



Chatbots' extroverted or introverted personality's influence on  
consumers' purchase intention depending on consumers'  
extroversion extent

Lea Kalem

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## Abstract

**Title:** Chatbots' extroverted or introverted personality's influence on consumers' purchase intention depending on consumers' extroversion extent

**Author:** Lea Kalem

The purpose of this study is to investigate the influence of chatbot personality on consumer purchase intention, depending on the consumer's level of extroversion. Through an experiment, this study will analyze the effects of extroverted and introverted chatbot personalities on consumers with different levels of extroversion. The findings will provide valuable insights into the impact of chatbot personality on consumers' purchase intention and the potential for personalized communication strategies in e-commerce. Results indicate that chatbot perception significantly influences purchase intention and that a match in personality between the chatbot and the consumer leads to higher purchase intention. Additionally, extroverted chatbots are found to lead to higher purchase intention than introverted ones. Finally, perceived ease of chatbot use is shown to increase purchase intention. These findings suggest that providing chatbots with a personality can effectively enhance purchase intention, particularly if matching the consumer's personality.

**Keywords:** Chatbot, Personality, Purchase Intention, Five-Factor Model, Extroversion, Personality traits

## Sumário

**Título:** Chatbots extrovertidos ou introvertidos influenciam a personalidade na intenção de compra dos consumidores, dependendo da extensão dos consumidores

**Autor:** Lea Kalem

O objectivo deste estudo é investigar a influência da personalidade do chatbot na intenção de compra do consumidor, dependendo do nível de extroversão do consumidor. Através de uma série de experiências, este estudo irá analisar os efeitos de personalidades extrovertidas e introvertidas de chatbots sobre consumidores com diferentes níveis de extroversão. Os resultados proporcionarão valiosos conhecimentos sobre o impacto da personalidade de chatbot na intenção de compra dos consumidores e o potencial para estratégias de comunicação personalizadas no comércio electrónico. Os resultados indicam que a percepção do chatbot influencia significativamente a intenção de compra e que uma correspondência na personalidade entre o chatbot e o consumidor leva a uma maior intenção de compra. Além disso, verifica-se que os chatbots extrovertidos levam a uma intenção de compra mais elevada do que os introvertidos. Finalmente, a percepção de facilidade de utilização do chatbot é aumentada a intenção de compra. Estas conclusões sugerem que dar uma personalidade aos chatbots pode efectivamente aumentar a intenção de compra.

**Palavras-chave:** Chatbot, Personalidade, Intenção de compra, Modelo de Cinco Factores, Extroversão, Traços de Personalidade

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## Glossary

$\alpha$	Cronbach's index of reliability
$b$	Estimated value of unstandardized regression coefficient
&	And
ANOVA	Analysis of Variance
FFM	Five-Factor Model
H	Hypothesis
$M$	Sample Mean
NLP	Natural Language Processing
NLU	Natural Language Understanding
$p$	p-value
$r$	Estimation of the Spearman correlation coefficient
RQ	Research Question
$SD$	Standard Deviation

## 1. Introduction

Today, more and more of our business is done online. Shopping or ordering online in the virtual world has increased rapidly over the last years (Pasquali, 2022). Customers have the opportunity to access and visit the online stores and webpages of companies 24/7, compared to physical stores (Herbrich, 2019). At the same time companies want to continue to offer their customers the best possible service both on and offline, no matter the channel through which they are reached. Therefore, it has become even more important for companies to be able to serve possible requests, fulfill wishes or respond to concerns of customers at any time. Due to this development, chatbots have emerged as a solution and serve customers at any time and place (Herbrich, 2019). According to a statistic published by Statista (The Insight Partner, 2019), chatbot market revenues have already increased by 103.91% worldwide from 2018 to 2021. From 2022 to 2027, the chatbot market revenue is expected to increase globally by 326.64%. Despite the fast and continuous growing, chatbots pose some challenges. Problems like frustration due to misunderstood questions or misleading answers are mentioned most frequently (Shumanov & Johnson, 2021). Chatbots are considered as the novel salesperson, therefore the question arises what characteristics a salesperson has that a chatbot lacks (Antikainen, 2020). One crucial characteristic is the lack of personality. Providing chatbots with a personality may increase trust which, which is crucial for a successful communication (Lee & See, 2004). Several studies have already indicated that personality traits have an influence on consumers' purchase intention (Fujiwara & Nagasawa, 2015; Lin & Huang, 2012; Tang & Lam, 2017; Zabkar, Arslanagic-Kalajdzic, Diamantopoulos, & Florack, 2017).

Accordingly, the topic of this master thesis is the influence of chatbot personality on consumer's purchase intention depending on the consumer's extroversion extent. This study aims to investigate whether an extroverted or introverted chatbot personality is more effective in influencing consumer's purchase intention, and if the consumer's extroversion extent plays a role in this relationship. By understanding the role of chatbot personality and consumer extroversion in influencing purchase intention, this research can provide valuable insights for businesses looking to utilize chatbots in their marketing and sales strategies.



## 1.1 Problem Statement

To understand the trend of increasing chatbot usage (Herbrich, 2019) and the accompanying frustration of consumers (Jenkins, Churchill, Cox, & Smith, 2007), this thesis addresses a new perspective. As chatbots are attributed to have a resemblance to a human salesperson (Antikainen, 2020), the goal of this study is to test how chatbot personality traits influence the purchase intention of customers by having a chatbot communicate in a manner that transmits an extroverted or introverted personality. Also, this study will test what influence consumers' extroversion level has on the impact of chatbot personality on purchase intention.

In summary, two research question result for this study:

RQ1: How does a chatbot with extroverted or introverted personality traits affect a consumer's online purchase intentions?

RQ2: How does consumers' own personality influence the impact of chatbot personality traits on purchase intention?

## 1.2 Relevance

This thesis contributes to the existing literature on personality traits and chatbots by combining both concepts together in an original manner. The influence of chatbot's and consumer's personality traits on consumers' online purchase intention are to be tested. More precisely, in order to understand the online purchase intention of consumers through chatbots, this thesis tests how purchase intention can be influenced by providing chatbots with a personality trait. Moreover, it is testing how consumer's own personality influences the effects on the purchase intention when communicating with a chatbot. The results of the study can be of great importance for businesses and organizations to better understand and adapt consumer communication through chatbots.

## 1.3 Dissertation Outline

After the brief introduction to the topic, the formulation of the problem and the topic's relevance, this dissertation will provide a literature review (Chapter 2). This will give an overview on chatbots, personality, and purchase intention followed by a presentation of the hypotheses. The dissertation next includes a methodology chapter (Chapter 3) in which an experimental study was concluded in order to accomplish this master thesis' objectives. Here, the measurements, the research strategy and design, and participants and procedure

descriptions are presented. In the next chapter (Chapter 4) the results will be analyzed and discussed, followed by the main conclusions. Finally, limitations and future research ideas are discussed (Chapter 5).

## 2. Literature Review

In the present chapter, a literature review is presented. Here studies and theories are outlined which are relevant to provide a theoretical basis for the dissertation. These support and develop the research questions and set a framework for the dissertation. First, chatbots are defined and their relevance today is elaborated before providing an overview of the technology on which chatbots rely. Second, the Five-Factor Personality Model (FFM) is described and its relevance for chatbots and examinees in this study framework is presented. Lastly, the chapter defines the term purchase intention, explains its relevance to the topic and considers factors that influence purchase intention.

### 2.1 Chatbots

Chatbots can be defined as AI-powered text-based systems which are made to communicate with consumers, making them a familiar version of bots (Breen, 2020; Fink, 2020). Normally, customers would fill out a form or use an Internet search engine to get an answer to a question or request. With chatbots, however, users have the ability to make their request just as they would with a human. This enables many queries to be answered in real time and around the clock (Das & Kuma, 2018; Waghmare, 2019). Chatbots understand human language and can communicate in this way (Kreutzer & Sirrenberg, 2019). They manage to do so by using machine learning and natural language processing, which Yse (2019) defines as “a field of Artificial Intelligence that gives the machines the ability to read, understand and derive meaning from human languages”. With the use of these systems, for instance, grammatical structures can be analyzed or words categorized into certain word groups. Natural Language Understanding (NLU), a part of Natural Language Processing (NLP), is used to decode text content. If NLU and NLP work together successfully, the chatbot has a foundation for successful communication. As the word chatbot suggests, chat with a bot, NLP applications aim to establish communication between humans and machines (Yse, 2019).

Factors such as a reduction in customer service costs and the ability of chatbots to handle many customers at the same time have increased the popularity of chatbots for businesses.

Also on the consumers' side, motivations such as productivity, entertainment, social factors, or the sole contact with novelty, are being mentioned (Adamopoulou & Moussiades, 2020). According to a Forbes Contributor (Press, 2019), chatbots have driven sales to grow by an average of 67% in 2019. Moreover, in 2019, 26% of all sales have their origin in a chatbot interaction (Press, 2019). According to Herbrich (2019), chatbots will become more important in commerce in the future. In addition to availability, more and more customers expect a simplified user system. This includes being able to ask for relevant information instead of having to search for it on the website. This means customers can engage with a chatbot in natural language, get quick answers, and experience an enhanced service experience (Herbrich, 2019). Based on a study by Gartner (2022), it can be stated that chatbots will continue to gain importance in the coming years. The research organization Gartner expects nearly 25% of companies to use a chatbot as their primary customer service channel within five years (Mallis, 2022). As this thesis' study focuses on chatbots, the prospect of an increase in chatbot usage reinforces its importance.

