Siri or Google Assistant?

The Impact of Voice Assistant Anthropomorphism on Consumer Usage Intention

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Statement of Originality

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

(Signed)_ Fatima Shahid_____ Date: _31st December, 2019_____

Abstract

Voice Assistants (VAs) will play a central role in consumer living over the next decade. The fundamental decision in this regard is whether the VA should communicate with the consumers like a machine or should have human features. This research investigates the impact of human-like or machine-like tone and interaction style of VAs on consumer usage intention. This study also attempts to demonstrate how this relationship changes according to consumers acceptance to new technology and the type of the brand being warm or cold. This study extends the literature on service marketing by making recommendation on what conversational style to choose when interacting with consumers.

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1. Introduction

We are living in a magical time. Imagine that you are looking for a flight to an exotic holiday resort. Instead of spending time and energy in navigating yourself through an unfamiliar airline website, you could 'ask' the Voice Assistant (VA) through their website for possible flight plans. Instantly, the VA will respond and start a conversation by offering you flight recommendations that match your preferences. The technology of speech recognition and natural language processing have been pivotal in allowing machines to understand the difference between a user saying "checking" and "saving."

Given these developments, it is reasonable to suggest that VAs will gradually play a more significant role in consumer living over the next decade, the shift for which has already started. According to The Economist (2017), Apple's Siri interprets "2 billion voice commands a week," and "20% of US consumers conduct searches by voice". Also, China's Baidu, which has 600 million active users, regularly releases powerful voice features through its voice-activated technology. The voice services market alone is estimated at unit sales of 100 million globally by 2020 (Deloitte Insights, 2018). According to a recent monthly report by PwC (2018), users use VA to search for something (57%), ask a quick question (59%), check weather/ news (50%), play music (49%). These statistics demonstrate the way the traditional consumer-brand interaction is crossfading into a new era of voice technologies. Gartner (2017) predicts that 20% of smartphone interactions will be through VAs by 2020, and 50% of consumer-brand interactions, in the shape of online searches will be conducted via voice (Heller, 2018).

VA, as a new trend, gives rise to language-based communications and social cues such as conversation and interactivity (Nass & Moon, 2002). For faceless technologies such as voice assistants, "tone of voice and communication style" is a particularly important feature of the technology (Schroeder & Epley, 2016).

Prior research has investigated how specific aspects of brand communications in advertising, websites and social media (e.g., figurative language, assertive language or language that implies closeness) affect consumer behaviors (Barcelos *et al*., 2018; Gretry *et al.*, 2017; Kronrod & Danziger 2013; Sela *et al*., 2012). These studies demonstrate the effect of the way a communicated message has on consumer response. Additionally, they provide some guidelines regarding the choice of an appropriate communication style. However, it is essential to note that these studies may not apply to technology like VAs. Here, the key difference lies in the directionality of communication i.e., bi- directionality vs. uni-directionality (Keeling *et al.*, 2007). While there is research into how styles of communication influence consumer responses, they have mainly focused on uni-directional communication. In the context of VA, the communication is bi-directional. In Kelleher's (2009) research, investigating the two-way communication style, they found that in general, two-way communication positively affects consumer satisfaction and preference. A VA differs from any other kind of communication in a way that they can respond to a much larger number of commands and questions and can converse with users like a human being. These assistants have added a personal touch to customer-brand interaction and are playing a role in the drive of "humanising the brand" (Ingold, 2017).). This study investigates the effect of different styles of communication in bi-directional communications on consumer's usage intention.

The ability to engage and converse in two-way communication has allowed brands to address their customers in highly interactive, conversational styles, using their voice as the only medium. The ability essentially suggests the notion of a conversational human voice that addresses a particular tone of voice, making the brand feel closer, more real, and human-like (Barcelos *et al.*, 2018; Park & Cameron, 2014). On social media platforms, a company's tone of voice and communication style such as using informal interaction style, addressing the consumers by their first names and making small talks, plays a pivotal role in reducing uncertainty and influencing their preference and intention to use (Barcelos *et al.*, 2018; Gretry *et al.*, 2017; Keeling *et al.*, 2010).

Recent studies have also looked at the positive effects of introducing anthropomorphism (human-like) characters in machines while interacting with users. For example, Stein and Ohler (2017) and Goudey and Bonnin (2016) looked at the anthropomorphism of robots and explored human-like characteristics of a robot. They found that a robot resembling a human results in a timely completion of task. Trivedi (2019) exclaims that conversational chatbots enhance a customer's experience in banking by introducing social bonds when interacting with a technology. Guzman (2019) has observed the way users conceptualise interactive mobile virtual assistants. With the support of these studies, it becomes clear that the presence of conversational agents generally has a favourable effect on users' experiences with the services. None the less, these researchers have not examined how the tone of voice and communicating style affect preferences and usage intention when it comes to Voice Assistants (VAs). A fundamental decision in this regard is

the choice of the characteristic of VAs. In particular, whether a brand should use machine-like or human-like characteristics of a VA while interacting with the customer.

Different personalities and identities have been assigned to different VAs. E.g., Apple iPhone's Voice Assistant is known to be "sassy" and is given a human name "Siri." Consumers refer to Siri informally as "Hey Siri" and refer to the assistant as "she," who, along with running errands for users, also can be funny. "Her" personality includes witty comebacks as a response e.g., upon asking, "Hey Siri: How much do you cost?" Siri replies: "I am a pearl beyond price" (Haslam, 2018). In contrast to Apple's Siri, Google - the largest search engine (Heitzman, 2017) - has come up with its Voice Assistant- 'Google Assistant.' Google Assistant directs black and white questions in a professional, task-oriented communication style, adding no persona or name to its product. Google makes it different from Apple's Siri by avoiding giving its VA a human name or persona, and directly calling it "OK Google" (Haslam, 2017).

Given that machines in the shape of Voice Assistants will enable direct contact with customers (Hoy, 2018), it is imperative to ask: should they take an informal, social-oriented communication approach through more personal and human ways? By adopting this style, firms would personalise and socialise with the customers (Keeling *et al.*, 2010; Williams & Spiro, 1985). To realise these aims, the social orientation style comprises of verbal or non-verbal behaviors to enhance preferences. Such behaviors add a human-like characteristic of being warm, friendly, and approachable (Keeling *et al.*, 2010; Mehrabian, 1966). These features can, therefore, enhance interaction and thus positively affect usage intention.

Alternatively, a brand can decide to keep its distance, adopt a less intimate approach, and maintain a machine-like, task-oriented style. In this way, it introduces limited personal interaction with users and, instead, focuses on competence resulting in positive attitude towards the brand and hence, increased purchase intention (Keeling *et al.*, 2010; Matsuo & Kusumi, 2002).

Given that VAs will become an essential touchpoint between brands, services, and consumers, it is important to investigate its impact on consumer behaviors and intentions. Looking at intentions to use a VA is critical to this investigation as intentions are the likelihood of using a product in the future and are therefore responsible for its failure or success (Estiri *et al.*, 2010). Consumer usage intentions help marketers to forecast future consumer behavior and develop appropriate marketing strategies.

One other significant development in the research on the brand perception that is related to brand anthropomorphism has been the stereotype content model (Cuddy *et al.*, 2008). This model focuses on warmth and competence, which are two crucial factors of brand perception and loyalty. This literature emphasises how people evaluate anthropomorphised brands along two dimensions, the same way that people evaluate other individuals, through the metric of warmth and competence (See for detail Collange *et al.*, 2009; Cuddy *et al.*, 2008) . This literature on warmth and competence further paves the way for the characterisation or perception of brands as warm or cold. This study takes into account the brand type, whether warm or cold and looks at its effect while interacting with a VA.

VA's momentum in the market space needs to be tempered by uncertainty over whether a consumer will accept communicating with brands and firms through human-like VA. Dealing with interactive machines during firm-customer interaction blurs the traditional

boundaries between a man and an object (Gudey & Bonnin, 2016), stirring both awe and a great deal of fear (Oh *et al*., 2017). In the past, many scientists, including renowned physicist Stephen Hawking, have actively expressed concern about the rise of an age of interactive machines (Cellan-Jones, 2014). According to a survey by Kulviwat *et al.* (2007), "36% of users face fear and anxiety when interacting with human-like machines." This fear could lead to an absolute rejection of technology. This study explores whether, to enhance usage intention, VA should be anthropomorphised i.e., resemble to those of humans or on the contrary, resemble machines as much as possible.

This paper tends to make the following contributions. First, we attempt to look at broadening the concept of anthropomorphism concerning the technology of voice assistance. In particular, we shed light on voice anthropomorphism through tone of voice and interaction style of VA. A large body of work on product and brand anthropomorphism (Delbare *et al*., 2011; Aggarwal & McGill, 2007, Epley *et al.*, 2007; Aggarwal 2004) generally concludes that human appearance positively influences attitude and purchase intentions. Similar results apply to robots (Schroeder & Epley, 2018; Goudey & Bonnin, 2016; Lee, 2010) and online avatars (Mimoum *et al.*, 2017 and Keeling *et al.*, 2010). These studies show that non-verbal anthropomorphised characteristics increase the usage intention of robots and websites using avatars. However, these studies have generally involved agents with certain physical appearances. This study explores the way anthropomorphism of verbal cues (tone of voice and communication style) of voice assistants and in the absence of physical appearances affect usage intention. The present study makes an effort to explain the usage intention of anthromoporhised VA through variables such as perceived usefulness, perceived ease of use,

and perceived playfulness. This study takes into account users' technology readiness as a moderator variable which is a crucial construct affecting users' intention of technology usage.

Secondly, this paper also contributes towards smart service literature by looking at how firms can engender usage intention by using anthropomorphic interaction style for their self-service technologies. Service firms around the world are now paying increasing attention to self-service technologies (Collier *et al.*, 2014; Gelbrich & Sattler, 2014). Research has also shown how consumers also prefer self-service technologies over traditional employee interaction service encounters (Meuter *et al.*, 2000). A wide range of innovative technologies is utilised by service providers e.g., self-service kiosks, online services, interactive voice response systems, and mobile services to engage customers in the co-creation process (Fan *et al*., 2016). An increasing number of anthropomorphism (human-like) features are being integrated into the design of the self-service machines to facilitate the human-machine interaction (Fan *et al.*, 2016). Bank of America, for instance, recently launched its voice assistant "Erica," through their mobile application, to help customers with tasks and provide personalised, proactive guidance to enhance the customer experience. Erica's design incorporates human features (human-like voice, and a female name). However, these technologies still tend to fail regardless of the anthropomorphic development of SSTs in service space (Fan *et al.*, 2016; Eyssel *et al.*, 2012). This study attempts to provide insights on the factors influencing consumers' acceptance and intention to use anthropomorphic technologies so that the failures of said technology could be avoided or mitigated in the future.

The rest of the paper is organised as follows; first, the relevant theoretical background on VAs, voice anthropomorphism (IV), Usage Intention (DV), Technology Readiness (TR-

Moderator), and Brand Type (Moderator) is reviewed. Then, the paper develops its hypotheses based on the theoretical background. The methodology is described next, and study findings are reported, and finally, the paper discusses the research implications, limitations, and future directions.

1.1. Research Problem

What are the impact of anthropomorphism of Voice Assistants (VA) on consumer usage intention, depending on individual's technology readiness (TR) and the brand type?

1.2. Research Questions

1. What effect has anthropomorphism of VA on consumer usage intention?

2. Is the effect of anthropomorphism on usage intention mediated by perceived usefulness, ease of use and enjoyment?

3. Is the effect of anthropomorphism on usage intention moderated by technology readiness?

4. Is the effect of anthropomorphism on usage intention moderated by brand type.

2. Theoretical Background

This section examines the literature on anthropomorphism and interaction and communication style along with the literature on the usage intention as dependant variable and the moderators i.e. technology readiness (TR) and Brand Type. Following the review, is the development of hypotheses.

2.1. Introduction to Voice Assistants

Since the 1960s, there has been a continuous rise in the interaction between human beings and computers and digital machines. Machines have gone from taking a passive to an active role in the everyday lives of consumers. Before machines becoming more active participants in human lives, consumer encounters with brands were largely conducted between consumers and front-line service employees (Gnewuch, 2017). However, increasingly in recent times, these encounters have taken place between machines and consumers, for instance, through self-service technology (SST) facilities (Meuter *et al.*, 2000). Self-service devices are referred to the machines that allow the consumers to 'produce services for themselves without assistance from firm employees' (Saleem *et al.,* 2011; Lin & Hsieh, 2007; Meuter *et al.*, 2005). Some important examples of said machines available to consumers include self-accessed hotel facilities, information services available via cell phones, automatic teller machines (ATMs), and self-scanning supermarket checkouts. Taking into account the speed of technological change in the world, the continuous evolution of self-service machines is likely with machines playing an even more important role in consumer living (Goudey & Bonnin, 2016).

For example, Frankfurt Airport, by taking advantage of growing digital technologies, has introduced its onsite service kiosk to help travellers. These fully automated self- service kiosks operate 24/7 to provide basic travel-related services to clients more efficiently and conveniently (CNBC, 2019). With these machines at hand, consumers perform tasks such as purchasing tickets, checking in, which are way quicker since no customers are waiting in the queue to be served, and no waiting for the "next available representative" (Hyken, 2017). In addition to this, these machines also provide instant and reliable information regarding travel

policies, departure, and arrival times, as well as updates on delayed flights. All these features serve to enhance service provision through these automated self-service machines.

