

ORCHESTRATING THE SERVICE ENCOUNTER IN A DIGITAL ERA

**HOW THE PRESENCE OF A GREETING ONLINE SERVICE
AGENT AFFECTS CUSTOMERS' EXPERIENCE OF VISITING A
HOME ELECTRONICS E-STORE**

OSKAR ESKILSSON

ELIZABETH LOPEZ ALUSHKINA

Bachelor Thesis

Stockholm School of Economics

2022



Orchestrating the Digital Encounter in a Digital Era: How the Presence of a Greeting Online Service Agent Affects Customers' Experience of Visiting a Home Electronics E-Store

The service encounter is to an increasing extent being transported to an online context. Companies are more and more often trying to create an initial point of contact when a customer enters a website. Using the S-O-R framework as a theoretical starting point, this quantitative experimental study tries to measure the impact of this interaction between a greeting service agent and a customer in the context of a home electronic company's website. The study employs a between-subject design, where subjects were randomly assigned to one of three different stimuli, each simulating a website visit: (1) a named greeting service agent that is introduced in a more emotive and informal manner with an accompanying human avatar picture (2) a greeting service agent that is introduced as a chatbot in a formal and less emotive manner with an anonymous avatar picture and a non-human name (3) absence of a greeting service agent. Results show that the mere presence of a greeting service agent, regardless of if it is indicated that the agent is a real person or a bot, did not generate higher levels of pleasure, trust, social presence or intentions to continue browsing the website. However, a linear regression analysis showed that social presence, as a separated variable, significantly predicted pleasure and trust which in turn, acting as mediators, significantly predicted purchase intention.

Keywords:

Service encounter, Online consumer behavior, Social presence, Mere presence, Trust, Customer analytics, E-commerce, Home electronics.

Authors:

Oskar Eskilsson (25099)
Elizabeth Lopez Alushkina (24940)

Tutors:

Hanna Berg, Research Fellow, Department of Marketing and Strategy
Patric Andersson, Associate Professor, Department of Marketing and Strategy

Examiner:

Daniel Tolstoy, Assistant Professor, Department of Marketing and Strategy

Bachelor Thesis

Bachelor Program in Business and Economics

Stockholm School of Economics

© Oskar Eskilsson and Elizabeth Lopez Alushkina, 2022

Acknowledgements

We would first and foremost like to thank our tutor Hanna Berg for much appreciated feedback and valuable insight as well as course director Patric Andersson for providing robust support throughout the whole writing process.

Beyond this we would also like to thank family and friends for emotional support, feedback and helping us distribute the survey. A big thank you lastly to all survey participants without whom this study would not have been possible.

Oskar and Elizabeth

Stockholm, November 2022

Contents

1.	INTRODUCTION	6
1.1.	Background.....	6
1.1.1.	Customer's Perceptions of Chatbots	7
1.2.	Problem Area.....	8
1.3.	Research Purpose and Research Question.....	9
1.4.	Delimitations	10
2.	THEORETICAL FOUNDATION AND LITERATURE REVIEW	11
2.1.	Conceptual Framework: S-O-R Model	11
2.2.	Mere Presence Theory	12
2.2.1.	Parallels to Employee Proactivity	12
2.2.2.	Online Environment	13
2.3.	Anthropomorphism.....	14
2.4.	Social Presence Theory	14
2.5.	Trust	16
2.6.	Hypotheses Summary.....	18
3.	METHODOLOGY	20
3.1.	Scientific Approach	20
3.2.	Preparatory Study I	20
3.3.	Preparatory Study II.....	21
3.4.	Main Study.....	22
3.4.1.	Experiment Design	22
3.4.2.	Questionnaire.....	22
3.4.3.	Measurements.....	23
3.4.4.	Stimuli Development.....	24
3.4.5.	Distribution.....	25
3.5.	Data Analysis	25
3.5.1.	Variables.....	26
3.6.	Reliability and Validity	27
3.6.1.	Reliability	27
3.6.2.	Validity	28
3.6.3.	Survey Evaluation	28
4.	RESULTS.....	30

4.1.	Descriptive Statistics	30
4.2.	Hypothesis Testing	32
4.2.1.	H1-H4: ANOVA Test	32
4.2.2.	H5-H8: Regression Analysis	34
4.2.3.	H9-H10: Mediation Analysis	36
5.	DISCUSSION AND CONCLUSION.....	38
5.1.	Summary of Results	38
5.2.	Discussion of Results	39
5.2.1.	H1-H4.....	39
5.2.2.	H5-H10.....	40
5.3.	Conclusion and Implications	41
5.3.1.	Theoretical Implications.....	41
5.3.2.	Practical Implications	42
5.4.	Limitations and Future Research	43
5.5.	Final Remarks.....	44
6.	REFERENCES	45
7.	APPENDICES	49
	Appendix A: Survey Dropout Rate Analysis	49
	Appendix B: Origin of Measurement Scales.....	50
	Appendix C: Survey	50

Definitions

Avatar: a graphical representation of a user.

Anthropomorphism: the attribution of human traits, emotions, or intentions to non-human entities.

Chatbot: a software used to simulate human-to-human text-based chat conversations.

Greeter: a retail salesperson that stand near a store entrance in order to ensure that shoppers are welcomed upon entry.

Live chat: a form of online text-based communication.

Mediated communication: communication that is performed by using information communication technology (ICT) – in contrast to traditional face-to-face communication.

Presence: “a psychological state in which virtual objects are experienced as actual objects in either sensory or non-sensory ways” (Lee, 2004).

Service encounter: a customer's direct contact with a service provider.

Service agent: either a contracted customer service employee or a chatbot (SA in abbreviated form).

Social presence: “the sense of being with another”, either a human or an artificial intelligence (Biocca, 2003).

Trust: the conviction that people will act in predictable ways.

1. Introduction

The nodes and the panoramas of the virtual garden correspond to exact physical locations of the actual garden. Users' spatial knowledge of the virtual authentic garden is valid information for their spatial navigation of the actual garden (Lee, 2004).

A company's first website page is in several ways comparable to a traditional store entrance. Shopping online is however very different, and the standard retail environment offers a completely different set of stimuli. One notable difference is the lack of social interaction in the online milieu. Perhaps as a way of bridging this gap, companies are more and more often trying to create an initial point of contact when a customer enters a website. Much like the traditional retail "greeter" – a person that stands near the store entrance to ensure that shoppers are greeted upon entry – online customers are met with a welcoming service agent.

This is one of many examples of how the service encounter to an increasing extent is being transported to an online context, but what does this shift entail? In this area we believe that many questions remain unanswered. How should the online service encounter be crafted for optimal performance? To what extent can already established insights – already existing nodes and panoramas – from the traditional retail environment act as a knowledge base during this process? Given the breakthroughs in natural language processing, should companies ramp up their investments in AI-initiatives or should they focus on facilitating personalized customer service by real humans?

Exhaustively answering these broad questions requires collaboration by several different fields of research. This paper instead focuses on a rather narrow scope: to gain insights into the affective and behavioral reactions that are produced in customers when they enter an online store where a greeting service agent is present. Underneath this query however lies a broader question, more conceptual in nature: Is there a fundamental connection between how humans act and behave in an online- and an offline milieu? Do the nodes and panoramas of the "virtual garden" in fact correspond to exact physical locations in the "actual garden"? Let's try to find out.

1.1. Background

Growth in online shopping continues to accelerate and especially in the last two years e-commerce as a share of retail sales have skyrocketed. With a 40% increase in 2021 compared to 2020 the home electronics segment is one of the segments where the increase, in Sweden, has been most pronounced (Caesar, 2022).

The widespread popularity of e-commerce within retail has led to a re-drawing of the customer service-landscape, and in particular, the nature of the service encounter (Cyr et al., 2007). In this new landscape, there are several different ways in which customers can use mediated communication to interact with a website in order to receive customer service. Leaving aside traditional methods of customer support such as e-mail and telephone this essay concentrates on two comparably new methods, namely: (1) *live chat*, which is a form of text-based online communication that in the retail context is manned by contracted customer service employees (Zhang, Erickson & Webb, 2011) and (2) *chatbots*, which is a software used to simulate human-to-human text-chat conversations (Ling et al., 2021).

Whereas live chat can be seen as a natural extension of the more traditional methods of customer support, the chatbot is a more radical technological improvement which hinges on new developments in AI and natural language processing (Ling et al., 2021). Since it eliminates the need for human work when implemented it has large potential benefits in terms of cost savings (Carter & Knol, 2019).

1.1.1. Customer's Perceptions of Chatbots

There is a lot of data suggesting that chatbots are being implemented at an increasing pace (Carter & Knol, 2019). Several sources (e.g., Kindly (2021)) are also stating that they are widely appreciated. These statistics are however either biased in the sense that the reporting bodies are companies that themselves have a large stake in the industry, or they are too imprecise in nature. For example, statements like “60% of millennials have used chatbots and 70% had a positive experience” (Forbes, 2018) are widely spread. What can be concluded about how customers, on an aggregated level, perceive the possibility of interacting with a chatbot versus starting a conversation with a real human from these testimonies? Very little. This is one of the research gaps that this paper attempts to bridge.

A study that compares the user experience of interacting with a chatbot on a website versus simply interacting with the same website shows that people generally conceive chatbots to be less useful and easy to use. The general satisfaction from these interactions is namely lower and the abandonment rate higher (Beriault-Poirier, 2018). Another line of reasoning that has been brought forward is that unsolicited help from a digital assistant agent can be seen as intrusive (Xiao, 2003). These contrasting views can be seen as a first indication about online shoppers' sentiment towards this type of encounter, but more importantly they highlight a potential research gap and underline the need for further exploration.

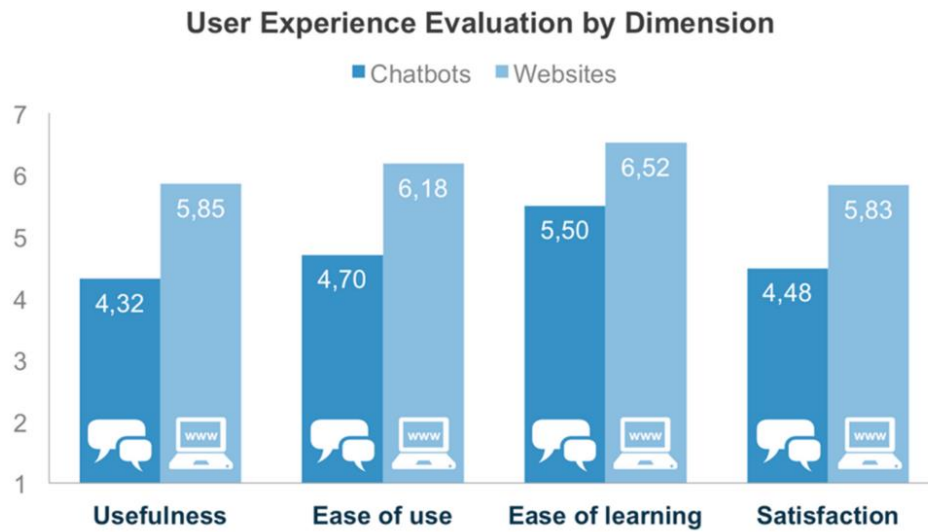


Figure 1. User experience evaluation by dimension (Beriault-Poirier, 2018).

1.2. Problem Area

Even though a lot of research has been conducted on differences and similarities between the service encounter in an online- and an “offline” environment, we believe that there has been a lack of direct synthetization between the mere presence paradigm in the traditional retail environment and the field of research around social presence in a website context. Also, seeing as much has happened in the area of e-commerce, the research conducted around social presence in the late 2000s needs to be updated and tested in a new technological context in which user patterns are expected to be rather different.

In terms of previous research this paper first and foremost builds upon Söderlund (2016) which shows that the mere presence of an employee in a physical retail environment increases customer pleasure and satisfaction and Cyr et al. (2007) which show that social presence in an online website-context positively effects loyalty, trust, perceived usefulness and overall customer enjoyment.

What we want to do is use the already established knowledge about social presence and mere presence but apply it to a more specific – and to a large extent updated – situation. Namely to compare the initial reaction of being faced with a greeting chatbot to the initial reaction of being greeted by (what appears to be) a real human in a live-chat, and then to compare those results to a control group where there is no greeting or interaction whatsoever. Doing this allows us to leave the information about whether or not the service agent is a chatbot or a human service agent to be somewhat ambiguous, as is often the case in real websites.

First of all, it gives us a chance to test whether the mere presence of a greeting service agent produces a sense of social presence. Furthermore, looking at the mere presence effect also gives us a chance to gauge the aggregated impact of this interaction possibility, taking into account both those who would have interacted with the service agent as well as those who would not. Because the fact of the matter is that not everyone will, in a real life scenario, use this opportunity. All these are aspects that we believe has not yet been tested.

Our hypothesis is that there will be similarities between how consumers react in the physical retail environment and the online ditto, so that the effects of mere presence will be positive. But we also recognize that a greeting service agent could be seen as an unsolicited interaction and as such be interpreted as intrusive. These are two complicating factors that further motivate the need for the present study. By bridging the gap in the foundation laid out above, we also hope to be able to develop our findings into actionable insights for managers.

The present topic is relevant for marketing since it affects how a company is perceived. A service agent, whether it is an AI or a real human being, promotes the company's products and services – it engages with customers with the object to, in the end, increase sales. As such it should be treated as a marketing activity.

1.3. Research Purpose and Research Question

The aim of this study is to gain knowledge about the initial stage of the service encounter in a digital context, i.e., to make an attempt at measuring the impact of the initial greeting interaction between a service agent and a customer on a company's website. The aim is also to create a model for the relationship between perceived social presence and customer purchase intention and to, based on this, provide actionable insights for managers.