An example of a chatbot is the KLM messenger who provides passengers with useful information and updates (Kreutzer & Sirrenberg, 2019) or Casey, the UPS chatbot who can assist with problems such as tracking of packages (Sterne, 2017). Other brands such as Expedia, Barbie, the Bank of America, eBay, Burberry, or CNN are also making successful use of chatbots (Sterne, 2017). Another company that has implemented chatbot technology is the French personal care and beauty store chain Sephora. The chatbot of the company answers all kinds of questions such as "What is the lipstick worn by the Oscar winner?" or "Which lipstick will look good on me?" (Waghmare, 2019). Users can also upload a photo of themselves and get advice from Sephora's virtual artist. According to Sephora, over 4 million people (as of 2019) have used the chatbot (Waghmare, 2019).

Nevertheless, studies have shown people become frustrated with a chatbot when they do not receive an answer to their question or receive an inadequate and irrelevant answer (Jenkins, Churchill, Cox, & Smith, 2007; Shumanov & Johnson, 2021). Jenkins and collaborators' (2007) study contrasted the computer bot with a human bot, meaning a chatbot that is not computer-driven but has a human at each end of the conversation. Findings were that users were less likely to get frustrated, annoyed, or impatient when using the human bot. The study concluded that users are more patient and understanding when they know that they are communicating with a human and not a machine. However, the advantages of a chatbot, such as real time assistance or around-the-clock availability, would no longer apply with human

bots. Therefore, this study will test whether users accept the chatbot recommendation when it has a human-like personality. This thesis will test if consumers are influenced by a chatbot with extroverted or introverted personality, and thus if purchase intention increases in line with a chatbot's recommendation when the chatbot has a human-like personality.

According to Lee and See (2004), the personality of chatbots is a crucial factor in creating a sense of trust among users. The behavior of chatbots can be understood as a characteristic feature of a personality. Trust strengthens the communication between the chatbot and the user, leading to higher customer engagement. Thus, to improve the satisfaction and engagement of users in general, it is important to research how chatbot personality can be used to improve customer engagement (Lee & See, 2004).

## 2.2 Personality

Rappaport (1963) defines the human personality as a combination of different characteristics. According to the author these characteristics are behavior and emotion that form a distinctive character. There are many personality theories and models such as Allports' (1960) personality theory, Cattell's 16 factor theory (Cattell & Mead, 2008) or Hans Eysenck's dimensions of personality (Revelle, 2016). McCrae and Costa (1987b) and Goldberg (1990) developed the five-factor model of personality (FFM), also referred to as the big five model. The big five model will be used in this dissertation to measure and explain consumers' personality because it has been studied by many personality psychologists, and most agree that the five personality traits of the FFM cover and distinguish the most basic and important areas of personality differences among individuals (Soto & Jackson, 2020). Thus, the big five structure can be used to reason countless characteristics and traits of human's personality (Soto & Jackson, 2020). Many studies include the big five personality test and use it as a measurement and central core to understand personalities by scoring individuals in the five different personality traits (Feher & Vernon , 2021). Some examples of the various areas of big five application are educational success (Çağataylı & Çelebi , 2021), job and life satisfaction (Steel, Schmidt, Bosco, & Uggerslev, 2018), sexuality and sexual health (Allen & Walter, 2018), business strategies (Caliskan, 2019), leadership (Shahzad, Raja, & Hashmi, 2021), addiction to social media such as Instagram (Kircaburun & Griffiths, 2018) or food preferences (Forestell & Nezlek, 2018).

Another reason why the big five theory has been chosen for this dissertation is that many similar studies have used the big five to explain their research. For example, one study

intended to test how the big five personality traits influence conversation between humans (Mairesse, Walker, Mehl, & Moore, 2007) and another between humans and machines (Yorita, Egerton, Oakman, Chan, & Kubota, 2019). Mairesse and collaborators (2007) tested how personality traits of the big five can be detected in texts and conversations. For this purpose, both observer and self-assessments were collected, leading to different results. The study found that depending on the personality trait, the personality judgement was perceived differently from the observer and the self-assessment. In turn, Yorita and collaborators' (2019) have researched whether a chatbot model or algorithm can be adapted to recognize the personality of the user and thus adapt its communication. The result of that study was that the chatbot could detect the personality traits and thus customize itself to the user.

The five-factor model includes the following personality traits: extroversion, agreeableness, conscientiousness, neuroticism (sometimes labeled as its opposite, emotional stability), and openness to experience (sometimes labeled as intellect). With only a small number of traits, the big five covers a large portion of the variances in individual personality as the following overview on the big five's personality traits shows:

- Neuroticism can be described with following adjectives “anxious, self-pitying, tense, touchy, unstable, worrying” (McCrae & John, 1992, pp. 178-179). Neuroticism is a trait that is closely related to well-being and mental health. People who score high in neuroticism tend to experience lower levels of happiness and are more likely to develop psychiatric disorders such as depression and various personality disorders. Even if their life circumstances are favorable, individuals with high levels in this trait may still struggle with negative emotions and mental health issues (McCrae & Costa, 2008a).
- Extroversion relates to an individual being “active, assertive, energetic, enthusiastic, outgoing, talkative” (McCrae & John, 1992, pp. 178-179). Extroverts are often perceived as popular and successful due to their outgoing personalities and tendency towards self-promotion. This can lead to higher lifetime income and a greater sense of happiness. Introverts, on the other hand, may not experience the same level of social success or financial success as extroverts (McCrae & Costa, 2008a).

- Openness represents individuals who are generally described with adjectives such as “artistic, curious, imaginative, insightful, original, wide interests” (McCrae & John, 1992, pp. 178-179). Typical outcomes are creative achievement predicted by openness in personality, while closedness predicts political conservatism and religious fundamentalism (McCrae & Costa, 2008a).
- Agreeableness outlines individuals that can be described as “appreciative, forgiving, generous, kind, sympathetic, trusting” (McCrae & John, 1992, pp. 178-179). Agreeable individuals are more likely to be desired as partners and have stronger marital relationships, while those who are more antagonistic tend to engage in criminal behavior and abuse drugs more frequently (McCrae & Costa, 2008a).
- Conscientiousness tells of individuals being “efficient, organized, planful, reliable, responsible, thorough” (McCrae & John, 1992, pp. 178-179). The trait of conscientiousness consistently predicts job performance and is correlated with positive health habits, such as punctuality, hard work, systematic behavior, safe driving, exercise, and a healthy diet. As a result, individuals who possess this trait tend to be more productive and have a higher likelihood of being healthy and living longer (McCrae & Costa, 2008a).

Costa and McCrae (1992) developed the NEO-PI-R, a questionnaire comprising 240 items, covering all factors of the five personalities. In addition, they developed a shorter version which was shortened to 60 items and named the NEO-FFI. More recently, Goldberg and collaborators’ (2006) developed a test containing 100 adjectives, also referred to as the five 20-item markers. Through the items, or questions, in the test, a variety of possible differences between people are assessed and thereby attributed to one of the big five personalities (Gow, et al., 2005; Goldberg, et al., 2006). Shortly after, Saucier (1994) reduced Goldberg’s marker to a 40-item questionnaire on the five mini-markers with eight items each. The shortened questionnaire was simplified by Saucier using items that were easier to comprehend (Saucier, 1994). One of the reasons for abbreviating the questionnaire is that it becomes easier for the researchers to implement and conduct, as the length of the previous questionnaires and the associated demands on the test time were difficult to administer (Goldberg, 1992).

While the big five model includes five different traits, this thesis focuses on one: extroversion. There are several reasons the extroversion trait was chosen for this study’s chatbot’s

personality. First of all, it is the trait that is recognized the quickest among all five personality traits (Kammrath, Ames, & Scholer, 2007). This is an important factor in this study and helps ensure the course of respondent's participation to this research. Also, this might be a useful tool for companies seeking significant outcomes when deciding to adapt a personality for chatbots.

Other personality theories differ from the big five, nevertheless some have also integrated the extroversion trait, for example Hans Eysenck in his dimensions of personality (Revelle, 2016). This theory describes two dimensions: neuroticism–stability and introversion–extroversion. Initially, Cattell's 16 factor theory (Cattell & Mead, 2008) does not point directly to extroversion, but has attributes such as dominance, liveliness or privateness, which indicate an extroversion personality. Subsequently, Cattell added a sub level, which is not as precise as the 16-factor model but is more suitable for a global scale. Here Cattell also mentions the Extroversion Personality.

It can be concluded that the big five have been used in many fields to explain or describe personalities and therefore will be applied in this dissertation to identify and characterize consumers' personalities to later link them to other dimensions.

Besides measuring consumers' extroversion, this thesis also manipulates chatbot personality. As the extroversion personality trait is a fundamental dimension when it comes to personality theories, it was selected to build the base for the chatbot personality.

Antikainen (2020) stated chatbots are being considered the new era of salespeople in online purchasing. Therefore, this dissertation investigates how a chatbot can influence consumers' purchase intention, and therefore sales revenue, in the same way a salesperson would. For that, the most important characteristics of salespeople that lead to an increased purchase intention have been researched by an early study from DeShields and collaborators (1996). The researchers identified that purchase intent was greater among consumers who were attracted to or liked the personality of the salesperson.

There is a particularly high correlation between sales revenue and the extroversion dimension of the five-factor model, but studies show varying results on whether extroverted or introverted salespeople achieve superior results. Some studies claim extroverts are better salespeople (Waheed, Yang, & Webber, 2017), while others agree that this was long believed but has changed in recent years (Grant, 2013). As such, researchers agree that introverted salespeople also have some traits that are perceived as important in sales (Grant, 2013; Waheed et al., 2017). Since the research in this area is divided into different views, this work

compares chatbots with introverted and extroverted personalities to determine which of the two has a greater influence on purchase intention.