Despite the presence of so many benefits, these technologically advanced machines can still fail. One of the most significant disadvantages of these machines is the potential loss of social bonds and interpersonal contact during the consumer-brand interactions (Curran *et al*., 2003). The primary concern here is the possibility of a negative impact on consumer commitment and consumer satisfaction, which are imperative for organisational survival. The key reason for this concern is that human interactions, as well as interactions between customers and firm, is important to make consumer use the service regularly (Darian *et al.*, 2015; Keeling *et al.*, 2010). Machine- based services provide little to no opportunity for face-to-face communications, therefore lacking many of the usage and repeat purchase building factors (Keeling *et al.*, 2007; Beatty *et al.*, 1996).

One way of alleviating concerns mentioned above, proposed by Keeling *et al*., (2010) and Trivedi (2019) is to introduce the medium of communication with a high social presence by a virtual character. The introduction of a virtual character, in turn, results in creating "personal, sociable and sensitive human contact" (Trivedi, 2019; Keeling *et al.*, 2010). One of the most important cues for the perception of social presence in technology is interactivity. In this context, an interactive virtual character playing the social role of online assistant should provide a potent source of customer interaction and hence, collaborative capabilities (Keeling *et al.*, 2010). Such mediums are perfect spaces for virtual assistants to fit potentially.

A voice assistant (VA) is a machine based-service that is " a computer program that simulates human conversation or chats through artificial intelligence and language" (Webopedia, 2016). The VA, while having all the benefits of machine-based services, also

has the unique characteristic and advantage of understanding users' requests, which is expressed in natural language, creating the perception or illusion of an actual human conversing behind the digital machine. The ability to show emotional responses such as interest, empathy, shock and the need for clarification (Keeling *et al.*, 2010; Keeling *et al.*, 2007; Crosby *et al.*, 1990) further enhances the benefits for the users. This results in an increase in customer-client interaction as well as an improvement in their relationship since much academic research has previously shown how human contact does accrue positive benefits for positive consumer behavior. Communication that takes place virtually often lacks many personal cues that serve to enhance interactivity such as cognitive cues through voice interactions and the display of emotions, found in face to face communication. Lack of these cues and other assurances can result in a situation of incomplete information (Lipshtz & Strauss, 1997) which in turn may result in an increase in uncertainty and risk with interacting with machines.

The ground-breaking innovation of voice assistance technology has given the brands a chance to address their customers in a highly interactive, conversational style, using a distinct voice as a medium. This can essentially be referred to as the concept of a conversational human voice, which is the use of tone of voice to make the brand feel more human and personal (Barcelos *et al.*, 2018; Park & Cameron 2014). In particular, on social media, the tone of voice & communication style of a brand such as interactive and informal communicating style plays a crucial role in reducing uncertainty and influencing a consumer's behavior towards the brand (Barcelos *et al.*, 2018; Gretry *et al.*, 2017; Keeling *et al.*, 2010). However, there is a dearth of research on how the tone of voice influences

consumer behavior, specifically usage intention, in the case of machines (Barcelos *et al.*, 2018; Gretry *et al.*, 2017).

Given that machines enable direct contact with customers through the use of Voice Assistants (Hoy, 2018), the question remains that should they take an informal, social-oriented communication approach to achieve a more personal and human way? Through the adoption of this style, firms will personalise and establish a relationship with the customers (Keeling *et al.*, 2010; Williams & Spiro, 1985). To achieve these aims, the social orientation style would need to comprise verbal as well as non-verbal behaviors to engender psychological closeness. The advantage here is that such practices serve to add the human-like characteristics of being friendly, warm, and approachable (Keeling *et al.*, 2010; Mehrabian, 1966).

But another question here is whether a brand should keep its distance from customers, adopt a less personal approach and maintain a task-oriented style to its communications that are more machine-like? Utilising this technique would result in limited personal interaction with the users with the focus being on communicating and delivering knowledge that could potentially result in a more successful firm-customer relationship, which can also have the possibility of impacting consumer usage intention positively (Keeling *et al.*, 2010; Weitz *et al*., 1986). This study aims to evaluate the questions posed above and provide answers and guidance to firms that intend to adopt VA.

2.2. Introduction to Anthropomorphism

The core of anthropomorphism can be seen as "the tendency of human beings to associate non-human agents with human-like motivations, characteristics, and intentions (Guthrie, 1993). These non-human agents can include ranging from nonhuman animals, religious deities, natural forces, products, brands, and mechanical or electronic devices with the characteristic of being individual (Epley *et al.*, 2007). Anthropomorphism has been defined more simply by Soanes & Stevenson (2005) as an "attribution of human characteristics or behavior to non-human objects."

However, anthropomorphism involves going beyond behavioral descriptions of imagined or observable actions rather than simply attributing life to the nonliving. It involves (e.g., the dog is affectionate) representing an agent's mental or physical characteristics using humanlike descriptors (e.g., the dog loves me). In its basic form, anthropomorphism involves associating human like characteristics and qualities to non-human objects or activities. Central to anthropomorphism, therefore, are the characteristics such as conscious experience and intentions that are involved in the perception of mind (Gray *et al.*, 2007). Anthropomorphism also entails attributing emotional states that are human-like, such as surprise, worry, happiness, and grief (Leyens *et al.*, 2003).

Elicited agent knowledge, defined as an individual's knowledge of people and how they behave, facilitates the perception of customers in attributing human-like features to non-humans. People ascribe human-like characteristics to events and entities to better account for outcomes and things they know less about and use what they are familiar with (Agarwal & McGill, 2007). Knowledge about humans in general, or the self in particular, is likely to serve as the basis for induction primarily because such knowledge is acquired earlier and is more

richly detailed than knowledge about non-human agents (MacInnis & Folkes, 2017; Epley *et al.*, 2007).

Effectance and Sociality motivation are two motivational factors that help explain Elicited Agent Knowledge by helping in increasing the tendency of viewing non-human objects in human-like terms (MacInnis & Folks, 2017; Aggarwal & McGill, 2007; Epley *et al.*, 2007). Effectance can be described as the desire to interact with the environment (White, 1959), which includes agents that are non-human which subsequently helps in explaining present stimuli that are complicated and predicting stimuli in the future when associated with anthropomorphism. The attribution of human-like motivations and characteristics to non-human agents increases the ability to make sense of an agent's actions, helps in gaining control over the agent and reduces the uncertainty associated with an agent (Aggarwal & McGill, 2007). Anthropomorphism, in this sense, provides a pivotal source or way to guide an individual's behavior with regards to unknown agents or stimuli. The anthropomorphising of a non-human agent, therefore, is influenced by the importance of predicting an agent's behavior and the anxiety associated with uncertainty (MacInnis & Folkes, 2017; Kim *et al*., 2016; Ghuman *et al.*, 2015; Aggarwal & McGill, 2007; Epley *et al.*, 2007).

On the other hand, sociality can be explained as the desire to make social connections. These social connections help people by providing them solace in companionships or relationships. This need is enabled by anthropomorphism that results in the satisfaction of human-like connections with non-human agents. To satisfy their motivation for social connection and in the absence of social connection to other humans, people create human agents out of non-humans through anthropomorphism (MacInnis & Folkes, 2017; Kim *et al*., 2016; Ghuman *et al.*, 2015; Guido & Peluso, 2014; Aggarwal & Mcgill, 2007; Epley *et al.*,

2007). Human beings often also develop social connections with the objects they purchase. In this sense, the motivations outlined above that focus on attributing human-like characteristics to non-humans are seen in the way humans interact with brands. E.g., psychological research has extensively shown how people tend to anthropomorphise objects such as personal computers (Waytz *et al.*, 2010) and cars (Windhager *et al.*, 2010). Such a tendency appears to be so pervasive that it has attracted the attention of marketing scholars to investigate the advent of brand anthropomorphism in terms of the relationships between human beings and branded products (for example, Aggarwal & McGill, 2012; Kim & McGill, 2011).

2.2.1. Brands with human-like features

Human-like features of brands include having a gender, human name, or physical characteristics that are human-like such as a face. Customers are more likely to consider a certain brand as being more human-like if it has characteristics that the customer perceives as those similar to what humans would have.

Anthropomorphism of a brand, in this sense, can be created through the use of visual cues; for instance, by making the brand's features resemble a human body (e.g., Kim *et al.*, 2016; Hur *et al*., 2015) or face (e.g., Touré-Tillery & McGill, 2015; Kim & McGill, 2011) or through the employment of an avatar (Nowak & Rauh, 2005). To quote an example, describing several soda bottles together as a "product family" encourages more prominent tendencies to anthropomorphise the product as compared to describing them as a "product line" (Aggarwal & McGill, 2007). On other factor that can engender anthropomorphism is the use of visual images, for example, that can depict the brand as being involved in human

actions such as applying sunscreen (Puzakova *et al.,* 2013). Examples of brand characters that powerfully activate the human schema include the Pillsbury Doughboy, Tony the Tiger, and the Jolly Green Giant, which can help in engendering the perception of the brand being human like. When consumers are faced with images that seem to them more human-like, anthropomorphism is more likely to work (Chandler & Schwarz, 2010).

The tendency of consumers to perceive brands as humans can also be encouraged by way of a variety of verbal marketing that serves to activate human schemas. There are certain factors that can increase the tendency f students to consider certain brand as anthropomorphic such as referring to them In the first person, giving them a human name and gendering them (Eskine & Locander, 2014; Waytz *et al.,* 2014; Puzakova *et al.,* 2013; Chandler & Schwarz, 2010; Aggarwal & McGill, 2007). Websites that use avatars who speak, have a gender and follow social conventions (for instance, by interacting with the audience and saying "hello") also help raise anthropomorphic tendencies (Nowak & Rauh, 2005). These tendencies may further be increased by sociality motivation. Anthropomorphic tendencies when describing the brand can be enhanced by, for example, using closeness-implying pronouns (e.g., "us" versus "you and the brand") or defining the brand in human relationship terms (e.g., "the brand is a great ally") (See for detail Sela *et al.,* 2012; Touré-Tillery & McGill, 2015).

2.2.2. Brands with human-like minds

Depicting a brand with human-like features can result in the consumers' perception that the brand can act in a human like way with characteristics such as making judgements of morality, evaluating others, having motives that are self-serving and forming impressions of

other and free will of their own (e.g., Epley & Waytz, 2010). The fact that some brands (such as Alexa, Siri, Watson) are called “intelligent agents” due to their voice assistance technologies is a case in point. There is some existing research available that shows that anthropomorphising of a brand's features induces the inference or perception of it being human-like. For instance, when brands get involved in a transgression, they tend to be evaluated more negatively when they possess human-like features (in comparison to those that do not display such features) (Puzakova *et al.*, 2013). There are two possible reasons for this, the intentionality of the brand and the fact that there is no goodwill behind the brand that is anthropomorphised. However, this only seems to occur in the case of a transgression.

Additional research shows that perhaps subconsciously, consumers can interact with brands with the perception of the brands having human-like minds. This is common even though the perception of a brand as being human like is more a personal matter. Particularly, consumers seem to implicitly want to have an active interaction with anthropomorphised brands as compared to those that are not, without being actively aware of this desire. Further, the degree to which people try to present themselves in a better light is influenced by the activation of agent knowledge through the congruity of schema in between the brand and a human (Sproull *et al.*, 1996). To quote an example, in the case of a computerised game, individuals sometimes behave in a way that is supportive of relationships when they can observe human-like eyes on a computer screen (Haley & Fessler, 2005). Ahn *et al*. (2014), for one, have shown how the depiction of human-like features in brands related to causes results in greater compliance with the propagated message of the brand, which in this case would translate into donations for a cause, because of the anticipation of guilt due to not

complying with the brand. Similarly, individuals show more concern for anthropomorphised brands as compared to those that aren't (Tam *et al.*, 2013).

2.2.3. Anthropomorphism of Voice Assistants

This research focuses on the anthropomorphism of Voice Assistants through verbal cues. Verbal cues include tone of voice, communication, and interaction style and are among the most predominant features of anthropomorphism (Fan et al., 2016; Hind *et al*., 2004). Verbal cues are likely to matter when evoking anthropomorphism (Schroeder & Schroeder, 2018; Schroeder & Epley, 2016). Human-like voice and communication style is of particular importance in the absence of face-to-face interaction. Pinker & Bloom (1990), for one, shows how the human voice is used to express insight into one's thoughts and used as a tool to communicate an agent's mind to others through the use of speech (Schroeder & Epley, 2016; Hall & Schmid, 2007; Kruger *et al*., 2005).

The style of interaction has more influence on consumers' evaluation during a service encounter. The interaction style, which is another term for communication style, often determines how a consumer will understand or respond to information conveyed to them. For instance, a communicator in the form of different emotions, may convey these interaction styles friendly, precise, professional, relaxed, and dramatic (Wu *et al.*, 2018). The communication style in this regard represents the concept of a conversational human voice, which refers to a tone of voice that makes the company or the brand seem more real or human-like (Park & Cameron, 2014; Kelleher 2009). The humanisation of an object increases by human-like interaction styles tend to vary in terms of pitch, amplitude and, rate of speech.

Verbal cues can be as crucial for customer satisfaction and experiences as the functional clues as they cater to emotions rather than reasons.

