



The “Other” Agent: Interaction with AI and Its Implications on Social Presence Perceptions of Online Customer Experience

Bianca Kronemann¹(✉), Hatice Kizgin^{1,2,3}, and Nripendra Rana^{1,2,3}

¹ Faculty of Business, Law and Politics, University of Hull, Hull HU6 7RX, UK
bianca.kronemann@googlemail.com

² Faculty of Behavioural, Management and Social Sciences, University of Twente,
7500AE Enschede, The Netherlands

³ College of Business and Economics, Qatar University, 2713 Doha, Qatar

Abstract. Advancements in Artificial Intelligence (AI) such as digital assistants and conversational agents are being adopted fast and wide across consumer industries such as e-commerce, where they act as frontline service agents and interact with customers in service encounters. It is suggested that technology is no longer only the mediator of communication between customers and a company but has potential to become the “other” with whom customers interact. Based on this idea, this research adopts Social Response Theory to measure the effects of anthropomorphism of AI, para-social interaction with AI and personalization on perceived social presence of the customer experience, customer loyalty and intentions to engage in eWOM. An online survey with a sample of online consumers, who have previously engaged with a form of AI-technology, is conducted. Quantitative analysis of the data through CFA and SEM shows that perceived social presence has a strong effect on both customer intentions to engage in eWOM and customer loyalty. Further, social presence serves as a mediator for the relationship between an anthropomorphism of AI and para-social interaction with AI on eWOM intentions and customer loyalty. A discussion of these findings and implications concludes this paper.

Keywords: Artificial Intelligence (AI) · Customer experience · Customer loyalty · Social presence · Social response theory

1 Introduction

The fourth industrial revolution witnesses a fast and widespread adoption of Artificial Intelligence (AI) as a disruptive technology that contributes to accelerating the shift towards a more algorithmic society (Huang and Rust 2018; Shankar 2018). Advancements in AI are being utilized across several consumer industries such as e-commerce and digital marketing. A popular application of AI in marketing are digital assistants also known as conversational agents (CAs), chatbots, virtual assistants, or dialogue systems (Rai 2020; Thomaz et al. 2020). These agents are designed to approximate human

speech and interact with people via a digital interface (Thomaz et al. 2020). They have the advantage of being highly scalable and the ability to deliver routine customer service to large numbers of people simultaneously (Davenport et al. 2020; Duan et al. 2019; Wilson and Daugherty 2018). Human-less transaction mediated by intelligent technology is growing in numbers and frequency (Hofacker and Corsaro 2020). However, research relating to the impact of AI and AI-enabled assistants, is still developing and relatively sparse (Davenport et al. 2020; Steinhoff et al. 2019).

Boden (2006) and Riskin (2007) state that from antiquity, humans have theorised about what it means to be human in contrast to artefacts made by humans. Key characteristics distinguishing human-made items from humans on an ontological dimension is the ability to communicate and experience emotion, yet, technology can now recreate communication in human-like ways, thus challenging existing paradigms (Edwards et al. 2019; Guzman 2020). Guzman (2020) argue that research into human-machine communication must re-examine interaction encounters and consider communicative technologies from a new perspective. Therefore, consistent with above discussion, this current study adapts Social Response Theory (SRT) to gain new insights of how people relate to AI because “communication is fundamental to both theory and practice of AI” (Gunkel 2012, p. 2). SRT posits that people relate to technologies as if they are people (Nass and Moon 2000; Reeves and Nass 1996). SRT is also known as Computers As Social Actors (CASA) paradigm because it states that humans mindlessly respond to computers in the same way as to humans if social cues are displayed. This research is anchored in SRT/CASA because this research is built on the assumptions that interaction with conversational agents is similar to human to human interaction and could approach relational nature. By adopting SRT/CASA as theoretical lens, this study contributes to the growing discussion in the marketing literature around consumers’ interaction with AI-based digital assistants such as conversational agents, customer experience and customer loyalty. Literature relating to AI and related technologies is still in early stages (Grewal et al. 2020; Yadav and Pavlou 2020), thus, this study expands existing theory by investigating effects of AI on social presence perceptions of customer experience and customer loyalty. In contrast to previous research, which is mostly conceptual in nature, this study quantifies the impact of AI on customer experience and customer loyalty. In addition, the effects on electronic word of mouth (eWOM) are considered.

