Electronic Journal of Business and Management
Vol.8 Issue 1, 2023 pp. 1-14
e-ISSN:2550-1380-ISSN

Examining Anthropomorphism of Chatbots and Its Effect on User Satisfaction and User Loyalty in the Service Industry

Lee Kim Lian
Taylor's University Malaysia
Email: KimLian.Lee@taylors.edu.my

Song Bee Lian
Asia Pacific University of Technology and Innovation
Email: song.beelian@apu.edu.my

Abstract

This article provides a conceptual insight into the role of anthropomorphism of chatbots and its effect on user satisfaction and user loyalty in the service industry. Technology advancement has contributed to the increasing usage of chatbots to improve service quality, customer satisfaction and loyalty. The factor variable examined in this study is anthropomorphism, which is hypothesized towards perceived usefulness and user satisfaction. The mediating roles of perceived usefulness and user satisfaction between chatbots anthropomorphism and user loyalty will be explored. This study is expected to contribute to a conceptual framework formation that can be utilised by industry practitioners for planning and implementation of anthropomorphism of chatbots in the service industry.

Keywords: *Anthropomorphism, Chatbots, User Satisfaction, User Loyalty, Artificial Intelligence, Perceived Usefulness.*

1.0 Introduction

As a consequence of the relevance of artificial intelligence (AI), along with advances in technology, chatbots are predicted to be dominant in businesses (Neuhofer, Magnus & Celuch, 2020). Within the framework of AI, the role of chatbots is in between "chat" and "robot". Chatbots are designed to stimulate human-to-human dialogue, particularly over the internet based on the software programming.

Nowadays, anthropomorphism engagement on chatbots has been growing throughout the industry which has led to an increasing obligation for businesses to step up their game by implementing chatbots. The main aim of this research is to allow a better understanding of the relationship between the anthropomorphism of chatbots and its effect on user satisfaction and consumer loyalty in the service industry. Most chatbots allow users to converse and interact via their mobile devices and allow communication through live chat (Wang & Petrina, 2013).

Customers may use a chatbot service to help solve technical issues, and some basic problems, and obtain information about the product. Moreover, chatbots provide personalised support with high-quality service that is always available to satisfy consumer demands 24/7 (Chung et al., 2018). The implementation of chatbots can bring benefits by improving user satisfaction and have the potential to meet consumer needs leading to sustainable user loyalty.

1.1 Problem statement

Recently, researchers have been analysing the effectiveness of chatbots that have been implemented into human-to-human interaction in various service industries (Gnewuch et al., 2018). In doing so, they found that anthropomorphism had a profound influence on user satisfaction and user loyalty. Several methods have been used to increase user satisfaction in the customer service industry, including human-to-human interaction, the implementation of knowledge base systems, and the implementation of chatbots (Adam et al., 2020). Chatbots are computer programs that can interact with customers in a simulated conversation while attempting to solve problems. As more businesses and consumers engage with chatbots, there will be a growing market for smarter chatbot development. It is imperative to comprehend how equipping conversational agents with anthropomorphic designing cues influences public perception of bots, and how these perceptions, in turn, affect how consumers feel about organisations that utilise chatbots.

In empirical studies on chatbot design, anthropomorphism has been applied to analyse how humanlike and non-human-like chatbot design could elicit diverse perspectives and behaviour among users. Various research has been undertaken on the impact of anthropomorphism in chatbot adoption, designing cues that influence consumer acceptance, and usage intention (Sheehan et al., 2020; Go & Sundar, 2019; Rietz et al., 2019; Araujo, 2018). However, little research has been done on the effect of anthropomorphism on chatbots as well as the mediating effect of the perceived usefulness of chatbots on anthropomorphism. The study aims to investigate if there is a significant difference in the level of consumer satisfaction and loyalty between users that interacted with a human or a chatbot. Moreover, it also examines if this difference exists due to the extent to which the service industry operator has attempted to anthropomorphise their chatbot.

1.3 Research Questions

The research questions are formed for this study as stated below:

RQ1: Does anthropomorphism increase consumers' perceived usefulness of chatbots?
RQ2: What is the impact of chatbots anthropomorphism on user satisfaction?
RQ3: Is the relationship between chatbots anthropomorphism and user satisfaction mediated by perceived usefulness?
RQ4: How does user satisfaction mediate the relationship between chatbots anthropomorphism and user loyalty?