In the same way, people tend to associate human-like features to products, brands, computers, and machines. They also tend to attribute human-like characteristics to technologies that use voice assistants, such as avatars on webpages, self-service technologies, and voice assistants on phones and other smart devices (Barcelos *et al.*, 2018). The key difference between the relationships of customers with products and brands and those with brands using voice assistant communication is the directionality of communication (i.e., one-way or two-way communication). With voice assistants, consumers engage in two-way communication in their conversations. These conversations involve communicational rules that are different from one-way communication in two significant ways. First, the conversation is a process of interpersonal turn talking. Participants in a conversation exchange messages are re-linked sequentially (Thomas, 1992). Such an exchange shows a requirement for adaption and coordination in communication based on previous messages from consumers. The second feature is that communication is interpersonal and spontaneous. Existing research on brand anthropomorphism only looks at one-way communication and fails to look at the responses of consumers to it. The same is valid for existing research on communication that highlights one-way communication rather than two-way.

Consumers make use of voice and interaction styles while interacting with voice-activated assistants. The communication style, tone of voice, gives the element of humanness and closeness that underlie the concept of a conversational human voice (Keller, 2009). Kelller (2009) studying social media communication, defines conversation human voice as

"an engaging and natural style of organisational communication as perceived by an organisation and individuals in public."

This research uses the conceptualisation of human-like characteristics in communication by Park and Cameron (2014). Human-like characteristics give the communication a more intimate, personal, and natural vibe as compared to corporate or machine-like communication, which can be considered more distant. Practically brands and companies use communication style, and tone of voice with varying degrees of "humanness" and not even that is either completely human-like or machine-like (Keller, 2009). "Communication style is more than just the words we choose. It is how we communicate our personality" (Meyer, 2016). Besides the choice of words, it also includes other elements of interaction i.e., musicality in spoken language, voice pitch, emotionality (Barcelos *et al.*, 2018; Gretry *et al.*, 2017; Park & Lee 2013;).

Schamri and Scharfers (2015) study brand voice in their research that focuses on marketing, and they see brand voice as an interplay between consumer brand engagements and web care. Van *et al*., (2015) analysed the impact of human-like style using different concepts associated with a human voice such as communication style (Steinmaan *et al.*, 2015) closeness in the language (Sela *et al.*, 2012) and friendliness (Verhagen *et al.*, 2014). The importance of communication style and tone of voice is that it can influence consumer responses and affect consumer behavior with the brand. Keller (2009) found that frequent visitors to the brand website were more likely to perceive the human-like communication style with confidence, satisfaction, and commitment. Although the communication style seems to affect consumers, the concept lacks clarity and operational guidelines for how a brand can articulate a communication style using conversational style, vocabulary,

punctuation, and use of pronouns, especially through the impact created by two-way communication (Gretry *et al.,* 2107).

This study takes into account informal (vs. formal communication style) and personalised (vs. non- personalised style communication style that serve to foster either human-like (vs. machine-like) perceptions of brands.

2.2.3 (a) Human-like vs. Machine-like Interaction Style

A human-like interaction takes a "social oriented" (Keeling *et al.*, 2010) and "naturalistic way" of interaction (Naas & Moon, 2000). This interaction style includes maintaining a non-task approach keeping human-human interaction style such as, briefly introducing oneself, small social talks (Yoo *et al.*, 2015), and positive expressions on goal achievement (Chattaraman *et al.,* 2019). For example: when providing weather forecast for a summery afternoon, VA introduces small social talk by exclaiming "stay cool!" or when placing an order for a white sneaker, VA comments: "great choice!" Human-like conversation signals the warmth and friendliness of the communicator building positive experiences; thus, positively influencing consumers' attitudes and preferences.

In contrast, is the machine-like, less human, task-oriented approach. Less social approach purely focuses on tasks dialogue to achieve functional goals emphasising on task efficiency, competency and credibility (Chattaraman *et al.*, 2019). In a traditional service space, salesperson makes an effort to complete the task on time, showing expertise and competence (Keeling *et al.*, 2010) resulting in positive behavioral intent (Sundar, 2017).

This research takes into account two forms of communication style i.e. informal/ formal communication style and personalised/ non personalised communication style to define human-like and machine-like characteristics of a VA. The study discusses these two styles of communication to differentiate between the two types (human-like Vs. machine-like) VAs.

2.2.3 (ai) Informal vs. Formal Communication Style

An informal communication style is the one that refers to "the use of common, non-official, casual, and often colloquial language/slang" (McArthur, 1992). Where written communication forms formal style of communication, an informal style is predominantly thought of as consisting of verbal communication (Biber, 1986) involving the employment of linguistic features that are generally seen in congruence with a conversation (Fairclough, 1994). To quote an example, saying, "Thanks. So happy to hear that." is more informal than saying, "Thank you for your feedback. It is much appreciated."

Pearson (2005) differentiates between informal language, which is considered more casual and conversational as compared to formal language, which is considered not conversational and very impersonal in nature. This paper observed previous research by Fairclough (1992,1994, 1996) in order to properly conceptualise communication styles. Fairclough (1992, 1994, 1996) in his research highlighted a shift towards informalisation of public discourses. These findings are further provided credence by Pearce (2005) who explores the use of informal language style in UK party elections during the years 1966-97. Fairclough (1992, 1994, 1996) and Pearce (2005) also additionally observed that changes in

society (such as technological innovations and globalisation) were influencing public discourse, in turn identifying informalisation of discourses. Specifically, speakers used an informal mode of communication very strategically in order to show how close they are with the audience. This style can help in fostering relationships by reducing hierarchy in relationships of power and by reducing social distances between interlocutors (Delin, 2005).

Based on the research mentioned above, marketing managers might suffice it to say that informal language would serve to improve relationships between customers and brands, that is enhanced by consumer behaviors. Yet, Barcelos *et al.*, (2018) study on communication styles used on social media provides the opposite conclusion where brands were advised to avoid using human-like characteristics especially under high involvement and risky context. Hence in certain contexts, it is perhaps advisable to maintain a certain level of distance when associating with humans and to adopt a corporate machine-like communication style.

2.2.3 (aii) Personalised vs. Non-personalised Communication Style

Personalised and non-personalised communication styles were recognised by Buchan *et al.,* (2006) as two routes that organisations can possibly take when providing information related to the brand on websites and online forums (such as Facebook). Some tactics such as addressing consumers by their first name adds a certain degree of personalisation to the message such as Dear Ella! Thank you so much for contacting us! So happy to hear from you! Research has shown how messages that are personalised will have a positive impact on the perception of users and the evaluation of the brand when comparing to a non-personalised message e.g. “We appreciate your kind words Miss Ella” (Steinmann *et al*, 2015).

If a company applies a higher degree of personalisation and human-like interaction while communicating with their users, it might be able to enhance positive perceptions of the brand (Steinmann *et al.,* 2015; Demangeot & Broderick, 2006). Addressing users with personalised messages increase the association of consumers with the brand, which positively impacts the attitude of consumers towards the brand as compared to the delivery of non-personalised messages (Steinmann *et al.*, 2015; Ball *et al.*, 2006).

The use of personalised rather than impersonal communication styles not only have an impact on the perceptions regarding the brand but also on the attitudes of the consumers with regards to the brand but it also increases their personal satisfaction and hence eventually the purchasing patterns (Kim *et al*., 2008; Jang, 2008). The use of personalised online communication therefore has a positive influence on members' satisfaction with the community (Stokburger- Sauer, 2010; Donavan *et al.*, 2006). Therefore, this paper assumes that adding personalised style of interaction gives a voice assistant more human-like characteristics. Furthermore, if the users perceive the voice assistant as being more human, socially present and interactive, it will result in a more intimate, open and giving relationship having a positive impact on users behavior (Stokburger- Sauer, 2010; Donavan *et al*., 2006).

From the above discussion, we hypothesised that:

H1: Human-like (vs. machine-like) interaction style of VA has a positive impact on usage intention.

3. Consumer Usage Intention

The world is continuously changing and becoming more digital day by day (Forbes, 2017). With the rapidly changing times, it will be even more imperative to design technologies that are interactive to make human lives more efficient, exciting, and convenient. Interaction is one of the key features in self-service based on voice-assistance (BBC, 2019). In recent years human interactions with voice assistant technologies are becoming more human-like, where simpler interfaces are used for these technologies. One of the primary variables that determine these interactions is "intention" (Reuters Institute, 2019), and in this case intentions refers to usage intention of customers towards a particular product or service.

Fishbein & Ajzen (1975) describe intentions as "the amount of effort one is willing to exert to attain a goal". A simpler definition of intention is that it is the commitment to perform a particular activity. Much behavior depends on the intentions behind it, which also helps in interpreting these behaviors and in the achievement of cooperative goals. The intentions of consumers are one of the foremost factors used by marketers to determine their future sales. Since companies usually forecast their sales by learning and understanding the interactions between the customers and the firm, the purchase intention becomes a reliable indicator for determining sales (Chandon *et al*., 2005; Jamieson & Bass, 1989). According to previous studies, purchase intention is strongly related to attitude and preference toward a brand or a product (Kim & Ko, 2010; Kim & Lee, 2009). Giving preference to consumers' intentions also results in the firm maintaining its customers (Kim & Ko, 2010).

When discussing usage intention of products and service that require the use of technology, it is also imperative to analyse the usage intention of customers for technology. In the case of voice assistants, it is crucial to understand how and why users make certain

decisions regarding the use of technology. Usage has been of increasing theoretical interest for researchers, and it has been identified as a key dependent variable in the literature around technology (Moor & Benbasat, 1993; Adams *et al*., 1992; Mathieson 1991; Davis 1989, 1993; Davis *et al.*, 1989, 1992). Intentions have also been considered strong predictors for the actual use of innovative technologies (e.g., Venkatesh *et al.,* 2003; Davis *et al.,* 1992). It also has gained particular interest in the case of online shopping (e.g. Lim *et al.,* 2016; Pavlou & Fygenson, 2006; Ajzen, 2011). From a managerial point of view, understanding the determinants of technology usage should also help to ensure the effective disposition of technology (Mathieson 1991; Davis, 1989). Therefore what is needed is an in-depth understanding of the factors that influence technology usage. What is also needed, is an understanding of the determinants of usage intention of technologically intensive products and services. Clearly, the two are interconnected with the usage intention of technologically often becoming an important determinant of the usage intention for certain products and services.

In the case of case technology usage, the review of the existing literature has highlighted in particular two cognitive and utilitarian determinants of technological readiness, which are perceived usefulness and perceived ease of use (Dabholkar & Bagozzi, 2002; Davis, 1986; Davis *et al*., 1989, 1992). There are many other researchers as well who have found these two factors to be quite prominent in the determination of technology use. For instance, Szymanski & Hise (2000) defined convenience as “terms of ease in finding items” and found how convenience is an important factor in e- satisfaction.

Additionally, research has also highlighted perceived enjoyment as an important determinant of usage intention for customers (Venkatesh, 2000). Since perceived usefulness

and ease of use may not provide a whole picture of usage intention (Yi & Hwang, 2003). By drawing on Yi & Hwang's (2003) findings one can look at the effective determinants of pleasure/ playfulness/enjoyment to predict the usage intention of the web-based retail setting. Szymanski & Hise (2000) also explored the importance of "fun" with regards to intention to use of technology. Their study shows that playfulness, by the use of music, animation, and colours, had positive effects on interactivity, which increased the user's technology usage intention. Davis *et al.,* (1992) focus on intrinsic motivations to explain how these factors collectively become antecedents for determining usage intention (Cyr *et al.,* 2008; Davis *et al.,* 1992).

3.1. Utilitarian Determinants

Utilitarian determinants, also known as cognitive values (Babin *et al.,* 1994) reflect expectations of easiness, time-saving as well as convenience (Overby & Lee, 2006). Thus, literature evaluates utilitarian determinants as being functional, task- oriented and rational (Ryu *et al.,* 2010). Functional dimensions are important links to utilitarian determinants; thus, the intention to use a VA can be understood as ways of accomplishing some task-related goals. Where the intention to use technology is present, the utilitarian value becomes one of the most significant predictors of usage intention (Venkatesh & Brown, 2001).

Two critical factors of utilitarian determinants of technology usage are perceived usefulness and perceived ease of use (Dabholkar & Bagozzi, 2002; Davis, 1989; Davis *et al*., 1989; Davis *et al.,* 1989, 1992).

Perceived usefulness refers to the "likelihood that the technology will enhance consumers' productivity or job performance" (Davis *et al.,* 1992). Perceived usefulness also posits that using a certain technology to perform a particular task will reduce time and increase convenience e.g., Hussain *et al.,* (2016) look at interactive mobile map's perceived usefulness as a factor that improves users' convenience in finding locations. The user evaluates the mobile app to be valuable and useful if it helps users to find the desired place or location in reduced time. Since consumers give much importance to whether an innovation will be beneficial for them, literature looks at perceived usefulness as the strongest cognitive determinant of technology usage intention (Zarouali *et al*., 2018; Kulviwat *et al.,* 2007).