To do this, the following set of questions were used as a point of departure: How does the mere presence of an online service agent affect customers that visit a home electronics e-store? What is the initial and immediate reaction when a customer is faced with such an entity?

These were then crystallized into the following research questions:

- (1) To what extent does the mere presence of a greeting service agent impact a customer's perceived level of pleasure, trust, intentions to continue browsing the website and social presence?*
- (2) What is the relationship between perceived social presence and the level of pleasure and trust that a customer experiences?*

(3) What is the relationship between a customer's experience of pleasure and trust and their purchase intention?

1.4. Delimitations

In terms of geographical scope we have chosen to limit ourselves to the Swedish market, and to Swedish customers. This choice was partly made due to the authors operating in Sweden and conducting research in Sweden was as a consequence prognosticated to be more effective and more likely to generate a higher quality of data. But Sweden is also a very good fit for a study of this sort since it is a country with high technology adoption and significant e-commerce penetration. As evidence for this, the country was, in 2022, ranked fourth place in the European Commission's Digital Economy and Society Index (European Commission, 2022). Sweden was also, again in 2022, one of top ten countries in terms of percentage of retail sales taking place online (Statista, 2022).

The B2C home-electronics segment was chosen partly since it was deemed that it would be possible to generate a scenario that survey participants could easily relate to. Choosing a B2B segment would for example have forced many participants to imagine a scenario that is very far away from their daily lives. As previously mentioned it is however more importantly a sector that is particularly interesting to study off the back of the rapid digitalization it is currently experiencing. Even though the industry segment is narrow in scope we still believe that the results will be generalizable for related retail segments at least in an indicative meaning, as well as overall acting as a basis point from which extrapolations can be made.

2. Theoretical Foundation and Literature Review

The theoretical foundation was crafted to address our research questions and hypotheses were developed in accordance with previous literature. In order to assemble and create the literature review that follows we have conducted extensive searches in library databases. The main databases used were HHS library catalog and Google Scholar. When searching for relevant literature our main keywords included: Service encounter, Social presence, Mere presence and Trust.

2.1. Conceptual Framework: S-O-R Model

Mehrabian and Russell's (1974) Stimulus-organism-response (S-O-R) is a framework that was initially developed in a more general context of environmental psychology but that has since then has been modified and now act as a common procedure for examining consumer behavior, especially in a retailing context (Tai, 1997; Guo et al., 2022). In short, the model explains that an external environmental stimulus (S) can generate emotional reactions (O) which then produce either avoidance or approach behavior (R) in an agent.

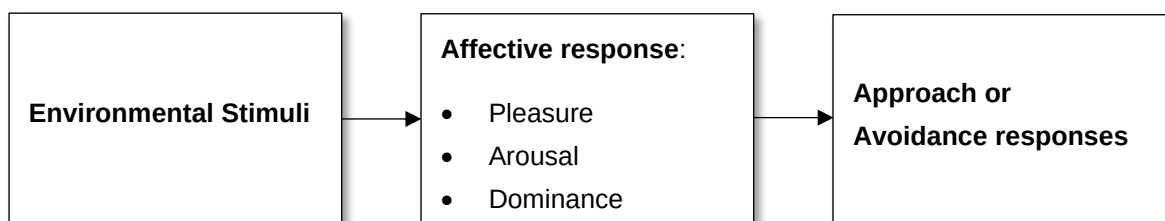


Figure 2. Original S-O-R model.

Using the S-O-R framework as a theoretical starting point we have created a modified model in order to study how consumers respond to a greeting service agent in a home electronics e-store. We will go through each of the building blocks of this modified model carefully but below is a preview of the result:

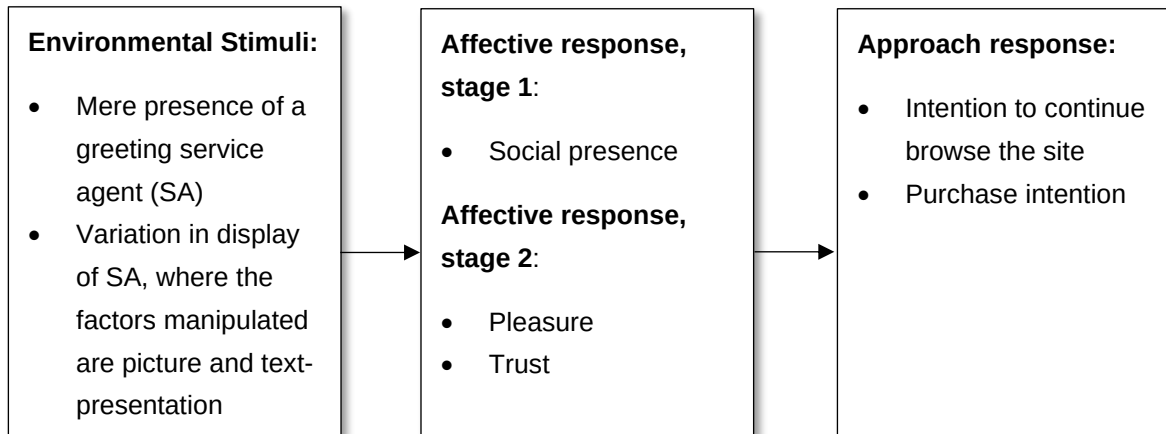


Figure 3. Modified S-O-R model.

2.2. Mere Presence Theory

Social interaction is a fundamental part of human life: we are particularly sensitive when it comes to detecting other humans and we pay more attention to people than any other object in the physical sphere (Lee, 2004).

The mere presence theory in social psychology proposes that the presence of another human increases general drive which is an antecedent of arousal (Zajonc, 1965). This is backed up by current research which explores an extended emotional spectrum and shows that the mere presence of an employee in a physical retail environment increases customer pleasure as well as satisfaction (Söderlund, 2016).

2.2.1. Parallels to Employee Proactivity

A research area that has indirect similarities to the present study concerns salespeople that stand near the entrance of a store, so called “greeters”. The causal model of this research area can also be fitted into the S-O-R framework: employee presence and proactivity produces affective reactions in the buyer which then shape the success of a service encounter (Musgrove, 2011). But are these affective reactions positive? And is it possible to predict the outcome in terms of consumer behavior?

Humans are inherently social creatures and as such they have a fundamental need for relatedness, i.e., feeling connected to other humans and experiencing a sense of inclusion in the wider social world (Baumeister & Leary, 1995). Going back to the theory of mere presence we can see that a present employee constitutes a possible point of contact – a way of fulfilling the important human desire for social connection. An employee that also

exhibits proactive behavior can in this perspective be seen as an even more distinct way of inviting the customer to participate in the store as a social environment. It is also a sign that the employee is available if a need for service were to surface in the future (Söderlund, 2018), which in a very fundamental way is something that should be seen as beneficial by customers in a retail setting.

Taking the above into account, both mere presence and employee proactivity should produce positive feelings in a buyer, however a study in this area which is also based on a modified S-O-R model shows that the presence of a greeting salesperson at the entrance had a negative impact on customers' attitudes (Musgrove, 2011). This indicates that additional aspects need to be considered.

Another study, also in the context of a home electronics store, does precisely that, and in a more fine-grained way illustrates the conflicting forces when it comes to the proactive behavior of sales personnel. Overall, customers prefer visiting a store where a salesperson immediately greets them rather than visiting a store where a salesperson is difficult to get a hold of. However, almost all respondents in the same study simultaneously state that they disapprove of greeters that apply sales tactics that involve too much pressure (Darian et al., 2001).

There is also other research examining the significance of initial contact with sales personnel, and in particular the importance of who the contact initiator is. Customers rate the overall retail experience higher when a salesperson initiated contact as compared to when the customer initiated contact (Naylor and Frank, 2000).

The exposition above illustrates the conflicting forces at play and pinpoints a potential pitfall when orchestrating these types of encounters: there is a thin line between the perception of a salesperson exhibiting overzealous behavior and feeling that the salesperson is not sufficiently alert and responsive. Our conclusion is that both the attribute of proactive employee behavior and mere presence from a theoretical standpoint has clear links to positive affects but that it is not insensitive to context.

2.2.2. Online Environment

The link between the research laid out in chapter 2.2.1 concerning the physical retail environment and the present study is that psychological studies have shown that humans, to a large extent, view interactions with computers as if they are real social entities. The social rules are essentially the same as real-life human-to-human interactions (Reeves and Nass, 1996). This is the underlying principle of the Computers-are-social-actors (CASA) paradigm, and can be viewed as the theoretical bridge between the discussion about behaviors in the physical retail environment above and the one about an online context that follows below.

Taking what has been said above into consideration, an online greeting service agent can be seen as analogous to the mere presence of a customer service employee in the traditional retail environment, but it is also possible to view it as an instance of proactive behavior. Given this backdrop, it is not certain how a customer will react, but our review of theory predicts it to produce positive feelings as long as the agent does not exhibit overzealous sales tactics. Combining this with the fact that pleasure has been found to be an antecedent of customers spending more time in a store (Donovan et al., 1994) leads up to the following hypothesis:

H1: The mere presence of a greeting service agent will produce higher levels of pleasure than the absence of a service agent

H2: The mere presence of a greeting service agent will produce higher intentions to continue browsing the site than the absence of a service agent

2.3. Anthropomorphism

Anthropomorphism is defined as the attribution of human traits, emotions, or intentions to non-human entities. Humans experience increased trust in technology with interfaces that possess humanlike elements due to a higher level of perceived competence (Bickmore & Picard 2005; Waytz et al., 2014). In an online shopping environment, avatars make the experience more enjoyable and both avatars and anthropomorphic chatbots have been observed to increase purchase intention (Holzwarth et al., 2006; Yen & Chiang 2021).

Previous research also shows that adding anthropomorphic features to a virtual service agent, such as including a human name, heightens the perception of the agent as being human-like (Munnukka, 2022). In cases where customers want to socially withdraw anthropomorphism negatively affects customers reactions (Puzakova & Kwak 2017). Therefore, the positive effect of anthropomorphism is reliant on customers' context and are therefore not universal (Valenzuela & Hadi 2017).

2.4. Social Presence Theory

Shopping, whether it takes place in an online- or an offline environment, is a process of communication (Cyr et al., 2007). In order to make an informed purchase decision the buyer first needs to gather information and there is even research indicating that there are active social motives when consumers patronize stores (Tauber, 1972).

With the advent of e-shopping this process has been significantly altered, with one new characteristic being the limited possibility of direct face-to-face contact. This creates a larger degree of social distance which in turn decreases trust between the actors (Pavlou, 2006).

By opening up for buyers to communicate with a service agent an attempt is made at creating an area of contact that will reduce this social distance. This attempt therefore in a very clear way relates to the theory of social presence, which is defined as a “sense of being with another” – either a human or an artificial intelligence (Biocca, 2003). Another definition is that social presence is “the extent to which a medium allows users to experience others as being psychologically present” (Gefen & Straub, 2003).

The theory has its root in social psychological theories of interpersonal communication, more specifically Morton Wiener and Albert Mehrabian’s immediacy-concept and Michael Argyle's theory about intimacy. Originally focused on non-mediated communication the theory has over the years developed so that it now encompasses both older versions of mediated communication, but also newer computer-mediated communication methods such as e-mail and online chat (Cui, 2013).

Two generally accepted notions are that social presence varies between different media and that it exists along a continuum (Cui, 2013). However, there is less agreement concerning the specific variables that can be attributed to higher levels of social presence and researchers consider a number of different variables. These include for example (1) the general degree of "warmth", i.e., the feeling of human contact expressed by the medium (Cyr et al., 2007), (2) the human-likeness (Kim, 2020) and (3) the degree of formality in language (Kim, 2020).

Particularly in the context of a website one can increase social presence by including pictures of humans and emotive text material (Gefen & Straub, 2003; Hassanein & Head, 2005). Chatbots do not have neither personality nor emotions (Carter & Knol, 2019), therefore it is reasonable to hypothesize that a service agent introduced as a chatbot will produce lower levels of human contact and human-likeness than a service agent introduced as a real human being. Against this background we also posit that the absence of a service agent will produce lower levels of social presence than a scenario where a service agent is present.

Translating the social presence variables above into concrete attributes that are relevant in the context of this study we end up with the following formalized hypotheses:

H4a: The mere presence of a greeting service agent will produce higher levels of social presence than the absence of a service agent.

H4b: A service agent that is introduced in a (1) more informal and emotive manner, (2) with a human name and (3) a human looking picture will produce higher levels of social presence than a service agent that is introduced as a chatbot in a (1) formal and less emotive manner (2) with a non-human name and (3) an anonymous avatar.

As stated above, humans are fundamentally social creatures and as such there is an inherent need to feel connected to a wider social world (Baumeister & Leary, 1995). It is even common for customers to actively seek social engagement when shopping (Tauber, 1972). For this reason, we expect there to be a link between social presence in an e-store context and positive affects. This is in line with previous studies which show that social presence, in an online context, positively affects satisfaction (Gunawardena, 1997) as well as overall customer enjoyment (Cyr et al., 2007).

H5: Social presence is positively associated with pleasure.

The affective state of pleasure has also been found to increase customer spending (Donovan et al., 1994). As a consequence of this, bearing in mind the causal sequences of the previously mentioned S-O-R model, we also propose that the impact of social presence on purchase intention is mediated by pleasure. In the end we are left with the following hypotheses:

H6: Pleasure is positively associated with purchase intentions.

H9: The impact of social presence on purchase intention is mediated by pleasure.

2.5. Trust

A basic definition of trust describes it as the conviction that people will act in predictable ways (Gefen & Straub, 2003). Trust is an essential ingredient in all business exchanges, but the need for trust is perhaps even more pronounced in an online, e-commerce context due to the fact that there is a disconnection both in space and time between the retailer and the customer (Reichheld & Scheffer, 2000).

