Ethical use of artificial intelligence through the Utilitarianism perspective

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ABSTRACT,

AI is thought to be one of the most important technologies for the 21st century. Its development is still ongoing, which requires regulators to stay updated with challenges. In recent years a lot of work has been put in developing the GDPR code, which aims at protecting user's personal information. This is due to the fact that artificial intelligence works with data. However, legal rules are not advanced enough to successfully distinguish between ethical and non-ethical use of artificial intelligence. Even though these systems are extremely useful, certain artificial intelligence processes still remain unknown to both researchers and practitioners, which makes it hard for regulators to keep track with the development of legal actions. This research presents a borderline of ethical and non-ethical use of artificial intelligence through the ethical framework of the Utilitarianism theory. It provides future researchers and practitioners with an ethical matrix tool to assess the use of AI systems by organizations with the purpose of protecting user's private data.

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1. INTRODUCTION

"Artificial intelligence refers to the ability of a computer or a machine to mimic the capabilities of the human mind – learning from examples or experience, recognizing objects, understanding and responding to language, making decisions, solving problems – and combining these and other capabilities to perform functions a human might perform, such as greeting a hotel guest or driving a car." (IBM, 2020). "The global artificial intelligence market is expected to reach $267 billion by 2027." (Business Insights, 2019). In the past few years, there has been an ongoing discussion about the need to obtain some control over AI's capabilities and ethical use because of the many potential threats that it might have on humans. AI is used to achieve certain goals set by people and is evaluated based on performance – is it successful? However, not all developers and analysts are able to fully understand whether the software attains these goals in an ethical way and contradictory to humans, artificial intelligence does not know morality. "One concern in relation to machine learning is that one does not always know how the result is produced... A model will often produce a result without any explanation. The question then arises as to whether it is possible to study the model, and thus find out how it arrived at that specific result." (Frey et al., 2018). Based on this difference a lot of ethical issues arise such as bias, discrimination, achieving goals by doing unintended harm, safety risks and infringing private space. At the end of the day it all comes to choices and with AI being developed by companies for commercial reasons it is now everywhere around us with the presented potential risks. "As of January 2021 there were 4.66 billion active internet users worldwide - 59.5 percent of the global population. The increased number of internet users could allow for the improved development of artificial intelligence due to the more obtainable data available, but also expand the potential risks that come with it. This is the reason why it is extremely important for us people to be fully aware of how any type of potential harm to our privacy could be eliminated. In the following section the objective of this research paper is discussed and how it will be attained.

1.1 Research objective

"According to the Privacy Rights Clearinghouse, 7,859 data breaches have been made public since 2005, exposing billions of records with personal identifiable information (PII) to potential abuse." (Zhe Jin, 2018). Shoshana Zuboff's book 'The Age of Surveillance Capitalism' is one of the main sources to openly discuss the misbehavior of companies with regards to private data of users. "Secrecy was required in order to protect operations designed to be undetectable because they took things from users without asking and employed those illegitimately claimed resources to work in the service of others' purposes." (Zuboff, 2019). Organizations which work with personal data must do it rightfully based on the GDPR ("This Regulation lays down rules relating to the protection of natural persons with regard to the processing of personal data and rules relating to the free movement of personal data." (Magdziarczyk, 2019)). However, in recent years the world has seen that companies could go around these rules. The most vivid example of that is the Facebook - Cambridge Analytica Case, which will be observed later on. Therefore, the problem I want to address and propose a solution for in this paper is: ***Where should be the borderline of an ethical collection and processing of customer's private data by organizations through the use of artificial intelligence?*** Moreover, I will provide an analysis of how artificial intelligence works and what are its potential risks when it is used for commercialization purposes by organizations. Then, I will use the Utilitarianism ethical framework to critically analyze the Cambridge Analytica – Facebook case in order finally develop a matrix tool which will help with distinguishing what is considered ethical and non-ethical use of artificial intelligence systems. This will help with the assessment of right and wrong doings of companies and hopefully provide a future basis for researchers in developing even better frameworks to protect the private space and data of customers. The following sub-research questions will help with the consistent analysis of providing an answer to the main objective. These are as following:

(1) 'What is the difference between ethical and non-ethical activities?'