Davis (1989) explains perceived ease to be "the degree to which a person believes that using a particular technology would be free of effort." It is the degree to which the consumers expect that the use of technology would result in things being easier for them. For example, perceived ease of use of using an interactive mobile map is enhanced if its use is free of physical and mental effort (Hussain *et al.,* 2016). The user may accept a mobile map to be helpful, but it might be difficult to use. For example, the object on a mobile screen may be poorly visible. The user will accept the ease of use of technology if the task performed through the innovation is effortless and smooth (Davis *et al.,* 1992). Past research has revealed that perceived ease of use serves as an essential factor in determining acceptance or rejection of technology such as online shopping (Lorenzo *et al.,* 2011; Vijayasarathy, 2004) mobile payment services (Schierz *et al.,* 2010) and Mobile apps (Hussain *et al.,* 2016).

A voice-activated assistant will make it a lot easier for users to perform their tasks by just voicing out their queries. Anthropomorphic VA will make it even more convenient to perform tasks through a two- way interactive communication as compared to the alternative

of one-way communication where more input from the consumer is required (Sachdeva, 2018). In particular, the communication styles that are a key component of anthropomorphised VA, such as informal and personalised conversation style, will have a positive impact on the perceived ease of use of technology, which in turn leads to a positive impact on usage intention. Hence it is hypothesised that:

H2: Anthropomorphised VA will have a positive effect on its usage intention through increased perceived usefulness.

H3: Anthropomorphised VA will have a positive effect on its usage intention through increased perceived ease of use.

3.2. Hedonic Determinants

Researchers take hedonic determinants into account to enable a more precise understanding of consumer usage intention (Kulviwat *et al*., 2006; Davis *et al.,* 1992). Hedonic determinants refer to the arousal of consumers' images, fantasies, and emotions that are multisensory while using products (Hirschman & Holbrook, 1982). The value generated from these emotions links to pleasure derived from using the items (Carpenter *et al*., 2005; Babin *et al.,* 1994). A hedonic determinant refers to the importance of playfulness and enjoyment derived from product/ service or technology. Hedonic determinants have generated massive significance over the years in the field of technology, and they play a

pivotal role in technology's acceptance and rejection (Poels *et al.,* 2011; Cheng *et al.,* 2009; Pihlstrom, 2007).

Davis *et al.,* (1992) considered perceived enjoyment as a "degree to which the use of technology is seen to be enjoyable and pleasurable to use." It is the perception of the user with regards to the pleasure and fun derived from using the technology (Davis *et al.,* 1992). It includes such characteristics and factors as playfulness, aesthetic beauty, pleasure, or fun received from using an interface and hedonic attractiveness. It subsequently serves as a motivating factor for users who enjoyed utilising the product or service. Substantial research on perceived enjoyment (Hussain *et al.,* 2016; Cry *et al.,* 2006; Yi & Hweng, 2003; Moon and Kim, 2001; Szymanski & Hise, 2000; Igbaria *et al*., 1995; Davis, 1992) has shown how users' enjoyment while employing an innovative technology has a significant impact on their intention to use the technology.

Anthropomorphised VAs can answer questions of users in an interactive, fun way, using small talks. Unsurprisingly, many companies have begun amending voice assistants to include friendly, informal responses, that can address consumers in a more personalised manner (Samuely, 2018), in turn, following a human social conversational approach, making it more enjoyable to use. Hence we can posit that:

H4: Anthropomorphised VA will have a positive effect on its usage intention through increased perceived enjoyment.

4. Moderating effect of Technology Readiness (TR) as an individual trait

The mere existence of technology does not certify its usage by customers, which can prove to be a detriment for firms trying to engage with technology to find innovative measures for customers (Parasuraman & Colby, 2001). A variety of technological innovations are new and unique for customers (Garcia & Calantone, 2002), and can result in those people who do not have much experience with technology to feel anxious. Consumers feeling anxious using new technology has become detrimental for those companies who want to use technology to improve the performance of their companies. It is imperative to note here how there are individual differences concerning to the way people react to technology. Many researchers have identified personality traits as being predominant factors in influencing individuals' use of technology (Mattila & Mount, 2003; Dabholkar and Bagozzi, 2002; Walker *et al*., 2002) which suggests that individual characteristics have a moderating effect on the use of technology. This research paper focuses on Technology Readiness (TR) to understand to what extent personality traits drive individuals to adopt or reject usage of VA. This understanding can, in turn, support companies in identifying individuals more willing to accept and use new technologies such as VA.

The research by Meuter *et al.*, (2003) states that 33% of college students suffer from computer-related anxiety, and almost half of Americans experience some degree of technophobia. In other words, many people avoid technology if they are not comfortable with and are not ready to use it. Therefore, as new technologies develop, it is crucial to explore customers' readiness to use them. The term ''technology readiness" (TR) refers to "peoples' propensity to embrace and use new technologies for accomplishing goals in home life and at work" (Parasuraman, 2000). TR has been proposed as a factor to understand customer's willingness to use new technology (Walczuch *et al.*, 2007).

TR is particularly useful in contexts where technology plays an important role, such as smartphones (Chen *et al*., 2013), electronic book devices (Ferreira *et al.,* 2014), and travel technologies (Wang *et al.,* 2016). As compared to Low TR customers, high -TR customers are more comfortable with new technologies, hence are open to innovative technologies. They are also more likely to continue their usage of technology despite facing hurdles in its adoption (Zeithaml *et al.,* 2002). Additionally, TR also influences the user's perceptions and expectations about technology, which impacts the user's intention to use the technology.

An individual's overall technology readiness establishes a framework within which he would value a technology. High-TR customers are comfortable with and regard technologies to be more useful and important (Lee & Naindoo, 2018; Wang *et al*., 2017; Walczuch *et al.,* 2007; Walker *et al*., 2002). High -TR customers are more open to innovative technologies. In contrast, in low TR Individuals, technologies can evoke feelings of anxiety inform of discomfort or insecurity that inhibits them from adopting an innovation. In high TR individuals, technology evokes a sense of fun, eliciting positive feelings of optimism and innovativeness acting as drivers to adapt to new technology (Lee & Naindoo, 2018; Wang *et al.* 2017; Walczuch *et al.*, 2007; Walker *et al.*, 2002).

With regards to technology, optimism refers to the stance or the belief that technology can help their work as well as personal life by providing efficiency and flexibility (Parasuraman, 2000). On the other hand, innovativeness refers to the tendency of firms to be pioneers and thought leaders in their fields in terms of adopting new technologies (Parasuraman, 2000). The one thing in common that optimists and innovators have is their efficiency, which has a significant impact on the formation of a positive impression with regards to the use of technology (Wang *et al*., 2014; Lu *et al.,* 2012). Optimists and

innovators are positively associated with customers perceived ease of use, perceived usefulness, and playfulness of technology (Walcuzh *et al*., 2007) which may influence the intention of people to use technology. Optimism and innovativeness, in this sense, play the role of drivers for technological readiness, by contributing towards an individual's increased propensity to adopt new technology.

Discomfort is "a perceived lack of control over technology and a feeling of being overwhelmed by it" while security is "distrust of technology and scepticism about its ability to work properly" (Parasuraman, 2000). Users who display discomfort and stress on issues of security seem to be overwhelmed by technology and innovation and might feel a substantial lack of control over their ability to handle uncertainty. Discomfort and insecurity can, in turn, result in lower levels of perceived functionality, usefulness, and ease of use (Lu *et al.*, 2012), leading to a decrease in usage intention. Due to their innate sense of fear concerning technology, these individuals are more prone to rejecting technology (Pradhan *et al*., 2018; Godeo & Johanses, 2012). Mankins (2009) emphasises "scepticism" of individuals as a primary reason behind them not being prone to new technologies and for feeling "very insecure" when interacting with hi-tech interfaces. Users who feel some level of discomfort by the use of modern technology, especially rate perceived usefulness and ease of use negatively (Curran *et al.*, 2003). Individuals with low-TR view technology to be complicated, tend to be overwhelmed by innovation, and feel a substantial lack of control over their ability to handle uncertainty. Discomfort and insecurity can lead to low perceived functionality and playfulness, leading to contrary intent to use technology (Lee and Naindoo, 2018; Wang *et al.*, 2017; Walczuch *et al.*, 2007; Walker *et al.*, 2002). Users who score low on

TR are more critical towards new technology. Due to their innate fear of technology, they tend to avoid the use of an innovation.

To decrease apprehension and uncertainty during usage of new technology, some researchers such as Childers *et al.*, (2001) and Cyr (2008) argue for giving greater importance to visual designs and interaction. Improving the quality of interface would result in better use of the technology leading to a reduction in uncertainty while at the same time increasing usage of technology (Mosunmola *et al*., 2018). Similarly, it can be assumed that adding human-like features to VAs would improve the quality of interaction for better usability of the technology. Thus, leading to reduced uncertainty while increasing usage. Similarly, this study assumes that the human-like interaction style that becomes the interface of the VA reduces uncertainty. Using anthropomorphic features would make the VA more intuitive and would provide certainty- seeking features. Thus the hypothesis:

H5: The effect of VA anthropomorphism on usage is stronger for people with low technology readiness.

5. Moderating Effect of Brand Type

Consumers are exposed to many brands in their daily lives; hence they attempt to simplify and generalise beliefs about these brands through the process of stereotyping (Greenwald & Banaji, 1995). This way of categorisation helps in streamlining, organising, and systemising the information they receive. It also represents the beliefs of consumers in the way they see brands as international agents (Kervyn *et al.,* 2012) which in turn can influence consumers' perceptions (e.g., brand evaluations), intentions (e.g., purchase intentions) and actual

behavior (e.g., brand ownership). Consumers form relationships with brands, much in the same way they form relationships with people (Escalas & Bettman, 2003; Fournier, 1998).

One significant development in the research filed of brand perception, related to brand anthropomorphism is the stereotype content model (Cuddy *et al.*, 2008). This model focuses on warmth and competence, which are two crucial factors of brand perception and loyalty. This literature emphasises how people evaluate anthropomorphised brands along two dimensions, the same way that people evaluate other individuals, through the metric of warmth and competence (See for detail Collange *et al*., 2009; Cuddy *et al*., 2008) . This literature on warmth and competence further paves the way for the characterisation or perception of brands as warm or cold.

5.1. Warmth and Competence

Susan Fiske (1998) developed the Stereotype Content Model (SCM), revealing the importance of warmth and competence as the basis for social judgments (Fiske *et al*., 1999; Fiske, 1998). This research stream continues over time (Collange *et al*., 2009) refining these constructs and their applicability in social psychology.

The Stereotype Content Model maps out how people perceive social groups as well as individuals on the two dimensions of social perception: Warmth and Competence. The Stereotype Content Model posits that people quickly assess two fundamental dimensions—warmth and competence—to guide their decisions about and interactions with other people and social groups. Competence therefore involve characteristics such as intelligence, high skills, and efficiency and warmth involve such characteristics as helpfulness, friendliness and sincerity (See Russell & Fiske, 2008 for detail). Stereotypes cohere into fundamental

dimensions of warmth and competence that combine to create specific patterns of emotion and behaviors of various social groups. These stereotype dimensions apply to a wide range of groups that are increasingly represented in the modern corporation‘s workforce, including women, ethnic minorities, and people of different nationalities. The relationship between warmth and competence remains ambivalent as research has shown both positive and negative correlations between the two (see, for instance, Julia & Asbrock, 2012; Cuddy *et al.*, 2008; Fiske *et al.*, 1999).

Why might warmth and competence be so ubiquitous and essential in determining the perceptions of others? These traits answer two socio-functional questions about others. First, warmth (or its absence) indicates whether others are likely to have positive or negative intentions toward us; second, competence answers the question of whether the other is capable of carrying out those intentions. The above question is primary because it distinguishes friend from foe. In the evolutionary history, this question had to be answered quickly to prepare for a fight or flight upon encountering a foe, while the exact capabilities of the other represent a secondary question that might determine whether fight or flight would be a better choice. Warmth indicates friendliness and coldness indicates hostility; or as Peters (2001) has described it, the warm traits are ―other-profitable, suggesting a general orientation toward helping others. At the opposite end of the spectrum, one can see how the opposite of warmth can be construed as coldness, and hence brands can be divided into either warm brands or cold brands.

In line with the idea that people's relationships with brands are similar to their relationships with people (e.g., Fournier, 1998), the recently introduced BIAF (Kervyn *et al.*, 2012) suggests that much of consumers' relationships with brands can be explained by the

same main dimensions as their perceptions of people: warmth and competence. These two universal dimensions of social cognition are able to explain both interpersonal and intergroup relationships (Becker & Asbrock, 2012; Cuddy *et al.*, 2011). This is an important determinant for consumers' intention of purchasing or not purchasing products.

Stokburger-Sauer *et al.*, (2012) provide evidence for the fact that brand warmth also has a spill over effect on the identification of customers of specific brands. They surveyed German household consumers demonstrated that brand warmth had a positive impact on brand loyalty and advocacy. They suggest that consumers are more likely to identify with brands that they perceive to be highly warm due to the inherently affective nature of consumers' identity construction and maintenance. This notion finds support in the literature that investigates the human-like characteristics of brands as, for instance, brand anthropomorphism.

A further study of the literature uncovers several lines of support for the notion that the effects of warmth and competence on consumers' intention to purchase brands might differ. First, people's perceptions of the warmth of others are considered to be more important in affective and behavioral responses (Fiske *et al*., 2007) and perceptions of warmth are almost always of great interest to others and universally positively evaluated (Cuddy *et al*., 2008; Fiske *et al*. 2002). Before judging the competence of others, consumers judge their warmth (Ybarra *et al.*, 2001). Second, broader global concepts, such as warmth, are more likely to be cued than narrow and specific ones, such as competence (Oyserman, 2009). It is thus more likely that warmth is an appropriate, congruent, and important signal of brand loyalty and usage intention of the brand by customers. Third, endorsing a non-profit brand, communicates warmth and dedication to others (Aaker *et al.*, 2010; Fiske *et al.*, 2007).