Trust can either be established more directly in the direct human-to-human interaction between a seller and a buyer, or it can be generated in a more general sense as a relationship between customers and the shop (Cyr et al., 2007). Gefen & Straub (2003) develops a more radical view of trust, arguing that it can only be established in a social context. In a very fundamental sense, they argue, a person does not put their trust into a technological system (such as a website). Trust is rather directed towards the people that operate the system. We agree with this line of reasoning and therefore expect there to be a link both between mere presence and the establishment of trust as well as a link between social presence and the establishment of trust.

H3: The mere presence of a greeting service agent will produce higher levels of trust than the absence of a service agent.

H7: Social presence is positively associated with trust.

This is also backed up by previous experiments such as (Riegelsberger, 2003) which shows that trust is enhanced even by adding simple social cues such as pictures of humans, but there are several other examples as well (Gefen & Straub, 2003; Hassanein & Head, 2005; Munnukka, 2022, Cyr et al., 2007).

We also believe that there is a link between trust and purchase intention. The basis for this, as have already been established, is that trust is a prerequisite for any business exchange to take place. When there is trust, uncertainty is reduced, and customers are more likely to believe that the seller will fulfill their contractual agreements (Gefen & Straub, 2003). Another concrete illustration is that when customers trust a vendor, they are more inclined to share personal information such as credit card details (Reichheld & Schefter, 2000).

H8: Trust is positively associated with purchase intentions.

Trust therefore seems to function as a hygiene factor in the context of business exchange. Again, giving consideration to the causal sequence of the S-O-R-model leads us also to posit that the impact of social presence on purchase intention is mediated by trust. This leads us to the following formalized hypothesis:

H10: The impact of social presence on purchase intention is mediated by trust.

2.6. Hypotheses Summary

H1: The mere presence of a greeting service agent will produce higher levels of pleasure than the absence of a service agent.

H2: The mere presence of a greeting service agent will produce higher intentions to continue browsing the site than the absence of a service agent.

H3: The mere presence of a greeting service agent will produce higher levels of trust than the absence of a service agent.

H4a: The mere presence of a greeting service agent will produce higher levels of social presence than the absence of a service agent.

H4b: A service agent that is introduced in a (1) more informal and emotive manner, (2) with a human name and (3) a human looking picture will produce higher levels of social presence than a service agent that is introduced as a chatbot in a (1) formal and less emotive manner (2) with a non-human name and (3) an anonymous avatar.

H5: Social presence is positively associated with pleasure.

H6: Pleasure is positively associated with purchase intentions.

H7: Social presence is positively associated with trust.

H8: Trust is positively associated with purchase intentions.

H9: The impact of social presence on purchase intention is mediated by pleasure.

H10: The impact of social presence on purchase intention is mediated by trust.

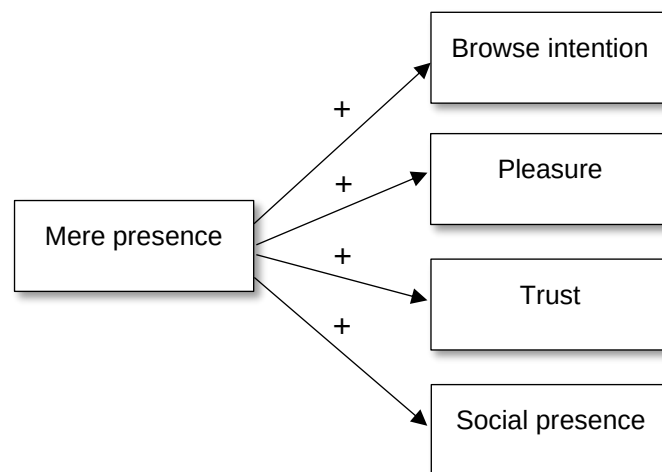


Figure 4. An illustration of hypotheses H1-H4.

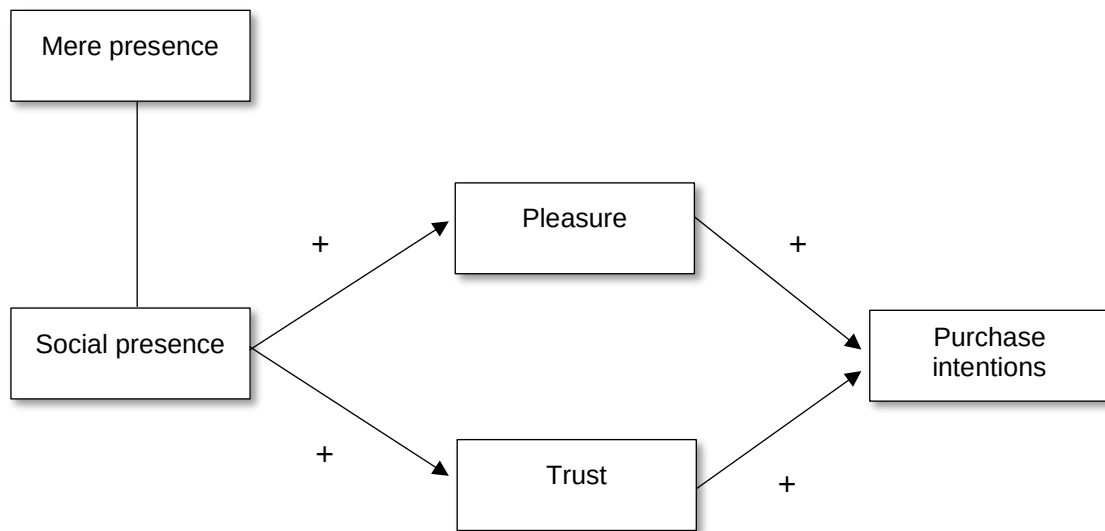


Figure 5. An illustration of hypotheses H5-H10.

The two figures above illustrate the connection between our two main blocks of hypotheses. As can be seen, hypotheses H1-H4 covers the relationship between mere presence and the variables browse intention, pleasure, trust and social presence. The hypothesized positive effects of mere presence on social presence are then carried over to our next block, hypotheses H5-H10, which cover the relationship between social presence and the variables pleasure, trust and purchase intention.

3. Methodology

3.1. Scientific Approach

We label our approach as deductive since theories and previous studies guided us in designing research strategy and hypotheses. This approach is based on a positivist epistemological position and an objectivist ontological position which treats reality as existing in an objective sense. And because of this it deems it appropriate to create hypotheses based on existing theory and then to test them by collecting data using surveys or other measurements (Bell et al., 2022).

Our choice of employing a quantitative experimental method was primarily motivated by the fact that we wanted to generate tangible, generalizable results and to investigate causality rather than only correlation (Spencer et al., 2005). Especially this first aspect, the possibility to generate tangible results by conducting statistical tests on our empirical data, aligned well with our aim to be able to provide insights that are both broadly applicable for managers as well as relevant from a more theoretical research perspective. The second most favorable aspect of the quantitative experimental method is that it allows for the isolation of stimuli effects. A between-subject study made it possible to randomly allocate respondents to different stimuli, testing the impact between groups and thus allowed us to investigate the causal relationships that underlie this phenomenon.

Another possible method would have been to rely on inductive, qualitative analysis, for example by running focus group interviews or by employing a think-aloud protocol. Doing this could have allowed us to go more in-depth into customers' opinions and thought processes related to this type of encounter. But by employing this type of method we would also expose ourselves to the risk of achieving results that are far worse in terms of generalizability and tangibility.

We believe that this type of method is more appropriate for larger research projects and instances where there is a lack of established theory, or when there are valid reasons to question the status quo. Given what has already been stated above about the strength of our chosen research design, the wealth of literature around our chosen subject and because of the fact that a bachelor's thesis comes with inherent restrictions both in time and resources, our choice was ultimately to use a quantitative method.

3.2. Preparatory Study I

In order to get an overview of the home electronics e-store landscape, in particular with respect to how service agents are presented, we conducted a pre-study on October the 5th. Based on revenue according to AllaBolag.se we visited 7 of Sweden's largest home

electronics e-stores and collected information on how service agents were presented in terms of external characteristics. The results show that there is a great deal of variation, but roughly 4 main categories emerged: human, bot, ambiguous entity and absence of service agent.

This brief overview guided us in designing our experiment, especially when deciding the specific attributes to test in H4b. Taking into account also what factors are highlighted by theory as elevating social presence we made the choice to focus on the service agent's avatar image, avatar name and accompanying greeting text.

Table 1. Pre-study of the home electronics store landscape.

Company	Pop-up greeting	Delay	Picture	Name	Bot/human	Emoticon	Revenue (2021, SEK)
Komplett.se	No	-	None	Human	Ambiguous	No	1.3 bn
Dustin Home	No*	-	-	-	-	-	5.4 bn
Elgiganten	Yes	Yes	Human	Bot	Bot	Yes	15.9 bn
Netonnet	Yes	No	Avatar	Human	Bot	Yes	7.5 bn
MediaMarkt	No*	-	-	-	-	-	7.4 bn
Webhallen	No	-	Avatar	Human	Human	No	2.4 bn
Inet	No	-	Avatar	Human	Human	No	1.5 bn

Note: * signifies that there was no possibility to chat at all.

3.3. Preparatory Study II

Before sending out the main survey we conducted a second pre-study (n = 5). A qualitative think-aloud method was chosen where participants were asked to verbalize their reactions and thinking process as they filled out our main survey draft, which is largely similar to the main study that was later distributed.

The purpose of this pre-study was primarily to make sure that the respondents would interpret the questions correctly, but also to uncover any problems with navigating through the survey as well making sure the three different stimuli presented were not significantly misunderstood.

Our method for documenting this pre-study was to record the sessions in their entirety. This made it possible to go back and analyze the content of the interview protocols in a structured manner. One thing we realized during the pre-study was that the attention-check question needed to be formulated in another way. Our initial formulation, we found, was somewhat ambiguous and could potentially produce misunderstandings.

We also realized that some questions were more difficult to understand on a mobile device due to the nature of how Qualtrics presents questions between devices. In order to adapt to this, we made changes accordingly. Lastly, we had a large block of questions that we,

based on the exhausted reactions of the participants, realized needed to be divided into smaller segments.

3.4. Main Study

3.4.1. Experiment Design

A quantitative experimental study was conducted in order to measure the impact of the interaction between a service agent and a customer in the context of a home electronics company's website. The study employed a between-subject design, where the subjects were randomly assigned to one of three different stimuli related to entering a company's website. Scenario 1 was modeled after the chatbot format and scenario 2 after the live chat format, based on input from preparatory study I.

Control group	0. No presence of greeting service agent.
Chatbot	1. Anonymous avatar. Service agent is introduced as a chatbot in a formal, less emotive manner and a non-human name.
Human service agent	2. Human picture. Service agent is introduced with a human name indicating that a person could be present live in the chat. Introduction text is also more informal and emotive.

Figure 6. Experiment design.

3.4.2. Questionnaire

The survey consisted of the following main elements: (1) introduction, information about GDPR and scenario description (2) random allocation to one of three different test groups and presentation of stimuli, i.e. a pre-recorded video of a website visit (3) questions about affects, intentions, trust, social presence and demographic profile. Participants were also asked to answer questions evaluating the survey at the end. An instructional manipulation check (IMC) was added to the survey based on Oppenheimer et al., (2009). Shown below is a brief overview of the survey flow:

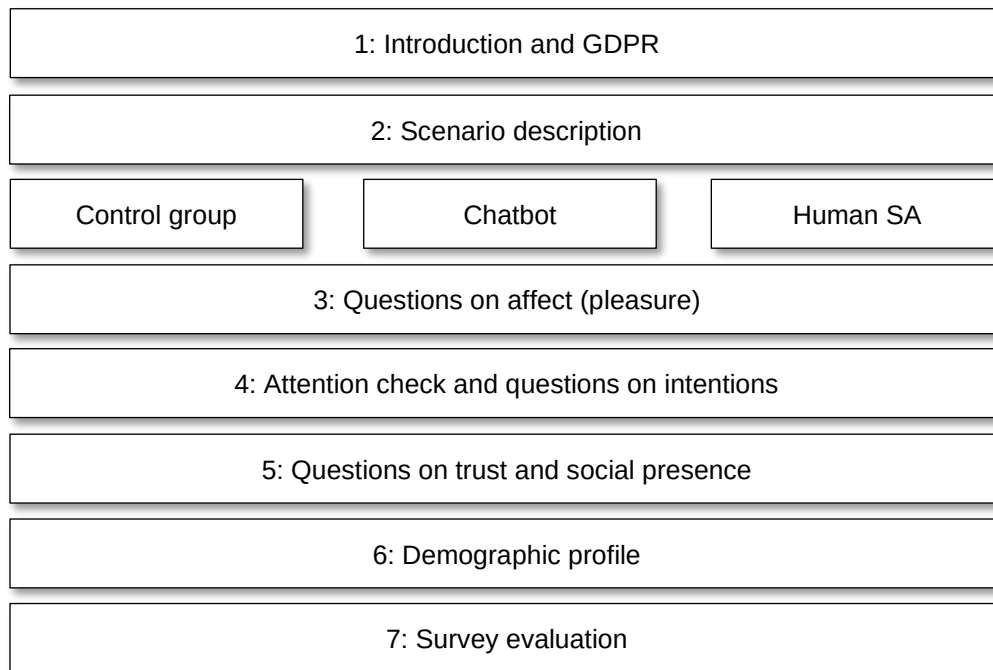


Figure 7. Survey flow.

Respondents were first met with an introduction explaining the nature of the research project and an estimate of the completion time. Included in this section was also a short note that for every participant 3 SEK will be donated to The Swedish Red Cross' Ukraine fund.

