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The influence of Artificial Intelligence awareness on the acceptance by users

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Abstract

To date, there have been many success stories about AI, but also less successful and some concerns expressed by experts in the field of using AI (Davidson R, Bicket M, Whitmarsh L, 2013). We as citizens are aware that Artificial Intelligence is in its early stages in our society (Brian Tomasik, 2016). Future goals of AI is to make unbiased decisions, taking human behavior into account, such as prejudices, values and feelings (Riedl, 2018). These need to be made transparent and understandable to humans, in order to achieve a higher acceptance of AI, as these are still unclear to many. Nowadays AI is a grey area for many, as it is unclear why certain decisions are being made.

The aim of this research is to find out whether the awareness, of products having AI technology, has an impact on the acceptance of these products, by also looking at intersectional variables, such as gender and age. The following research question has been prepared for this: *To what extent does the awareness of AI technologies, influence the acceptance of products in which they are integrated? through intersectional variables; age and gender using Theory of Planned Behavior?*

To be able to answer this research question, an experimental survey was conducted for which online questionnaires were distributed among Dutch respondents. Through completely randomized design (CRD), participants are divided into two surveys, a Survey with Description of AI and a Survey without Description of AI in the questions. These two groups have seen different product descriptions based on this classification.

While the acceptance of AI by the society is still in its early stage, this research indicated that the current awareness of AI does indeed influence the acceptance of AI technologies. People with awareness of AI accept certain technologies less quickly which ultimately can lead to no adoption. Participants perceive control and transparency as important, because AI can use personal data. Participants have indicated that they would like to have control over the data that is used by AI technologies. Other researchers can conduct this study to measure the acceptance of AI in the future as AI keeps evolving.

Table of Contents

Abstract	2
List of Tables	5
List of Figures	6
1. Introduction	7
1.2 Problem statement	8
1.3 Significance of the study	9
1.4 Research Question	10
1.4.1 Main research question	10
1.4.2 Objective of the study	10
1.4.3 Hypothesis	10
2. Theoretical Framework	12
2.1 Acceptance and Adoption models	12
2.2 Theory of Planned Behavior	22
2.2.1 Why Theory of Planned Behavior?	24
2.3 Acceptance of Artificial Intelligence Technologies	24
2.3.1 Trust and Transparency	25
2.3.2 Dutch government on AI	26
2.3.3 Search Keys	26
3. Methodology	28
3.1 Research Philosophy	28
3.2 Research Design	28
3.3 The Research Pyramid	30
3.3.1 Paradigm	30
3.3.2 Methodology	30
3.3.3 Methods (Collecting Data)	31
3.4 Questionnaire experimental survey	33
3.5 External influence during experiment	34
3.6 Techniques (Data analysis)	36
3.7 Limitations and Quality of the Study	36
3.7.1 Possible Methodological Limitations	36

3.7.2 Possible Limitations of the Researcher	36
4. Results (Descriptive and Inferential Statistics)	37
4.1 Experimental Questions (Descriptive Analyses)	37
4.1.1 Survey with Artificial Intelligence description	38
4.1.2 Survey without Artificial Intelligence description	42
4.2 Experimental Questions Analysis	47
4.3 Behavioral Intention (Inferential Statistics)	48
4.3.1 Theory of Planned Behavior Questionnaire	50
4.3.1.1 Attitude	50
4.3.1.2 Social Norm	54
4.3.1.3 Perceived Behavioral Control	55
4.3.1.4 Descriptive analysis	58
5. Conclusion	59
6. Discussion	61
References	62
APPENDIX A. Survey questions	65
APPENDIX B. T-table	68

List of Tables

Table 4. 1 Survey overview	37
Table 4. 2 NPS Key performance indicator	37
Table 4. 3 NPS score Tesla car	38
Table 4. 4 Tesla Age scores	39
Table 4. 5 Tesla Gender scores	39
Table 4. 6 NPS score Google Home Assistant	40
Table 4. 7 Google Home Assistant age category	40
Table 4. 8 Google Home Assistant gender category	40
Table 4. 9 NPS score SimCam Home Security Camera	41
Table 4. 10 SimCam Home Security Camera age category	41
Table 4. 11 SimCam Home Security Camera gender category	42
Table 4. 12 NPS score Tesla car	42
Table 4. 13 Tesla Age scores	43
Table 4. 14 Tesla Gender category	43
Table 4. 15 NPS score Google Home Assistant	44
Table 4. 16 Google Home Assistant knowledge score	44
Table 4. 17 Google Home Assistant Age category	45
Table 4. 18 Google Home Assistant Gender category	45
Table 4. 19 NPS score Home Security Camera	45
Table 4. 20 SimCam Home Security Camera Age category	46
Table 4. 21 Q12 Gender category	46
Table 4. 22 SimCam Home Security Camera Gender category	46
Table 4. 23 Tesla car survey NPS scores	47
Table 4. 24 Google Home Assistant survey NPS scores	47
Table 4. 25 SimCam Home Security Camera survey NPS scores	48
Table 4. 26 Q10 participant answers: What is the first thing that comes to mind when you think about	
Artificial Intelligence?	51
Table 4. 27 Q11 results about expressing emotions about Artificial Intelligence	52
Table 4. 28 Q12 results: Would you like to have Artificial Intelligence devices in your home?	52
Table 4. 29 Q13 results: To what extent do you consider yourself a fan of innovative technologies?	53
Table 4. 30 Q14 results importance of personal data	53
Table 4. 31 Q15 results: service by Artificial Intelligence	54
Table 4. 32 Q16 results Social Norm	54
Table 4. 33 Q17 results Social Norm	55
Table 4. 34 Q18 results Artificial Intelligence become part of our society	55
Table 4. 35 Q19 Rating knowledge about Artificial Intelligence	56
Table 4. 36 Q20 Confident about understanding Artificial Intelligence Technologies	56
Table 4. 37 Q21 Control over Artificial Intelligence	57
Table 4. 38 Q22 Desire to buy	58

List of Figures

Figure 2. 1 Innovation Adoption Curve (Rogers, 1995)	13
Figure 2. 2 Task Technology Fit model (Goodhue and Thompson, 1995)	14
Figure 2. 3 Theory of Reasonable Action (Fishbein and Ajzen, 1975)	14
Figure 2. 4 The Theory of Planned Behavior (Ajzen, 1991)	15
Figure 2. 5 This is the first modified version of the Technology Acceptance Model (TAM) by Davis, Bo	gozzi
and Warshaw, 1989)	16
Figure 2. 6 Technology Acceptance Model 2 (Venkatesh & Davis, 2000)	17
Figure 2. 7 Technology Acceptance Model (TAM 3) (Venkatesh and Bala, 2008)	18
Figure 2.8 Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davi	s and
Davis, 2003)	19
Figure 2. 9 Unified Theory of Use and Acceptance of technology (Venkatesh, Thong, & Xu, 2012)	21
Figure 2. 10 The Theory of Planned Behavior (Ajzen, 1991)	22
Figure 2. 11 Google Scholar Search Keys	27
Figure 2. 12 Leiden university library Search Keys	27
Figure 3. 1 Research design related to theory, methodology, question and context	29
Figure 3. 2 The research Pyramid	30
Figure 3. 3 Completely Randomized Design flow	32
Figure 3. 4 The Theory of Planned Behavior (Ajzen, 1991)	33

1. Introduction

Artificial Intelligent has become a much-discussed term. Artificial Intelligence (AI) is an umbrella term of techniques such as Machine Learning, Internet of Things and Deep Learning which show their contribution to the development of Artificial Intelligence in general. These techniques are all covered by Artificial Intelligence. Many technologies make use of these techniques and may contain one or more to make the functionality of technology as complete as possible. Previous research of *Sarah Katharina Kessler & Maik Martin. (2017)* showed interesting findings regarding the adoption of Voice Assistants and the factors influencing this. The research also showed necessary changes to the already existing UTAUT (Unified Theory of Acceptance and Use of Technology) to make it more recent. The study was focused on specific innovation like Voice Assistance and the sampling group is focused on a more general audience. This research has placed its focus on the impact of awareness that a certain technology uses Artificial Intelligence through intersectional variables such as gender and different age categories. Recent developments in Artificial Intelligence have ensured that the lives of different people have become easier. Many people have unconsciously adopted this (e.g. smartphones).

It can no longer be denied that Artificial Intelligence occupies a place in our world. More and more often we are confronted with or use our own applications that are driven by Artificial Intelligence, such as chatbots while shopping online or the speech assistant Google in our own home. However, stories on this transformation is often negative; it is feared that robots will steal our jobs or become smarter than ourselves. It will not be able to help us in society, but also in business in the workplace. Most people are convinced that waiting times are reduced, repeated administrative tasks are eliminated and the number of mistakes made decreases. Because a lot of time is saved with the introduction of Artificial Intelligence, employees are given time for other tasks, so they can develop further. In addition, in particular numerical processes are expected to be performed better in terms of quality. Software or hardware that use Artificial Intelligence do not require holidays, or never get sick and can be available 24/7 without making mistakes.

There are also concerns expressed through the media, which indicates that Artificial Intelligence must be used in a way to improve society and help humans in different areas not to be a threat. The concerns often come from companies or society, because at the moment people see this as a danger to their job, safety and privacy. From the government, there is no Quality Mark for Artificial Intelligence technologies. So end-users often do not know which devices offer them security and privacy they need since these technologies involve personal data to its functionalities. The Dutch government should be more involved in this and should work together with companies and universities to provide users with the safety they expect and need. The future of Artificial Intelligence is very promising, but as a government, you need to have an eye on job security, personal data protection and regulations. In Europe, steps have been taken by introducing the GDPR (General Data Protection Regulation). This results in a more forceful consent requirement from the European government for collecting personal data by organizations. Organizations who fail to comply with this regulation risks significant penalties. The side effect of too strict might limit the functionality of intelligence technologies. Staying within the safe zone of regulations and make optimum use of AI can be challenging. These kinds of concerns and challenges ensure that acceptance and user behavior are influenced by this. Trust by the Dutch society for Artificial Intelligence might decrease and makes it more difficult to grant Artificial Intelligence access to society and adopt it more. Besides this, the Dutch Artificial Intelligent, from Europe perspective, is still in the process of setting up its AI strategy at the EU and also internally by investing more in human talent. From education perspectives, the Netherlands are well-positioned and are avoiding brain drain (Dutch Artificial Intelligence Manifesto, 2018). This will provide students with a good base for the future of Artificial Intelligence in the Netherlands, but it is up to the government to keep experts in the Netherlands and make the Netherlands more interesting to stay. Such measures are the first steps in the future to influence the acceptance and adoption of AI technologies. Making Artificial Intelligence part of society.

1.2 Problem statement

Consciously or unconsciously we all have interaction with intelligent systems and technologies in some way. Many technologies and devices we use today possess Artificial Intelligence algorithms to make our daily tasks better and easier. Whether things go the way we hope is a different story. In practice, it is ideal if the interaction between humans and AI were to run better (Siau, 2018). The goal is to integrate, different aspects of the interaction between humans, into AI such as; preventing prejudices, imagining someone else's situation, understanding behavior and emotions. Explaining a decision so that it is transparent and understandable for everyone because it is still a black box for many (Riedl, 2019). Trust in AI is not entirely clear despite the fact that we already make use of it (Thelisson, 2017). People are used to communicating with each other when there is common knowledge about how things work and how the world works. Social interaction is the way in which people and groups act with respect to each other, respond to each other and try to influence each other. AI should be built and designed to understand humans and AI should help humans to understand them (Riedl, 2019).

Many are not aware of the existence of AI in technologies we use today. The ones who are aware are not always conscious of the capabilities, how AI functions and if it is reliable enough for daily use. Many home devices are generating data, store and reuse to make prediction and suggestions based on personal data. Many home users rely on their purchased technology (some with the necessary knowledge and some without). Purchased home technologies are tested on technology reliability and quality. But how do we know the society is using it in the proper way? How do we know their home network is secured enough against cyber-attacks? Since all AI-related devices are connected to the home network (Whitmarsh, Balta-Ozkan, Davidson, 2013). We live in an era of commerce and easy purchasing of technologies via the internet from all over the world. In the Netherlands, we are able to order electronics, such as drones, smartphones, smart voice assistants and more, which make use of AI. These technologies store personal data such as GPS coordinates with date and time, when and what time a person was at a particular location (Costa, Poullet, 2012). Voice assistants devices and applications are storing human voice and the way we sound (vocal waves). These personal data can be used and misused. Currently, we are accepting many intelligent devices and applications developed by different manufacturers from all over the world without any clear quality mark to protect buyers. A quality mark helps the consumer to decide on a purchase. This is especially useful if the consumer is insecure and a possible mis-sale can lead to considerable damage, for example, leak of personal data (Noel Sharkey, 2018). We always try to create a secured home against any threat (such as burglars), but digital cyber-attacks on our privacy are even a bigger threat. Ultimately, people want to be able to use all existing and future AI technologies carefree. This ultimately ensures winning trust and acceptance to purchase and use. It is also very important not to forget that AI algorithms do not make prejudices and discriminatory decisions that developers have not thought of (Riedl, 2019). The interaction with an AI algorithm must be transparent and understandable for end-users. If the algorithm's decision is not correct, humans can respond and correct it so that the AI algorithm reviews its previous decision. This creates a bond and trust with humans to adopt and allow technology in our lives (Riedl, 2019). We have to advance towards an environment where humans profile from AI algorithms with known regulations for everyone without limiting or losing the functionality and practicality of AI.

1.3 Significance of the study

Many studies have been carried out in the field of Artificial Intelligence and also on different surfaces. Many discussions about recent developments in the field of Artificial Intelligence, have generated a great deal of interest to investigate this in a specific area. Reading the research project of Kessler, SK and Martin, M. (2017) together with Ricquebourg, V. et al (2006) have indicated explicit suggestions to conduct their research further on other focus groups, countries or cultures. After reading their studies, I decided to conduct the acceptance of Artificial Intelligence technologies in the Netherlands based on The Theory of Planned Behavior acceptance adoption model through intersectional variables such as age and gender. This study ensures an extra contribution to science in the field; acceptance of Artificial Intelligence Technologies. This research can be used as a base for further research within the field of acceptance and adoption of new innovative technologies and predict intention and behavior of potential users. This research can be very useful for different scenarios where it is desirable to view the acceptance of a certain technology. Artificial Intelligence is not a product or a thing, but is much broader and more complex. So this research can be used as a basis for making predictions on acceptance by organizations, countries and different groups or cultures.

1.4 Research Question

1.4.1 Main research question

The previous section states that the acceptance of AI devices differs from traditional acceptance of new technologies by humans due to security and trust concerns and knowledge on how to adopt. For this statement we have formulated the next research main question:

To what extent does the awareness of AI technologies, influence the acceptance of products in which they are integrated? through intersectional variables; age and gender using Theory of Planned Behavior?

1.4.2 Objective of the study

The purpose of this study was to identify the impact of awareness when technologies possess Artificial Intelligence. This research also aims to give a deeper understanding of the acceptance by making use of the theoretical model Theory of Planned Behavior. The Theory of Planned Behavior (TPB) is designed to forecast human behavior in various cases (Ajzen, 1991). For this research we want to see to what extent does the awareness, that a product possesses Artificial Intelligence, Influence the acceptance by users through intersectional variables; age and gender using TPB.

The intention to investigate the acceptance of Artificial Intelligence actually arose after various news reports were published about various incidents at the Dutch government to track fraud or a major leak at Google from their Home Assistant. I have also become aware of how much dependent we have become in our daily lives. After this I started reading about Artificial Intelligence and the intention was further developed by an already existing research about the AI and IoT (Martin Kessler and Sarah Katherina 2017) and their recommendations regarding further research to look into different sampling groups and using acceptance and adoption model for new upcoming technologies in the field of AI and IoT. The study was focused on the adoption of voice assistants like google home or Alexa from Amazon. This study focuses on a range of three devices which are making use of Artificial Intelligent, like Tesla car, Google Home Assistant and Home Security Camera SimCam. By answering the main question, which covers various aspects of acceptance of AI devices and which may have an impact on the introduction of new future technologies, we can conclude what effect this may have on the behavior of the Dutch society and what makes sure that these technologies are purchased.

1.4.3 Hypothesis

Because of the fact that Artificial Intelligence has become a much-discussed topic in the world many scholars and entrepreneurs express different opinions on the use of Artificial Intelligence. Many opinions and discussions, from scholars and experts in AI, have drawn my interest to investigate how end users respond to AI technologies. Ultimately, new innovative technologies end up in stores for the "ordinary" people. Many authors have expressed great concern that the Dutch society is not ready yet (Dutch Artificial Intelligence Manifesto, 2018). The educational institutions run the risk of "Brain drain" and that one-third of the society is not aware of AI and half of the population do not believe Artificial Intelligent makes life easier (Dutch Artificial Intelligence Manifesto, 2018), but makes the lives of "ordinary people" more vulnerable.

