



## **Artificial Intelligence:**

An online exploration of the public's attitude towards the increased use of  
AI in today's society and the associated future consequences

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**Title:**

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**Abstract:**

Throughout the past decade, Artificial Intelligence has been edging its way into our lives. The increased use of AI technology led to significant improvements in various industries and different aspects of life, but also comes with several risks and regulatory challenges that need to be adequately addressed. In light of these issues, existing academic research has investigated AI from a researcher's perspective without explaining the expectations, fears, and thoughts of consumers. The present thesis aims to understand the consumers' general attitude towards Artificial Intelligence. Hence, an online netnography was conducted to map the interests and thoughts on AI in online communities. Results show that most concerns and the general scepticism towards the technology have its origin in the theme of trust. The mistrust in governments, corporations and AI itself together with unclear accountability positions decelerate adoption and development. Reinforcing transparency and direct communication between providers and consumers is, therefore, considered to be a key aspect in introducing AI technology on a mainstream level. The underlying thesis contributes preliminary research findings to a yet rather neglected field within AI and holds practical implications for AI providers and AI enablers of all size. Implications include the optimal positioning in Artificial Intelligence and how to avoid or resolve common issues on the customer's side with the commercial and social use of the technology.

**Resumo:**

Ao longo da última década, a Inteligência Artificial tem vindo a conquistar o seu espaço nas nossas vidas. O uso crescente da tecnologia da IA levou a melhorias significativas em várias indústrias e em diferentes aspetos da vida, mas também apresenta vários riscos e desafios regulamentares que precisam de ser abordados adequadamente. À luz destas questões, a investigação académica existente investigou a IA a partir da perspetiva de um investigador sem explicar as expectativas, medos e pensamentos dos consumidores. O objetivo da presente tese é entender a atitude geral dos consumidores em relação à Inteligência Artificial. Assim, uma netnografia online foi conduzida com o objetivo de mapear os interesses e pensamentos das comunidades online sobre a IA. Os resultados mostram que a maioria das preocupações e o ceticismo geral em relação à tecnologia têm origem no tema da confiança. A desconfiança em governos, corporações e na própria IA, juntamente com posições pouco claras de responsabilidade, desaceleram a adoção e o desenvolvimento. Reforçar a transparência e a comunicação direta entre provedores e consumidores é, portanto, considerado um aspeto fundamental na introdução da tecnologia de IA a um nível profundo. A tese subjacente contribui com resultados de pesquisas preliminares para um campo ainda bastante negligenciado dentro da IA e tem implicações práticas para provedores de IA de todos os tamanhos. Estas implicações incluem, não só, o posicionamento ideal na Inteligência Artificial, bem como, evitar ou resolver problemas comuns do lado do cliente com o uso comercial e social da tecnologia.

**Keywords:**

Artificial Intelligence, Technology, Netnography, Digital Insights, Trust, Regulations

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# 1. Introduction

## 1.1. Problem Definition and Relevance

Artificial Intelligence is no longer subject to the creativity and imagination of the entertainment industry but edged its way into reality and developed into one of the most discussed topics in the technology sector. The technology entails massive opportunities and could help to overcome many challenges of today's society. However, one must be careful with the relentless development of intelligent computer systems as it comes with multiple public risks that need to be controlled and accounted. Due to an AI system's characteristics of learning and adapting, the potential risk of losing human control over such a system is a possible threat to society. If control is once lost, it will be difficult to regain as the AI is designed with the characteristics described above. Such systems can demonstrate unforeseeable behaviour that is not reachable by a human being, which leaves authorities with the challenge of whom to blame in case of potential harm caused by an AI system (Scherer, 2016).

The introduction of regulations and privacy standards on AI technology alone will not be sufficient to drive its adoption in a responsible way to society. Consumers need to be comfortable with the technology and adequately informed about it to stimulate responsible growth. In order to do so, companies first have to understand the general attitude of consumers towards the use of AI technology in today's society. The obligation to explore and properly address the concerns, opportunities and fears stated by consumers is crucial and must be considered in privacy standards and regulatory frameworks for Artificial Intelligence. The consumers' points raised in the process are influenced by the cultural and personal knowledge that has to be considered when interpreting such information (Briley & Aaker, 2006). During the past two decades, researchers have been using ethnographic research methods to analyse the cultural aspects of consumer behaviour. Offline ethnographic research studies are limited to geographical locations and involve significant time and effort. AI is a global topic and should, therefore, be analysed on a global scale. To do so, this paper will shift the research to an online environment and will adapt ethnographic methods to gain insights from virtual communities regarding AI technologies (Catterall & Maclaran, 2002).

The topic of Artificial Intelligence is a trending topic and popular in online community discussions. User knowledge in such communities can range from novice to expert level and consequently, different users express different aspects of AI concerning challenges,

opportunities and threats. Nevertheless, literature that investigates the consumer attitude towards AI online is limited and, therefore, provides an interesting field for further research.

## **1.2.Objective and Research Questions**

The underlying dissertation aims to contribute to the yet limited stream of research on AI adoption barriers. It should provide managerial implications on how to properly introduce strategies to drive adoption among the public by considering the consumer's attitude. The primary objective is to drive the growth of this promising technology in a responsible way for both the commercial and societal side.

The author of this dissertation decided to conduct a netnographic research method to cover the cultural and personal knowledge influencing consumer's attitude without being limited to the factor of geographical location. The following research questions are raised.

### **RQ1:**

How do consumers feel/act towards the development of AI in general?

The first research question intends to provide a fundamental understanding of the consumer's attitude towards technological progress and specifically AI development.

### **RQ2:**

Is the definition and scope of what AI is considered to be clear within the online community? If not, are there people online telling others they lack a basic understanding of AI? What are their arguments? What do they consider a basic understanding of AI?

The second research question intends to expose consent or dispute among consumers in terms of understanding AI and its scope.

### **RQ3:**

How do consumer concerns on AI impact AI adoption intentions?

### **RQ4:**

How does the level of knowledge about AI impact AI adoption intentions?

Research question Three and Four are meant to explore the different aspects that need to be considered to drive AI adoption to a mainstream level.



### **1.3. Dissertation Outline**

The dissertation's first chapter includes the problem statement and illustrates the relevance of the research as well as the research objectives. Subsequently, a review of academic literature covering the topics of Artificial Intelligence, Virtual Communities and Netnography is presented. This part is followed by the introduction of the methodology used in the following empirical investigation. The given investigation includes a thematic analysis building the basis for the development of grounded theory on an online community communicating about Artificial Intelligence. On a final note, theoretical and practical managerial implications are concluded, and limitations and future research directions are discussed.

## 2. Literature Review

This section presents a review of the existing literature on the dissertation's main research fields: Artificial intelligence and consumer behaviour in virtual communities.