Following this block was the scenario description where respondents were asked to imagine themselves being on a mission to buy a new computer. They were told to react to the questions as if they, with this goal in mind, had stumbled onto the site “Teknikgiganten” after having made a google entry for the model that they are looking for. Before being presented with the stimuli – a website visit presented in the form of a video recording – respondents were also informed that the video only will cover the initial part of a website-visit. That they might feel that certain questions would require more time spent on the website, however that they should base their answers on the information provided.

3.4.3. Measurements

Questions and measurements employed in the survey were primarily based on scales used in prior research. In our adopted S-O-R model we chose to exclude emotional states linked to arousal such as excitement and enthusiasm. The measurements that in our study captures affective responses is therefore **pleasure**, where Söderlund (2016) was used as

the main source of inspiration. The reasoning behind this is that we believe that pleasure better captures affective responses that are relevant for the retail experience.

Respondents were asked the question “*What feeling do you get from the store Teknikgiganten?*”. This was followed by two adjective pairs (unpleasant–pleasant, dislike it–like it) scored on a 7-point scale. Magnus Söderlund’s version originally contains three adjective pairs but based on feedback from pre-study 2 the scale “Bad-good” was removed. Respondents indicated that, in this setting, being faced with three almost indistinguishable questions was both confusing and tedious.

Apart from the questions related to demographic profile, the respondent’s reactions to the rest of our inquiries were measured on a 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7). Respondents were asked to state how much they agree or disagree with a list of statements. Based on Cyr et al. (2007) the following statements were used in order to measure **trust**: “*I can trust this website*”, “*I feel this website would provide me with good service*” and “*I trust the information presented on this website*”.

Social presence was measured using the following slightly tweaked statements from Gefen and Straub (2003): “*There is a sense of human contact on this website*”, “*This website feels personal*” and “*this website feels social*”. Our modifications did not alter the meaning of the statements, we rather simplified them in order to facilitate easy understanding.

Gefen and Straub (2003) was then again used as inspiration when constructing the statements measuring **intentions**. These were the following: “*I am likely to buy a computer from this store*”, “*I am likely to buy other products from this store*” and “*I would like to continue to browse this website*”. See appendix B for table summary of the measurement scales and their respective origin.

3.4.4. Stimuli Development

For the study we created a website’s front page using HyperText Markup Language (HTML) and Cascading Style Sheets (CSS), two core languages for website building. The fictitious brand “Teknikgigaten” – inspired by existing brands “Elgiganten” and “Teknikmagasinet” – was used for the website in order to simulate a realistic initial meeting with the service agent without having any store brand preferences affect the answers provided. We made one recording for each of the test groups that showed the initial 20 seconds of a website visit. This recording was that was then, based on random allocation, shown to the participants in a manner such that the service agent stimuli appeared after approximately 10 seconds, if said participant had not been assigned to the control group.

A recording was used so that every participant would more or less have the same exposure to the stimuli. It was therefore a conscious decision to restrict them from continuing to browse the website, since this would have made it significantly more difficult to control that any effects measured would not have its origin in other aspects of the website visit.

Products on the website included commercials from Elgiganten.se that have been stripped away from their store brand associations. These included the new iPhone 14, MacBook Air 13 M1 2020 and were chosen to mimic a real home electronics e-store. The stimuli texts were written in Swedish since we are analyzing the Swedish market and wanted respondents to be exposed to their native language. The human service agent had a realistic picture of a customer service employee and the translated text “Hi 🙋 Daniel Sköld from Teknikgiganten here. If you have any questions, I am ready to help! 😊” with a green dot under saying “I am online” (See appendix C). The chatbot had an anonymous avatar with the translated text “Hi! This is Boti, your digital chatbot. Write in the chat if you have any questions” (See appendix C).

3.4.5. Distribution

The self-completion questionnaire was developed in the online survey tool Qualtrics and was distributed between October the 27th and November the 5th. A total of 304 answers were collected.

Participants were invited to answer the survey by the authors reaching out to their private networks (family, friends, previous colleagues and classmates), primarily through social media such as Facebook, Messenger and Instagram. But also through e-mail and mobile text messaging. Certain respondents were also asked to distribute the survey forward to their own networks. Since there were no other sampling criteria except that participants were available for us to contact and willing to participate, the sample should be labeled as a convenience sample.

Elimination of respondents were based on the following criteria: (1) not answering the attention check question correctly (2) being under the age of 18 and thus not being eligible under SSE’s GDPR regulations (3) not completing the whole survey (4) not speaking Swedish (5) providing obviously unreasonable answers.

3.5. Data Analysis

The data was first imported to excel for some initial data cleansing. Invalid responses were removed according to the criteria above. After removing incomplete survey responses 186 answers remained. Respondents who answered correctly on the attention

check totaled to 141. Lastly 3 respondents stated their age to be under 18 which violates GDPR, 1 respondent stated that they shop online 222 times per month which we deemed unreasonable and 3 people did not speak Swedish which is the language of the text in our stimuli. See appendix A for a visual representation of this process.

This left the total number of valid responses at 134. 49 responses in the control group, 45 in the chatbot-group and 40 in the human service agent-group. Since each group had more than 30 respondents the data was assumed to be approximately normally distributed (Kwak & Kim, 2017). Sample size of the groups was uneven ranging between 49 and 40 responses, which potentially could come with a risk of reduced statistical power. However, we proceeded with the sample groups since the difference in size was not deemed to be detrimental.

After this initial data cleansing, the data was imported to R studio where the rest of our analysis was conducted. The tests performed to examine hypotheses H1-H4 were Bartlett tests, one-way ANOVA tests and Tukey's Honest Significant Difference tests. For hypotheses H5-H10 we ran a Breusch-Pagan test, a multicollinearity test, regressions and bootstrapped mediation tests. A significance level of 5% was decided for all tests before conducting the statistical analysis. Lastly, it should be noted that our primary analysis has been confirmatory, i.e. in accordance with our pre-analysis plan, but we have also included elements of exploratory data analysis.

3.5.1. Variables

Cronbach's alpha was used as a reliability coefficient to ensure internal consistency for the groups of questions addressing trust and social presence. Adhering to conventions concerning Cronbach's alpha a threshold level of 0.7 was decided upon beforehand, where questions that scored higher than this could be merged together in order to create a new variable (Cortina, 1993).

Cronbach's alpha for trust equaled 0.875 and these 3 questions were merged into a new variable called "trust". Cronbach's alpha for social presence was equal to 0.876 and these 3 questions were merged to a new variable called "social presence" (or "SP" in abbreviated form).

A Pearson Correlation Test for the two questions measuring respondents' level of pleasure showed that there was a significant positive linear correlation between the questions, $r(132) = .40$, $p = p < .001$. It should be noted that a correlation of 0.4 does not imply an unmistakably strong linear relationship but the questions were still merged into the variable "pleasure".

Similarly, a Pearson Correlation Test for the two questions measuring respondents' purchase intentions showed that there was a positive linear correlation, $r(132) = .74$, $p =$

$p < .001$. Against this background these questions were merged into the variable “purchase intention” (or “P.I.” in abbreviated form). Below is a summary of our independent- and dependent variables respectively:

Table 2. Overview of independent- and dependent variables.

Hypothesis	Independent variable(s)	Dependent variable	Mediator
H1	Mere presence	Pleasure	
H2	Mere presence	Intentions to continue browsing	
H3	Mere presence	Trust	
H4a	Mere presence	Social presence	
H4b	Text and picture presentation	Social presence	
H5	Social presence	Pleasure	
H6	Pleasure	Purchase intentions	
H7	Social presence	Trust	
H8	Trust	Purchase intentions	
H9	Social presence	Purchase intentions	Pleasure
H10	Social presence	Purchase intentions	Trust

Using Likert scale-type of questions as a basis, our measurement scale should be labeled as ordinal, but as variables in our analysis we treat them as being continuous. We recognize that there is disagreement as to the appropriateness of this but ultimately view it as highly meaningful to compare means, against the background that previous research, for example Cyr et al. (2007), has handled the scales in this way.

3.6. Reliability and Validity

3.6.1. Reliability

Reliability is commonly used to denote the extent to which measures that are applied in a study are consistent (Bell et al., 2022). In order to ensure a high degree of internal consistency, i.e. the extent to which the study in itself is consistent, multi-item measures were used when possible. For example, three questions each were used to measure trust and social presence. Cronbach’s alpha was then used as a reliability coefficient, where the threshold level decided upon beforehand was 0.7, meaning that sets of questions that scored higher than this were aggregated into one variable (see section 3.5.1. above for more information).

Table 3. Cronbach's alpha for the variables Trust and SP.

Aggregated variable	Cronbach's alpha
Trust	0.875
Social presence	0.876

3.6.2. Validity

Validity is a measure of the extent to which a piece of research measures what it is supposed to measure (Bell et al., 2022). An instructional manipulation check (IMC) was, as previously mentioned, added to the survey based on Oppenheimer et al., (2009). This was done in order to identify potential participants that did not pay sufficient attention to the questions. By removing these responses, the validity of the survey, we argue, has been improved. To ensure a high level of construct validity we used measurement scales that have been used before as often as possible. We however acknowledge that the changes made, such as removing one of the pleasure scales, could have a potential adverse effect on validity.

Our choice to display a video recording (instead of a picture) of a website visit was made in order to increase authenticity. This choice also allowed, as previously mentioned, for better control of the stimuli provided and thus secured a more reliant measurement of the effects produced. The choice of creating our own website with a fictitious brand was made in order to avoid store brand bias. All of the above, we argue, contributes to decreasing the chance of systematic errors affecting the results, and thus improves the validity of our study.

3.6.3. Survey Evaluation

The final block included questions that attempted to assess the survey and give insights about how questions and scenarios were perceived. 94.66% of respondents answered that they to some extent agreed that the questions and response options were clearly formulated and 88.54% thought to some extent that the scenario and the website content appeared realistic. Only 14.5% thought that the questions to some extent tried to influence their response in a certain direction. All this points towards the survey being sufficiently clear and that the participants understood the scenario which increases the quality of the answers and thus strengthens the validity of the study.

Table 4. Survey evaluation

	Strongly disagree (1)	Disagree (2)	Slightly disagree (3)	Neutral (4)	Slightly agree (5)	Agree (6)	Strongly agree (7)
Questions and response options were clearly formulated	0.76%	0%	1.53%	3.05%	10.69%	41.22%	42.75%
Questions tried to influence my responses in a certain direction	29.77%	30.54%	4.58%	20.61%	9.92%	3.05%	1.53%
Scenario and website content appeared realistic	0%	1.53%	3.05%	6.87%	11.45%	48.85%	28.24%

4. Results

4.1. Descriptive Statistics

The total number of valid responses was 134 (n=134). Out of all the participants there were 47.76% male and 48.51% female with the remainder being respondents that identified as non-binary or preferred not to state their gender. Between the groups the gender distribution remained fairly even with the biggest difference being observed in the chatbot-group, where about 2% percent units differed between male and female participants. Overall, the gender distribution between the groups can be said to be balanced.

Table 5. Gender.

	Total n=134	Control Group n=49	Chatbot n=45	Human SA n=40
Male	47.76%	49.00%	46.67%	47.50%
Female	48.51%	49.00%	48.89%	47.50%
Non-binary	1.49%	2.00%	0%	2.50%
Prefer not to say	2.24%	0%	4.44%	2.50%

In regard to age the overall group average was 30.08 years and remained close in between groups ranging from 31.15 to 28.53 years. Seen as a whole, the sample ranged from 18 to 74 years. The most homogeneous group in terms of age range was the chatbot-group which had a 41 year difference between the youngest and oldest participant. See the boxplot below for a graphical illustration of the overall sample distribution for this variable.

Table 6. Age and Shopping habits.

	Total n=134	Control Group n=49	Chatbot n=45	Human SA n=40
<u>Age</u>^a				
Mean	30.08	31.15	28.53	30.53
Min	18	19	20	18
Max	74	69	61	74
<u>Shop online</u>^b				
Mean	3.27	4.07	2.70	2.91
Min	0	0	0	0
Max	40	40	12	15

Note: ^a Age is measured in number of years,

^b Shopping habits is measured in quantity of online purchases per month.

The average for shopping online, measured in quantity of online purchases per month, was 3.27 times per month. Maximum value was 40 times, and the minimum value was 0, with the group furthest away from the mean being the control group which had an average of 4.07 times. This slightly higher mean figure is attributed to the fact that this group contained a significant outlier. Including this response does not in any meaningful way impact the results of this study since shopping habits in terms of quantity is outside its main focus area. The question was included as a way of gauging to what extent the participants were familiar with online shopping, and in this respect, we believe that the sample has sufficient reoccurring experience from the phenomena.

Taking the above into account our overall conclusion from the descriptive statistics is that the data shows very little problematic disparity, and we foresaw no issues in comparing the groups.

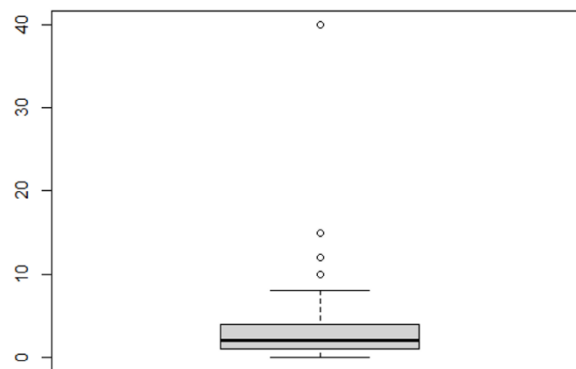


Figure 8. Boxplot showing the distribution of respondents in terms of how many times per month (on average) they shop online.