Research questions	Hypothesis
To what extent does the awareness of AI technologies,	H0: Awareness of AI does not have influence the
influence the acceptance of products in which they are	acceptance of AI technologies.
integrated? through intersectional variables; age and gender	
using Theory of Planned Behavior?	H1: Being aware of AI in products does influence
	the acceptance of AI technologies.

Ultimately, I want to know what the participants think of Artificial Intelligence after the experimental survey and whether participants with awareness of AI do not intend to accept AI technologies. The results of this study can be used for further research or development of new AI technologies and policies. After this research, I expect to find out what influence the awareness has, when users find out that certain technology uses AI and whether this influences their decision to use or accept an AI technology.

2. Theoretical Framework

The literature review consists of two different parts. First, we bring The Theory of Planned Behavior to the forefront, describing the origin and development of this model together with all its determinants and other developed models. Furthermore, the acceptance of Artificial Intelligence products will be discussed as a second component in the context of where we come from, are, and can go to later. Various studies have been conducted in the past about the present by different scientists and observers. There is a lot to do regarding the acceptance of Artificial Intelligence. Different expertise is needed for this to ultimately make a prediction about whether future products can be accepted or not. How people can respond to this when their daily lives are influenced, in the context of privacy, security, social life and efficiency. Why and when does someone choose to take an AI product in their home and use it? Which aspects are guaranteed by the government? The literature review will cover these topics.

This research uses recent and older kinds of literature which vary between theoretical models and the risk analysis in the field of security of Artificial Intelligence products. I have come across various literature on the general use of AI products, but nothing regarding the focus on the adoption by different age categories and gender in the Netherlands. I have mainly focused on finding literature which might help me answering the main-question with an eye on the data I collected and if they are applicable and compatible for the Dutch society. There are many theories written and developed regarding the adoption of new technologies. The literature "The literature review of Technology Adoption Models and Theories for the Novelty Technology" Lai, P. (2017) and "UTAUT and UTAUT 2: a Review and Agenda for Future Research CHANG" (2012) gives an overview of all the models which are applicable for the research on adoption behavior.

2.1 Acceptance and Adoption models

In this part of the research, we discuss the different models concerning the intention and behavior to accept and adopt new technology. The literature "The literature review of Technology Adoption Models and Theories for Novelty Technology" Lai, P. (2017) discusses most of the models except the UTAUT 2 which is discussed in another literature. This literature has mainly helped me find a suitable model for this research. In this chapter, we will discuss why I chose The Theory of Planned Behavior (Ajzen, 1985, 1991) and not one of the other models. Human adoption of different products has been proposed and studied in different ways in the past and these methods are still used today, these includes; Theory of Diffusion of Innovations (DIT)(Rogers, 1995), Task Technology fit model (Goodhue et al 1995), the Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), Decomposed Theory of Planned Behavior, (Taylor and Todd, 1995), the Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw, 1989, Technology Acceptance Model 2 (TAM2) Venkatesh and Davis (2000) and Technology Acceptance Model 3 (TAM3) Venkatesh and Bala (2008). With the developments around new technologies, we are also experiencing various threats and resistance, although we can also conclude that, in addition to different organizations, "ordinary" citizens have benefited and will benefit greatly from newly developed services that we can all use and make our lives easier and safer. Companies and organizations often want new and innovative technologies to be adopted as quickly as possible by their employees in order to create a lead over different competitions (Lovelock, 2001; Lai, 2007). With the advent of new technologies in technological development, a certain debate has always arisen to date when human life is affected. Consider the arrival of computers, mobile phones or smartphones, tablets, internet and email. Ultimately, it has ensured that we have accepted and adopted regardless of what intention, but how quickly we have accepted a product to use at home depends on a number of elements such as; the safety of our family members, health and privacy, availability of a technology etc. (Lai, 2007).

In 1995, Rogers presented The Theory of Diffusion as a basis for future research into the acceptance and adoption of innovations, which can be applied to individuals and organizations. His theory provides a foundation and explanation of how new innovations are communicated or spreads over a certain period of time via different communication channels to members of a social system (Rogers, 1995). At the end of this theory or model, the researcher presents the adoption of the new idea, intention or product by people as part of a population of a social system. The theory of Rogers shows that Many early adopters have different personal characteristics if we compare this to the late Majority of people who accept a certain new idea, intention or product (Lai, 2007). The differences in characteristics are measured in the different stages as shown in the S-shaped below acceptance curve of innovators, Early Adopters, Early Majority, Late Majority and Laggards. The Diffusion of Innovation model is usually used by organizations in the context of successful implementations because of their focus on the market.



Figure 2. 1 Innovation Adoption Curve (Rogers, 1995)

The second model that we will discuss in this literature review is the Task Technology Fit model (Goodhue and Thompson, 1995) where this model focuses on improving the efficiency, effectiveness and higher quality of a technology on an individual (Lai, 2007). A good match between a task and a new technology not only increases the chance of use but also increases productivity, since the technology fulfils all the requirements of a task. This model is suitable for conducting a survey about a product where feedback can be received from consumers, this can also be products that have already been put into use. This can be applied both within an organization and with consumers. Although this model seems to be a suitable model for the acceptance of new innovative technology, it is difficult to believe when an individual, in an organization or as a consumer, has no choice but one type of technology to accept to utilize all the benefits. This does not always promise higher performance or quality(Lai, 2007).



Figure 2. 2 Task Technology Fit model (Goodhue and Thompson, 1995)

The Theory of Reasonable Action (TRA) (Fishbein and Ajzen 19975) is a very well-known model among companies and scientific researchers. This model is about the behavioral intention of a personal attitude that depends on the type of belief. TRA predicts that behavioral intent can arise through human attitudes (also called opinions or beliefs) and subjective norm (the "perceived social norms" also the "way people think others should behave)." Fishbien and Ajzen (1975) define "attitude" as the someone's interpretation of the expected outcomes of the behavior: also the value that one attaches to the outcome that one expects from the behavior. and "belief" as an association between an object and attributes and "Behavior" as an intention (Lai, 2017). Attitude arises through the belief or estimation about the expected outcomes of the behavior: this means that when one exhibits the behavior, certain outcomes will arise. The expectation now, which one has before displaying the behavior, is what this factor is about. Subjective norm is about what that individual thinks other people expect of him and others (so what people expect others to think is the social norm) (Ajzen, 1991). This factor also consists of two sub-factors, namely: Normative beliefs and Motivation to comply. In other words, the normative belief is that what is experienced as "that which one should do". Normative beliefs can be seen as rules of conduct that dictate to people what they should do. Willingness to comply with the norm: this sub aspect is about the extent to which people are willing to go along with the social norm. So, because you think others expect it from you, you do it!



Figure 2. 3 Theory of Reasonable Action (Fishbein and Ajzen, 1975)

Ajzen's Theory of Planned Behavior (TPB) states that conscious human behavior is driven by three types of considerations, these considerations are described by Ajzen as; Behavioral Beliefs are the beliefs we have about the results of specific behavior. Together these beliefs form our attitude toward the behavior. Normative Beliefs are our beliefs about the opinion of important others about behavior. Together they form the Social Norm. Control Beliefs are our beliefs about whether we are able to put certain behavior into practice. Together, these beliefs form the Perceived Behavioral Control factor (Ajzen, 1991). Later this chapter we get to dive deeper into the TPB model of Ajzen and why I made the decision to use this model in this project.



Figure 2. 4 The Theory of Planned Behavior (Ajzen, 1991)

The TAM (Technology Acceptance Model) is developed and intended for mapping the user's acceptance of Information systems or technologies. In 1992 Fred Davis and Richard Bagozzi (Davis 1989, Bagozzi, Davis & Warshaw) intended to explain the user behavior on the use of computers with this model. The research then had two different beliefs; Perceived Usefulness (PU) and Perceived Ease of Use (PEU). The Perceived Usefulness actually says that end-user perception is that the use of a system makes his or her task or execution easier. Perceived Ease of Use refers to the fact that the assigned system is easy to use (Davis, 1989). PU and PEU can be influenced by different types of external factors in TAM.



Figure 2. 5 This is the first modified version of the Technology Acceptance Model (TAM) by Davis, Bogozzi and Warshaw, 1989)

Later Venkatesh and Davis formed the next version of the Technology Acceptance Model in 1996. They found from the first model that Perceived Usefulness and Perceived Ease of Use have direct influence with behavior intention, thus the attitude was then unnecessary. In 2000 Venkatesh and Davis introduced the TAM 2. This model illustrates that there are more variables which might influence the Perceived Usefulness and Perceived Ease of Use. The TAM2 is made up of various factors that influence each other. The factors Perceived Usefulness (PU) and Perceived Ease of Use (PEU) have the most influence on Intention to Use (IU). In addition, the factors have Subjective Norm, Image, Job Relevance, Output Quality and Result Demonstrability again influences the PU. There are also a number of moderators in the model, these influence the correlations. For example, Experience is a moderator on PU and IU, Voluntariness is a moderator on IU, PEU is a moderator on PU and Subjective Norm affects Image. The TAM 2 differs with the first version of the model, there are additional external variables which be included in the model. All of these variables now play a role in determining the utility of the new technology. What is also experienced in the new model is the extent to which the user of the new technology is obliged to use it plays a role in the acceptance of it (Venkatesh & Davis, 2000). The relevance to work within an organization or to the daily life of an individual can also influence acceptance. This model also regards this variable as a valid one.



Figure 2. 6 Technology Acceptance Model 2 (Venkatesh & Davis, 2000)

The TAM 3 model that was developed by Venkatesh and Bala 2008 by combining the TAM 2 with the Perceived Ease of Use and Perceived Usefulness (Venkatesh, 2000). This model is further expanded on the basis of new variables which may have an impact on Perceived Ease of Use. The new variables are based on the following factors; Computer Self Efficacy: The extent to which an individual believes that he or she is capable of handling perform certain tasks and jobs through the use of the target system (Compeau & Higgins, 1995a, 1995b). Perception of external control: this is the extent to which the individual believes that there is external or organizational control and support when using the system (Venkatesh et al., 2003). Computer anxiety: the amount of shock or aversion that an individual experiences or experiences if he can or may use a new system (Venkatesh, 2000, p. 349). Computer Playfulness: The extent to which an individual finds pleasure in using it of a new system (Webster & Martocchio, 1992, p. 204). Perceived Enjoyment: The degree of pleasure that individual experiences with it perform certain activities specific to the system, regardless of whether or not these tasks are not experienced as of high quality (Venkatesh, 2000, p. 351). Object Usability: Here the individual makes a comparison of several for himself systems and the efforts that he must make to be able to perform certain tasks and jobs complete (Venkatesh, 2000, pp. 350–351).



Figure 2. 7 Technology Acceptance Model (TAM 3) (Venkatesh and Bala, 2008)

We have previously discussed different models and we can conclude that they all have the same goal, to investigate and explain whether or not to accept new technological resources. We can also witness that there were often similarities between the different models and their variables. In 2003, Venkatesh, Morris and Davis jointly studied old models and looked at whether they can develop a new model based on previous experiences and variables as technology continues to develop (Lai, 2007). This model functions as a combination of previous models namely Theory of reasoned actions, Technology Acceptance Model, Motivational model, Theory of Planned Behavior, Combined TAM and TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT); most of which we have already discussed above. The Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions are replacing the five similar variables from previous models including; Perceived Usefulness, extrinsic motivation Job-fit, Relative Advantage and outcome expectation. Social influence replaces the subjective norm, and where the Effort Expectancy replaces the Perceived Ease of Use.



Figure 2. 8 Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis and Davis, 2003)

Performance Expectancy

This understanding includes the extent to which an individual thinks the system will contribute to being successful processing tasks in his job. This concept largely corresponds to the perceived usability of TAM / TAM2, extrinsic motivation (Davis et al. 1989, 1992), Job fit (Thompson et al. 1991) usability and outcome prediction (Compeau and Higgins 1995b; Davis et al. 1989), some of the studies that also link the performance of a system to the intention. The performance expectation is one of the stronger predictors of the intention to enter the system use. (Venkatesh, Morris, Davis, & Davis, 2003).

Effort Expectancy

This determinant is defined as the extent to which efforts must be made to get started with the system. For example, a system that is very good (performance expected), but which is expected to be too difficult to learn, not quickly be accepted. Together with the performance expectation, these are the two strongest determinants. This term again summarizes several previous concepts, namely the perceived ease of use (TAM / TAM2), complexity (MPCU) and ease of use (IDT).

Social Influence

Social influence is the notion that summarizes to what extent an individual believes he or she would like the system must use according to people who are important to him. Otherwise, express the extent to which the individual thinks that using the system will contribute to a positive status within the social group in which the individual is. We find this notion in earlier studies under the following names: Subjective norm (TRA, TAM (2), TPB), social factors (MPCU), image (IDT).

Facilitating Conditions

The circumstances which is described based on an individual believes that there are sufficient organizational and technical infrastructure and support to use the system. In other words, this means, to what extent is support and assistance available if potential problems and obstacles arise during use. We find this notion also back in previous studies, namely in the MPU (under the same name), or in TPB and CTAM-TPB (here it refers to perceived control).

Gender

Although people might not pay attention to it right away, gender does spell one role. This is because the gender influences performance expectation, effort expectation and social influence. Performance Expectations: Men are generally more task-oriented (Minton & Schneider 1980), giving him a stronger focus on fulfilling the duties and consequently have the performance of the system (Venkatesh, Morris, Davis, & Davis, 2003). effort expectation: This determinant is strengthened if the gender of the individual is female (Venkatesh & Davis, 2000). Social influence: Research shows that Women are more influenceable and sensitive to the area of others opinion about whether or not to accept new technology. (Miller 1976; Venkatesh et al. 2000).

Age

Age is the second factor that responds to the main components. Age has that way influence on the performance expectation, the effort expectation, social influence and facilitating conditions. Performance expectations: This determinant becomes stronger if the individual is younger (Venkatesh, Morris, Davis, & Davis, 2003) Expectations of effort: This determinant becomes more important if the end-user is older is (Barnett and Marshall 1991). Social influence: This determinant also becomes more important if the user is older (Morris and Venkatesh 2000). Facilitating conditions: This determinant also becomes more important if the user is older (Morris and Venkatesh 2000).

Experience

This factor responds to the effort expectation, the social influence and the facilitator conditions. And with all in the same way, namely if one has less experience, one will have more attach importance to these components. (Venkatesh, Morris, Davis, & Davis, 2003).

Voluntariness of Use

This factor only responds to social influence. For example, social influence will decrease in a compulsory business environment. In other words: If there is no obligation to use, there will be more to the social group (what they think of technology and to what extent they are the individual) whether or not to use the technology) (Venkatesh, Morris, Davis, & Davis, 2003).

In 2012 Venkatesh, Thong, & Xu, both studied the previous edition of acceptance models and they noticed that the acceleration of new technologies was not aimed at the consumer and came with the UTAUT 2 where the original model and many of the previous models earlier in one In organizational or business context, this model has the goal of investigating consumers. That already makes a first difference, namely that the factor of voluntary use is expressed this model has been omitted since it is assumed that this is less satisfactory in a consumer context order, since they have a free will to use or not to use a product (Venkatesh, Thong, & Xu, 2012). A second difference consists in the addition of three components, namely Hedonic motivation, price estimation and habits. These components, in turn, also become possible influenced by the three factors of age and gender. These adjustments to the model have led to a significant improvement in the model.



Figure 2. 9 Unified Theory of Use and Acceptance of technology (Venkatesh, Thong, & Xu, 2012)

Hedonic Value

A first component that is added is hedonic motivation. This is described as the degree to which people derive pleasure from the use of technology (Venkatesh, Thong, & Xu, 2012). Earlier research showed that this hedonic motivation (conceptualized already perceived) pleasure) is an influence in accepting a technology. (Brown and Venkatesh 2005) (Thong et al 2006). This hedonic motivation is influenced by age and gender. So hedonic motivation will be a more important determinant in younger men and especially in the early stages of the experience (Venkatesh, Thong, & Xu, 2012).