(2) 'Is it possible for regulators to control the ethical use of artificial intelligence systems?'

First, a scientific literature review will be conducted in order to provide an explanation of what is artificial intelligence and how does it work as well as the Utilitarianism ethical theory perspective which will be used to analyze the case study in order to develop the final assessment matrix. Secondly, expert interviews with professionals in the fields of artificial intelligence, computer science and data analysis will be made. This is very important as it is a prime source of ethical considerations and opinions taken from people working with these systems. After that, a thematic analysis of the data collection and selection will take place in order to finalize the matrix tool and provide a conclusion to the research. Then, the academic and practical relevance of the paper will be discussed as well as the limitations of it and the acknowledgement sections.

2. METHODOLOGY

In this section the ways by which data for this paper was collected, analyzed and validated in order to serve for a solid argumentation in answering the problem statement – "Where should be the borderline of an ethical collection and processing of customers' private data by organizations through the use of artificial intelligence?" is explained. Furthermore, to answer this question data collection was concluded in multiple libraries, websites and statistical sources. The following paragraphs are divided in quantitative and qualitative data collection of the two main fields – Ethics and Artificial Intelligence. The analyzed information from both allowed for the answering of the research question as well as developing the matrix tool.

To start up with the data collection of papers libraries such as Scopus, Google Scholar, Research Gate and the Library of Congress were used. Also, for the collection of statistical data websites like Statista, Data Privacy Manager and others were approached. The search was mostly focused on Ethics, Artificial Intelligence, Customer's privacy and safety as well as legal documents for regulation of robotics such as GDPR and official legal reports from different countries. Of course not all of the found literature was relevant for the topic, so the selection process was a crucial part of finding the correct combination of information in order to answer the problem question. "To be accepted as trustworthy, qualitative researchers must demonstrate that data analysis has been conducted in a precise, consistent, and exhaustive manner through recording, systematizing, and disclosing the methods of analysis with enough detail to enable the reader to determine whether the process is credible." (Nowell et al., 2017). Therefore, in the qualitative data collection mostly the thematic analysis was used. "It is a method for identifying, analyzing, organizing, describing, and reporting themes found within a data set" (Nowell et al., 2017).

The artificial intelligence collection of data was both quantitative and qualitative. Statistics about data privacy and security were taken from Data Privacy Manager, which is a "**well-rounded data privacy platform** that will be used by our clients to provide

them with a single and unique **360 degrees' view** of their customers' personal data lifecycle." (Manager, 2020). It has won the award for the best and most innovative implemented ICT solution in the GDPR category and also conducts its own data collection and statistical analysis. Therefore, this was a main relevant source for quantitative data regards the privacy and security of consumers online. The qualitative data used from official papers was acquired from the aforementioned sources in the literature section. The information that developed the idea for this research is based on Shoshana Zuboff's findings on the way big corporations like Google and Facebook use personal data of customers in order to maximize the value of their business models. This is the reason why the Cambridge Analytica scandal was chosen as a case-study to be looked upon. It involves Facebook as the main source of sensitive personal data collected without the knowledge of its users. Other papers about AI and consumer privacy as well as regulatory legal documents such as the GDPR were analyzed. The aim was to understand how could public and private regulators impact the operations of such companies in order to apply an ethical code among their collection and usage of data activities.

The final source of data is the expert interviews with professionals in the field of artificial intelligence and data analysis. The specific purpose of those will be to dive into the consideration of collection and processing of personal data through the use of AI in order to find out whether it is possible to set a clear line between ethical and non-ethical activities in order to help with the further regulation of organizations. These interviews with professionals are of crucial importance as their opinions about how artificial intelligence systems must be fairly used will be based on their own ethics, which will then be further examined.

