Qualitative Methods Research Paper

"What is the perspective of the key stakeholders in the EU tech sector on the role that ethics have on the progressive development of AI?"

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Introduction

Global expenditures on artificial intelligence (AI) are expected to exceed \$38 billion by the end of 2019, and then double by 2022 (International Data Corporation, 2019) signaling the importance of AI to the global economy. AI has helped make work-places safer, information more accessible, empowered disabled individuals, and allowed military exercises to be less costly both in financial and human accounting (Allen & Hussain, 2017) However, AI is not without its inherent risks and challenges, most notably ethical innovation. Identifying the parameters for ethical AI innovation and implementation is a complex and difficult task, requiring a nuanced understanding. Given that AI is expanding exponentially, new ideas are introduced in swift progression with limited clarity or understanding to those outside of the industry. Additionally, AI is pervasive with distinct applications across many different industry sectors. Furthermore, AI is iterative and most successful when it "learns" from humans, yet the legislative environment in Europe is more restrictive than China or the U.S., and hinders machine learning, potentially creating innovation obstacles for the European Tech Sector (Stranieri, 2019).

This paper provides an exploratory qualitative assessment of ethics in AI development from the perspective of different European Tech Sector Actors in Europe. The work contributes to our understanding of the current-state of the AI industry with regard to innovation and ethics; the paper does not provide a discussion of the factors impacting ethical perspectives. The paper is organized as follows: an examination of the research question, discussion of the research design and operationalization of the design, data collection and analysis, methodological reflections and limitations, and concluding remarks.

Research Question

The financial and humanitarian benefits of AI are being realized in many domains creating significant interest and investment in AI development. However, investment and implementation differ across countries, potentially widening economic gaps. Additionally, concerns related to privacy, misuse, and algorithmic bias raise critical ethical questions and lead to our research question: *"What is the perspective of the key stakeholders in the EU tech sector on the role that ethics have on the progressive development of AI?"*

This research question (RQ) is exploratory, as it aims to discover underlying thoughts and ideas of key actors in a domain that is relatively new and not clearly defined. Thus, qualitative research is best to address this type of question, as it tends to provide insight rather than a conclusion. Our research takes a phenomenological theoretical approach, with the goal of collecting first-hand subjective experiences and perspectives of the key stakeholders in the European Tech Sector. Phenomenology aims at deriving non-manipulated data from individuals with broad knowledge on a subject, aligning with our focus and specific RQ. As this is a new area at the intersection of ethics, science, and technology, there are no existing theories or frameworks that adequately address our research question. The Social Construction of Technology theory can explain large parts of the AI development, but not the more subjective ethical perspectives, thus it has limited applicability for this research (Klein & Kleinman, 2002)

In order to create a context for this work, it is important to explore the phrase "key stakeholders in the European tech sector" as it is part of the RQ. The European tech sector is comprised of key actors with differing roles, including private industry, national and regional public sector organizations, and lobbyists. Private industry is a critical driving force in AI in that it represents the largest producers of AI technology, profits from AI applications, and tends to be the link with end-users (International Data Corporation, 2019). Thus, it is included in this work and is represented by a German AI company. The public sector has multiple roles, funding many AI projects, using AI for government services and military applications, and regulating AI. The public sector has many actors including government regulators and legislative bodies. In this work, the public sector is represented by two actors: Digitaliseringsstyrelsen (DS), the Danish regulatory body that advises on AI policy, strategy, and implementation, and the European Commission (EC). The EC is a critical actor in the industry given its advisory and regulatory role in setting policy directives. The last group, lobbyists, is important in that they tend to serve as an intermediary and more closely represent businesses and special interests; the lobbyist perspective is represented by DIGITALEUROPE (DE).

Research Design

The research design provides the structure for conducting the research project, connecting collected data with appropriate analysis, thus providing a logical plan from opening questions to concluding discussions (Yin, 2014) Given our interest in gaining an understanding of the

different stakeholders' perspectives on the current state of AI development, we determined that a phenomenological qualitative cross-sectional research design featuring case study elements with interviews and content analysis (CA) would be most appropriate to address the RQ; this allows us to describe and examine a particular phenomenon. We define our case as the European Tech Sector, while treating the key stakeholders as the units of analysis. Qualitative research designs tend to be flexible, often including features from multiple methods (Bryman, 2012: 69), which is the case in this work as both interviews and CA of published work by relevant stakeholders provide insight. Interviews are particularly suited to this work, as the data gathered supports the generation of a detailed deep examination of key stakeholders. For analyzing our interviews, we chose to conduct a thematic analysis (TA) on each interview, with the aim of coding the data and finding common themes.

Additionally, the cross-sectional design allows for comparison across key stakeholders for a single point in time (Bryman, p. 59). Of importance in this work is the decision made to include CA of work published one year ago as a supplement to the interviews. It is important to note that the unit of analysis is not the case or text itself, rather perceptions across the key tech sector stakeholders. Additionally, we determined that the trade-off in time difference of one year as compared to limited access to relevant stakeholders was minimal. Although the speed of development in AI is rapid, the focus and development of AI-related ethics, is at a much slower rate, thus allowing us to justify the texts as time-relevant and appropriate for our research. We technically violated the single point in time criteria, and will need to be aware of potential timerelated variations (Bryman, 2012: 68-69), however, given that it was the most recent publications available we deemed this the best course of action.

Although a cross-sectional design can also be nomothetic, aiming to generate findings that can be generalized universally, this is not the case in this work as only a limited number of tech sector stakeholders are represented given resource constraints. More specifically, this work is idiographic in design, focusing on specific stakeholders, and based on subjective experiences of these stakeholders (Tsoukas, 1989) This design, like many other case study designs with a very small sample, has low external validity (Bryman, 2012: 390). Lastly, the idiographic approach makes sense in that this work is exploratory rather than confirmatory, meaning that

after the collection, coding and analysis of the data, we looked for common themes and categories in the data.

