown that there is a positive correlation between perceived ease of use, perceived usefulness, and perceived enjoyment. Furthermore, the study conducted by Rietz et al. (2019) supported the idea that perceived ease of use positively influences perceived usefulness and enjoyment. Based on the findings of past studies, the following hypotheses are made:

H5: Perceived ease of use positively impacts perceived usefulness.

H6: Perceived ease of use has a positive influence on perceived enjoyment.

Aligned with a large body of studies conducted on chatbots, it is logical to surmise that attitudes toward chatbots have a positive correlation with the behavioral intention to use chatbots (Balakrishnan et al., 2022; Chocarro et al., 2023; Go & Sundar 2019; Han, 2021; Kasilingam, 2020; Rese et al., 2020). Balakrishnan et al. (2022) indicated that attitudes toward chatbots positively affect users' intentions to continue using chatbots. Similarly, Kasilingam (2020) confirmed that users' attitudes toward chatbots directly impact their intentions to use chatbots. Based on reviewing related studies, the following hypotheses are made:

H7: Attitudes toward chatbots positively impact users' intentions to use chatbots.

2.3. Measurement of The Variables

The scale for measuring anthropomorphism is adopted from Selamat and Windasari (2021), with a Cronbach's alpha of 0.947. The scale consists of five items and will be measured using a seven-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). The four items with minimal changes are as follows: (a) The conversations I have had with ChatGPT provided are as if I have had a dialogue with a real human being.; (b) I perceive ChatGPT as having human-like qualities; (c) I feel like ChatGPT behaves as if it has human features; (d) Conversations with ChatGPT that I use do not seem artificial.

The social presence will be measured using a version of the highly cited five-item scale developed by Gefen and Straub (2004), which has well-established reliability with an average Cronbach's α of 0.96. The items will be measured using a seven-point Likert scale from strongly disagree to agree strongly and are as follows: (a) There is a sense of human contact in interaction with ChatGPT; (b) There is a sense of personalness in interaction with ChatGPT; (c) There is a sense of sociability in interaction with ChatGPT; (d) There is a sense of human warmth in interaction with ChatGPT; and (e) There is a sense of human sensitivity in interaction with ChatGPT.

Innovativeness will be measured using a five-item scale and a seven-point Likert scale ranging from strongly disagree to strongly agree, developed by Kasilingam (2020), which has an average Cronbach's α of 0.87. The five items of the scale are as follows: (a) I think I know more about chatbots than my circle of friends (b) If I heard about new technology like ChatGPT, I would look for ways to experiment with it; (c) Among my peers, I am usually the first to try out new technologies such as ChatGPT; (d) In general, I am hesitant to try out new technologies such as ChatGPT; and (e) I like to experiment with technologies such as ChatGPT.

Perceived usefulness will be measured using a revised version of the highly cited five-item scale developed by Davis (1989) with minimal revisions by Kasilingam (2020), demonstrating Cronbach's alpha of 0.92. The items will be measured using a seven-point Likert scale ranging from strongly disagree to agree strongly. The five items are as follows: (a) ChatGPT will be useful to me; (b) Using ChatGPT will enable me to fulfill my needs quickly; (c) Using ChatGPT will

increase my productivity; (d) Using ChatGPT will enhance my effectiveness; and (e) Using ChatGPT would enable me to accomplish my tasks.

Perceived enjoyment will be adopted from the scale Van der Heijden (2004) developed with minimal, demonstrating a Cronbach's reliability of 0.87. It will be measured using a four-item scale consisting of a seven-point semantic differential scale. The items of the scale are as follows: (a) enjoyable-disgusting, (b) exciting-dull, (c) pleasant-unpleasant, (d) Interesting-boring.

Furthermore, perceived ease of use will be measured using a four-item scale adapted from Van der Heijden (2004) with a Cronbach's alpha of 0.86. The scale is measured by a seven-point Likert scale ranging from strongly disagree to agree strongly. The four items of the scale are as follows: (a) The interaction with ChatGPT is clear and understandable; (b) Interaction with ChatGPT does not require much mental effort; (c) I find ChatGPT easy to use; and (d) I find it easy to get ChatGPT to do what I want it to do.

In addition, attitudes toward chatbots will be measured using a seven-item scale with Cronbach's reliability of 0.942 from Lee et al. (2012). The scale will be measured using a seven-point Likert scale ranging from strongly disagree to agree strongly. The items on the scale are as follows: (a) I think that using ChatGPT is positive; (b) I think that using ChatGPT is useful; (c) I think that using ChatGPT is valuable; (d) I think that using ChatGPT is dynamic; (e) I think that using ChatGPT is attractive; (f) I think that using ChatGPT is enjoyable; (g) I think that using ChatGPT is delightful.

To measure users' intention to use chatbots, a five-item scale is adapted from Lee et al. (2012) with a Cronbach's alpha of 0.933. The scale is measured by a seven-point Likert scale ranging from strongly disagree to agree strongly. The items on the scale are as follows: (a) I intend to use ChatGPT in the near future; (b) I am planning to use ChatGPT in the near future; (c) I will make an effort to use ChatGPT in the near future; (d) I will certainly invest time and money to use ChatGPT in the near future;(e) I am willing to continue using ChatGPT in the near future.

2.4. Sampling Method and Survey Data Analysis

For this study, adult users aged 18 or older are defined as the target population and live in Los Angeles, the U.S.A. The sampling procedure used in this study is non-probability convenience sampling. The mean sample size equals 317 participants, utilizing comparable research techniques

(see Table 1). Still, for the sake of regression analysis accuracy and by considering the number of variables in the conceptual model, the sample size of this research is 490.

Table 1. Sample Sizes of Comparable Research

Author(s)	Sampling Method	Number of respondents
Konya-Baumbach et al (2022)	Nonprobability sampling	420
Kasilingam (2020)	Nonprobability sampling	350
Selamat & Windasari (2021)	Nonprobability sampling	315
Trivedi (2019)	Nonprobability sampling	258
Zarouali et al. (2018)	Nonprobability sampling	245

Data will be collected using a structured questionnaire in line with prior research conducted in chatbot research. The questionnaire is written in English and is presented in Appendix 1. It has three sections: introduction, scale measurement, and demographic information collection. After collecting data from respondents, they will be prepared for descriptive and inferential statistical analysis. Descriptive information will be produced to present observable features of the organized data via numerical forms such as means and standard deviations. Moreover, statistical methods such as factor analysis and regression analysis are utilized to explore the latent information and to test hypotheses.

3. Descriptive and Statistical Analysis of the Empirical Data

3.1. Descriptive Statistics of the Respondents and the Latent Variables

The study's questionnaire was constructed using Qualtrics, a powerful online survey tool well-regarded for academic research. A key feature of Qualtrics is its ability to randomize scenarios among respondents, ensuring an equitable distribution of surveyed situations. Additionally, the tool prompts participants to address unanswered questions before finalizing the questionnaire

submission. For this study, participant age was limited to adults, specifically those aged 18 and above, eligible to view and engage with the task. Geographically, the scope was restricted to Los Angeles city, the U.S.A. A total of 490 respondents completed the survey, with two exclusions due to using randomized answers. These exclusions aimed to maintain data integrity. The distribution of respondents across household income categories and age groups is presented in Tables 2 and 3, respectively. This comprehensive methodology underscores the meticulous approach to gathering diverse and relevant data for the study.

Table 2. Count (Percentage of Sample Size) for the Household Income Categories

Household Income							
Prefer not to say	Less than $25,000	$25,000-$49,999	$50,000-$74,999	$75,000-$99,999	$100,000-$149,999	$150,000 or more	Total
3 (0.6%)	48 (9.8%)	118 (24.1%)	132 (27 %)	101 (20.7%)	56 (11.5%)	40 (8.1%)	488 (100.0%)

Table 3. Count (Percentage of Sample Size) for the Age Categories of Respondents.

Age					
18-24 y.o.	25-34 y.o.	35-44 y.o.	45-54 y.o.	55 y.o and above	Total
34 (6.9%)	188 (38.5%)	102 (20.9%)	66 (13.5%)	98 (20.1%)	488(100.0%)

3.2. Validity and Reliability of the Scales

The scales' validity was assessed through factor analysis, principal component analysis, and varimax rotation to extract factors from all items (see Appendix 3). Table 4 displays that Bartlett's test revealed a non-random correlation matrix ($\chi 2(703) = 14293.514$, $p < 0.001$). The KMO statistic, exceeding the minimum standard for factor analysis at 0.968, further substantiates the suitability of the data for factor extraction.