Price Value

As mentioned above, earlier acceptance models for technology were often focused on businesses. This is different from UTAUT2, where the focus is on applying the model to the consumer market. Where the companies never had to take into account the price from the end user's position is now also different. This provides a second addition, namely the price estimate. A study showed that the popularity of Short Messaging Services (SMS) in China was in part due to the difference in price (Chan et al. 2008). There is again an influence, namely gender and age. For this, there is to look at earlier sociological research in which it is stated that Women pay more attention to details (e.g., Bakan 1966; Deaux and Lewis 1984). This also extends on a commercial level, having Women Hereby also more attention for the price with a possible purchase. (Slama and Tashchian 1985). In addition to the fact that Women often pay more attention to the price, it is mainly older Women who pay attention because of the social role as keeper of finances (Deaux and Lewis 1984) a heavier weight give an estimate to the price (Venkatesh, Thong, & Xu, 2012).

Habit

Habits is a concept based on how the individual stands with regard to technology behave (e.g., Kim and Malhotra 2005; Venkatesh et al. 2003). Thus, an individual with a lot of interest in (related) technology or someone who already has experience in this, are more likely to be new also to test technologies and possibly to accept and purchase. This determinant will especially be strengthened older men who are already in the later stages of experience (Venkatesh, Thong, & Xu, 2012).

2.2 Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is designed to forecast human behavior in various cases (Ajzen, 1991). For this research we want to see to what extent does the awareness, that a product possesses Artificial Intelligence, Influence the acceptance by users through intersectional variables; age and gender using TPB. According to Ajzen, TPB has developed after limitations were discovered in Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) where people have little to no control over their behavior. Just like in the TRA, the TPB has a central determinant for displaying a certain behavior and that is the intention. According to Ajzen (1991), the intention has an indication as to what precedes the behavior, how much someone wants to achieve a certain goal and how much effort they expect to give. If the intention is strong enough to express a certain behavior, the performance of that behavior can be recognized more easily (Ajzen, 1991). For example, a person may decide for himself whether or not to display a certain behavior. This will have an effect on the performance because it depends on the intention because the person is in control and when that is the case the performance will increase as the person is motivated. As shown in figure 2 we can see that the TPB has a number of important variables that are crucial for intention and behavior.



Figure 2. 10 The Theory of Planned Behavior (Ajzen, 1991)

As can be seen in the Figure 2.10, the intention is controlled by three different variables; Attitude toward a behavior, Perceived norm, Perceived Behavioral Control and Actual Control (Ajzen, 1991). We do not include the Actual Control in the following sections because this is not actually a psychological aspect. This variable has a dependence on the Perceived Behavioral Control. The other connections between the Perceived Behavioral Control and Behavior were created because it usually has more influence than the other two variables. Furthermore, we also see that in addition to a direct influence of Perceived Behavioral Control, there is also an indirect influence via the Intention of behavior (Ajzen. 1991). As earlier Perceived Behavioral Control is the fact that a person believes to be able to perform the already decided behavior. In this case, what kind of

mindset the person has when performing the behavior. So a person sees himself as a person in order to achieve a goal or a person does not estimate himself as well when performing. So as an example we can use whether a person is confident to drive a car with an autopilot? for example, if this person does not have the knowledge or is not anxious, then it is more likely that it will be easy for someone to accept than a person with little selfconfidence, so a lack of knowledge and trust. this does not always have to match the final result, it may differ slightly. A person can assume that the execution of certain action is obvious and easy to carry out, whereas in reality, this is different (Ajzen & Fishbein, 1977).

The development of Perceived Behavioral Control is generated or controlled by Control Beliefs (see Figure 2.10). Control Beliefs is usually shaped by a similar type of behavior from personal experiences, information from one's own network such as family, friends and colleagues or from the past. Perceived Behavioral Control can have impact Behavior in two different forms. First, when someone is confident or believes in being able to take a certain action, they often have more chance of success than someone with less confidence and doubts. Secondly, we also see that the Perceived Behavioral Control usually functions as the "partner" Actual Control in the context of serving each other and feeding information. Situations such as when, for example, someone has a lot of skills, this can have a positive influence on the knowledge and information of an individual, as a result of which Perceived Behavioral Control also grows. So if an individual test himself for the fact that certain requirements are needed (Actual Control) to use Google Smart Home Speaker, then his perception of being able to operate all peripheral devices autonomously will become more positive (Perceived Behavioral Control) (Ajzen, 1991). These are the cases when Actual Control is involved and can, therefore, be part of Perceived Behavioral Control. The accuracy of a behavior depends on both variables (PBC & AC) because the relationship between PBC and AC is very strong and has a lot of influence on reality. If a person misjudges himself then there is a good chance that there will be inconsistency between PBC and AC, for example, a person expects to be able to install a Smart Security Camera, but that person is due to privacy legislation not allowed to aim the camera at his garden (as he or his had in mind) because pedestrians also pass by so can also be recorded by the camera. This can have consequences for Perceived Behavioral Control and there is nothing wrong with that. In fact, this can be very interesting to further investigate which factors determine successful behavior.

Other factors such as a person's attitude to a behavior indicate the appreciation of the behavior in question. The final behavior can have different results such as good, sufficient or moderate. In the case of Autopilot, someone can show a negative Attitude such as "Autopilot is a danger on the road, because the technology AI is not transparent, so drivers do not know which decisions are being taken". Furthermore, another person may have a positive Attitude for Autopilot such as "Autopilot reduces fatal collisions by AI, other driver behavior is recognized by AI". These are Attitudes before behavior takes place. The Attitudes are nourished and influenced by Behavioral Beliefs, these can be different types of Behavioral Beliefs. In the figure of The Theory of Planned Behavior, a number can be seen such as Past Behavior, Risk, Mood, Personality and General Attitude. etc. The sum total of these beliefs shape Attitude and Attitude can shape the Intention and Behavior (Ajzen, 1991). Also, the media might influence the mood of a person before having an attitude. In *"Feeling-as-Information"* from Schwarz (Schwarz, 2010), Schwarz says that when we do not feel mentally good in our daily lives, we have not experienced a fun event or we experience little positivity and we feel good through positivity and can more easily tolerate negativity. Schwarz says that we use our feelings as a source of information until the contrary is proved. But as long as there is no evidence to the contrary (from a related source), we can use our feelings as a source of information.(Schwarz, 2010).

In addition to the Attitude and Perceived Behavioral Control, the model also has a final variable, namely Subjective Norm. The definition of the subjective norm is: "*a person's perception that most people who are important to him think he should or should not perform the behavior in question*" (Ajzen, 1991, p.188). Subjective Norm points to how a person believes that for him significant others see relevant behavior. Subjective norm consists of two factors, normative beliefs about how people who are important to him/her expect that he/she should behave. And the motivation of an individual to meet these expectations (Ajzen, 1991). An example is when in a person's social network everyone recommends purchasing a SimCam (smart security camera) for his or her safety, then there is great social pressure and the chance that the person will also purchase it is great. Like the other variables, the Subjective Norm is driven by faith. This belief can be served by various external factors such as; Education, Age, Gender, Income, Race of Culture, as can be seen on the image. The three variables, Perceived Behavioral Control, Subjective Norm and Attitude are used to feed Intention, which in the following also leads to an action (Behavior). Intentions do not always explain behavior. Sometimes this is due to deliberately not executing intentions, and sometimes individuals forgetting simply to perform an intention when, for example, they forget to fuel their car (Pieters, 1990).

2.2.1 Why Theory of Planned Behavior?

The reason I chose TPB in this study is that this specific solution offers to do research at a more abstract level. After studying the models as described earlier, the expected user motivation is better covered by the TPB, among other things by the important addition of the Perceived Behavioral Control. The UTAUT model is the most developed model of all adoption models, and yet I chose the Theory of Planned Behavior because I think that for my research the emotion and feelings of people play a role during the process of acceptance. At UTAUT these are precisely the practical aspects and facts, such as Performance Expectancy or Effort Expectancy etc. Where TPB acknowledges that acceptance depends on various beliefs such as mood, culture, feelings at that moment and the influence of the media, for the UTAUT it does not matter whether the use of algorithms is transparent or not and with TPB it does because people believe in what they see. People make judgments and make decisions by listening to their emotions: do I like this, do I find this annoying, how strongly do I feel involved in this? In all facets of life, people form opinions and make choices that are a direct reflection of their emotions and their tendency to look for or avoid certain things (KahneMen, 2016). For example, if you want to go from A to B with the Autopilot from Tesla and it does not matter in what way, UTAUT is a suitable model instead of TPB because the model has performance expectancy where it doesn't matter how if one arrives at B. At TPB, people want to see the reason why the Autopilot has, for example, skipped a turn or takes a different route than the day before.

2.3 Acceptance of Artificial Intelligence Technologies

Consciously or unconsciously we all have interaction with intelligent systems and products in some way. Many technologies and devices we use today possess Artificial Intelligence algorithms to make our lives better and easier. Whether things go the way we hope is a different story. In practice, it is ideal if the interaction between humans and AI were to run differently. The goal is to integrate, different aspects of the interaction between humans, into AI such as; preventing prejudices, imagining someone else's situation, understanding behavior and feelings. Explaining a decision so that it is transparent and understandable for everyone because it is still a grey area for many. Trust in AI is not entirely clear despite the fact that we already make use of it. People are used to communicating with each other when there is common knowledge about how things work and how the world works. Social interaction is the way in which people and groups act with respect to each other,

respond to each other and try to influence each other. AI should be built and designed to understand humans and AI should help humans to understand them. (Riedl, 2019). Many are not aware of the existence of AI. The ones who are aware are not always conscious of the capabilities, how AI functions and if it is reliable enough for daily use.

2.3.1 Trust and Transparency

Various studies have been conducted on the acceptance of AI products. In an article by Riedl (2018), Humancentered AI is explained which describes future AI. It describes that there is a growing awareness that Artificial Intelligence (AI) algorithms and Machine Learning (ML) must be designed with the idea that the AI must also interact with humans. Riedl indicates that AI and ML products must be produced and designed with the idea that it will become part of a social system with various stakeholders such as citizens, customers, operators and other people (Riedl, 2018 p33). Some researchers have started to focus on a more human-focused AI to ensure that interaction with humans becomes more transparent, what and why AI has made a certain decision. At the moment we see that it is only one type of AI that we use today, but the products do not offer a Human-centered AI. Regardless of the fact that the AI products are often a black box at the moment and are not transparent to normal people (without any AI or computer science background), we still see an increasing line of acceptance by users (Ridl, 2018). In 2009, Kenya FreeMen Oduor and Eric N. Wiebe write in "The Effect of Automated Decision Algorithm Modality and Transparency on Reported Trust and Task Performance" that trust and reliability are interpreted as key elements in developing a relationship between people and automation. Here as well, reference is made to the transparency of AI algorithms, whereby this leads to more trust on the part of people and will reduce complexity. FreeMen and Wiebe indicate that Automation will never create perfect reliability in humans, but it would help if we could substantiate the behavior of an AI. In a PhD study by Eva Thelisson about "Towards Trust, Transparency and Liability in AI / AS systems" (2017), she indicated that there should be a dialogue between all stakeholders (users) when developing an ethical framework for AI systems that will ultimately result in acceptance of products and services developed by the industry (Thelisson, 2017). Current developments allow us to use different AI products whereby we also discover different system errors which can cause confusion because current developments are not so advanced that interaction takes place just like two people. We often discover errors in AI products, which means that we ultimately do not fully trust the products and therefore use them to a limited extent. As humans, we are used to tracking down mistakes made by others by asking why someone made a certain decision or took action. The IEEE Global Initiative currently developed and Ethically Aligned Design which provide societal and policy guidelines to make sure AI products and systems to ensure that future products are developed with the idea that it should serve people and keep people central with our values. This model has a number of goals: Human right, ensuring that it does not violate human rights. Accountability, taking into account the fact that the developers are ultimately responsible. Transparency, ensuring that AI products operate in a transparent manner. Awareness of misuse, minimizing misuse of AI products. In this document, they indicate that current AI products and systems have many advantages and that it minimizes human effort. Having this said, it is also indicated that it raises some concern given their impact on individuals and populations. In addition to having many positive impacts, they also indicate in this document that AI products have the potential to damage privacy, discriminate, cause people to lose their skills in the long term, economic impact, safety and long-term effect. on social well-being. According to the organization, we can only fully benefit if the systems and products take our values and ethical principles into account (IEEE, 2017).

2.3.2 Dutch government on AI

Because the Netherlands is part of Europe, the measures and regulations from the EU also apply to the Netherlands. While collecting government-related literature or scientific studies, I came across two literature and a press release from the European Commission on tackling Artificial Intelligence. The European Commission presented a number of measures on 25 April. The Commission presented three proposals on 25 April. It states that an approach to public and private investment in AI needs to be stepped up, preparations for social change must be made and a legal framework must be designed. With this, Authorities like IEEE discussed earlier can help. The Digital Single Market President and Commissioner Andrus Ansip said during the debate: "Like the steam engine and electricity, AI is transforming our world. We are faced with new challenges that Europe must tackle together to ensure that AI is going to be a success and everyone benefits, and we have to invest at least EUR 20 billion by the end of 2020. The Commission is making a contribution: we are giving researchers a boost and enabling them to develop the next generation of AI technologies and applications. The business community can also seize these opportunities and take advantage of them." (Europese Commissie -Persbericht, 2018). The press release provides a global overview of the expected measures to be taken by the end of 2020. It is expected that between 2018 and 2020 the European Commission has set aside 1.5 billion for research and innovation programs and a further 2.5 billion later for existing public and private partnerships in the field of big data and robotics. Furthermore, social changes will also be taken into account in the area of changes such as taking into account a changing job market (new jobs are created and others are disappearing), education must also change and modernize. In addition, the government will have to cooperate with companies and universities to keep the AI in Europe interesting for students, teachers and experts. The third and final step of the commission is to set up a legal framework to make the legal and ethical framework appropriate because AI developers must be held liable if a law is violated or AI is misused. Other two articles cover the Dutch position in the field of AI in different sectors through the Special Interest Group of AI. This article indicates that the Netherlands are well-positioned and are avoiding brain drain (Dutch Menifesto, 2018. This will provide students with a good base for the future of Artificial Intelligence in the Netherlands, but it is up to the government to keep experts in the Netherlands and make the Netherlands more interesting to stay. Such measures are the first steps in the future to influence the acceptance and adoption of AI products. In the Privacy and the regulation of 2012, the European Commission also presents other proposals in the field of renewing existing laws in connection with the arrival of AI. As well in this article, transparency is discussed in the context of relationships between governments, citizens and companies. The government must protect citizens against the misuse of personal data by companies and organizations. Steps have been taken by introducing the GDPR (General Data Protection Regulation). This results in a more stringent consent requirement from the European government for collecting personal data by organizations. Organizations who fail to comply with this regulation risks significant fines. (Riedl, 2019). Collected literature and research do help to conduct this research because most of the literature contains similarities with human awareness, acceptance of innovative technologies in general by humans, human behavior and the impact of current and future AI products.

2.3.3 Search Keys

During the search for other already performed research in the field of acceptance of AI, I did not come across relevance research on Google scholar or on Leiden University Library. **Search keys** I have used are 'Artificial Intelligence', 'Awareness', 'Human Awareness', 'Transparency', 'acceptance', and 'Human AI'.

∛≡ Google Scholar	'Artificial Intelligence', 'Awareness', 'Human Awareness', 'Transparency', 'Acc Q										
+ Artikelen	Ongeveer 5.520 resultaten (0,03 sec) Figure 2. 11 Google Scholar Search Keys										
Universiteit Leiden Catalogue		NEW SEARCH	FIND DATABASES	FIND E- JOURNALS	LIBRARY HOME	ACQUISITIONS	ASK A LIBRARIAN				
'Artificial Intelligence', 'Awareness', 'Human Awareness', 'Transparency', 'Accept: 🗙 / All Content 🝷 🔎											
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Figure 2. 12 Leiden university library Search Keys

3. Methodology

In the previous chapter we discussed the literature review and why the Theory of Planned Behavior was chosen for this study acceptance of Artificial Intelligence. By means of this model, we continue in the chapter by explaining the Research Design, Research Philosophy, Data Collection method and analysis of the data. We also discuss the limitations when collecting the data and the quality of the research. The methodology is derived from the Greek words "meta hodos" meaning 'the way along which' Jonker, Jan; Pennin, B. (2010). The methodology is a general research strategy, which explains how an investigation has been or will be carried out. The methodology also often indicates that a researcher has maintained a certain structure or guideline, making the research easy to follow for a reader. This part also deals with what data a researcher has had to deal with and which techniques have been used for this. This research is qualitative research. In this study, the term qualitative is defined as the development of knowledge through the methodology and the method type the way data is collected. Qualitative research also depends on the behavior and attitude of the researcher. This means that a researcher must be unbiased during the research. This ensures a reliable research and end result Jonker, Jan; Pennin, B. (2010).