Operationalization

After finalizing the research question and design, we then needed to determine how to optimally collect and analyze data required to answer the research question, and begin to understand how ethics impacts AI development. Given our design and RQ, it was initially determined that we would use interviews with a wide variety of EU Tech Sector Actors, including private firms, EC representative, investors, and lobbyists, as well as a focus group with students studying AI to collect data. The rationale for this wide range of actors was to have the broadest lens for analysis and highest level of data saturation strengthening the overall validity of the work. However, as we progressed, it was determined that the student and investor perspectives were less relevant. Students were dropped from the initial design for two reasons: expertise and availability. First, as students are just learning about the industry they are less likely to have significant insight into the ethical implications of AI. Second, as we needed to have higher level students, we found it was too difficult to secure enough to run a focus group. Additionally, investors were also eliminated from the sampling frame given that they have similar financial motives as the lobby group, and we deemed them less relevant given the lack of broader representation of investors.

Further, as we could not secure access to either of the key lobbyist groups or the EC via interview, we determined they both had enough relevant published information to perform a content analysis (CA). We believe the CA enhances the work and provides a more complete picture of the different perspectives. Since the EU operates as a representative democracy, the EC allowed for indirect assessment of public interest and the role of citizens (The European Association of Communication Agencies, 2019) Thus, the final determination regarding data collection was inherently tied to the availability of key actors, creating a shift in perspective, as academia was excluded as a key stakeholder and the focus evolved to ethics related to AI development from the business and regulatory point of view.

In the operationalization of our first data collection method, interviews, we decided to conduct both as semi-structured. The primary motivation behind this decision was that although we had a fairly clear focus on ethics, many of the issues around AI development and ethics are complex and nuanced, thus the semi-structured approach allowed for greater flexibility for each interviewee, while creating a framework for comparison across interviews (Bryman, 2012: 472). Interview guides were prepared ahead of the interviews, ensuring broad topical similarity across the interviews. Despite the relatively structured interview guide, we allowed plenty of time for unplanned questions and pursuing topics that the interviewees viewed as important, thereby gaining a better insight and helping to ensure that the data was truly reflective of the interviewee and not the interviewer. To limit leading questions and interviewer bias, we reviewed the guides and researched the institutions prior to the interviews, allowing the interviewer to focus on the interview content even when the interviews got more technical.

While the operationalization of the second method included qualitative CA, this allowed us to answer our research question and have stronger data saturation across the tech sector stakeholders. For this section we chose two reports by critical public actors, DE and the EC. These reports were chosen as they represent what we view as key stakeholders – a European lobby-group and the regulatory body (Barryan, 2019)We decided that the entire reports weren't relevant for our paper, thus limiting our sample size to parts of the report creating the basis of our qualitative CA.

Given the cross-sectional design and data collection, it was determined that a framework TA was best suited for analysis and interpretation. This method is often used in policy type research (Herzog, Handke, & Hitters, 2019) and allows for identification of recurring and significant themes across different sub-samples (Bryman, p. 580). This approach allows for open exploratory examination of issues and enhances comparability within our employed methods. Given the framework approach, we use a procedurally similar structure for both methods. We first did a close reading of the transcripts and documents to become familiar with the overall content, then identified a set of organically occurring themes most relevant to the RQ. We then went back and coded the transcripts of the interviews and the document content, creating a matrix of the most relevant statements which aligned with the underlying themes allowing for a consistent level of analysis. It is important to note that the categories were not predetermined, but were reflective of the content in the interviews and reports and that while analyzing the data we allowed for inductive category development which is appropriate for exploratory work.

Sampling

This work uses *purposive sampling*, a non-probability sampling technique in which potential respondents are chosen based on interviewer guidelines and judgment. This was deemed the most appropriate sampling framework for potential interviewee candidates for several reasons: content expertise, access to respondents, and availability of respondents. Given the AI/ethics focus, the pool of potential interviewees was limited to those with expertise in AI and ethics. Additionally, within this pool we needed to ensure that we could secure access to potential respondents and that they had availability in our time frame. Thus, given the aforementioned constraints, a stratified opportunistic sampling technique was necessary.

Stratified purposive sampling uses a pre-defined sampling frame to divide a larger population into subsections; in this case, the European Tech sector serves as the larger population, while the sub-samples are private industry, public sector, and lobbyist. As noted previously, there were also access and availability constraints, thus an opportunistic sampling frame is overlaid on these subsections. *Opportunistic purposive sampling* is justified in this case as it is often used in cases where respondents are difficult to reach (Bryman, p. 409, 419). A sampling frame was determined using the sub-samples noted by examining LinkedIn and available CBS alumni lists. Out of 20 interview requests in the private sector, two replied. Of these two, we strategically and purposively chose our private industry representative based on their expertise and willingness to work with us. In the public sector we made one request for an interview with DS, a key stakeholder for government-driven strategy and policy, and were able to secure an interviews, and thus determined to use CA for this sub-sample. Given this decision, we then determined that CA would also be justified for the EC providing a comparative point on CA.