The three types of data collected were put together in a way that confronts the collection and use of personal information through artificial intelligence technologies by organizations with the aim of identifying whether these actions are ethical and safe for their consumers as well as how governments and private institutions could regulate them. Therefore, I have created a methodology table to clearly show the extraction and analysis of data for the creation of this research (Figure 1).
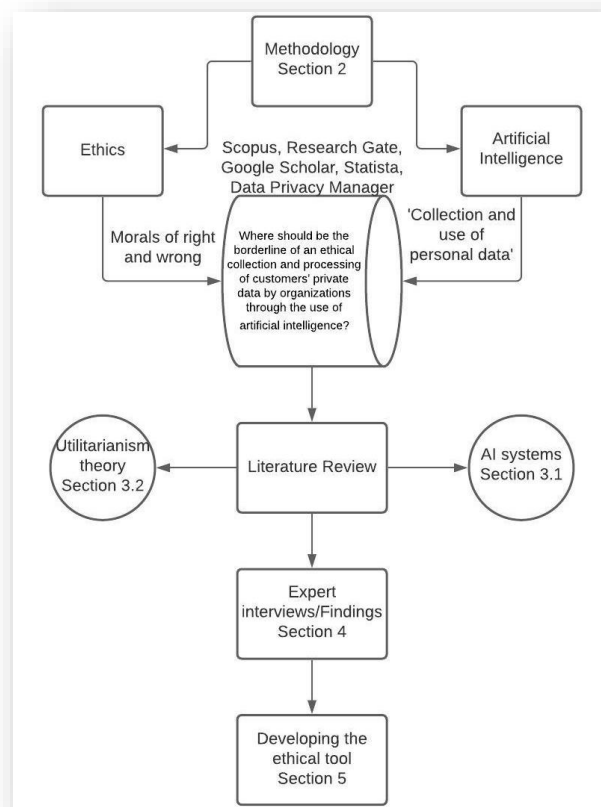

Figure 1. Methodology and data analysis.

3. LITERATURE REVIEW

As stated in the problem statement, AI is a tool that people use and develop to solve certain problems. Even though its nature is to be a self-thinking and self-learning program, its results are still analyzed and proved by people. Therefore, the determination and evaluation of any ethical activities could be pointed to the people in power. Furthermore, the literature review is divided in two main sections describing the different sources used in each – Artificial Intelligence and Ethics. Within Company Law, the GDPR law will be used in the development of the matrix. It contains all of the principles with regards to data collection, usage, and transparency of organizations in the European Union, "as it arguably embodies the new 'gold standard' of cyber-laws." (Andrew & Baker, 2021).

3.1 Artificial intelligence – what is it and how does it work?

Simply put, artificial intelligence is a system that "processes information in order to do something purposeful" (Dignum, 2019). There are different systems of AI methods as "artificial intelligence is an umbrella term that embraces many different types of machine learning" (Frey et al., 2018). The way these systems work is by learning from data by finding patterns and similarities among it in order to react to certain actions. Then it makes predictions about new objectives based on the findings. Looks much similar to the human brain except for the fact that artificial intelligence is far away from being even close to the complexity of our brains. However, the fact that such systems work with computing power allows them to analyze enormous amounts of data in significantly less time than the human brain. "While traditional analytical methods need to be programmed to find connections and links, AI learns from all the data it sees"