1.4 Research Objectives

The following research objectives are developed:

RO1: To investigate the effect of anthropomorphism towards consumers' perceived usefulness.
RO2: To understand the impact of chatbots anthropomorphism on user satisfaction.

RO3: To examine the mediating effect of consumers' perceived usefulness on the relationship between chatbots anthropomorphism and user satisfaction.
RO4: To analyse the mediating effect of user satisfaction on the relationship between chatbots anthropomorphism and user satisfaction.

1.5 Significance and Justification of Research

The research aims to perceive the anthropomorphism of chatbots in the service industry and its effect on user satisfaction and user loyalty in the service industry. This study is to discover whether chatbots will have an impact on user satisfaction, perceived usefulness and user loyalty in the service industry. The research conducted is to have greater insight into understanding the mediating effects of perceived usefulness and user satisfaction. Furthermore, we hope that this research could give a better insight into the sustainability of the implementation of chatbots to bring more benefits towards the service industry. This study will also benefit the service industry by educating and guiding them on the importance of chatbots.

2.0 Literature Review

2.1 Anthropomorphism

Anthropomorphism is known as the attribution of human traits, emotions, and intentions to non-human entities or agents (Guthrie, 1993; Duffy, 2003, p. 180). Anthropomorphism exists in cultures around the world and appears in many forms of art, including fiction, literature, and music. This phenomenon can be explained as a natural human propensity to apply anthropocentric knowledge into making unfamiliar actors more understandable (Epley et al., 2007; Pfeuffer et al., 2019). Based on that, the use of language by a chatbot is expected to elicit attributions of human likeness via the psychological process known as anthropomorphism (Kiesler et al., 2008; Nass, 2004).

For decades, anthropomorphism has been a key factor in the development of chatbots. This is because anthropomorphism is linked to a broad array of motivations that are inherent to the human experience. Previous literature has associated chatbot anthropomorphism with positive consumer evaluation, and the capability of chatbots to deliver more human-like cues, resulting in higher degrees of emotional connection in service encounters (Araujo, 2018). Despite the widespread usage of chatbots as a customer service tool, a recent study found that almost half of the business decision-makers (47%) consider that basic chatbot interactions limit their ability to enhance the customer experience (Matthews, 2021).

This implies that chatbots' conversational capabilities and sophistication are the main focus for providing a high-quality consumer experience and satisfaction. For this reason, Rietz, Benke, and Maedche (2019) highlight the relevance of making design decisions about the agent's "chatting behaviour." Furthermore, Wang, Zhao, Qiu and Zhu. (2014) posits that seemingly little aspects of a chatbot's conversational behaviour, such as social cues, have a major impact on the agents' effect on users (consumer satisfaction and loyalty). Social cues are used as an agent's anthropomorphic element, resulting in improved social presence. Thereby, firms should carefully evaluate and implement the ideal chatbot in terms of intelligence and position in the customer experience to maximise overall user satisfaction.

2.2 Perceived Usefulness

The term "perceived usefulness" refers to a customer's belief that adopting a certain technology would enhance his or her activities and improve the performance of specific tasks (Zarouali et al., 2018; Kasilingam, 2020). In the context of chatbots, "performance" refers to the benefits derived from their use, such as problem resolution via rapid service help and time savings via real-time information (Ashfaq et al., 2020). It is derived from the definition of "useful", which means "capable of being used successfully" (Davis, 1989).

With the increased use of chatbots in recent years, scholars have begun to examine the effect of consumers' perceived usefulness on consumer attitude and adoption, typically using the Technology Acceptance Model (TAM) as one of its key determinants (Davis, 1989; Kasilingam, 2020; Arajo & Casais, 2020; Liu & Tao, 2021; Ashfaq et al., 2020). Perceived usefulness is also a critical factor in innovation adoption since it is associated with the utilitarian value that technology provides to customers (Amin et al., 2014). Simultaneously, perceived usefulness influences customers' desire to utilise chatbots positively (Selamat & Windasari, 2021; Liu & Tao, 2021). Usability is undoubtedly a significant factor related to a favourable attitude toward chatbots (Brachten et al., 2021; Arajo & Casais, 2020). Apart from perceived usefulness's direct consequences, its mediating influence is researched in a variety of disciplines, including user performance in information systems (Blut et al., 2020). Chatbots are a type of technology and perceived usefulness plays a critical role in mediating the relationship between satisfaction and technology adoption (Ashfaq et al., 2020; Blut et al., 2020).