Table 4. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.968
Bartlett's Test of Sphericity	Approx. Chi-Square	14293.514
	Df	703
	Sig.	.000

Table 5. Loadings and Communalities of Items and Explained Variance of Factors

Item	AN	SP	IN	PU	PE	PEU	AT	IU	h^2
The conversations I have had with ChatGPT provided are as if I have had a dialogue with a real human being.	0.791								0.726
I perceive ChatGPT as having human-like qualities.	0.785								0.691
I feel like ChatGPT behaves as if it has human features.	0.770								0.691
Conversations with ChatGPT that I use do not seem artificial.	0.759								0.669
There is a sense of human contact in interaction with ChatGPT.		0.742							0.622
There is a sense of personalness in interaction with ChatGPT.		0.738							0.621
There is a sense of sociability in interaction with ChatGPT.		0.729							0.563
There is a sense of human warmth in interaction with ChatGPT		0.729							0.593
There is a sense of human sensitivity in interaction with ChatGPT.		0.727							0.602
I think I know more about chatbots than my circle of friends.			0.710						0.570

Table 5 continuation

If I heard about a new technology like ChatGPT, I would look for ways to experiment with it.			0.694						0.556
Among my peers, I am usually the first to try out new technologies such as ChatGPT.			0.627						0.559
In general, I am hesitant to try out new technologies such as ChatGPT.			0.614						0.544
I like to experiment with technologies such as ChatGPT.			0.612						0.570
ChatGPT will be useful to me.				0.577					0.571
Using ChatGPT will enable me to fulfill my needs quickly.				0.572					0.587
Using ChatGPT will increase my productivity.				0.484					0.588
Using ChatGPT will enhance my effectiveness.				0.572					0.714
Using ChatGPT would enable me to accomplish my tasks.				0.484					0.671
Enjoyable- Disgusting					0.840				0.751
Exciting- Dull					0.833				0.831
Pleasant- Unpleasant					0.798				0.540
Interesting- Boring					0.793				0.588
The interaction with the ChatGPT is clear and understandable.						0.715			0.490
Interaction with ChatGPT does not require a lot of mental effort.						0.695			0.539
I find ChatGPT easy to use.						0.692			0.609
I find it easy to get ChatGPT to do what I want it to do.						0.680			0.532
I think that using ChatGPT is positive.							0.650		0.473

Table 5 continuation

think that using ChatGPT is useful.							0.649		0.487
I think that using ChatGPT is valuable.							0.648		0.474
I think that using ChatGPT is dynamic.							0.639		0.769
I think that using ChatGPT is attractive.							0.627		0.794
I think that using ChatGPT is enjoyable							0.802		0.787
I think that using ChatGPT is delightful.							0.782		0.779
I intend to use ChatGPT in the near future.								0.766	0.732
I am planning to use ChatGPT in the near future.								0.744	0.762
I will make an effort to use ChatGPT in the near future.								0.865	0.710
I will certainly invest time and money to use ChatGPT in the near future.								0.728	0.743
I am willing to continue using ChatGPT in the near future.								0.742	0.764
What gender do you identify yourself as?								0.736	0.752
Percent of Variance Explained	37.71	52.15	57.39	61.26	63.54	64.98	66.29	67.56	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. h^2= Communality Extraction Coefficient									

As presented above in Table 5, the initial factor, “perceived anthropomorphism,” comprises four items. The second factor, labeled “social presence,” encompasses five items. The third factor, denoted as “innovativeness,” incorporates five items. The fourth factor, “perceived usefulness,” is formed by the following five items. The fifth factor, “perceived enjoyment,” is represented by four items. The sixth factor, “perceived ease of use,” is shaped by four items. The seventh factor is “attitudes toward chatbots,” which includes seven items. The last factor is “intention to use,” which comprises five items.

The reliability of the measurement scales was assessed through Cronbach's alpha method, and the results are illustrated in Table 6 (refer to Appendix 4 for additional information). As Cronbach's alpha values for the scales were acceptable, no items were excluded to improve the overall reliability of the scales.

Table 6. Reliability of the Scales

Scale	Number of Items	Number of Valid Cases	Cronbach's Alpha
Perceived anthropomorphism	4	487	0.871
Perceived social presence	5	488	0.842
Innovativeness	5	488	0.910
Perceived usefulness	5	488	0.891
Perceived Enjoyment	4	488	0.917
Perceived ease-of-use	4	488	0.931
Attitudes toward chatbot	7	487	0.862
Intention to use	5	488	0.837

3.3. Statistical Tests Results and Inferences of The Research Hypotheses

H1: Perceived Anthropomorphism has the most substantial influence over perceived usefulness than the perceived social presence or Innovativeness have. H1 is accepted. Based on Table 9, perceived social presence has no significant impact on perceived usefulness($p=0.119$), but perceived anthropomorphism ($p< 0.000$) and innovativeness ($p<0.000$) indicated a significant effect on perceived usefulness. Therefore, perceived social presence is excluded, and regression analysis is reiterated with the remaining variables. Based on the results of the second regression analysis ($R^2=0.692$, $F(2) = 547.362$, $p<0.000$), perceived anthropomorphism ($t= 13.131$, $p< 0.000$) has the most substantial impact on perceived usefulness with the standardized coefficients beta equal to 0.516, than innovativeness ($t=9.313$, $p< 0.000$) with standardized coefficients beta of 0.366.

Table 7. Model Summary for the Regression Analysis of Perceived Usefulness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833[a]	.693	.691	.30281

a. Predictors: (Constant), Innovativeness, Perceived Social Presence, Perceived Anthropomorphism

b. Dependent Variable: Perceived Usefulness

Table 8. ANOVA Test Results of the Regression Analysis of Perceived Usefulness

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	100.896	3	33.632	366.794	.000[b]
Residual	44.654	484	.092		
Total	145.550	487			

a. Dependent Variable: Perceived Usefulness

b. Predictors: (Constant), Innovativeness, Perceived Social Presence, Perceived Anthropomorphism

Table 9. Coefficients of the Regression of Analysis Perceived Usefulness

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	2.744	.225		12.212	.000					
Perceived Anthropomorphism	.174	.014	.497	12.065	.000	.798	.480	.303	.371	2.693
Perceived Social Presence	.057	.036	.050	1.561	.119	.551	.071	.039	.609	1.643
Innovativeness	.338	.039	.352	8.749	.000	.763	.369	.220	.389	2.574

a. Dependent Variable: Perceived Usefulness

Table 10. Model Summary of the Second Iteration of Regression Analysis of Perceived Usefulness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.832[a]	.692	.690	.30325

a. Predictors: (Constant), Innovativeness, Perceived Anthropomorphism

b. Dependent Variable: Perceived Usefulness

Table 11. ANOVA Test for the Second Iteration of Regression Analysis of Perceived Usefulness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	100.673	2	50.337	547.362	.000[b]
	Residual	44.877	485	.092		
	Total	145.550	487			

a. Dependent Variable: Perceived Usefulness

b. Predictors: (Constant), Innovativeness, Perceived Anthropomorphism

Table 12. Coefficients Test for Perceived Usefulness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.957	.179		16.533	.000					
	Perceived Anthropomorphism	.181	.014	.516	13.131	.000	.798	.511	.330	.409	2.448
	Innovativeness	.352	.038	.366	9.313	.000	.763	.388	.234	.409	2.448

a. Dependent Variable: Perceived Usefulness

H2: Perceived social presence has the most substantial impact on perceived ease-of-use than Perceived Anthropomorphism or Innovativeness have.

H2 is rejected. Based on the results of the regression analysis (R^2=0.490, F (3) = 787.994, p<0.000), perceived anthropomorphism (t= 3.009, p< 0.000) has the most substantial impact on perceived ease-of-use with the standardized coefficients beta equal to 0.671, than innovativeness (t=7.788 , p< 0.000) with standardized coefficients beta of 0.234 and perceived social presence (t=3.009 , p< 0.000) with standardized coefficients beta equal to 0.072.

Table 13. Model Summary of Perceived Ease-of-use

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702[a]	.490	.489	.36152

a. Predictors: (Constant), Innovativeness, Perceived Social Presence, Perceived Anthropomorphism

b. Dependent Variable: Perceived Ease-of-use

Table 14. ANOVA Test for Perceived Ease-of-use

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	440.203	3	146.734	787.994	.000[b]
	Residual	90.686	484	.186		
	Total	530.889	487			

a. Dependent Variable: Perceived Ease-of-use

b. Predictors: (Constant), Innovativeness, Perceived Social Presence, Perceived Anthropomorphism

Table 15. Coefficients Test for Perceived Ease-of-use

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.256	.320		-.799	.425					
	Perceived Anthropomorphism	.450	.021	.671	21.830	.000	.894	.703	.409	.371	2.693
	Perceived Social Presence	.156	.052	.072	3.009	.003	.609	.135	.056	.609	1.643
	Innovativeness	.429	.055	.234	7.788	.000	.791	.333	.146	.389	2.574

a. Dependent Variable: Perceived Ease-of-use

H3: Innovativeness substantially impacts perceived enjoyment more than perceived anthropomorphism or perceived social presence does.

H3 is accepted. Based on the results of the regression analysis (R^2=0.546, F(3)= 460.342, p<0.000), innovativeness (t= 13.693, p< 0.000) has the most substantial impact on perceived enjoyment with the standardized coefficients beta equal to 0.520 followed by perceived social presence (t=9.824, p< 0.000) with standardized coefficients beta of 0.291 and perceived anthropomorphism (t= 4.223, p< 0.000) with standardized coefficients beta equal to 0.157.

Table 16. Model Summary of Perceived Enjoyment

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.739[a]	.546	.535	.49950

a. Predictors: (Constant), Innovativeness, Perceived Social Presence, Perceived Anthropomorphism

b. Dependent Variable: Perceived Enjoyment

Table 17. ANOVA Test for Perceived Enjoyment

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	417.005	3	139.002	460.342	.000[b]
	Residual	147.051	484	.302		
	Total	564.056	487			

a. Dependent Variable: Perceived Enjoyment

b. Predictors: (Constant), Innovativeness, Perceived Social Presence, Perceived Anthropomorphism

Table 18. Coefficients Test Perceived Enjoyment

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-2.396	.408		-5.877	.000					
	Innovativeness	.296	.070	.520	13.693	.000	.815	.527	.317	.421	2.374
	Perceived Social Presence	.647	.066	.291	9.824	.000	.693	.407	.227	.609	1.643
	Perceived Anthropomorphism	.359	.026	.157	4.223	.000	.724	.188	.098	.371	2.693

a. Dependent Variable: Perceived Enjoyment

H4: Perceived usefulness impacts users' attitudes toward chatbots the most compared to perceived ease-of-use and perceived enjoyment

H4 is rejected. (R^2=0.550, F(2)=972.518, p<0.000). Results of the regression analysis indicate that perceived enjoyment has no significant impact on attitude toward chatbots (t=.091, p=0.927). Thus, perceived enjoyment will be excluded, and the regression analysis will be reiterated with the remaining three variables. Based on the results of the second regression analysis, perceived ease-of-use (t=6.492 , p<0.000) has a weaker impact on attitude toward chatbots with a standardized coefficient beta equal to 0.226, and perceived usefulness (t=20.083, p< 0.000) with a standardized coefficient beta of 0.700 has the stronger influence on attitude toward chatbots.