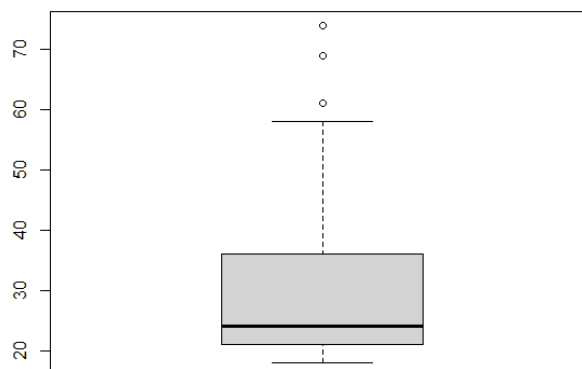


Figure 9. Boxplot showing the distribution of respondents in terms of age.

4.2. Hypothesis Testing

4.2.1. H1-H4: ANOVA Test

In order to test the hypotheses that there are significant differences in the reported means of pleasure, browse intentions, trust and social presence between the groups that were exposed to the mere presence of a service agent and the control group we conducted four independent one-way ANOVA tests. In doing this we have relied on the robustness of ANOVA against violations of normal distribution and unequal variances (Blanca et al., 2017). However, a Bartlett test of homogeneity of variances was performed. The test showed that, with an alpha level of 0.05 – the samples does not – in relation to any of the relevant variables exhibit issues with unequal variances.

Table 7. Bartlett test of homogeneity of variances.

Variable	Bartlett's K-squared	p-value
Social presence	0.06	0.97
Trust	0.99	0.61
Browse intentions	1.89	0.39
Pleasure	0.88	0.64

The same one-way ANOVA test was also used to test the hypothesis that changes in picture and text presentation of a service agent would generate significant differences in the mean level of perceived social presence.

Table 8. Results of ANOVA test.

Variable	Control Group n=49		Chatbot n=45		Human service agent n=40		p-value	F
	μ	σ	μ	σ	μ	σ		
Pleasure	4.52	1.07	4.29	1.13	4.69	0.97	0.221	1.53
Browse intentions	4.14	1.63	4.47	1.50	4.45	1.32	0.503	0.69
Social presence	3.16	1.47	3.25	1.45	3.72	1.51	0.176	1.76
Trust	4.30	1.40	4.33	1.37	4.52	1.21	0.723	0.33

The summarized results of the one-way ANOVA tests show no significant difference in the means of the above mentioned groups. This implies that no empirical evidence was found to support the hypotheses H1 through H4a that the mere presence of a greeting service agent would produce higher levels of pleasure, browse intentions, trust and social presence than the absence of a service agent.

It also means that no empirical evidence was found to support hypothesis H4b that a service agent that is introduced in a (1) more informal and emotive manner, (2) with a human name and (3) a human looking picture would produce higher levels of social

presence than a service agent that is introduced as a chatbot in a (1) formal and less emotive manner (2) with a non-human name and (3) an anonymous avatar.

Below is a graphical illustration of how the means are distributed between the groups in terms of above mentioned variables. “1CG” corresponds to the control group, “2LSP” corresponds to the chatbot-group and “3HSP” corresponds to the human service agent-group.

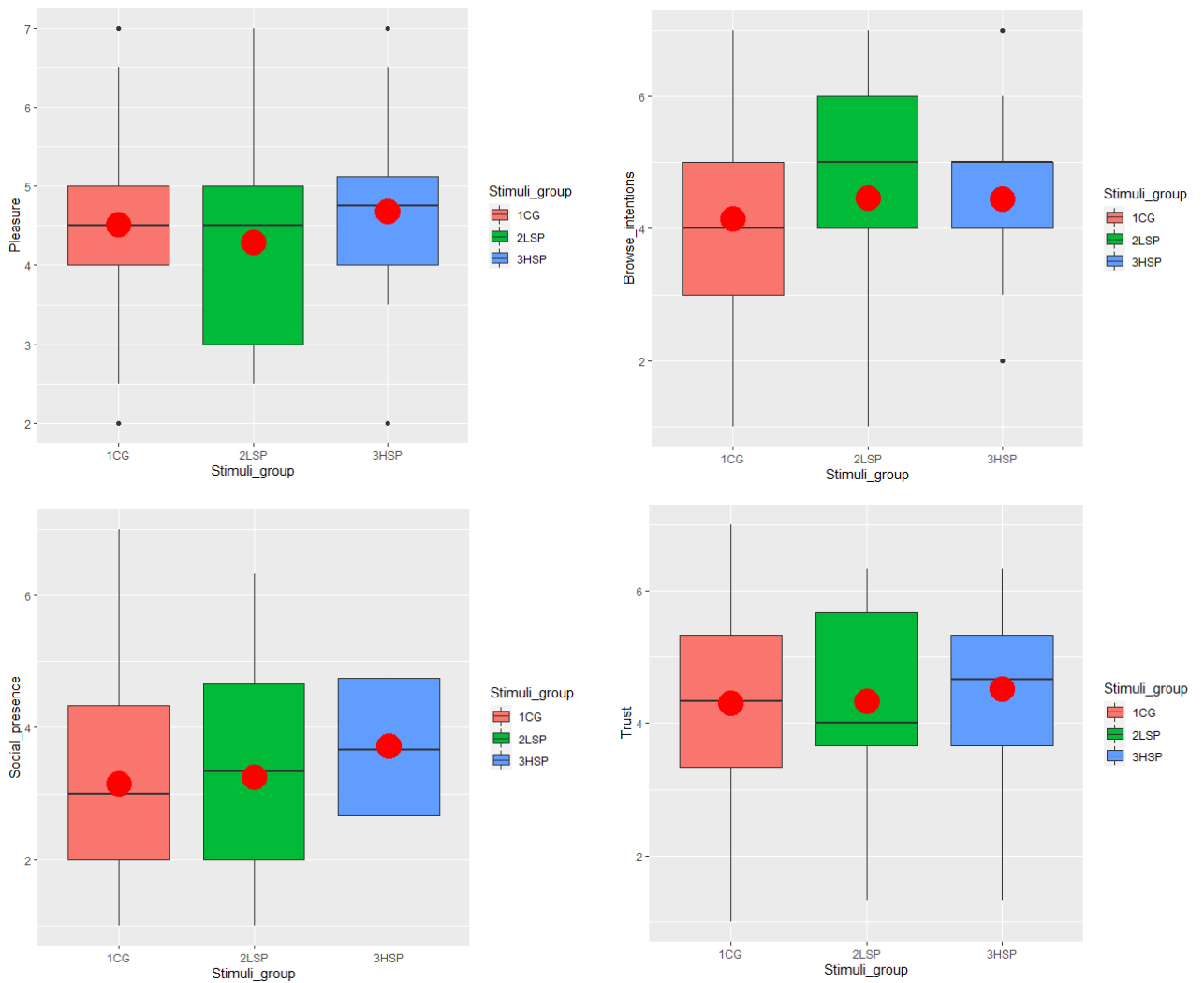
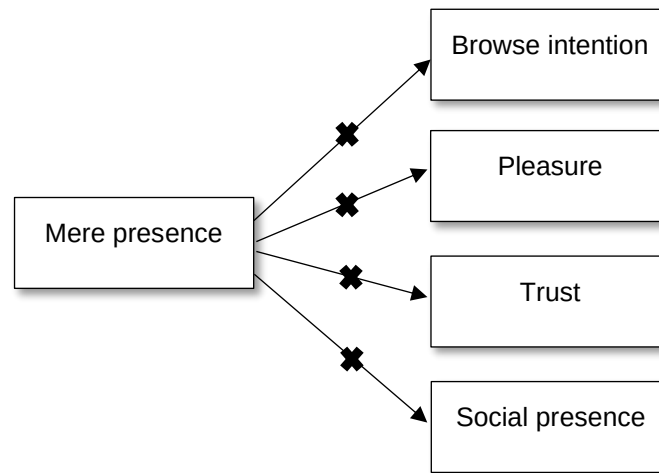


Figure 10. Graphical illustration of mean differences.

Continuing the analysis, a Tukey’s HSD test was conducted post-hoc. Since the ANOVA showed no significance there was no expectation of finding significant p-values to support our hypotheses. However, this further illustrates the differences between the groups and shows how far away each variable was from statistical significance. In conclusion, neither H1, H2, H3, H4a or H4b found empirical support.

Table 9. Results of Tukey's Honest Significant Differences.

Variable	(2LSP-1CG) p-value	(3HSP-1CG) p-value	(3HSP-2LSP) p-value
Pleasure	0.542	0.740	0.197
Browse intentions	0.550	0.603	0.999
Social presence	0.947	0.179	0.180
Trust	0.992	0.726	0.803

**Figure 11.** An illustration of hypotheses H1-H4b and their outcomes.

4.2.2. H5-H8: Regression Analysis

Before running regressions between our variables, a Breusch-Pagan test was conducted in order to test the data for potential heteroscedasticity. With a reported p-value of $p = 0.53$ we did not reject the null hypothesis at a 5% alpha level, which means that there is no evidence of heteroscedasticity being present in the variables. Furthermore, a Rainbow test for linearity was conducted. Results showed that, with a p-value of $p = 0.17$ there is no significant deviation from linearity.

In addition to this a multicollinearity test was performed in order to make sure that there were no issues with independent variables being too highly correlated. There is no generally accepted rule of thumb when it comes to VIF threshold levels. In light of this we chose to go with a conservative limit of 2.5 as a sign of there being considerable issues with collinearity, in accordance with Johnston et al. (2018). Since all variables had lower VIF scores than this threshold level we saw no issues with collinearity undermining the statistical significance. This means that the relevant assumptions of a linear regression model were met, and we continued our regression analysis.

Table 10. Results of Multicollinearity Test

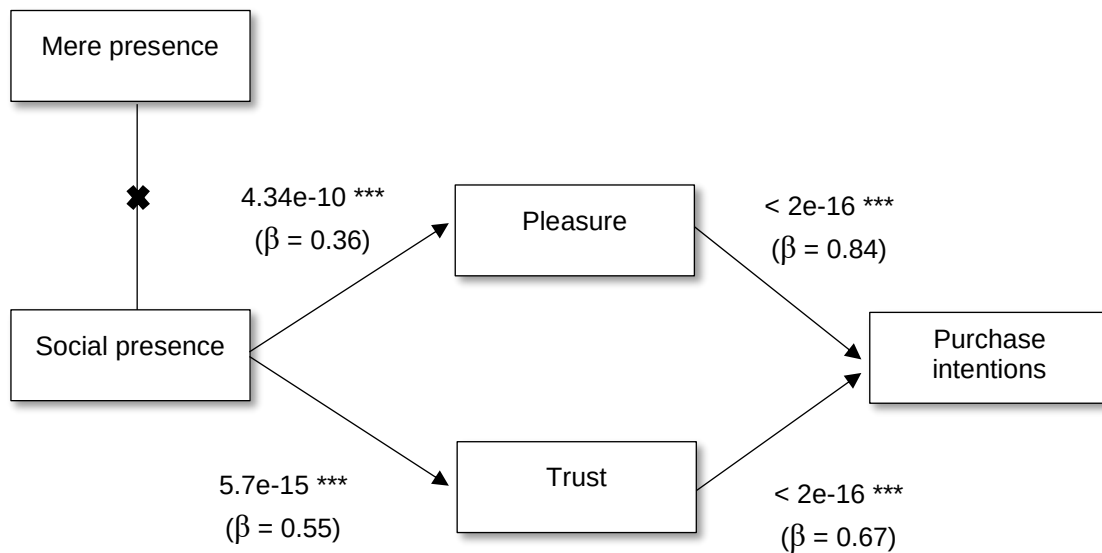
Variable	VIF	Tolerance
Social presence	1.66	0.60
Trust	2.00	0.50
Pleasure	1.70	0.59

In order to test H5 through H8, we computed four individual simple regressions between relevant variables. It was found that: social presence significantly predicted pleasure ($\beta = .36$, $p < .001$), pleasure significantly predicted purchase intention ($\beta = .84$, $p < .001$), social presence significantly predicted trust ($\beta = .55$, $p < .001$) and lastly that trust significantly predicted purchase intention ($\beta = .67$, $p < .001$). The standard deviation on all the regression can be considered low with values under 0.1 which means the data adheres closely to the regression line. In conclusion H5, H6, H7 and H8 found empirical support.

Table 11. Results of regressions.

Hypothesis	Causal path	Coefficient	p-value	Standard deviation
H5	SP $\rightarrow$ Pleasure	0.36	4.34e-10 ***	0.053
H6	Pleasure $\rightarrow$ P.I.	0.84	< 2e-16 ***	0.085
H7	SP $\rightarrow$ Trust	0.55	5.7e-15 ***	0.062
H8	Trust $\rightarrow$ P.I.	0.67	< 2e-16 ***	0.069

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

**Figure 12.** Illustration of hypotheses H5-H8 with reported significance levels and betas.

4.2.3. H9-H10: Mediation Analysis

To assess the hypotheses that the variables pleasure and trust are acting as a mediators between the variables social presence and purchase intention, a mediation test built on bootstrapping was applied. This test served the purpose to test the 95% confidence interval, determining if it contained 0 in compliance with Preacher & Hayes (2008). A mediation analysis result where a 95% confidence interval for indirect effect includes zero should be treated as insignificant, indicating that there is no mediating effect. Whereas the opposite, i.e. a 95% confidence interval for indirect effect not containing zero, would indicate the presence of a significant mediation effect (Preacher & Hayes, 2008).

In the figure below *ACME* corresponds to the “Average Causal Mediation Effect”, also known as the indirect effect. *ADE* corresponds to the “Average Direct Effect, also called the direct effect.