(Dignum, 2019). Therefore, the more controlled data we are able to feed the system, the higher chances of it to learn more efficiently and effectively. "The technological trajectory, however, is clear: more and more data will be generated about individuals and will persist under the control of others" (Podesta et al., 2014). With more and more people using the Internet and various number of applications, companies are offered the opportunity to collect more and more data, which has proven to be effective for their success. "54% of executives say that AI solutions have already increased productivity in their businesses." (PWC, 2018). For this reason, artificial intelligence has received a great attention by any kind of organizations – governmental, educational, health-care, business companies and more. "Artificial intelligence is playing an increasingly prominent role in shaping customer expectations. In fact, 62% of customers are open to the use of AI to improve their experiences" (Donegan, 2019). However, there is one problem with two important factors – AI programs can make itself decisions and also they get better through self-learning. As mentioned earlier, artificial intelligence does not know ethics, nor morality. So how could we really trust its working process and the outcomes it creates especially when it is given personal data? "3 in 4 businesses are exploring or implementing AI" (IBM, 2019). Not only that, but could we even be confident in the fairness of how our data is being handled by organizations? Further, AI's processes and ethical decision-making reasoning will be examined in order to see whether its results could be trusted on a moral human level.

Artificial intelligence systems work with different models. "The more training data we can feed into the model, the better the result: this is a typical mantra frequently heard in connection with machine learning. In most instances the computer will require a lot more data than humans do in order to learn the same thing. This currently sets a limit for machine learning, and is compensated for by utilizing considerable amounts of data – often greater than a human being would be able to manage" (Frey et al., 2018). There are a lot of different models, but this paper will focus on one in particular. First, let's present in the figure below what actually is an artificial intelligence model and how it operates.
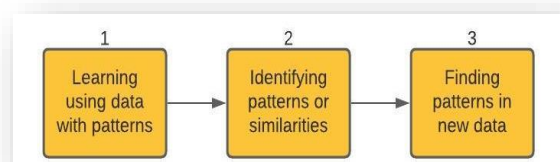

Figure 2. AI process within a model.

Artificial intelligence systems most commonly learn by being given an example data set with already identified patterns and correlations between the different objects and is let to learn that by itself in order to find other ones in new sets of data. The chosen method for this paper is 'deep learning' as it is one of the most complex AI programs, but definitely the best one due to it beating other machine learning ones in a number of different activities (Lecun et al., 2015). "**Deep learning** uses huge neural networks with many layers of processing units, taking advantage of advances in computing power and improved training techniques to learn complex patterns in large amounts of data." (SAS Analytics, 2021). These neural networks are very much similar to the neurons in the human brain. They create links between them in networks in order to learn and come up with a

result. These networks could be immensely big and therefore form the problem of 'the black box' to be addressed in this section. The larger the amount of data, the more connections between neural network components are created. These form the so-called 'layers' between each and every one of them. The AI black box problem refers to the inability of analysts to understand and explain the process of such artificial intelligence model due to its low transparency and complex interrelatedness. "Which features, or which combinations of features, are the most important? A model will often produce a result without any explanation." (Frey et al., 2018). Referring to the first research question 'How exactly does artificial intelligence processes data from users?' the answer is by feeding it a lot of user's data. By now you know that the AI will look for patterns and interrelations within the data in order to come up with a result. But the whole process consists of numerous of decision that the system is supposed to make. The result might be acceptable and useful to the developers as it is obviously noticed by the successful implementation of AI systems, but if even specialists are not able to fully understand the way this program works, how could we ethically assess its work? The main point of this is reached by questioning the transparency and fairness by which companies handle personal data of users through artificial intelligence. "It can be challenging to satisfy the transparency principle in the development and use of artificial intelligence. Firstly, this is because the advanced technology employed is difficult to understand and explain, and secondly because the black box makes it practically impossible to explain how information is correlated and weighted in a specific process." (Frey et al., 2018). Surely, people must set a clear borderline between ethical and non-ethical activities of companies and the technology they are operating with in order to collect and use personal data of customers legally and fairly. Therefore, in the next section the ethical perspective of such activities will be examined to define a comprehensible point of right and wrong.