2.3 User Satisfaction

User satisfaction is described as a broad sense of pleasure associated with routine media-consuming behaviour that includes long-term average outcome expectations (Cheng & Jiang, 2020). Satisfaction, according to Blut, Wang, Wünderlich and Brock (2020), is an emotional state that results from a customer's appraisal of a company's service. Amin, Rezaei, and Abolghasemi (2014) defined satisfaction as a customer's evaluation of a brand based on their interactions and experiences with the brand. User satisfaction is defined in this study as the chatbot user's overall good experience with and sentiment toward the chatbot's services.

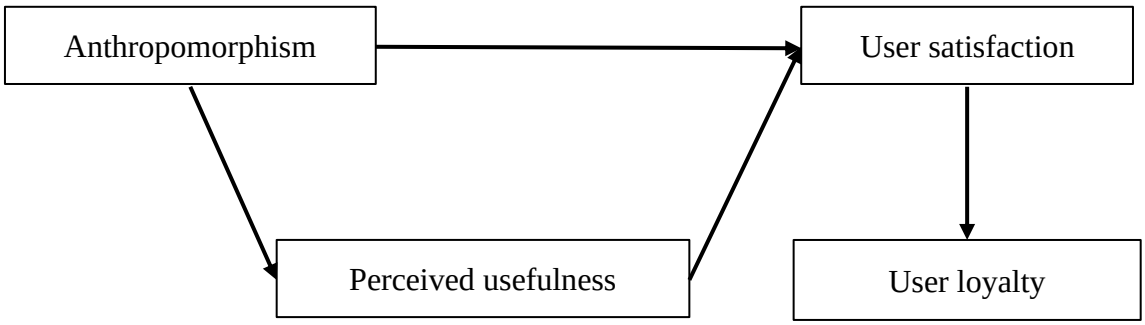
In a communication study, it was discovered that user satisfaction is a critical predictor of user experience. It is mostly used inside the realm of business to determine the extent to which items or services meet client expectations (Chung et al., 2018). However, only a few studies have explored the influence of user satisfaction in human-robot interaction (HRI) studies (Blut et al., 2020). Utilitarian, hedonic, technological, and social gratifications all have an effect on user satisfaction (Cheng & Jiang, 2020; Barnes & Vidgen, 2014). According to Chung, Ko, Joung and Kim (2018), clients appreciate when luxury brand chatbots can deliver pertinent and professional product information. As a consequence, user satisfaction increased, demonstrating that digital services such as chatbots may help improve consumer connection, contentment, and purchasing experience. Additionally, the quality of service influences the customer's trust in chatbots, which has an effect on user satisfaction (Kim & Chang, 2020). Due to the fact that consumers are the primary concern for businesses, firms must guarantee that regardless of where their target customers are or what they do, they receive high-value-added services to ensure user satisfaction (Amin et al., 2014).

2.4 User Loyalty

User loyalty can be referred to as fundamentals of business essentials where it measures the overall experience through relationship norms between business and individuals. The word "loyalty" itself can be defined broadly as a domain of dedication towards a specific branding, people or group. Loyalty relates to a customer's willingness to repeat patronage and tendency to recommend products to others (Kang et al., 2015). The ability to create loyalty in consumers is the end goal and the ultimate objective for many market industries to sustain their business through continued use because of user satisfaction. In communication research, loyalty has been studied as a non-random consumer behavioural reaction that explains consumers' long-term commitment to a brand even when they are largely exposed to other competitors in the market (Oliver, 1997).

AI is linked with workforce and user satisfaction due to the ability to provide fast and relevant information to clients and the ability of an AI to handle multiple queries from various users 24/7 with accurate personalised conversations. Therefore, the service reflects the fulfilment of chatbots services to score a high satisfaction from the consumer which will immediately increase the rate of satisfied users who can turn into loyal customers. Thus, gaining user loyalty from servicing by AI vividly shows that AI plays an important role in influencing user satisfaction by building brand credibility and boosting engagement (Prentice & Nguyen, 2020). A chatbot service nurtures relationships between the industry and the clients where user loyalty is mostly determined by the relationships formed between sales, service personnel and the consumer (Youn & Jin, 2021).