5.2. Warm Brand and Cold Brand

As the construct of warmth is related to positive and collaborative intentions (Fiske *et al*. 2002), researchers suggest furthermore that consumers are more likely to support brands that display signs of warmth. One observation is that some brands who are perceived as being warm perform better financially as compared to their competitors. The perception of brands that are considered warm is different from the perception of brands that are considered cold (Bratanova *et al.,* 2015). The point here is that both warm and cold brands exist, and a congruity may exist with voice anthropomorphism, whereby a warm brand may be more congruent with a human-like VA.

5.3. Congruency between Brand Type and VA

Both brand warmth or coldness are said to be associated with brand anthropomorphism, with elements of warmth making brands more human-like and hence relatable for customers and elements of coldness making brands more machine-like and formal (Kim & Kramer, 2015; Aggarwal & McGill, 2012; Fournier & Alvarez, 2012).

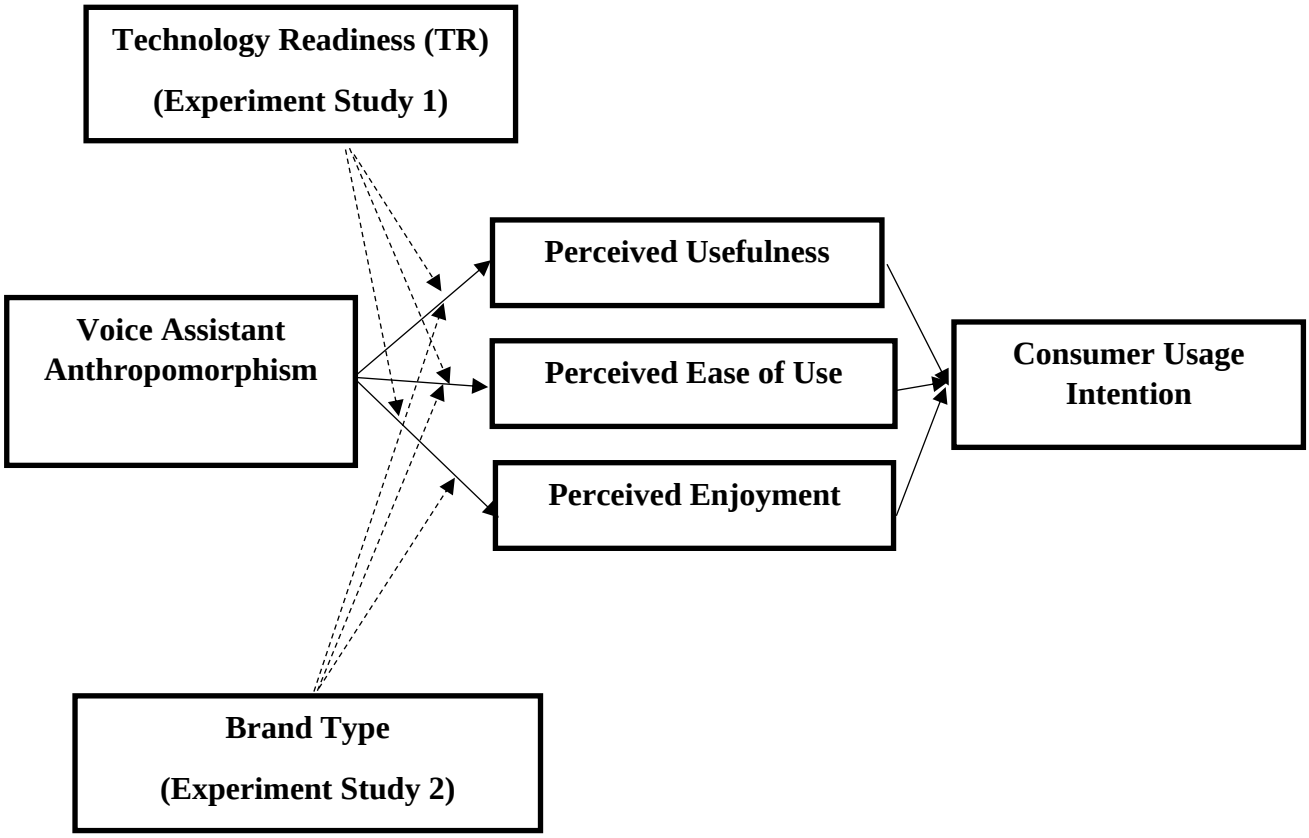
As mentioned before, Malone and Fiske (2013) conducted extensive research on brand warmth and competence. They observed how individuals judged as warm and competent (cold and incompetent) are judged most (less) favourably. They further suggested how similar traits in brands are also judged, with warm brands being judged more favourably (Malone & Fiske, 2013; Kervyn *et al*., 2012). Research has also fairly touched upon congruencies between the brand type (warm or cold) and whether the brand is human-like or not (Sirgy, 1982). There may, therefore, exist a congruity between the type of brand, whether

warm or cold, and the resulting anthropomorphism (e.g., Fennis & Pruyn, 2007). An important aspect that feeds into this congruity between the type of brand and anthropomorphism is self-congruity. Self-congruity is the relationship between a brands' image and an individual's concept of self. Research has shown, how an association between brand-self congruity and brand anthropomorphism in terms of a match between the personality and image of a car brand with the self-resulted in a rise in expectations of customers regarding the reliability of the car brand, which in turn engendered the assertion that the car would play an important role in their lives (Kressmann *et al.*, 2006). Aguirre-Rodriguez *et al.*, (2012) also conducted similar research but by using meta-analysis to evaluate the congruency between the brand warmth and anthropomorphism and its subsequent impact on customer decisions with customers finding warm brands more human-like.

The conclusion here is that brand type, whether warm or cold, can work in congruency with brand anthropomorphism to influence the perceptions of customers. There is a lack of research on this relationship and its subsequent impact on customers' usage intention, especially when taking into account voice anthropomorphism, which is a gap this study will be attempting to fill. Hence we conclude the following hypothesis:

H6: Brand type (warm) will increase customers' usage intention more when combined with human-like VA.

6. Theoretical Framework



7. Methodology

This study attempts to examine the effect of anthropomorphism of verbal cues (tone of voice and communication style) of voice assistants (VA) on usage intention by using experimental designs.

7.1. Research Philosophy

Research philosophy is an assumption regarding the way data concerning a phenomenon should be gathered, used, and analysed. Positivism and interpretivism are the two major social sciences philosophies found in the research tradition (Galliers, 1991). Empiricism laid the foundation for positivism, which effectively distinguishes between objective and subjective knowledge. While the former concerns knowledge that can be verified empirically, the latter is a construction in the human mind. Underlying the divergence between facts and values is the desire for value-neutral science that "positivism minded scientists tend to uphold with a significant degree of fervor" (Crotty, 1998, p. 27). Positivists contend that the phenomena being studied should be separated and for observations repeated. This often requires manipulation of reality to isolate variables and to form constituent relationships between them.

This study is grounded in the positivist paradigm, adopting assumptions such as the hypothetical-deductive model of scientific explanation and the existence of an empirical reality related to the subject (Chua, 1986). The focus is on a quantitative methodological approach that is structured in nature, where all the factors affecting research and aspects of it

are determined before the start of data collection (Coolican, 2013).

7.2. Rationale for Using Experiments

Experimental designs allow the researcher to establish causal effect of independent variable on the dependent variable by manipulating the variables of interest to the researchers' inclination, allowing the researcher to claim that the variations of dependant variable measured in the experiment only derives from the manipulated variables, i.e., the experimental treatments. According to Smith (2003), this makes the experiments "particularly suited to research questions that investigate causal relations between variables" (p. 100).

The effectiveness of the experimental design is determined by how well the researcher controls variations amongst the non-tested variables without having to create artificial situations that would hamper the findings of the study. The experimental design also entails random assignment of subjects to treatment groups. Randomisation generates two or more groups that have no critical initial differences before any treatments being applied to the experimental group, in turn guaranteeing that the measured changes in dependent variable can be attributed to the influence of the independent variable (Babbie, 2010; Kirk, 2009). To this end, the research would employ the technique of random sampling, where participants will be assigned to each treatments randomly.

7.3. Research Design

The choice of a particular experimental design depends on the way participants are assigned to the experiments; the employment of a pre-test to estimate the dependent variable before the experimental treatment; the experimental treatment itself, which consists of the manipulation of one or more variables by the researcher; and the post-test, i.e., the measuring of the phenomenon of interest after the application of the experimental treatment.

Experimental designs, when incorporating the effects of two or more experimental treatments, may employ factorial designs, for instance, a 2 X 2 design, which is considered useful to determine an interaction between two variables, by manipulating each variable at two levels.

To test the impact of anthropomorphic VA on usage intention, this study intends to undertake experimental design, using data collected from Prolific, which is an online crowdsourcing marketplace. Prolific is being employed for this study due to two particular reasons. Firstly, Prolific is known to provide large samples that are more demographically representative than university subjects (Paolacci *et al.*, 2010) and many existing samples from the internet (See, for detail, Stewart et al., 2015; Mason & Suri, 2012). Stewart *et al.*, (2015) for one, showed how the samples within Prolific are generally as diverse as the population at large. Secondly, Prolific has been highlighted in multiple studies as providing a cost-effective way of conducting online research (See, for instance, Buhrmester *et al*., 2011; Horton *et a*l., 2011; Mason & Watts, 2010).

The study will focus on two different design experiments; a one-factor between-subjects design and a 2 x 2 between-subjects design, to evaluate the differences in the responses of customers to VA under two conditions: human-like and machine-like.

8. Experiment 1: Single Factor Experiment (Study 1)

This study has three objectives. First we aim to look at the impact of VA anthropomorphism on usage intention. Second, we test whether this effect is moderated by technology readiness. And lastly we look at the mediating effect of perceived usefulness, perceived ease of use and perceived enjoyment.

Procedure and sample:

In the first experiment, the single factor experiment is employed. A written conversation between the VA and a customer, is created under both conditions, i.e., human-like and machine-like. This is undertaken by manipulating the conversation in the formal versus informal way and according to task orientations. The study evaluates the impact of specific interaction styles and tone of voice on VA anthropomorphism by collecting user feedback through questions after each conversation. The feedback evaluates the aspects of VA anthropomorphism, which includes human-like vs. machine-like VA taking into account informal vs. formal communication styles, and personalised vs. non-personalised communication styles. In each condition, the participants consider themselves as willing and able-to-purchase consumers in the conversation **(See Appendix: A- Study 1).**

Variable measured in this study is technology readiness (TR), where participants are asked to evaluate their Technology Readiness, through a series of questions. The treatment variable is perceived VA anthropomorphism, with a moderating variable being perceived TR. This study will test the hypotheses: H1, H2, H3, H4, H5.

100 Prolific panellists (50 participants each condition) participated in the study in exchange for a small monetary reward. The participants included equal number of both genders (M_{age}= 31.4, SD= 10.9).

Manipulation: VA Anthropomorphism: The VA (machine-like or human-like) is manipulated in both the experiments. In the first experiment, the participants were provided with two subsequent written conversations between the VA and the customer. The conversation that was manipulated as machine-like included formal conversational style e.g. " Thank you for calling. Goodbye" and used expressions that depicted less closeness in speech e.g. "Shall Best Pizza use the same address?" For adding non- personalised conversational style, the VA addressed the costumer with their last name. For the human-like VA made conversation that was informal in nature e.g. "Thanks for calling", addressed consumers by their first name, and adopted a personalised conversational style. The VA added more humanness in the conversation using small talks e.g. "Hello!", "Good Choice", "Goodie!" The manipulations were inspired by previous works related to language choice and feelings of humanness by Biber (1986), Fournier (1998), Park & Cameron (2014), Barcelos *et al*. (2018) and consist of choice of language that would increase (vs. decrease) the perception of the VA as being more human-like or machine-like (**See Appendix B, Table 1**).

Manipulation Checks: We conducted an Independent T-test, to compare means for manipulation checks i.e. (human-like VA or machine-like VA). We collapsed all manipulation items into single measure and put the measure in Test Variables. We labelled human-like VA as 1 and machine-like VA as 2 in the Grouping Variable. The results showed that there was a significant difference between human-like VA (M= 3.04, SD= .60) vs. machine-like VA (M= 2.87, SD= .44) conditions [t(98)=1.44, p=0.032)].

Measures: Variables in this research are measured with the items adapted from prior research. The instrument for perceived usefulness was adapted from Walczuch *et al.*, (2007). The instrument consisted of three items of perceived usefulness: "I found it useful to speak to the VA," "The VA enabled me to accomplish my task of ordering pizza quickly," "The VA helped me save time." Three items of perceived ease of use included: "I found it easy to understand the VA," "I found ordering the pizza through the VA cumbersome," "I found the VA rigid and inflexible to interact with." The items were adapted from previous work of Walczuch *et al.*, (2007). The three items of perceived enjoyment was adapted from Yi and Hwang (2003) and included "Speaking to the VA was enjoyable for me," "Speaking to the VA was boring for me," "Speaking to the VA was pleasant for me." Usage intention towards using the VA was adapted from prior research by Sundar *et al.,* (2017). Participants were asked to what extend they agreed with the statement and was measured by: "I am always excited about the prospect of interacting with a VA."