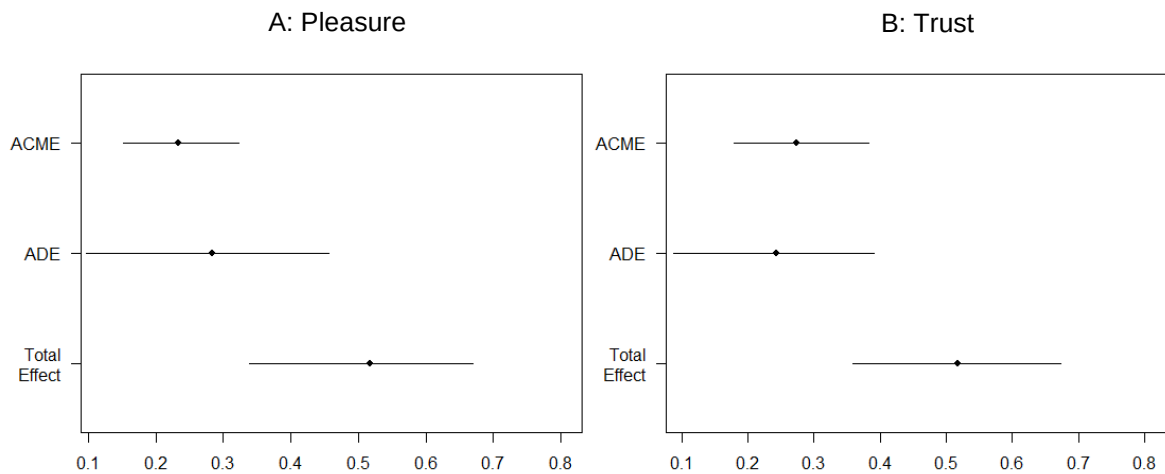


Figure 13. Causal mediation analysis of the variables (a) pleasure and (b) trust.

Table 12. Results of mediation analysis.

Effects	Mediator: Pleasure			Mediator: Trust		
	95% C.I.		p-value	95% C.I.		p-value
	Lower	Upper		Lower	Upper	
Indirect effect	0.15	0.32	<2e-16 ***	0.18	0.38	<2e-16 ***
Direct effect	0.01	0.46	<2e-16 ***	0.08	0.39	0.002 **
Total effect	0.34	0.67	<2e-16 ***	0.36	0.67	<2e-16 ***
Prop. Mediation	0.27	0.73	<2e-16 ***	0.36	0.78	<2e-16 ***

Note: Bootstrap simulations equaled 1000 instances.

Our results, based on 1000 Bootstrap samples, showed that the 95% confidence interval of neither indirect effect [0.15, 0.32] nor direct effect [0.01, 0.46] for the causal sequence (social presence → pleasure → purchase intention) included 0, which indicates the presence of a mediating effect as well as a direct effect. This means that there is not only a significant relationship between the variable pleasure – here acting as a mediator – and the variable purchase intention, but also a direct significant relationship between social presence and purchase intention.

Furthermore, our results showed that the 95% confidence interval of neither indirect effect [0.18, 0.38] nor direct effect [0.08, 0.39] for the causal sequence (social presence → trust → purchase intention) included 0, which is an indication of the presence of a mediating effect as well as a direct effect. This means that empirical evidence was found to support both the hypotheses H9 and H10.

5. Discussion and Conclusion

The aim of this study is to gain knowledge about the service encounter in a digital context and to answer the following research questions:

- (1) To what extent does the mere presence of a greeting service agent impact a customer's perceived level of pleasure, trust, intentions to continue browsing the website and social presence?*
- (2) What is the relationship between perceived social presence and the level of pleasure and trust that a customer experiences?*
- (3) What is the relationship between a customer's experience of pleasure and trust and their purchase intention?*

5.1. Summary of Results

Table 13. Summary of hypotheses and their outcomes.

H1	The mere presence of a greeting service agent will produce higher levels of pleasure than the absence of a service agent	Not supported
H2	The mere presence of a greeting service agent will produce higher intentions to continue browsing the site than the absence of a service agent	Not supported
H3	The mere presence of a greeting service agent will produce higher levels of trust than the absence of a service agent	Not supported
H4a	The mere presence of a greeting service agent will produce higher levels of social presence than the absence of a service agent	Not supported
H4b	A service agent that is introduced in a (1) more informal and emotive manner, (2) with a human name and (3) a human looking picture will produce higher levels of social presence than a service agent that is introduced as a chatbot in a (1) formal and less emotive manner (2) with a non-human name and (3) an anonymous avatar	Not supported
H5	Social presence is positively associated with pleasure	Supported
H6	Pleasure is positively associated with purchase intentions	Supported
H7	Social presence is positively associated with trust	Supported
H8	Trust is positively associated with purchase intentions	Supported

H9	The impact of social presence on purchase intention is mediated by pleasure	Supported
H10	The impact of social presence on purchase intention is mediated by trust	Supported

5.2. Discussion of Results

5.2.1. H1-H4

The presence of a greeting service agent, regardless of if it is indicated that the agent is a real person or a bot, did not generate higher levels of pleasure, trust, social presence or intentions to continue browsing the website. Rather it appears as if the sample population, with respect to these variables, were indifferent across all three stimuli groups.

Comparing these results to the theoretical framework laid out in chapter 2 it should first and foremost be noted that no direct, fully transportable parallels existed between our experiment and previous research. Our particular scenario had yet to be tested which was reflected in the mosaic nature of our theoretical foundation. What this means is that the results are both in congruence and disharmony with what literature and previous research would predict.

If Reeves and Nass' (1996) statement that humans view interactions with computers as if they were real social entities is taken as fact, one would expect that mere presence in an online context also would increase customer pleasure, in accordance with the results of Söderlund (2016). And likewise, that customers would prefer visiting an e-store where a salesperson greets them upon entry rather than visiting an e-store where a salesperson is difficult to get a hold of, in accordance with Darian et al.'s (2001) research conducted in the physical retail environment. This is however something that our results do not substantiate. One possible interpretation is therefore that Reeves and Nass' bridge between the online environment and the offline environment might be shakier than theory predicts.

However, as laid out in our theoretical foundation, the links to positive outcomes of scenarios related to mere presence cannot be studied in isolation. One of our starting points was – consistent with the line of argument brought forward by Xiao (2003) – that a greeting service agent can be seen as an unsolicited interaction and as such be interpreted as intrusive. Along similar lines, the research of Musgrove (2011) shows that a greeting salesperson at a store entrance impacted customers' attitude in a negative way. These can be seen as two examples of previous literature that adds complexity to a theoretical foundation that would otherwise be more clear-cut.

Looking back at the theoretical foundation as a whole, a possible interpretation of our results is that the service agent stimuli created a situation where positive effects clashed with negative effects, producing a feeling of accumulated indifference in the customer with respect to the variables pleasure, trust and browse intentions.

One potential takeaway is thus that our results reinforce the pitfall that was pinpointed early on, namely that there is a thin line between a greeting salesperson appearing too aggressively and the feeling that the salesperson is not sufficiently present.

The most unexpected outcome of our experiment is however that neither of the service agent scenarios produced any significant effect in terms of perceived social presence (when compared to the control group). Since this is something that theory rather unilaterally would predict it is at first glance a rather surprising result.

Ultimately, we view it as a testimony to the fact that it is more difficult to, in an online context, achieve meaningful effects on perceived social presence from fragmented instances of social stimuli. Given an authentic real life-like situation in which a subject is presented with a website in its totality – where the social aspect only composes one part of a larger set of stimuli – it is difficult to reach a statistically significant effect on an aggregated level, taking into consideration both those customers that do not feel a pressing need to engage with a service agent as well as those who do.

(See the heading “Limitations and future research” for a discussion about potential methodological deficiencies that could explain these results).

5.2.2. H5-H10

Social presence significantly predicted pleasure and trust. In relation to the foregoing theoretical framework these results were expected as they are aligned with Baumeister & Leary (1995) which highlight that there is an inherent human need to feel connected to a wider social world as well as Gunawardena (1997) and Cyr et al. (2007) which show that social presence – in an online context – positively effects satisfaction and overall customer enjoyment. They are also in line with Gefen & Straub’s (2003) view of trust as being tightly related to a social dimension.

Pleasure and trust then in turn significantly predicted purchase intention. This is also very much in harmony with previous research. For example, Donovan et al. (1994) has found the state of pleasure to be linked to increased consumer spending and Gefen & Straub (2003) argues that when a customer feels trust, uncertainty is reduced which means that they are more likely to believe that the seller will fulfill their contractual agreements.

The causal sequences laid out above was then confirmed by the mediation analysis which showed that the variables trust and pleasure acted as mediators between the variable social presence and purchase intention.

5.3. Conclusion and Implications

5.3.1. Theoretical Implications

Mere presence of a greeting service agent, regardless of if it was indicated that the agent was a real person or a bot, did not generate higher levels of pleasure, trust, social presence or intentions to continue browsing the website. Our view is that there are two possible explanations for this lack of effect: (1) that the positive effects of mere presence were hindered by the subjects perceiving the nature of the greeting as too intrusive or (2) that the presence of an online greeting service agent simply is an aspect that is not viewed as particularly important by customers – that it is an aspect that disappears in the roar of other details.

Ultimately, we view this last scenario as more probable than the first. It connects well to the discussion above about the difficulty involved in generating statistically measurable effects on social presence and, if indeed true, leads us to the conclusion that Reeves and Nass' bridge between the physical world and the online environment needs to be examined more thoroughly.

Continuing the recap of our results, social presence, as a separated variable, significantly predicted pleasure and trust which in turn significantly predicted purchase intention. Following the causal structure of the S-O-R model, this means that there is no effect between the *Stimulus* (mere presence) and the first stage *Organism* (social presence). However, there is indeed a significant statistical relationship between the first stage *Organism* (social presence) and the following second stage *Organism-Response* sequence (pleasure/trust → purchase intention). See figure 12 above for a visual representation of this brief summary.

The perhaps most noteworthy part of our results is therefore that mere presence of a service agent was not perceived as a stimuli that increased social presence according to the sample population. One possible implication of this is that a larger degree of disconnection between mere presence and social presence, as theoretical constructs, is necessary. It seems like it is difficult to produce stimuli that, in an online milieu, is sufficiently strong to produce a noticeable effect on the level of perceived social presence.

Even when adding a human picture or changing aspects such as the emotive nature of text presentation – aspects that according to theory would produce social presence – there is no effect when compared to a control group.

Overall it can be said that our results validate causal sequences related to social presence that have been observed in previous research, while simultaneously updating them to a new technological context. Our study provides new perspectives on the relationship between mere presence and social presence, highlighting that mere presence is not a strong enough stimuli to generate significant effects on social presence in an online milieu. As such they caution researchers against being too liberal when generalizing insights from the traditional retail environment to the online, e-commerce ditto. Our results also in a more general sense emphasizes the difficulty involved in pinpointing elements that generate these effects on perceived social presence.

5.3.2. Practical Implications

Creating a significant increase in customer purchase intention is one of the ultimate signs of success for an e-commerce strategy. This insight reveals the potency of our proposed model: that purchase intention is significantly predicted by social presence (mediated through the variables trust and pleasure). From a managerial perspective it essentially means that adding social elements to an e-commerce website can have a significant positive effect on their bottom line.

The difficulty lies in how to stimulate these effects in an online environment. As previously mentioned, our results showed that the impact on social presence from a greeting service agent was statistically insignificant, which means that retailers can't use this particular factor as a means of increasing customer purchase intention.

An important general takeaway is therefore that the threshold for creating a socially stimulating environment appears to be significantly higher in the online environment. With this in mind, managers should look for more powerful measures to increase the degree of social presence on their website. One possibility is to examine the possibility of introducing a service agent by using a video presentation or to invite customers to the possibility of interacting with customer service representatives directly via video. A few websites have recently started using a customer service protocol that involves video-chatting with employees, and we view this as an option that should be investigated further.

Lastly, it should be noted that the above does not mean that implementing a chatbot or contracting a customer service employee for online chat interactions is entirely useless, it simply means that the aggregated effect of such an initial greeting fails to appear. A scenario is still possible where pleasure, trust and purchase intention is increased for those customers that follow through with the interaction due to a pressing need to talk directly to a customer service representative.

5.4. Limitations and Future Research

Since the survey was distributed through our own personal networks and not through random selection, it should be regarded as a convenience sample. This comes with drawbacks such as sample bias and means that the results will not be fully representative of the population (Bell et al., 2022). One indication of this can be seen already in the age distribution of the sample population, which had an average of around 30 years. When compared to the overall population this is rather low since the average age in Sweden was 41.6 years in 2021 (SCB, 2022).

In view of the fact that an experimental design was chosen our ability to apply the results to a broader context remains rather intact, but results would have been even more robust and generalizable if probability sampling had been used. The study should therefore be conducted again to test if results are replicable. This should, if possible, also be done with the inclusion of random selection of participants, something that would make the results more representative of Sweden's population.

Another limitation was that the survey text was written in English while the stimuli and the respondents were Swedish. The survey was therefore not written in the respondent's native language which is something that we believe could potentially cause issues in relation to how they interpreted and understood the questions. The study focused on the Swedish market so having the stimuli in Swedish was intuitive but having the survey in English could be a source of confusion as respondents might not have been used to taking surveys in their non-primary language. The fact that 45 respondents misinterpreted the attention check hints towards the fact that this type of misunderstandings might have been prevalent. If redone the questionnaire should be conducted in Swedish.

For a future study the stimuli development could also be improved. For example, a complete website could be created which would allow the participants to freely roam the entire site instead of just being shown a video. We limited this experiment to the initial 20 seconds greeting but if extended by having a fully formed website the full encounter could be analyzed which could also produce deviating results.