Table 19. Model Summary of Attitude Toward Chatbots

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.742[a]	.550	.549	.32586

a. Predictors: (Constant), Perceived Ease-of-use, Perceived Enjoyment, Perceived Usefulness

b. Dependent Variable: Attitude Toward Chatbots

Table 20. ANOVA Test for Attitude Toward Chatbots

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	289.005	3	96.335	647.030	.000[b]
	Residual	72.508	484	.149		
	Total	361.514	487			

a. Dependent Variable: Attitude Toward Chatbots

b. Predictors: (Constant), Perceived Ease-of-use, Perceived Enjoyment, Perceived Usefulness

Table 21. Coefficients Test for Attitude Toward Chatbots

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.541	.223		2.427	.016					
	Perceived Ease-of-use	.356	.056	.226	6.323	.000	.796	.275	.128	.323	3.093
	Perceived Enjoyment	.002	.027	.003	.091	.927	.720	.004	.002	.353	2.829
	Perceived Usefulness	.576	.034	.698	17.138	.000	.884	.613	.348	.411	2.433

a. Dependent Variable: Attitude Toward Chatbots

Table 22. Model Summary of the Second Regression Analysis for Attitude Toward Chatbots

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.742[a]	.550	.549	.32586

a. Predictors: (Constant), Perceived Ease-of-use, Perceived Usefulness

b. Dependent Variable: Attitude Toward Chatbots

Table 23. ANOVA Test for the Second Regression Analysis for Attitude Toward Chatbots

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	289.004	2	144.502	972.518	.000[b]
	Residual	72.510	485	.149		
	Total	361.514	487			

a. Dependent Variable: Attitude Toward Chatbots

b. Predictors: (Constant), Perceived Ease-of-use, Perceived Usefulness

Table 24. Coefficients Test for Attitude Toward Chatbots

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.538	.221		2.440	.015					
	Perceived Ease-of-use	.357	.055	.226	6.492	.000	.796	.282	.132	.338	2.958
	Perceived Usefulness	.578	.029	.700	20.083	.000	.884	.673	.407	.338	2.958

a. Dependent Variable: Attitude Toward Chatbots

H5: Perceived ease of use positively impacts perceived usefulness.

H5 is accepted (R^2=0.603, F(2)= 957.304, p<0.000), perceived ease-of-use positively impacts perceived usefulness (t=30.940, p<0.000) with a standardized coefficient beta equal to 0.814.

Table 25. Model Summary of Perceived Usefulness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.814[a]	.662	.661	.31723

a. Predictors: (Constant), Perceived Ease-of-use

b. Dependent Variable: Perceived Usefulness

Table 26. ANOVA Test for Perceived Usefulness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	96.339	1	96.339	957.304	.000[b]
	Residual	49.211	486	.101		
	Total	145.550	487			

a. Dependent Variable: Perceived Usefulness

b. Predictors: (Constant), Perceived Ease-of-use

Table 27. Coefficients Test for Perceived Usefulness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.641	.076		47.682	.000					
	Perceived Ease-of-use	.426	.014	.814	30.940	.000	.814	.814	.814	1.000	1.000

a. Dependent Variable: Perceived Usefulness

H6: Perceived ease of use has a positive influence on perceived enjoyment.

H6 is accepted (R2=0.505, F(1)= 833.888, p<0.000); perceived ease-of-use positively influences perceived enjoyment (t=28.800, p<0.000) with a standardized coefficient beta equal to 0.794.

Table 28. Model Summary for Perceived Enjoyment

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.794[a]	.630	.630	.65298

a. Predictors: (Constant), Perceived Ease-of-use

b. Dependent Variable: Perceived Enjoyment

Table 29. ANOVA Test for Perceived Enjoyment

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	355.555	1	355.555	833.888	.000[b]
	Residual	208.501	486	.426		
	Total	564.056	487			

a. Dependent Variable: Perceived Enjoyment

b. Predictors: (Constant), Perceived Ease-of-use

Table 30. Coefficients Test for Perceived Ease-of-use

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.679	.134		12.521	.000
	Perceived Enjoyment	.770	.027	.794	28.800	.000

a. Dependent Variable: Perceived Ease-of-use

H7: Attitudes toward chatbots positively impact users' intentions to use chatbots.

H7 is accepted, (R^2=0.505, F(2)= 1532.358, p<0.000), attitudes toward chatbots positively impacts intentions to use (t=39.145, p<0.000) with a standardized coefficient beta equal to 0.871.

Table 31. Model Summary for Intention to Use

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.711[a]	.505	.505	.67376

a. Predictors: (Constant), Attitude Toward Chatbots

b. Dependent Variable: Intention to Use

Table 32. ANOVA Test for Intention to Use

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	695.608	1	695.608	1532.358	.000[b]
	Residual	220.618	486	.454		
	Total	916.226	487			

a. Dependent Variable: Intention to Use

b. Predictors: (Constant), Attitude Toward Chatbots

Table 33. Coefficients Test for Intention to Use

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.880	.209		-13.809	.000
	Attitude Toward Chatbots	1.389	.035	.871	39.145	.000

a. Dependent Variable: Intention to Use

3.4. Interpretation of The Results and Managerial Implications

The findings of the study illustrate that perceived anthropomorphism significantly impacts perceived usefulness, aligned with the conclusions drawn in prior research studies (Balakrishnan et al., 2022; Blut et al., 2021; Han, 2021; Salamat & Windasari, 2021; Salimon et al. 2021; Rietz et al. 2019). Moreover, the study confirms the strong effect of perceived anthropomorphism on perceived ease of use, consistent with the results reported by Balakrishnan et al. (2022), Blut et al. (2021), and Selamat & Windasari (2021). Furthermore, the study indicates a positive influence of perceived anthropomorphism on perceived enjoyment, which is in line with previous studies conducted by Blut et al. (2021), Han (2021), Konya-Baumbach et al. (2023), and Rietz (2019).

Moreover, the study's results reveal that perceived social presence has no significant impact on perceived usefulness, opposing the findings reported in other studies such as Araujo (2018), Blut et al. (2021), and De Cicco et al. (2020). Additionally, the impact of social presence on perceived ease of use is less than the effects of innovativeness and perceived anthropomorphism. This contradicts prior research, including studies by (De Cicco et al. 2020; Fagan et al., 2012 Kasilingam, 2020), which collectively highlighted the strong impact of

perceived social presence on perceived ease of use. In addition, the study indicates that perceived social presence has a more substantial effect on perceived anthropomorphism than perceived enjoyment. These results were confirmed by several studies (Araujo, 2018; De Cicco et al., 2020; Han, 2021).

Furthermore, the study revealed that innovativeness significantly impacts perceived usefulness, aligning with findings in other studies (Fagan et al., 2012; Kasilingam, 2020). Notably, its effect is weaker than perceived anthropomorphism yet stronger than perceived social presence. Also, the research shows that innovativeness significantly affects perceived ease of use, the result supported by prior studies such as Fagan et al. (2012) and Kasilingam (2020). Additionally, innovativeness has a solid and significant impact on perceived enjoyment. It's worth noting that, to the best of the authors' knowledge, no other study has comprehensively considered the effects of simulations on perceived social presence, perceived anthropomorphism, and innovativeness impacts on perceived ease-of-use regarding perceived ease-of-use. Also, Contrary to prior studies (e.g., Blut et al.,2021; Han,2021; Kasilingam,2020), this study found that perceived social presence and innovativeness have a lesser influence on perceived usefulness, ease of use, and enjoyment than perceived anthropomorphism.

Moreover, this study revealed that perceived ease of use has a positive and significant influence on perceived usefulness and perceived enjoyment, aligning with consistent findings across various studies (Balakrishnan et al.,2022; Chocarro et al., 2023; Fagan et al., 2012; Rese et al., 2020; Zarouali et al., 2018). Intriguingly, although perceived ease of use weakens attitudes toward chatbots, this result diverges from other studies (Blut et al.,2021; Kasilingam, 2020). Aligned with the conclusions drawn in multiple studies (Kasilingam, 2020; Mogaji et al., 2021; Zarouali et al., 2018), our findings underscore that perceived usefulness significantly influences attitudes toward chatbots, subsequently impacting intentions to use them. Interestingly, contrary to existing research (e.g., Han, 2021; Kasilingam, 2020; Selamat & Windasari,2021) indicating the solid positive impacts of perceived enjoyment on users' attitudes and intentions to use chatbots, our study highlights the influence of perceived enjoyment is comparatively weaker than that of perceived usefulness and perceived ease-of-use. Lastly, this study establishes that attitudes toward chatbots bear significant and positive impacts on intentions to use them, a conclusion supported by several studies (e.g., Balakrishnan et al., 2022; Blut et al., 2021; Han, 2021). This comprehensive investigation contributes valuable insights into the intricate relationships between

perceived ease of use, perceived usefulness, perceived enjoyment, attitudes toward chatbots, and intentions to use them.

The results and findings of this research can help managers address gaps and problems in chatbots. In the following section, several recommendations to managers are briefly presented.

1. Findings of the study indicate that incorporating human-like traits into chatbots will significantly and positively influence users' perceptions of chatbots' ease of use, usefulness, and enjoyment. By making chatbots more human-like, such as using human language, showing human emotions, and including human-like avatars and images, their perceived utility among users dramatically increases. Managers and developers should prioritize integrating anthropomorphic elements into chatbot interfaces and interactions. This could be done by allowing users to select different personas or avatars for the chatbots, catering to diverse preferences, enabling empathy-driven responses in the chatbot's dialogue, or using human-like language.