Figure 1. Conceptual model



2.5 Hypothesis development

2.5.1 Anthropomorphism

Recent research suggests that anthropomorphism represents a significant component in chatbot design as well as an antecedent of customer decision-making and usage intention (Novak & Hoffman, 2019; Han, 2021). According to Epley, Waytz and Cacioppo (2007), anthropomorphism can increase the perceived usefulness of a robot by strengthening its social connection. A direct impact of anthropomorphism on usefulness is consistently supported by the literature. In line with the academics' research, perceived usefulness may be higher when specific tasks, such as rapid service and immediate product recommendations, are successfully performed (Selamat & Windasari, 2021). Past studies discovered that the anthropomorphic

chatbot design promotes customer engagement as it "incorporates the fundamental concepts and expectations individuals utilise in social contexts to fine-tune the interaction between social robots and humans" (Duffy, 2003, p. 181). Thus, the first hypothesis:

H1: Anthropomorphism of chatbots has a positive impact on perceived usefulness in the service industry.

User satisfaction is determined by the difference between expected service performance and perceived service delivery performance. Researchers found that people perceive human-like robots as better utility and capable than machine-like robots (Canning, Donahue & Scheutz, 2014; Stroessner & Benitez, 2019). Moreover, service interactions that are facilitated by social chatbots have a higher level of responsiveness since chatbots can provide instant and real-time responses (Chen, Le, & Florence, 2021). As compared to previous online service experiences, chatbots can alleviate the absence of interpersonal connection by generating perceptions of social presence and customization (Adam et al., 2020). Given the central role of satisfaction in service encounters and its proven effect on user behavioural intentions, it is recommended that:

H2: Anthropomorphism of chatbots has a positive impact on user satisfaction in the service industry.

2.5.2 Perceived Usefulness

Earlier research showed that anthropomorphism enhances perceived usefulness (Kim et al., 2021; Blut et al., 2020; Konstanta, 2020). According to Epley, Waytz, and Cacioppo (2007), anthropomorphism enhances the perceived usefulness of chatbots by instilling a sense of effectiveness, which facilitates engagement, and by establishing social ties, which foster a sense of social connection. Similarly, Selamat and Windasari (2021) discovered that anthropomorphic signals in chatbots such as conversational language and emoticons boost perceived usefulness. The beneficial effect of anthropomorphism on perceived usefulness implies that customers have more trust in the potential of more humanlike chatbots to deliver superior services, resulting in increased user satisfaction (Blut et al., 2020).

Only a little amount of study has been conducted on the effect of perceived usefulness in mediating anthropomorphism. Kim, Merill, and Collins (2021) discovered a mediating influence between the perceived usefulness of functional versus social chatbots. Additionally, Blut et al. (2020) discovered that perceived usefulness is a crucial mediator of anthropomorphism in AI. In comparison, Konstanta (2020) concluded that perceived usefulness is not a mediator of advertising chatbot anthropomorphism since no mediation effect was seen. However, no research was done on the mediating influence of perceived usefulness on the anthropomorphism of chatbots in the service business. Thus, the third hypothesis:

H3: Perceived usefulness mediates the relationship between chatbot anthropomorphism and user satisfaction in the service industry.

2.5.3 User Satisfaction

Few studies have looked at the mediating influence of user satisfaction on anthropomorphism, with Blut et al. (2020) demonstrating a high mediating effect of user pleasure on chatbot

anthropomorphism. Additionally, Cheng and Jiang (2020) discovered that user satisfaction has a significant mediating influence on the gratifications acquired by chatbots. When a robot is seen to be more humanlike or anthropomorphic, humans approach it as a genuine person and expect it to have human intellect. However, as their expectations of the robot's human skills grow, people are more likely to be disappointed when the robot does not live up to those expectations (Blut, et al., 2020).

Numerous studies discovered that perceived usefulness is a significant predictor of user satisfaction when it comes to information systems and websites (Wu & Huang, 2015; Barnes & Vidgen, 2014; Amin et al., 2014). A similar approach may be extended to the context of chatbot services based on these findings. According to Nguyen, Chiu and Le (2021), perceived usefulness is a factor in determining customer happiness with chatbot services. Wu and Huang (2014) discovered that perceived usefulness is critical in assessing user satisfaction and in deciphering users' loyalty intentions when it comes to online buying. Given user satisfaction's essential role and effect on anthropomorphism and perceived usefulness, it is added as a mediator and offers the following two hypotheses:

H4: User satisfaction mediates the relationship between chatbot anthropomorphism and user loyalty in the service industry.