Technology Readiness*:* The TR was measured by three-item scale employed in research by Walczuch *et al.,* (2007). The items included: "Using technology is an integral part of my day-to-day life," "I am extremely comfortable using technology," and "I am readily able to learn about new technology and adopt its usage in my daily life."

All of these measurement items were rated on a 5-point Likert-type scale ranging from “strongly disagree” (score 1) to “strongly agree” (score 5). A Likert scale was used not only in conjunction with previous literature but also to provide comparable results with the first experiment of this study (See for instance Walczuch *et al.*, 2007, Yi & Davis, 2001; Parasuraman, 2000; Davis *et al.,* 1992).

Reliability Check: To check the reliability of the scale measuring VA anthropomorphism we conducted Cronbach’s alpha. The results show that the scale is reliable (α= .79). To check the reliability of other items, we collapsed all items into single measure for each: perceived usefulness, perceived ease of use, perceived enjoyment, and technology readiness and conducted Cronbach’s Alpha. The results showed that the scale is reliable for perceived usefulness (α= .81), perceived ease of use (α= .86), perceived enjoyment (α= .87) and usage intention (α= .74) and technology readiness (α= .87) (**See Appendix C: Reliability Check).**

Usage Intention: We conducted a moderation test using PROCESS Macro Model 1 (Hayes, 2018) in which we entered usage intention as the dependant variable, VA anthropomorphism as independent variable, and technology readiness as moderator. The results showed a non-significant moderating effect of technology readiness (β= .23, SE= .31, p= .45, 95% CI= [-.39, .86]), suggesting technology readiness does not moderate the effect of VA anthropomorphism on usage intention. The results also showed a non-significant main effect of VA anthropomorphism (β= -.75, SE= .58, p= .19, 95% CI= [-1.91, .39]) and of technology readiness (β= -.31, SE= .48, p= .53, 95% CI= [-1.2, .66]). The results do not support H1 and H5.

Perceived usefulness: We conducted a moderation test using PROCESS Macro Model 1 (Hayes, 2018) in which we entered perceived usefulness as the dependant variable, VA anthropomorphism as independent variable, and technology readiness as moderator. The results showed a non- significant main effect of VA anthropomorphism (β= -.16, SE= .50, p= .75, 95% CI = [-1.15, .83]) and non- significant main effect of technology readiness (β= -.07, SE= .42, p= .86, 95% CI [-.90, .76]) on perceived usefulness. The interaction effect was also non-significant (β= .11, SE= .26, p= .69, 95% CI [-.42, .64]).

Perceived ease of use: We conducted a moderation test using PROCESS Macro Model 1 (Hayes, 2018) in which we entered perceived ease of use as the dependant variable, VA anthropomorphism as independent variable, and technology readiness as moderator. The results showed a non- significant main effect of VA anthropomorphism (β= -.03, SE= .29, p= .90, 95% CI= [-.61, .55]) and non- significant main effect of technology readiness (β= .39, SE= .25, p= .11, 95% CI = [-. 09, .88]) on perceived ease of use. The interaction effect was also non- significant (β, -.15, SE= .15, p= .34, 95% CI = [-.46, .16]).

Perceived enjoyment: We conducted a moderation test using PROCESS Macro Model 1 (Hayes, 2018) in which we entered perceived enjoyment as the dependant variable, VA anthropomorphism as independent variable, and technology readiness as moderator. The results showed a non- significant main effect of VA anthropomorphism (β= .25, SE= .26, p= .33, 95% CI= [-.78, .27]) and non- significant main effect of technology readiness (β= .10, SE= .22, p= .63, 95% CI = [-. 55, .33]) on perceived ease of use. The interaction effect was also non- significant (β= .13, SE= .14, p= .36, 95% CI = [-.15, .42]).

Moderated Mediation: To test whether the interaction effect of VA anthropomorphism (IV) and TR (moderator) on usage intention (DV) is mediated by

perceived usefulness, perceived ease of use and perceived enjoyment we conducted Moderated Mediation Model 8 (Hayes, 2018). The results based on a 5,000 bootstrap did not show a significant moderated mediation effect on any of the mediators (perceived usefulness: β= .02, SE= .08, 95% CI [-.19, .16]), perceived ease of use (β= .04, SE= .06, 95% CI [-.06, .18]) and perceived enjoyment (β= .14, SE, .21, 95% CI [-.26, .56]). The results of Moderation test do not support our hypotheses H2, H3, H4.

Discussion: Study 1 attempts to examine the effect of anthropomorphism of VA's interaction on customer usage intention, where customer usage intention of anthropomorphised VA is mediated through variables: perceived usefulness, perceived ease of use and perceived enjoyment. The results showed a non-significant effect of VA anthropomorphism on usage intention. The results also showed non-significant effect of technology readiness. Looking at the literature above, one would have expected people with low technological readiness to have a stronger impact of VA anthropomorphism on their usage intention. As predicted, human-like VA could help in reducing uncertainty amongst users with low TR by offering two way communication, making the technology less complicated and providing users with more control over it, making the whole process more comfortable for users. This would result in reduced anxiety and insecurity while using a new or faceless technology, such as VA. Adding more human-like feature to a VA such as closeness through personalised and informal conversation would elicit a sense of fun, resulting in positive feelings of optimism to adapt to new technology (Lee & Naindoo, 2018; Wang *et al.*, 2017; Walczuch *et al.*, 2007; Walker *et al.*, 2002). However, the results showed a non-significant impact of technology readiness. This may be because for this study somehow, all the respondents were the ones with high technological readiness. One reason

behind this may be the fact that people who use Prolific are the ones who already use technology regularly and are comfortable using it. By interpreting the results, it can be said that the effect of VA anthropomorphism on usage intention would be stronger for people with low technology readiness, but it could not be confirmed because of the sample.

9. Experiment 2: 2 x 2 Factor Experiment (Study 2).

The objective of this study was to look at the moderating effect of brand type on usage intention. The object was also to look at the effects of brand type on perceived usefulness, perceived ease of use and perceived enjoyment.

Procedure and sample:

In the second experiment, the VA, whether human-like or machine-like was manipulated using the same items as in study 1 **(See Appendix B: Table 1)**. The experiment involved a written conversation, where participants again took on the role of customers in all the scenario. The participants selected were randomly shown one of the four conditions (human-like VA and warm brand, human-like VA and cold brand, machine-like VA and warm brand, machine-like VA and cold brand). The conversation will reflect either a cold or warm brand and machine-like or human- like interaction style. The first conversation would be human like with a warm brand and will include informal and personalised communication styles. The second conversation will also be human-like however, it will represent a cold brand. The third conversation will be manipulated to represent a warm brand with a machine-like conversational style. The fourth and final conversation will be machine like consisting of

formal communication styles, and non-personalised communication style and representing a cold brand **(See Appendix A: Study 2).**

The manipulation check that experiment 2 deployed was the brand type: cold or warm. Hence a 2 x 2 between subjects design was employed to evaluate the interacting effect between VA anthropomorphism and brand type. This study tested the hypothesis: H6.

200 Prolific panellists (50 participants each condition) participated in the study in exchange for a small monetary reward. The participants included equal number of both genders (M_{age}= 29.6, SD= 10.3).

Manipulation: VA Anthropomorphism: This experiment followed the same manipulation of VA type (machine-like or human-like) as in experiment 1 **(See Appendix B: Table 1).**

Brand Type: The manipulation of brand type was taken from prior work of Keeling *et al.,* (2010) and Chattaraman *et al.,* (2019). The cold brand type was more task- oriented and focused on efficiency and competency e.g. VA's interaction was limited to providing guides and information. While the warm brand was more social oriented and followed a friendly attitude towards customers e.g. VA would maintain an informal conversation through small talks along with providing guides and information **(See Appendix B, Table 2).**

Manipulation Check: We conducted an Independent T-test, to compare means for manipulation checks i.e. (warm brand and cold brand). We collapsed all manipulation items into single measure and put the measure in Test Variables. We labelled warm brand as 1 and cold brand as 2 in the Grouping Variable. The results showed that there was a marginally significant difference between warm brand (M= 3.91, SD= .57) vs. cold brand (M= 3.83, SD= .75) conditions; t(198)= .90, p=0.07.

Measures: The instrument for brand type was adapted from Chattaraman *et al*., (2019).

The instrument consisted of three items: “I found the bank competent,” “I found the bank professional,” and “I found the bank friendly.”

The rest of the measures used in study 2 were same as measures used in study 1. The items used for perceived usefulness, perceived ease of use, perceived enjoyment and usage intention were the same as in Study 1.

Reliability Check. To check the reliability of the scale measuring brand type we conducted Cronbach’s Alpha. We collapsed all three items into single measure. The results showed that the scale is reliable ($\alpha = .76$). The reliability checks for other items used (perceived usefulness, perceived ease of use, perceived enjoyment) is same as study 1 (**See Appendix C, Reliability Check).**

Usage intention. We performed two-way ANOVA keeping usage intention as dependant variable and brand type and VA type as independent variables. The results showed non-significant main effect of brand type ($F(1, 196) = .16$, $p = .68$) and VA type ($F(1, 196) = .22$, $p = .63$) on consumer usage intention. The results showed a marginally significant interacting effect of VA type and brand type on Usage Intention ($F(1,196) = 3.12$, $p = .07$). The difference in the means suggest customers in warm brand type condition ($M = 2.73$, $SD = 1.07$) had greater intention to use human-like VA than customers in cold brand type condition ($M = 2.66$, $SD = 1.09$). The results also show that customers interacting with human-like VA ($M = 2.90$, $SD = 1.11$) as compared to machine-like VA ($M = 2.56$, $SD = 1.02$) will have greater intention to use anthropomorphised VA. These results support our hypothesis (H6): Brand type (warm) with human-like VA will have a positive effect on consumers usage intention.

Perceived usefulness. We performed two-way ANOVA keeping perceived usefulness as dependant variable and brand type and VA type as factor variables. The results showed a

non-significant main effect of brand type on perceived usefulness (F(1, 196)= .59, p= .44). The main effect of VA type on perceived usefulness was significant (F (1, 196)= 7.43, p= .01). The results showed a non-significant interaction between brand type and VA (F(1,196)= .34, p= .56). The results showed that consumers interacting with human-like VA (M= 4.09, SE= .62) find VA more useful as compared to people interacting with machine-like VA (M= 3,76, SE= .65).

Perceived ease of use. We performed two-way ANOVA keeping perceived ease of use as dependant variable and brand type and VA type as factor variables. There was a marginally significant main effect of brand type (F(1, 196)= 2.71, p= .10). There was a non-significant main effect of VA (F(1, 196)= .27, p= .60) on perceived ease of use. The results showed a marginally significant interaction (F(1, 196)= 3.45, p= .06) between brand type and VA. Consumers in cold brand type condition (M= 3.22, SD= .54) reported higher perceived ease of use as compared to consumers in warm brand type (M= 3.10, SD= .54). The results also showed that consumers interacting with machine-like VA (M= 3.31, SD= .57) find higher perceived ease of use as compared to consumers interacting with human-like VA (M= 3.13, SD= .50).

Perceived enjoyment: We performed two-way ANOVA keeping perceived enjoyment as dependant variable and brand type and VA type as factor variables. The results showed non-significant main effect of brand type (F (1,196)= .003, p= .96) on perceived enjoyment. There was a significant main effect (F (1,196)= 5.61, p=. 02) of VA on perceived enjoyment. The results also showed that consumers interacting with human-like VA (M= 3.26, SD= .33) enjoy using VA as compared to consumers interacting with machine-like VA (M=3.13, SD=

.33). The interaction between brand type and VA was non- significant (F(1, 196)= .03, p= .87).

Moderated Mediation: To test the interaction effect of VA anthropomorphism (IV) and brand type (moderator) on usage intention (DV) is mediated by perceived usefulness, perceived ease of use and perceived enjoyment we conducted Moderated Mediation Model 8 (Hayes, 2018). The results shows significant indirect effect of perceived usefulness when the brand type is warm (β= -.11, SE= .05, 95% CI [-.22, -.02]) and insignificant effect of perceived usefulness when the brand type is cold (β= -.07, SE= .06, 95% CI [-.22, .03]). The results showed non-significant effect of ease of use on usage intention when brand type is warm (β= -.03,SE= .04, 95% CI [-.13, .04]) as well as when it is cold (β= .06, SE= .05, 95% CI [-.01, .18]). The results also showed significant indirect effect of enjoyment when brand type is warm (β= -.11, SE= .06, 95% CI [-.25, -.00]) and non- significant effect of perceived enjoyment when the brand type is cold (β= -.10, SE= .08, 95% CI [-.27, .04]).