### Artificial Intelligence

#### 2.1. Artificial Intelligence, a Brief History

The first concept of Artificial Intelligence was established at Dartmouth College in the United States of America in 1956. At the time, AI was defined as “the ability of machines to understand, think, and learn in a similar way to human beings, indicating the possibility of using computers to simulate human intelligence” (Pan, 2016, p. 410). Since the 1970s, the technology expanded into several directions such as mechanical theorem proving, machine translation, expert systems, game theory, pattern recognition, machine learning, robotics, and intelligent control. In its sixty-year history, AI has faced major setbacks, which led to a shift in research from AI learning from massive amounts of knowledge from human experts to gaining knowledge from the environment automatically. The aforesaid setbacks almost always originated from an AI incompatibility with the present information environment. Today, the information environment has changed drastically with increasing connectivity due to sensors, Big Data, e-commerce, information communities, and the interconnection and fusion of data gathered from physical and cyberspace. The increasing interconnectivity enables a new era of Artificial Intelligence driven by external forces in four areas (Pan, 2016).

First, technologies such as mobile terminals, and the internet connecting individuals and groups throughout the world, as well as sensor networks, vehicular networking, and wearable devices extensively used in Smart Cities and remote transportation systems have changed the information environment significantly. Furthermore, the world is no longer a binary space (physics and human society), but a ternary space (cyber, physics, and human society). The ternary space creates new technological breakthroughs such as perception fusion, “man-in-the-loop”, augmented reality, and cross-media computing. Second, AI research is shifting from academic curiosity to a focus on problem-solving across multiple industries, e.g. smart cities, medicine, transportation, logistics, manufacturing, smart products, automotive driving, smartphones and many more. Third, AI goals have shifted greatly. The former goal definition was built around simulating human intelligence by using a computer. The new objectives include: “1) Enhanced hybrid intelligence systems combining machines and humans, 2) new crowd intelligence systems organized by machines, humans, and networks and 3) more complex

intelligence systems, such as intelligent cities combining humans, societies, physics, and cyber systems” (Pan, 2016, p. 410-411). Fourth, the increasing amount of big data, sensors, networks, and cross-media information actively promotes the development of Artificial Intelligence systems. (Pan, 2016).

## **2.2.A Definition of Artificial Intelligence from a Business Perspective**

AI can be defined as “the theory and development of computer systems able to perform tasks normally requiring human intelligence” (Oxford dictionaries online, 2018). However, the definitions for AI and what is to be considered as true Artificial Intelligence differ widely. The problem of coming up with a generally accepted definition for the technology lies not in the concept of artificiality, but the definition of “intelligence”. John McCarthy (2007), the AI pioneer, stated that the term intelligence is always related to human intelligence and that we are not able yet to characterise what kinds of computational procedures we can define as intelligent. Nevertheless, research in this field has been conducted trying to come up with a valid definition of “intelligence”. Copeland (2000) references Alan Turing online by defining “Human Intelligence” through the following characteristics. 1) Generalisation learning enables the learner to perform better in situations not previously encountered. 2) Reasoning is the ability to conclude appropriately to the situation in hand. 3) Problem-Solving is explained as “given such and such data, find x”. 4) Perception is defined as analysing a scanned environment and analysing features and relationships between objects. 5) Language Understanding refers to following syntax and other rules similar to a human. Furthermore, there is a distinction between human and machine intelligence. The two concepts of intelligence can have different physical forms, sensors, actuators, means of communication, information processing abilities and environments that are completely unlike from each other. Therefore, it can be impossible to decide if a machine is intelligent as in some cases they might share a few attributes with human intelligence, which makes it applicable to relate with human intelligence. In other cases, it is not distinct to classify those attributes with the machine (Legg & Hutter, 2007). Scherer, 2016 refers to an introductory textbook on AI, written by Russell and Norvig (2010) in which they categorise AI into four concepts, thinking humanly, acting humanly, thinking rationally, and acting rationally. The computing pioneer Alan Turing (1950) focusses on the concept of “acting humanly” in his influential work “Computing Machinery and Intelligence”. Turing’s introduction to the “imitation game” does not try to answer the question of whether machines can think, but rather if machines are capable of replicating the human thought process disguising its true identity as a machine by doing so (Turing, 1950). Furthermore, the definition

of intelligence shifted continually over time as technology developed and constantly enabled new tasks performed by machines that have been considered to require human intelligence to perform before. Therefore, one of today's more popular approaches to defining AI refers to the achievement of specific goals accomplished by machines touching the Russell and Norvig (2010) category of acting rationally. However, the definition above simply replaces one difficult term "intelligence" with another "goal". Consequently, the definition of Scherer (2016) stating Artificial Intelligence as "machines that are capable of performing tasks that, if performed by a human, would be said to require intelligence" (Scherer, 2016, p. 362) seems to be more applicable for the further investigation in the present thesis.

### **2.3. The AI Universe and its Technical Differentiations**

This paragraph is meant to provide an overview of the underlying technologies used for or with Artificial Intelligence systems. The core of AI lies in its algorithms. The Cambridge dictionary online (2018) defines an algorithm as "a set of mathematical instructions or rules that, especially if given to a computer will help to calculate an answer to a problem". In other words, the algorithm is a set of rules to complete a task, e.g. a recipe or railway timetable (Burgess, 2018). Particularly AI algorithms use probability to find the optimal output to a specific goal from a range of inputs. In order to perform well, the algorithm has to be fed with lots of data to train the system and learn from its mistakes made during the process. One of the more popular differentiations of AI technology is the distinction between "supervised" and "unsupervised" learning. Today, most AI systems are based on supervised learning, which refers to systems that are trained by using large amounts of data, e.g. a system that can identify pictures of cats by showing it thousands of cat pictures before. Unsupervised systems on the other side refer to an AI system confronted with an extensive data set that has no meaning to it. However, the system can identify clusters of similar data points within the data set. Once the patterns within the data are spotted, the AI can make predictions for new inputs, e.g. predicting the price for a diamond after the identification of the dependent variables of a diamond on its price by feeding the system with enough base data. A good structure for understanding the underlying technologies of AI is to think of the following terms as concentric circles (Burgess, 2018; Russell & Norvig, 2010).

Machine learning incorporates all the concepts explained in this paragraph so far. The term refers to the training of AI algorithms, most of the time supervised learning systems, with the help of training data sets in order to improve and eventually optimise the answers to a specific problem. The improvement and optimisation process is based on a technology called Deep

Neural Networks (DNNs). A DNN tries to mimic the structure of the human brain and its information processing approach. A neural network consists of multiple artificial nodes acting as neurons that are connected through different layers in various degrees of strength that can also adapt and vary while the machine learns. Stronger nodes impact other layers more than weaker nodes and, therefore, the system is supposed to reach a better solution after increased data feeding and continuous adaptation. Further terms commonly used in the world of AI are decision tree learning, inductive logic programming, reinforcement learning, and Bayesian networks. However, the detailed explanation of all of these concepts would go beyond the scope of the present thesis (Burgess, 2018; Russell & Norvig, 2010).

#### **2.4.Challenges, Opportunities, and Risks of AI**

The most distinct feature of AI that separates it from other technologies is the characteristic of acting autonomously. Furthermore, AI is not biased by rules, which could be described as conventional wisdom and preconceived notions the human decision-making process relies on. The AI system might come up with solutions that the human decision maker did not even consider, which represents the potential for great opportunities, but also entails a public risk. So far, AI solutions were limited to specific tasks, such as performing a move in the game of chess. However, the applications for AI systems will increase tremendously over the next decade and will lead to more autonomy of AI technology, which in turn presents a significant public risk to society. An AI system's solution could deviate significantly from the solution produced by a human being (Scherer, 2016).