The remaining parts of this paper are structured into four sections: Firstly, a critical review of existing literature highlights the current state of knowledge in the areas of AI, customer experience and customer loyalty, which provides the background of this study and allows for the development of hypotheses. Following upon this, the research methods and methodology are outlined. Results are presented to confirm or reject the proposed hypotheses. A discussion of findings and implications follows and a brief summary concludes this paper.

2 Literature Review

2.1 AI-Based Agents

Interaction between AI-based service agents and consumers is becoming a central topic of discussion in the marketing and service literature. AI-based agents are addressed in

academic literature under a variety of names such as conversational agents, chatbots, dialogue systems, (voice based) digital assistant and sometimes virtual assistants. These agents are natural language processing programs which are designed to approximate human speech and interact with humans via a digital interface (Rai 2020; Thomaz et al. 2020). Companies adopt these agents as new front-facing customer service that interact with consumers during service encounters (Thomaz et al. 2020; van Doorn et al. 2017; Wilson and Daugherty 2018). Ramaswamy and Ozcan (2018) as well as Haenlein and Kaplan (2019) suggest that AI will fundamentally change the nature of interaction between companies and their customers. Intelligent agents are adopted due to the underlying idea that they can enhance both the experience (Brandtzaeg and Følstad 2018; Hofacker and Corsaro 2020) as well as the outcome of consumer interaction with a company (Bleier et al. 2019; Thomaz et al. 2020). However, research relating to the impacts and outcomes of the integration of AI-based technology in the consumer context is sparse and still developing.

2.2 Anthropomorphism, Para-Social Interaction and Personalisation

A large body of marketing and consumer behaviour literature considers the topic of anthropomorphism (e.g. Aggarwal and McGill 2007; Epley et al. 2007; Kim and McGill 2018; Lu et al. 2019) because it represents an opportunity for marketers to affect consumption or affect consumer experience related to consumption (Epley 2018). Anthropomorphism refers to the level of an object's humanlike characteristics such as human appearance, self-consciousness and emotion (Kim and McGill 2018). Previous research argues that anthropomorphism is an important determinant of consumer behaviour (Epley 2018; Lu et al. 2019; van Doorn et al. 2017). Based on SRT, Nass and Moon (2000) showed that consumers treat computers like social actors if they display a minimum of social cues, such as asking questions or sharing information with the consumer. Anthropomorphism will impact consumers' evaluation of an entity because it encourages consumers to think about products as more human (Aggarwal and McGill 2007). Kim et al. (2019) state that anthropomorphism aims at influencing consumers to like them more, perceive them as more vivid and potentially treating them like sentient beings. The authors show how anthropomorphism of a consumer robot increases psychological warmth and positively affects consumers attitudes. Thus, it is proposed that anthropomorphism of AI will positively affect perceived social presence of the customer experience, which leads to:

H₁: Anthropomorphism of AI positively affects perceived social presence of the customer experience.

Interaction is important because it is expected that AI-enabled technology will reshape the ways in which firms try to communicate, interact, and connect with customers (Grewal et al. 2020; Haenlein and Kaplan 2019; Yadav and Pavlou 2020). It is argued that customer's perception of the interactions with the company has substantial influence on customer experience. AI can create new types of interactions. Reeves and Nass (1996) demonstrated how interactivity can reinforce social presence by investigating human encounters with computers. Building upon this notion, Keeling et al. (2010)

find that interactivity is a critical cue to the perception of social presence of an avatar due to its communication style. Taking these insights further into the context of AI, scholars (e.g. Saad and Abida 2016; Steinhoff et al. 2019; van Doorn et al. 2017) suggest that AI can change the nature of interaction with customers in marketing, and create new types of social interaction which can make the consumer feel accompanied by another social entity. Ramaswamy and Ozcan (2018) examine how new technologies co-create value with customers through continuous interaction. Further, Steinhoff et al. (2019) suggest that integrating AI into a company’s online interaction with customers can enable companies to introduce a human touch, resembling interpersonal interactions. This is supported by Cherif and Lemoine (2019) who investigate the effect of voice of virtual assistants during interactions with consumers. The authors find that consumers who interact with a more human like virtual assistant have stronger impressions of social presence than consumers who do not interact through an assistant. Therefore, it is proposed that:

H₂: Parasocial interaction with AI positively affects perceived social presence of the customer experience