3.1 Research Philosophy

The philosophy of this research is the belief about the approach in which the data is collected about the Influence of Awareness on acceptance of Artificial Intelligence by performing a survey, analyzed and use of the data. At the end of this process, new knowledge has been created. This research serves as the creation of new knowledge within the field of acceptance of Artificial Intelligence. The intention is that I collect as much primary and secondary data as possible and then analyze it to be able to answer the research question. The answer then serves as new knowledge within the field of acceptance of Artificial Intelligence Saunders, M., Lewis, P. & Thornhill, A. (2012). There are four main research philosophies; Pragmatism, Positivism, Realism and Interpretivism. This master thesis relies on the idea of Realism. Within this philosophy, the Ontology and Epistemology methods are constructed for the philosophical aspect of this study (Saunders, Lewis & Thornhill, 2009; BryMen & Bell, 2015). The ontological approach exists of two parts, Ontological Materialism and Ontological Idealism, what people see and what people believe. Regarding this researcher's purpose is to have a better understanding of different beliefs for the acceptance of Artificial Intelligence and to understand the reason why people accept Artificial Intelligent technology in devices in their homes and daily lives. Regarding Epistemology, this study investigates how and why the participants are willing (or not) to buy the self-driving car, smart home security camera of the Google Home speaker. This social approach gives the knowledge of what the researcher believes and what the outcome of the survey is (the truth)

3.2 Research Design

The research design is in the beginning never really clear how this will look like. As different literature is read and thought about the research question. A researcher often discovers how the three 'building blocks' of the research design related and connected to each other. Components such as theory, research question and methodology together form the research design Jonker, Jan; Pennin, B. (2010).



Figure 3. 1 Research design related to theory, methodology, question and context..

From the already chosen theoretical framework, Theory of Planned Behavior (TPB), and the already conducted literature review concerns the acceptance of technologies and how the behavioral intention of an end-user can be mapped, together with the research methodology and the main question will be answered. Analyzing all findings and data requires some coherence between the data (participants) of the survey and the literature, with an eye on the main question (Table 3). Research Design projects the structure of collecting and analyzing data for research. It also shows what a researcher is trying to achieve at the end of the study BryMen and Bell (2011).

Descriptive Design begins not with a hypothesis, but instead, it collects the data and then examine the result and then a hypothesis. This research starts with a hypothesis, which explains why I haven't chosen this design. Correlational Design is a more observational approach which means that the observation is the approach to collect data. This research collects data using a survey. The quasi-experimental approach does not manipulate the independent variable. This research does manipulate, see "Method" in the next chapter for more explanation. The last design is Experimental Designs, which is more suitable for this research. The reason for this is also explained in the next chapter.

3.3 The Research Pyramid

The research pyramid shows that this research contains a structure and that with this model a reader sees how this research is performed and which techniques have been used. This model contains four different parts; paradigms, methodology, methods and techniques. The researcher must make choices for each component. Below you can see which choices have been made for this research.



Figure 3. 2 The research Pyramid

3.3.1 Paradigm

This research originated purely from personal interest and experience. This subject is a much-discussed subject and is already or will affect everyone's life. This research requires interaction with many end-users and also ask myself to look at how my own life is influenced by the use of AI technologies. This makes the reality of this research self-evident. This research also started with the intention to discover new facts concerning the acceptance of smart intelligence devices and to understand the behavior and intention of end-users. Because I am interested in technology and AI, I respected and interpret all survey and collected data without prejudice.

3.3.2 Methodology

As earlier stated what methodology is, where it comes from and why is it important for research, in this section we define what kind of methodology is used for this research. In terms of possibilities, I have below number of examples which options I encountered during the literature review Saunders, M., Lewis, P. & Thornhill, A. (2012) Phenomenology: defined as the 'living experience', Ethnography: defined as the exploration of the social world, culture and behavior of people, Participatory: this shows that the participants of the survey are also researchers, but this is not the case during this research, Ethnomethodology: the examination of people's body language. In the course of time, a lot of methodologies have been developed and proposed. For this research, it has been necessary for the research to show different experiences and the acceptance of AI users and to give them a structure through The Theory of Planned Behavior. After a literature review on methodology (Jonker, Jan; Pennin, B. 2010) the Phenomenological has been chosen as a kind of methodology, because it describes the living situation of the end-users. Furthermore, Ethnography has opted for analyzing the behavioral intention because this methodology focuses on the area of the social world, culture, faith and behavior.

3.3.3 Methods (Collecting Data)

Although terms such as methodology and methods are often confused with each other because they have many similarities. However, as a researcher you understand and apply this further, you will see that both differ from each other. If you do not keep this in mind, this will continue to cause confusion for a researcher himself, but also for a reader. Previously, we have defined methodology as a general term for the kind of research that a researcher performs. A method is more specific because a method indicates which approach is used to collect data. This can be different approaches such as; Interview, Survey, Diary study, Usability study, Contextual inquiry and there will probably be more methods that researchers have used. A survey (in an experimental way) will be used for this study because when conducted properly, surveys provide hard figures about the opinions and behavior of people who can be used to make important decisions. Furthermore, a survey will give end users a voice on the use of AI devices. It will also provide substantiation of why a participant considers it important to take AI into their home or not and what the concerns are for example. During the surrey, participants are able to give answers and express themselves by filling in open questions, select the options (possible and realistic answers), or give a grade. During this experiment, participants receive different questionnaires about different products that have AI. the purpose of this is to measure their acceptance when participants become aware that a product has AI on the basis of different descriptions of a product (description with AI content and without AI). Does awareness, what AI does with personal data and how it handles, lead to an unexpected acceptance of a product? Will participants actually distance themselves? AI only work well if it is fed with Data. This means that the more interaction takes place between people and AI algorithms, the better product functions.

Because of the fact that AI has become a much-discussed topic in the world and many scholars and entrepreneurs express different opinions on the use of AI. Many opinions and discussions, from professors and experts in AI, have caused a lot of interest in me to investigate how end users respond to this in the Netherlands. Ultimately, new innovative technologies end up in stores for the "ordinary" people. Many authors have expressed great concern that the Dutch society is not ready yet, the educational institutions run the risk of "Brain drain" and that one-third of the society is not aware of AI and half of the population don't believe Artificial Intelligent makes life easier (E. Dutch Artificial Intelligence Menifesto. 2018;(April 2017). Ultimately, I want to know what the participants think after this experiment of AI and whether participants with knowledge of AI don't intend to accept AI technologies due to safety and privacy concerns. If I can show to what extent the awareness that a product has AI influences the acceptance of AI products by users on the basis of this research. Then this research and the result can be used for further research or for the development of new AI technologies or legislation in the Netherlands. After this research, I expect to find out what influence the awareness has when users find out that a product has AI and whether this influences their decision to use or purchase AI technology. I expect participants without knowledge of AI to accept more AI products than participants with awareness AI in products.

The type of experiment I have chosen is the Completely Randomized Design. In a completely Randomized design, each experimental unit randomly assigned to a random group to receive a different treatment. Each unit in the same group will receive the same treatment. At the end of the experiment, the results are compared to the treatments. In addition to finding out the influence on AI awareness, we will also look at what the awareness that a product possesses AI to say about different age groups (18-30, 31-50, 50-70 and 70+), gender (male or female).



Figure 3. 3 Completely Randomized Design flow

Completely Randomized Design differs from the observational study. During this study, the researchers have to analyze and collect data without changing or manipulating the condition during the experiment. Because validity depends on how the experiment is performed, the researchers have to be extremely careful during changing and manipulating the experiment. For this research, we have applied two different surveys which will be a handout to randomly picked participants as visualized in the previous table. Within the Completely Randomized Design, treatment is given to the groups (participants). Treatment, in this case, is a part of the whole process. This part is managed by the researcher for each unit or group. In this study, we used two different surveys which we randomly give to two different groups to complete. Both surveys have almost the same questions. Only one survey AI is explicitly named and in the other AI is replaced by another name, namely smart devices or only intelligence. We want to know if participants accept the products when they become aware that the technologies use AI (Valerie J. Easton and John H. McColl's 1997).

A Factor is a general part of Treatment. The number of treatments forms (in the case of this study it will have two different levels of factor) different levels of factors. If we have two different treatments, where both differ from each other, then we automatically have two different levels of factors. The data this experiment generates is wisely developed with the right participants to make sure the main question is well answered. In consultation with those involved, we have quietly taken the time to come up with the right survey questions based on The Theory of Planned Behavior. TPB indicates that factors such as emotions, social circles and media or knowledge influence the behavior of a person. Based on these categories, we have designed various questions to determine the Behavior Intention of the participants. In addition, this research has included questions to find out the age and gender. This experiment is designed in order to increase the precision of the answers participants give. This process is called experimental design (Valerie J. Easton and John H. McColl's 1997).



Figure 3. 4 The Theory of Planned Behavior (Ajzen, 1991)

For this research, it is very important that at the end of the study, so when analyzing the data, the correct and valid answers are analyzed. It is important that the answers of the participants are analyzed with AI listed in the descriptions of the three products. We assume that when participants, with knowledge of AI, find out that a product possesses AI, they accept the products less than participants without knowledge of AI. Participants without knowledge of AI accept these products faster because sometimes social environment or media influence without knowing how AI technologies generate and process personal data.

The next part of Completely Randomized Design is the "Control". To prevent experimental bias, I observed in our social environment beforehand who might have knowledge of AI and who did not. This selection criterion was that the participants were not already using AI technologies. The reason for this approach is to make sure to cover the precision of the answers and that I wanted to explore the perception of participants concerning the technologies at that moment and if they would like to buy them (with or without knowing the technologies are possessing AI). We also asked more participants for this study to include the error margin of the sample in data analysis. This study would deviate completely if a Survey with Description of AI in the description was answered by one participant without knowledge of AI. Participants do not know what AI entails and there is a good chance that the answers will be filled in differently if AI is called differently, such as smart devices or intelligent technologies. The same applies to Survey without Description of AI in the description of participants with knowledge of AI.

3.4 Questionnaire experimental survey

As indicated earlier, this study has been chosen to collect data via a survey. And the method (Completely Randomized Design) has ensured that participants are chosen completely randomly. Of many participants, the researchers did not know what their background is and what their field is. The same applies to the participants, they did not know what this investigation or survey was about at the start. The intention was to let the participants fill in the survey without any premise, without any background information and explanation. The only thing that was important to the researcher is the age categories. During sending out, the researchers closely

monitored the progress of the surveys to see whether participants of all age categories had completed the surveys. Various communication channels have been used for this, such as LinkedIn, Facebook, WhatsApp and unknown participants who have been approached via friends or family to participate in this research.

The theory of Planned behavior explains that human behavior is guided by three different streams; Behavioral Beliefs, which indicates what kind of attitude someone has with regard to AI and what emotions come into play here, for example. So someone has a favorable or unfavorable attitude. Normative Beliefs projects the factors from a social perspective and whether friends and family influence the acceptance of AI. The final tendency is the control beliefs that indicate whether there are factors that influence whether someone has the means, for example, money, to purchase technology with AI. Also, have the belief that you have and will understand the ability to understand AI. Perceived Behavioral Control is often a consideration of Actual Control which indicates whether someone actually has the knowledge and skills to understand AI technology. The combination of both currents can ensure that behavior is predicted, this will skip the prediction of the intention. Furthermore, the rule is that the more subjective norm and attitude are pleasant, the more likely there is that Perceived Behavior Control is less convincing, so that the intention is strong that someone will accept an AI technology. But the Perceived Behavioral Control can be invalidated by unusual and impulsive events, meaning that the intention is lost.

Because the research took place in the Netherlands and the Dutch population was central during this research, the questions were also asked in Dutch. In the Appendix A I have set up a translated version of the survey. These questions were developed on the basis of The Theory of Planned Behavior and the literature of Ajzen 2016 "Constructing a Theory of Planned Behavior Questionnaire". It explains how you can best ask the questions of the different beliefs in order to predict the behavior of a participant. Ajzen indicates that a survey must meet the following requirements;

- Define the behavior
 - The researcher must indicate in advance what the behavior of a participant can be. The expectation pattern of this study was that participants with the knowledge of AI do not accept the three products.
- Specifying the Research Population
 - Ajzen explains that it is necessary for the participants to be able to sort out carefully. For this research I chose to use different age categories. I have also taken into account possible experience in AI with both a Men and a Women of the Dutch population.

3.5 External influence during experiment

The surveys were sent to all participants on July 15, 2019 until July 29, 2019, all participants had the opportunity to complete the surveys. This is a two-week period that I needed to collect the data. During this period, an event took place after the survey was sent. This was noticed after I had several conversations with the participants about the course of the event and how they experienced this. Furthermore I have also observed various external factors (the same period) which may have influenced the participants and their answers. These factors may have influenced the Attitude, Social Norm and perceived Behavioral Control and of course ultimately the acceptance of Artificial Intelligence (Intention and Behavior) in the three different products which were applied for this research (Tesla, Google Home and SimCam).

News in the media

Various Dutch news sources (nrc.nl, nu.nl, telegraaf.nl....) have released the news that Google has started an investigation into leaked voice recordings from Google Home users. Google claims that nobody listens to you if you use a smart speaker or the Google Assistant on your phone. After all, the assistant consists entirely of software that answers commands such as "Turn off the light" or questions such as "What time does my flight to Paris leave", or "Will it rain tomorrow?" Google's privacy conditions clearly state that the company collects voice and audio clips. The survey question for the participants stated that only conversations after the assistant was activated via the necessary commands were recorded.

"The Intelligent speaker from Google is also available in the Dutch language. The Intelligent speaker is generally always on or standby. The device can be turned off completely with a button in most cases. In standby mode, it is activated with voice commands. The major suppliers such as Amazon, Sonos and Google have communicated that the device does not record ambient noise when it is not activated. It is possible that an assignment history is preserved; this can later be used as history by the user."

Hijink, M. (Schipper, 2018)

The software behind Google Assistant has been trained with existing speech databases, including from Google Voice Search. In order to further improve speech recognition - and also to properly interpret the statements of users in language areas such as the Netherlands - Google will continue to tinker with the algorithms. This is partly automated and partly with human analysts who have to label many short fragments. According to Google, these cannot be traced to people or Google accounts. I received and read many messages, one of the participants send me a text message:

"This is why I gave option 3, why I don't want to use this"

This participant gave a score 3 to the Google Home Assistant and score 3 is Detractors.



Also, read as in various comments on the internet at news pages or comments on blogs.

"People are crazy! Why would you want to put a listening microphone in your house or worse, you also have them with a camera! Because it is now in fashion?" (comment on Onemorething.nl, 2019)

3.6 Techniques (Data analysis)

There are many different types of techniques for conducting quality research and generating data. The most common technique is interviews and then observations. This kind of research is done by means of having a conversation and then recording it, which is stored as private data. This is then analyzed and sorted according to usability. This study does not use an interview but, as indicated earlier, of surveys. In this case, a digital survey called Qualtrics from Leiden university was chosen. This indicates that this research uses a traditional survey that is supported by new techniques. Qualtrics ensures that researchers can access easier and more efficient participants and can collect and analyze data. As soon as I have received all the surveys from the participants, it is possible within Qualtrics to analyze data directly and easily and to render it in different visual ways. The reason why Qualtrics had been chosen due to the fact that it is easy to use and easy to send out via smartphones. This research assumes that participants possess a smartphone and participants are able to submit the survey back after communicated end date is expired.

3.7 Limitations and Quality of the Study

This study, like other studies often face sometimes methodological and Researcher limitation. Possible limitations regarding methodological are often related to external factors which might limit the research. Researcher limitations are more out of control of the person who performs the research (e.g. cultural, language, gender or age limitations).

3.7.1 Possible Methodological Limitations

Impact limitation might be one of the limitations this or future research might face due to the fact that the research scope is too narrow and focuses on few or one group of participants. In this case the research is focused on the acceptance of Artificial Intelligent home devices in the Netherlands but does not cover the whole population. This research and its results might not be applicable for other countries with different policies. Also the adoption results might be limited due to the fact that researchers might explore different culture with different mentality and habits. Drawing the conclusion that a research is limited, only applies if the end result is not a reflection of the hypothesis earlier defined in the research. Measure used to collect the data is also a very common limitation for researchers due to less quality data which has been collected. In this case the survey is a qualitative method based on the questions the survey has. This means that the outcome depends strongly on the questions the participants have to answer. After collecting and analyzing the data, researchers might face some regret or challenges that triggers the intention to perform the survey all over again if some critical questions are forgotten.