3.2 Utilitarianism ethical theory perspective

Ethics is the moral principles that a human has, leading his life in every decision he makes. It is the inner governor of right and wrong that everyone possesses. "Ethics should concern all levels of life: acting properly as individuals, creating responsible organizations and governments, and making our society as a whole more ethical." (Bonde & Firenze, 2013). Ethics is a philosophy of what is life, what is the human being and how these two things should be balanced in a way that provides us with what is right and wrong. However, for thousands of years' ethics has been unfinished. This is because every person has a different moral compass, which makes it almost impossible to create a finalized set of rules for what ethics should be. Of course, there is a lot of common, sensible moral features that the majority of people have. For example, things like knowing not to hurt or kill others, helping the ones in need or not lying are just a few out of hundreds, maybe thousands of distinguishable differences that we make in our lives. "Another way to think about the relationship between ethics and morality is to see ethics as providing a rational basis for morality, that is, ethics provides good reasons for why something is moral." (Bonde & Firenze, 2013). For that we have ethics and in this research more specifically – the ethical aspects of artificial intelligence. Until now it has been proven that a machine is not capable of possessing an ethical code, nor a moral compass when it makes decisions. Therefore, it shall be discussed how people are supposed to assess the ethical activities of such machines and also who are the ones to take responsibility for that especially when personal data of users is on the line. Where should be the border separating an ethical and a non-ethical activity when using

artificial intelligence to collect and process the data of customers?

3.2.1 Utilitarianism theory and the Cambridge Analytica – Facebook case

The utilitarianism theory is part of the consequentialists theories, which are concerned with the overall ethical consequences of a particular action. This theory was chosen as artificial intelligence operates with large amounts of users' data and it is a technological tool for people, which is very close to the main idea of this ethical theory - to achieve a greater good for society. The utilitarianism theory "is one of the most common approaches to making ethical decisions, especially decisions with consequences that concern large groups of people, in part because it instructs us to weigh the different amounts of good and bad that will be produced by our action" (Bonde & Firenze, 2013). The assessment of good and bad should be done by the people using the system. For this reason, the GDPR code has been established. Although companies are legally regulated by it, ethics are universally different for everyone. Therefore, there is a possibility of a business formally obeying the GDPR law, but still performing in an unethical way with the data of its customers. As it is still not possible to create an ethical law and it probably never will be, people can only trust organizations, their policies and regulators. However, an unethical usage and processing of data through the use of artificial intelligence still could be punished by the laws in charge. An example of that is the very famous case of Cambridge Analytica, which is a political consultancy company founded in 2013 that "combines the predictive data analytics, behavioral sciences, and innovative ad tech into one award winning approach." (Rathi, 2019). However, in March 2018 a former analyst has publicly come up with a confession that the practices the organization has used in the 2016 US Presidential Election are unethical. Shortly after his recognition Cambridge Analytica goes bankrupt. What the company was able to do is collect Facebooks' user's data with the help of the social media giant. "They are blamed for deceiving consumers in how their data was collected and about identifiable information (FTC). While the data was showing the user a personality score, the firm was harvesting each Facebook User ID to gain insight for voter profiling." (Boerboom, 2020). Cambridge Analytica lied to what information exactly it was going to collect from users and consequently its actions were proven unethical. However, Facebook have a role in this whole thing. The social media company did not read all of the privacy policy information that Cambridge Analytica had proposed to them leading to the organization not knowing about what the political consultancy business was doing. Due to Facebook's poor attention to its own privacy policy, Cambridge Analytica was able to harvest the data of more than 50 million people. "The Federal Trade Commission wanted to be sure that users could be confident in their rights with the platform influencing communication worldwide. Therefore, they issued a $5 Billion fine and demanded a new privacy compliance system which includes two-factor authentication, and other new tools that helps the FTC monitor Facebook in an effort to make a statement about the importance and seriousness concerning data privacy (FTC)." (Boerboom, 2020). This case shows that it will not be possible to fully trust the ethics of organizations with people's personal information. For that to happen successfully, societies need regulators and laws to forbid inappropriate actions. The utilitarianism theory applied for the Cambridge Analytica and Facebook case provides an obvious reasoning of how companies could act in an unethical way with their user's data. A main idea of the theory is "that some good and some bad will necessarily be the result of our action and that the best action will be that which provides the most good or does the least harm, or, to put it another way, produces the greatest balance of good over harm" (Bonde & Firenze, 2013). Obviously, to exploit and put in danger the data of millions of people just to use it for the good of one is definitely against utilitarianism. It is a perfect representation of what Shoshana Zuboff is referring to in her idea of Surveillance Capitalism "This architecture produces a distributed and largely uncontested new expression of power that I christen: 'Big Other.' It is constituted by unexpected and often illegible mechanisms of extraction, commodification, and control that effectively exile persons from their own behavior while producing new markets of behavioral prediction and modification. Surveillance capitalism challenges democratic norms and departs in key ways from the centuries long evolution of market capitalism." (Zuboff, 2015).