2. Based on the findings of this research, perceived ease-of-use is very influential and important as it impacts perceived usefulness and enjoyment and finally shapes attitudes toward chatbots. The study underscores the importance of creating user-friendly interfaces to enhance how easy chatbots are perceived to use, which significantly influences attitudes toward them. This connection stresses the necessity of designing intuitive and accessible chatbot interfaces that promote effortless user interactions. Managers and designers should refine the user experience by ensuring smooth navigation, simplified interactions, and clear guidance within the chatbot interface. Managers and developers could simplify the interface by offering clear options, a user-friendly menu, and intuitive visual cues like icons or tooltips to aid users through complex layouts.

3. The study's findings also show that users perceive the usefulness of chatbots as a significant influence on their acceptance and use of this technology. Users are inclined to adopt chatbots when they believe these tools enhance their efficiency and productivity. This emphasizes the importance of users understanding the practical benefits chatbots offer,

influencing their willingness to accept and engage with them. Hence, managers should effectively communicate the chatbot's problem-solving abilities through tutorials or informative content in real-world scenarios. Additionally, they must prioritize features that provide practical value and directly meet users' needs and desires, ensuring the chatbot aligns with users' functional requirements and enhances their experiences.

4. Conclusions and Recommendations

4.1. Conclusions and Recommendations

The findings of this study are multifaceted and provide insights into the dynamics of chatbot-human interaction. Conclusions derived from theoretical analysis are depicted in the following.

1- Anthropomorphic design features including human names, avatars, and conversational abilities make chatbots seem more human-like. This can increase trust, social presence, and purchase intentions.

2- Large body of the research indicate that factors such as perceived usefulness, ease of use, social presence, and enjoyment positively influence users' attitudes and intentions toward chatbots.

3- Individual differences among users, such as their level of personal innovativeness influences their attitudes towards chatbots.

4- Large body of the research indicate that factors such as perceived usefulness, ease of use, social presence, and enjoyment positively influence users' attitudes and intentions toward chatbots.

5- Privacy concerns and perceived risk negatively impact user acceptance and experience of chatbots. Trust is crucial and is influenced by social presence and anthropomorphism.

In the following the conclusions derived from the empirical data analysis are presented.

1- The study's findings indicate that perceived anthropomorphism substantially impacts users' perceptions of the usefulness, perceived ease of use, and perceived enjoyment.

2- Results of the research indicate that perceived social presence of interacting with ChatGPT has no significant impact on perceived usefulness, but it significantly impacted perceived usefulness and perceived enjoyment.

3- Analysis of the empirical data illustrate that personal innovativeness influences perceived usefulness, perceived ease of use, and perceived enjoyment.

4- Findings of the research also revealed that perceived ease-of-use positively impacts both perceived usefulness and perceived enjoyment.

5- Perceived enjoyment has no significant impact on attitude toward chatbots. perceived usefulness has a stronger impact on attitude toward chatbots than perceived ease of use.

6- This study's results show that attitudes toward chatbots positively impacts intention to use of chatbot.

The subsequent recommendations are made based on the conclusions made from analysis of the empirical data.

1- The study's findings indicate that perceived anthropomorphism substantially impacts users' perceptions of the usefulness of chatbots, perceived usefulness, and perceived enjoyment. These statistically significant associations signify that infusing chatbots with human-like characteristics greatly enhances their perceived utility among users. Consequently, it is recommended that managers incorporate anthropomorphic elements into chatbot interfaces and interactions to boost users' attitudes toward chatbots and their intention to use them.

2- Another conclusion derived from the research findings is the robust relationship between perceived ease of use and perceived usefulness, emphasizing that designing user-friendly interfaces significantly impacts perceived ease of use in chatbot interactions. This strong association highlights the criticality of developing intuitive and accessible chatbot interfaces that facilitate effortless user interactions. This finding illustrates that creating chatbot interfaces and functionalities that prioritize simplicity, accessibility, and user-friendliness is essential. By enhancing the ease with which users can comprehend, navigate, and engage with chatbots, the perceived usefulness of chatbots can be reinforced. Managers and designers should focus on streamlining the user experience, ensuring

seamless navigation, simplified interactions, and clear guidance within the chatbot interface. Moreover, managers might incorporate intuitive visual cues, icons, or tooltips to guide users through complex interface layouts.

3- Creating and maintaining a positive attitude toward chatbots is paramount, as it strongly influences users' intentions to engage with such systems. This study indicates that users' favorable attitudes significantly boost their willingness to adopt and utilize chatbots. Managers should strategically focus on initiatives aimed at shaping positive perceptions of chatbots. To this end, managers may implement communication strategies, educational campaigns, and user-centric approaches highlighting chatbots' benefits, functionalities, and value propositions. By proactively addressing user concerns, providing transparent information, and demonstrating the practical advantages of chatbots in addressing user needs and challenges, managers can cultivate an environment conducive to fostering positive attitudes. This strategic emphasis on nurturing favorable attitudes might be pivotal in driving higher user acceptance, adoption rates, and sustained engagement with chatbot technology across diverse industry landscapes.

4.2. Limitations and Future Research Directions

This study has several limitations that are worth mentioning. First, limiting the survey to Los Angeles residents might not represent diverse perspectives or cultural variations regarding chatbot use. Considering a broader demographic could enhance the study's generalizability. Thus, it is recommended that future studies replicate the study in other demographical areas to check whether the results are consistent with their findings. Moreover, conducting cross-cultural studies might help researchers shed light on variances that cultural differences might make. Second, the survey subject was Chatgpt, one of the numerous available chatbots; therefore, extending the findings or results to other chatbots might not be valid and reliable. In this regard, researchers are urged to replicate the study using other chatbots to check if their results are aligned with the current research. Third, many other variables might influence the interplay of factors that shape and form attitudes toward chatbots or intention to use chatbots that were not included in this study. Factors such as user trust, perceived risk, perceived intelligence of the chatbot, social influence, etc., could be included in future studies to broaden the scope and depth of knowledge in this particular realm of science. Fourth, another limitation of the study is that it did not consider the long-term adoption and sustained usage of chatbots to understand how attitudes evolve and what factors contribute to

their sustained use. Thus, it is recommended that future research conduct longitudinal studies to include other factors and investigate the interplay of included factors in a long-term study.

From the methodological perspective, this study used a quantitative approach that provides numerical data and statistical relationships. Yet, qualitative, or mixed-method studies hold immense promise for enriching future research on various aspects of chatbot adoption and usage intentions. On the other hand, qualitative approaches delve deeper into participants' perceptions, attitudes, and experiences. These methodologies allow researchers to explore the intricate nuances, motivations, and contextual factors that quantitative analyses might overlook. Qualitative methods such as in-depth interviews or focus groups enable participants to articulate their thoughts, emotions, and beliefs regarding chatbot interactions, revealing insights that quantitative surveys might fail to capture. Moreover, employing mixed-method approaches by combining qualitative narratives with quantitative data enables a comprehensive triangulation of findings, strengthening the validity and reliability of the research outcomes. This integration permits a holistic understanding of the complexities surrounding attitudes toward chatbots, shedding light on the underlying reasons behind perceptions, thereby aiding in developing more nuanced theoretical models and practical applications in the chatbot adoption and use field.

Summary in English

Chatbots hold potential for business growth by automating customer communication, reducing costs, and ensuring reliability in information processing. Managers can easily monitor chatbot performance, while customers benefit from their availability, speed in responses, and engaging interactions. This study examines the influence of anthropomorphism, perceived social presence, and personal innovativeness on perceived usefulness, ease of use, and enjoyment in the context of chatbots. It also explores how these mediating factors affect attitudes toward chatbots and, consequently, intention to use chatbot users, addressing the complex interplay between these variables in shaping user interactions with and perceptions of chatbot technology.

Studying factors influencing chatbots' perceived performance and user attitudes toward them is crucial for the optimal deployment of chatbots. One of the factors used in this study is anthropomorphism, which is associating human attributes with non-human entities like chatbots. The results of this study indicated that perceived anthropomorphism positively impacts perceived usefulness, perceived ease of use, and perceived enjoyment. Perceived social presence is the other factor studied in this research and results indicate that it influences perceived ease-of-use and enjoyment. Another factor influencing users' attitudes toward chatbot usage is users' innovativeness. The study's findings suggested that this factor impacts perceived enjoyment, ease of use, and usefulness. Moreover, it has been discovered that perceived ease of use positively affects perceived enjoyment and effectiveness.

Recognizing the impact that perceived enjoyment, perceived ease-of-use, and perceived usefulness have on users' attitudes toward chatbots is crucial. The research findings indicate that perceived enjoyment does not significantly influence users' attitudes toward chatbots. On the other hand, both perceived ease of use and usefulness positively affect users' attitudes toward chatbots.

Finally, the research results illustrate that users' attitudes toward chatbots positively impact their intentions to use them.

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APPENDIX 1 QUESTIONNAIRE OF THE STUDY

Dear Respondent,

This questionnaire is a part of a research in marketing at Vilnius University. All the data will be used for non-profit scientific studies. You will not be asked to disclose your sensitive personal information or identity. This questionnaire would take 6 to 9 minutes of your valuable time to complete.

I would like to thank you in advance for your participation.

Please answer the following question.

Have you ever used ChatGPT?

○ Yes

○ No

Provided that you have used chatGPT, please answer the following questions.

Anthropomorphism

1- The conversations I have had with ChatGPT provided are as if I have had a dialogue with a real human being.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

2-I perceive ChatGPT as having human-like qualities.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

3-I feel like ChatGPT behaves as if it has human features.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

4-Conversations with ChatGPT that I use do not seem artificial(natural).