It would also be favorable to tap into customer data in a more direct way, i.e., to collect data in such a way that respondents are purely behaving within the customer role rather than being survey respondents that act as if they were customers. This would increase the overall authenticity of the experiment and could potentially produce different results since the participants would be more immersed in a natural and life-like experience.

This means that a scenario cannot be ruled out where our results were partially distorted due to the nature of how this experiment was conducted. When entering a company's website, it is entirely reasonable to believe that a real customer service employee could be present, ready to answer questions. However, when completing a survey in the context of a research project with limited economic resources it is not as plausible to believe that

a real customer service employee would in fact be present. One could therefore expect that the immediate reaction in a customer would be stronger – and hence that results could be different – if a research design that overcomes this issue could be crafted.

As mentioned earlier, a suggestion for future research is to investigate further and more broadly into Reeves and Nass' bridge between the physical world and the online environment. Another potential focus area for future research would be to zoom in and ask questions about the degree to which customers felt that the service agent applied sales tactics that involved too much pressure in order to gain more knowledge about the “pitfall” that was mentioned early on related to this issue. Lastly, the concrete attributes that generate increased social presence in the context of an online greeting service agent largely remain undiscovered which means that further research on this topic is needed.

5.5. Final Remarks

Going back to where we started, our conclusion points towards the direction that yes, a company's first website page is in several ways comparable to a traditional physical store entrance. But the surrounding context and the rules that govern the online service encounter are different.

Yes, our spatial knowledge of the “actual garden” is indeed valid information for our spatial navigation of the “virtual garden”, but it cannot be transposed by direct route. In other words: already established insights from the traditional retail environment can act as a knowledge base when we craft the online service encounter, but rather than conceiving it as linear, the link between the two domains should be treated as being composed of several unpredictable twists and turns. In the end, our results indicate that the nodes and the panoramas of the virtual garden *do not* correspond to exact physical locations of the actual garden.

6. References

- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human-motivation. *Psychological Bulletin*, 117(3), 497-529. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=1995-29052-001&site=ehost-live>
- Bell, E., Bryman, A., & Harley, B. (2022). *Business research methods*. Oxford university press.
- Berriault-Poirier, A., Prom Tep, S., & Sénécal, S. (2018, October). Putting chatbots to the test: does the user experience score higher with chatbots than websites? In *International Conference on Human Systems Engineering and Design: Future Trends and Applications* (pp. 204-212). Springer, Cham.
- Bickmore, T. W., & Picard, R. W. (2005a). Establishing and maintaining long-term human-computer relationships. *ACM Transactions on Computer-Human Interaction*, 12, 293-327. doi:10.1145/1067860.1067867
- Biocca, F., Harms, C., & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Teleoperators and Virtual Environments*, 12(5), 456-480. doi:10.1162/105474603322761270
- Blanca, M. J., Alarcón, R., Arnau, J., Bono, R., & Bendayan, R. (2017). Non-normal data: Is a nova still a valid option? *Psicothema (Oviedo)*, 552-557. Retrieved from <http://www.psicothema.com/pdf/4434.pdf>
- Caesar, J. (2022). *Rapport: Här är e-handelsbranschern som växer snabbast*. Retrieved from <https://www.di.se/digital/rapport-har-ar-e-handelsbranschern-som-vaxer-snabbast/>
- Carter, E., & Knol, C. (2019). Chatbots — an organisation's friend or foe? *Research in Hospitality Management*, 9(2), 113–115-113–115. Retrieved from <https://www.ajol.info/index.php/rhm/article/view/192221>
- Cortina, J. M. (1993). What is coefficient alpha? an examination of theory and applications. What is Coefficient Alpha? an Examination of Theory and Applications. *Journal of applied psychology*, 78(1), 98-104.
- Cui, G., Lockee, B., & Meng, C. (2013). Building modern online social presence: A review of social presence theory and its instructional design implications for future trends. *Education and Information Technologies*, 4(18), 661-685. doi:10.1007/s10639-012-9192-1
- Cyr, D., Hassanein, K., Head, M., & Ivanov, A. (2007). The role of social presence in establishing loyalty in e-service environments. *Interacting with Computers*, 19(1), 43-56. doi:10.1016/j.intcom.2006.07.010
- Darian, J. C., Tucci, L. A., & Wiman, A. R. (2001). Perceived salesperson service attributes and retail patronage intentions. *International Journal of Retail & Distribution Management*, 29(5), 205-213.

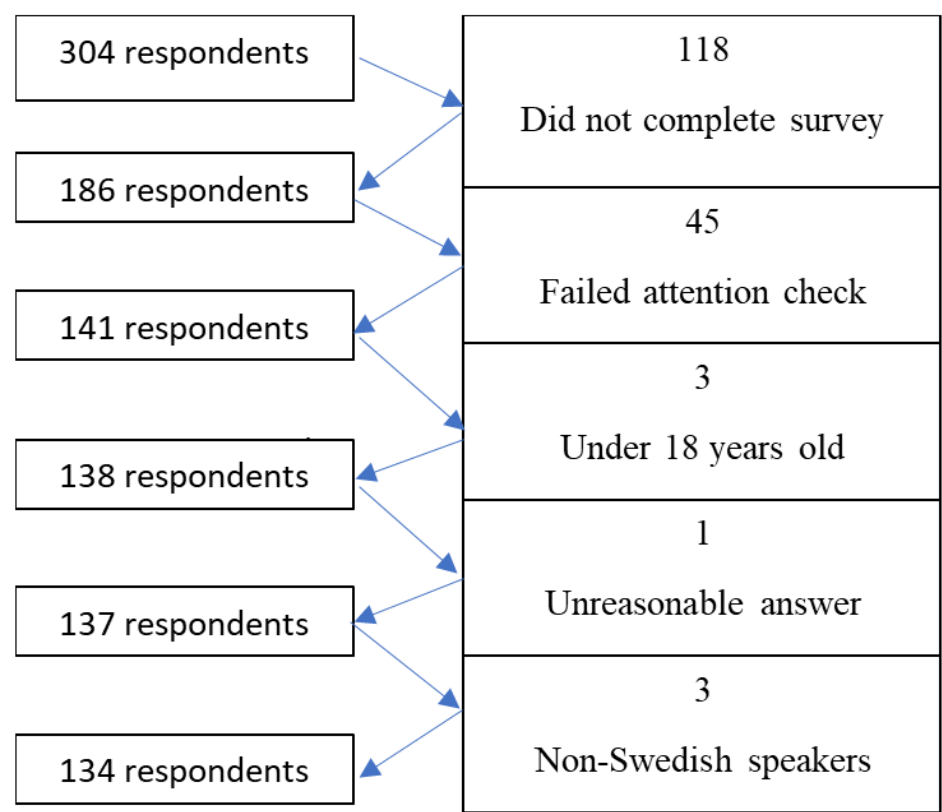
- Donovan, R. J., Rossiter, J. R., Marcoolyn, G., & Nesdale, A. (1994). Store atmosphere and purchasing behavior. *Journal of Retailing*, 70(3), 283-294. doi:10.1016/0022-4359(94)90037-X
- European Commission. *The digital economy and society index (DESI)*. Retrieved from <https://digital-strategy.ec.europa.eu/en/policies/desi>
- Forbes. (2018, Jan 27). How Chatbots Feed Into Millennials' Need For Instant Gratification. *Forbes*. <https://www.forbes.com/sites/andrewarnold/2018/01/27/how-chatbots-feed-into-millennials-need-for-instant-gratification/>
- Gefen, D., & Straub, D. (2003). Managing user trust in B2C e-services. *E-Service Journal*, 2(2), 7-24. doi:10.2979/esj.2003.2.2.7
- Guo, Z., Yao, Y., & Chang, Y. (2022). Research on customer behavioral intention of hot spring resorts based on SOR model: The multiple mediation effects of service climate and employee engagement. *Sustainability*, 14(14), 1-15. Retrieved from https://econpapers.repec.org/article/gamjsusta/v_3a14_3ay_3a2022_3ai_3a14_3ap_3a8869-_3ad_3a866969.htm
- Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *American Journal of Distance Education*, 11(3), 8-26. doi:10.1080/08923649709526970
- Hassanein, K., & Head, M. (2005). The impact of infusing social presence in the web interface: An investigation across product types. *International Journal of Electronic Commerce*, 10(2), 31-55. doi:10.2753/JEC1086-4415100202
- Holzwarth, M., Janiszewski, C., & Neumann, M. M. (2006). The influence of avatars on online consumer shopping behavior. *Journal of Marketing*, 70(4), 19-36. Retrieved from <https://www.jstor.org/stable/30162112>
- Johnston, R., Jones, K., & Manley, D. (2018). Confounding and collinearity in regression analysis: A cautionary tale and an alternative procedure, illustrated by studies of british voting behaviour. *Quality & Quantity*, 52(4), 1957-1976. doi:10.1007/s11135-017-0584-6
- Kim, T., Sung, Y., & Moon, J. H. (2020). Effects of brand anthropomorphism on consumer-brand relationships on social networking site fan pages: The mediating role of social presence. *Telematics and Informatics*, 51, 101406. doi:10.1016/j.tele.2020.101406
- Kindly. (2021, November). *15 Chatbot Statistics in 2022 You Need to Know*. <https://www.kindly.ai/blog/chatbot-statistics-2022>
- Kwak, S., & Kim, J. (2017). Central limit theorem: The cornerstone of modern statistics. *Korean Journal of Anesthesiology*, 144-156. Retrieved from <http://dx.doi.org/10.4097/kjae.2017.70.2.144>
- Lee, K. M. (2004). Presence, explicated. *Communication Theory*, 14(1), 27-50. doi:10.1111/j.1468-2885.2004.tb00302.x

- Ling, E. C., Tussyadiah, I., Tuomi, A., Stienmetz, J., & Ioannou, A. (2021). Factors influencing users' adoption and use of conversational agents: A systematic review. *Psychology & Marketing*, 38(7), 1031-1051. doi:10.1002/mar.21491
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. Cambridge, MA, US: The MIT Press.
- Munnukka, J., Talvitie-Lamberg, K., & Maity, D. (2022). Anthropomorphism and social presence in Human–Virtual service assistant interactions: The role of dialog length and attitudes. *Computers in Human Behavior*, 135, 107343. doi:10.1016/j.chb.2022.107343
- Musgrove, C. F. (2011). *Hailers: Retail salespeople near the entrance of the store and shoppers' approach-avoidance reactions*. The University of Alabama. Retrieved from <https://ir.ua.edu/handle/123456789/1049>
- Naylor, G., & Frank, K. E. (2000). The impact of retail sales force responsiveness on consumers' perceptions of value. *Journal of Services Marketing*, 14(4), 310-322. doi:10.1108/08876040010334529
- Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). *Instructional manipulation checks: Detecting satisficing to increase statistical power*. Rochester, NY: Retrieved from <https://papers.ssrn.com/abstract=1003424>
- Pavlou, P. A., Liang, H., & Xue, Y. (2006). Understanding and mitigating uncertainty in online environments: A principal-agent perspective. *MIS Quarterly*, 105-136. Rochester, NY: Retrieved from <https://papers.ssrn.com/abstract=2380164>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, 40(3), 879-891.
- Puzakova, M., & Kwak, H. (2017). Should anthropomorphized brands engage customers? the impact of social crowding on brand preferences. *Journal of Marketing*, 81(6), 99-115. Retrieved from <https://www.jstor.org/stable/44878185>
- Riegelsberger, J.. (2003). Shiny happy people building trust? : Photos on e-commerce websites and consumer trust. *Proc. of the SIGCHI Conference on Human Factors in Computing Systems (CHI'03)*, Retrieved from <https://cir.nii.ac.jp/crid/1571135650481336320>
- Reeves, B., & Nass, C. I. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. New York, NY, US: Cambridge University Press.
- Reichheld, F. F., & Schefter, P. (2000). E-loyalty: Your secret weapon on the web. *Harvard Business Review*, 78(4), 105-113. Retrieved from <https://www.elibrary.ru/item.asp?id=4029762>
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(6), 845-851. doi:10.1037/0022-3514.89.6.845

- Statista. *Countries where e-commerce is most popular 2022*. Retrieved from <https://www.statista.com/statistics/1042763/worldwide-share-online-retail-penetration-by-country/>
- Statistiska centralbyrån (SCB). (2022). *Befolkningens medelålder efter region och kön*. https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__BE__BE0101__BE0101B/BefolkningMedelAlder/?rxid=698f7427-2ec7-46b6-808c-3082f1a070fb
- Söderlund, Magnus. (2018). The proactive employee on the floor of the store and the impact on customer satisfaction. *Journal of Retailing and Consumer Services*, 43(C), 46-53. Retrieved from https://econpapers.repec.org/article/eeejoreco/v_3a43_3ay_3a2018_3ai_3ac_3ap_3a46-53.htm
- Söderlund, M. (2016). Employee mere presence and its impact on customer satisfaction. *Psychology & Marketing*, 33(6), 449-464. doi:10.1002/mar.20890
- Tai, S. H. C., & Fung, A. M. C. (1997). Application of an environmental psychology model to in-store buying behaviour. *The International Review of Retail, Distribution and Consumer Research*, 7(4), 311-337. doi:10.1080/095939697342914
- Tauber, E. M. (1972). Marketing notes and communications: Why do people shop? *Journal of Marketing*, 36(4), 46-49. doi:10.1177/002224297203600409
- Valenzuela, A., & Hadi, R. (2017). Implications of Product Anthropomorphism Through Design. In *The Routledge Companion to Consumer Behavior* (pp. 82-96). Routledge.
- Waytz, A., Heafner, J., & Epley, N. (2014). The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle. *Journal of Experimental Social Psychology*, 113-117. doi:10.1016/j.jesp.2014.01.005
- Xiao, J., Catrambone, R., & Stasko, J. T. (2003). *Be quiet? evaluating proactive and reactive user interface assistants*. Georgia Institute of Technology.
- Yen, C., & Chiang, M. (2021). Trust me, if you can: A study on the factors that influence consumers' purchase intention triggered by chatbots based on brain image evidence and self-reported assessments. *Behaviour and Information Technology*, 40(11), 1177-1194. doi:10.1080/0144929X.2020.1743362
- Zajonc, R. B. (1965). Social facilitation. *Science*, doi:10.1126/science.149.3681.269
- Zhang, L., Erickson, L., & Webb, H. (2011). Effects of "emotional text" on online customer service chat. *Graduate Student Research Conference in Hospitality and Tourism*, Retrieved from https://scholarworks.umass.edu/gradconf_hospitality/2011/Presentation/42

7. Appendices

Appendix A: Survey Dropout Rate Analysis

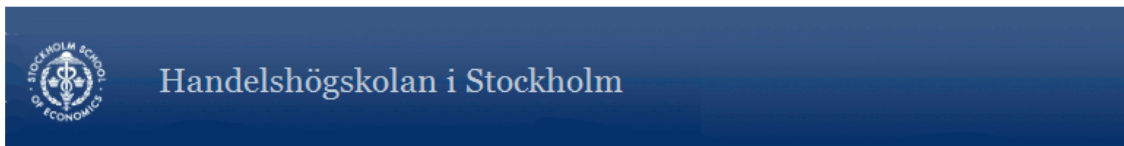


Appendix B: Origin of Measurement Scales

Table 14. Origin of measurement scales.