There is little research on whether people perceive chatbots to have extrovert or introvert personality traits. Furthermore, the state of research regarding the interaction between different personality traits is not clearly clarified. A study from 2022 found that consumers with a low score on the extroversion scale prefer the chatbot with the equally low extroverted personality and it was also found, that perceived friendliness and satisfaction were higher (Jin & Eastin, 2022). In contrast, however, Kahnweiler's (2016) book emphasizes how well extroverts and introverts blend together. The author emphasizes that opposites attract when they do not reduce each other to their differences. Due to limited research in this area, consumer personality is additionally evaluated and its influences on the perception of the chatbot are tested.

H1: Participants having an overall good perception of the chatbot, have a higher purchase intention.

H2: Purchase intention is higher when participants' personality traits match chatbots' personality trait.

### 2.3 Purchase Intention

To forecast future purchases, marketing managers make use of one input in particular, purchase intention - an essential metric in marketing (Donmez, 2022; Morwitz, 2012). Behavior and cognition are the basis for explanations of changes in the use, adoption, and purchase of certain products, ideas, and services. Since marketing and advertising are based on consumer intentions, it is particularly important to understand consumers purchase intentions (Baodeng, et al., 2022; Donmez, 2022). Using these inputs, companies can manage their future actions and better assess consumers' future buying behavior (Morwitz, 2012).

For this dissertation, the online purchase intention plays a significant role. This particular type of purchase intention has been interpreted by Peña-García and collaborators (2020) as the extent to which a consumer is likely to make a purchase through an online store. These researchers measured the following seven factors that influence the online purchase intention: the attitude towards online shopping, the consumers' buying impulse, subjective norms such as motivations by family and friends, consumers' self-efficacy in online stores, planned



behavior, consumers' belief of online shopping compatibility with their own shopping preferences, and the consumers' personal innovation and willingness to try out IT.

In general, there are several aspects that increase purchase intention in online commerce. According to a study (Islam & Daud, 2011) these include above all compatibility, usefulness, ease of use and security. Other studies, such as Heijden and collaborators' (2017) and Lindh and collaborators' (2020), also highlight the importance of ease of use as an influencing factor on consumers online purchase intention. Besides that, there has been research on the effect of chatbots on consumers' purchase intention. A study by Yen and Chiang (2020) researched how a chatbot triggers the purchase intention of consumers. They found that factors such as competence or social presence led to an increased trust towards chatbots, which in turn increase purchase intention. Pereira and collaborators (2021) have found that purchase intention among consumers is higher when an option is given to consumers to leave the chatbot conversation when needed and talk to a human employee instead. For consumers, knowing that they can escape a frustrating chatbot conversation when it occurs seems to increase satisfaction and purchase intent.

Research from Lo Presti and collaborators (2021) shows the positive effects that successful chatbot communication can have. This study tested the effect of chatbots on purchase intentions by dividing the research sample: One group was tested on a hedonic product, the other group on a utilitarian product. In both cases, purchase intentions were found to be higher among those who communicated with a chatbot instead of those who just browsed the website. As this study has found no difference in utilitarian or hedonic products, the current dissertation will neglect differences within product types.

The influence of personality traits on purchase intention has already been investigated in many studies from a wide variety of industries and sectors (Fujiwara & Nagasawa, 2015; Lin & Huang, 2012; Tang & Lam, 2017). A study published by Zabkar and collaborators (2017), shows that extroversion positively influences purchase intentions. The study was conducted in four southeast European countries and found that consumers personality traits, such as extroversion, impact the purchase intention.

H3: Extroverted chatbots have a greater impact on participants purchase intentions.

H4: Participants that perceived the chatbot as easy to use will have a higher purchase intention.

## 2.4 Conceptual Model

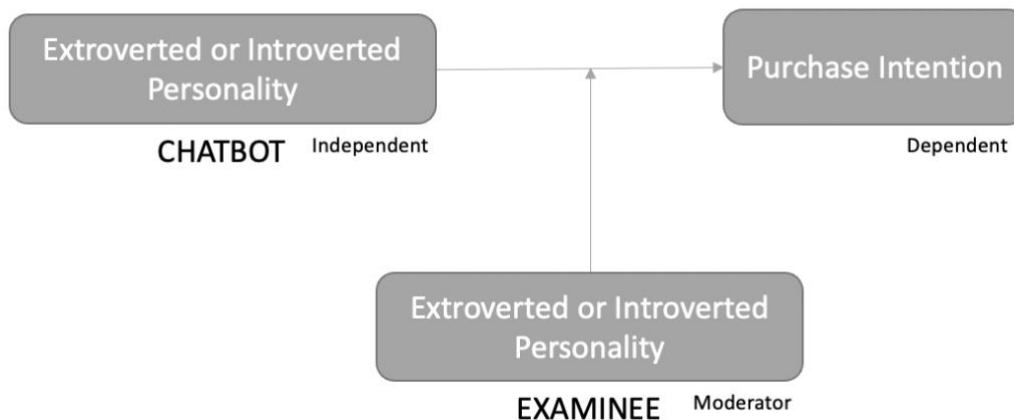


Figure 1 Model Framework

The first variable appears as independent and covers the chatbots who can have either an extroverted or an introverted personality. This variable has a direct effect on the dependent variable purchase intention. A third variable influences the relationship between the chatbots personality and the purchase intention as a moderator. This variable is the examinee extroverted or introverted personality.

## 3. Methodology

A questionnaire was designed where, in the first step (or last, position was randomized to ensure unbiased answers), participants were asked to judge their personality to determine their extroversion level. In the next step, participants were shown a chatbot conversation. Here, respondents were randomly assigned to either the introverted or extroverted chatbot. The survey was divided into two parts and, depending on the gender, the participants were shown the corresponding conversation. Male participants were shown a chatbot conversation about a male product, whereas female participants were displayed the same conversation with the difference of showing a product for women. This helps ensuring that participants perceive the shown product more relevant and thus provide a valid answer to the purchase intention in the next step. Lastly, participants were asked to explain their purchase intention for the proposed product and to answer a few questions about the chatbot communication shown and the chatbot's personality.

### 3.1 Participants

I intended to collect 130 participants for this survey. All participants were volunteers among the university community and acquaintances who were reached by email and WhatsApp. Additionally, an anonymous URL link was shared on the social media platform LinkedIn. Among 120 respondents, 47 were male (39%), 72 were female (59%) and 2 identified themselves as non-binary / third gender (1.7%; see Appendix D for the distribution of gender). The age ranges from under 18 to over 55, however, most respondents fall in the ranges from 25 - 34 (43.3%) and 18 – 24 (31.7%; see Appendix E for the distribution of age). A total of 13 countries is represented, although Germany and Portugal measure noticeable higher responses than all other countries (see Appendix F for the distribution of countries the respondents currently reside in). Germany covered a total of 64% of all respondents and Portugal 22%. When asking the participants about the frequency of their chatbot usage in the past 12 months, 37 stated they have never used it (31%) and 54 participants (45%) have used a chatbot less than five times in the past 12 months (see Appendix G for the distribution of chatbot usage in the past 12 months).

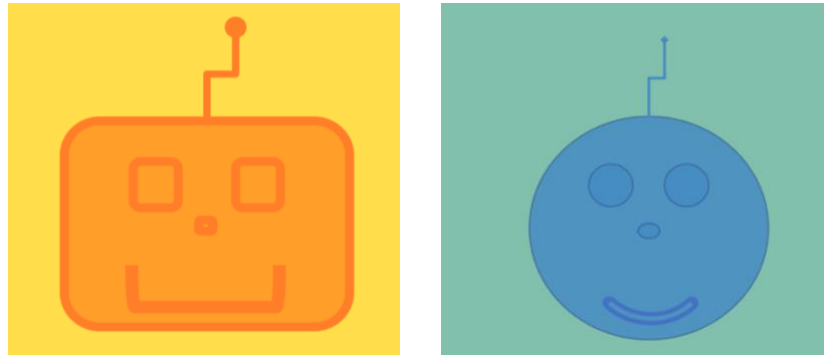
### 3.2 Chatbot Design

To enable chatbots to display personality, tone of voice plays an important role. Tone of voice allows (human, machine, or company) to express their personality through different methods (Hübner, Dantas, & Séné, 2018). When talking about tone of voice for bots, one means not only the choice of words but the musicality in spoken language, expressions, graphic elements on websites such as emoticons or the avatars of the speakers (Hübner, Dantas, & Séné, 2018).

#### 3.2.1 Avatar

Research has been able to link the extrovert trait with visual design attributes, both in the psychological and aesthetic domains (Karsvall, 2002). Following these findings, the avatar for the chatbot (see Figure 2) in this dissertation was created through researched attributes. Studies report extroverted personalities prefer warm colors which tend to be in the yellow-red spectrum, while introverts prefer cool colors in the green-blue range (Choungourian, 2010). The extroversion characterizes a design with strong color contrasts, saturated color tones hues, bold or sharp-edged shapes, higher contrast between interactive elements, backgrounds with colors in the warm spectrum, and bold lines and angular shapes (Karsvall, 2002). Introversion, on the other hand, is associated with less saturated colors (such as white, green

and gray tones), lower contrasts, thin lines, white-green backgrounds and thinner, rounded frames (Karsvall, 2002). Following these characteristics, avatars for the chatbots were designed. To ensure unbiased impressions, the avatars were designed gender neutral.