Discussion. In the case of study 2, we examined the impact of brand type (moderating variable), whether warm or cold, on usage intention. The results show that brand type does moderate the effect on usage intention. The difference in the means suggests that warm brand type increases customer's intention to use human-like VA. The results also showed that warm brand type along with human-like VA increases the perceive usefulness and perceived enjoyment. People find using the human-like VA more useful and enjoy the usage more when the VA is combined with more human-like characteristics. There may, therefore, exist a congruity between the type of brand, whether warm or cold, and the anthropomorphism (e.g., Fennis & Pruyn, 2007) since the perception of the brand as being human-like or a machine-like may heavily influence self-congruity of the brand for the customer. The hypothesis

therefore for the study was that brand type, whether warm or cold, can work in congruency with brand anthropomorphism to influence the perceptions of customers. Therefore brand type (warm) will increase customers' usage intention more when combined with human-like VA. The result of the study 2 confirms the previous literature on congruency between warm brands and brands having human-like features. This study in line with the previous studies that state brands that are perceived warm are positively evaluated and results in brand usage (Cuddy *et al*., 2008; Fiske *et al*., 2007). Consumers are more likely to identify with brands that they perceive to be highly warm (Stokburger-Sauer *et al*., 2012). This study also confirms the research by Fiske *et al*. (2002) suggesting that consumers are more likely to support brands that display signs of warmth.

10. Conclusions and Discussion

In study 1, VA anthropomorphism showed no effect on usage intention. The effect was not also moderated by technology readiness. In study 2 however, there was a positive effect of VA anthropomorphism on usage intention when combined with brand type. The results showed that consumers when interacting with anthropomorphised VA and warm brand, tend to find VA more ease to use and enjoy using it more.

10.1. Theoretical Implications

This paper contributes to current service and marketing research by extending the emerging body of work on service and brand communication through technology. This

research contributes by studying the effects of humanness of voice assistant on consumer usage intention, taking technology readiness and brand type as moderators. This study provides a contribution to stream of literature on brand and product anthropomorphism (Delbare *et al*., 2011; Aggarwal & McGill, 2007, Epley *et al.*, 2007; Aggarwal, 2004) by applying the concept to voice assistants. It also contributes to prior research on technology (Schroeder & Epley, 2018; Mimoum *et al.*, 2017; Goudey & Bonnin, 2016; Keeling *et al*., 2010; Lee, 2010) by providing a clearer understanding on how brands should communicate when interacting with consumers using faceless technology i.e. voice assistant.

As opposed to prior research of interaction styles on consumer- brand relationships (Delin, 2005) and interaction styles on other mediums such as social media (Barcelos *et al.*, 2017; Gretry *et al*, 2017), the present work indicates that adding humanness to a machine-voice assistant in this case, does not always guarantee positive consumers behaviors i.e. usage intentions. It may also backfire, if the informal and personalised style is inconsistent with the consumers' expectation from a brand. Indeed, this paper finds out that the effect of adding human-like characteristics to technology on consumers' usage intention depend on the brand type (warm/ cold).

This paper also contributes to the literature on language, by experimentally manipulating the interaction and conversational style. This paper adds on the literature by operationalising interaction style (formal/ informal conversational style and personalised/ non-personalised conversational style) within the new context of technology i.e. voice assistants.

10.2. Managerial Implications

Since voice assistants will take a centre stage while communicating with consumers in the next few years, it is critical for managers to understand the style that they should adopt while interacting with customers. Marketers should know that it is not merely what we say but how we say it that matters. This paper offer useful insights into how brands could best converse with consumers through conversational technology such as voice assistants. For many brands, adapting to newest technology is a trial- and-error process. This research paper shows that consumers respond differently depending on how they relate to brands. The effectiveness of the interaction can be enhanced greatly if marketers observe and follow interaction styles coherent with expectations of their consumers. Accordingly, our findings suggest that, while using an informal and personalised conversation, which results in humanness of voice assistants is likely to be successful when consumers expect a brand to be warm and social- oriented. Adoption of informal and human-like characteristics of voice assistant may not prove to be successful when consumer expects a brand to be competent and task- oriented. In latter case, consumers might find informal and social- oriented approach inappropriate.

10.3. Limitations and Future Directions

Due to logistical and time related reasons, this study could not employ a bigger sample size. One major limitation of this study was that rather than random sampling, a more stratified sampling technique could have been used. For instance, the respondents could have been chosen on the basis of certain demographic or other factors or on the basis of their use

of technology. In the case of study 1, users were asked about their technological readiness after the completion of the study and could have been selected on the basis of the technology usage. Another major limitation was the fact that all the respondents in study 1 were people with a high technological readiness. The sample therefore was not very representative and the results were possibly impacted by the fact that none of the respondents had low technological readiness. This had an impact on the moderation hypothesis as well, which stated that users with low technological readiness would respond more to VA anthropomorphism. Since users with low TR could not be acquired, this hypothesis was not accurately measured.

Another major limitation of the study is that in the case of study 2, the manipulation check could be better employed to evaluate brand type. In future studies, the manipulation could have been employed in a more detailed manner. When manipulation is stronger, the impact of the manipulated variables may be higher. A lot of studies that employ the technique of role-play or showing scenarios to respondents is that the respondents fail to develop the kind of intense emotional response that they would develop if they were actually a part of the scenario. Even though the technique does result in an increase in internal validity by controlling and manipulating the situation with regards to the experiences of the respondents.

In this study, the focus was limited to two variables i.e. technology readiness (high and low) and brand type (cold and warm) that moderate the effect of VA anthropomorphism on usage intention. However, other factors that might also interact with use of voice assistants and make its influence positive, negative or null towards the VA. Such factors might include consumer goals (hedonic or utilitarian) and level of situational involvement (high or low), which can be employed to see the effect of VA anthropomorphism on consumer intention.

Future studies can also look at the benefits of using anthropomorphic VAs for cold brands. This can be explored by using real brands for the manipulations of the experiments. This would help in creating realistic manipulations and see its effects ,if any, on cold brands and whether it helps in changing any perceptions regarding the brand that the user might have.

Future studies may explore these mechanisms on Voice Assistant that may influence consumer behavior. Similarly, this research focused on interaction with VAs during service scenarios. Studies could extend the research to other scenarios e.g. interaction with Voice Assistants that comes in the phone e.g. Apple's Siri or Google's Google Assistant.

Appendices

Appendix A: Study 1

Experiment 1

[Consent form insert here]

Instructions

Welcome to this survey!

This survey contains two parts. In the first part, we will ask you to read a simple service interaction and provide feedback on this interaction by evaluating the interaction as if you were the customer in the scenario. In second part, we will ask you some questions about your general attitude about new technology.

Please read the instructions before each section carefully and answer the questions that follow.

Please move to the next page for the first task when you are ready.

Task 1a: Interacting with VA

In this section, you will be presented with a scenario in which you will interact with a VA.

It is dinner time and you are hungry. You decide to order pizza from your favourite pizza place. You are aware of the prices, the menu. Moreover, you order delivery from this pizza place regularly. You always pay by credit card.

Today you are calling the pizza place and you realize that the phone is answered by this restaurant's new virtual assistant.

Interaction Scenario 1: interaction with Machine-like Voice Assistant

Please read the below given scenario carefully.

VA: Hello. Welcome to Best Pizza In Town. Say “place an order” if you would like to place an order. Say “query an order” if you would like to ask questions about an order.

Customer: Place an order.

VA: Please state all items you want to order.

Customer: An appetizer, a pizza and a drink

VA: Yes. What do you want for an appetizer?

Customer: One serving of garlic bread.

VA: Yes. How many pieces of garlic bread would you like?

Customer: Six.

VA: Yes. What pizza do you want?

Customer: Pepperoni pizza.

VA: In which size?

Customer: Large.

VA: Yes. Please state what drink do you want?

Customer: Coca Cola.

VA: Please state the size of your drink?

Customer: 1.5 litre.

VA: If the delivery address is the one associated with your phone number, please say “I confirm the address”.

Customer: I confirm the address.

VA: You placed an order of six pieces of garlic bread, a large pepperoni pizza and a 1.5 litre of Coca Cola, your total payable amount is $25.59. If it is correct, please say “I confirm the order”.

Customer: I confirm the order.

VA: How will you pay?

Customer: By Card.

VA: If you want to pay using the credit card associated with this phone number, please say “I confirm to use the credit card”.

Customer: Confirm.

VA: To confirm payment, type your CVC after you hear the beep.

[beep]

[Customer presses three digit code]

VA: Your payment has been processed successfully. Your order will arrive approximately in 30 to 45 minutes. Is there anything else?

Customer: No

VA: Thank you for calling. Goodbye.

[End of interaction]

Interaction Scenario 2: Interaction with Human-like Voice Assistant

Please read the below given scenario carefully.

VA: Hello! Welcome to Best New York Pizza. If you are looking to place an order with us please say “place an order”. For queries related to order, please say “query an order”.

Customer: Place an order.

VA: Goodie! Can you please tell me what you want to order today?

Customer: An appetizer, a pizza and a drink

VA: Alright. And what would you like to have for an appetizer?

Customer: I would like a serving of garlic bread.

VA: Good choice! I like garlic bread myself. Can you please tell me how many pieces of garlic bread would you like?

Customer: Six.

VA: Noted! Now for pizza, which flavour of pizza do you want?

Customer: Pepperoni pizza.

VA: You are a fan of Peperoni pizza! The last pizza you ordered was also Peperoni pizza. Which size pizza would you like to have?

Customer: Large.

VA: It's a party, I see. Now, can you please tell me your drink order?

Customer: Coca Cola.

VA: Ok. Which size would you prefer to order?

Customer: 1.5 litre.

VA: Shall we use the same address linked to your phone number?

Customer: Yes.

VA: You placed an order of six pieces of garlic bread, a large pepperoni pizza and a 1.5 litre of Coca Cola, your total amounts to $25.59. If it is correct, please say "I confirm this order".

Customer: I confirm.

VA: And how will you be paying today? By card, as per usual?

Customer: By Card.

VA: We have your card number and date on file. All you have to do is confirm that the details haven't changed by saying "confirm".

Customer: Confirm.

VA: Great. Now to confirm payment, type in your CVC into our secure system after you hear the beep.

[beep]

[Customer presses three digit code]

VA: Alright. Looks like your payment has been processed. Your order will arrive approximately in 30 to 45 minutes. Can I help you with anything else?

Customer: No

VA: Thanks for calling. I hope you will enjoy the pizza! Have a great evening! Goodbye.

[End of interaction]

Task 1b: Usage Intention

Please evaluate the conversation you just had with the VA by indicating to what extent you agree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Perceived Usefulness					
I find it useful to speak to the VA	o	o	o	o	o

The VA enables me to accomplish my task of ordering pizza quickly	o	o	o	o	o
The VA helps me save time	o	o	o	o	o

Perceived Ease of Use

I find it easy to understand the VA	o	o	o	o	o
I find ordering the pizza through the VA cumbersome	o	o	o	o	o
I found the VA rigid and inflexible to interact with	o	o	o	o	o

Perceived Enjoyment

Speaking to the VA was enjoyable for me	o	o	o	o	o
Speaking to the VA was boring for me	o	o	o	o	o
Speaking to the VA was pleasant for me	o	o	o	o	o

Additional Questions about VA

I regularly use VA to interact with service providers.	o	o	o	o	o

I find my interactions with VAs to be extremely convenient	o	o	o	o	o
I am always excited about interacting with a VA	o	o	o	o	o
I prefer interacting with a VA rather than a human	o	o	o	o	o

Additional Questions about the Scenario

The interaction I read was realistic	o	o	o	o	o
The scenario I read was believable	o	o	o	o	o
The scenario has positively influenced my perception of VA	o	o	o	o	o
The interaction I read felt exactly like an interaction between two humans	o	o	o	o	o
The language used in the interaction was very human-like	o	o	o	o	o
I felt that the interaction was stilted and rigid (i.e. not human-like)	o	o	o	o	o

Task 2: Estimating Technology Readiness

The use of technology is prevalent in today's world. Imagine yourself going through an ordinary day of your life, completing your routine tasks as you normally do. Now recall how

often you rely on technology to assist in the completion of your day-to-day tasks. For example, do you regularly ask Siri to check the weather for you.

Please indicate to what extent you agree with the following statements, using the provided scale.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Using technology is an integral part of my day-to-day life.	o	o	o	o	o
I am extremely comfortable using technology.	o	o	o	o	o
I am readily able to learn about new technology and adopt its usage in my daily life.	o	o	o	o	o

Demographics:

What is your age?

_____

What is your gender? (optional)

o Male (1

o Female (2)

Appendix A: Study 2

Experiment 2

[Consent form insert here]

Instructions

This survey consists of an interaction scenario followed by a feedback form in which you evaluate the interaction. In the survey the interaction is between a bank representative and a customer. Before the start of the interaction, we will provide you with a brief description of the bank. Please imagine yourself as the customer in the scenario.

Please read the instructions before each section carefully and answer the questions that follow.

Please move to the next page for the first task when you are ready.

Interaction Scenario 1: Machine-like and Cold Brand

In this interaction, the bank is a well-established reputable bank called Best Global Bank that has been operating in many countries for many years, including the U.S market. The bank is known as extremely task-oriented, efficient, and competent. Recently, this bank has started using virtual assistant (VA) for the customer service.

In the survey we will ask you to read a simple service interaction between a customer and the virtual assistant of the bank. Imagine yourself as the customer in this interaction who has called the bank to open up a new account. After we will ask you to provide feedback on this interaction.

Please read the scenario below carefully:

VA: You have reached the phone line of the Best Global Bank. Please select from the following services by saying either open a New Bank Account, Bank Balance, Pay and Transfer, Manage Direct Debits, Report a Lost or Stolen Card, or Complaint Registration. To repeat the option list, please say “repeat”.