AI agents are being adopted by consumers because they enable individuals to access timely and useful information (Canbek and Mutlu 2016). These assistants meet customer demand for contextually relevant and highly personalised content that is delivered in real-time (Brill et al. 2018). It is argued that companies utilise AI to collect user details with the aim to improve the user experience and enhance lifetime value of customers (Shankar 2018; Wilson and Daugherty 2018). Due to the circumstance, that with AI, data about every individual consumer can be stored and analysed at unprecedented scale, marketers can now personalise their marketing mix for everyone. AI technology offers to improve and personalise interactions. Research by Gutierrez et al. (2019) finds that personalization of location-based advertising has significant impact on the acceptance of MLBA. Consequently, it is suggested that consumers react positively to personalization because of improved experience and perceptions of being better understood by a company. It is hypothesized that this understanding will lead to:

H₃: Personalisation positively affects perceived social presence of the customer experience.

2.3 Social Presence of the Customer Experience

Social presence captures the sociability and feeling of human context in a digital environment (Gefen et al. 2003) and describes the extent to which a website or technology allows users to experience others as psychologically present. It is argued that perceived social presence will be critical for advancements in frontline experiences in service encounters with technological advancements such as AI. Qiu and Benbasat (2009) demonstrate how social presence enhances behavioural intentions due to increased trust. Cherif and Lemoine (2019) find that perceived social presence of a virtual assistant influences behavioural intentions of consumers. Abrantes et al. (2013) find in their study on drivers of eWOM in the online environment that social interaction leads to increased sharing of eWOM. Therefore, it is proposed that perceived social presence of AI in the customer experience has a positive influence on intentions to engage in eWOM, which leads to:

H₄: Perceived social presence of the customer experience positively affects intentions to engage in eWOM

Choi et al. (2011) assessed the effect of social presence and social cues on engagement, reuse intentions and purchase behaviour. The authors find that webpages that convey social cues positively affect reuse intentions and engagement. Bleier et al. (2019) link social presence to purchase intentions in the online environment. The authors state that intelligent chat options, based on AI, can convey social presence, for instance through their linguistic style. Researchers (e.g. Bleier et al. 2019; Saad and Abida 2016; Steinhoff et al. 2019) suggest that AI can add a human touch to service in the online environment, which has the potential to influence consumer behaviour. Prentice and Nguyen (2020) examine how customers’ service experience with human employees and AI influence customer engagement and loyalty. Their findings show that customer engagement and loyalty are driven by overall experience with both human and AI employees. It is proposed that:

H₅: Perceived social presence of the customer experience positively affects customer loyalty.

Finally, it is assumed that customer experience comprises a consumer’s subjective, multidimensional, psychological response to a stimulus and then impacts consumer behaviour. Based on both studies by Bleier et al. (2019) and Holzwarth et al. (2006) it is argued that the perceived social presence of customer experience mediates the influence of the antecedents of anthropomorphism, interaction with AI, and personalisation of AI on intentions to engage in eWOM and customer loyalty, which leads to:

H₆: Perceived social presence of the customer experience mediates the effects of a) anthropomorphism of AI b) parasocial interaction with AI and c) personalisation on intentions to engage in eWOM and customer loyalty

Figure 1 summarizes the proposed relationships in a conceptual model:

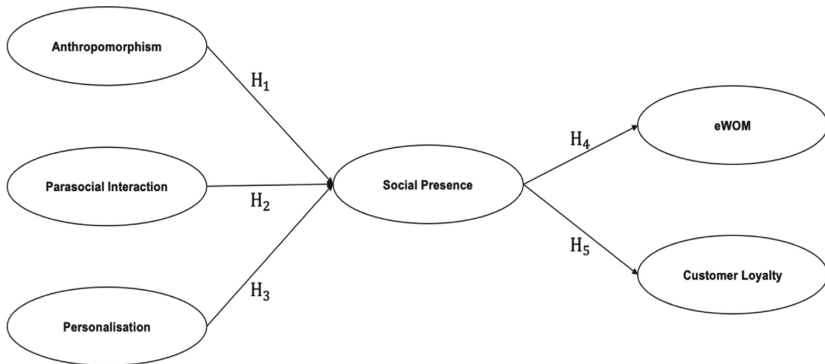


Fig. 1. Proposed research model and relationships based on Social Response Theory (Reeves and Nass 1996)

3 Methodology

3.1 Sample

An online survey was conducted with consumers who have previously encountered AI technology during an online service encounter. A screening question ensured that the sample requirement of a previous encounter with AI was met. The survey was distributed electronically through a convenience sampling approach on LinkedIn. Thus, respondents were recruited online, which is a common approach in online consumer behaviour research. In addition, answering a screening question in the affirmative regarding a previous encounter with AI, prospective respondents must be over 18.

