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## The role of anthropomorphic virtual assistants in mediation and customer experience

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## Abstract

The objective of this present article is to analyze the characteristics of anthropomorphic virtual assistants used in the Brazilian market and assess their potential to promote interaction between customers and brands. Based on this information, we seek to guide companies that wish to adopt this strategy. The survey included 135 respondents, and the netnography covered websites and other channels of Lu (Magazine Luiza), Nat (Natura), CB (Casas Bahia), and Sam (Samsung). The theory deals with VAs and anthropomorphism and includes Chérif and Lemoine (2019), Noor et al. (2022), among others. The results showed that humanizing VAs can enrich the customer experience, influencing their perceptions and evaluations. However, it presents challenges such as meeting customer expectations, providing accurate and aligned information, and ensuring data security and privacy.

### Keywords

Virtual Assistant; Anthropomorphism; Branding; Humanized Brands; Netnography.

## Introduction

Advances in technological devices drive changes in institutional mediation (Franciscato, 2019). For Martín-Barbero (2009), mediation should not be seen as a simple act of communication/transmission of information, but rather as a cultural process, in which institutionality, sociality, rituality, and technicity are involved. An example of these changes in mediation is the advance of virtual assistants, known as VAs, which are designed to simulate human conversations and can interact via text or voice to provide personalized information to customers. These systems assist customers not only in searching for desired products but also offer suggestions based on individual preferences, facilitate the purchasing and payment process, and are available for support at any time and day of the week (Akdin & Casalo, 2023; Bohouta & Kepuska, 2018; Flavián et al., 2022; Hoyer et al., 2020; Magno & Dossena, 2023; Schmitt, 2019; Strecker, 2024).

This upward trend in the use of VAs is mainly due to the progress of Generative Artificial Intelligence (Santaella, 2023). According to Gartner (2023), 45% of executives surveyed indicated that GPT Chat has driven an increase in AI investments. The survey also reveals that 70% of organizations are actively exploring generative AI, while 19% are already in the pilot or production phase. In addition, studies by Juniper Research predict that global spending on chatbots will reach US\$12 billion in 2023, with estimates of US\$72 billion by 2028 (Juniper Research, 2023). Assistants can transform the customer experience (Fan et al., 2022), a key factor in differentiation and competitiveness for brands. For Fontenelle (2004), the experience sector is shaping itself in response to the emergence of new information technologies and the changes in subjectivity that arise from these innovations.

In this context, the more human the appearance and behavior of these assistants, the easier it will be to improve the customer experience, as the degree of humanization of technological products (anthropomorphism) can improve interactions and connections and, therefore, result in better customer reviews (Araujo, 2018; Cai et al., 2022; Crolic et al., 2021; Fernandes & Oliveira, 2021; Roy & Naidoo, 2021; Schanke et al., 2021; Schmitt, 2019). Epley (2018) defines anthropomorphism as the perception of human traits in non-human agents. Kühne and Peter (2023) propose a multidimensional concept that includes attributing human mental capabilities to the robot, such as thinking, feeling, perceiving, desiring, and choosing. In Brazil, several brands have already adopted VAs by making them available on channels such as websites, applications, and social networks. Some models interact by voice, others by text, and some brands have developed assistants with human characteristics, as is the case of Lu (Magazine Luiza), who was the most followed virtual influencer worldwide in 2022, with 31.2 million followers on her social networks (Hiort, 2022).

Hence, this study aims to analyze the characteristics of anthropomorphic virtual assistants used in the Brazilian market and assess their potential in promoting interaction between customers and brands. Based on this information, we seek to guide companies that wish to adopt this strategy. The guiding question is: What are the characteristics of the most effective anthropomorphic virtual assistants in promoting interaction between customers and brands in the Brazilian market? This study aims to fill a gap in the literature on VAs in Brazil, offering guidance for brands that wish to adopt strategies with anthropomorphic VAs. In the systematic review carried out in July 2023 of articles published in the Spell, Scopus, and Scielo databases, in which documents with the keyword: Virtual Assistant (more options in Portuguese and Spanish) and that specifically dealt with the business/management area were selected, only 15 documents on VAs and no studies on the Brazilian market were found. The data offered in this study will serve as material for the interpretation of new scenarios of technological mediation traversed by anthropomorphic VAs.