Customer: Open a new bank account.

VA: Please state the type of bank account you want to open.

Customer: What are the options available?

VA: Demand Deposit Account, Current Account, Saving Account, Money Market Account, Individual Retirement Account, Brokerage Account.

Customer: I would like to open a saving account.

VA: Please state your full name.

Customer: Alex Smith

VA: Would you like to give information on your Social Security Card or ID Card for identification?

Customer: Social Security Card

VA: Please type your social security number.

Customer: (Customer types the number)

VA: Please state which branch you would like to open your account in?

Customer: The Garden Place branch of Best Global Bank.

VA: Please wait while the available slots for appointments are checked.

VA: Thank you for waiting. The next available appointment is on the 16th of September at 10 am.

Customer: I am afraid I cannot make it at this time. Can you look for some other time slot on the same date.

VA: The only other time slot available on the 16th of September is 4 pm.

Customer: That works well for me. Can you please book me in for this appointment?

VA: Yes, the appointment has been booked. Please bring identification documents with you.

Customer: Thank you so much. How long will the process take after the appointment?

VA: Once your identification documents are verified, the account will be opened immediately.

Customer: Okay, thank you so much.

VA: Thank you for calling. For more information please visit Best Global Bank's website. To go back to the main menu, press 1. To give your feedback, press 2.

Customer: Thank you.

[End of interaction]

Interaction Scenario 2: Human-like and Cold Brand

In this interaction, the bank is a well-established reputable bank called Best Global Bank that has been operating in many countries for many years, including the U.S market. The bank is known as extremely task-oriented, efficient, and competent. Recently, this bank has started using virtual assistant (VA) for the customer service.

In the survey we will ask you to read a simple service interaction between a customer and the virtual assistant of the bank. Imagine yourself as the customer in this interaction who has called the bank to open up a new account. After we will ask you to provide feedback on this interaction.

Please read the scenario below carefully:

[music plays]

VA: Hello there! You have reached the phone line of the Best Global Bank. This is Barry and may I please know your name?

Customer: Hello, This us Alex.

VA: Well hello Alex! Can you please select from the following services by saying either Open New Bank Account, Bank Balance, Pay and Transfer, Manage Direct Debits, Report a Lost or Stolen Card, or Complaint Registration. To repeat the options, Please say "repeat".

Customer: Open a New Back Account.

VA: I will be happy to help you with that, Hugh. Can you please state the type of bank account you want to open?

Customer: What are the options available?

VA: The options are Demand Deposit Account, Current Account, Saving Account, Money Market Account, Individual Retirement Account, Brokage Account.

Customer: I would like to open a Saving Account.

VA: Great choice, Alex. To great started, I would like you to state your full name?

Customer: Alex Smith

VA: For the purpose of identification, I would require some information, Alex. Would you like to give information of your Social Security Card or ID Card for identification?

Customer: Social Security Card.

VA: Can you please type your Social Security Number for me, Alex?

Customer: (Customer types the number)

VA: Alright! Your details have been updated. For the purpose of verification we would

require you to come into the Garden Place branch of Best Global Bank. Would that be alright with you, Alex?

Customer: Yes

VA: Sounds Good! Can you give me a minute please while the available slots for appointments are checked.

VA: Thank you for waiting. I found the earliest available appointment for you on 16th of September at 10 am. Would that be acceptable, Alex?

Customer: I am afraid I cannot make it at this time. Can you look for some other time slot on the same date?

VA: The only other time that we have available on the same day is 4 pm. Does that suit you better?

Customer: That works well for me. Can you please book me in for this appointment?

VA: I sure can. The appointment has been booked. I would like to remind you to please bring identification documents with you.

Customer: Thank you so much. How long will the process take after the appointment?

VA: Good question, Alex. Once your identification documents are verified, the account will be opened immediately.

Customer: Okay, Thank you so much.

VA: Thank you for calling. For more information visit the Best Global Bank's website.

If you would like to go back to the main menu please press 1. To give feedback, please press 2.

Customer: Thankyou!

[End of Interaction]

Interaction Scenario 3: Machine-like and Warm Brand

In this interaction, the bank is a well-established reputable bank called Best Global Bank that has been operating in many countries for many years, including the U.S market. The bank is known as social orientation and friendly attitude towards its customers**.** Recently, this bank has started using virtual assistant (VA) for the customer service.

In the survey we will ask you to read a simple service interaction between a customer and the virtual assistant of the bank. Imagine yourself as the customer in this interaction who has called the bank to open up a new account. After we will ask you to provide feedback on this interaction.

Please read the below given scenario carefully:

[music plays]

VA: You have reached the phone line of the Best Global Bank. Please select from the following services by saying either Open a New Bank Account, Bank Balance, Pay and Transfer, Manage Direct Debits, Report a Lost or Stolen Card, or Complaint Registration. To repeat the option list, please say “repeat”.

Customer: Open a new bank account

VA: Please state the type of bank account you want to open.

Customer: What are the options available?

VA: Demand Deposit Account, Current Account, Saving Account, Money Market Account, Individual Retirement Account, Brokerage Account.

Customer: I would like to open a Saving Account.

VA: Please state your full name.

Customer: Alex Smith

VA: Would you like to give information on your Social Security Card or ID card for identification?

Customer: Social Security Card

VA: Please type your Social Security Number.

Customer: (Customer types the number)

VA: For verification purposes, we require document verification at our Garden Place branch. Would that be acceptable for you?

Customer: Yes.

VA: Please wait while the available slots for appointments are checked.

VA: Thank you for waiting. The next available appointment is on the 16th of September at 10 am.

Customer: I am afraid I cannot make it at this time. Can you look for some other time slot on the same date?

VA: The only other time slot available on the 16th of September is 4 pm.

Customer: That works well for me. Can you please book me for this appointment?

VA: Yes, the appointment has been booked. Please bring identification documents with you.

Customer: Thank you so much. How long will the process take after the appointment?

VA: Once your identification documents are verified, the account will be opened immediately.

Customer: Okay, thank you so much.

VA: Thank you for calling. For more information visit Best Global Bank's website.
To go back to the main menu, press 1. To give your feedback, press 2.

Customer: Thank you.

[End of interaction]

Interaction Scenario 4: Human-like and Warm Brand

In this interaction, the bank is a well-established reputable bank called Best Global Bank that has been operating in many countries for many years, including the U.S market. The bank is known as social orientation and friendly attitude towards its customers. Recently, this bank has started using virtual assistant (VA) for the customer service.

In the survey we will ask you to read a simple service interaction between a customer and the virtual assistant of the bank. Imagine yourself as the customer in this interaction who has called the bank to open up a new account. After we will ask you to provide feedback on this interaction.

Please read the below given scenario carefully:

[music plays]

VA: Hello there! you have reached the phone line of your very own digital mobile bank, MOBANK. This is Barry and may I please know your name?

Customer: Hello. This is Alex Smith

VA: Well hello Alex! Can you please select from the following services by saying either open a New Bank Account, Account Balance, Pay and Transfer, Manage Direct Debits, Report a Lost or Stolen Card, or Complaint Registration. To repeat the option list please say "repeat".

VA: So how can I help you today?

Customer: Open a new Bank Account.

VA: I will be happy to help you with that, Alex. Can you please state the type of bank

account you want to open?

Customer: What are the options available?

VA: The options are Demand Deposit, Current Account, Saving Account, Money Market Account, Individual Retirement Account, Brokerage Account.

Customer: I would like to open a Saving Account.

VA: Great choice, Alex! To get started, I would like you to state your full name.

Customer: Alex Smith

VA: For the purpose of identification, I would require some information, Alex. Would you like to give information on your Social Security Card or ID Card for identification?

Customer: Social Security Card

VA: Can you please type your Social Security Number for me, Alex?

(customer types the number)

VA: Alright! Your details have been updated. For the purpose of verification we would require you to come into our branch at the Garden Place. Would that be alright for you, Hugh?

Customer: Yes

VA: Sounds Good! Can you also please give me a minute while I check for the available slots for the appointments?

VA: Thank you for waiting. I found the earliest available appointment for you on 16th of September at 10 am. Would that be acceptable, Alex?

Customer: I am afraid I cannot make it at this time. Can you look for some other time slot on the same date?

VA: the only other time slot available on 16th of September is 4 pm. Does that suit you

better?

Customer: That works well for me. Can you please book me for this appointment?

VA: I sure can. The appointment has been booked. I would like to remind you to please bring identification documents with you.

Customer: Thank you so much, How long will the process take after the appointment?

VA: Good question, Alex! Once your identification documents are verified, the account will be opened immediately.

Customer: Okay, Thank you so much.

VA: Thank you for calling, For more information visit Best Global Bank's website.

If you would like to go back to the main menu, press 1. To give your feedback, press 2

Customer: Thankyou

[End of Interaction]

Please evaluate the conversation you just had with the VA by indicating to what extent you agree with the following statements.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Perceived Usefulness					
I find it useful to speak to the VA	o	o	o	o	o
The VA enables me to report my stolen card quickly	o	o	o	o	o

The VA helps me save time	o	o	o	o	o

Perceived Ease of Use

I find it easy to understand the VA	o	o	o	o	o
I find reporting a stolen card through the VA cumbersome	o	o	o	o	o
I found the VA rigid and inflexible to interact with	o	o	o	o	o

Perceived Enjoyment

Speaking to the VA was enjoyable for me	o	o	o	o	o
Speaking to the VA was boring for me	o	o	o	o	o
Speaking to the VA was pleasant for me	o	o	o	o	o

Additional Questions about VA

I regularly use VA e.g. to place a complaint regarding low Wi-Fi signals	o	o	o	o	o
I find my interactions with VAs to be extremely convenient	o	o	o	o	o
I am always excited about the prospect of interacting with a VA	o	o	o	o	o

I prefer interacting with a VA rather than a human substitute	o	o	o	o	o
I feel that banks like Best American Bank must have a machine-like VA	o	o	o	o	o

Additional Questions about the Bank

I find Best American bank to be very competent in its interactions with its customers.	o	o	o	o	o
I find Best American Bank to be very professional	o	o	o	o	o
I find Best American Bank to be very friendly in its interactions with its customers	o	o	o	o	o

Additional Questions about the Scenario

The interaction I read was extremely realistic i.e. I have had such interactions myself before	o	o	o	o	o
The scenario could be made more believable e.g. by asking for my name when taking the order	o	o	o	o	o

The scenario has deeply impacted my perception of VA	o	o	o	o	o
The interaction I read felt exactly like an interaction between two humans	o	o	o	o	o
The language used in the interaction was very human-like	o	o	o	o	o
I felt that the interaction was stilted and rigid (i.e. not human-like)	o	o	o	o	o

Demographics:

What is your age?

_____

What is your gender? (optional)

o Male (1)

o Female (2)

Appendix A of this thesis has been removed as it may contain sensitive/confidential content

Appendix B: Variables Manipulations

Table 1: Voice Assistant (VA) Anthropomorphism Manipulation

Tone of Voice/ Interaction Style	Manipulations	Examples
Machine-like Voice Assistant (VA)	VA uses formal language & less personalised approach	Thank you for calling. Goodbye.
	Expresses with less closeness in the speech.	Shall Best Pizza use the same address?
	Addresses consumers by last name.	Use of last name "Smith"
Human-like Voice Assistant (VA)	VA uses in-formal interaction style.	Thanks for calling.
	Expresses with humanness in the speech, using small talk.	Hello!, Good choice!, Goodie!
	Uses punctuations	Shall we use the same address?
	Addresses consumers by first name to follow a more personalised approach.	Use of first name: Alex

(The manipulations are inspired by previous works related to language choice and feelings of humanness by Biber, 1986; Fournier, 1998; Park & Cameron, 2014 and Barcelos *et al.*, 2018).

Table 2: Brand Type Manipulations

Brand type	**Manipulations**	**Examples**
Cold Brand	Task- oriented	VAs interaction is limited to providing guides and information
	Efficient and competent	No social conversation except for the initial greeting
Warm Brand	Social oriented	In addition to providing functional guide and information, VA maintains informal conversation through small talks and exclamatory feedback
	Friendly attitude towards customers	

(The manipulations were inspired by previous works by Keeling *et al.*, 2010 and Chattaraman *et al.*, 2019).

Appendix C: Measures and Reliability Checks

Variables	Items	Cronbach's Alpha Score
VA Anthropomorphism	The interaction I read felt exactly like an interaction between two humans.	α= .79
	The language used in the interaction was very human-like.	
	I felt that the interaction was stilted and rigid (i.e. not human-like).	
Brand Type	I found the bank competent.	α= .76
	I found the bank professional.	
	I found the bank friendly.	
Perceived Usefulness	I found it useful to speak to the VA	α= .81
	The VA enabled me to accomplish my task of ordering pizza quickly	
	The VA helped me save time	
Perceived Ease of Use	I found it easy to understand the VA	α= .86
	I found ordering the pizza through the VA cumbersome	
	I found the VA rigid and inflexible to interact with	
Perceived Enjoyment	Speaking to the VA was enjoyable for me	α= .87
	Speaking to the VA was boring for me	
	Speaking to the VA was pleasant for me.	
Technology Readiness	Using technology is an integral part of my day-to-day life	α= .87
	I am extremely comfortable using technology	
	I am readily able to learn about new technology and adopt its usage in my daily life.	
Usage Intention	I am always excited about the prospect of interacting with a VA	

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