3.2.2 Utilitarianism applied in organizational culture

In the book 'Business Ethics' by William H. Shaw the first ethical theory discussed is the Utilitarianism one. By doing an analysis of business cultural ethics through it, the author concluded that this is a very appealing theory as a moral standard for organizations. It is needed to first mention that organizations could be considered moral agents. "If corporations are moral agents, then they can be seen as having obligations and as being morally responsible for their actions, just as individuals are." (Shaw, 2017). Therefore, such entities should have ethical considerations in the performance of their activities. For the successful development of the ethical tool and answering the problem questions of this research, three aspects derived by W. Shaw about Utilitarianism will be mentioned. These are:

- "First, utilitarianism provides a clear and straightforward basis for formulating and testing policies. By utilitarian standards, an organizational policy, decision, or action is good if it promotes the general welfare more than any other alternative."
- "Second, utilitarianism provides an objective and attractive way of resolving conflicts of self-interest. This feature of utilitarianism dramatically contrasts with egoism, which seems incapable of resolving such conflicts… Thus, individuals within organizations make moral decisions and evaluate their actions by appealing to a uniform standard: the general good."
- "Third, utilitarianism provides a flexible, result-oriented approach to moral decision making… This facet of utilitarianism enables organizations to make realistic and workable moral decisions."

These three conclusions made by William Shaw will be used in the development of the ethical tool as a proof of the possibility that an ethical culture could be developed in organizations.

4. EXPERT INTERVIEWS

The expert interviews (5) were conducted with people in the areas of computer science, data analysis and artificial intelligence systems. These findings combined with the literature review will help with providing an answer to the problem statement "*Where should be the borderline of an ethical collection and processing of customer's private data by organizations through the use of artificial intelligence?*". The answer to the questions will be presented as an ethical tool using the Utilitarianism perspective in order to help define ethical and non-ethical usage of AI systems.

First, the people interviewed (3 CS workers, an AI one and a data analysis specialist) agreed that there is a further need for an ethical assessment of how artificial intelligence systems are used by organizations. They believe that collection and usage of customer's private data needs to be controlled more precisely.

Secondly, out of the following given issues – (bias, transparency, security, privacy, human understanding and control) everyone placed transparency and privacy as the most relevant ones. This is a confirmation for the required need to create an ethical tool in order to help with the assessment of organizational activities using artificial intelligence. Then, the three main types of ethical theories (Consequentialist theories, Non-consequentialist theories, Agent-centered theories) were discussed and three of the five people believe that the Consequentialist theories, which include the Utilitarianism theory are relevant for the creation of the intended ethical tool. All of the experts support the use of the GDPR code in the creation of the tool, but do believe that it is not enough when it comes to ethical issues. Three out of the five shared that there are ways to go around the GDPR, which they themselves know of and also said that the way the code has be written could be considered a bit vague. The data analyst interviewee gave an example of how very complex artificial intelligence algorithms could not be explained in a 'plain language' as the GDPR requires. This is another reason why the AI black box section in this research is important for the creation of the ethical tool and a confirmation of why the GDPR code could be irrelevant. Finally, a main answer to what this ethical tool should provide as a solution for a trustworthy conduct of organizations is transparency. Specifically, the AI specialist mentioned that being open about the artificial intelligence system, its use and work with personal data is of highest importance. As ethics is about making decision (good or bad), companies should allow their customers to be completely aware of how their personal data is collected, processed and what are the purposes of its use. The confirmation for a fully trusted and transparent artificial intelligence system is provided by a company concentrated in the creation of such platform.