In the methodological path, a survey was used that included 135 respondents and a netnography on the websites, social networks, and applications of Lu (Magazine Luiza), Nat (Natura), CB (Casas Bahia),

and Sam (Samsung). This article is structured into five sections. Besides this introduction, the second section presents the theoretical framework on virtual assistants, the third describes the methodology used, the fourth discusses the results obtained and offers suggestions for adoption, and the fifth section presents the conclusions and suggestions for future work.

## Literature Review

According to the American Marketing Association (AMA, 2023), a brand is a unique identifier for products or services. However, beyond a simple label, name, or design, the value of a brand lies in the quality of the relationship and experiences it provides with customers (Moffitt & Dover, 2012). In line with this perspective, Pine and Gilmore (1999) suggest that the company should build a branding strategy that evokes positive feelings in consumers, and mediations and connections to be increasingly authentic. For Franciscato (2019), Pine and Gilmore (2008), authenticity is a fundamental pillar for establishing bonds. Kotler et al. (2017) complement this idea by proposing that brands should cultivate other human attributes such as physicality, sociability, intellectuality, emotionality, and morality.

Aaker (2015) and Oh et al. (2020), as a way of building a distinctive personality, also propose the attribution of human characteristics to the brand. The humanization of brands aims to establish a connection with customers who will feel more involved and close (Mossman & Viana, 2019). For Kotler et al. (2021), customers value companies that are transparent and human in their communication. This search for humanization of brands is driven by the trend towards personalized experiences. The personalization of interactions and experiences, advocated by Akdim and Casalo (2023) and Turchi (2018), is increasingly relevant in a digital scenario. Strecker (2024) highlights the potential of hyper-personalization enabled by algorithms that use data to offer “highly relevant content”, which seems to know consumers better than they know themselves.

This orientation poses a challenge for marketers, who need to build brands that behave like people: approachable, friendly, and at the same time vulnerable (Kotler et al., 2017). To do so, it is necessary to innovate constantly, offering engaging experiences and keeping up with social and technological changes (Aaker, 2020; Gregory & Bridwell, 2016; Oh et al., 2020). From this perspective, artificial intelligence (AI) emerges as a tool to improve mediation with customers. Puntoni et al. (2021) argue that social experiences tend to be positive when AI is perceived as a natural and effective means of interaction. Virtual assistants (VAs), for example, can be an efficient form of communication (Ferreira et al., 2021; Guerreiro et al., 2022).

VAs are automated computer programs that use artificial intelligence, which may include Natural Language Programming, Machine Learning and Deep Learning (Kamoonpuri & Sengar, 2023). They perform a limited number of automatic actions (Bellis & Johar, 2020; Hoyer et al., 2020; Gustavsson, 2005), simulate human conversations, providing information, using appropriate vocabulary and seeking to convey emotions and feelings (Flavián et al., 2022; Hoyer et al., 2020; Magno & Dossena, 2023; Schmitt, 2019). They can also support customers at various stages of their purchasing process (Hoyer et al., 2020; Luo et al., 2019; Mari, 2019; Przegalinska et al., 2019).

However, according to research conducted by Luo et al. (2019), disclosing the identity of the chatbot before the chat-customer conversation reduces purchase rates by more than 79.7%. According to the authors, when customers are aware that the interlocutor is a machine, they buy less because they judge the bot to be less capable and friendly. The negative effect appears to be motivated by a subjective human prejudice against machines. In addition to these, Kamoonpuri and Sengar (2023) identified seven barriers, with customer barriers standing out as the most significant, followed by technical and financial obstacles. In addition, the study also addresses marketing, sociocultural, organizational, and operational barriers.

To overcome these challenges, Hoyer et al. (2020) propose the humanization of VAs, making

intelligence tangible and with sensory/emotional value. To this end, VAs should express qualities, feelings, or actions that are common to human beings, such as humor, empathy, or creativity, so that VAs can increase customer trust, satisfaction, and engagement (Araujo, 2018; Blut et al., 2021; Flavián et al., 2022; Noor et al., 2022; Puntoni et al., 2021; Ramadan, 2021; Schanke et al., 2021; Youn & Cho, 2023). However, it is important that the algorithms governing VA are impartial and do not perpetuate biases (Kamoonpuri & Sengar, 2023).