Moreover, machine learning systems can produce solutions without any explanation also referred to as "Black box" in Artificial Intelligence terminology (Datatilsynet - The Norwegian Data Protection Authority, 2018). Hence, the solution may not have been foreseeable by a human, which results in a partial loss of control over such a system. If control is once lost, it may be difficult to regain it as AI entails the features of learning and adapting. Due to the advancements in AI technology over the previous years, it is more than likely that the frequency of unexpected AI behaviour will increase substantially over the next years, which leaves the question open of how much risk is involved in driving AI forward without proper regulation. If an AI system comes up with an unforeseeable solution that might cause harm to something or someone in the process, who is there to blame? As the AI designer could not foresee the behaviour of the developed AI system, victims might be left without a way to obtain compensation for their losses. This type of incidents describes a local loss of control, where the human designer is no longer able to control the system in question. A general loss of control

would describe an AI system that can no longer be controlled by any human. This scenario represents a major public risk if the objectives of the AI system are no longer aligned with those of the public. This requirement is hard to guarantee though due to the AI's possibility to continually learn and adapt leading to, for the computer, rational objectives that can significantly differ from those of the human species. Stronger forms of AI could, therefore, resist all human efforts to control such a system and could result in a perhaps even existential threat to humanity (Scherer, 2016).

## **2.5. Privacy Standards & Regulation of AI**

Today, a universal and generally accepted set of privacy standards and regulations of AI does not exist, although some countries start to develop a form of AI legislation on a national level (Weaver, 2018). Developing such a framework comes with several difficulties, particularly regarding the R&D environment of AI work rather than the technology itself.

“Discreteness refers to the fact that AI development work can be conducted with limited visible infrastructure. Diffuseness means that the individuals working on a single component of an AI system might be located far away from one another. A closely related feature, discreteness, refers to the fact that the separate components of an AI system could be designed in different places and at different times without any conscious coordination. Finally, opacity denotes the possibility that the inner workings of an AI system may be kept secret and may not be susceptible to reverse engineering” (Scherer, 2016, p. 369).

Artificial Intelligence represents a threat to the public as its risks are not controllable enough due to the characteristics of the technology mentioned above and the missing infrastructure. People do not need any resources or facilities to write code and modify AI applications. Furthermore, such users can remain anonymous in the process, which leads to the question of whom to blame in case of an incident (Scherer, 2016).

### **2.5.1. Artificial Intelligence and the GDPR**

The GDPR refers to the General Data Protection Regulation, which was set active on the 28<sup>th</sup> of May 2018. The law is aimed to harmonise and refresh regulations on processing personal data giving the consumers more rights to control their data. In the case of Artificial Intelligence, the GDPR, therefore, applies whenever the system operates with the help of personal data or when such data is used to analyse or reach decisions about individuals. The most relevant data

protection principles for Artificial Intelligence include the principle of fairness, purpose limitation, data minimisation and transparency. The principle of fairness requires an AI system to process all personal data of an individual in their best interest and aligned with their reasonable expectations. Purpose limitation means that an organisation or individual using an AI system must clearly state the reasons for processing personal data when such data is collected. Minimisation refers to minimising the data gathered for training machine learning systems by ensuring the right technical and organisational measures are taken to do so. Finally, transparency must be guaranteed by avoiding black box scenarios through providing data subjects with process details and informing about how the information will be used (Datatilsynet - The Norwegian Data Protection Authority, 2018).

## **Virtual Communities**

### **2.6. The Rise of Virtual Communities**

The hype around virtual communities started around twenty-five years ago. Since then, an increasing amount of people have been getting connected to cyberspace and started to engage online with other users. The establishment of the internet has allowed people to create virtual social space, where they can connect and interact regardless of the physical location of each person. People have started countless groups in a variety of forms, e.g. forums, chats and social media groups to discuss a wide range of topics. The rules and characteristics of such virtual communities differ from traditional face-to-face meetings, which can result in an entirely new dynamic, when discussing a topic online compared to offline (Kollock & Smith, 1999). Rheingold (as cited in Akar & Mardikyan, 2018, p. 1) defines online communities as: “social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace”. A by-product of the development of new technologies in the field of Artificial Intelligence and Biotech was the development of a certain “cyberculture” that aims to explain the behaviour of people in a virtual environment. Computers, information and biological technologies changed the nature of social life significantly, shaping a cyberculture, which works under its own values and influences that can considerably differ from the offline cultural behaviour of people (Escobar, 1994). In an online environment, cues such as gender, age, social status, professional status and ethnicity are missing, filtered out or intentionally falsified (Brown, Broderick, & Lee, 2007). Online communities increasingly influence the behaviour and adoption of new products, services or technologies in the market. Therefore, marketers

started to continually increase their focus and efforts on understanding consumer behaviour in virtual communities (Kozinets, 2002).

### **2.7. Overview of the Cyberspace Landscape**

Each platform for online communication works with its own set of rules and processes resulting in reasonably different kinds of interaction depending on the used platform. Kozinets (2002) mentions several interactive platforms in his work about netnography that enable the sharing and discussion of ideas and building of a community, including newsgroups (boards), personal World-Wide-Web pages and web rings, e-mail lists as well as multi-user dungeons and chat rooms. However, the fast-changing technological environment has changed the cyberspace landscape significantly over the past sixteen years, with the introduction of social media. Nowadays, netnographers must consider a vast variety of social media platforms, e.g. Facebook, LinkedIn, Twitter, Reddit as well as online blogs and discussion forums when pursuing their research.

Furthermore, the online interactions itself gained complexity. One must differentiate between privately and publicly held conversations that can happen both asynchronously and synchronously, over different periods and with a number of different contributors, site sources and presented in a variety of formats, e.g. textual, visual or audio. Moreover, additional complexity is added through the sharing feature, available on most social media platforms, that makes it possible to discuss topics on multiple platforms linking communication between numerous contributors and sources (Kozinets, Dolbec & Earley, 2014).

### **2.8. User Roles in Virtual Communities**

A user's behaviour in online communities may not only be influenced by their motivations, but also by the decisions and opinions of other members and the community. Kelman (1958) defined three social processes that influence an individual's behaviour including compliance, identification, and internalisation. First, compliance represents the urge to comply with other users' opinions who have some importance to the person. These users usually have authoritarian status or enjoy some legitimacy within the group, e.g. discussion board leaders. Second, identification can be interpreted as the individual's sense of belonging and attachment with a group. Finally, internalisation occurs when a user accepts the opinion of the group due to the alignment of their values with the community's values (Zhou, 2011). Much literature has been done on user roles in communities. For instance, Kozinets (1999) categorised four types of



posters within online communities.<sup>1</sup> The classification is based on the user's level of involvement with the cyber community and their consumption activity.

“Tourists” lack strong social ties and deep interest in the activity (they often post casual questions). “Minglers” have strong social ties but minimal interest in the consumption activity.

“Devotees” have strong consumption interests, but few attachments to the online group. Finally, “insiders” have strong ties to the online group and to the consumption activity and tend to be long-standing and frequently referenced members” (Kozinets, 2002, p. 6).