Overall, the obtained information from these interviews supports the idea of creating an ethical tool and this comes straight from people working in the field of computer science and data analysis. Evaluating their needs and opinions, the following sections is going to show the development of the tool as well as all the reasoning for each step of its creation.

5. CONCLUSION

This research sets the basis for providing guidelines and important aspects of the utilitarian ethical theory applied to the use of artificial intelligence systems developed into a matrix tool meant to assess the borderline of ethical and non-ethical collection and processing of personal data. The borderline will be set simply – following the main idea of the Utilitarianism theory (to do what brings best consequences for society). To do that important aspects should be developed based on the literature review and expert interviews' findings. First, the idea of the theory itself – to do that which will result in the best consequences for society. Therefore, *aspect #1* of the borderline will be 'good consequences for society' on the ethical side and 'bad consequences for society' on the unethical one. 'Consequences' are defined under different dimensions of societal progress:
- health; income; education; happiness; safety (more personal focus)
- economy, technology, environment (more global focus)

Secondly, an analysis of the consequences should be made and how utility is calculated - the right action will be the one that maximizes the average utility of society (McNamee et al., 2001). *Aspect #2* will be about utility calculation based on the previously mentioned dimensions. On the ethical side – the action/s that maximize the average utility of society; on the unethical side – the action/s that do not. Thirdly, the use of personal data for the greater good should only be used with regards to the GDPR code. However, as discussed there are ways

to go around it, which is why organizational ethical culture is of extreme importance. *Aspect #3* is about the need for organizations to implement an ethical culture to ensure regulators that their activities are ethical. This could be done by using the three factors by William Shaw in section 3.2.2. The ethical borderline here is determined on whether these factors are fulfilled or not. Lastly, accountability for transparency and trusted AI systems being used must be held by organizations. *Aspect #4* will be the successful implementation of trusted AI systems with complete understanding of its processes in order to satisfy the transparency requirements of regulators and customers.

The ethical tool (Figure 3) is presented below as ethical activities could be assessed based on these aspects. Answering the problem statement "*Where should be the borderline of an ethical collection and processing of customer's private data by organizations through the use of artificial intelligence?*" is done by using the Utilitarianism perspective to analyze the use of artificial intelligence systems and customer's private data. If all of the aspects in the tool are fulfilled, then the activities of an organization could be considered ethical. If not, then the border is crossed and activities could be unethical.
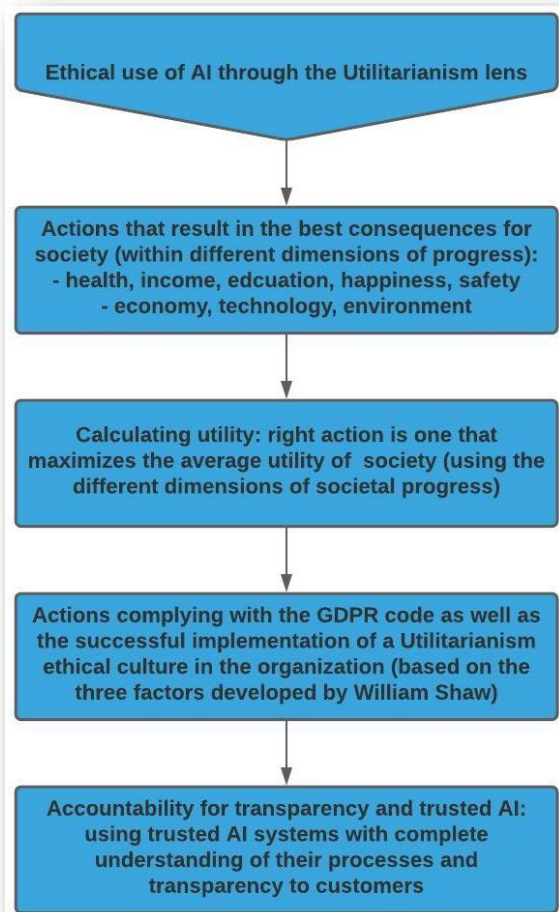