Hoyer et al. (2020) add that, in the social aspect, the integration of technology into people's lives and the humanization of interaction can also create experiential value. Thus, interactions can go beyond communication (text and voice) and become more interactive by incorporating gestures and movements (Bohouta & Kepuska, 2018; Noor et al., 2022). Following the constitutive language of networks, which is hypermedia, in this way "mixtures between languages, or rather, their hybridizations, occur because digitalization also allows the reticular organization of information flows in hypertextual architectures" (Santaella, 2023, p. 94). After all, as Martín-Barbero (2009) explains, in a communicative ecosystem the entire environment matters.

Ultimately, one way to provide better experiences for customers interacting with an anthropomorphic assistant is to design AI products that mimic humans in terms of attributes, actions, and language. In this way, they can establish a social presence with users (Akdin & Casaló, 2023; Noor et al., 2022; Qiu & Benbasat, 2009; Van Doorn et al., 2017) and become "artificial best friends" for them (Puntoni et al., 2021). In other words, visible and recognizable aspects of humanity, such as faces and expressions, as well as names similar to those of a person, facilitate identification and connection with users (Araujo, 2018; Schanke et al., 2021; Youn & Cho, 2023).

Voice also plays a crucial role in this relationship. Chérif and Lemoine (2019) note that human-voiced VAs generate a stronger sense of social presence in customers than synthetic-voiced assistants. Furthermore, assistants who are able to use nonverbal communication cues, such as facial expressions, gaze, body movements, and distance, further enrich mediation (Araujo, 2018). The learning capacity of VAs, through machine learning, allows them to adapt to individual customer preferences and behaviors, offering personalized and relevant solutions (Akdin & Casaló, 2023; Mari, 2019; Guerreiro et al., 2022; Strecker, 2024). This personalization, combined with anthropomorphization, can contribute to the creation of positive experiences, strengthening the bond between the customer and the brand.

## Methodological Procedures

This study adopted exploratory and qualitative methods, aiming to understand the subjective and contextual aspects involving the interaction between customers and anthropomorphic virtual assistants (Gil, 2021; Yin, 2015). First, it is necessary to contextualize that this work is part of a postdoctoral research in Administration, which focuses on the investigation of augmented marketing actions for brand equity management in the context of omnichannel retail. Specifically, this article details and analyzes two questions from a survey conducted through Google Forms and a section of the netnography.

The first two questions, which were closed-ended, aimed to identify the participants' characteristics. The first question, about age, used as a basis for the scale the definitions adopted by UNESCO (Abramovay & Castro, 2006) and by the Brazilian Youth Statute (2013), which defines young people as people aged 15 to 29, and by the Elderly Statute (2003), which guarantees differential rights to people aged 60 or over. Therefore, people aged 30 to 59 are considered adults, and those under 15 are considered children. The second question asked about the respondent's gender, with the options: Female, Male, Other. The following two questions were open-ended and allowed for long answers in one or more paragraphs. The open-ended questions asked about: 1. Which virtual assistants have you used? and 2. What are the benefits of using virtual assistants?

The research adopted non-probabilistic convenience sampling, according to Malhotra (2011), with a collection interval set for August and September 2023. Data collection was carried out anonymously to guarantee the privacy of the participants, and it was decided to publish it on social networks and WhatsApp groups belonging to the authors. During the established period, the research obtained responses from 135 individuals, of which 74% were between 15 and 29 years old, while 26% were between 30 and 59 years old. There was no participation of people under 15 or over 60 years old. Regarding gender identification, 66% of the respondents identified themselves as female and 34% as male.

In September 2023, a netnographic study was conducted covering the websites, social networks, and applications of the following VAs: Lu (Magazine Luiza), Nat (Natura), CB (Casas Bahia), and Sam (Samsung). These four anthropomorphic VAs were selected based on the survey conducted. The methodology adopted was non-participant observation, in which researchers monitored interactions without directly engaging with users/assistants (Kozinets, 2014; Malhotra, 2011). The study followed the model proposed by Kozinets (2014), that is, after identifying the digital platforms, the observation and data collection items were listed, which were the images and descriptions of the VA's profile and the analysis of responses and interactions with customers. All information was collected without the aid of software.