There are trade-offs with this type of sampling and the use of a single representative for a given sub-sample. It is important to note that within the public sector we chose two representatives because of the possible differences between national and supranational actors. A strength of this technique is that it allows for judgment on content expertise and flexibility in terms of choosing respondents based on availability. A limitation is that the sample is not randomly chosen and thus there is an inherent bias in the sample; additionally, the use of a single respondent does not provide a broad lens to analyze the research question. To limit the negative

impact of this limitation, we made sure the interviewees from the two groups had a broad range of expertise in AI and ethical innovation. This is evidenced in their years working in the industry and their public reputation. Additionally, the interview content of DS was closely aligned with that of the general stance of the EC, suggesting DS represents a standard public actor. It is harder to ascertain how the perspective of the private industry representative aligns more broadly with the private sector in that AI applications are vastly different across sectors, but the response to the broad questions suggests a high and wide level of expertise with AI and innovation ethics. It is important to note that despite the limitations of this sampling method, criterion and maximum variation sampling although considered, were deemed not viable. Criterion sampling, where all relevant units are sampled was simply not feasible for this study given the size of the some of the sub-groups such as private industry. Additionally, maximum variation ensures a wide representation of data, but operationalizing variation was difficult and not meaningful at this stage of an AI ethics research agenda. Variation could be captured by industry sector, size, time involved in AI, or types of AI applications and given the exploratory nature and small sample constraints of this work, this method was not viable.

Interviews

As noted previously, the interview data from the semi-structured interviews was analyzed using the thematic framework method, thus the first step was to become highly familiar with the totality of data (Ritchie & Spencer, 1994)which in this case meant rereading and studying the transcripts from the two interviews. Through this process, two key themes emerged: *Ethical AI as a Product* and the *Role Legislation and GDPR*. As we worked on refining the thematic framework through group discussion and judgments about relevance, meaning, and impact, we were able to code the data as we identified portions of the transcripts that were particularly relevant and charted them on a matrix based on the key themes. This process helped to ensure that the conclusions are in the voice and perspective of the respondent rather than the researcher (Ritchie & Spencer 1994) and provide additional nuance for the analysis and interpretation.

The first theme focuses on *Ethical AI as a Product*. When prompted by a broad question on ethics, both interviewees suggested that ethical considerations are critical for the sustainable development of AI, and intimated that in the future one might be able to make a business case for focusing on ethical AI. The industry representative mentioned how the company had previously

positioned their product as ethical AI, and remarked, "the simple fact is that that angle didn't sell... if we were to have this conversation in ten years' time things might be different", suggesting that ethics do not currently create a valued point of differentiation or drive AI innovation. The government representative echoed this sentiment, but went even further, suggesting that in the long-run ethical AI *will* serve as a point of competitive advantage, at least in Europe, noting, "... we believe that it [AI] will pay off financially if firms apply it in a proper way," suggesting that it is up to firms to help shape ethical AI innovations.

This leads to the second theme, *The Role of Legislation and GDPR*. Again, there is a sense of consistency across both interviewees. They suggest that legislation is important to help manage ethical AI development, yet there is a divergence with regard to how helpful specific legislation such as GDPR is in creating an ethical environment where consumers and firms are protected. The industry representative suggested that speed of innovation is more critical than regulation because of greater competitive pressures for quality AI, and inherent value for consumers. In contrast, in the public sector there is a sense that consumer protection and public interest are more critical than speed. These differences seem to stem from information asymmetries related to end-users. This was evidenced in the interview where the government representative suggested individual consumers think of AI as a Terminator-type general making robotic decisions, while not accounting for spell check as AI. It makes sense that the legislative sector is more interested in guidelines that protect public interests, however, more bureaucratic legislative bodies are slower to function and pass laws, creating a legislative lag between product introduction and regulatory oversight.

More specifically with relation to GDPR, there is a sense that the regulation is somewhat limiting for firms, although providing some protections for consumers. The industry representative was critical of the legislation but conceded that in the future it could create an environment where there is a "higher quality" data experience. Given the private sector focus on speed to market and focus on profit, it makes sense that words such as "annoying", "slow to adapt," and "ineffective," were used to describe the highly bureaucratic government. As noted, the field is highly dynamic, making it difficult to enact policies directed to the newest innovations in the field, thus suggesting the thematic thread of legislative lag. These exact concerns were brought forth in our interview, however despite the critical approach our interviewee did see that there was a necessity and that it had to be made by lawmakers rather than these corporations, as he states, "in my experience you can't put legislation in the power of profit creating enterprises because ultimately those two things are at odds with each other in this disastrous post-capitalistic society we live in."

Even though such approach was rewarding, we were also aware of the few disadvantages attached to interviews as a method of data collection. For instance, it is very time consuming – both before and after, as it demands a large amount of preparation, transcription, reflection and analysis to conduct and analyse an interview successfully. Furthermore, we had to be cautious during the preparation not to make questions leading, which can be enormously difficult with little experience. Lastly, to rely on interviews solely to represent a large variety of perspectives, there is a larger need to interview a sufficient amount of people in order to compare data and to reach data saturation.

When conducting our interview, we put minimal focus on our order of questions, besides a slight introduction and an introductory question regarding their profession and role in the company, simply to get more familiar. Then, in alignment with Bryman's take on interview guides, we proceeded to encounter topics within our research area, thus helping us acquire the information needed to answer our research question (Bryman, 2012: 472). With our sparse experience in interviewing that mainly came from pilot interviews, we recognized this weakness and, therefore, we drew inspiration from Bryman and his guidelines for preparation and kinds of questions for an interview guide (Bryman, 2012: 472-79).