## **2.9. Introduction to Netnography**

Robert V. Kozinets (2002), the pioneer of netnographic studies, defines netnography as “an online marketing research technique for providing consumer insights. Netnography is described as an ethnographic study that is adapted to study online communities (Kozinets, 2002). Netnographers observe and document a virtual social space just as a traditional ethnographer tries to understand and document a community or cultural form (Fox & Roberts, 1999). Ethnography is a marketing research tool that has only been used over the past twenty years and is based on participant observation with the objective to understand the cultural influence on communities and their individual member's behaviour (Catterall & Maclaran, 2002). According to Hammersley and Atkinson (1989), observer participation is an essential and mandatory characteristic of ethnographic studies.

Moreover, the conductor of the study needs to consider a certain degree of reflexivity during the observation, analysis, and writing. Ethnographic studies conducted in cyberspace, also referred to as netnographies or cyber-ethnographies, also must take the factor of cyber-culture into account during their analysis of online communities (Escobar, 1994). In his work on cyber-culture Escobar (1994) describes that technologies emerge out of specific cultural environments and, therefore, enable new social and cultural situations.

Kozinets (2002) lists six steps to conduct a successful netnographic study, which will be addressed and briefly explained in the following section.

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<sup>1</sup> Kozinets (1999) user categorization has not been further elaborated on in the empirical part of the present thesis as it does not add additional value to the findings of the research conducted.

### **2.9.1. Entrée**

After defining specific research questions and identifying online forums suitable to answer those questions, the researcher must seek to understand each particular forum, its community, and individual participants in order to gain some insights on their behaviour linked to a particular theme of the discussion. The most important types of forums useful for a netnographic research can be seen under “overview of the cyberspace landscape” of the underlying thesis. Before starting the collection of data, all relevant characteristics of the online communities, e.g. market-oriented behaviours, interests and language should be familiar to the researcher (Kozinets, 2002).

### **2.9.2. Data Collection and Analysis**

A netnographic research collects on one hand data directly produced by online community members in the form of copied online communications and on the other hand the researcher’s notes on observations regarding the community, its members, interactions, and meanings. The choice of which data to save and use should be guided by the conductor’s research questions and available resources to organise and control the overflow of information usually faced in netnographic studies. Also, participants should be classified regarding their activeness and devotedness in the community (Kozinets, 2002). The different types of participants in an online community can be seen under “Roles in virtual communities” of the present thesis. The data collection should continue until no further insights are gained from the research as stated by Glaser & Strauss (1967). Once the netnographer gathers data, it has to be contextualised, classified and coded to be further interpreted. In the process, the researcher has to trade-off content richness for clarity and structure. However, the netnographer has to carefully evaluate data points before condensing it as most of the time the most valuable interpretations come from contextually rich data (Kozinets, 2002).

### **2.9.3. Providing Trustworthy Information**

While conducting a netnographic data collection, the researcher must follow specific procedures to guarantee quality and “trustworthiness” of the data gathered. The difference between traditional ethnography and netnography is that the former only involves the observation of the participants while the later also includes the necessity to recontextualise conversational acts as the computer-mediated discussions are influenced by several social cues and biases created through the virtual world where the conversations take place. Potential such issues include misrepresentation, breach of codes of etiquette and social pressures. Therefore, Kozinets (2002) recommends the use of triangulation of the data by testing its trustworthiness

through the help of interviews, focus groups, surveys or additional ethnographic studies. In summary, to be trustworthy, the netnographic researcher must account for the limitations of the online medium and technique in their work (Kozinets, 2002).

#### **2.9.4. Research Ethics**

“Netnography uses information that is not given specifically, and in confidence, to the marketing researcher” (Kozinets, 2002, p. 8). There is no precise definition of what data on the internet is to be considered public. Users might be offended or harmed by using their data without explicit consent and permission from the participant to do so. Kozinets (2002) suggests four ethical procedures for responsibly conducting a netnographic study.

“They are: (1) the researchers should fully disclose their presence, affiliations and intentions to online community members during any research, (2) the researchers should ensure confidentiality and anonymity to informants, and (3) the researchers should seek and incorporate feedback from members of the online community being researched” (Kozinets, 2002, p. 9).

(4) The researchers should contact community members and obtain permission to use the data provided by them and directly quoted in the study (Kozinets, 2002).

#### **2.9.5. Member Checks**

Member Checks involve the presentation of findings to the people that have been studied to confirm the proper interpretation of the gathered data. This procedure can lead to additional insights, guarantees of ethical standards and can trigger an ongoing information exchange with the community useful for possible further research within the community (Kozinets, 2002).

### 3. Methodology

This chapter establishes the methodological approach used to answer the present thesis' research questions. Furthermore, it is intended to explain the process of how to obtain digital consumer insights from the chosen online community and how to draw managerial implications from it. The findings are intended to help businesses in the field of AI to better understand the consumer's attitude towards AI concerning future perspectives and concerns, hence improving their positioning and communication towards customers.

#### 3.1. Research Method

Research in the field of AI from a managerial perspective is limited, and as the technology is constantly evolving and changing its environment, there is significant room to add new insights on the topic. The focus of the underlying work is the cultural analysis of an online community and, therefore, eligible for a qualitative research method. In order to better understand the general consumer attitude towards AI, a netnographic research approach was chosen. Netnography or "Cyber-ethnography" can be described as research conducted on a virtual community which communicates entirely through text (Escobar, 1994; Fox & Roberts, 1999). As mentioned before in the literature review section Introduction to Netnography, netnography is a marketing research tool and is meant to observe and understand a community or cultural form in virtual space (Fox & Roberts, 1999). The foundation for the underlying netnography involved the development of a thematic framework (Appendix A) to ground inductive theories from. The applied method known as grounded theory is a qualitative research method that uses a systematic set of procedures to derive inductively grounded theory about a phenomenon (Glaser & Strauss, 1967).

Artificial Intelligence is a widely discussed topic at the moment and represents a technology with significant potential future impact on professional and private society (Pan, 2016). The netnography began with the identification of suitable online communities around the topic of Artificial Intelligence by using the Google search engine. The used keywords included "AI online communities", "Most active Artificial Intelligence communities" and "Online discussion on Artificial Intelligence". After eliminating the groups with a too technical focus, the research revealed three potential online communities: Facebook <Artificial Intelligence Deep Learning Machine Learning Neural Networks>, Facebook <Artificial Intelligence>, and Reddit <r/artificial>. <r/artificial> hosted on the platform reddit.com was chosen because of the largest overall subscriber count and the highest traffic, which provided access to enough data. The

group's discussion thread<sup>2</sup> is not limited to a specific area of Artificial Intelligence, but instead presents a wide variety of articles ranging from most-recent advancements in AI and use-cases to privacy and regulatory concerns as well as AI world domination fears. Therefore, the group provided a broad spectrum to develop the big picture around AI. Most of the content is also understandable for readers without a computer technical background. After the familiarisation with the general themes and style of content posted in the community, the online thread was skimmed for articles related to AI definitions, future consequences, privacy-, regulatory concerns and advancements in the field of AI. Highly technical articles involving the use of programming codes and algorithms were not considered relevant for this research. Understanding the online community's messages and their medium can help businesses working in the field of AI in effective online positioning and can provide a guide to design socially responsible AI systems that are aligned with the consumers' values and perceptions.