To analyze the data collected qualitatively from both the netnography and the survey, content analysis was used, following the methodology of Bardin (2004). The following steps were carried out: a) pre-analysis with the preparation of the survey and selection of the VAs; b) exploration of the material, with the definition of the categories: anthropomorphic signs (appearance, behavior, personality, etc.) and social presence (access channels, advantages, experiences, etc.); c) inference and interpretation of the results presented in the following section.

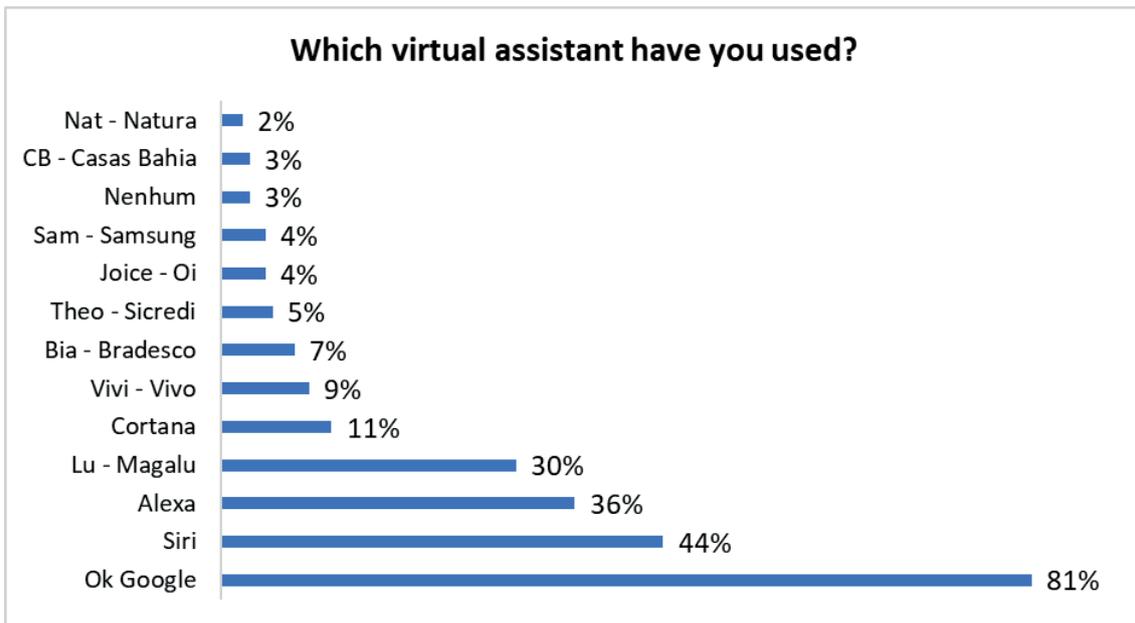
## Results and discussions

This section presents a summary of the main characteristics of the anthropomorphic VAs analyzed and the results of the survey questions. Next, guidelines for companies that wish to create and implement an anthropomorphic VA are described.

### Assistants already in use and their benefits

The results revealed that there was no difference in the responses provided between the demographic groups studied, with both young people (15-29 years old) and adults (30-59 years old) providing similar responses. Likewise, there were no variations according to the gender identity of the participants. The initial question of the questionnaire, "Which virtual assistants have you used?" was open-ended and allowed respondents to mention their preferred assistants. The responses can be seen in Graph 1.

Graph 1 Question 1: Which virtual assistant have you used?



Source: Produced by the authors

According to graph 1, Ok Google leads the user preference with 81%. Siri comes in second, with 44%, followed by Alexa with 36%, Lu from Magalu with 30% and Cortana with 11%. Other assistants, such as Vivi from Vivo, Bia from Bradesco, Theo from Sicredi, Joice from Oi, Sam from Samsung, CB from Casas Bahia, and Nat from Natura have a usage rate of less than 10%. In addition, 3% of those surveyed said they had never used virtual assistants.