H5: User satisfaction mediates the relationship between perceived usefulness of chatbots and user loyalty in the service industry.

2.5.4 User Loyalty

Studies showed that the rate of user loyalty increases with user satisfaction (Yu, 2021). According to the expectancy-confirmation model, consumers may be satisfied if product or service performance exceeds their expectations thus leading to long-term loyalty (Cheng & Jiang, 2020). Chang and Zhu (2012) found that user loyalty and continuance intention on using social networking service (SNS) chatbot was positively influenced by user satisfaction. Similarly, the Chatbot services help the potential consumer understand what they need, and what the business can supply and the buyer is pleased that their problem was resolved quickly.

Thus, users experienced a sense of satisfaction as they compromise the chatbot which will positively encourage user loyalty and long-term commitment towards using the chatbot. In a service context, if a chatbot serves customer requirements in the short term, engagement is relatively long-term and fosters user loyalty with the businesses. Looking at the results of research on chatbot engagement, we find that user perception and attitudes play an important role as a parameter that makes up the relevant quality reliability that influences user loyalty towards AI (Sprott, Czellar & Spangenberg, 2009). Based on the above-mentioned evidence between satisfaction and loyalty to continued use, it is proposed that:

H6: User loyalty is positively impacted by user satisfaction of chatbots in the service industry.

3.0 Research Methodology

3.1 Research Design and Paradigm

The research design for this study uses a quantitative approach that emphasises objectivity in data collection by using questionnaires to collect primary data. The quantitative data is generated using a series of pre-programmed questions derived from statistical data that has been analysed and extracted. This enables us to collect the most complete and accurate data in a logical flow. Moreover, the research design is commonly referred to as the positivist paradigm, which assumes a quantitative methodology. Under the positivist paradigm, the goal of the research is to forecast results, test hypotheses, or evaluate the strength of correlations between variables. Finally, we analysed the data using a combination of descriptive statistics, correlation research, and multiple regression techniques.

3.2 Methodology

A quantitative study was undertaken based on the research topic, gathering numerical data to assess the relationships between chatbot anthropomorphism, perceived usefulness, user satisfaction and user loyalty. Subsequently, a convenience sampling method is used, and data is gathered through an online survey. The instrument was chosen for its ability to collect data more quickly and efficiently than traditional methods. The data was then evaluated using computing rationale and branching technology for exponentially more accurate survey data collection.

3.3 Sampling

Since the research area is still in its exploration stage, a non-probability sampling method with a convenience sampling technique is more fitting (Selamat & Windasari, 2021). Chatbots are typically used when individuals are online, such as on websites and social media. Hence, we distribute the survey via the service Qualtrics Surveys which enables a larger reach of participants using various tools such as email, web page or social network. Using its Online Panel distribution feature, a custom pre-screening of respondents can be applied to ensure a higher generalisability of the data (Brachten et al., 2021).

In line with the latter aspect, the target population are customers who have experience with using chatbots in service businesses such as healthcare, banking, tourism and telecommunication. Individuals between 18 to 40 years old are targeted as the age group is more likely to have internet access to use chatbots and answer the questionnaire. Filter questions such as “Have you used chatbots in service businesses?” are included to easily identify invalid data and increase reliability. With a population size of 3.6 million people in Malaysia who are engaged in the services sector (DOSM, 2021), the sample size is 385 respondents with a 95% confidence level and 5% margin of error. A total of 1,500 questionnaires will be handed out via Qualtrics.

3.4 Data Collection

Our research information is collected through primary data from the survey. The research instruments used in the questionnaire have been listed in Table 1. Cronbach Alpha will be used to analyse the reliability of the constructs with the rule of thumb that it must be above 0.70

(Selamat & Windasari, 2021). The target audience of the survey is customers who have experience in using chatbots in service businesses with the age range of 18 to 40 years old. The survey is received through email, web page and social network via Qualtrics Survey. Considering that some respondents might forget to answer the online questionnaire, we will set up a constant reminder for them to achieve substantial responses for this study. All constructs of the survey were assessed on a seven-point Likert scale varying from strongly disagree (1) to strongly agree (7).