*Figure 2 Chatbot avatar extrovert (left) and introvert (right)*

### 3.2.2 Language

Shumanov and Johnson (2021) conducted a study where they looked into language as a tool to personalize human-computer interactions by matching consumers personality. They found that the language of a person, or in this case of a chatbot, can be highly revealing about his or her personality. Furthermore, the researchers found that extroverted individuals are more talkative, dominant and positive in the way they communicate, causing them to use a higher number of words than others. By placing less emphasis on precise language, the results of the study show that they use less complicated words. In addition, the study showed that extroverts like to use social language and are not shy when it becomes more sentimental or emotional. A chatbot with an introverted personality will focus on answering in a goal-oriented and efficient manner. Here, the experience of the conversation plays less of a role than solving the query (Shumanov & Johnson, 2021).

The conversation of both chatbots was designed following the above-mentioned characteristics. To face as few deviations as possible, both the extrovert and the introvert chatbot show the same conversation flow (see Appendix A and B for full chatbot conversations). The wordcount for the extroverted bot was at 168 words, whereas the introverted bot made use of 84 to answer the query, exactly the half.

### 3.2.3 Emojis

Several studies have already tested for a correlation between emoji usage and personality. They found that people with an extroverted personality tend to use emojis more in a

conversation (Hall & Pennington, 2013; Li et al., 2018). Following the existing research, emojis were integrated into the chatbot conversation of the extroverted bot (see Appendix A for full extrovert chatbot conversation). The emojis were chosen in a way that matched the context of the question or response given by the chatbot.

### 3.3 Personality Measurement

Considering the limited time period available for the study of this dissertation, it was decided to use the mini-markers (Saucier, 1994) for personality measurement. A study by Burisch (1984) found that psychological tests which are too long can decrease participant motivation. The researcher states that participants can be intimidated by the number of questions which can lead to an increase in incomplete tests. Therefore, testing with an abbreviated version was considered to be the best option for this research. As highlighted in the literature review, Saucier (1994) has shortened the question set to improve ease of use, which ensures, in line with Thompson's (2008) recommendations, that questions can be answered with greater speed and therefore do not take up too much time in studies. In line with the focus of this work, the extroversion of participants is tested with the mini-markers, in a dimension that ranges from extrovert to introvert characteristics (Karsvall, 2002). The adjectives elaborated by Karsvall (2002) have four positive and four negative items for each trait. For extroversion, the four positive adjectives are the following: bold, extroverted, talkative, and energetic. The four negative, or reversed-scored items, are: bashful, quiet, shy, and withdrawn (Goldberg, 1990).

In the survey, participants were asked to assess their own personality using the eight adjectives. For this measure, a 7-point Likert scale was used, ranging from 1 (*strongly disagree*), to 7 (*strongly agree*). Therefore, the higher the scale value is, the higher the participants' extroversion level. The adjectives were put in the first-person form, so the question "I am [adjective]" was asked. The order of the questions of the personality test were randomized. Participants received these questions either at the beginning, before the chatbot conversation, or at the end, after all questions about the chatbot had been answered. The intention was to ensure that the results were unbiased and assessed independently of the chatbot's personality.

### 3.4 Purchase Intention

Purchase intention was measured after the conversation with the chatbot. For the conversation scenario, participants were asked to imagine they were looking for a new pair of running shoes and they were visiting a website of a retailer for sporting goods. Running shoe as a product was chosen as the category of shoes are among the top three most purchased categories online. A study by Statista (2022) showed that between 2018 and 2019 shoes were among the most sold articles when shopping online. To determine the purchase intention as accurately as possible, the most relevant influences on consumer purchase intention were compiled from the literature review and addressed in the survey. Therefore, the questionnaire addressed the perceived ease of use of the chatbot conversation, the purchase intention of the presented product and the overall perception of the chatbot. The perception plays a significant role as, the purchase intention is higher when consumers like or feel attracted to the salesperson/chatbot (DeShields, Kara, & Kaynak, 1996). These variables are addressed in more detail in the following sections.

#### 3.4.1 Ease of use

To assess the perceived ease of use of the chatbot, participants were asked to rate several questions on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), where lower values represent higher ease of use. The questions were constructed based on the study by Wu and Wang (2005). While the researchers measure the ease of use for mobile commerce, this dissertation intends to determine the ease of use for chatbots. Therefore changes in the questions were made regarding the medium addressed in the study and the sentence “After seeing the chatbot conversation” was added to the beginning of every question (see Appendix C for questions in the questionnaire).

An exemplary question is (Wu & Wang, 2005): “After seeing the chatbot conversation, I think learning to use a chatbot is easy.”

#### 3.4.2 Purchase Intention

The purchase intention of the product shown, running sneakers, was evaluated by questions following the 7-point Likert scale ranging from 1 (*strongly disagree*), to 7 (*strongly agree*) where lower values represent higher purchase intention. These questions were derived from a study conducted by Lu and collaborators (2016) and were adapted in regard to chatbot

conversations and the recommended product (see Appendix C for questions in the questionnaire). Also, the sentence “After seeing the chatbot conversation” was added to the beginning of every question.

An exemplary question is (Lu, Fan, & Zhou, 2016): “After seeing the chatbot conversation, I would be very likely to buy one of the shoes recommended by the chatbot.”

### 3.4.3 Perception of the chatbot

To explore how participants perceived the chatbot, or to assess whether they liked it, questions on the chatbot perception were posed. The questions were presented in a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), where lower values represent higher or more positive chatbot perception. The questions originate from a study by Çakiroğlu (2019), from which the chatbot component stems, and Isbister and Nass (2000) who defined the liking dimension. The questions were assembled by both studies and the phrase “After seeing the chatbot conversation” was added to the beginning of every question (see Appendix C for questions in the questionnaire).

An exemplary question is (Çakiroğlu, 2019; Isbister & Nass, 2000): “After seeing the chatbot conversation, I liked the chatbots personality.”

## 3.5 Manipulation check

To understand whether the attempt to communicate personality within chatbots has worked, a manipulation check was applied. Here participants were asked to rate their perception on whether the chatbot was introverted or extroverted. The question was asked in a horizontal 5-point scale, ranging from 1 (*Definitely Introvert*) to 5 (*Definitely Extrovert*).

## 4. Results

### 4.1 Data preparation

The data collection was stopped after 137 responses. After removing unfinished responses and those who did not pass the attention check, a total of 120 valid respondents remains. Furthermore, reversed scored items were re-coded in order to make them valid for further analysis. As the questionnaire was showing a chatbot conversation for every participant to

relate to afterwards, no screening question was needed. The same accounts for the demographics, were no special requirements had to be fulfilled.

#### 4.2 Scale reliability

To examine the analysis of the internal consistency between concepts examined in the study, Cronbach's  $\alpha$  is applied. The procedure shows the extent to which the questions in the survey reflect the research topic (Field, 2009). A value of 0.80 shows that the survey is very reliable (Field, 2009). The reliability analysis was applied to four variables with the 7-point Likert scale. These were the mini-markers, for which the introvertedly worded items were reverse-coded before the scale assessment, as well as for the ease of use, the purchase intention, and the chatbot perception.

The Cronbach's  $\alpha$  for the scales of the mini-markers ( $\alpha = .86$ ) and purchase intention ( $\alpha = .92$ ) are above .80 and therefore show reliable (Taber, 2017) results (see Appendix H, J for the table of Cronbach Alpha mini-markers and purchase intention). The Cronbach's  $\alpha$  for the scales of ease of use ( $\alpha = .66$ ) and the scales of chatbot perception ( $\alpha = .79$ ) are below .80 (see Appendix I, K for the table of Cronbach Alpha ease of use and chatbot perception) and therefore rated as adequate or satisfactory (Taber, 2017), however, Field (2009) and Taber (2017) mention that a higher number of questions leads to an increased Cronbach's  $\alpha$ . As the ease of use includes only four questions and the chatbot perception two questions, the lower  $\alpha$  can be explained.

#### 4.3 Descriptives and bivariate correlations

The mean of the perceived ease of use of consumers towards chatbots was  $M = 2.30$  with a standard deviation of .76 (see Appendix L for the mean and standard deviation scales). As the 7-point Likert scale ranged from 1 "strongly agree" to 7 "strongly disagree", the mean overall perceived ease of use is relatively low meaning a relatively high agreeableness level. The purchase intention ( $M = 3.4$ ,  $SD = 1.38$ ) and the chatbot perception ( $M = 3.06$ ,  $SD = 1.40$ ) are relatively similar and rather lower than higher also showing relatively high agreeableness levels. For the mini-marker, participants' personality, ( $M = 4.91$ ,  $SD = 1.10$ ) it can be said that participants are overall rather extroverted than introverted, as a mean of four would indicate a balanced distribution on both sides (see Appendix L for the mean and standard deviation scales).



To determine whether there is a relationship between variables, a bivariate correlation was applied. To do so, dummy variables for all categorical variables (except nationality) were created. Following Pearson's correlation value, a  $p < .05$  leads to a rejection of the null hypothesis, which indicates no correlation (Field, 2009). Four significant correlations were found: between perceived ease of use of chatbot and purchase intention,  $r(118) = .35, p < .001$ , between perceived ease of use of chatbot and chatbot perception,  $r(118) = .34, p < .001$ , between purchase intention and chatbot perception,  $r(118) = .50, p < .001$ , and between chatbot perception and chatbot personality,  $r(118) = .22, p = .015$ . Thus, in line with the literature, the predictors of purchase intention were positively and significantly correlated with it (ease of use and chatbot perception) and, in general, people had a more positive perception of introverted chatbots. No other bivariate correlations were significant (see Appendix M for the full correlation table).