By analyzing the graph, it is possible to see that the most widely used VAs are those developed by large technology companies such as Google, Apple, Amazon, and Microsoft. This preference can be attributed to the trust that consumers place in these brands, recognized for their constant investments in innovation and technological expertise. Familiarity with the interfaces and services offered by these companies can also influence users' choices. In this sense, it can be inferred that adopting strategies aligned with those of market leaders can be a differentiator in achieving greater acceptance and increasing the use of VAs.

Lu from Magalu (30%) is an exemplary case of the successful application of anthropomorphized virtual assistants in the Brazilian market. Her performance as a digital influencer highlights the potential of personalization and humanization as effective strategies for mediation with customers (Akdim & Casaló, 2023; Araujo, 2018; Noor et al., 2022; Puntoni et al., 2021; Qiu & Benbasat, 2009; Schanke et al., 2021; Strecker, 2024; Van Doorn et al., 2017; Youn & Cho, 2023). Assistants from financial institutions such as Bia from Bradesco and Theo from Sicredi register 7% and 5%, respectively. Other assistants, such as Joice from Oi (4%), Sam from Samsung (4%), CB from Casas Bahia (3%), and Nat from Natura (2%) have lower usage rates, indicating that there are challenges that need to be overcome for these assistants to be more accepted/known by customers.

Finally, it can be seen that most respondents are not only receptive but have already adopted VAs in their daily lives, with only 3% stating that they have never used this technology. This scenario paints a promising picture for companies that have not yet benefited from the implementation of VAs, or those that aim to improve and expand the presence of this innovation in their operations.

Subsequently, the question "What are the benefits of using virtual assistants?" was asked, highlighting the importance of recognizing the advantages that users observe when employing VAs, in

addition to looking for areas that can be improved. The answers were organized in a word cloud (in the Word Cloud Generator platform), illustrated in Image 1.

Image 1 - Question 2: What are the benefits of using virtual assistants?



Source: Produced by the authors

Image 1 highlights the main benefits of AVs as identified by study participants. These benefits were summarized and organized into three main categories:

**Practicality and Ease:** VAs should be easy to use and not require much effort from the user, which is convenient for tasks such as making calls, sending messages or controlling home devices (Akdim & Casaló, 2023; Bohouta & Kepuska, 2018; Flavián et al., 2022; Hoyer et al., 2020; Schmitt, 2019). They should facilitate communication and data exchange (Puntoni et al., 2021) and have good usability (Magno & Dossena, 2023), being easy to understand and use, even for people with little familiarity with technology.

**Agility and Speed:** VAs must perform tasks quickly and easily, without the need for the user to type or use complex controls, providing speed, convenience, and efficiency (Akdim & Casaló, 2023; Flavián et al., 2022; Noor et al., 2022).

**Help and Support:** They should help optimize tasks by automating processes and providing relevant information or suggesting recommendations (Akdim & Casaló, 2023; Bohouta & Kepuska, 2018; Magno & Dossena, 2023; Flavián et al., 2022; Hoyer et al., 2020; Luo et al., 2019; Przegalinska et al., 2019; Mari, 2019; Schmitt, 2019).

The results presented in graphs 1 and image 1, when analyzed in light of the theory explored, demonstrate the potential of VAs to improve social and technological mediation. However, the successful implementation of these systems requires attention from marketing professionals and VA developers to aspects such as security, accessibility, integrity, and accountability, as discussed in the next section.

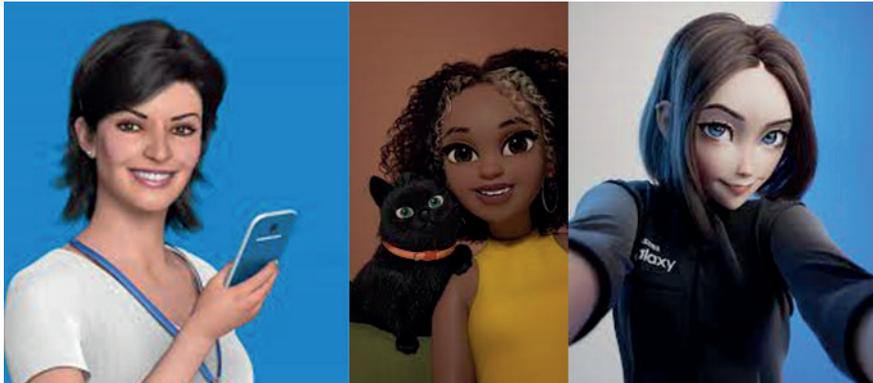
## Characteristics of the anthropomorphic virtual assistants mentioned