Table 1. Research Instrument

Constructs	Operational Definition	Items	Source
Anthropom-orphism	The presence of social interactions between chatbots and customers.	• The conversations I have with chatbots are as if I have a dialogue with a real human being. • My interactions with chatbots that I use feels natural. • The chatbot I use is like understanding who the chatbot is interacting with. • Conversations with chatbots that I use that don't seem artificial.	Selamat and Windasari (2021)
Perceived Usefulness	Determines how helpful chatbots are in solving users' problems.	• Chatbots that I used provide good-quality information. • Chatbots that I used improve my performance in finding the information and services that I need. • Chatbots that I used increased my effectiveness in finding information about the business. • Chatbots that I used are useful for doing transactions, and getting information.	Selamat and Windasari (2021)
Constructs	**Operational Definition**	**Items**	**Source**
User Satisfaction	Occurs when customers find that products or services meet or exceed their positive expectations.	• I am satisfied with chatbots. • I am content with chatbots. • Chatbots did a good job. • Chatbots did what I expected. • I am happy with chatbots. • I was satisfied with the experience of talking with the chatbots.	Chung et al. (2018)

User Loyalty	Describes customers' long-term commitment to "re-buy[ing] or re-patrsonis[ing]" their preferred brands even when they are exposed to the marketing efforts of other competitive brands.	• I intend to keep purchasing products/services from this brand. • I will recommend this brand to others. • I will expand using other products/services of the brand. • I consider myself to be loyal to the brand.	Cheng and Jiang (2020)

3.5 Data Analysis Technique

Under data analysis techniques, we plan to use correlation research, descriptive statistics, and multiple regression techniques to analyse the data. The correlation research examines if there is a relationship connection between two variables with statistical analysis. The correlation coefficients can be between -1 to +1. The significance where the smaller the value, the less error in the relationships between variables under study. Subsequently, a descriptive analysis will be used to summarise the data points in such a way that patterns emerge that satisfy all of the data's conditions and compile the validity of the data. Descriptive statistics were utilised to summarise the data to compute and compile the validity and mean of data such as gender, age, education level etc. Besides that, the multiple regression techniques allow researchers to evaluate the relationship between variables. To check these hypotheses, multiple regression could be run such that we use anthropomorphism (independent variables) and user satisfaction (dependent). After performing the calculation analysis, we could identify whether there are any significant effects between the two variables.

4.0 Conclusion

This research will be beneficial for industry practitioners that wish to understand the role of anthropomorphism of chatbots and its effect on user satisfaction and user loyalty in the service industry. Limitations in this study include the variables used that are confined to anthropomorphism, perceived usefulness, user satisfaction and user loyalty. Hence, it is proposed that future studies should explore other consumer behavioural outcomes such as user repurchase intention and brand preference.

5.0 References

Adam, M., Wessel, M. & Benlian, A. (2020). AI-based chatbots in customer service and their effects on user compliance. *Electronic Markets*, 31, 427-445.

Amin, M., Rezaei, S. & Abolghasemi, M. (2014). User satisfaction with mobile websites: the impact of perceived usefulness (PU), perceived ease of use (PEOU) and trust. *Nankai Business Review International*, 5(3), 258-274.

Araujo, T. (2018). Living up to the chatbot hype: The influence of anthropomorphic design cues and communicative agency framing on conversational agent and company perceptions. *Computers in Human Behavior*, 85, 183–189.

Araújo, T. & Casais, B. (2020). Customer acceptance of shopping-assistant chatbots. *Marketing and Smart Technologies*, 26, 278-287.

Ashfaq, M., Yun, J., Yu, S. & Loureiro, S. M. C. (2020). I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. *Telematics and Informatics*, 54, 101473.

Barnes, S. J. & Vidgen, R. T. (2014). Technology socialness and Web site satisfaction. *Technological Forecasting and Social Change*, 89, 12–25.

Blut, M., Wang, C., Wünderlich, N. V. & Brock, C. (2020). Understanding anthropomorphism in service provision: a meta-analysis of physical robots, chatbots, and other AI. *Journal of the Academy of Marketing Science*, 49, 632-658.