Over the course of three months, 122 postings were read for the netnographic research. In addition, the research was complemented by further informational material, such as books, online articles, corporate web-pages, and independent and dependent reports. In order to keep the amount of data limited to a manageable scale, the research was limited to 46 postings with a total of 456 comments between October and December 2018. The coding of the data represented both data analysis and data interpretation (Spiggle, 1994). Discussion threads with the same code, belonging to the same category and theme, were compared in their similarities and differences (Glaser & Strauss, 1967; Spiggle, 1994). Netnography does not imply the use of any software, such as, e.g. NVivo. Manual coding was preferred due to the risk of the researcher accepting the output and analysis of the software tools without gaining an in-depth understanding of the culture within the community. The manual data analysis helps the researcher grounding in the basics of inductive and reflexive analysis (Kozinets, Dolbec & Earley, 2014).

Research ethics were taken into consideration by the researcher identifying himself to the community, informing about the observation, and providing credentials. Direct quotes have only been used when permission was granted to do so. The "trustworthiness" of the data interpretation was ensured by conducting six member checks<sup>3</sup>, in which the researcher asked informants about the validity and context of observations made during the investigation to clarify questionable assumptions made by the researcher in the course of the data collection

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<sup>2</sup> A discussion thread is defined as a chain of written ideas linked to a specific topic or area (Kozinets, 2002).

<sup>3</sup> Member checks are a method, where some or all of a researcher's findings are presented to the consumers who have been studied in order to solicit their feedback (Kozinets, 2002).

process (Kozinets, 2002). In order to gain access to members of the analysed virtual community for direct online member checks, the administrator of <r/artificial> was contacted and interviewed. Furthermore, the author of this thesis asked the related questions in the form of a community post and direct messages resulting in five more considerable interviewees, who answered the asked questions in the form of written comments.

The purpose of this research approach is to map the general attitude of consumers towards AI and provide insights that can be used to drive the development of the technology forward in a responsible and reasonable way.

## 4. Empirical Analysis

The subsequent chapter carefully examines the collected data, including qualitative results' analysis in the form of a netnography covering a thematic analysis (Appendix A) and the resulting development of grounded theory.

### **4.1.A Netnography of the AI Consumer Attitude towards the increased Use of AI in Today's Society and its associated Future Consequences**

The following paragraphs of analysis will be based on the core theme of AI trust and its attached positive and negative associations influenced by the sub-themes AI fascination, AI accountability, and AI consequences, which are interdependent. Resulting implications will be specified throughout and extended in the conclusion. The data shows that by cutting across consumer concerns and opinions about AI development and its resulting privacy and regulatory implications, there seems to be a central theme around trust in the community.

A phenomenon that provides the breeding ground for the AI hype though is the category of AI definitions. The data shows a lot of engagement and rich content on topics treating definitions in the field of AI. In general, these threads include discussion and dispute around definitions of AI as there seems to be no universal set of definitions, which leaves much room for interpretation among the users. The academic literature also supports this assumption. According to John McCarthy (2007), the problem of coming up with a generally accepted definition for the technology lies not in the concept of artificiality, but the definition of "intelligence", which science has not thoroughly figured out yet. Therefore, we are not able to characterise what kind of computational procedures are to be considered as intelligent. For instance, examples are found in the following thread concerning an exchange about the possibility of AI to develop a conscience ["Do you think A.I. can develop a conscience?"]. Linking back to the attempt to define human intelligence by the academic researchers, users with different backgrounds including psychology, neuroscience, and information technology hold a fruitful discussion about how conscience as part of intelligence can be achieved in AI.

The thread reveals a variety of theories. User (1) states that *"AI will likely have a conscience reminiscent of our own. For example, we have neural pathways including the frontal lobe, the amygdala and other sections of the brain that regulate empathy and emotion."* User (2) counters *"it's not a simple matter of emulating the amygdala or other brain areas to induce these behaviours since human behaviour is a complex interaction between environmental and biological structures in any given individual."* User (3) notices that *"A conscience is just the*

*ability to discriminate between right and wrong, and that's a much more tangible problem."*

This definition is particularly interesting as it claims that every human being has a conscience.

Nevertheless, the data shows a lot of scepticism towards rather organisations such as governments and corporations, consisting of human beings, can decide between right and wrong. User (4) comments *"Have we finished the human code of ethics yet or is that in the TODO pile as well?"*. Further examples are found in the following thread concerning an exchange about whether AI should be preserved or banned and why so. The major concerns with AI can be seen in the example of a thread publisher comparing AI with nuclear weapons and essentially putting it on the same level of danger to society.

User (5) argues that the risk is not necessarily a sentient AI taking over and dominating the world, but rather the unethical use of existing machine learning algorithms by governments, militaries, and other organisations. Mistrust in governments, corporations and individuals is visible in the data as a regularly recurring concept. User (6) makes a similar claim in another thread worrying about individuals using AI to *"do tremendous damage to the world"*. The user characterises such individuals as to be driven by monetary incentives, prioritising to *"make a few million more"* over a *"trashed economy"*. Furthermore, User (7) represents the idea that *"maintaining ethical standards when using machine learning technology is too big of a problem to be left to companies"*. *"100% self-police"*, as the user describes it, has been failing in the past and corporations *"barely pay consequences"*. The members of the online community, therefore, propose a regulatory body with the ability to screen datasets for biased cues and *"investigate possible unethical personal data usage"*.

User (8) supports the above-reached conclusion by giving a real-life example of Amazon's use of a biased Machine Learning (ML) algorithm. The resulting application favoured men over woman as potential employees due to old employment data used to train the algorithm. Further examples mentioned include a face recognition software that only seems to work for white people. Another user strengthens the assumption of data bias by explaining the conflict of assembling and passing on data. They further elaborate *"the researchers working on AI aren't data experts, but they mostly decide on how the algorithms must function"*, User (9).

The last comment also links to the "Black box" phenomenon in machine learning systems. The term "Black box" is used when such systems produce solutions without any explanation or chance to recreate the solution finding process (Datatilsynet - The Norwegian Data Protection Authority, 2018). The lack of transparency helps to understand the consumers' mistrust in



corporations partly due to the limited ability of AI designers to control the outcome of ML-based systems. Consequently, victims might be left without a way to obtain compensation for their losses (Scherer, 2016). On the contrary, member checks advised that over-regulation of AI could withhold enormous benefits for society. For instance, User (22) provides the example of human cloning technology that was outlawed, while it could have led to accessible replacement organs for millions of people.

Increased transparency could support a customer relationship basis that can be built on. Nevertheless, transparency in the form of open-source projects is likely going to be a “non-starter” for most organisations as it would open the opportunity of hacking an AI, which could result in significant damage to consumers and the organisation itself.

The theme of accountability takes an important intangible role in the online discussions about Artificial Intelligence. User (10) complains about an AI company by stating *“They just aren’t transparent enough, they try to market to me, but they don’t give me enough information to convince me of anything”*. They continue *“It just doesn’t make me trust them as a platform or company”*. Throughout the data users continually raise the question of responsibility in case of an incident. User (11) *“I am just waiting for the day when everything would be AI’s fault and we will like always just wash off our hands from the consequences.”* All these comments indicate a severe demand of the public to clarify accountability issues in AI through direct communication by the AI organisation. Member checks support the clarification of accountability issues also providing a potential solution by comparing AI developers with doctors. A hospital is responsible for an incident if the employed doctor causing it was not acting to the best of their knowledge and interest of the patient. The same rules could be applied to AI companies and its developers. However, accountability only represents a part of the trust issues towards governments and corporations operating in the field of Artificial Intelligence.