Variable	Measurement scale adopted from:
Pleasure	Magnus Söderlund (2016) – modified version
Trust	Cyr et al. (2007)
Social presence	Gefen and Straub (2003)
Purchase intentions	Gefen and Straub (2003)
Browse intentions	Gefen and Straub (2003) served as inspiration

Appendix C: Survey



Hi and welcome!

This survey is a part of a thesis project at the Stockholm School of Economics. Completing the survey will take approximately 5 minutes and your answers will be collected anonymously. Note that some questions will remind you of others.

Our bachelor thesis will be based on this survey, so please remember to read the scenario and answer the questions carefully. For every participant we will donate 3 SEK to The Swedish Red Cross (Röda Korset) Ukraine fund - up to a maximum of 500 SEK.

Thanks in advance for participating!
Oskar & Liza





Information about GDPR:

This survey is a part of a Bachelor thesis in marketing conducted by Oskar Eskilsson (25099@student.hhs.se) and Elizabeth Lopez Alushkina (24940@student.hhs.se). Supervisor for the project is Hanna Berg. The following information explains how we will handle your personal data in accordance with GDPR (General Data Protection Regulation):

- All answers will be treated anonymously.
- Anything you say in the survey will be held strictly confidential.
- All data will be stored safely by the school and will be permanently deleted when the project is completed.
- You can at any time withdraw your consent and your data will thereafter be permanently erased.

☐ I accept the terms stated above





Imagine the following scenario:

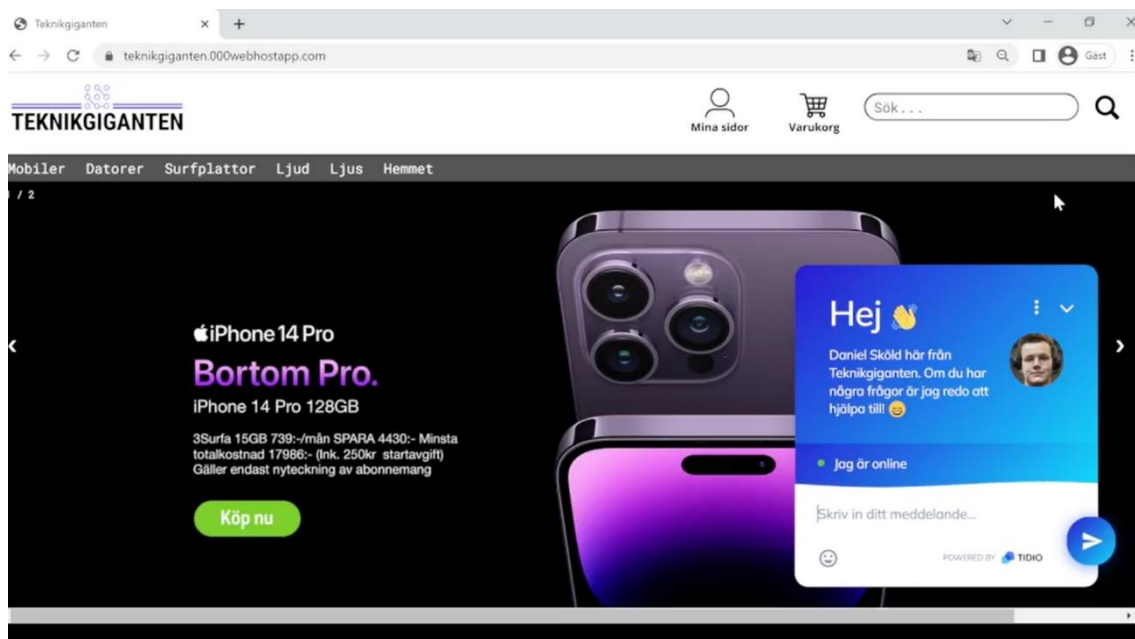
You are on a mission to buy a new computer. After having made a google entry for the specific model you are looking for, you end up on the website "Teknikgiganten". The following video shows you the 20 first seconds of your website store visit. Please watch the video carefully. Then answer the questions that follow with the scenario in mind.

Note that the video only will cover the initial part of your website-visit and you will only see the frontpage. You might feel that certain questions would require more time spent on the website, however you should base your answers on the information provided in the video.

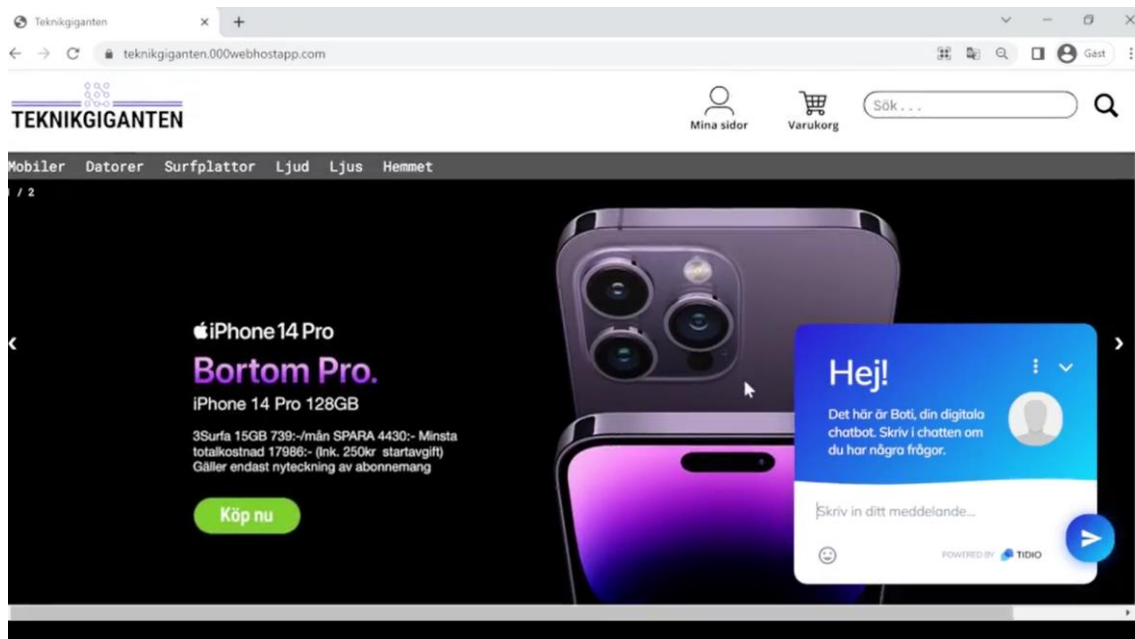
Important: If you are on a **mobile device**, please make sure to open the video in full screen mode and **tilt your phone** so that it covers the whole screen. Thank you!



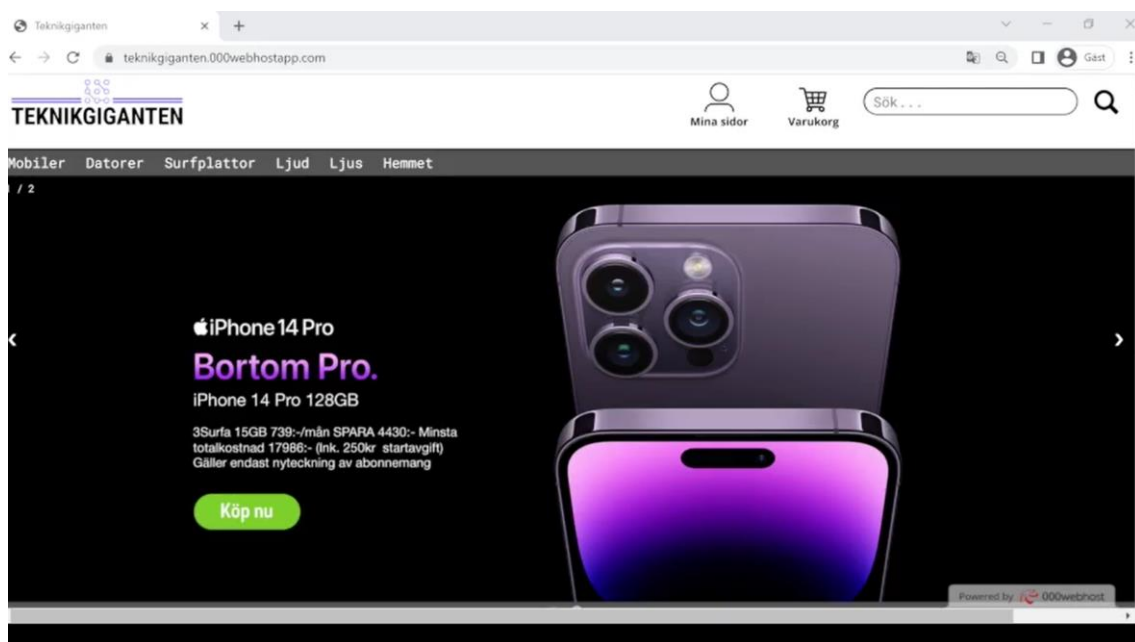
Participants were then randomized into one of the following groups:



Stimuli 1: Human service agent.



Stimuli 2: Chatbot.



Stimuli 3: Control group. Absence of greeting service agent.



What feeling do you get from the store Teknikgiganten?

Answer on a scale from 1 to 7, where 7 "Pleasant" and 1 is "Unpleasant".

- ☐ 7 (Pleasant)
- ☐ 6
- ☐ 5
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1 (Unpleasant)



What feeling do you get from the store Teknikgiganten?

Answer on a scale from 1 to 7, where 7 "Like it" and 1 is "Dislike it".

- ☐ 7 (Like it)
- ☐ 6
- ☐ 5
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1 (Dislike it)





In relation to the video you just saw, please state how much you agree or disagree with each of the following statements:

	(1) Strongly disagree	(2) Disagree	(3) Slightly disagree	(4) Neutral	(5) Slightly agree	(6) Agree	(7) Strongly agree
I would like to continue to browse this website.	☐	☐	☐	☐	☐	☐	☐
I am likely to buy a computer from this store.	☐	☐	☐	☐	☐	☐	☐
I am likely to buy other products from this store.	☐	☐	☐	☐	☐	☐	☐
It's important that you pay attention to this study. Please tick (7).	☐	☐	☐	☐	☐	☐	☐





Please state how much you agree or disagree with each of the following statements:

	(1) Strongly disagree	(2) Disagree	(3) Slightly disagree	(4) Neutral	(5) Slightly agree	(6) Agree	(7) Strongly agree
I can trust this website.	☐	☐	☐	☐	☐	☐	☐
I feel this website would provide me with good service.	☐	☐	☐	☐	☐	☐	☐
I trust the information presented on this website.	☐	☐	☐	☐	☐	☐	☐



Please state how much you agree or disagree with each of the following statements:

	(1) Strongly disagree	(2) Disagree	(3) Slightly disagree	(4) Neutral	(5) Slightly agree	(6) Agree	(7) Strongly agree
There is a sense of human contact on this website.	☐	☐	☐	☐	☐	☐	☐
This website feels personal.	☐	☐	☐	☐	☐	☐	☐
This website feels social.	☐	☐	☐	☐	☐	☐	☐





How old are you? (answer by stating a number)

What is your gender?

- ☐ Male
- ☐ Female
- ☐ Non-binary / third gender
- ☐ Other
- ☐ Prefer not to say

Do you speak Swedish?

- ☐ Yes
- ☐ No
- ☐ A little bit

On average how many times a month do you make a purchase at an online store? (answer by stating a number)





Evaluation of the study. Indicate to what extent you agree with the following statements:

	(1) Strongly disagree	(2) Disagree	(3) Slightly disagree	(4) Neutral	(5) Slightly agree	(6) Agree	(7) Strongly agree
The questions and response options were clearly formulated	☐	☐	☐	☐	☐	☐	☐
The questions tried to influence my responses in a certain direction	☐	☐	☐	☐	☐	☐	☐
The scenario and the website content appeared realistic	☐	☐	☐	☐	☐	☐	☐



We thank you for your time spent taking this survey.
Your response has been recorded.