Brachten, F., Kissmer, T. & Stieglitz, S. (2021). The acceptance of chatbots in an enterprise context–A survey study. *International Journal of Information Management*, 60, 102375.

Canning, C., Donahue, T.J., and Scheutz, M. (2014). Investigating human perceptions of robot capabilities in remote human-robot team tasks based on first-person robot video feeds. In Proceedings of intelligent robots and systems, L. Kevin and P. Lynne (eds.), Chicago, IL: Institute of Electrical and Electronics Engineers (IEEE), Curran Associates, Inc, 4354-4461.

Chang, Y. P. & Zhu, D. H. (2012). The role of perceived social capital and flow experience in building users' continuance intention to social networking sites in China. *Computers in Human Behavior*, 28(3), 995–1001.

Chen, J. S., Le, T. T. Y., & Florence, D. (2021). Usability and responsiveness of artificial intelligence chatbot on online customer experience in e-retailing. International Journal of Retail & Distribution Management, Early Access, 20.https://doi.org/10.1108/ijrdm-08-2020-0312

Cheng, Y. & Jiang, H. (2020). How Do AI-driven Chatbots Impact User Experience? Examining Gratifications, Perceived Privacy Risk, Satisfaction, Loyalty, and Continued Use. *Journal of Broadcasting & Electronic Media*, 64(4), 592-614.

Chung, M., Ko, E., Joung, H. & Kim, S. J. (2018). Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research*, 117(C), 587-595.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 13(3), 319-340.

Department of Statistics Malaysia (2021). *Income of e-commerce transactions and revenue of the services sector, second quarter 2021*. Available at: https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=398&bul_id=N0lmN091L2w2VmlYQTZtZGErczNWdz09&menu_id=b0pIV1E3RW40VWRTUkZocEhyZ1pLUT09 [Accessed 30 October 2022].

Duffy, B. R. (2003). Anthropomorphism and the social robot. *Robotics and Autonomous Systems*, 42(3-4), 177–190.

Epley, N., Waytz, A. & Cacioppo, J. T. (2007). On seeing human: a three-factor theory of anthropomorphism. *Psychological review*, 114(4), 864-886.

Gnewuch, U., Morana, S., Adam, M. T. & Maedche, A. (2018). Faster is not always better: understanding the effect of dynamic response delays in human-chatbot interaction, Paper presented at the 26th European Conference on Information Systems: Beyond Digitization-Facets of Socio-Technical Change, ECIS 2018, Portsmouth, UK, June 23-28. [Accessed 30 October 2022].

Go, E. & Sundar, S. S. (2019). Humanizing chatbots: The effects of visual, identity and conversational cues on humanness perceptions. *Computers in Human Behavior*, 97, 304-316.

Guthrie, S. E. (1993). *Faces in the clouds: A new theory of religion*. New York and Oxford: Oup USA.

Han, M.C. (2021). The Impact of Anthropomorphism on Consumers' Purchase Decision in Chatbot Commerce. Journal of Internet Commerce,20(1), 46-65.

Kang, L., Wang, X., Tan, C. H. & Zhao, J. L. (2015). Understanding the antecedents and consequences of live chat use in electronic markets. *Journal of Organizational Computing and Electronic Commerce*, 25(2), 117-139.

Kasilingam, D. L. (2020). Understanding the attitude and intention to use smartphone chatbots for shopping. *Technology in Society*, 62, 101280.

Kiesler, S., Powers, A., Fussell, S. & Torrey, C. (2008). Anthropomorphic interaction with a robot and robot-like agent. *Social Cognition*, 26(2), 169-181.

Kim, J., Merrill Jr, K. & Collins, C. (2021). AI as a friend or assistant: The mediating role of perceived usefulness in social AI vs. functional AI. *Telematics and Informatics*, 64, 101694.

Kim, M. & Chang, B. (2020). The Effect of Service Quality on the Reuse Intention of a Chatbot: Focusing on User Satisfaction, Reliability, and Immersion. *International Journal of Contents*, 16(4), 1-15.

Konstanta, S. (2020). *The effects of anthropomorphism and personalization in the context of conversational advertising* [Doctoral thesis. Copenhagen Business School, Denmark]. Available at: https://research-api.cbs.dk/ws/portalfiles/portal/66715816/879654_ The_ effects_of_athropomorphismand_personalization_in_the_contextof_conversational_a dvertising.pdf [Accessed 20 September 2022].