As mentioned in the methodology section, netnographic data collection was used in this study based on the responses from the survey. For this purpose, the four anthropomorphic VAs mentioned

were selected: Lu from the retailer Magazine Luiza; Nat from the cosmetics brand Natura; Sam from the technology company Samsung; and CB from the retailer Casas Bahia. Specifically, the focus was on analyzing the two previously defined categories: anthropomorphic signals (appearance, behavior, personality, etc.) and social presence (access channels, advantages, experiences, etc.).

The images of the VAs reflect the different branding strategies adopted by these companies. The appearance and personality of Lu (Magazine Luiza), Nat (Natura), and Sam (Samsung) are characterized by being young, smiling, relaxed and fun women (Image 2).

Image 2 - Lu from Magalu, Nat from Natura, Sam from Samsung



Source: Instagram Magalu (2023), X Natura (2023), site Samsung (2023)

The character CB (Casas Bahia) is represented by a young male, who stands out for his friendliness (Image 3).

Image 3 - CB from Casas Bahia



Source: X Casas Bahia (2023)

Table 1 presents the name of the VA, its description (personality and behavior) and the access channels through which customers can communicate with the VAs.

Table 1 - General characteristics of virtual assistants

NAME AND BRAND	DESCRIPTION	ACCESSIBILITY
Lu from Magalu	3D Virtual Influencer #Magalu Digital Specialist Content Creator	Instagram - 6,4k followers Threads – 475k followers TikTok - 7.2k followers YouTube - 2,7k subscribed Facebook - 14.7k followers X - 1,3k followers Chat on the site WhatsApp Blog
Nat from Natura	Natura Beauty Consultant, Digital Influencer, Natura Spokesperson, supporter of socio-environmental causes and Murumuru tutor.	X - 291,8k followers 0800, chat on the site and WhatsApp. Hosts videos on TikTok, posts on the brand's Instagram and Facebook, and doesn't have its own pages.
CB Casas Bahia	Hi, I'm CB. I'm passionate about games, diversity, POP culture, sustainability and Brazilian culture.	Instagram - 3,6k followers X - 214,7k followers Facebook - 5,4k followers YouTube – 687k subscribed Threads – 257k followers WhatsApp
Sam from Samsung	A native of the digital world, SAM loves technology and posts content about her life and her friends, as well as news from Samsung, the brand in which she is an expert.	Hosts videos on TikTok, posts on Instagram, and the brand's Facebook page, but no pages of its own.  There are tips on Samsung's website

Source: Instagram Magalu (2023), X Natura (2023), site Samsung (2023), X Casas Bahia (2023)

It is observed that VAs present several anthropomorphic characteristics such as personality, emotions and physical appearance, establishing an emotional connection with customers. These characteristics align with the concepts of the theoretical framework, demonstrating the positive impact of anthropomorphism on the interaction between humans and VAs. Some aspects that can be highlighted are:

**Human Appearance:** The presence of friendly faces and facial expressions in AVs contributes to the perception of a more human and pleasant interaction, simulating a mediation between humans instead of a conversation between human and machine (Araujo, 2018; Cai et al., 2022; Chérif & Lemoine, 2019; Crolc et al., 2021; Gustavsson, 2005; Youn & Cho, 2023).

**Human Names:** Human names are an important anthropomorphic aspect (Blut et al., 2021; Crolc et al., 2021; Youn & Cho, 2023). All the VAs analyzed have short, easy-to-pronounce names and are associated with/inspired by the brands they represent. According to Araújo (2018), chatbots that use human names create stronger emotional bonds between customers and companies. This effect is explained by the greater sense of social presence that these VAs convey, which results in better customer reactions (Youn & Cho, 2023).

**Natural Communication:** The language used by VAs is informal and close to human language, which facilitates interaction and creates a sense of connection. They understand the context of conversations and respond appropriately, demonstrating an understanding of the nuances of human language (Chung et al., 2022; Youn & Cho, 2023). More human and natural voices evoke more positive perceptions of the brand (Chérif & Lemoine, 2019).