3.7.2 Possible Limitations of the Researcher

Access to people for the survey can limit the research. Researchers that are applying surveys for collecting data and are depending on people to answer questions. These answers are collected and organized. These organized data are eventually the evidence for the outcome, the conclusion and recommendation. Also access to other information such as information like all Artificial Intelligent devices which are approved by the government. This is still a gray area, due to the fact that the government doesn't have their hands on regulations and policies for these products and innovations.

4. Results (Descriptive and Inferential Statistics)

This chapter provides an overview of all the findings of the surveys completed by the participants. As indicated in previous chapters, the questions are designed on the basis of the Theory of Planned Behavior and are therefore also categorized under "Personal Questions", "Attitude", "Perceived Norm" and "Perceived Behavioral Control". To discuss the results and visualize them I use Qualtrics Data Analysis for the Descriptive Statistics and JASP for Inferential Statistics. This provides a clear picture of the results. For some questions, I will also have to copy the answers literally because the participants sometimes had to answer open questions. These answers are shown in italics and are quoted.

Survey	Survey Survey with Artificial Intelligence description		Total
Received	43	33	76

	Table 4	. 1	Survey	overview
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4.1 Experimental Questions (Descriptive Analyses)

As indicated in the "Methods" chapter and the data collection section, that use was made of the Completely Randomized Design experiment and snowballing sampling. In this section we will discuss the answers of the participants. The Experimental Questions are questions about three different products that possesses AI techniques; Pr1. Tesla car, Pr2. Google Home Voice Assistant and Pr3. Scam Home Security Camera. As indicated in other chapters, I have used two different surveys. Regarding the questions, I have formulated the products in two different ways, one survey has a description with AI and the other not. As described in my hypothesis, H0: awareness of AI does not have influence the acceptance of AI technologies and H1: Being aware of AI in products does influence the acceptance of AI technologies... For the questions about the three products I opted for a Net Promoter Score (NPS) which is an important Key Performance Indicator to be able to trace the opponents (Detractors), Passionate (Passives) and Promoter (Promoters) (Qualtrics, 2019). This happened on a scale of 1 to 10. Where Detractors are, participants who gave a score of 9 or 10).

Net Promoter Score (NPS)										
Detractors							Pass	sives	Prom	noters
0	1	2	3	4	5	6	7	8	9	10

Table 4. 2 NPS I	Key	performance	indicator
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The formula for calculating NPS is NPS = percentage of promoters - the percentage of detractors. A result is a number between -100 and 100. For example, if there are 60% Promoters and 50% Detractors, the NPS is 10 (60% - 50% = 10). Passives have no direct influence on the NPS score. Normally this method is used to measure customer satisfaction within organizations, but it can also be used for other purposes to measure. Whether someone recommends a company or a product, the score makes the same clear in both cases. As shown in

chapter 4.2.1, we have a number of different calculations and results from both surveys. Regarding the Survey with Description of AI survey, we see different results for Pr1. Tesla car, Pr2. Google Home Voice Assistant and Pr3. SimCam Home Security Camera. In the overview we also see a scale from 1 to 10, where 10 is very likely that a participant will use a product in his or her daily life and of course 0 means that a participant does not see him or herself using a product with AI. Survey "Survey without Description of AI" has interesting figures despite fewer respondents.

4.1.1 Survey with Artificial Intelligence description

Product 1. Tesla car

For the participants, this was the first question they received when completing the acceptance of AI survey in the descriptions of the three products. The promoters are the ones who will recommend a Tesla car, Passives ones are the participants who are "satisfied". The expectations of a participant are met, but that's it. Passives are indifferent to AI technology in this study. With an attractive alternative, these passionate people will very easily no longer want to use AI technologies. Participants who give this score will rather share their experience than really recommend it to friends and family. The Detractors will not promote a Tesla car but rather advise against, for example, friends and family. Figures show that the majority give a score of 7 and 8, which means that Passives get the most scores. This can have several reasons such as knowledge or other experiences, not being able to trust Tesla's Autopilot completely. What strikes me is that participants quickly associate Tesla cars with self-driving cars. Until this year, Tesla cars were unaffordable for a "normal" citizen with an average salary. But the Tesla Model 3 has changed that because the electric Tesla Model 3 is one of the most wanted cars among lease drivers due to the low tax liability. As a result, more and more citizens can drive a Tesla and there is also a chance that the participants of this study have experience with a Tesla car. Furthermore Detractors then the most score which varies between 0 and 6 and the Promoters with 8 voters finished last.

NPS	How high do you estimate the chance that you will use a Tesla car in your daily life if you have the opportunity to do so?												
	Total	0	1	2	3	4	5	6	7	8	9	10	%
Detractors	16	3	1	2	0	4	3	3	0	0	0	0	37.2
Passives	19	0	0	0	0	0	0	0	7	12	0	0	44.2
Promoters	8	0	0	0	0	0	0	0	0	0	2	6	18.6
Total NPS NPS = percentage of promoters - percentage of detractors											-18.6		

Table 4. 3 NPS score Tesla car

What is striking is that many participants are not in favor of a Tesla after reading the description about the use of AI and how Tesla handles and processes data. The descriptions come from the car manufacturer and therefore what a customer reads on the Tesla website. Most Detractors are between the age category of 18 - 30 and 31 - 50 as shown in the table 4.4. This may mean that this age category has more knowledge of what AI does and also what products these techniques use.

Age	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	43	3	1	2	0	4	3	3	7	11	2	6
18 - 30	48.8%	0.0%	0.0%	100%	0.0%	50.0%	33.3%	33.3%	57.1%	50.0%	50.0%	66.7%
31 - 50	39.5%	100.%	100.%	0.0%	0.0%	25.0%	66.7%	33.3%	28.6%	33.3%	50.0%	33.3%
51 - 70	9.3%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	33.3%	14.3%	8.3%	0.0%	0.0%
70+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4. 4 Tesla Age scores

With regard to gender, it can be seen that it varies between men and Women and that it runs roughly the same with 53.5% and 44.2% of the participants. What is also evident is that of the 8 Promoters, only 1 was a Women from the participants. This may have to do with the fact that the female participants have nothing to do with cars and certainly not a car like Tesla where in some cases you as a driver cannot have control. The answers to the question *"Which of the options below do you think is good if it is carried out by an Artificial Intelligence?"* Confirm this even more because 25 of all participants prefer to drive a car when it comes to giving control to Artificial Intelligence at one of the options. The options were: Driving, Construction, Surgery (operation), Financial services, None of the options, Home security, Customer service and Personal recommendations. And of these, 16 men and 9 Women. The highest score can be found in Passives people with 18 participants, most of whom fall under the age category 18 - 30 with 57.1% for score 7 and 50% of the votes for score 8. These participants can still switch to Promoters or Detractors in the future. This all depends on various factors that can cause participants to accept more Artificial Intelligence technologies.

Gender	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	43	3	1	2	0	4	3	3	7	11	2	6
men	53.5%	33.3%	100.%	100.%	0.0%	25.0%	66.7%	33.3%	42.9%	41.7%	100.%	83.3%
Women	44.2%	66.7%	0.0%	0.0%	0.0%	75.0%	33.3%	66.7%	57.1%	50.0%	0.0%	16.7%

Table 4. 5 Tesla Gender scores

Product 2. Google Home Assistant

The second question of this experiment is the question about Google Home Assistant where this product uses speech recognition. Concerning the Google Home Assistant, this topic will be discussed later in this chapter because in the same period as the participants had time to fill in the survey, the news message was published that Google will launch an investigation into leaked conversations via the Google Assistant. In the overview below, it is immediately noticeable that a considerable number of participants have chosen Detractors. So there is a good chance that this is due to the news item. However, not everyone was shocked by the news because it was not a technical error but a human error when training the Artificial Intelligence algorithm. Detractors are considerably high with 59.5%, hereafter the Passives with 26.2% and Promoters with 14.3% of the participants. After the Detractors, 11 participants fall under Passives with 26.2%. As indicated earlier, these are participants where they can become both Detractors and Promoters in the future.

Q2	How hiş so?	gh do you	ı estima	te the chan	ce that you	ı will use a	Google Ho	ome Assista	nt in your	daily life if	you have tl	ne opportu	nity to do	
	Total	0	1	2	3	4	5	6	7	8	9	10	%	
Detractors	25	25 3 3 2 5 2 7 3 0 0 0 0												
Passives	11 0 0 0 0 0 0 0 0 0 0 0 2													
Promoters	6	0	0	0	0	0	0	0	0	0	2	4	14.3	
Total NPS NPS = percer	ntage of pi	comoters	- percer	ntage of det	ractors								-45.2	

Table 4. 6 NPS score Google Home Assistant

Largely of the Detractors fall under 18-30 with 50% and 31-50 with 40.5% age category. Regarding Google Home Assistant as a product, it can be seen that it is mainly used by younger target groups. Making a reservation through a voice command at a restaurant is of this time, as it is for a Tesla car or a smart security camera. Cars, speakers and security cameras have always existed, but these products have now been made smarter by means of new techniques, including Artificial Intelligence.

Age	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	43	3	3	2	5	2	7	3	4	7	2	4
18 - 30	50.0%	33.3%	66.7%	50.0%	100.%	100.%	14.3%	33.3%	25.0%	57.1%	50.0%	50.0%
31 - 50	40.5%	66.7%	33.3%	0.0%	0.0%	0.0%	71.4%	66.7%	25.0%	42.9%	50.0%	50.0%
51 - 70	9.5%	0.0%	0.0%	50.0%	0.0%	0.0%	14.3%	0.0%	50.0%	0.0%	0.0%	0.0%
70+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4. 7 Google Home Assistant age category

We also see in the overview below that within the age category 51-70 there are no promoters, only Detractors (score 2 and 5) and Passives (score 7). Furthermore, we do not see any striking figures between the different genders because the product is popular for the home or office, for example, which means that every family member or colleague can use it.

Gender	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	43	3	3	2	5	2	7	3	4	7	2	4
Men	54.8%	0.0%	66.7%	50.0%	40.0%	50.0%	71.4%	100.%	0.0%	71.4%	50.0%	75.0%
Women	45.2%	100%	33.3%	50.0%	60.0%	50.0%	28.6%	0.0%	100.%	28.6%	50.0%	25.0%

Table 4. 8 Google Home Assistant gender category

Product 3. SimCam Home Security Camera

The last and third product of this research is the SimCam Home Security camera. We also see striking figures with this product. This product uses image recognition techniques through Artificial Intelligence Video and Image Recognition. What we see is that Detractors score with 41.9%, Passives with 44.2% and Promoters moderately with 14.0%. This indicates that 41.9% of the participants would rather not recommend this product or would like to have it at home. 44.2% think security is important, but these participants are not enthusiastic enough to become Promoters. Passives can become detractors due to incidents (burglary on a home network that exposes personal data) or become Promoters after a very long good experience with SimCam, but this requires time. Promoters have 14.0% as indicated. These participants believe the technology and benefits of this product if they take it home. They will also recommend it to others, such as their social environment.

Q3	How hi	gh do yoi	u estima	te the chan	ce that you	ı will use a	SimCam in	ı your daily	life if you l	have the op	portunity t	o do so?		
	Total	0	1	2	3	4	5	6	7	8	9	10	%	
Detractors	18 3 0 2 3 0 5 5 0 0 0 10 0 0 0 0 0 0 0 0													
Passives	10 0 0 1 0 0 0 0 19 0 0 0 0 0 0 11 8 0 0													
Promoters	6	0	0	0	0	0	0	0	0	0	4	2	14.0	
Total NPS NPS = percer	ntage of p	romoters	- percer	ntage of de	tractors								-27.9	

Table 4. 9 NPS score SimCam Home Security Camera

Passives have the highest score among the participants and with regard to the different age categories, we also see that among the age categories 18-30, most Passives score. The Detractors show that especially under the age category 31-50, most participants score with 11 participants, then age category 18-30 with 7 participants and the number of participants are 2 under age category 51-70.

Age	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	43	3	0	2	3	0	5	5	11	8	4	2
18 - 30	48.8%	33.3%	0.0%	50.0%	33.3%	0.0%	60.0%	20.0%	72.7%	37.5%	50.0%	50.0%
31 - 50	41.9%	66.7%	0.0%	50.0%	33.3%	0.0%	20.0%	80.0%	27.3%	37.5%	50.0%	50.0%
51 - 70	9.3%	0.0%	0.0%	0.0%	33.3%	0.0%	20.0%	0.0%	0.0%	25.0%	0.0%	0.0%
70+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4. 10 SimCam Home Security Camera age category

There were no striking figures found between the two genders because the proportions are fairly similar. This applies to the numbers of Detractors as well as Passives and Promoters.

Gender	Total	Men	Women
Total Count	43	24	19
Passives	19	11	8
Promotor	6	3	3
Detractors	18	10	8

Table 4. 11 SimCam Home Security Camera gender category

4.1.2 Survey without Artificial Intelligence description

Product 1. Tesla car

This section of this chapter presents the results of the survey without Artificial Intelligence being named in the descriptions of the three products, including Tesla car. As a result, the participants have not been informed that Artificial Intelligence is part of the products, then only the participants with a lot of knowledge about Artificial Intelligence and are aware that these products have Artificial Intelligence. When reading this section, we must also take into account the fact that this survey has fewer respondents than the survey with Artificial Intelligence. If we look at the overview below, we actually see completely different figures, in relation to the figures from the survey where Artificial Intelligence is explicitly named. What is striking is that this survey has more Promoters with 26.4%. We see the highest score in the Passives with 46.1% of the participants, then Detractors with 27.5%. We also see an NPS score of 1.1 which is not extreme, given that an NPS score can vary between -100 and 100.

Q1	How his	gh do you	ı estima	te the chan	ce that you	ı will use a	Tesla car ir	n your daily	life if you	have the op	oportunity	to do so?			
	Total	0	1	2	3	4	5	6	7	8	9	10	%		
Detractors	10	10 0 0 1 4 0 5 0 0 0 0 15 0													
Passives	15 0														
Promoters	8	0	0	0	0	0	0	0	0	0	5	3	26.4		
Total NPS 1.1 NPS = percentage of promoters - percentage of detractors 1.1													1.1		

Table 4. 12 NPS score Tesla car

If we look further at the different age categories, we see that the age category 18-30 stands out above all other categories with 54.9%. This actually indicates that this product is the most popular with the younger age category. This product is new and is widely discussed because many new techniques are available and used. It can be seen that this appeals more to the younger generation and data can also be seen from the table 4.13. The Promoters therefore only fall under the age categories 18-30 and 31-50. Again, it is just as good to reflect on the fact that this survey did not mention Artificial Intelligence in the product descriptions. Most Detractors fall under the age category 31-50 and 51-70. If we look at these results, it seems that the older the participants, the less they estimate the chance that they will use a Tesla in their daily lives. Furthermore, this survey also shows that a high number of participants fall under Passives with a score of 8 and 7, under the age category 18-30 (72.1% and 82.6%). Two participants fall under the age category 51-70 and both participants score differently

(Detractor and Passive) but one gives a score of 6 What falls under Detractors and the other 7 what falls under Passives. Both can still be convinced or disappointed in the future.

Age	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	33	0	0	0	1	4	0	5	8	7	5	3
18 - 30	54.9%	0.0%	0.0%	0.0%	100%	41.7%	0.0%	0.0%	72.1%	82.6%	53.3%	28.6%
31 - 50	38.3%	0.0%	0.0%	0.0%	0.0%	58.3%	0.0%	70.8%	14.0%	17.4%	46.7%	71.4%
51 - 70	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.2%	14.0%	0.0%	0.0%	0.0%
70+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4. 13 Tesla Age scores

If we look further at the results and in particular the gender, we see that of all Detractors (10), only one male gender estimates the chance that he will use a Tesla car in his daily life. This participant falls under the age category 51-70 if we look at the table 4.13. That 70.8 % of the women who gave a score of 6 all fall under the age category 31-50. We also see very striking numbers of Promoters, because here too we see that the male gender in particular scores high. This is remarkable because 71% of the participants in this survey are women. In the survey in which Artificial Intelligence is explicitly mentioned, we also see that men in particular estimate the chance that they will use a Tesla car in their daily lives.