Liu, K. & Tao, D. (2021). The roles of trust, personalization, loss of privacy, and anthropomorphism in public acceptance of smart healthcare services. *Computers in Human Behavior*, 127, 107026.

Matthews, J. (2021). *Chatbot Challenges: Five Steps For Improving The Customer Conversation*. Available at: https://tbtech.co/innovativetech/artificial-intelligence /chatbot-challenges-five-steps-for-improving-the-customer-conversation/ [Accessed 24 October 2022].

Nass, C. (2004). Etiquette Equality: Exhibitions and expectation of computer politeness. *Communications in Computer and Information Science*, 47(4), 35-37.

Neuhofer, B., Magnus, B. & Celuch, K. (2020). The impact of artificial intelligence on event experiences: a scenario technique approach. *Electronic Markets*, 31, 601-617.

Nguyen, D. M., Chiu, Y. T. H. & Le, H. D. (2021). Determinants of Continuance Intention towards Banks' Chatbot Services in Vietnam: A Necessity for Sustainable Development. *Sustainability*, 13(14), 7625.

Novak, T. P., & Hoffman, D. L. (2019). Relationship journeys in the internet of things: A new framework for understanding interactions between consumers and smart objects. Journal of the Academy of Marketing Science, 47(2), 216–237.

Oliver, R, L. (1981). Measurement and evaluation of satisfaction processes in retail settings. *Journal of Retailing*, 57(3), 25–48.

Pfeuffer, N., Adam, M., Toutaoui, J., Hinz, O. & Benlian, A. (2019). Mr. and Mrs. Conversational Agent - Gender stereotyping in judge-advisor systems and the role of egocentric bias. Paper presented at the International Conference on Information Systems, Munich. Available at: https://core.ac.uk/reader/301383720 [Accessed 10 November 2022].

Prentice, C. & Nguyen, M. (2020). Engaging and retaining customers with AI and employee service. *Journal of Retailing and Consumer Services*, 56, 102186.

Rietz, T., Benke, I. & Maedche, A. (2019). The Impact of Anthropomorphic and Functional Chatbot Design Features in Enterprise Collaboration Systems on User Acceptance. Available at: https://core.ac.uk/download/pdf/301381011.pdf. [Accessed: 10 October 2022].

Selamat, M. A. & Windasari, N. A. (2021). Chatbot for SMEs: Integrating customer and business owner perspectives. *Technology in Society*, 66, 101685.

Sheehan, B., Jin, H. S. & Gottlieb, U. (2020). Customer service chatbots: Anthropomorphism and adoption. *Journal of Business Research*, 115, 14–24.

Sprott, D., Czellar, S. & Spangenberg, E. (2009). The importance of a general measure of brand engagement on market behavior: Development and validation of a scale. *Journal of Marketing Research*, 46(1), 92-104.

Stroessner, S. J., & Benitez, J. (2019). The social perception of humanoid and non-humanoid robots. International Journal of Social Robotics, 11(2), 305–315

Wang, W., Zhao, Y., Qiu, L. & Zhu, Y. (2014). Effects of emoticons on the acceptance of negative feedback in computer-mediated communication. *Journal of the Association for Information Systems*, 15(8), 454-483.

Wang, Y. F. & Petrina, S. (2013). Using learning analytics to understand the design of an intelligent language tutor–Chatbot lucy. *Editorial Preface*, 4(11), 124-131.

Wu, I. L. & Huang, C. Y. (2015). Analysing complaint intentions in online shopping: the antecedents of justice and technology use and the mediator of customer satisfaction. *Behaviour & Information Technology*, 34(1), 69-80.

Youn, S. & Jin, S. V. (2021). In A.I. we trust?" The effects of parasocial interaction and technopian versus luddite ideological views on chatbot-based customer relationship management in the emerging "feeling economy. *Computers in Human Behavior*, 119, 106721.

Yu, J. (2021). The moderating role of perceived risk between AI chatbots, purchase intentions and customer loyalty in customer service [Doctoral dissertation, Auckland University of Technology]. Available at: https://openrepository.aut.ac.nz/handle/10292/14571 [Accessed: 11 November 2022].

Zarouali, B., Van den Broeck, E., Walrave, M. & Poels, K. (2018). Predicting consumer responses to a chatbot on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 21(8), 491-497.