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

Social presence

7- There is a sense of human contact in interaction with ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

8-There is a sense of personalness in interaction with ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

9-There is a sense of sociability in interaction with ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

10-There is a sense of human warmth in interaction with ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

11-There is a sense of human sensitivity in interaction with ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

Innovativeness

12-I think I know more about chatbots than my circle of friends

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

13-If I heard about a new technology like ChatGPT, I would look for ways to experiment with it.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

14-Among my peers, I am usually the first to try out new technologies such as ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

15-In general, I am hesitant to try out new technologies such as ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

16-I like to experiment with technologies such as ChatGPT.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

Perceived usefulness

17-ChatGPT will be useful to me.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

18-Using ChatGPT will enable me to fulfill my needs quickly.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

19-Using ChatGPT will increase my productivity.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

20-Using ChatGPT will enhance my effectiveness.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

21-Using ChatGPT would enable me to accomplish my tasks.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

Perceived Enjoyment

22-For each pair of descriptors, please choose how you feel when interacting with ChatGPT.

Enjoyable ○ ○ ○ ○ ○ ○ ○ Disgusting

Exciting ○ ○ ○ ○ ○ ○ ○ Dull

Pleasant ○ ○ ○ ○ ○ ○ ○ Unpleasant

Interesting ○ ○ ○ ○ ○ ○ ○ Boring

Perceived Ease-of-use

23-The interaction with the ChatGPT is clear and understandable.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

24-Interaction with ChatGPT does not require a lot of mental effort.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

25-I find ChatGPT easy to use.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

26-I find it easy to get ChatGPT to do what I want it to do.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

Attitudes toward ChatGPT

27- I think that using ChatGPT is positive.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

28- think that using ChatGPT is useful.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

29- I think that using ChatGPT is valuable.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

30- I think that using ChatGPT is dynamic.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

31- I think that using ChatGPT is attractive.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

32- I think that using ChatGPT is enjoyable.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

33- I think that using ChatGPT is delightful.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

Intentions to use

34- I intend to use ChatGPT in the near future.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

35- I am planning to use ChatGPT in the near future.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

36- I will make an effort to use ChatGPT in the near future.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

37- I will certainly invest time and money to use ChatGPT in the near future.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

38- I am willing to continue using ChatGPT in the near future.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

39-What gender do you identify yourself as?

○ Female ○ Male ○ Non-Binary ○ Prefer not to Say

40- How old are you?

I am _____ years old.

41-What is the highest level of school you have completed or the highest degree you have received?

- ○ Less than a high school degree
- ○ High school degree or equivalent
- ○ Bachelor degree
- ○ Graduate degree

42- What is your annual household income?

- ○ $25,000 and Less
- ○ $25,001 - $50,000
- ○ $50,001 - $100,000
- ○ More than $100,000
- ○ Prefer not to say

APPENDIX 2 THE ORIGINAL MEASUREMENT ITEMS USED FOR THE RESEARCH

Table 1. Original items of the used measures

Variables	**Items**	**Measurement**	**Reference**
Perceived Anthropomorphism	The conversations I have had with ChatGPT provided are as if I have had a dialogue with a real human being. I perceive ChatGPT as having human-like qualities. I feel like ChatGPT behaves as if it has human features. Conversations with ChatGPT that I use don't seem artificial (natural).	7-point Likert scale	Selamat and Windasari (2021)
Perceived Social presence	There is a sense of human contact in interaction with ChatGPT. There is a sense of personalness in interaction with ChatGPT. There is a sense of sociability in interaction with ChatGPT. There is a sense of human warmth in interaction with ChatGPT. There is a sense of human sensitivity in interaction with ChatGPT.	7-point Likert scale	Gefen and Straub (2004)
Innovativeness	I think I know more about chatbots than my circle of friends. If I heard about a new technology like ChatGPT, I would look for ways to experiment with it. Among my peers, I am usually the first to try out new technologies such as ChatGPT. In general, I am hesitant to try out new technologies such as ChatGPT. I like to experiment with technologies such as ChatGPT.	7-point Likert scale	Kasilingam (2020)

Table 2. continuation

Perceived usefulness	ChatGPT will be useful to me. Using ChatGPT will enable me to fulfill my needs quickly. Using ChatGPT will increase my productivity. Using ChatGPT will enhance my effectiveness. Using ChatGPT would enable me to accomplish my tasks fast.	7-point Likert scale	Kasilingam (2020) (Adapted from Davis 1989)
Perceived enjoyment	Enjoyable- Disgusting Exciting- Dull Pleasant- Unpleasant Interesting- Boring	7-point semantic differential scale	Van der Heijden (2004)
Perceived ease-of-use	The interaction with the ChatGPT is clear and understandable. Interaction with ChatGPT does not require a lot of mental effort. I find ChatGPT easy to use. I find it easy to get ChatGPT to do what I want it to do.	7-point Likert scale	Van der Heijden (2004)
Attitudes toward ChatGPT	I think that using ChatGPT is positive. I think that using ChatGPT is useful. I think that using ChatGPT is valuable. I think that using ChatGPT is dynamic. I think that using ChatGPT is attractive. I think that using ChatGPT is enjoyable. I think that using ChatGPT is delightful.	7-point Like rt scale	Lee et al. (2012)

Table 2. continuation

Intentions to use	I intend to use ChatGPT in the near future. I am planning to use ChatGPT in the near future. I will make an effort to use ChatGPT in the near future. I will certainly invest time and money to use ChatGPT in the near future. I am willing to continue using ChatGPT in the near future.	7-point Likert scale	Lee et al. (2012)

APPENDIX 3 VALIDITY TEST OF THE SCALES

Table 1 Initial Eigenvalues and Extraction Sums of Squared Loadings

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15.462	37.712	37.712	15.462	37.712	37.712
2	5.920	14.44	52.152	5.920	14.44	52.152
3	2.148	5.238	57.39	2.148	5.238	57.39
4	1.588	3.873	61.263	1.588	3.873	61.263
5	0.935	2.280	63.543	0.935	2.280	63.543
6	0.590	1.439	64.982	0.590	1.439	64.982
7	0.537	1.310	66.292	0.537	1.310	66.292
8	0.520	1.269	67.561	0.520	1.269	67.561
9	0.475	1.159	68.72			
10	0.452	1.102	69.822			
11	0.768	1.872	71.694			
12	0.678	1.654	73.348			
13	0.650	1.586	74.934			
14	0.630	1.537	76.471			
15	0.613	1.494	77.965			
16	0.585	1.428	79.393			
17	0.565	1.377	80.77			
18	0.549	1.339	82.109			
19	0.530	1.293	83.402			
20	0.516	1.258	84.66			
21	0.500	1.219	85.879			
22	0.478	1.166	87.045			
23	0.458	1.116	88.161			
24	0.431	1.052	89.213			
25	0.410	1.000	90.213			
26	0.395	0.963	91.176			
27	0.378	0.921	92.097			
28	0.347	0.846	92.943			
29	0.328	0.799	93.742			
30	0.306	0.747	94.489			
31	0.286	0.698	95.187			
32	0.273	0.665	95.852			
33	0.262	0.639	96.491			
34	0.246	0.599	97.09			
35	0.223	0.545	97.635			
36	0.212	0.516	98.151			
37	0.193	0.47	98.621			
38	0.178	0.435	99.056			
39	0.164	0.400	99.456			
40	0.145	0.354	99.81			
41	0.078	0.190	100			

Extraction Method: Principal Component Analysis.

APPENDIX 4 RELIABILITY OF THE SCALES

The Reliability of perceived anthropomorphism is obtained as follows.

Table 1. Case Processing Summary of Perceived anthropomorphism

		N	%
Cases	Valid	487	99.8
	Excluded[a]	1	0.2
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 2. Reliability Statistics for Perceived anthropomorphism

Cronbach's Alpha	N of Items
0.871	4

Table 3. Item-Total Statistics for Perceived anthropomorphism

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived anthropomorphism 1	24.87	61.697	.894	0.871
Perceived anthropomorphism 2	24.92	61.022	.889	0.870
Perceived anthropomorphism 3	24.94	59.855	.895	0.871
Perceived anthropomorphism 4	24.93	59.999	.902	0.861

The Reliability of perceived social presence is as follows.

Table 4. Case Processing Summary for Perceived social presence

		N	%
Cases	Valid	488	100.0
	Excluded[a]	0	.0
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 5. Reliability Statistics for perceived social presence

Cronbach's Alpha	N of Items
0.842	5

Table 6. Item-Total Statistics for Perceived Social Presence

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived social presence _1	17.263	2.239	.459	.842
Perceived social presence _2	17.281	2.419	.358	.848
Perceived social presence _3	17.267	2.436	.376	.837
Perceived social presence _4	17.348	2.317	.432	.829
Perceived social presence _5	17.294	2.348	.410	.835

The Reliability of innovativeness is as follows.

Table 7. Case Processing Summary for Innovativeness

		N	%
Cases	Valid	488	100.0
	Excluded[a]	0	.0
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 8. Reliability Statistics for Innovativeness

Cronbach's Alpha	N of Items
0.910	5

Table 9. Item-Total Statistics for Innovativeness

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Innovativeness 1	23.904	5.626	.490	.910
Innovativeness 2	23.961	5.437	.527	.919
Innovativeness 3	23.929	5.532	.515	.918
Innovativeness 4	23.868	5.527	.489	.893
Innovativeness 5	23.906	5.277	.544	.910

The reliability test results for perceived usefulness are depicted in the following.

Table 10. Case Processing Summary for Perceived usefulness

		N	%
Cases	Valid	488	100.0
	Excluded[a]	0	.0
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 11. Reliability Statistics for Perceived usefulness

Cronbach's Alpha	N of Items
0.891	5

Table12. Item-Total Statistics for Perceived Usefulness

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived usefulness 1	23.833	5.213	.451	.886
Perceived usefulness 2	23.862	4.940	.512	.888
Perceived usefulness 3	23.884	4.931	.526	.908
Perceived usefulness 4	23.870	4.987	.505	.887
Perceived usefulness 5	23.802	5.322	.430	.886

The Reliability test results for perceived ease-of-use are as follows.