3.2 Measures and Procedure

All measures and scales for this research were adopted from existing studies. 7-point Likert scales were utilized anchored from 1- Strongly disagree to 7-Strongly agree because Barnes et al. (2015) argue that a 7-point scale can improve reliability and validity of results. Anthropomorphism was measured on a scale with seven items adopted from Lu et al. (2019), who developed and validated a service robot integration willingness scale and found that anthropomorphism serves as a key determinant in consumers' willingness to integrate robots in their service transactions. Para-social Interaction was measured by five items adopted from Hartmann and Goldhoorn (2011). Personalisation measures through three items and social presence was measured with five items adopted from Qiu and Benbasat (2009). Customer loyalty was measured by eleven items taken and intentions to engage in eWOM through three items by Hennig-Thurau et al. (2004). The tool of a questionnaire to collect data was selected because it is an efficient means of data collection where respondents answer questions by completing the questionnaire themselves, which is a common approach in the social sciences (Bell et al. 2018). Self-completion questionnaires have the advantages that they are cheap and quick to administer, convenient for respondents because they can answer the questionnaire at a time and location of their choice, and lastly the questionnaire poses less risk of social desirability bias in respondents' answers in contrast to an interview because researcher and respondent are geographically distant and replying to the questionnaire is asynchronous (Bell et al. 2018; Saunders et al. 2019). The questionnaire was pilot tested in the summer 2021 and the main data collection took place in autumn of 2021. A total of 514 people answered the screening question, of which 489 answered “yes” and consequently provided full answers to all questions. Hence, the sample is $n = 489$. The sample has equal representation of gender (50.3% male, 49.3% female), and a good representation of age and income levels.

4 Analysis and Results

4.1 Measurement Model

Confirmatory Factor Analysis (CFA) was applied to examine the measurement model's fit and validity. The theoretical representation of the measurement model yields a χ^2 of 1284.688 (466 degrees of freedom), $\chi^2/df = 2.757$, a comparative fit index (CFI) of .955, Tucker-Lewis Index (TLI) of .949, Root Mean Square Error of Approximation (RMSEA) of .060 and Standardized Root Mean Residual (SRMR) of .0591 as an assessment of the data. Thus, the model achieves good fit based on criteria set out by Hair et al. (2007; 2010). Further, all path coefficients between indicators and their respective construct were significant and standardized regression weights all above .5. Further, the Average Variance Extracted (AVE) is above .5 for all constructs, indicating adequate convergent validity (Hair et al. 2010). Reliabilities are above .8 suggesting convergence or internal consistency. Discriminant validity was also confirmed through examination of AVE and Squared Inter-Construct Correlation.

4.2 Hypotheses Testing

Structural Equation Modelling (SEM) was conducted in AMOS to test the proposed hypotheses. The structural model yields a χ^2 of 1360.434 (473 degrees of freedom), $\chi^2/df = 2.876$, a comparative fit index (CFI) of .952, Tucker-Lewis Index (TLI) of .946, Root Mean Square Error of Approximation (RMSEA) of .062 and Standardized Root Mean Residual (SRMR) of .0734 as an assessment of the data. This means the structural model achieves good fit. The relationship paths and their strength are shown in Table 1.

Table 1. Direct path estimates

Proposed path	Path estimate	Significance
Anthropomorphism → Social presence	.455	***
Parasocial interaction → Social presence	.307	***
Personalization → Social presence	.183	***
Social presence → eWOM	.593	***
Social presence → Customer loyalty	.730	***

Mediation analysis was performed to test the proposed mediating role of perceived social presence of the customer experience. Table 2 shows the results of the analysis.