In regard to research questions, some examples of sub-themes are provided here in the same order as at the interview: Formalities and code of conduct, introductory question, ethics in the AI market, and regulation and AI. We started out with a single open-ended question in both interviews to become more familiar with the interviewees. This was followed by intermediate questions focused to find the interviewees' beliefs to gain insight into the perceptions of the interviewee and the organisation they represent. We avoided closed questions, as we had the concern that it could cause certain themes to fall to the ground before we had collected our desired answers. This was also affected by the 30-minute limit we had on both interviews, which furthermore affected the process of creating the interview guides, as the time restriction forced us

to have an even more specific focus with our questions to ensure the collection of needed answers, as well as prioritizing our questions according to importance. By providing a semistructured interview guide, we increased our external reliability, even though it is very hard to have a high external reliability in qualitative research because it can rarely be replicated. Here, some simple features of our research can be replicated, such as the interview guide (Bryman, 2012: 390). Afterwards, upon reflection, we believe our interview guide could have been strengthened by preparing more possible follow-up questions to the various themes brought up by our interviewees, as our follow-up questions intended to pursue new and interesting themes tended to be leading in a certain direction, as we had ethics in mind.

Comparing expectations with the results from our interviews resulted in some interesting reflections. The interview with DS surprised us, as we did not expect to get that much information in a timespan of only 30 minutes. The group had researched the institution and their strategy before the interview, so some of the information was known prior to the interview. Therefore, due to our semi-structured interview approach, we could focus on new points brought up by the interviewee. As it is a Danish governmental institution, some information was regarding the Danish market hence deviating from our research questions, as we specifically research the broader, European perspective. That was our biggest disadvantage of using interviews as a method, as DS was the second-best option to a representative of the European Union. Furthermore, the flexibility in the semi-structured interview became a disadvantage as we were not able to control the interview completely, therefore making it inevitable to collect data that was unusable. Therefore, our validity decreased, as the relevance of our data gathering decreased (Bryman, 2012: 389).

Due to the pressure from the EC, companies could feel obliged to present their opinions as they were aligned with those of the EC. However, a positive surprise was that our interviewee had no issues with answering our questions with honesty as long as he could maintain his anonymity, which resulted in the insight into a company's quite critical view of the EC's initiatives. Such statements increased our validity, as we gathered the exact data we wanted to observe (Bryman, 2012: 389). We conducted the interview in a video call, therefore providing a full view into the body language of the interviewee, which was especially evident when the interviewer probed for perspectives of ethics, where a discomfort was evident in the interviewee's body language and tone of voice (Bryman, p. 488). The video call turned out to be an advantage in several regards, especially since it gave room for the interviewer to get inspiration from the interview guide without giving the impression of being inattentive. Furthermore we were able to utilize a typical limitation inherent to video-calls, the feeling of distance, to our advantage by creating a less critical attitude, making it easier to ask more direct questions and probe towards the more sensitive topic of ethics compared to the face-to-face interview. Thus, the interview with the company turned out to be very beneficial for our research as we found the data we were looking for and were able to minimize possible limitations inherent with phone interviews.

Content Analysis

We chose to do a qualitative CA on two different reports, one from the EC and one from DE. The EC is the supranational institution in the EU, which is responsible for the protection of the citizen's rights, this institution is representative of the citizens given the nature of the institution's democratic nature (The European Association of Communication Agencies, 2019) On the other hand, DE is the leading trade association that represents digitally transforming industries in Europe. Furthermore, using generalizable and representative actors increases external reliability as it makes a replication of this method more feasible despite the topic of ethics in AI being a rapidly changing topic. This is a product of CA's nature inherently allowing for greater external reliability given that these are long term strategies implemented, thus it isn't affected as heavily by the dynamic nature of the AI industry.

We decided that it would be best to conduct these content analyses separately to increase our internal validity by reaching an agreement on the findings within the research group. When conducting a CA, it is important to follow a specific step-by-step model, to enhance the comparability and facilitate synthesization. Our multiple-step process started with a thorough coding of our chosen reports, where we coded passages specifically relating to our research question to keep the process organised and consistent. This process was done by two different members of the study group in order to facilitate an increased inter-coder reliability, as it would ensure unbiased findings when matching and synthesizing data into more general concepts or themes. After coding the texts, we made a second evaluation of whether irrelevant information should be ignored. Thereafter, the two texts were compared to agree on recurring core themes that related to our research and on ethical perspectives on AI in both reports, which would become the baseline of our CA.

To increase our external validity, we would have had to increase our sample size, due to the fact that a small sample size lacks the ability to generalize our findings across all stakeholders. However, this is often a problem for qualitative researchers (Bryman, p. 390). Although our qualitative CA mostly provided us with desired data, we might have been able to increase the quality of data by doing interviews with questions tailored to answer our research question instead of analysing official reports. While it may be true that interviews might have given us higher quality and more relevant data, our choice of using qualitative CA strengthened our data triangulation, which helped us guarantee that we weren't drawing conclusions based solely on one method, instead using several methods to explore our research questions.

Upon having finalized our coding and ordering it into themes that are existent in both texts and relate to ethics, we decided to facilitate the synthetization of the data by deriving 3 core themes, from the codes, relating to ethics and the development of AI: Fairness, data privacy, and the regulatory framework around AI. The first core theme of fairness entails the way in which the concept is used in the actors' ethical considerations regarding the utilisation and development of AI. DE mainly addresses fairness when tackling the ethical concerns around creating regulation and legislation specifically how that might affect companies differently, thus obstructing fair competition. On the other hand, the EC especially emphasizes fairness in terms of the ethical impact AI may have on the societal level e.g. on economic equity. However, both reports do address issues of biases in AI and how they may, for instance, discriminate between people because of their membership in a specific group.

Data privacy is another theme that both institutions generally agree upon being highly necessary. However, DE has a major concern about how regulations such as GDPR and ePrivacy may seriously restrict companies' use of data, which is crucial to develop and train AI-programs. They argue that regulation will cause restrictions that could result in a drop in the quality and amount of data. Furthermore, they argue that the current legislative framework is made as a "One size fit all", which is not applicable to the real world and, therefore, regulation has more devastating consequences to some companies than others. Thus, DE calls for European decision makers to make more innovation-friendly data policy framework in order to promote business and to create legislation and regulation with an ethical perspective of both individuals and businesses. Contrary to DE, the EC emphasizes its concerns regarding data privacy on the societal and individual level, expressing privacy as a right and the development of AI as a possible risk or danger that may potentially jeopardize this right.