Table 13. Case Processing Summary Perceived Ease-Of-Use

		N	%
Cases	Valid	488	100.0
	Excluded[a]	0	.0
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 14. Reliability Statistics for Perceived ease-of-use

Cronbach's Alpha	N of Items
0.917	4

Table 15. Item-Total Statistics for Perceived ease-of-use

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived ease-of-use 1	16.33	10.058	.783	.918
Perceived ease-of-use 2	16.36	10.083	.760	.919
Perceived ease-of-use 3	16.36	10.194	.740	.915
Perceived ease-of-use 4	16.33	10.056	.774	.917

The reliability test results for perceived enjoyment are as follows.

Table 16. Case Processing Summary for Perceived Enjoyment

		N	%
Cases	Valid	488	100.0
	Excluded[a]	0	.0
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 17. Reliability Statistics for Perceived Enjoyment

Cronbach's Alpha	N of Items
0.931	4

Table 18. Item-Total Statistics for Perceived Enjoyment

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived Enjoyment 1	14.74	10.553	.761	.925
Perceived Enjoyment 2	14.70	10.625	.742	.933
Perceived Enjoyment 3	14.63	11.050	.725	.936
Perceived Enjoyment 4	14.69	10.833	.752	.931

The reliability test results for attitude toward chatbot are as follows.

Table 19. Case Processing Summary for Attitude Toward Chatbot

		N	%
Cases	Valid	487	99.8
	Excluded[a]	1	0.2
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 20. Reliability Statistics for Attitude Toward Chatbot

Cronbach's Alpha	N of Items
0.862	7

Table 21. Item-Total Statistics for Attitude Toward Chatbot

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Attitudes toward chatbot 1	34.88	26.677	.785	.858
Attitudes toward chatbot 2	34.88	26.886	.770	.864
Attitudes toward chatbot 3	34.90	27.644	.728	.861
Attitudes toward chatbot 4	34.83	26.690	.777	.878
Attitudes toward chatbot 5	37.89	26.810	.770	.846
Attitudes toward chatbot 6	34.92	26.466	.783	.865
Attitudes toward chatbot 7	34.87	27.015	.764	.862

The Reliability of intention to use is as follows.

Table 22. Case Processing Summary for Intention To Use

		N	%
Cases	Valid	488	100.0
	Excluded[a]	0	.0
	Total	488	100.0

a. Listwise deletion based on all variables in the procedure.

Table 23. Reliability Statistics for Intention to use

Cronbach's Alpha	N of Items
0.837	5

Table 24. Item-Total Statistics for Intention to use

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Intention to use _1	10.41	7.900	.856	.834
Intention to use _2	10.34	7.773	.848	.857
Intention to use _3	10.40	7.764	.838	.820
Intention to use _4	10.39	7.846	.841	.841
Intention to use _5	10.37	7.911	.845	.839

APPENDIX 6 COMPLEMENTARY INFORMATION OF STATISTICAL ANALYSIS OF THE HYPOTHESES OF THE RESEARCH

Complementary information for regression analysis of H1 is as follows:

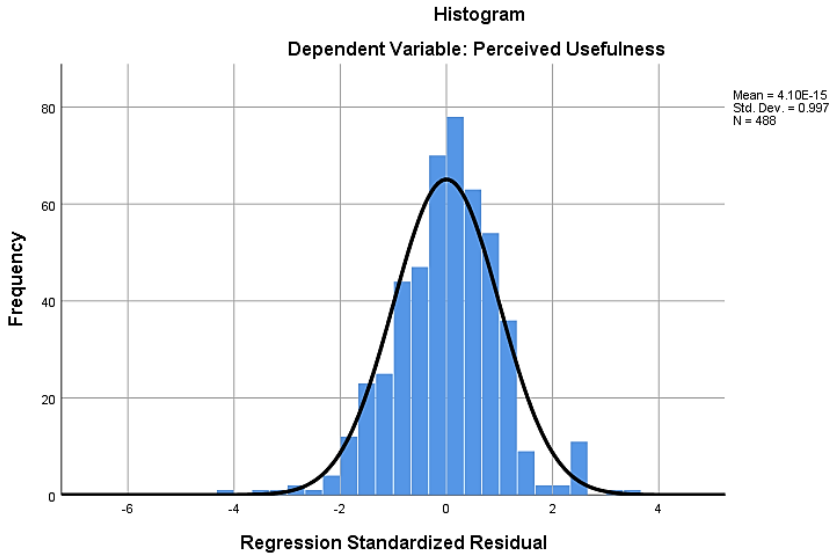

Figure 1. Histogram of Regression Standardized Residual for Perceived usefulness

Table 1. Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Perceived Anthropomorphism	Innovativeness
1	1	2.948	1.000	.00	.00	.00
	2	.049	7.729	.04	.47	.00
	3	.002	36.523	.96	.53	1.00

a. Dependent Variable: Perceived Usefulness

Table 2. Correlations for the first regression analysis of H1

		Perceived Usefulness	Perceived Anthropomorphism	Perceived Social Presence	Innovativeness
Pearson Correlation	Perceived Usefulness	1.000	.798	.551	.763
	Perceived Anthropomorphism	.798	1.000	.600	.769
	Perceived Social Presence	.551	.600	1.000	.575
	Innovativeness	.763	.769	.575	1.000
Sig. (1-tailed)	Perceived Usefulness	.	.000	.000	.000
	Perceived Anthropomorphism	.000	.	.000	.000
	Perceived Social Presence	.000	.000	.	.000
	Innovativeness	.000	.000	.000	.
N	Perceived Usefulness	488	488	488	488
	Perceived Anthropomorphism	488	488	488	488
	Perceived Social Presence	488	488	488	488
	Innovativeness	488	488	488	488

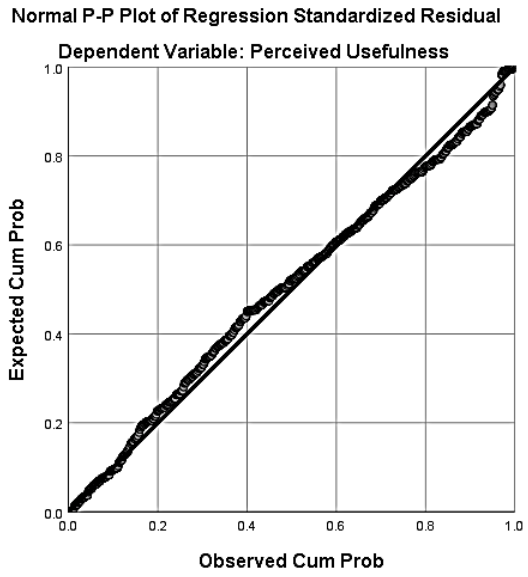

Figure 2. Normal P-P of Regression Standardized Residual for Perceived Usefulness

Complementary information for regression analysis of H2 is as follows:

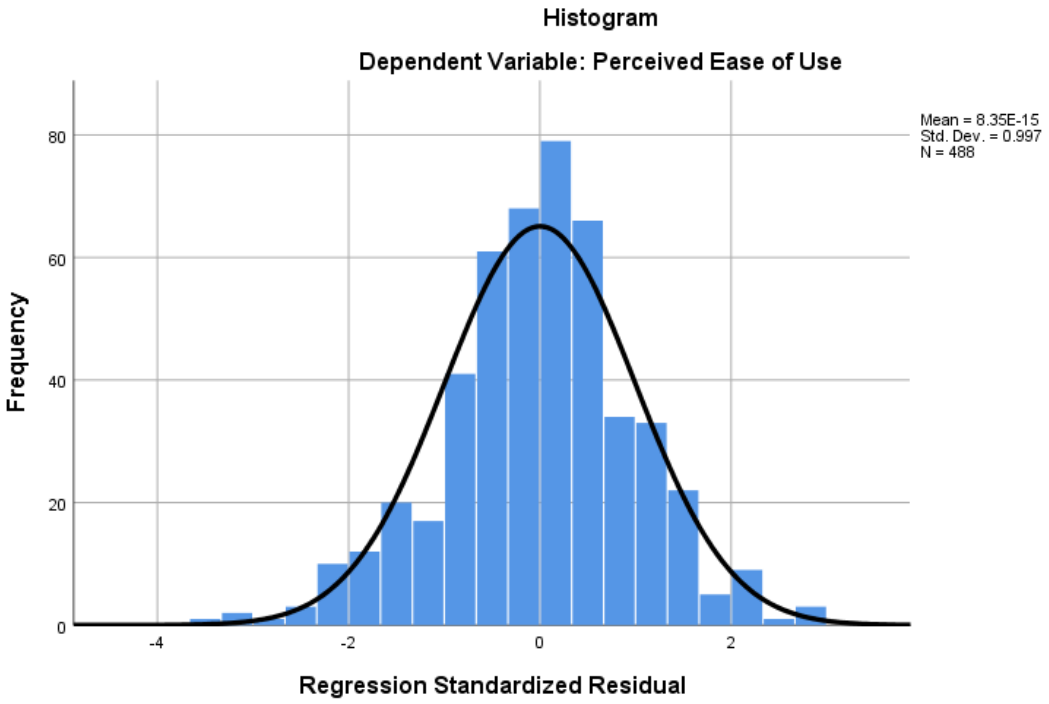

Figure 3. Regression Standardized Residual for Perceived Ease-of-Use

Table 3. Correlations

		Perceived Ease-of-use	Perceived Anthropomorphism	Perceived Social Presence	Innovativeness
Pearson Correlation	Perceived Ease-of-use	1.000	.894	.609	.791
	Perceived Anthropomorphism	.894	1.000	.600	.769
	Perceived Social Presence	.609	.600	1.000	.575
	Innovativeness	.791	.769	.575	1.000
Sig. (1-tailed)	Perceived Ease-of-use	.	.000	.000	.000
	Perceived Anthropomorphism	.000	.	.000	.000
	Perceived Social Presence	.000	.000	.	.000
	Innovativeness	.000	.000	.000	.
N	Perceived Ease-of-use	488	488	488	488
	Perceived Anthropomorphism	488	488	488	488
	Perceived Social Presence	488	488	488	488
	Innovativeness	488	488	488	488