**Friendly and Approachable Personality:** In the interactions of the VAs analyzed, an optimistic, positive, and motivating tone was noticeable, seeking to inspire and encourage customers, which, according to Hoyer et al (2020), Puntoni et al. (2021), is important for interaction. It can also contribute to

building relationships and positive experiences with customers (Chung et al., 2022; Kamoopuri & Sengar, 2023; Ramadan, 2021). This personality allows providing product recommendations (Akdim & Casaló, 2023), high-quality services (Noor et al., 2022), and a personalized shopping experience (Bellis & Johar, 2020; Strecker, 2024).

**Learning Capacity:** The ability of assistants to provide personalized and relevant recommendations is aligned with the concept of “captive relationship strategy”, in other words, they create a feeling of intimacy and trust that leads to greater customer engagement (Ramadan, 2021). The learning capacity of VAs, improving their skills and responses over time, makes them more useful and relevant, adapting to customers’ needs and preferences (Magno & Dossena, 2023; Noor et al., 2022).

All these aspects suggest that anthropomorphic signals can increase customer acceptance of technologies by facilitating interaction (Chung et al., 2022; Hoyer et al., 2020), increasing customer satisfaction and loyalty to brands (Magno & Dossena, 2023), contributing to creating more positive experiences (Puntoni et al., 2021) and helping to reduce barriers related to trust and acceptance (Bellis & Johar, 2020). The personification of AVs can increase the perception of value of the service provided (Akdim & Casaló, 2023). Characteristics such as empathy, trust, and personalization, reinforced by anthropomorphization, are essential for the acceptance of AVs (Kamoopuri & Sengar, 2023; Hoyer et al., 2020; Noor et al., 2022). This information is considered in the recommendations mentioned in the next section.

## Challenges and recommendations for companies

With increasing automation, it becomes relevant to find methods to develop VAs that are safe, efficient, and reliable, as highlighted by Przegalinska et al. (2019). Roy and Naidoo (2021) emphasize that, by incorporating social characteristics into VAs, customers tend to perceive brands in a more humanized way. In other words, transferring positive impressions about the assistant to the brand itself. This dynamic demonstrates the potential of VAs as strategic branding tools, since recommendations perceived as reliable and beneficial can be more effective in persuading customers, who in turn are likely to follow, acquire, and disseminate such brand information (Blut et al., 2021; Flavián et al., 2022; Guerreiro et al., 2022; Mari, 2019). After all, the integrity of information and positive emotional interactions with VAs are essential to ensure customer satisfaction and consequently strengthen the bond with the brand (Magno & Dossena, 2023).

In this context, it is important to note that the mode of interaction with a VA can influence the perception and acceptance of recommendations. Studies such as that by Flavián et al. (2022) demonstrate that voice recommendations tend to be perceived as more credible and useful than text recommendations. This difference can be explained by the greater sense of personalization and proximity provided by voice, which positively impacts purchase intentions (Chérif & Lemoine, 2019). For Chung et al. (2022) and Mari (2019), the use of VAs has accelerated the adoption of voice shopping. Similarly, Hildebrand and Bergner (2021) reinforce this perspective by observing that VAs that have conversational capabilities, unlike those that do not, influence the perception of reliability, improve company evaluations, and affect customers' financial decisions.

Thus, when developing an anthropomorphic AV, it is recommended to consider ease of use (Blut et al., 2021), correctly specify the utilities that the AV will perform (Blut et al., 2021; Flavián et al., 2022; Mari, 2019), pay attention to the credibility of the information provided (Akdim & Casaló, 2023; Chung et al., 2022; Chérif & Lemoine, 2019; Flavián et al., 2022; Magno & Dossena, 2023; Noor et al., 2022; Ramadan, 2021), ensure social presence (Akdim & Casaló, 2023; Araujo, 2018; Bellis & Johar, 2020; Blut et al., 2021; Cai et al., 2022; Chung et al., 2022; Youn & Cho, 2023; Chérif & Lemoine, 2019; Noor et al.,

2022; Van Doorn et al., 2017), include anthropomorphic cues such as physical appearance, e.g., profile pictures and naming (Schanke et al., 2021; Youn & Cho, 2023), adapt conversational styles (Hildebrand & Bergner, 2021), adopt humor (Schanke et al., 2021) and warm characteristics (Roy & Naidoo, 2021), as well as facilitate the purchasing process (Van Doorn et al., 2017) with personalization and adaptability (Akdin & Casaló, 2023; Noor et al., 2022; Puntoni et al., 2021). Thus, it is projected that customers will adopt VAs as digital consultants who understand and meet their needs, even making decisions on their behalf, as discussed by Bellis and Johar (2020).