On the final theme, the EC and DE generally agree that the best way to create the regulatory framework is through a multi-stakeholder approach. Here, the decision-making is made with an effort towards engaging a broader spectrum of stakeholders to ensure that technical and practical expertise is matched with political, social and ethical goals of Europe. Despite agreeing upon the need for collaboration between stakeholders, they disagree on what regulation and legislation framework should be focused on. This is, for instance, evident in the way they look at future challenges and risks with the development of AI where the EC proposes a preventive action that foresees challenges with ethical and societal consequences whereas DE states that risks must be identified before they can be addressed. Thus, the two institutions agree upon the method of how legislation should be approached but disagree upon the lens in which the legislation should be addressed through.

Reflections

This work made use of two different qualitative research methods to answer our RQ, and although the data provide insight and thematic response for the question, a reflection is critical for both reviewing the process and thinking how the broader research agenda might be moved forward with future research.

In terms of design, given the RQ, we believe the use of the cross-sectional design helped to build both reliability and validity as we are able to make comparisons across the groups. Although it is sometimes argued that reliability is more of a quantitative issue, we are able to demonstrate consistency and transferability of ideas, thus helping one understand the specific AI development and ethics phenomenon (Lincoln & Guba, 1985)In relation to validity, the use of multi-methods, such as interviews and CA, helps create a level of data triangulation which helps to build a more diverse construction of reality (Lincoln & Guba, 1985) The evidence of recurring themes across the interviews and CA, suggest trustworthiness for the study and deeper understanding of the issues.

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Beyond the methods used in this study, we could have incorporated other methods to further build validity through an increased sample. Upon reflection a focus group of industry representatives, likely would have given a deeper understanding of the RQ in relation to this particular cross-sectional group, but not necessarily a better understanding of the broad issues related to AI ethics policies. The dynamic of the focus group with a panel of industry leaders would likely have necessitated the need to rethink the research design as the sample for this sector would have been significantly larger than the others. However, securing a panel would have been significantly more difficult in terms of accessibility and resources.

Limitations

Although we have developed a stronger understanding of the role of ethics in AI development across various EU tech sector actors, the work has some limitations. Most notably as we are a team of students without expertise in AI, ethics, or interviewing techniques, there are inherent challenges and biases that are evident in this work. Many of the design and analysis limitations have been discussed, but we believe it is important to understand that impact that limited experience in interviewing techniques has on the data. Unlike the CA where the researcher can engage in iterative data collection from the document, the interview is a single experience where the outcome and data are somewhat dependent on the expertise of the interviewer. Furthermore our status as students and the timeframe of the course made it difficult to actually secure interviews with a wide range of actors, making clear the need for a longer temporal frame for conducting this type of research.

Conclusion

In conclusion, our project is able to demonstrate that ethics are important to AI development, although they are prioritized and perceived differently *across tech sector stakeholders*. In private industry, speed of innovation is critical and prioritized over ethical considerations while in the public sector ethical considerations are prioritized. Additionally, we were able to ascertain that the role of consumers acts as a motivation for tech sector stakeholders with regard to ethics, such that firms believe consumers have agency to make informed decisions, while public sector actors see the need to protect consumers. This was a particularly

interesting and unexpected finding as our preliminary reading did not touch on this. In that this work was exploratory in design, future work can delve more deeply into the broad themes presented earlier in this work and the role of the consumer in driving ethical innovation and regulatory guidelines.

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(International Data Corporation, 2019)	(Stranieri, 2019)
(Allen & Hussain, 2017)	(Bryman, 2012)

Appendices Appendix 1: Transcript of Interview

Interview with the head of content and creative director of a German AI company

Before the interview was recorded: The interviewer introduced himself and the project to the interviewee, thanked the interviewee for participating, asked for permission to record the interview, and offered the interviewee the right to remain anonymous if that was what he would prefer.

Interviewer: Alright, I would mainly like to focus on your perspective on the industry. So, it will not be that quantitative or technical, it will mainly be about your opinions because it is a qualitative research, what we are doing. Anyway, can you first of all just tell me a little bit about your role at German Auto Labs?

Interviewee: Yes sure, I do a few things, I am the head of content and creative director, so I deal with communications, and yea communications is about 90% of my job. But there are many different forms that takes, so I have to know the industry extremely well because I have to do things like write white papers and case studies, so quite technical. But also, you know we also are a B2C company, so I also have to produce marketing materials, blast emails, etc. Just, you know, things that are for me less interesting but are, you know, all part of sales activities. So, we have an interesting split of being both a B2B Company and B2C Company, and that is really the two diverse areas that drive what we do.

Interviewer: Yea, I was actually curious about that because it seems like you are very focused on both, with especially the white label aspect, do you focus more on one or the other?

Interviewee: Sure, when the company started our mission, always from the beginning was to have both strands a B2C and B2B angle. What we naturally, being a small team, ended up putting more of our eggs in one basket in the beginning, we built CHRIS. Which was the world's first in call voice system. The reason why we built CHRIS first was because we knew we would build up a whole world of data and understandings from the way people used CHRIS, which then meant our B2B offering such as it was, though it was fairly inexistent, suddenly we have a big active fleet of drivers on the road. We know what kind of things people are saying, what kind of things people are doing, so suddenly it then makes the use of our white label component much

more viable for companies out there who are there. You know Mercedes has MBUX? Various other companies have all sorts of integrations, there are many, many companies on a tier below MBUX, who lets say Kia just a name out the hat, they are a company who sell a huge number of cars, who might not have the budget to do this. It is a huge amount of budget it takes to build something like MBUX. So, the positioning initially was maybe we can bring a bit of expertise in there.