#### 4.4 Manipulation Check

The independent samples  $t$ -test compares the means of two independent groups and will therefore be applied to assess the manipulation check. The point was to see if the manipulation worked and the bot personality ratings in the introvert condition were more introvert than the ratings in the extrovert condition. The null hypothesis states that the perception of the chatbot is equal, no matter if the chatbot was presented as introvert or extrovert. If the  $p < .05$ , the null hypothesis is rejected and suggests that the means of the variables are different (Field, 2009). Therefore, the dependent variable whether the chatbot was perceived as introvert or extrovert, and the independent variable extroverted or introverted chatbot were tested. The result of the  $t$ -test (Field, 2009) showed the two groups are significantly different  $t(103.05) = 6.76, p < .001$ , with participants in the extrovert chatbot condition considering the chatbot as more extrovert ( $M = 59, SD = .69$ ) than those for the introvert condition ( $M = 61, SD = 1.06$ ). This leads to the assumption that the manipulation test was successful (see Appendix N for the group statistics and detailed independent samples test).

#### 4.5 Hypothesis testing

A regression was run to understand the nature of the main variables, along with a new variable which represents an interaction of the chatbot's personality (extroverts = 1, introverts = 2) and the consumer's personality with the mini-markers (higher numbers = more

extroversion), to test a main effect and matching effect of personality (i.e., that the purchase intention of extrovert people is higher when the bot is also extrovert and vice-versa for introverts). Chatbot personality had a significant and negative impact on purchase intention,  $b = -3.26$ ,  $SE = 1.12$ ,  $p = .004$ , showing introverted chatbots led to higher purchase intentions. Participants' personality also had a significant and negative impact on purchase intention,  $b = -1.11$ ,  $SE = 0.36$ ,  $p = .003$ , showing, in contradiction to Hypothesis 3, that introverts have higher purchase intention. Yet, the interaction between these two factors was significant and positive,  $b = 0.75$ ,  $SE = 1.60$ ,  $p = .001$ , showing a matching participants' personality with bots' personality had a positive effect in purchase intention, in line with Hypothesis 2 (see Appendix O for the full regression table).

Analyzing the adjusted  $R^2 = .088$ , one can see the percentage the models accounts for the dependent variable (see Appendix P for the coefficients regression model summary), thus a 9% of variance in purchase intention is explained by participants', chatbot's personalities and their interaction.

To test the two remaining hypotheses, the same regression as before was run, with the addition of ease of use and chatbot perception. When these variables are added, the effect of chatbot personality is no longer significant, while the effects of respondent's personality and their interaction are significant (see Appendix Q for the coefficients regression table). In line with Hypothesis 1, chatbot perception was a significant and positive predictor of purchase intention,  $b = 3.82$ ,  $SE = 0.09$ ,  $p = .001$ , such that the more positive the chatbot perception, the higher the purchase intention. Also in line with Hypothesis 4, ease of use was a significant and positive predictor,  $b = 0.342$ ,  $SE = 0.15$ ,  $p = .025$ , such that the easier people perceive the use of the chatbot, the higher their purchase intention.

To test the controls, such as age, gender and the frequency of chatbot usage, a third regression was run including the control variables. When these variables are added, the effect of chatbot personality remains not significant,  $b = 2.19$ ,  $SE = 0.36$ ,  $p = .544$ . The effects of chatbot perception,  $b = 0.38$ ,  $SE = 0.08$ ,  $p = .001$ , and ease of use,  $b = 0.39$ ,  $SE = 0.15$ ,  $p = .010$ , remain significant and positive determinants for purchase intention. The interaction of chatbot personality and respondent's personality has changed and is no longer significant,  $b = 0.014$ ,  $SE = 0.06$ ,  $p = .816$ . There was a significant effect of age for people aged under 18,  $b = 0.92$ ,  $SE = 0.45$ ,  $p = .042$  and between 25 and 34  $b = 1.08$ ,  $SE = 0.34$ ,  $p = .002$ . People under 18 and between 25 and 34 have higher purchase intention than people aged 35 and over.

For participants that never used a chatbot,  $b = -0.23$ ,  $SE = 0.41$ ,  $p = .581$ , participants who used a chatbot less than 5 times,  $b = -0.27$ ,  $SE = 0.38$ ,  $p = .485$ , participants who used a chatbot 5-10 times,  $b = -0.72$ ,  $SE = 0.44$ ,  $p = .103$ , and gender,  $b = 0.37$ ,  $SE = 0.23$ ,  $p = .097$ , the added control variables for chatbot usage are not significant (see Appendix R for the full coefficients regression table).

## 5. Discussion

### 5.1 Findings

Chatbots are being used in more and more branches and sectors in the business world. They are playing an increasingly important role in our day to day lives. As the virtual world is expanding, the availability and usage of chatbots are rising constantly. Therefore, it is important for organizations to understand how they can be used to improve the company's performance.

In this dissertation, I tried to understand how chatbots can communicate better with consumers. Prior research and studies have identified several factors that are crucial for chatbots' communication. As mentioned, Lee and See (2004) have identified personality as crucial for trust and a successful communication. Therefore, I intended to find out how a chatbot with a human-like personality can influence the important KPI of purchase intention. The motivation for the research arose through the repeatedly mentioned frustrations with chatbots, although they are so widespread today.

This research's results have supported Hypothesis 1, which predicted that participants having an overall good perception of the chatbot or liked the chatbot will have a higher purchase intention. Hypothesis 2 was also supported, which stated that the purchase intention is higher when the participants' personality traits are matching the chatbots' personality trait. Hypothesis 3 stated that an extroverted chatbot has a higher effect on consumer's purchase intention than an introverted chatbot. This Hypothesis was not supported by the analysis as the results have shown to be significant but negative. Therefore, it shows that introverted participants have a higher purchase intention than extroverted participants. Finally, Hypothesis 4 stated that consumers who perceive the chatbot as easy to use would increase the consumers' online purchase intention. Also, this hypothesis was supported by the results.

Consumers who like the chatbot or have a good perception of the chatbot have a higher rate in purchase intention. This finding highlights the importance of the need for consumers to like chatbots. It strengthens the prior research of Antikainen (2020) who compared chatbots with salespeople and combines it with the study of DeShields and collaborators (1996) who identified the need of liking the salesperson as a crucial factor for purchase intention.

This study has also shown that purchase intention increases when the chatbot's personality matches with the consumer's personality. This is a crucial finding and emphasizes prior research from Yorita and collaborators (2019) who have intended to create an algorithm allowing chatbots to adapt their personality according to the consumer's personality. This would help increase purchase intention as the chatbots' personalities would always match the consumers' personality, assuming the personality of the consumer can be correctly identified.

Another finding the study shows is that a chatbot with an introverted personality leads to a higher purchase intention. As mentioned in the literature review, the current research state was showing differences whether an extroverted or introverted personality of salesperson or chatbot achieves better performance. The current study supports the findings that an introverted chatbot leads to higher purchase intention. Multiple reasons can be the driving force for this result such as that consumers prefer someone being more neutral in their responds and helps in a quick manner without having to interact and read a lot. Further research in this dimension is needed to understand the reasons for the consumer's preference for introverted chatbots. Furthermore the study shows two age ranges, people under 18 and 25-34, that have a particularly higher purchase intention.

It is crucial to ensure the chatbots understand consumers' questions and consumers do not receive misleading answers during the conversation as these can lead to frustrations, since a chatbot that is perceived as easy to use increases the purchase intention of consumers. This is in line with prior research on that topic (Heijden, Verhagen, & Creemers, 2017; Lindh, Nordman, Hånell, Safari, & Hadjikhani, 2020; Islam & Daud, 2011).

## 5.2 Academic and managerial relevance

The findings in this dissertation offer implications of academic as well as managerial relevance.

Chatbots, consumers, and personality have been studied intensively and the current research has proven that combining these variables increases performance in terms of purchase intention. Combining different fields of literature is interesting in line with Yorita and collaborators' (2019) who have combined chatbots and consumers personality. The results of this research indicate that individual differences are important for chatbot effectiveness, therefore, further studies should focus on that. Furthermore, to further understand chatbot perception, other person-like traits of chatbots can be researched such as age, gender, accents, or origin. Also, other personality traits than extroversion can be investigated to understand the effect of personality traits. To better understand the difference in purchase intention in different age groups, further research could elaborate causes for the differences in the purchase intention depending on age.

The current study identified that matching consumer's and chatbot's personality increases purchase intention. This is a key finding underlining the importance of organizations and companies to invest in technology and match the chatbot to consumers. A company making use of this and adapting the chatbot's personality to the consumer's personality can be set apart from the competition while, at the same time, increasing consumers' satisfaction through decreased frustration and increasing the company's performance through increased purchase intention. Yorita and collaborators' (2019) study on the self-adapting bot can be further researched to elaborate the topic in more detail. The ease of use plays a significant role and should not be neglected by organizations. It is of great importance that consumers perceive the chatbot as easy to use and problems with misinterpreted questions and misleading answers are reduced to a minimum. The way consumers perceive a chatbot is influencing the purchase intention as well. Here organizations can identify the characteristics and personality their chatbot should hold in order to best reach the company's target group. Depending on the main consumer target, organizations can adapt their chatbot's personality and increase the positive perception and liking.

The findings of this study contribute to managerial implications for organizations that have chatbots in use or plan to implement them in their business strategy. Despite this research being only one of many steps towards understanding the impact of personality on purchase intention, this study contributes to the understanding of how companies can adapt their chatbot interaction in order to increase factors such as ease of use or the chatbot perception that have an immediate effect on purchase intention.