Exploring the thread [“Google Pulls out of \$10 billion Pentagon cloud contract over AI concerns”] gives further insights on trust issues towards corporations and governments. Some comments particularly illustrate the scepticism and concerns of consumers towards governments. For instance, some members referred to former privacy breaches demanded by the government and enabled through big tech corporations. User (12) uses sarcasm to express mistrust in both parties with the following contribution: *“They asked them to censor political dissent and Google refused. No, wait, that was China and Google complied.”* The comment can be interpreted as an acceptance of the loss of control over such entities and the general scepticism towards both parties. Member checks also concord to this assumption by stating that

*“people are rather ignorant or unmotivated over the ethics of AI by corporations”* when it comes to taking actions. As an example, they provide the Cambridge Analytica Scandal in which Facebook spread extremely biased propaganda to influence social opinion with the help of AI algorithms. However, the majority of people still gives Facebook whatever data it asks for.

The general trust issues towards corporations, governments, and the technology are often expressed through the listing of potential consequences, which represent another sub-theme within the thematic analysis used. Comments such as *“Google has no morals”* User (13) and *“Hmm I always assumed Google would invent Skynet<sup>4</sup>”* User (14) link back to the argument of corporations’ monetary motivations when using AI. Moreover, it suggests the lack of control over such systems potentially ending with AI world domination as mentioned before. Major concerns visible in the collected data regarding these issues include fake news, future political propaganda, AI applications for military purposes, and surveillance. *“No one can escape from the Big Brother’s eyes”* User (15), referring to the concept of total monitoring and loss of privacy. User (16) argues *“What we should be worried about is who owns the automation. In an ideal world, no one would own it, it would just be a thing everyone can benefit from. But we generally don’t live in an ideal world”*. The potential scenario of AI systems being controlled by a handful of selected people could have severe consequences regarding wealth distribution and exploitation of individuals without access to such systems. Huesemann (2011) claims that ongoing technological innovation is considered a significant threat to workers. The potential replacement by more advanced machinery, e.g. Artificial Intelligence results in a more controllable and disciplined workforce, which benefits the owners in generating greater profits. The owners or “selected people” as mentioned before, are in control of advanced technology and occupy a power position that they could take advantage of, simultaneously hurting society.

Another user shares the opinion *“At first humans will be told what to do by the A.I. but eventually robots will do the manual work as well completely cutting out the human labor”*. They further elaborate *“The world should be scared to death about A.I. Once it can rationalize and see us for what we really are we are screwed, especially if we’ve come to depend on it and trust it”*. The long-term concern of AI taking over control and potentially oppressing or exterminating humanity is a concern stated in the data several times. This concern is further shared by influential individuals such as, for example, Elon Musk who is AI innovator and one

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<sup>4</sup> Skynet refers to the name of the Artificial Intelligence system trying to exterminate humanity in the Hollywood Terminator movies.

of its biggest sceptics at the same time. The use of AI for military purposes is another serious concern found in the comments. As User (17) frames it *“AI in military is definitely a threat”* They refer to a link showing a video about the potential use of AI in weaponised drones, which could imply severe or deadly consequences. Further direct communication with some users support the findings presented above, but also suggest that an AI world domination scenario can potentially be prevented through implementing specific control measures and decreasing the Black box phenomenon with enough investment into math, computer science and computational neuroscience fields. Nevertheless, research is not yet able to guarantee the controllability of Artificial General Intelligence (AGI)<sup>5</sup>, while it is also not yet able to develop such a system.

However, the data also reveals members showing more confidence and stating the potential benefits that AI can enable consequently. Notably, the topic of health care typically triggers excitement among consumers and is continually stated as the most promising sector for AI solutions in the future. Therefore, expectations are in general high as, for instance, expressed by User (18) *“Imagine when AI can examine someone’s DNA and determine every health issue that a person is likely going to encounter”*. Specifically, the detection and treatment of cancer, neurological diseases, and mental disorders by an AI are continually discussed as one of the most exciting use-cases. The articles [New powerful deep learning algorithm can detect Alzheimer’s six years before doctors] and [University of Central Florida’s AI finds early lung cancer with up to 97% sensitivity] are just two contributions in the thread among multiple others treating the health care topic. However, the comments on this particular topic also reveal mistrust in corporations and governments once again to a certain extent. User (11) shares on a thread about AI systems working as psychologists *“It sounds promising. One reason why it might work is because people might trust a machine over human counterpart who could be judgemental and suggestive”*. User (19) counters *“One downside is that machines are always owned by somebody, who can record the sessions”*. User (20) suggests a solution by stating *“We just have to take advantage of the benefits of AI innovations like these and just watch out and be wary of companies who have tendencies on abusing it”*. The previous conversation shows that although there is a general form of excitement present regarding AI health care topics, even in these conversations the theme of trust is always existent.

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<sup>5</sup> AGI refers to an intelligent computer system that is able to perform any task requiring human intelligence (Burgess, 2018).

The potential benefits within the theme of AI consequences go hand in hand with the sub-theme of AI fascination. Fascination usually is the reason for high expectations in AI technology and its future use. The theme of Fascination with AI has been intensified and biased over almost a century with fiction literature, e.g. Frankenstein 1831 and Hollywood movies, such as Transcendence 2014. Therefore, many expectations of what is already possible with Artificial Intelligence are elusive. By screening the data, however, contrary behaviours were also found in which users temper other highly enthusiastic users in their expectations. This kind of behaviour appears several times throughout the data collection and might indicate an indistinct communication and explanation of AI towards the public.

Instead, the media tends to push expectations on AI far beyond its current capabilities and fortifies the ideas of AI world domination and human extinction scenarios. Whereas some well-informed users are able to look through the media strategy, the average user hops on the AI hype when developing future expectations. The following thread [In what ways does the media exaggerate AI?] provides some striking user opinions towards media coverage on Artificial Intelligence. User (21) argues *“every article on AI going accompanied by a picture of a Terminator’s skull”* and is further referring to an article they wrote on the media *“blowing AI reports out of proportions”*. User (22) claims that *“Real AI is extremely boring, complicated, mathematical”*. They further raise the question of when the media ever does not exaggerate AI and accuse such of only striving for click-bait and consequently misrepresenting the actual findings.

## 5. Conclusion and Managerial Implications

This section aims to conclude the netnographic analysis by answering the initial research questions stated at the beginning of the thesis. Subsequently, managerial implications are extracted from the main findings and presented in a strategic sequence.

Existing literature discussed the problem of defining Artificial Intelligence, its challenges, opportunities, and threats to society and business from an academic point of view. In response to these prior research findings, the presented thesis is intended to provide a snapshot of the AI consumer's point of view on the increased use of Artificial Intelligence. The research was conducted by exploring the productive discussions of a carefully chosen online community on reddit.com <r/artificial> dedicated to the topic in question. Consequently, the research objective was to interpret the given online discourse and develop applicable grounded theory and strategy for responsible AI adoption and growth. Thus, the following research questions were to be answered.