Interviewer: Okay cool! So how did you see the entering of the industry, I have tried to research it a little bit and as far as I can see you started it with Kickstarter and then you have received funding afterwards. Have you felt it has been difficult to enter or has it been easy? I am mainly thinking of all of the large competitors in the industry and if you have felt a big difficulty with that.

Interviewee: Um, so there is a very important distinction to make at this point. If we were going up against Alexa auto and the various big guns directly, we would not have a chance. No one does, because they have limitless resources. However, the important thing to realize is there are many assistances already out there, Siri, Bixi, Cortano, Alexa, etc., and now you are also adding in things like MBUX as well into the mess. So, what we realized is not to let us try and build a brand new assistant for everyone. To be honest that is sort of the last thing that people need. What they do need is what we internally call it here is arbitration I have heard, Ralph calls it orchestration, orchestration or arbitration, however you want to phrase it the fact is you have to balance what a person needs with all of these different assistances out there. So let us say, you are out there, you are driving around in your car you might want to say something that needs to be understood by Alexa, but you may also say something that needs to be understood by Google Maps and so what we are doing is helping to build this middle way slice so that all of these different systems can operate harmoniously with one another, which is by the way a piece of business direction that these companies themselves are very concerned about they realize, oh shit we probably cannot build off a closed off ecosystem here because we are going to lose too much functionality. It does not make sense for google to block out Siri and vice versa. They are

starting to realize now: "Okay we actually have more power if we work together", and that is where we are helping them do that.

Interviewer: Yes okay, so the essence in what you are saying is that the other competitors for instance have other opportunities together with their competitors? So, is that also for you as a smaller company than them, an incentive for you to focus on the more ethical perspective of AI, and the product itself, to differentiate?

Interviewee: Um, that is a complicated question, because there are two parts to it. The ethics let us leave that to one side for the time being, because that is a whole different thing and a very interesting question. What we wanted to do simply was bring the very best understanding of lean and agile technologies, in our office in Berlin, with employees who are quite experienced. We know how to create and build products. We build them, break them and iterate them way, way, way faster than they can at Google or wherever. Of course, they can do it if they were broken down into their individual teams but were helping to provide innovation through speed of delivery, through speed of proof of concept. In terms of the ethics we all have our own individual view on this. My personal view on this, I was born in 1992 so I am basically top end, the first generation of a digital native. Where I consider all of my rights to be fundamentally fucked. I think If I am on the internet forget it, I have given away all of my privacy on the internet, and I am fine with it. Because I only give them a certain amount. So, in terms of the ethics I do not know what you want me to say. We are a supremely ethical company, and we obviously comply with GDPR, but beyond that yea in terms of the ethics what through a voice assistant or in terms of using data maliciously. What is your question?

Interviewer: Well, I was sort of thinking of ethics in general. But we can go more specific. So, for instance, it could be more the usage of the data you collect, from your consumers. It is just not really about how you use the data, my question is mainly how highly you focus ethics. Is it highly prioritized or mainly something you feel is up to the consumers or the regulators?

Interviewee : Whatever I say now should be considered completely off the record, ONLY because I feel my CTO would want me to phrase it in a completely specific way. There is no smoke and mirrors here. We are not listening into people's private lives; my understanding is this: We completely anonymize all of the data. We are compliant with GDPR. What we do, which is completely set out in the terms and conditions sort of using CHRIS with our consumer device. We do look at mapping patterns, and regular routes that are directly driven in order to directly link that information to make our product better. It is pretty standard.

Interviewer: Yea okay!

Interviewee: I personally, I honestly would tell you if I was uncomfortable with this. Because I am the last person who wants to give away all digital rights, really, I believe that is super important. But if you choose, to put a voice assistant in your car or in your home at the moment with the current technology that we have in 2019, and the next 5 years at the minimum, you are going to expect people will be listening to you. Not because they want to listen to you but because they want to make that product better.

Interviewer: Yeah, of course! It is really no different from the bigger companies. So my next question is also about the ethics, as there has been a lot of scandals lately about the larger companies and the listening in and the usage of data, do you think as a European company, where first of all there is more regulation, but also as a smaller company you can sort of sell your product on being more ethical or having more privacy, do you think it is an improvement on your product compared to the larger companies? Or do you not really?

Interviewee: I think if you have that in your, I think it really much depends on the product you have there. I think it is very possible to sell things upon their privacy or independence they pretain. Let us say that you came up tomorrow with the idea of completely anonymized Facebook. So, you log in with THOR? You everything is completely encrypted, but you have all of the functionality to connect with people but at the end of every connection with people everything is gone. That is a lot of value to you. The trouble is that ethos cannot be applied to all products, because some products require a certain kind of understanding and learning to make them better. And we are in this weird kind of situation now where people do not like the fact voice assistants have to be listened to, to make sure the voice assistant is understanding the person. To make sure, to improve the product in 2000 different ways, there are so many different ways that can happen. Um, and I think what has happened recently with Apple and Siri, was that they were listening in on people's interns, they were listening in and they said they felt uncomfortable what they were hearing. That is the kind of story where it would make me very nervous and it does bring up the ethics. All I can say is that when we do our randomized listener testing to make sure it is understood what it is the customer is trying to say, we overhear the most basic stuff. Because we offer the most basic stuff. Like calls, music, messaging, navigation, we normally just check the navigation books, and everything is anonymized because of GDPR.