### 5.3 Limitations and future research

There are several limitations to this study that cannot be neglected. First, the study only focuses on the purchase intention of consumers and does not consider other factors that may affect their purchase decision-making process, such as the quality of the product or the price that could affect the purchase decision. Additionally, the study does not account for the influence of other external factors, such as the marketing strategies of the company or the availability of similar products in the market. Marketing strategies could shape consumers' perception on the brand and the chatbot leading to an impact in the chatbot perception. The availability of other products in the market could shape the purchase intention in a way that consumers do or do not have other purchasing options and therefore the need of the purchase can change the purchase intention. Second, the study is restricted to the use of a self-reported extroversion measure, which might not fully reflect the participants' true personality characteristics. Additionally, the chatbot dialogue did not represent a real-life scenario, which can alter the viewpoint of customers. Furthermore, the study does not take into consideration how consumer's prior experiences with chatbot conversations and general attitudes towards a chatbot or other comparable technology may have affected their desire to make a purchase. Besides that, the study is limited to a specific product category. The purchase decision-making process can differ among various product categories. Also, the study is based on a sample of consumers, which may not be representative of the entire population.

In conclusion, the limitations of the study should be considered when interpreting the findings and generalizing the results to the wider population.

Further research is needed to address these limitations and provide a more comprehensive understanding of the influence of chatbots' personality on consumers' purchase intention. In future research, it would be interesting to further explore the impact of chatbots' personality on consumers' purchase intention. One possible direction could be to investigate the effects of other factors on the relationship between chatbots' personality and consumers' purchase intention. For example, it could be interesting to examine whether consumers' personal values, attitudes, or motivations play a role in determining the effectiveness of chatbots with different personality traits. Additionally, it would be valuable to expand the current study by exploring the potential differences in the effects of chatbots' personality on consumers' purchase intention across different product or service categories. For instance, it could be the case that the influence of chatbots' personality on consumers' purchase intention varies depending on the type of product or service being promoted. Furthermore, future research

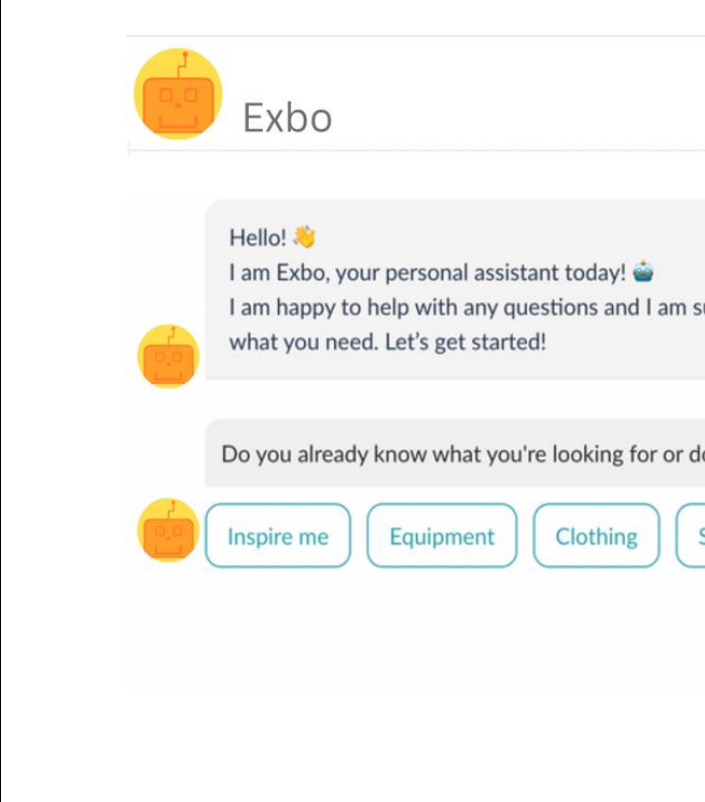
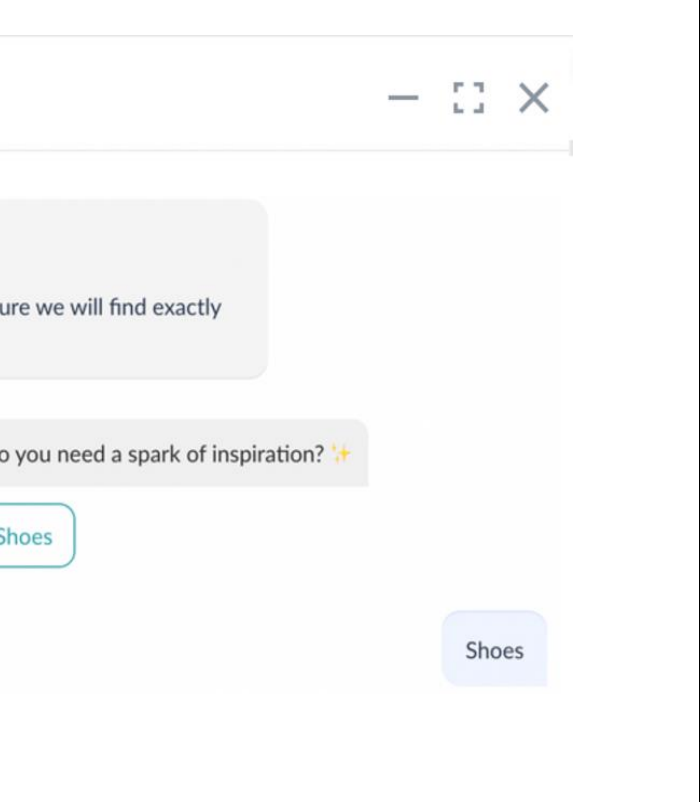
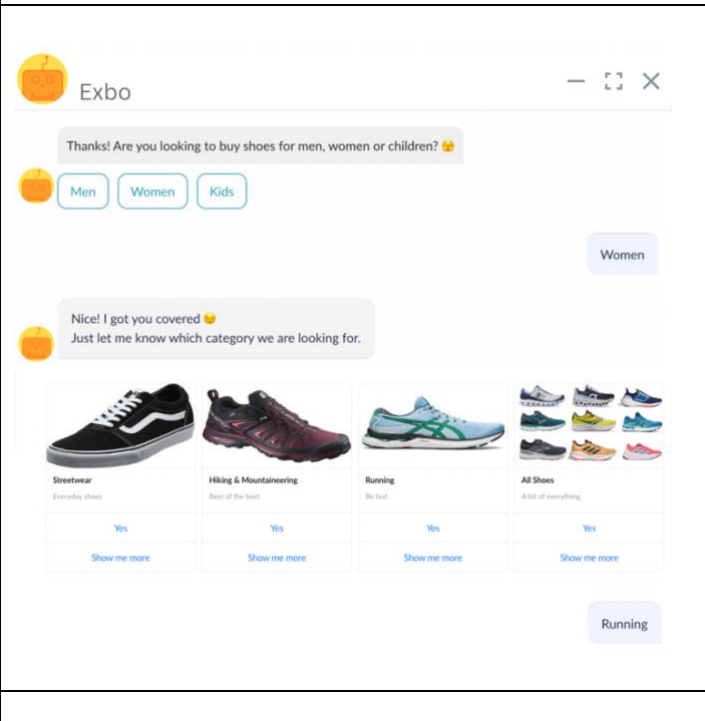
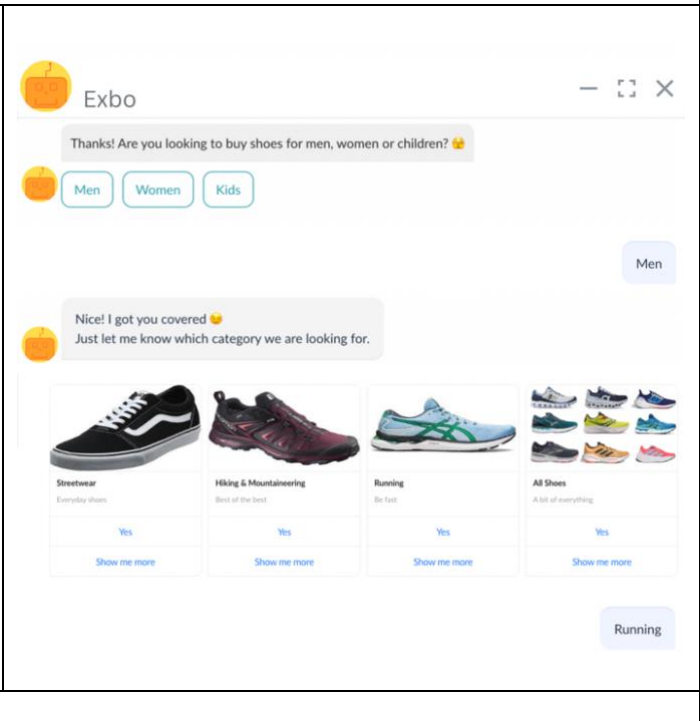
could also focus on the development of more sophisticated and personalized chatbots that can adapt their personality to individual consumers' characteristics and preferences, expanding the findings of Yorita and collaborators' study (2019). This could potentially enhance the effectiveness of chatbots in influencing consumers' purchase intention and provide a more personalized and engaging customer experience. Lastly, researching what factors and characteristics of a chatbot are needed to have consumers perceive a chatbot as easy to use and like the chatbot.

## 6. Conclusion

In conclusion, the results of this study show that chatbots with introverted personalities are more effective in influencing consumers' purchase intention than those with extroverted personalities. However, the extent of the consumer's extroversion also plays a role in determining the effectiveness of the chatbot's personality, as consumers with low levels of extroversion have a higher purchase intention. However, the interaction shows, that a match of the chatbots personality and the consumers personality tend to respond in a higher purchase intention. As more chatbots are expected to be used in the future, it is crucial for companies to consider both the personality of their chatbot and of their target audience when designing and implementing chatbot technology in their marketing strategies. There is more research needed to identify how chatbot communication can be improved, however, this dissertation led us one step closer to understand how chatbots can be understood as our new virtual salesperson.