Table 2. Mediation path estimates

Mediation path	Estimate	P value
Anthropomorphism → Social presence → Customer loyalty	.384	.000
Anthropomorphism → Social presence → eWOM	.377	.000
Parasocial interaction → Social presence → Customer loyalty	.411	.000
Parasocial interaction → Social presence → eWOM	.404	.000
Personalization → Social presence → Customer loyalty	.146	.001
Personalization → Social presence → eWOM	.144	.001

5 Discussion and Conclusion

5.1 Discussion

The empirical assessment of the data shows statistical support for all five direct relationships, and also finds statistical support for the mediating effects of social presence. It is confirmed that anthropomorphism of AI has a strong effect ($\beta = .455$, $p = .000$) on the perceived social presence of the customer experience. This means that by imbuing humanlike characteristics on AI, perceptions of being accompanied by another human is increased. This finding extends insights gained Holzwarth et al. (2006), Kim et al. (2019) and Mende et al. (2019) suggested that anthropomorphism has positive effects on consumer evaluation of a technology and behavioural outcomes. Further, the finding gives an idea how the human-object relationship between AI and the customer can become more sociable and relatable, which answers a call by Schweitzer et al. (2019) to study these new types of relationships more closely. Findings indicate that human-likeness will results in a better experience. Adding to this, findings also support the hypothesised positive effect of para-social interaction on perceived social presence ($\beta = .307$, $p = .000$). This highlights the importance of examining para-social (human-like) interactions with technology because AI is changing the way in which companies engage with their customers (Grewal et al. 2020; Yadav and Pavlou 2020). Further, interaction is proved to become a source of value if it is able to affect customer experience, which shows the relevance of integrating AI into customer service where it can contribute to a positive customer experience. The results also show a positive effect of personalisation on perceived social presence ($\beta = .183$, $p = .000$). While not as strong as the effects of anthropomorphism and para-social interaction, the effect is still significant and important for marketing practitioners who integrate AI into their service offerings to collect, analyse and store customer data to provide higher levels of personalisation. The results show a clear link between higher personalisation and improved customer experience, thus providing reassurance for investment into AI for the purpose of improving the customer experience. Further, the findings reveal strong positive effects of perceived social presence on eWOM ($\beta = .593$, $p = .000$) as well as customer loyalty ($\beta = .730$, $p = .000$). Results from mediation analysis confirm all proposed paths and show that perceived social presence of the customer experience serves as mediator for the relationships between anthropomorphism of AI, para-social interaction with AI, and personalisation

and both outcome variables (intentions to engage in eWOM and customer loyalty). This confirms and extends previous findings by Bleier et al. (2019) and provides clear evidence that AI is not only able to improve the customer experience but also outcomes of experience as suggested by Brandtzaeg and Følstad (2018).

5.2 Limitations

As with any research, this study is also subject to limitations that must be acknowledged and taken into consideration when interpreting its findings and conducting further research. One limitation of this research is that it has examined customer loyalty as outcome of company-customer interactions that are mediated by AI instead of measuring actual purchase behaviour. Operational or technical measurements relating to purchase behaviour or performance of the retailer who utilised the AI technology have not been included in this study. Another limitation related to the selected method of collecting data through a questionnaire with a non-probability sample. Non-probability samples cannot be automatically generalized beyond the context and scope of this study. However, the results provide a good indication of the effects of integrating AI as intelligent agents into customer service for the purpose of improving customer experience and customer loyalty.

5.3 Future Research

Future research should examine whether previous experience of interacting with AI technology has an influence on consumer evaluations and attitudes regarding their experience with AI agents during service encounters. This research required consumers to have engaged with AI prior to the study, however, no difference was made between the level of experience respondents had with AI technology. In addition, future research could examine the strategies by which humans try to distinguish AI and human employees and whether personal preference for AI or human service agents affects customer experience and loyalty. Schmitt (2020) argues that humans have a preference towards their own kind, which the author terms “speciesism”. Future research should investigate the role of personal preference and speciesism and its implications to further strengthen our understanding of the effect of AI agents into service encounters.

5.4 Conclusion

Interactions between customers and AI-enabled technology are taking place every day in the online environment, where AI becomes “the other” with whom customers communicate during their shopping experience. This study advances our understanding of consumer experiences that are affected by AI technology and how AI affects customer loyalty and eWOM. The findings from this study confirm that AI affects perceived social presence of the customer experience, thus providing empirical evidence for marketers who invest heavily into efforts of making their AI technology more human-like. The study adopts SRT as theoretical lens and extends previous work by quantifying how AI is not only able to affect customer experience but also outcomes of experience, which

contributes both to a better theoretical understanding of customer experience and customer loyalty in the online environment, but also a practical contribution due to the circumstance that findings clearly demonstrate how marketers can utilize AI as tool in their marketing strategies.

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