Gender	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	33	0	0	0	1	4	0	5	7	7	5	3
Men	29.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.2%	51.5%	0.0%	46.7%	71.4%
Women	71.0%	0.0%	0.0%	0.0%	100%	100%	0.0%	70.8%	48.5%	100%	53.3%	28.6%

Table 4. 14 Tesla Gender category

Product 2. Google Home Assistant

The score of the Google Home Assistant is, as indicated earlier, an interesting overview, because the participants may have been influenced by a news message during the period that participants were able to complete the survey. We will elaborate on this later in this chapter under Perceived Norm. Although we see that now Detractors no longer score highest with 38.9%, but with Passives (40.9%), with Promoters now also scoring higher with 20.2%. As a result, we also see that the NPS is lower than the survey in which Artificial Intelligence has been named. This only indicates that this product has more Promoters.

Q2	How hi	gh do yoi	u estima	te the chan	ce that you	ı will use a	Google Ho	ome in your	daily life i	f you have t	the opporta	unity to do	so?		
	Total	0	1	2	3	4	5	6	7	8	9	10	%		
Detractors	13	13 1 1 0 2 1 5 4 0 0 0 15 0 0 0 0 0 0 0 0													
Passives	15	15 0 0 0 0 0 0 0 0 0 0 15 0 0 0 0 0 0 8 7 0 0 4													
Promoters	5	0	0	0	0	0	0	0	0	0	2	3	20.2		
Total NPS NPS = percer	ntage of pr	romoters	- percer	ntage of de	tractors								18.7		

Table 4. 15 NPS score Google Home Assistant

If we look at these participants and want to know how highly they rate their knowledge about Artificial Intelligence, the "Knowledge" overview below comes in handy. If we look at scores 5 and 6, we see that these scores give most participants themselves this score when it comes to estimating how high their knowledge is about Artificial Intelligence. In general, the overview below shows how highly the participants estimate their knowledge about Artificial Intelligence. We can therefore conclude from this that the participants generally do not have much knowledge of Artificial Intelligence.

Knowle dge	How high do you rate your knowledge about Artificial Intelligence?												
	Total 0 1 2 3 4 5 6 7 8 9 10												
Total Count	33	0	2	3	2	2	6	12	3	2	0	0	
Men	29.0%	0.0%	0.0%	63.6%	41.7%	46.2%	0.0%	13.4%	38.9%	100%	0.0%	0.0%	
Women	71.0%	0.0%	100%	36.4%	58.3%	53.8%	100%	86.6%	61.1%	0.0%	0.0%	0.0%	

Table 4. 16 Google Home Assistant knowledge score

Regarding the age categories, we see that especially the ages between 18-30 score high with 54.9%, then age categories 31-50 with 38.3% and age categories 51-70 with 6.7%. What can be seen is that most of the age categories 18-30 and 31-50 fall under Passives and Promoters. This only indicates that these age groups highly estimate the likelihood that they will use this product in their daily lives.

Age	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	33	1	1	0	2	1	5	4	7	7	2	3
18 - 30	54.9%	0.0%	0.0%	0.0%	100%	0.0%	100%	46.4%	37.2%	80.6%	38.5%	38.5%
31 - 50	38.3%	0.0%	100%	0.0%	0.0%	0.0%	0.0%	53.6%	48.8%	19.4%	61.5%	61.5%
51 - 70	6.7%	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.0%	0.0%	0.0%	0.0%
70+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4. 17 Google Home Assistant Age category

This shows that Women in particular are in the majority with 71%, even when it comes to Promoters, we see that Women in particular score highest. This trend actually continues from the score 5 to 10. Here the Women scores highest. Hereby it is good to reflect on the fact that the participants have been given a description of the products without Artificial Intelligence being named. So the participants do not know that the products use Artificial Intelligence they lack the knowledge, but when we look at the knowledge overview, the participants generally have little knowledge.

Gender	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	33	1	1	0	2	1	5	4	6	7	2	3
Men	29.0%	100%	100%	0.0%	0.0%	0.0%	25.0%	32.1%	18.2%	38.9%	38.5%	0.0%
Women	71.0%	0.0%	0.0%	0.0%	100%	0.0%	75.0%	67.9%	81.8%	61.1%	61.5%	100%

Table 4. 18 Google Home Assistant Gender category

Product 3. SimCam Home Security Camera

The third and final experimental question of this survey is the SimCam security camera. Immediately noticeable are the numbers among Passives and Promoters that run at 34.95%. This allows us to see that for the first time in this study, Detractors score less than Promoters. With regard to this product, Promoters score more than Detractors, indicating that 34.95% of all participants consider themselves to be highly likely to use the SimCam security camera in their daily lives. We also see the same numbers in the Passives with 12 of the participants. We can therefore conclude that most participants (24) are on the right half of the scoreboard against 9 Detractors participants. Among the Detractors, the scores are different between 1 and 6, with three participants giving a score of 5. With more participants, the other survey has a lower number of Promoters, namely 6 participants versus 12 participants for this survey.

Q3	How his	gh do you	u estima	te the chan	ce that you	ı will use a	SimCam in	ı your daily	life if you l	nave the op	portunity t	o do so?	
	Total	0	1	2	3	4	5	6	7	8	9	10	%
Detractors	9	0	1	2	1	1	3	1	0	0	0	0	30.10
Passives	12	0	0	0	0	0	0	0	6	6	0	0	34.95
Promoters	12	2 0 0 0 0 0 0 0 0 0 0 0 7 5 34.95											34.95
Total NPS NPS = percer	ntage of pr	of promoters - percentage of detractors -4.85										-4.85	

Table 4. 19 NPS score Home Security Camera

Among the different age categories, we mainly see many young participants 18-30 with 54.9%, age category 31-50 with 38.3% and 51-70 age category with 6.7%. Under the age category 18-30, 6 participants have indicated that they fall under Detractors, 7 have indicated that they see themselves as Passives and 4 of the participants think they are Promoters, they will recommend the SimCam to friends and family. Under the age category 5170 it can be seen that these participants are likely to estimate that they will use a smart security cameras in their home and daily life. The probability varies between Passives (8) and Promoter (9). These participants will quickly accept this product, or it will continue to be when these participants find out how Artificial Intelligence really works, I don't know and I'll leave that to another research.

Age	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	33	0	1	2	1	1	3	1	6	6	7	5
18 - 30	54.9%	0.0%	100%	50.0%	100%	100%	36.8%	100%	78.0%	36.4%	29.0%	50.0%
31 - 50	38.3%	0.0%	0.0%	50.0%	0.0%	0.0%	63.2%	0.0%	22.0%	42.4%	51.6%	50.0%
51 - 70	6.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	21.2%	19.4%	0.0%
70+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4. 20 SimCam Home Security Camera Age category

We know from this survey that Women are in the majority with 71% and men with 29%. 8 Women think their chances are small that they will use this product in their daily lives. 5 Women fall under Passives and 8 under Promoters. The participants did not get the questions about the three products that Artificial Intelligence is part of the technology that is used. What is striking is that in the questions under Attitude, 72.9% of Women score as Detractors in the question "How would you like to have Artificial Intelligence devices in your home?" I will elaborate on this later in the Attitude section.

Q12	Hoe zou u het vinden om ap	oparaten met Kunstmatige Inte	elligentie te hebben in uw huisi						
	Total	tal Passives Promotor Detractors							
Total Count	33	13	3	11					
Men	29.0%	29.0% 29.2% 32.1% 27.1%							
Women	71.0%	70.8%	67.9%	72.9%					

Table 4. 21 Q12 Gender category

Gender	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	33	0	1	2	1	1	3	1	5	6	7	5
Men	29.0%	0.0%	0.0%	0.0%	100%	0.0%	0.0%	0.0%	29.0%	60.6%	38.7%	23.3%
Women	71.0%	0.0%	100%	100%	0.0%	100%	100%	100%	71.0%	39.4%	61.3%	76.7%

Table 4. 22 SimCam Home Security Camera Gender category

4.2 Experimental Questions Analysis

The overview below shows the results of both surveys. We see the total of all three scores (Detractors, Passives, Promoters) and the total NPS. Here we can draw different conclusions and see if the hypothesis of this research is correct and whether the main question can be answered. But this will be further discussed later in the Conclusion and Discussion chapters. The overview below shows the three products that have been part of the survey and functioned as an experiment. The first thing that strikes me is that participants from the survey with Artificial Intelligence in the description will generally promote the products less. The participants from the survey without Artificial Intelligence are generally more positive and also have more Promoters. With the SimCam Home Security Camera, the Promoters even score higher than the Detractors, which is not the case with all other products and both surveys. The fact is that participants in the Artificial Intelligence survey are much more aware of Artificial Intelligence as part of the products. If we compare both results of the Tesla car, we see that the participants of the survey with Artificial Intelligence score 17.5% more negative. This indicates that they are more Detractors and fewer Promoters. They will be less likely to recommend Tesla cars.

		Product 1. Tesla car		
	Detractors	Passives	Promoters	Total NPS
Survey with Description of AI in description	37.2%	44.2%	18.6%	-18.6%
Survey without Description of AI in description	27.5%	46.1%	26.4%	-1.1%

Table 4. 23 Tesla car survey NPS scores

The same applies to the Google Home Assistant speaker. Only this product scores very poorly with a -45.2% for the survey with Artificial Intelligence in the description and -18.7% NPS for the survey without Artificial Intelligence. Possible cause of this score is further explained in the following section "External influence during experiment". The news coverage of the leaked conversations from Google Home Assistant has only helped this research with the experiment and will only help the reader of this research understand what is meant by "awareness" and what impact this may have on the acceptance of Artificial Intelligence. The experiment of this product also receives extra attention from the reader because of the much talked and written about this product and because this is a much-consumed product due to Artificial Intelligence 59.9% Detractors score. These participants were explicitly informed that this product only uses Artificial Intelligence, but also the other survey, but then through all the news reports, not because it was indicated in the description.

	Product 2. Google Home Assistant							
	Detractors	Passives	Promoters	Total NPS				
Survey with Description of AI in description	59.5%	26.2%	14.3%	-45.2%				
Survey without Description of AI in description	38.9%	40.9%	20.2%	-18.7%				

Table 4. 24 Google Home Assistant survey NPS scores

Next and final product of the experiment is the SimCam Home Security Camera that has emphasized the hypothesis that prior to this investigation was made H0: Awareness of AI does not have influence the acceptance of AI technologies. H1: Being aware of AI in products does influence the acceptance of AI technologies . The outcome of this product is different from the other two products, because the survey with Artificial Intelligence in the description received for the first time a positive NPS score, which indicated that the participants of the survey without Artificial Intelligence in the description for this product is likely to use it in their daily lives. Furthermore, as expected, the survey with Artificial Intelligence scores many Detractors in the description, so that the NPS score comes out at -27.9%, indicating that this product would rather not be recommended or accepted by the participants.

	Product 3. SimCam Home Security Camera							
	Detractors	Passives	Promoters	Total NPS				
Survey with Description of AI in description	41.9%	44.2%	14.0%	-27.9%				
Survey without Description of AI in description	30.10%	34.95%	34.95%	4.85%				

Table 4. 25 SimCam Home Security Camera survey NPS scores

4.3 Behavioral Intention (Inferential Statistics)

In this section, we make a further analysis of the data from both surveys. We do the analysis using JASP, in which we have loaded both groups (With and Without AI in experimental questions) and then do an Independent Sample T-Test analysis. I have chosen to use a t-test, also called the Welch t-test, to compare the averages of a maximum of two groups. I have labeled the groups with 1 (Survey without Description of AI) and group 2 (Survey with Description of AI) Where I stated in the hypothesis (H1: Being aware of AI in products does influence the acceptance of AI technologies) what the essence of this research is to know what the participants of the experimental survey think after the experimental questions of Artificial Intelligence and whether participants with awareness of AI don't intend to accept AI technologies. I compared both means. With a Welch t-test, the rule applies that the greater the t-value, the more there is a difference between both groups. And on the other hand, when the t-score is small, the more the groups are the same. When you run a test, the bigger the t-value, the more likely it is that the results are repeatable.

Below I explain the results after I uploaded the data of the experimental questions into JASP. The experimental questions are the most important part of this research because participants did not receive any additional information about Artificial Intelligence. The statistical results below are part of Inferential statistics. Such as t-test, This makes it possible to make predictions and look into future expectations. For example, a score of 3 indicates that both groups differ three times as much from each other. When performing a t-test, the higher the score, the greater the chance that the results will occur again. If we look at the results below, we see the t-score of 1,395 for Q4 (Tesla car), indicating there are no major differences between the two groups (differences between the two means from both groups). We also see a p-value of 0.084, which equals 8.4%. So 8.4%

probability that the results from an experiment happened by chance. The number of per cent explains the chance that the result of Q4 will occur again, and so the result is statistically significant. The result of Q4 is significant if p < .20 and for the results of questions Q5 and Q6 are significant if p < .05. The differences in p-values are based on the t-table (http://www.ttable.org/#).

Experimental Questions

Indep	endent Sam	ples T-Test	
	t	df	р
Q4	1.395	72.244	0.084
Q5	1.866	73.879	0.033
Q6	1.677	69.991	0.049

Note. Welch t-test.

Note. For all tests, the alternative hypothesis (H0: > H1:) specifies that group 1 is greater than group 2.

^a Levene's test is significant (p < .20 for Q4, Q5 and Q6 p < .05), suggesting a violation of the equal variance assumption.

Group Descriptive

	Group	Ν	Mean
Q4	1	33	7.152
	2	43	6.395
Q5	1	33	6.455
	2	42	5.302
Q6	1	33	7.152
	2	43	6.163

The results of Q5 (Google Home Assistant) show a higher t-value with 1,866. Which indicates that a larger difference, of the mean between the two surveys, as an outcome according to the t-table. By means of the t-table, we were able to determine the t-value and figure out the p-value. If we look at the p-value then we can conclude that the result is valid because the p-value stays below the "Two-tailed" score of p < 0.05.

The last experimental question is Q6 (SimCam Home Security). If we look at the result, we see that the t-value is between the t-value of Q4 (1,395) and Q5 (1,866) with a 1,677 t-value. This indicates that the surveys of both groups differ less from each other, compared to Q5, and more differ from each other, compared to Q6.

4.3.1 Theory of Planned Behavior Questionnaire

The Theory of Planned behavior explains that human behavior is guided by three different streams; Behavioral Beliefs, which indicates what kind of attitude someone has with regard to Artificial Intelligence and what emotions come into play here, for example. So someone has a favorable or unfavorable attitude. Normative Beliefs projects the factors from a social perspective and whether friends and family influence the acceptance of Artificial Intelligence. The final construct is the control beliefs that indicate whether there are factors that influence whether someone has the means, for example, money, to purchase technology with Artificial Intelligence. Also have the believe that you have and will understand the ability to understand Artificial Intelligence. Perceived Behavioral Control is often a reflection of Actual Control which indicates whether someone actually has the knowledge and skills to understand Artificial Intelligence technology. The combination of both currents can ensure that behavior is predicted, this will skip the prediction of the intention. Furthermore, the rule is that the more subjective norm and attitude are pleasant, the more likely there is that Perceived Behavior Control is less convincing, so that the intention is strong that someone will accept an Artificial Intelligence technology. But the Perceived Behavioral Control can be invalidated by unusual and impulsive events, meaning that the intention is lost. The overview below only indicates what the questions and results are for both surveys and what role Theory of Planned Behavior played in developing the questions. After the questions from the three products, the remaining questions from both surveys are all the same as a result, I have combined the results, because the experiment is no longer relevant to the rest of the survey.

4.3.1.1 Attitude

As discussed earlier, the Attitude maps the attitude of a participant to gain insight into what attitude a participant has towards Artificial Intelligence. This section has a total of six different questions: First question (Q10) under the Attitude believe what an open question that gives me the first impression as research how the participants look at Artificial Intelligence and what is the first thing that comes to mind. As you can see in the overview below, I have randomly placed all the answers of the participants one after the other and I have noticed that the word "Robot" is used quite often because perhaps the participants still have an image from movies about "smart" Robots and that it is attacking humanity without any human control. Fifteen times the word Robot has been mentioned by the participants. The robot is just the packaging or the form, Artificial Intelligence is about the content. What a robot does and the decisions it makes. This has also given me a clear picture of the attitude I can expect from the participants in general. There have also been participants with a different image of Artificial Intelligence such as; smart computers from a future perspective or science such as high self-willed thinking.