### **RQ1:**

How do consumers feel/act towards the development of AI in general?

The progress and development of Artificial Intelligence are accompanied by a range of feelings and opinions at the consumer side. Results show a strong tendency towards scepticism and concern in consumers' online discussions about AI. However, most of this behaviour is triggered by a general mistrust in governments and corporations rather than in the technology itself. The concerns are directed towards what damage and inconvenience these entities could cause with the help of AI systems. On the contrary, when talking about the technology and its potential, it leaves most consumers with a feeling of fascination and expectations are often disproportionally high. Especially the health sector is considered to be the most promising environment for AI applications.

### **RQ2:**

Is the definition and scope of what AI is considered to be clear within the online community? If not, are there people online telling others they lack a basic understanding of AI? What are their arguments? What do they consider a basic understanding of AI?

Results show a variety of data stating different definitions of AI. The problem of defining a Artificial Intelligence does not lie in artificiality, but rather in defining intelligence. This fact leaves consumers with much room for discussion and threads dedicated to topics around this

theme usually show increased engagement and tension. The definition of “a basic understanding of AI” varies between users. Some consumers consider technical knowledge only when others argue from a more neuro-scientific or psychological perspective, which often leads to contrary points of view regarding challenges, opportunities and threats of Artificial Intelligence.

**RQ3:**

How do consumer concerns on Artificial Intelligence impact AI adoption intentions?

Regarding AI adoption, the data reveals three types of consumer mind-sets.

User type One remains sceptical towards AI and intends to warn other people of the relentless implementation of AI systems in society. This behaviour is mostly supported by the strong mistrust in governments and corporations.

User type Two also shows mistrust in such entities but feels powerless against governments and big corporations to a certain extent. They generally show the intention of adopting AI systems due to the mindset of not being able to stop it in any case.

User type Three is generally optimistic and excited of how AI evolves. They weigh the benefits of AI heavier than its potential negative consequences. AI regulation is considered to be straightforward and easy from their point of view, and they opt for as little regulation as possible to enable the potential benefits of AI growth.

**RQ4:**

How does the level of knowledge about Artificial Intelligence impact AI adoption intentions?

Some experienced users tend to temper the expectations of Artificial Intelligence in stating that AI development is mostly focused on “expert systems” – a system build and usable for a specific task only (Scherer, 2016). However, it is difficult to connect such behaviour with an increased likelihood of AI adoption due to knowledge as the data shows knowledgeable consumers of both parties, positive and negative towards AI.

In conclusion, online communities devoted to Artificial Intelligence are gaining importance in the world of technology. Technological adoption and development can be tempered by consumer mistrust and concerns. Therefore, communication towards consumers must be clarified and optimised to build a relationship of trust between businesses and consumers in order to drive AI adoption and development. Furthermore, an industry mindset of transparency, accountability and security is essential to introduce AI responsibly on a mainstream level.

### **5.1. Theoretical Implications**

Online communities increasingly influence the behaviour and adoption of new products, services or technologies in the market. Therefore, marketers are advised to increase their focus and efforts on understanding consumer behaviour in virtual communities to use it as a useful tool that can drive AI adoption (Kozinets, 2002).

Online consumers tend to be knowledgeable and provide interesting consumption insights due to their ability to use field-specific jargon allowing them to express and elaborate their thoughts and comments more in-depth. The data provided in online communities can be extraordinarily rich, and researchers can often obtain useful information similar to information created by “lead users” (Hippel, 1986). Virtual communities are a robust platform that has not been fully tapped in yet but can be used to retrieve valuable insights on consumer behaviour and market trends if the market intelligence of such group is correct. The analysis of the reddit.com online community <r/artificial> revealed several interesting insights that can be transformed into actionable implications from a managerial perspective (Scherer, 2016).

Previous authors indicate that the question of accountability is one of the most critical aspects to clarify concerning AI regulation (Scherer, 2016). Regulatory measures such as the GDPR are beginning to cope with the challenge of introducing AI to a broader audience in a responsible way (Datatilsynet - The Norwegian Data Protection Authority, 2018). Nevertheless, in order to establish AI on a mainstream level, several additional factors have to be taken into account.

The analysis revealed the development of trust as the core criteria for facilitating the adoption of Artificial Intelligence. Building, or much more, rebuilding the trust of consumers in a corporation seems to be a centerpiece to create a basis for the responsible growth and adoption of AI solutions. Several different factors need to be addressed and fixed in order to establish a healthy relationship between consumers and the business. The following strategic sequence of steps has been developed by the author of the underlying thesis to be used by Small and Medium Sized Businesses, global enterprises, and governments.

## **5.2. Practical Implications**

First, governments must implement a minimal regulatory framework that clarifies accountability questions and defines prohibitive actions for each industry in detail. Companies must commit to this minimal regulatory set of rules and obligations to make themselves accountable in case of an incident. The consumers should know whom to claim compensation from to make them more comfortable with the new technology. The GDPR is the beginning of such a movement. However, the underlying analysis suggests that regulators have to be careful to avoid over-regulation, which could block AI development and diminish its potential benefits.

To build on the above-stated, governments, companies and researchers should pursue a crystal clear communication strategy towards the consumer. Communication on Artificial Intelligence must be straightforward and complete. Consumers should be able to understand its use, implications and the providers' role and responsibilities in a potential B2C or B2B relationship involving an AI product. Actionable marketing steps could involve the launch of an AI For-Clarity campaign that is intended to educate consumers on the technology, its use, benefits, and the role and obligations of the provider creating as much transparency as possible in each aspect.

In order to make such communication strategies more credible, transparency is vital. As found in previous literature and backed up with the findings of the thesis, open source will be no option for most for-profit and governmental applications due to the increased vulnerability towards hacking of the AI system in question (Scherer, 2016). Providing the customer with a transparent culture of the organisation, however, can help to build a basis of trust among consumers. Transparency can be achieved through clear accountability positions and comprehensibility through the measures taken above.

From a long-term view, the organisation must implement a culture that reinforces the responsible commercial and social use of Artificial Intelligence and must communicate those values publicly by engaging in proper initiatives. As revealed in the data analysis, the mistrust of consumers in commercial corporations is strong. Therefore, the given measure is another initiative to slowly rebuild trust among consumers and create a connection with the company's audience. The engagement in such initiatives is to be seen as a long-term investment in order to prepare the company for an increased AI adoption rate in the future.

Last but not least, trust can be increased by giving consumers the option of controlling the extent of access and functionality an AI product has in the consumers' environment. The analysis shows that consumers feel powerless and vulnerable to technology providers. In a B2C



context, consumers become dependent on the solutions through personal use and benefits such as saving time and gaining convenience in a variety of tasks. In the case of a B2B relationship, consumers depend on AI in order to stay competitive in the market because of cost reductions and productivity enhancements enabled with AI. The offering of customisation can lead to a feeling of gaining back control rather than having to surrender entirely to the AI provider when using their AI solution. For instance, users could have customisable options regarding security preferences, data accessibility constraints and task environment of the implemented AI systems.