Yeah, I do not know, maybe I am used to it because I have been working too long with a voice assistant, and I just find it natural now. I do not know if you personally or know a friend who has got Google Home or Alexa. I think the more that you have those objects around you in your day to day life the less suspicious you become. Whether that is rightly or wrongly that is another matter.

Interviewer: Yeah, I think you are probably, very right about that. But I was also thinking, CHRIS is also an offline product so you can also use the voice assistant when it is offline. So, it will not really be able to collect data in the same way as every other. I don't know if that was the intention but at least in my perspective that was a great ethical perspective. Or a great ethical benefit if you are really concerned.

Interviewee: I think it is a good tool, the simple fact is that that angle did not sell ultimately. It is not that people did not like it; it is just not enough on its own. Mate, if we were to have this conversation in ten years' time, then once you have mass acceptance of voice assistance in all cars, that is then, when your niche model of a super privacy complaint, anonymous, protective service becomes much more interesting. In the same way as what we have seen with these things in when you talk about things like telegram, signal for example having a higher level of encryption and anonymity. Still not perfect but WhatsApp. But what happens first is you have got to get the blanket acceptance of your product then you have got to get your niche product in to say actually we would like things to be super private. Hang on to that thought because I think it is a super good one, and there is definitely a string potential to market off of that. But not yet.

Interviewer: Hm, okay that is interesting that it did not work, especially for a European Company, and I do not know where you base most your sales, but I would imagine, and I do not know what your experience is with this, but there is a bigger concern for this, or focus on the ethical perspective in Europe than in China especially or even in the US. Do you feel that way, or do you have any experience with that?

Interviewee: It is very hard for me to quantify that professionally, I can only say so basically the markets we focus on are, Germany and the UK. We do sell in the Scandinavian countries and Belgium and Luxembourg, but mainly Germany and the UK. For me I come from London, we do not, everyone assumes that everything is completely fucked. They assume you have no privacy,

that the internet is a bad thing, so you take it just a bit like okay that is whatever, it is what it is. In Germany, completely different, completely different landscape, here the people that I meet are young people they will not put their names on anything like Facebook, twitter whatever, whatever platform it is. Because people still have that post story post the wall coming down mentality that everyone is watching me, everyone is trying to steal my data. Where me I am called my name on Facebook whatever, other people I know are like are you kidding me no I will not put my name on there. But you are an idiot because your IP address is all over everything, it is so easy to track you as a person so I find it really stupid worrying about this kind of level of your computer can be hacked and listened to so easily, your smartphone can be hacked and listened to so easily, do you really think that changing your name to Jonathon Potato is going to help? So, there are some GDPR is a big deal here especially. In reality, I do not think it really changes day to day lives.

Interviewer: That is interesting because recently we have also interviewed a Danish government agency who has very much the same government strategy as the EU and he mainly had the perception that GDPR or other regulations are meant to give some privacy, are like a short term cost but in the long term are going to give a lot for the consumers and the companies. Do you think that this is true in anyway?

Interviewee: Did he say how it could be beneficial for a company? I could see how it could be beneficial for a consumer, because it keeps your data outside, but for a company surely it is just annoying.

Interviewer: Yeah, so, what I think his explanation was that because EU companies will now generally be more regulated than those of China and the US. When, in the future, the more ethical and private perspective becomes more relevant the EU companies will already have adapted to that so they will be further ahead, I think he also explained it as more in sort of tech and AI that is developing and one that combines that with privacy and ethics.

Interviewee: Well that goes back to the same conversation we just had 5 minutes ago, where I said you have got a great idea you are ten years to early, I feel the same way with what he just said there. I feel that government agency is absolutely right, it does position EU a little bit further. I do not think they should be clapping themselves on the back saying what a brilliant job

we have done, EU government. But also, you colluded with the US the situation where we now have GDPR, so let us not get too carried away. But definitely there is a huge business model, and it already exists, but there is a huge business model to be built around ethical and controlled use of data. I could see it happening in a way where it controls every part of your presence, from your smart phone to computer, to you communications, that there will be a service that is set up by your cornel where you completely anonymize all of your touch points on the internet. Where you have a much higher quality data experience on the internet, that for sure is going to happen. It will happen. It just depends when.

Interviewer: So, I am a little bit curious with your experience with the regulations, have they had any influence yet?

Interviewee: Yes, massively, so we take it, obviously, we have to take it very seriously because we built a voice assistant, which is that extra layer of invasiveness in the mind of a consumer. So what we did was we got a GDPR officer, it was a horrible thing, we did not want to have to do, but we basically got a GDPR officer, where we basically said here you go, go and help yourself, go into all of our files and tell us what is bad and what is wrong. So, he did that, and it was actually quite an alright process and basically it is just the most common violation is. If I buy a product and I return the product, in some return agreements that means that my data has to be taken off the list, and when you have many, many Facebook chats with this person going back nothing sinister, just the person talking about their hardware return you have to delete that person's name off your data base. By far that was it, and it is very boring, and I am sorry for having to explain it to you but that was by far the most common fault that we had, which we immediately cleaned up. But yeah, other than that obviously you cannot use the device to listen to people and monitor people, so we do not do that. There is very little else, that is why I am less than impressed with GDPR, because I feel it is a false sense of security for people well at least it shows Europe is trying to protect people's data rights, but as far as it goes back to the beginning I come from Berlin which is hackers world. I know exactly how easy it is to get into anyone's machine or computer, GDPR does not do anything if we were a sinister company and we wanted to listen to people we could do that in so many different ways, that is just the reality of technology. It does not make me evil thinking that. Of course, anyone of us could go out and do terrible things like that I hope that people do not. GDPR is good but that is how I feel about that.