Q10	What is	the first thing that comes to mind with	hen you thi	nk about Artificial Intelligence?	
	0	Ι.	0		
Answer	Count	Answer	Count	Answer	Count
Robots	15	Much to think of	1	computer games	1
Automation	4	Electric cars	1	Boring subject	1
Computers	2	Human	1	Skynet (Terminator)	1
Siri	2	Autopilot	1	Smarter than human	1
Cruise control	2	That computers can do a lot and I never understand how that is possible	1	Technical aids	1
3d printing	1	That computers are smarter than us and that will only become more in the future	1	Technology	1
Device that learns from its	1	That it is a development of high	1	Tesla	1
environment		value			
Security in home	1	Movie AI	1	Much needed data	1
Science	1	Domotica movie	1	Simplify from daily life	1
Something that will be	1	Cool	1	Will eventually pose a threat	1
installed to think like a human				to people	
Movies, where the control over humans will be taken	1	Google home	1	Self-learning device, through sensors, code and scripting	1
No privacy	1	Useful	1	Computer systems	1
I believe in this	1	Informatica	1	is it safe?	1
Innovation	1	Art designs high thinking independence technology	1	collecting intelligence through technology	1
Intelligence that continues	1	Allow machines to independently perform activities, enable machines to improve and learn	1		
Surgeries by Artificial Intelligence	1	Neural network	1		
Devices and programs are taking over	1	Next gen / smart Tech (self- driving cars, etc.)	1		
Phillips, Google, (i.e. vacuum cleaners), drones	1	nothing	1		
Autonomous cars	1	Privacy	1		
Human limits	1	on different levels. E.g. at home or for scientific	1		
Progress	1	Research	1		
Development with dangers	1	Society	1		

Table 4. 26 Q10 participant answers: What is the first thing that comes to mind when you think about Artificial Intelligence?

The second question (Q11) is a question that gives all participants a short and easy explanation of what Artificial Intelligence is. I did this to make sure that all participants have enough information for the rest of the survey. To further clarify the question Q11, we must look at the overview below where I score the highest (emotionally marked) for each emotion. The participants have had the option to select multiple emotions because I can well understand that when new information comes to light, different emotions can arise. The following is an overview of both surveys and we see that Enthusiasm scores the highest an 8 (24 participants) that comes closest to Very High. We also see that "Angry" and "Sad" score very low with 31 participants for "Angry" and 34 participants "Sad" on Very low. Other emotions such as "Curious", "Anxious" and "Interested" also score high with an 8 and therefore come close to the Very high level.

Q11	Artificial Intelligence is used in devices and programs that respond to data or impulses from their environment and make independent decisions based on that. So intelligence with which machines, software and devices independently solve problems and / or make decisions. They thereby imitate the mind of a human. This type of device is not about computing power, but about the ability to learn and make decisions (independently). Can you indicate your feelings about Artificial Intelligence below on a scale of 1 to 10?													
	Very low 1	2	3	4	5	6	7	8	9	Very high 10				
Enthusi astic	1.11% 1	2.33% 1	9.09% 4	8.33% 3	4.62% 3	15.09% 8	20.73% 17	25.53% 24	17.39% 8	20.83% 5				
Interest ed	2.22% 2	0.00%	0.00%	8.33% 3	7.69% 5	11.32% 6	19.51% 16	23.40% 22	23.91% 11	29.17% 7				
Nervou s	6.67% 6	13.95% 6	18.18% 8	19.44% 7	24.62% 16	16.98% 9	15.85% 13	5.32% 5	2.17% 1	0.00%				
Fear	10.00% 9	16.28% 7	27.27% 12	19.44% 7	27.69% 18	9.43% 5	6.10% 5	6.38% 6	4.35% 2	4.17% 1				
Curious	1.11% 1	0.00%	2.27% 1	0.00%	7.69% 5	9.43% 5	17.07% 14	21.28% 20	39.13% 18	37.50% 9				
Angry	34.44% 31	34.88% 15	20.45% 9	19.44% 7	4.62% 3	9.43% 5	1.22% 1	1.06% 1	0.00%	0.00%				
Sad	37.78% 34	30.23% 13	18.18% 8	13.89% 5	6.15% 4	9.43% 5	1.22% 1	0.00%	2.17% 1	0.00%				
Нарру	6.67% 6	2.33% 1	4.55% 2	11.11% 4	16.92% 11	18.87% 10	18.29% 15	17.02% 16	10.87% 5	8.33% 2				

Table 4. 27 Q11 results about expressing emotions about Artificial Intelligence

In the Q12 a question is asked to map the will of the participants. How much does someone want an Artificial Intelligence device in their home? This question was asked after the experimental questions and Q11 where Artificial Intelligence was explained. Based on the results below, we can draw different conclusions later. What is striking is that Detractors scores more than twice the Promoters and Passives highest with 33 participants. But as previously indicated the participants under Passives depend on what the future offers and how Artificial Intelligence develops further. These participants can still go in any direction.

Q12	Would ye	ou like to	have Artifi	cial Intelli	gence devi	ces in you	r home? on	a scale of 0	to 10					
	Total	tal 0 1 2 3 4 5 6 7 8 9 10												
Total Count	76	1	2	0	0	6	7	11	18	15	3	7		
Passives	36	0	0	0	0	0	0	0	18	15	0	0		
Promotors	13	0	0	0	0	0	0	0	0	0	3	7		
Detractors	27	1	2	0	0	6	7	11	0	0	0	0		

Table 4. 28 Q12 results: Would you like to have Artificial Intelligence devices in your home?

With the next question (Q13) my intention has been to ask the participants how much they love new innovative technologies and whether there are participants who fall under Promoters. To see the results below, there are many Detractors (33) and almost as many Passives (29) where they have indicated that they are enthusiasts but

Q13	To what	extent do	you consi	ider your	self a fan o	f innovative	technologie	es? on a scal	e of 0 to 10					
	Total	Total 0 1 2 3 4 5 6 7 8 9 10												
Total Count	76	2	0	1	3	3	13	11	15	14	6	6		
Passives	29	0	0	0	0	0	0	0	15	14	0	0		
Promotors	12	0	0	0	0	0	0	0	0	0	6	6		
Detractors	33	2	0	1	3	3	13	11	0	0	0	0		

not Promoters (12). The conclusion that we can draw from the overview below is the fact that most participants are themselves enthusiasts (in general), but there are also many non-enthusiasts.

Table 4. 29 Q13 results: To what extent do you consider yourself a fan of innovative technologies?

Q14 is a question in which I map out the awareness of the participants under their own personal data. What can be seen below was a bit expected because there are quite a lot of Detractors. So these are participants who find their personal data important and how a device, website or platform uses and processes their data. From the overview below we see Promoters with 39 out of 75 who think it is important how their data is processed. Then the Passives with 23 of the 75 and 13 Detractors. The Passives may be participants who use a service or device that is so valuable to them that confidence in perspective is less important to them than Promoters.

Q14	To what	extent do	you think i	t is importa	unt how a p	oroduct h	andles your	personal da	ata? on a sca	lle of 0 to 10)	
	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	76	0	1	0	2	2	2	6	5	18	9	30
Passives	23	0	0	0	0	0	0	0	5	18	0	0
Promotors	39	0	0	0	0	0	0	0	0	0	9	30
Detractors	13	0	1	0	2	2	2	6	0	0	0	0

Table 4. 30 Q14 results importance of personal data

In Q15, I gave the participants a total of eight options that would make them feel comfortable when executed by an Artificial Intelligence, taking service from them. The participants also had the option of choosing different options. Highest score (54) get the option "Home security" this score also corresponds to the experiment about SimCam Home Security Camera. The next is the "Driving" (39) that the participants have chosen to have it done by an Artificial Intelligence. Then the "Construction" with 33 and then "Personal recommendations" with 24 for when a client is faced with a dilemma or cannot make a choice from various options. The other results speak for themselves and get a lower score (less priority by the participants). What we see of these products/services are all existing products/services that we have made intelligent. Think of a staircase (is now an escalator) and whistling kettle (now an electric kettle). The next phase is that intelligence is also integrated into all devices and services. It becomes a part of everyday life.

Q15	Which of the options below do you like if it is perfor	med by an Artificial Intelligence?	
#	Answer	%	Count
1	Driving car	18.31%	39
2	Customer service	10.80%	23
3	Home Security	25.35%	54
4	Financial services	10.33%	22
5	Medical surgery	5.63%	12
6	Construction	15.49%	33
7	Personal recommendation	11.27%	24
8	None of these options	2.82%	6
	Total	100%	213

Table 4. 31	Q15	results:	service	by	Artificial	Intelligence
	 			~		0

4.3.1.2 Social Norm

If certain actions and decisions were made by an individual, predicting his or her intention or behavior is easier. But that is sometimes not the case because often other factors play a role such as external factors. With Perceived Norm it is mainly external factors that are mapped that can influence an individual's decisions. In addition, It also indicates how important some external factors are for an individual. Think of family, friends, direct colleagues, people with an important position and artists with a large audience. These are some examples of external factors that can influence an individual.

The first question under Perceived Standard is Q16 where the question has been developed to map the influence of friends and relatives of the participants. Hereby it is important to find out whether participants give an answer in the direction of Promoters. This means that there are participants who have friends and family members who are enthusiastic about the developments of Artificial Intelligence. This awareness of the participants may have an influence on the Behavioral Intention of the relevant participant. One of the factors under the Perceived Norm is the social aspect. Religion, culture, race and ethnicity also play a role. If we look at the results below, we can conclude that the participants of this study score on average with 37 participants among Detractors, 36 participants Passives, and only 3 participants Promoters.

Q16	To what function	extent are alities depe	e friends a end on per	and family sonal data	enthusiast and behav	ic about th ior?	e developme	ent of prod	ucts with A	rtificial In	telligence,	where the		
	Total	tal 0 1 2 3 4 5 6 7 8 9 10												
Total Count	76	2	0	0	3	5	13	14	27	9	2	1		
Passives	36	0	0	0	0	0	0	0	27	9	0	0		
Promotors	3	0	0	0	0	0	0	0	0	0	2	1		
Detractors	37	2	0	0	3	5	13	14	0	0	0	0		

Table 4. 32 Q16 results Social Norm

With Q17 I want to know from participants how important they think the advice of friends and family is when it comes to making decisions. Promoters do not score very high in the section either. This immediately gives me the impression that the participants of this study do not think it is very important what friends and family think when making a decision. If we look at the Passives, we see that 21 participants have given this score, because they may be listening, but it does not immediately mean that they are following their advice. At Detractors, we see 52 participants who have indicated that, in fact, little or no value has been given to what friends and family think when making decisions.

Q17	How imp	ortant do y	70u think	the advice	of your fri	ends and fa	mily is wher	n it comes to	making ch	oices?		
	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	76	3	1	8	4	3	15	18	15	6	2	1
Passives	21	0	0	0	0	0	0	0	15	6	0	0
Promotors	3	0	0	0	0	0	0	0	0	0	2	1
Detractors	52	3	1	8	4	3	15	18	0	0	0	0

Table 4. 33 Q17 results Social Norm

With the knowledge of the participants they have had with this question, I want to look into how they thinking that Artificial Intelligence can become part of society. As discussed earlier, we already use Artificial Intelligence in different ways. In Computers at work, devices at home or in our mobile phones. Looking at the results, the participants estimate that there is a good chance that we will be confronted with a future in which Artificial Intelligence becomes part of our society. With a score of 30 Promoters, 33 Passive and only 13 Detractors it means a lot about the imagination the participants have, regardless of their experience, opinion and preferences.

Q18	How likel	y do you th	ink Artificia	al Intelliger	nce becom	es a part c	of our soci	ety?						
	Total	otal 0 1 2 3 4 5 6 7 8 9 10												
Total Count	76	0	0	0	1	1	5	6	14	19	17	13		
Passives	33	0	0	0	0	0	0	0	14	19	0	0		
Promotors	30	0	0	0	0	0	0	0	0	0	17	13		
Detractors	13	0	0	0	1	1	5	6	0	0	0	0		

Table 4. 34 Q18 results Artificial Intelligence become part of our society

4.3.1.3 Perceived Behavioral Control

As earlier mentioned Perceived Behavioral Control is the fact that a person believes to be able to perform the already decided behavior. In this case, what kind of mindset the person has when performing the behavior. So a person sees himself as a person in order to achieve a goal or a person does not estimate himself as well when performing. So as an example we can use whether a person is confident to drive a car with autopilot? for example, if this person does not have the knowledge or is not anxious, then it is more likely that it will be easy for someone to accept than a person with little self-confidence, so a lack of knowledge and trust. this does not always have to match the final result, it may differ slightly. A person can assume that the execution of certain

action is obvious and easy to carry out, whereas in reality, this is different (Ajzen & Fishbein, 1977). Perceived Behavioral Control can have impact Behavior in two different forms. First, when someone is confident or believes in being able to take a certain action, they often have more chance of success than someone with less confidence and doubts. Secondly, we also see that the Perceived Behavioral Control usually functions as the "partner" Actual Control in the context of serving each other and feeding information.

With question Q19 I want to show the general knowledge of the participants. How much knowledge do the participants themselves have about Artificial Intelligence? As a researcher, self-assurance about available knowledge gives me the impression of how participants prepare themselves for the Intention. Seeing the results below, we see a sum of both surveys. In general, participants don't think they have a lot of knowledge. Q19 is a question after three experimental questions and an explanation about Artificial Intelligence. Participants have had the opportunity to compare, compare or test their knowledge in addition to the information from question Q11 on Artificial Intelligence.

Q19	How hi	How high do you rate your knowledge about Artificial Intelligence?												
	Total	otal 0 1 2 3 4 5 6 7 8 9 10												
Total Count	76	1	2	4	5	8	9	26	11	8	2	0		
Passives	19	0	0	0	0	0	0	0	11	8	0	0		
Promotor	2	0	0	0	0	0	0	0	0	0	2	0		
Detractors	55	1	2	4	5	8	9	26	0	0	0	0		

Table 4. 35 Q19 Rating knowledge about Artificial Intelligence

The next question has to do with understanding and being able to use technologies in which Artificial Intelligence is a part. The reason this question is asked is that I want to know how convinced the participants are about their knowledge and thinking of being able to use Artificial Intelligence technologies. Q19 and Q20 are a bit similar, but Q20 also asks participants to think about the use. The results therefore also generally correspond to Q19 with more participants now are part of Passives. This can have various reasons, such as that some participants know how to use the products regardless of their knowledge. There are also more Promoters in Q20 (7) if we compare it with the previous question.

Q20	To wha	t extent a	are you co	onvinced t	hat you wi	l understa	nd and use	Artificial	Intelligenc	e technol	ogies easily	y?		
	Total	otal 0 1 2 3 4 5 6 7 8 9 10												
Total Count	76	0	0	2	3	6	12	9	20	17	3	4		
Passives	37	0	0	0	0	0	0	0	20	17	0	0		
Promotor	7	0	0	0	0	0	0	0	0	0	3	4		
Detractors	32	0	0	2	3	6	12	9	0	0	0	0		

Table 4. 36 Q20 Confident about understanding Artificial Intelligence Technologies

With the following question, I want to see to what extent a participant feels comfortable using Artificial Intelligence technologies. Control gives confidence and certainty when a participant is in control of an Artificial Intelligence technology. As an example, we can take the autopilot of a Tesla car. As soon as the autopilot is activated while driving, a driver hands over the control to an Artificial Intelligence Algorithm. At the same time, the driver also has the authorization to put an end to the autopilot (for example in the case of too busy intersections) which may give a participant a sense of satisfaction or acceptable when using an Artificial Intelligence technology. Looking at the results below, the participants in this study prefer to be in control. From the figures we can see that 12 people clearly gave a 10 and an 8 which fall under the Promoters. In this case, the participants are sure that they would prefer to be in control. In addition, 35 participants have indicated that they fall under Passives, so that they can go to Detractors in the future, which is only positive because that means that the development of Artificial Intelligence is only becoming more accepted. And then the number of Detractors with 21 participants who have indicated that they do have faith in Artificial Intelligence.

Q21	Would y	Would you feel comfortable if you had some control over Artificial Intelligence?												
	Total	0	1	2	3	4	5	6	7	8	9	10		
Total Count	76	2	0	0	2	1	7	9	15	20	8	12		
Passives	35	0	0	0	0	0	0	0	15	20	0	0		
Promotor	20	0	0	0	0	0	0	0	0	0	8	12		
Detractors	21	2	0	0	2	1	7	9	0	0	0	0		

Table 4. 37 Q21 Control over Artificial Intelligence

Nowadays there are many different products available for consumers where Artificial Intelligence (or as it is sometimes translated for consumers as "Smart") is used to make optimal use of all functionalities. Enthusiasts want new products and sometimes stand in line for hours (sometimes all day) to be one of the first to have a certain (wanted) product. But there are also plenty of other people who attach less value to it and prefer to wait for various reasons. With the question below I want to know from the participants to what extent they are capable or have the urge to buy a newly released device that has Artificial Intelligence or as it is sold in stores as "smart". Seeing the results, we do not all see the enthusiasm, and even more so, Promoters do not include any of the participants. The participants are distributed among Passives with 10 participants and the rest among Detractors with 66 participants. What finally means in short that the participants of this study are not completely enthusiastic about buying Artificial Intelligence devices directly. This can have various reasons, poor experience, or wait-and-see attitude until all errors have been corrected. Among the Passives we can draw the conclusion that these are enthusiasts who want to buy the products only when this is necessary or if they are in there and do not have to stand in line for that, for example.