## 7. Appendices

### Appendix A Table of chatbot conversations extrovert

Women	Men
	
	





Exbo



Well, well, well... a runner it is 🏃  
Where do you plan to get athletic?



Road & dirt trails

Trails & mountains

Competitions

Road & dirt trails

Almost there, pinky promise!

Should we browse for a neutral running shoe or do you feel like you need one with more stability? 🤖



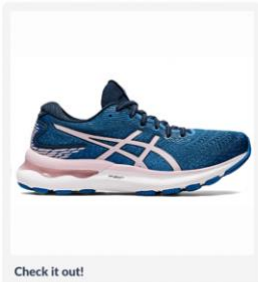
Neutral

Stability

Neutral



Yayyy, we made it 🎉  
Check out my expert suggestion below 📄



Check it out!

Also, click [here](#) and find other options matching your search.

Is there anything else I can help with? 🤖



Yes

No



Exbo



Yayyy, we made it 🎉  
Check out my expert suggestion below 📄



Check it out!

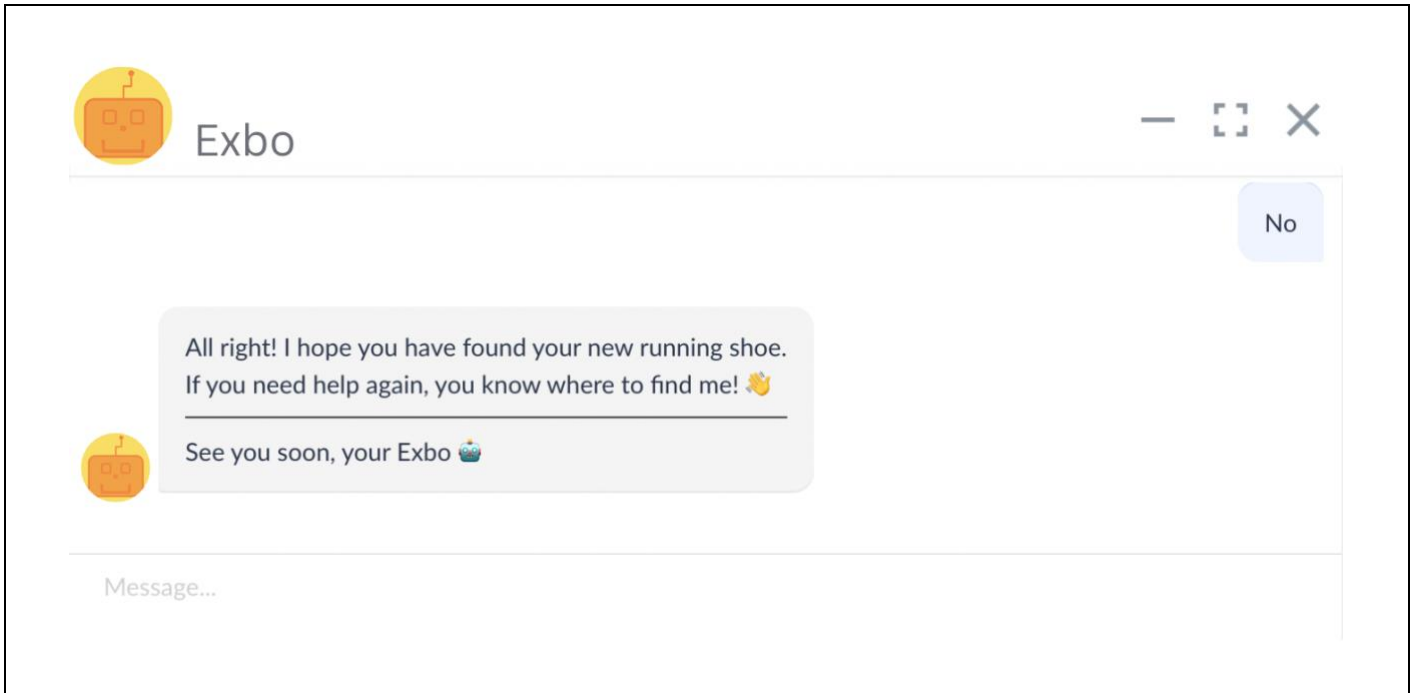
Also, click [here](#) and find other options matching your search.

Is there anything else I can help with? 🤖



Yes

No



**Appendix B Table of chatbot conversations introvert**

Women	Men
<p>Inbo</p> <p>Hi. I am a personal assistant and here to help with any inquiries.</p> <p>What are you looking for?</p> <p>Inspire me   Equipment   Clothing   Shoes</p> <p>Shoes</p>	





**Inbo** [Close] [Fullscreen]

Thank you very much! Are you looking for footwear for men, women or children?

Men Women Kids

Women

What category are you specifically looking for?

			
<b>Streetwear</b> Everyday shoes	<b>Hiking &amp; Mountaineering</b> Best of the best	<b>Running</b> Be fast	<b>All Shoes</b> A bit of everything
Yes	Yes	Yes	Yes
Show me more	Show me more	Show me more	Show me more

Running





**Inbo** [Close] [Fullscreen]

Thank you very much! Are you looking for footwear for men, women or children?

Men Women Kids

Men

What category are you specifically looking for?

			
<b>Streetwear</b> Everyday shoes	<b>Hiking &amp; Mountaineering</b> Best of the best	<b>Running</b> Be fast	<b>All Shoes</b> A bit of everything
Yes	Yes	Yes	Yes
Show me more	Show me more	Show me more	Show me more

Running

**Inbo** [Close] [Fullscreen]

Where do you mainly run?

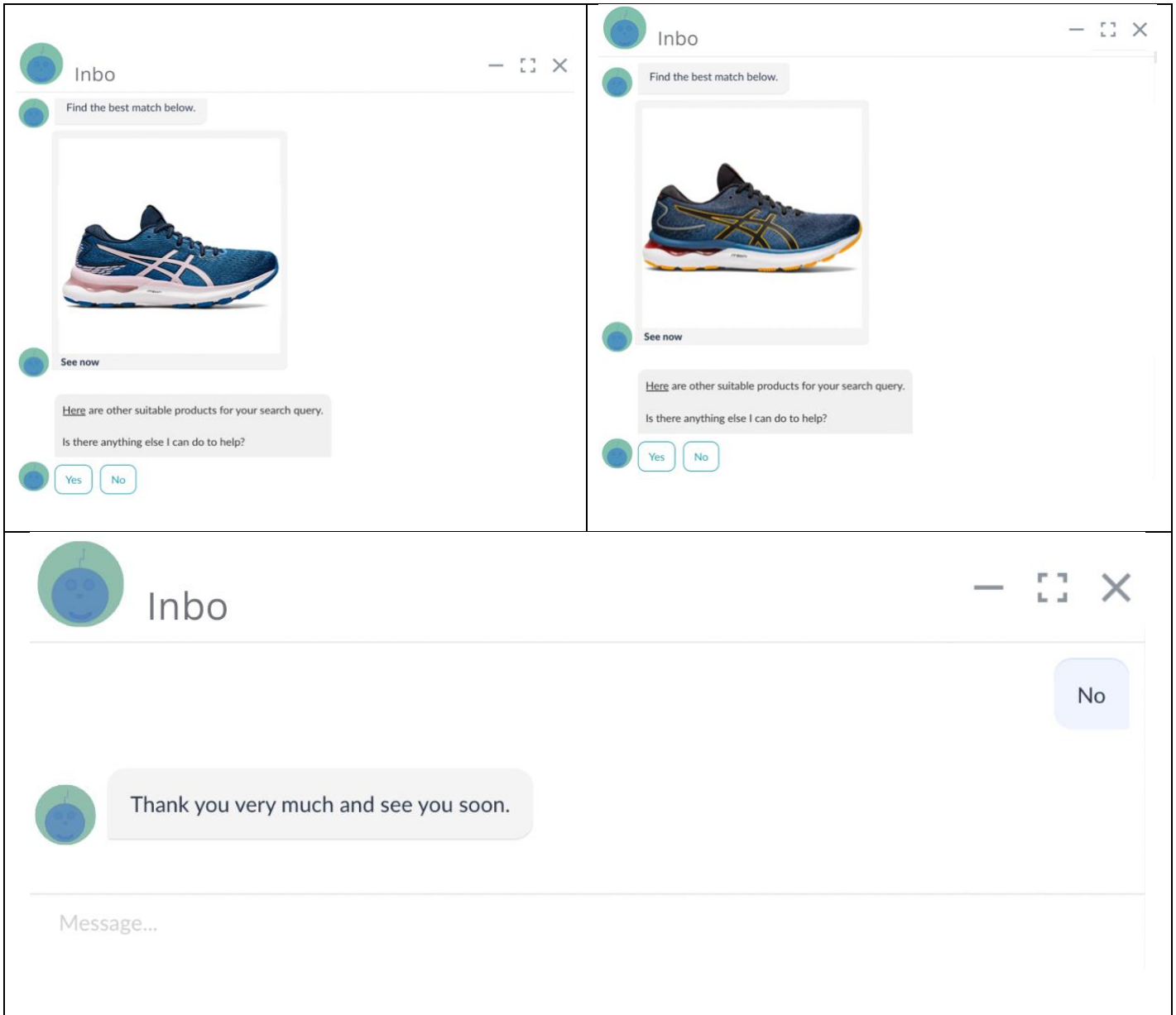
Road & dirt trails Trails & mountains Competitions

Road & dirt trails

What type of running shoe are you looking for?