Interviewer: But do you think it is just not enough, or it is wrong to make regulation like that or is it just not the correct way to make it, GDPR for instance?

Interviewee: What do you mean by wrong?

Interviewer: Like uh, so you say there is some things that are just annoying to the get rid of, like the data which may not have any privacy benefits for the consumer, so in that sense it is not the correct structure, or way to make regulations?

Interviewee: I think that is exactly why. I think that was interesting for me is if you can go to google and say I want all mentions of Interviewer taken off google, you do not have that right, you can go on a case by case basis go to google this website is using my name take it out. That is a sort of form of GDPR it is done in a way where all bureaucracy it takes so long just for that one website, that if you were to try and remove all trace of yourself it would take you absolutely forever, for a lot of people it would be very challenging process. So that shows you on the one hand GDPR is powerful but on the other hand its slow and bureaucratic just like all other political legislations.

Interviewer: So do you think, well okay maybe this is pretty unrealistic, but so, GDPR is made by the regulators themselves, but if companies themselves took the responsibility to do it, would it be better for everyone? I do not know if they would or if it is realistic that they would actually do it.

Interviewee: You could, but in my experience you cannot put legislation in the power of profit creating enterprises because ultimately those two things are at odds with each other in this disastrous post-capitalistic society we live in. There is always the potential for eventually, no matter how good the initial motives are, the profit will always come in and chip away at some awful part of it. That has always been the fear, maybe you can set up a company that maintains its integrity. We have just seemed to decide that all corporations are mentally evil. There are companies that have been around for hundreds of years that have been operated ethically for hundreds of years, man is not fundamentally evil, but let us get off that philosophical subject.

Interviewer: Yeah okay, this interview almost finishes, it is half an hour now. I pretty much have lots of interesting points. I will see if I have one more question, if you have time at least.

I think I have pretty much everything that I would have liked to ask you. Yeah, I think it should be all good, perfect timing actually! But thank you very, very much for your insights.

Interviewee: It was so good to talk to you, are you writing a paper on this, or a thesis what is your?

Interviewer: We are writing a paper, and if I quote you on anything I will ask you first

Interviewee: I will just be very interested to read the paper in general, you seem like a very nice person and I wish you the best of luck with it!

Interview Subject	Theme 1 - Ethical AI as a Product	Theme 2 – Role of Legislation and GDPR
Private Sector Response 1	"I think it's a good tool, the simple fact is that that angle didn't sell ultimately. Its not that people didn't like it, its just not enough on its own. Mate, if we were to have this conversation in ten years time, then once you have mass acceptance of voice assistance in all cars, that's then, when your niche model of a super privacy complaint, anonymous, protective service becomes much more interesting."	"That's a sort of form of GDPR its done in a way where all beurocracy it takes so long just for that one website, that if you were to try and remove all trace of yourself it would take you absolutely forever, for a lot of people it would be very challenging process. So that shows you on the one hand GDPR is powerful but on the other hand its slow and beurocratic just like all other political legislations."

Appendix 2 - Thematic Analysis Matrix

Private Sector Response 2	"But what happens first is you've got to get the blanket acceptance of your product then you've got to get your niche product in to say actually we would like things to be super private. Hang on to that thought because I think it's a super good one, and there's definitely a string potential to market off of that. But not yet."	". I know exactly how easy it is to get into anyones machine or computer, GDPR doesn't do anything if we were a sineceter company and we wanted to listen to people we could do that in so many different ways, that's just the reality of technology"
Private Sector Response 3	"I think its very possible to sell things upon their privacy or independence they pretain, The trouble is that ethos cannot be applied to all products, because some products require a certain kind of understanding and learning to make them better"	"I feel that government agency is absolutely right, it does position EU a little bit further. I don't think they should be clapping themselves on the back saying what a brilliant job we have done, EU govs. But also you colluded with the US the situation where we now "

Digitaliseringsstyrelsen Response 1	"Our standpoint is that it has to ethical and the use has to be responsible, as we believe that is the correct way, but also because we feel that this is the most sustainable in the long run"	"It is about taking control of the development, as there are no regulations, but simply an approach based on principles. I am not sure if you guys have been following lately, but Margrethe Vestager and Von De Leyen have said that within
		the first 100 days they will present something within this area (AI), which are likely to be some regulations. So from EU's point of view, they're saying that it is important for them from the beginning to pinpoint that there is a need for some principles, as there need to be a direction for the development, followed by some regulations so game rules can be established."
Digitaliseringsstyrelsen Response 2	"Yes, I believe it is an advantage in the long-run. To use GDPR as an example once again; initially it was a kickback as you couldn't just advance with your solutions and data sharing. But as it has turned out, it might be a competitive advantage in the future, because there are some sort of convergence that we believe that it is fair that there are some principles, which are reasonable and focuses on data security and privacy."	"To use GDPR as an example once again; initially it was a kickback as you couldn't just advance with your solutions and data sharing. But as it has turned out, it might be a competitive advantage in the future, because there are some sort of convergence that we believe that it is fair that there are some principles, which are reasonable and focuses on data security and privacy"

Digitaliseringsstyrelsen Response 3 "Furthermore, we believe that it will pay of financially if firms apply it in a proper way (ethical AI), as there is a demand for this among the citizens, which I also believe that one can see. Such has been growing since the Snowden case and Cambridge Analytics, where the citizens are turning towards that way the technology has previously been used and demands that for the future it is used in a responsible and trustworthy way."	"As an authority and from a political point of view, it is your task to put up a framework and some guidelines on these things, a sort of direction for the development, instead of expressing that it is all about puttingup as many barriers as possible, if that is your paradigm"
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