Finally, the implementation of machine learning-based VAs requires continuous monitoring to ensure their proper functioning and evolution over time (Kamoonpuri & Sengar, 2023). In addition to the technical aspect, it is essential to consider ethical issues such as gender representation and possible algorithmic biases. The anthropomorphization of VAs, although beneficial to interaction, raises questions about the ideal of a perfect worker, young, engaged, always available, and without the need for pay or rest periods. It is also essential to ensure that VAs do not perpetuate gender stereotypes, as pointed out by Gustavsson (2005), Flavián et al. (2022), and Puntoni et al. (2021). As well as the adequate training of algorithms to meet the diverse needs and expectations of users, regardless of their age or culture (Bellis & Johar, 2020; Hoyer et al., 2020; Kamoonpuri & Sengar, 2023; Noor et al., 2022; Puntoni et al., 2021).

## Final Considerations

The objective of this study was to analyze the characteristics of anthropomorphic virtual assistants used in the Brazilian market and assess their potential to promote interaction between customers and brands. Based on this information, we seek to provide guidance for companies that wish to adopt this strategy. In practical terms, VAs are designed to interact with users using voice, text, and gestures, standing out for their ability to maintain natural and intuitive dialogues, in addition to integrating with different systems and devices, adapting and learning from users' preferences and habits. As technology advances, these devices are expected to become more popular and useful. In the survey, the VAs most used by respondents were Ok Google, Siri, Alexa, Lu do Magalu and Cortana, with the most cited advantages being practicality, ease, agility, speed, help and support. Next, the resources and access channels of VAs Lu (Magazine Luiza), Nat (Natura), CB (Casas Bahia,) and Sam (Samsung) were listed, followed by an analysis of anthropomorphic characteristics based on interactions on their social networks and other channels.

For companies, VAs become a strategic tool when communicating with customers, understanding their desires and demands, offering support, clarifying doubts, closing sales, and providing information. In addition, they reduce operational costs. However, it is crucial that VAs are customized to meet the specific needs of users. It was observed that the authors' main argument is that VAs that resemble humans more are perceived by customers as human interlocutors and not as bots. Anthropomorphism can make users more accepting of VAs, as people feel more comfortable and confident when interacting with objects that have human characteristics or behaviors. This can result in greater user engagement and satisfaction, providing a more positive experience.

Some of the challenges of implementing a VA include meeting customer expectations, ensuring that the information provided and the actions of VAs are accurate and consistent with the interests of users, and ensuring security and privacy when storing data. Finally, for VAs to be effective, they need to be designed, tested, and constantly updated, considering the profile of customers as well as the purposes of the brand. Defining an appropriate tone of voice and a specific communication style is essential to creating lasting relationships with brands. It is equally important to avoid VAs presenting biases.

To explore the impact of anthropomorphism on other aspects of user experience, such as satisfaction, usefulness, and usage intention, a quantitative study is suggested, evaluating anthropomorphic and non-anthropomorphic VAs on a satisfaction scale. A qualitative/quantitative study could also be

conducted to explore users' experience with anthropomorphic VAs, through interviews about their perceptions, feelings, and attitudes toward the assistants. Some specific questions that such studies could address include: To what extent does anthropomorphism affect users' perception that virtual assistants are trustworthy? To what extent does anthropomorphism affect users' likelihood to recommend virtual assistants to others? Are anthropomorphic virtual assistants more effective at selling products? Are they more effective at providing information? Are virtual assistants that use facial expressions more effective than those that do not? By answering these questions, research could help brands develop anthropomorphic virtual assistants that are more effective and appealing to customers.

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