Neutral Stability

Neutral



### Appendix C Questions in the questionnaire

Question block	Questions	Based on
Ease of use	<p>After seeing the chatbot conversation, I think learning to use a Chatbot is easy.</p> <p>After seeing the chatbot conversation, I think finding what I want via a chatbot is easy.</p> <p>After seeing the chatbot conversation, I think becoming skillful at using a chatbot is easy.</p> <p>After seeing the chatbot conversation, I think using a chatbot is</p>	(Wu & Wang, 2005)

	easy.	
Purchase Intention	<p>After seeing the chatbot conversation, I would be very likely to buy one of the shoes recommended by the chatbot.</p> <p>After seeing the chatbot conversation, I would consider buying one of the shoes recommended by the chatbot in the future.</p> <p>After seeing the chatbot conversation, I intend to buy one of the shoes recommended by the chatbot.</p>	(Lu, Fan, & Zhou, 2016)
Perception of the Chatbot	<p>After seeing the chatbot conversation, I liked the chatbots personality.</p> <p>After seeing the chatbot conversation, I would like to interact with a chatbot like this.</p> <p>After seeing the chatbot conversation, would you describe the chatbot's personality as more introverted or extroverted?</p>	(Çakiroğlu, 2019)

## Appendix D Distribution of Gender

### What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	47	39.2	39.2	39.2
	Female	71	59.2	59.2	98.3
	Non-binary / third gender	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

## Appendix E Distribution of age

### What is your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 18	13	10.8	10.8	10.8
	18-24	38	31.7	31.7	42.5
	25-34	52	43.3	43.3	85.8
	35-44	8	6.7	6.7	92.5
	45-54	6	5.0	5.0	97.5
	Over 55	3	2.5	2.5	100.0
	Total	120	100.0	100.0	

## Appendix F Distribution of countries the respondents currently reside

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Austria	4	3.3	3.3	3.3
	Bosnia and Herzegovina	1	.8	.8	4.2
	Croatia	2	1.7	1.7	5.8
	France	1	.8	.8	6.7
	Germany	77	64.2	64.2	70.8
	India	1	.8	.8	71.7
	Mexico	1	.8	.8	72.5
	Portugal	26	21.7	21.7	94.2
	Slovenia	1	.8	.8	95.0
	Spain	1	.8	.8	95.8
	Sweden	3	2.5	2.5	98.3
	Switzerland	1	.8	.8	99.2
	United Kingdom of Great Britain and Northern Ireland	1	.8	.8	100.0
	Total	120	100.0	100.0	

## Appendix G Distribution of chatbot usage in past 12 months

### How frequently have you used Chatbot in the last 12 months?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	37	30.8	30.8	30.8
	Less than 5 times	54	45.0	45.0	75.8
	5-10 times	18	15.0	15.0	90.8
	Once a month	9	7.5	7.5	98.3
	Every week or more frequently	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

## Appendix H Cronbach Alpha mini-markers

			Item Statistics		
			Mean	Std. Deviation	N
How much do you, in the present moment, agree with the following statement? I am bold.			4.83	1.731	120
How much do you, in the present moment, agree with the following statement? I am extroverted.			4.96	1.621	120
How much do you, in the present moment, agree with the following statement? I am talkative.			5.35	1.465	120
How much do you, in the present moment, agree with the following statement? I am energet			5.35	1.333	120
Mini Markers reversed I			4.36	1.522	120
Mini Markers reversed II			4.62	1.599	120
Mini Markers reversed III			5.09	1.556	120
Mini Markers reversed IV			4.74	1.558	120

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.856	.858	8

## Appendix I Cronbach Alpha Ease of use

Reliability Statistics			Item Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Mean	Std. Deviation	N
.662	.700	4			
			1.98	.835	120
			2.81	1.362	120
			2.33	1.095	120
			2.08	.963	120

## Appendix J Cronbach Alpha purchase intention

Reliability Statistics			Item Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Mean	Std. Deviation	N
.923	.923	3			
			3.54	1.495	120
			3.20	1.464	120
			3.44	1.505	120

## Appendix K Cronbach Alpha chatbot perception

Reliability Statistics			Item Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Mean	Std. Deviation	N
.792	.792	2			
			2.98	1.517	120
			3.13	1.555	120



## Appendix L Mean and standard deviation scales

### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Combined_ease_of_use	120	1	5	2.30	.762
Combined_purchase_intent	120	1	7	3.39	1.385
Combined_chatbot_perception	120	1	7	3.06	1.398
Combined_minimarker_notmalandreversed	120	2	7	4.91	1.095
Valid N (listwise)	120				

## Appendix M Pearson's r covariate correlation

### Correlations

		Chatbot_Personality	Combined_ease_of_use	Combined_purchase_intent	Combined_chatbot_perception	Combined_dummy_gender	Combined_dummy_chatbot_usage	Combined_dummy_age	Combined_minimarker_notmalandreversed
Chatbot_Personality	Pearson Correlation	1	.084	.152	.221*	.b	.b	.b	-.056
	Sig. (2-tailed)		.361	.097	.015	.	.	.	.544
	N	120	120	120	120	120	120	120	120
Combined_ease_of_use	Pearson Correlation	.084	1	.352**	.343**	.b	.b	.b	.047
	Sig. (2-tailed)	.361		<.001	<.001	.	.	.	.608
	N	120	120	120	120	120	120	120	120
Combined_purchase_intent	Pearson Correlation	.152	.352**	1	.503**	.b	.b	.b	.028
	Sig. (2-tailed)	.097	<.001		<.001	.	.	.	.757
	N	120	120	120	120	120	120	120	120
Combined_chatbot_perception	Pearson Correlation	.221*	.343**	.503**	1	.b	.b	.b	.053
	Sig. (2-tailed)	.015	<.001	<.001		.	.	.	.567
	N	120	120	120	120	120	120	120	120
Combined_dummy_gender	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b
	Sig. (2-tailed)	.	.	.	.	.	.	.	.
	N	120	120	120	120	120	120	120	120
Combined_dummy_chatbot_usage	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b
	Sig. (2-tailed)	.	.	.	.	.	.	.	.
	N	120	120	120	120	120	120	120	120
Combined_dummy_age	Pearson Correlation	.b	.b	.b	.b	.b	.b	.b	.b
	Sig. (2-tailed)	.	.	.	.	.	.	.	.
	N	120	120	120	120	120	120	120	120
Combined_minimarker_notmalandreversed	Pearson Correlation	-.056	.047	.028	.053	.b	.b	.b	1
	Sig. (2-tailed)	.544	.608	.757	.567	.	.	.	
	N	120	120	120	120	120	120	120	120

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

b. Cannot be computed because at least one of the variables is constant.

## Appendix N Sample T-Test

### Group Statistics

	Chatbot_Personality	N	Mean	Std. Deviation	Std. Error Mean
Would you describe the Chatbot's personality as more introverted or extroverted?	Extrovert	59	4.1017	.68720	.08947
	Introvert	61	3.0000	1.06458	.13631

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Would you describe the Chatbot's personality as more introverted or extroverted?	Equal variances assumed	11.253	.001	6.710	118	<.001	<.001	1.10169	.16418	.77658	1.42681
	Equal variances not assumed			6.757	103.048	<.001	<.001	1.10169	.16304	.77834	1.42505

## Appendix O Coefficients Regression

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	8.222	1.826		4.502	<.001		
	Chatbot_Personality	-3.256	1.120	-1.180	-2.906	.004	.046	21.536
	Interaction-Chatbot*Consumer-Personality	.749	.222	1.602	3.366	.001	.034	29.568
	Combined_minimarker_notmalandreversed	-1.107	.360	-.876	-3.073	.003	.094	10.610

a. Dependent Variable: Combined\_purchase\_intent

## Appendix P Coefficients Regression Model Summary

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.334 <sup>a</sup>	.111	.088	1.322

a. Predictors: (Constant), Combined\_minimarker\_notmalandreversed, Chatbot\_Personality, Interaction- Chatbot\*Consumer-Personality

## Appendix Q Coefficients Regression

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.477	1.741		2.571	.011
	Combined_ease_of_use	.342	.150	.188	2.275	.025
	Combined_chatbot_perception	.382	.085	.385	4.464	<.001
	Chatbot_Personality	-1.966	1.015	-.713	-1.938	.055
	Interaction-Chatbot*Consumer-Personality	.429	.204	.917	2.101	.038
	Combined_minimarker_notmalandreversed	-.658	.328	-.521	-2.009	.047

a. Dependent Variable: Combined\_purchase\_intent

### Appendix R Coefficients Regression

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.320	.672		.477	.635
	Interaction-Chatbot*Consumer-Personality	.014	.062	.031	.233	.816
	Chatbot_Personality	.219	.360	.079	.608	.544
	Dummy-Male	.377	.225	.134	1.674	.097
	DummyAge18-24	.528	.342	.178	1.546	.125
	DummyAge25-34	1.084	.335	.389	3.238	.002
	DummyAgeUnder 18	.923	.449	.208	2.055	.042
	DummyUsageNever	-.226	.408	-.076	-.553	.581
	DummyUsageLess5	-.267	.381	-.096	-.701	.485
	DummyUsage5-10	-.717	.436	-.186	-1.643	.103
	Combined_ease_of_use	.387	.148	.213	2.616	.010
	Combined_chatbot_perception	.380	.082	.383	4.606	<.001

a. Dependent Variable: Combined\_purchase\_intent

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