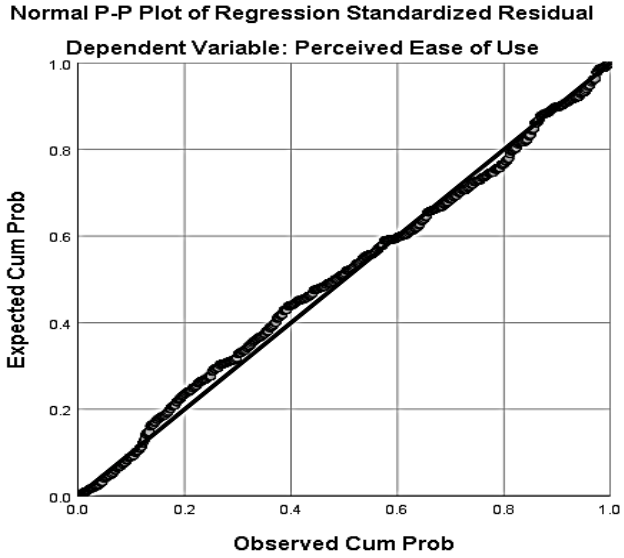

Figure 4. Normal P-P of Regression Standardized Residual for Perceived Ease-of-Use

Complementary information for regression analysis of H3 is as follows:

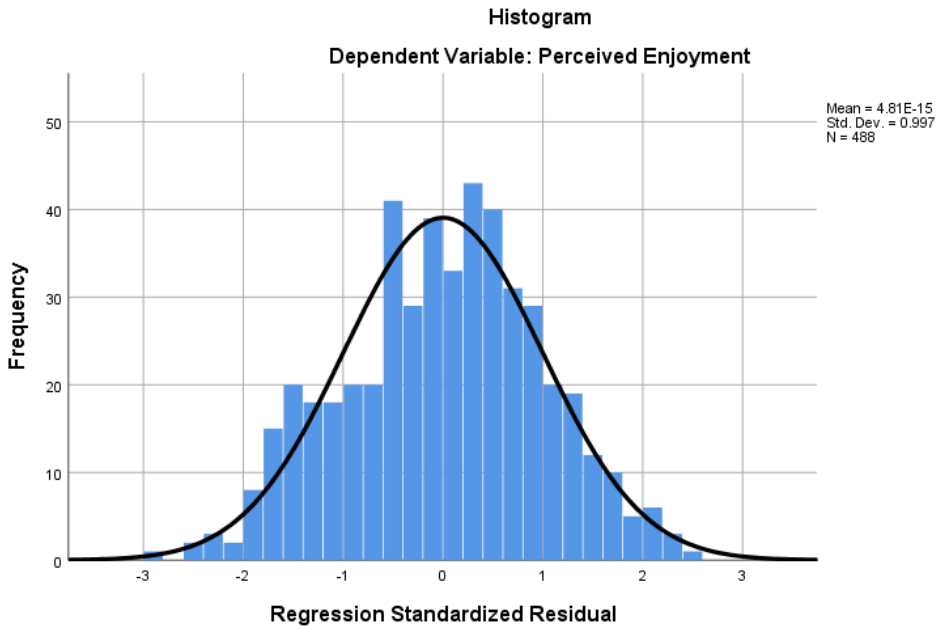

Figure 5. Regression Standardized Residual for Perceived Enjoyment

Table 4. Correlations

		Perceived Enjoyment	Perceived Anthropomorphism	Perceived Social Presence	Innovativeness
Pearson Correlation	Perceived Enjoyment	1.000	.815	.693	.724
	Perceived Anthropomorphism	.815	1.000	.600	.769
	Perceived Social Presence	.693	.600	1.000	.575
	Innovativeness	.724	.769	.575	1.000
Sig. (1-tailed)	Perceived Enjoyment	.	.000	.000	.000
	Perceived Anthropomorphism	.000	.	.000	.000
	Perceived Social Presence	.000	.000	.	.000
	Innovativeness	.000	.000	.000	.
N	Perceived Enjoyment	488	488	488	488

	Perceived Anthropomorphism	488	488	488	488
	Perceived Social Presence	488	488	488	488
	Innovativeness	488	488	488	488

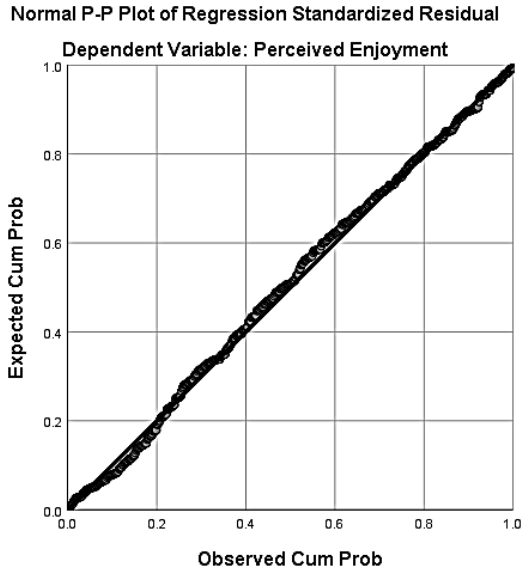

Figure 6. Normal P-P of Regression Standardized Residual for Perceived Enjoyment

Complementary information for regression analysis of H4 is as follows:

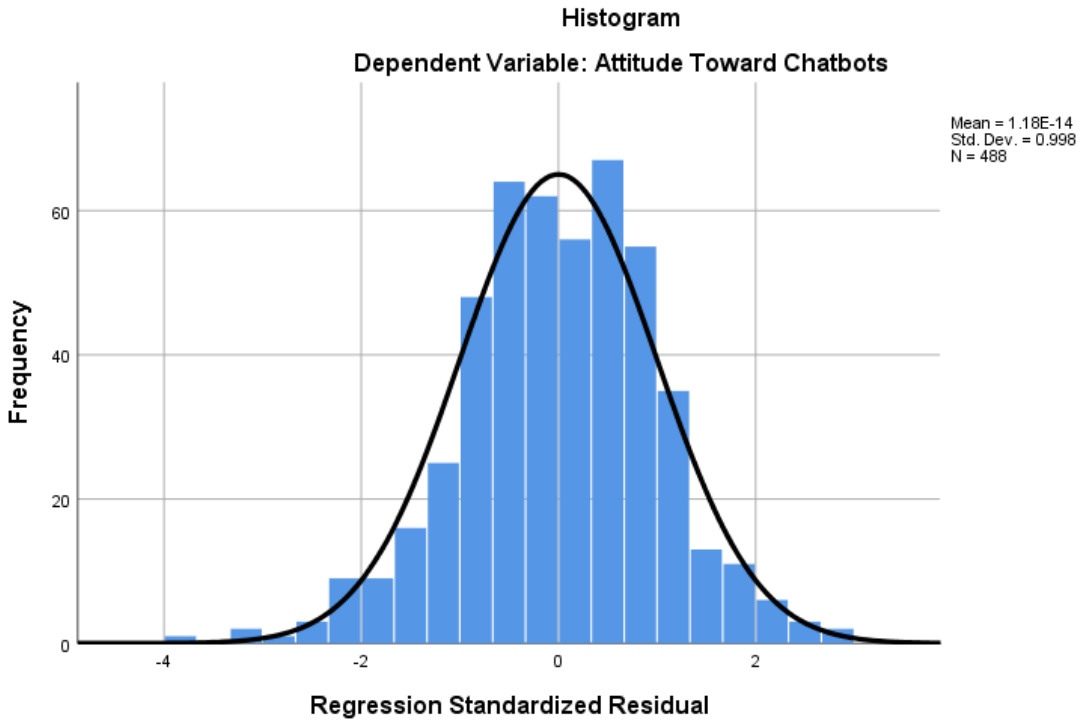

Figure 7. Regression Standardized Residual for Attitude Toward Chatbots

Table 5. Correlations

		Attitude Toward Chatbots	Perceived Usefulness	Perceived Enjoyment	Perceived Ease-of-use
Pearson Correlation	Attitude Toward Chatbots	1.000	.796	.720	.884
	Perceived Usefulness	.796	1.000	.720	.814
	Perceived Enjoyment	.720	.720	1.000	.794
	Perceived Ease-of-use	.884	.814	.794	1.000
Sig. (1-tailed)	Attitude Toward Chatbots	.	.000	.000	.000
	Perceived Usefulness	.000	.	.000	.000
	Perceived Enjoyment	.000	.000	.	.000

	Perceived Ease-of-use	.000	.000	.000	.
N	Attitude Toward Chatbots	488	488	488	488
	Perceived Usefulness	488	488	488	488
	Perceived Enjoyment	488	488	488	488
	Perceived Ease-of-use	488	488	488	488

Complementary information for regression analysis of H5 is as follows:

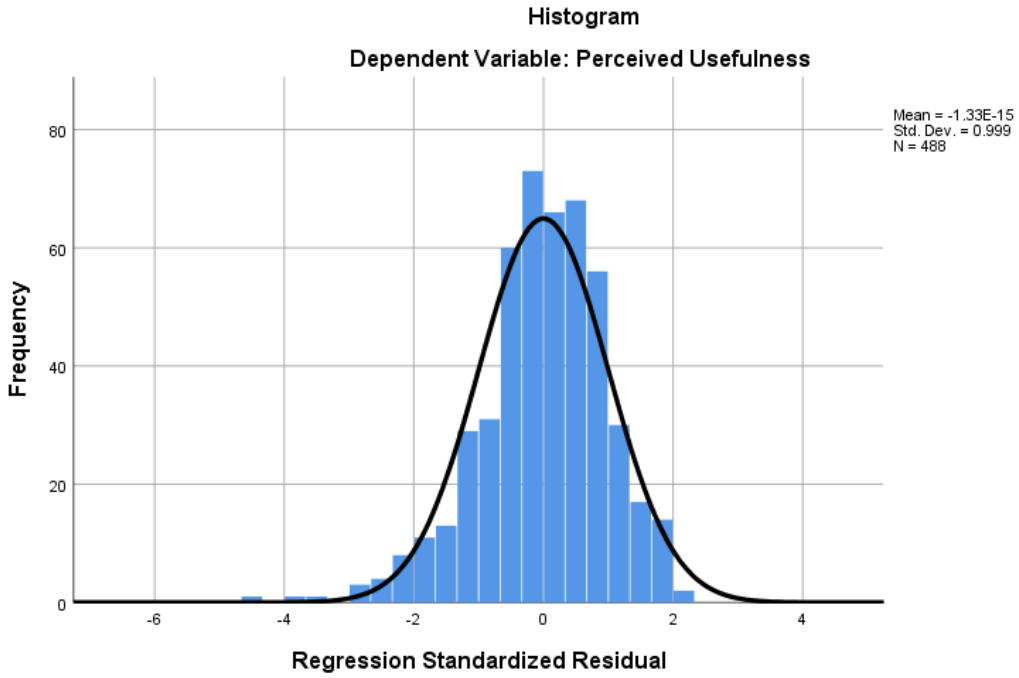

Figure 8. Regression Standardized Residual for Perceived Usefulness

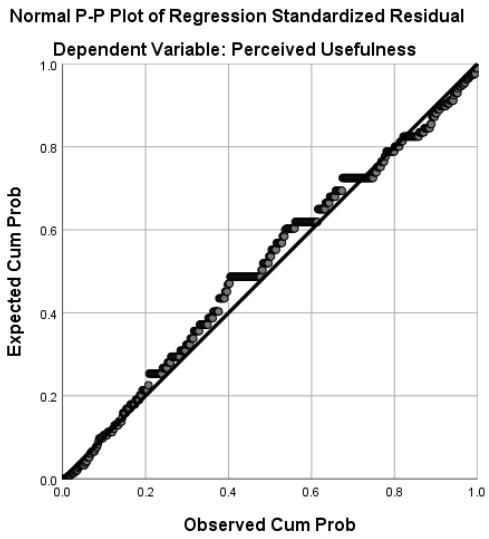

Figure 9. Normal P-P of Regression Standardized Residual for Perceived Usefulness

Complementary information for regression analysis of H6 is as follows:

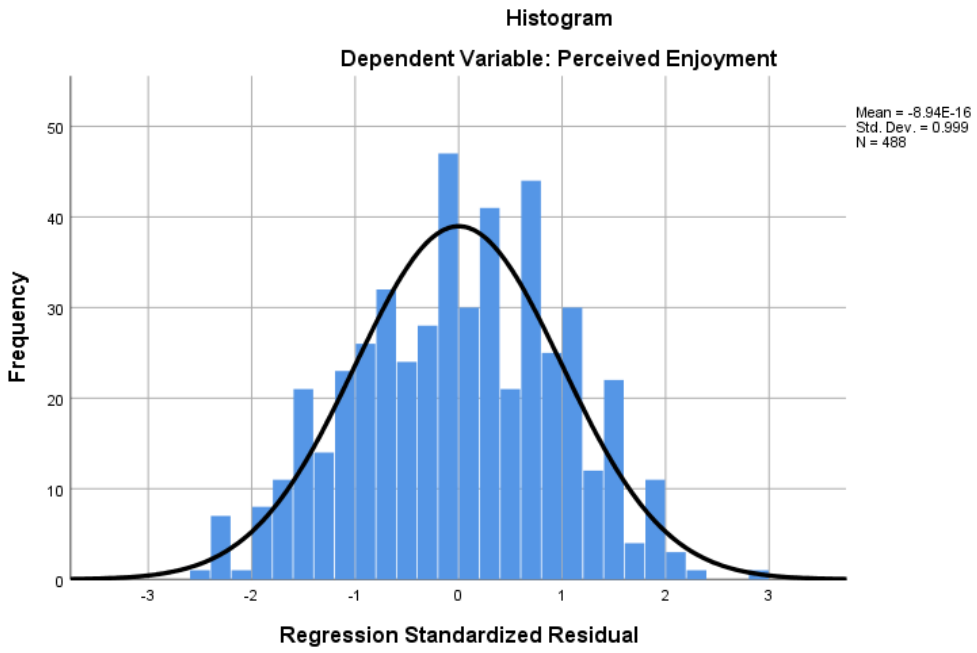

Figure 10. Regression Standardized Residual for Perceived Enjoyment

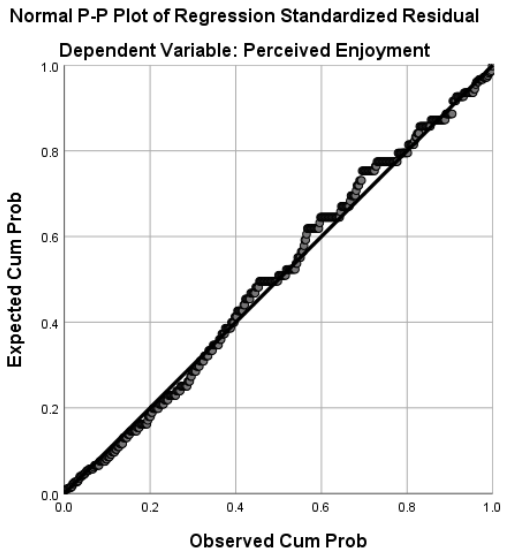

Figure 11. Normal P-P of Regression Standardized Residual for Perceived Enjoyment

Complementary information for regression analysis of H7 is as follows:

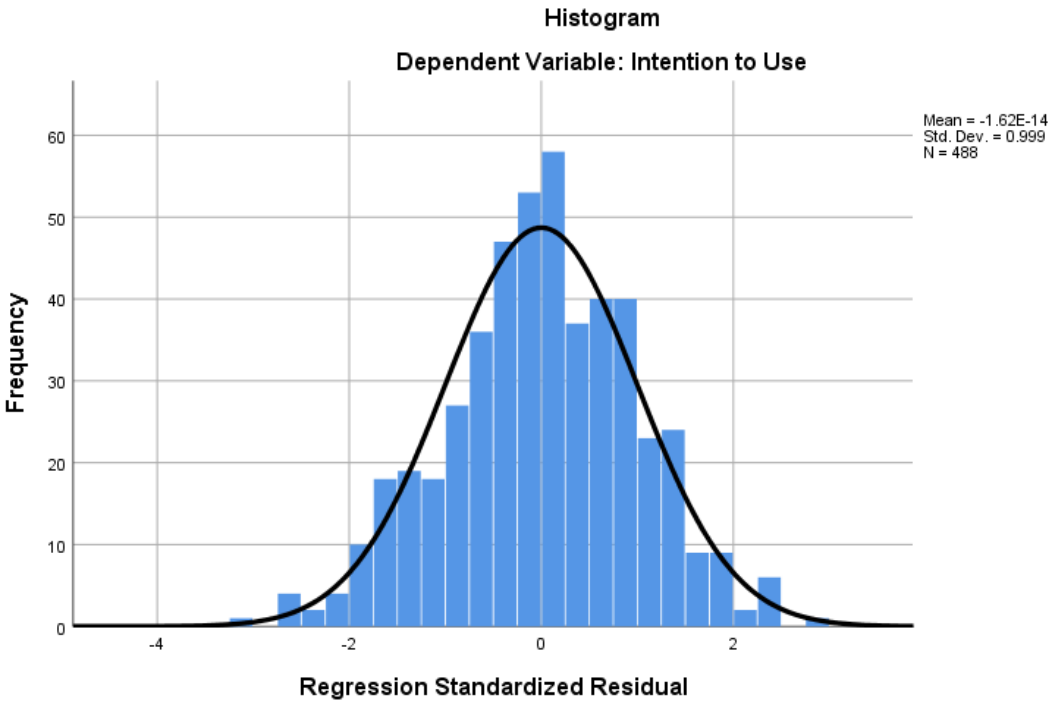

Figure 12. Regression Standardized Residual for Intention to Use

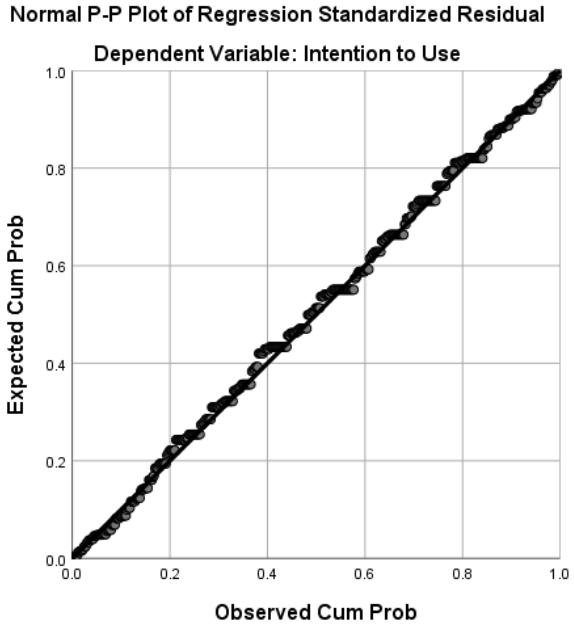

Figure 13. Normal P-P of Regression Standardized Residual for Intention to Use