Figure 3. The utilitarian aspects for ethically using artificial intelligence systems.

6. DISCUSSION

This research provides a newly developed ethical tool with the aim of supporting the decision-making and regulation activities of how organizations use artificial intelligence programs when

collecting and processing user's personal data. The Utilitarian ethical theory and the most relevant AI challenges were analyzed in order to fill the gap between morality and technology. The 4 aspects in the tool are novel to how organization's activities could be regulated. The conducted interviews summarized that there is a required need for the GDPR to be updated as technology progresses as well as for trusted AI systems to be implemented. The ethical tool could be very essential for the success of correctly regulating the development and use of AI in the 21st century.

7. IMPLICATION

The academic relevance in this field of study has seen an increased attention. Researchers like Shoshana Zuboff have sparked the realization of how exactly big organizations use artificial intelligence and for what purpose. It is definitely not only interesting to conduct an investigation of the topic, but also important to assess whether these actions are ethical and provide a significant result which could be used as a basis for future researches. The developed matrix on using artificial intelligence systems ethically through the utilitarian lens opens new perspectives on how such organizations could be further regulated.

The practical relevance of the research has a high futuristic scope of helping regulators and researchers out to find a way of restricting unethical use of AI by companies. The integration of artificial intelligence technologies among people in societies is increasing and it is crucial to realize the need for developing stricter rules and an ethical code for it. Therefore, the matrix tool in this paper could be used by private and public regulators to perform an analysis of the ethical collection and usage of private data by companies using artificial intelligence systems.

8. LIMITATIONS

There are two main limitations of this research concerned with the use of the Utilitarianism ethical theory - the future cannot be known certainly, which is one main limitation of whether the consequences will be good or bad. The analysis of good or bad consequences could be complex making one of the aspects in the tool quite hard to assess. However, all consequentialists ethical theories are about the future so this is an inevitable general limitation. The second limitation is that utilitarianism also has trouble accounting for values such as individual rights. This is why the GDPR code is a crucial aspect for the development of this tool as it focuses on the protection of individuals.

9. FURTHER RESEARCH

Artificial intelligence is still being developed which requires the creation of new regulations for its use. Customer's private data and its collection and use by organizations is also an important topic which will receive much more attention in the future. Therefore, the choice of ethical theory and its limitations could be further researched with regards to new developments in AI systems and regulatory codes. The ethical tool created in this research should promote further attention to the ethical concerns behind the use of artificial intelligence and user's personal data. The tool is capable of continuing Shoshana Zuboff's research about how big organizations use customer's data to profit out of it by assessing whether actions of businesses are ethical. More dimensions could be developed in the second step of the matrix. Also, I thought of making a formula for the calculation of the utility, but did not have enough time and resources to do so. This will be a useful aspect to add. The ethical tool could be updated or used as an example of creating new ones using different theoretical perspectives (in my opinion the Agent-centered one will be very interesting). Overall, data is a crucial and there is a required need for those in power to evaluate the ethical considerations behind its use by organizations. More countries and regulators should focus on developing rules and codes to ensure the righteousness of business' operations.

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