Q22	When new devices with Artificial Intelligence are sold, do you want to purchase them immediately, regardless of the costs?											
	Total	0	1	2	3	4	5	6	7	8	9	10
Total Count	76	7	6	10	11	9	11	12	4	6	0	0
Passives	10	0	0	0	0	0	0	0	4	6	0	0
Promotor	0	0	0	0	0	0	0	0	0	0	0	0
Detractors	66	7	6	10	11	9	11	12	0	0	0	0

Table 4. 38 Q22 Desire to buy

4.3.1.4 Descriptive analysis

Looking back at this chapter, we know it has been divided into three streams; Behavioral Beliefs, which indicates what kind of attitude someone has with regard to Artificial Intelligence and what. emotions come into play here, for example. So someone has a favorable or unfavorable attitude Normative Beliefs are the factors from a social perspective and whether friends and family influence the acceptance of Artificial Intelligence. The final construct is the control beliefs that indicate whether someone has the believe that he or she will have the ability to understand and use Artificial Intelligence. Another example for this construct is whether someone has the enough money to purchase the technology that possesses Artificial Intelligence.

I found out during this research what kind of image the participants have of Artificial Intelligence. I have noticed that the word "Robot" is used fifteen times because perhaps the participants still have an image from movies about "smart" Robots and that it is attacking humanity without any human control. But on the other side, there are also many participants who are very enthusiastic, which is a little opposite of angry and sad, and that can also be seen in de results from Q11. The conclusion that we can draw for the attitude construct is that participants who are positive about the developments of Artificial Intelligence are also reluctant to use it home. From the results of question Q14 it can be seen that participants prioritize the importance on how personal data is processed by the Artificial Intelligence product nowadays.

We also indicate that external factors such as the opinions and advice from friends and family have little or no influence on the choices they make. So when it comes to Artificial Intelligence, the chances are very small that the participants will accept or buy the products upon their recommendation. This means that the social norm construct has little or no influence on their acceptance.

Third and final construct, Perceived Behavioral Control shows results that the participants estimate their knowledge about Artificial Intelligence low and that they will not easily understand Artificial Intelligence products. Participants know that they cannot use all Artificial Intelligence products because they do not have the knowledge for this. This attitude is because these participants generally are of the opinion that it is very important how data is used and processed. Which mean that participants knowing that a product is using Artificial Intelligence, they probably will not accept or use it.

5. Conclusion

The aim of this study was to find out whether the awareness that a product possesses Artificial Intelligence has an impact on the decision of potential users to accept such a product, based on a qualitive study. While the acceptance of AI by the society is still in its early stage, this research indicated that the current awareness of AI does indeed influences the acceptance of AI technologies looking at the results from the Welch's T-test analysis. This study gives an overview of two groups. The results indicate that group two, with awareness of AI, generally does not accept AI. Group one, with no awareness of AI, is lightly in favor over group two in accepting AI. Therefore, we can draw the conclusion that being aware of AI in products, does influence the acceptance. But not with convincing significance. The reason for this is what kind of product a person has to deal with. By means of a Welch t-test, it can be seen that both groups statistically do not differ much from each other. Of the three products, the results of the Google Home Assistant represent the greatest significance. This study also shows that incidents can be determinative for the acceptance of AI technologies. News reports about an incident with Google Home Voice Assistant, where conversations were leaked, might have influenced the participants, looking at the results from the experimental question. What is striking is that many participants, from both groups, gave a low score to the Google Home Assistant (group one 6.455 and group 2 5.302). Which positions both as Detractors. What is also striking is that this seems to have had no effect on the other two products.

During this study, I experienced the Google Home Speaker Assistant incident as an unplanned experiment regarding awareness, substantiation and confirmation of the hypothesis. This study provides an insight of current awareness and is not a reflection of the whole Dutch society and its future. These results can change when future technologies are further developed. While technologies are still improving, producers must take doubts and concerns of users into account during development, so that users are more likely to accept new future technologies. Therefore other researchers have the possibility to perform the necessary study in the field of acceptance and adoption when transparency is integrated in AI products. Future researchers have the possibility to further expand the Theory of Planned Behavior with a new transparency construct alongside Attitude, Perceived Norm and Perceived Behavioral Control to perform acceptance or adoption studies. This research could also be conducted in other countries and continents (in countries where the priority is less than in the Netherlands), so there is a good chance that a researcher will get other results comparing to this research.

By reading this study readers understand the importance of transparency regarding AI and what impact this has on the acceptance if transparency negates the "Black box". Other adoption and acceptance models can also be expanded with this construct (Transparency) such as; Theory of Diffusion of Innovations (DIT) (Rogers, 1995), Task Technology fit model (Goodhue et al 1995), the Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen , 1985, 1991), Decomposed Theory of Planned Behavior, (Taylor and Todd, 1995), the Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw, 1989, Technology Acceptance Model 2 (TAM2) Venkatesh and Davis (2000) and Technology Acceptance Model 3 (TAM3) Venkatesh and Bala (2008) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis and Davis, 2003).

From the questions within the constructs (Attitude, Perceived Norm and Perceived Behavioral Control) in combination with literature, we see that there is a great need for transparency in the field of Artificial Intelligence. Transparency, such as Explainable AI, is a very discussed topic. Why does AI technology makes a

certain decision? What underlying thought or reasoning led to the output? How does the model "think"? Often we have no idea. This research has also remained limited due to this intersectional variables. This gives other researchers the opportunity to investigate what has not yet been investigated in the context of the acceptance of Artificial Intelligence. Another limitation is that some questions from the surveys could not be analyzed statistically because it could not be included in the tooling. The results of this study cannot be used infinitely because of the continuous developments within this sector. Artificial Intelligence is becoming a prominent part of our society. Therefore there is a good chance that when this research is conducted in the future, we will have to deal with completely different results.

For both surveys I have analyzed the age and gender variables using the data from the experimental questions. Analyzing the data we can conclude that in general men are in the majority when it comes to using a Tesla car. Of these participants, it is mainly young participants between the ages of 18-30 who see themselves using this product. The Detractors for this product are mainly women. These findings are also confirmed by the question Q15: *"Which of the options below do you think is good if it is carried out by an Artificial Intelligence?"* where the majority are men who choose a car with Artificial Intelligence.

With the Google Home Assistant we see very different results, with little difference between both genders (women in the majority). The majority do not see themselves using a Google Home Assistant. This may have to do with the leaked conversations by Google from the Home Assistant. With this product we see that especially the age category 18-30 would prefer not to use this product. Regarding the third product, we see an advantage for the women analyzing the SimCam Home Security Camera. This does not say much, because more women were in the majority submitting this survey. Both surveys indicate that participants tend to move more toward Promoters for the SimCam Home Security Camera. Which only indicates that regardless of the participants are or not aware of Artificial Intelligence is being used, safety is important.

The conclusion that we can draw is that, regardless a product uses Artificial Intelligence, it depends on what kind of product men of women has to deal with. And regarding age, It also seems that the older the participants are, the less they estimate the chance that they will accept or use an Artificial Intelligence product.

6. Discussion

For this research, two different surveys were used to determine the influence of Artificial Intelligence by using the Theory of Planned Behavior. These questionnaires were then distributed among 74 participants in a sample representative of two different groups. It can be stated that if this research were to be repeated in the same period, the results would be the same and, therefore, the results of this research would be valid. The statistical analysis, in the Results chapter, shows that awareness has influence on the acceptance of Artificial Intelligence. The result is fully consistent with the hypothesis of this research, that participants with the awareness of AI being used in a particular technology, generally do not accept the technology. In this research, I have asked three different experimental questions about Tesla, Google Home, and SimCam security camera in two surveys with only one survey having a description of Artificial Intelligence.

A possible explanation for the results of this study is provided by the research by Kenya Freemen Oduor and Eric N. Wiebe (Oduor & Wiebe, 2008). Oduor and Wiebe indicate that trust and reliability are important factors in building a relationship between humans and algorithms (in the context of this study we can start from AI). These factors are highly dependent on transparency (Reeves, 1999). Reeves indicates that when algorithms are transparent, cognitive complexity also diminishes. This allows users to read the "black box" and learn why AI technology has made a certain decision. We can also translate this into the Theory of Planned Behavior's Perceived Behavioral Control. By making an algorithm transparent, users get the perception of whether AI products are easy or difficult of use. This makes it easier for researchers, companies and governments to predict whether new products or services will be accepted and adopted. If technologies with transparent algorithms can be offered, then this will also increase acceptance, which can ultimately lead to adoption. If the perception of users is clear (by understanding the result of an algorithm), then the acceptance can also be predicted. This is also evident from the result of the Q20 survey question, in which the participants were able to indicate how easily they will use and understand Artificial Intelligence technologies.

This study complements existing literature and studies in the context of acceptance and adoption of Artificial Intelligence by using Theory of Planned Behavior, because other studies have not concluded if awareness has an impact on acceptance and/or adoption. In doing so, account must be taken of the fact that this study took place in the Netherlands. It may be the case that other legal rules are applied in other countries in the context of Artificial Intelligence, as a result of which it can affect acceptance. Future studies can start their research by looking into the next research questions: 1. How does Artificial Intelligence position itself in the society in the year 2025? 2. And 2030? 3. Does transparency increases the acceptance of new AI products?. Furthermore, this study will also get other results if this study is done again in ten years. By that time, social acceptance will also be further developed and Artificial Intelligence may become prominent part of society in which Artificial Intelligence is developed and functions to assist and not replace humans.

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APPENDIX A. Survey questions

As earlier mentioned both surveys are almost the same only the experimental questions (Q4, Q5 and Q6) differ from each other by not naming Artificial Intelligence.

Survey with Description of AI in product description										
Numbering	Questionnaire									
Products										
Product nr.1 Tesla car										
Tesla's autonomous car can let p and the environment to make be offers Autopilot functions and c power than the previous general Tesla for images, sonar and rada himself does not have and perce senses. The advanced Autopilot	Tesla's autonomous car can let people drive without having to steer a driver, but is also able to learn behavior from both the driver and the environment to make better decisions about driving. Every new Tesla car comes standard with advanced hardware that today offers Autopilot functions and can make the cars completely self-driving. A new, built-in computer with 40 times stronger computing power than the previous generation turns all data into a coherent whole thanks to the Artificial Intelligence network developed by Tesla for images, sonar and radar processing software. In this way, this system provides an image of the environment that the driver himself does not have and perceives the environment in every direction simultaneously, at wavelengths that are beyond the human senses. The advanced Autopilot functions for safety and comfort are meant to help you with the most tiring aspects of driving.									
With Autopilot, your car can steer, accelerate and brake within the lane itself. Navigating with Autopilot proposes lane changes to optimize your route and makes adjustments to avoid having to keep driving behind slow-moving cars or trucks. When Navigation with Autopilot is active, the function also automatically directs your car to motorway exits and ramps based on your destination. With the so-called Summon, your car can handle even more complex environments and parking spaces, so that your Tesla can pick you up anywhere in a parking space without being hindered by obstacles.										
Machine learning is a form of Artificial Intelligence and many companies use the technology. With Artificial Intelligence and connectivity, the Tesla autopilot system is designed in a way that nobody is working on yet. Because information learned by one car will also be shared with every other Tesla car. A lot of data will be generated based on your driving behavior. This means that all Tesla cars know when there is a gap in a certain street or that they become familiar with problematic intersections where people stop in front of red lights and signs. They can learn to anticipate cyclists and specific parts of the road, or, for example, discover the differences between how people drive in Amsterdam or Utrecht when it rains. Not only can these vehicles be safer than human drivers on the road, but they can also be safer than any other autonomous model that exists.										
Tesla collects three important types of information regarding you or your use of Tesla: (1) information from or about you or your devices; (2) information from or about your Tesla vehicle; and (3) information from or about your Tesla energy products such as a charging station.										
How high do you estimate the chance that you will use a Tesla car in your daily life if you have the opportunity to do so?										
Product nr.2 Google Home Speaker										
Google Home is a wireless smart speaker. Google Home can accept assignments through speech recognition. Google Assistant is used as an intelligent personal assistant or IPA. An Artificial Intelligence speaker is a wireless device with a built-in virtual assistant. This speaker can be used to give instructions via speech. An Artificial Intelligence speaker makes it possible, among other things, to control various devices in your home via your home network. In addition, it is possible to request information about, for example, the weather, sports results, recipes, shopping or reserving a restaurant.										
The Intelligent speaker from Google is also available in the Dutch language. The Intelligent speaker is generally always on or standby. The device can be turned off completely with a button in most cases. In standby mode, it is activated with voice commands. The major suppliers such as Amazon, Sonos and Google have communicated that the device does not record ambient noise when it is not activated. It is possible that an assignment history is preserved; this can later be used as history by the user.										
How high do you estimate the c	chance that you will use a Google Home in your daily life if you have the op	pportunity to c	lo so?							

Product nr.3 SimCam Home security camera

With the Intel **Artificial Intelligence** (deep learning) technology, SimCam can protect your home, help control your children and pets 24/7. SimCam can detect any human intruder within seconds with its 360° motorized suspension and send alerts to your phone. SimCam can use **Artificial Intelligence** to recognize your friends and family, which gives you the option to turn off notifications for familiar faces. In addition, no false notifications from intruders are sent when pets, trees or curtains are detected. You connect SimCam to your home network, which means that you can keep an eye on your home via your laptop, smartphone or tablet, regardless of where you are.

How high do you estimate the chance that you will use a SimCam in your daily life if you have the opportunity to do so?

Personal questions		
Q7	I'm a • Men • Women	
Q8	Which age category do you belong to? • 18 - 30 • 31 - 50 • 51 - 70 • 70+	
Q9	 What is your highest level of education? Primary School Secondary Education (VMBO / HAVO / VWO) Secondary Vocational Education (MBO) Higher Professional Education (HBO) University (WO) 	
Attitude		
Q10	What is the first thing that comes to mind when you think about Artificial Intelligence?	
Q11	Artificial Intelligence is used in devices and programs that respond to data or impulses from their environment and make independent decisions based on that. So intelligence with which machines, software and devices independently solve problems and / or make decisions. They thereby imitate the mind of a human. This type of device is not about computing power, but about the ability to learn and make decisions (independently). Can you indicate your feelings about Artificial Intelligence below on a scale of 1 to 10?	
Q12	Would you like to have Artificial Intelligence devices in your home? on a scale of 1 to 10	
Q13	To what extent do you consider yourself a fan of innovative technologies? on a scale of 1 to 10	
Q14	To what extent do you think it is important how a product handles your personal data? on a scale of 1 to 10	
Q15	 Which of the options below do you like if it is performed by an Artificial Intelligence? Driving Customer service Home security Financial services Surgery 	

	ConstructionPersonal recommendationsNone of the options	
Perceived Norm		
Q16	To what extent are friends and family enthusiastic about the development of products with Artificial Intelligence, where the functionalities depend on personal data and behavior?	
Q17	How important do you think the advice of your friends and family is when it comes to making choices?	
Q18	How likely do you think Artificial Intelligence becomes a part of our society?	
Perceived Behavioral Control		
Q19	How high do you rate your knowledge about Artificial Intelligence?	
Q20	To what extent are you convinced that you will understand and use Artificial Intelligence technologies easily?	
Q21	Would you feel comfortable if you had some control over Artificial Intelligence?	
Q22	When new devices with Artificial Intelligence are sold, do you want to purchase them immediately, regardless of the costs?	

APPENDIX B. T-table

cum. prob	t.50	t .75	t.80	t.85	t.90	t .95	t .975	t.99	t.995	t .999	t .9995
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df	PROPERTY AND	the the second second		9-20-20-20-20-20-20-20-20-20-20-20-20-20-			0.5270000000		in the second	Sector al a comment	14114 1414 1419
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1,708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1,701	2.048	2.467	2,763	3,408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3,460
80	0.000	0.678	0.846	1.043	1,292	1.664	1,990	2.374	2.639	3,195	3.416
100	0.000	0.677	0.845	1.042	1,290	1.660	1.984	2.364	2.626	3.174	3,390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3,300
Z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
					Confi	dence Lo	evel				