## **6. Limitations and Future Research:**

### **6.1. Limitations**

Although the conducted netnography has yielded valuable new findings in a yet limited stream of research, certain limitations must be considered.

First, netnography has a narrow focus on online communities. Therefore, findings found in a particular online group cannot be generalised to other groups that easily. Furthermore, virtual communities work with values and influences that can considerably differ from the offline cultural behaviour of people (Escobar, 1994). In order to apply the findings of this research to another group, careful evaluations of similarity and employment of multiple methods need to be applied.

Second, researchers must deal with large quantities of noise, spam, and other irrelevant data within the sample data. Screening through the data, therefore, implies a significant time effort that needs to be accounted for in a netnographic study.

Third, as the author decided to conduct a qualitative analysis in the form of a netnography for the sake of exploring deeply integrated cultural information in the online community, the interpretation of such data is subjective to a certain degree. Consequently, the analysis' quality is dependent on the researcher's interpretive skills.

Finally, the anonymity guaranteed through the lack of informant identifiers, e.g. pen names in online communities, also makes it difficult to generalise and apply results to groups outside the online community sample.

### **6.2. Future Research**

From a general perspective, this study provides a solid foundation for further research investigations and is supposed to contribute to the current state of consumer understanding in the field of AI. During the data analysis of the present thesis, the author encountered certain information that would have been interesting to examine more in-depth. However, due to the limited scope of the research, those aspects were not further investigated. For instance, it would be interesting to identify and divide users with a technical and non-technical background to further explore how they differ in their arguments about AI. Another potential direction of research would be the investigation of the use of Artificial Intelligence in third world countries and the accompanying threats and benefits as well as expectations and fears. Also, due to the subjective nature of qualitative research, it would be interesting to conduct an online survey

with passive users of AI, e.g. users using Siri on their phone but not actively engaging with the topic of AI. The survey would ask questions formed with the help of the present analysis in a quantitative way, which would allow a comparison of the results with the insights gathered through the underlying research.

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## 8. Glossary

AI	Artificial Intelligence
AGI	Artificial General Intelligence
B2B	Business to Business
B2C	Business to Customer
DNN	Deep Neural Network
GDPR	General Data Privacy Regulation
ML	Machine Learning
R&D	Research and Development

## 9. Appendices

### 9.1. Appendix A

Concept Mapping

AI Thematic Model

V5

**A netnography of the AI consumer attitude towards the increased use of AI in today's society and its associated future consequences**

**Thematic Analysis - Julian Schmidt**

Julian Schmidt

17.12.2018

1



Concept Mapping

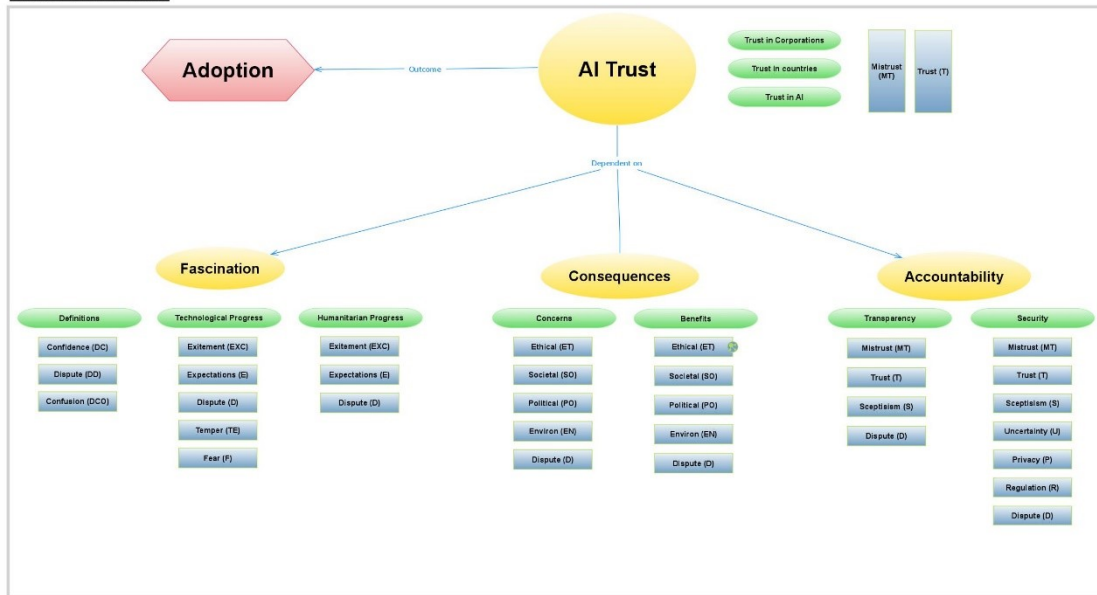
AI Thematic Model

V5

**Concept Mapping: AI Thematic Model**

<b>Name/Title</b>						<b>Pictogram</b>
AI Thematic Model						
<b>Tech-Name</b>						
AI_Thematic_Model						
<b>Summary</b>						
<b>Domain</b>					<b>Global ID</b>	
Concept Mapping					d1d6f975-0f71-4628-9609-3bcec606eaaa	
<b>Route</b>						
VAI Thematic Model						
<b>Version Number</b>	<b>Version Sequence</b>	<b>Creation</b>	<b>Creator</b>	<b>Last Modification</b>	<b>Last Modifier</b>	
0.0.00	560	11.11.2018 19:01:25	schmi	17.12.2018 11:33:57	schmi	

**View: Main View**



**List of composing Concepts**

Name/Title	Summary	Pict.	Concept Definition
Accountability			Theme
Adoption			Outcome
AI Trust			Theme
Benefits			Category
Concerns			Category
Confidence (DC)			Code
Confusion (DCO)			Code
Consequences			Theme
Definitions			Category
Dispute (D)			Code
Dispute (D)			Code

Julian Schmidt

17.12.2018

2

Concept Mapping AI Thematic Model V5

Name/Title	Summary	Pict.	Concept Definition
Dispute (D)			Code
Dispute (D)			Code
Dispute (D)			Code
Dispute (D)			Code
Dispute (DD)			Code
Environ (EN)			Code
Environ (EN)			Code
Ethical (ET)			Code
Ethical (ET)			Code
Exitement (EXC)			Code
Exitement (EXC)			Code
Expectations (E)			Code
Expectations (E)			Code
Fascination			Theme
Fear (F)			Code
Humanitarian Progress			Category
Mistrust (MT)			Code
Mistrust (MT)			Code
Mistrust (MT)			Code
Political (PO)			Code
Political (PO)			Code
Privacy (P)			Code
Regulation (R)			Code
Sceptisism (S)			Code
Sceptisism (S)			Code
Security			Category
Societal (SO)			Code
Societal (SO)			Code
Technological Progress			Category
Temper (TE)			Code
Transparency			Category
Trust (T)			Code
Trust (T)			Code
Trust (T)			Code
Trust in AI			Category
Trust in Corporations			Category
Trust in countries			Category
Uncertainty (U)			Code

**List of composing Relationships**

Name/Title	Summary	Pict.	Relationship Definition
Dependent on			Relationship
Outcome			Relationship

**Content of the composing Relationships**

**Relationship: Dependent on**

**Relationship: Outcome**