

Artificial Intelligence as Enabler in the Marketing Process: A Research Agenda

Alina Isabel Ritter, s1873407

University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

ABSTRACT,

Over the last years the digital transformation of retailing activities has become very important to stay competitive in the increasingly dynamic markets. New technologies came with new implications for marketing activities and opened up many opportunities for better performance. One of them being the use of artificial intelligence. The technologies help the marketers better understand the customers and enables them to target them better and customize the marketing actions and messages. Learning about the impact of AI on marketing is very important in terms of understanding the current technological developments and thinking about their capabilities. The problem is that the developments are quite recent and therefore there is not enough in depths research yet, which makes it difficult for marketers to utilize the technologies. This paper provides a research agenda to the current application of artificial intelligence in marketing practices, future trends and their influence on the future of marketing practices. The paper includes a broad literature review over the topic of artificial intelligence and identifies that future research should be done in the areas of master algorithms, real- life customer interaction, independent machines and strong beyond human artificial intelligence as well as the potential ethical problems that come along.

Graduation Committee members:
Dr. Efthymios Constantinides

Keywords

Artificial intelligence, digital marketing, deep learning, machine learning, advertisement, customer relationship management, innovation

1. INTRODUCTION

Over the last years the digital transformation of the Marketing and in particular of the retailing activities has become very important to stay competitive in the increasingly dynamic markets. New technologies make it possible to increase sales growth, reduce costs, work globally, interact constantly and more direct with the customers (Ilanenko, Ilanenko, Huhlaev, & Martynenko, 2018). Generally speaking, Marketing is the process of promoting the sales of a company's products and services. To be successful the marketers need to understand their customers and learn how to interact with them. Marketing therefore can include many different activities that help the company remain their customer relationships. (Twin, 2019) Thanks to the Internet of Things (IoT) Marketeers have access large amounts of data about the customers, the market or the environment. This data is generated by a range of devices used by customers that are interconnected via the internet. Any of these objects can be "connected, accessed or controlled via the internet", which enables to collection of a lot of data. (Valacich & Schneider, 2016, p. 38) In order to process this Big Data and make use of it we need the help of computers and artificial intelligence. The big data analysis forms the basis for advanced technology developments. They are getting more and more integrated into the daily life of the consumers, analyzing everything they do. (Favaretto, De Clercq, & Bernice Simone Elger, 2019). This helps the marketers better understand the customers and enables them to target them better and customize the marketing actions and messages. The digital transformation of Marketing means that the traditional activities shift towards the digital environment. Digital or e-marketing "can identify, anticipate and satisfy customer needs efficiently" (Chaffey & Smith, 2013, p. 19). One important tool in that environment is the use of artificial intelligence

The main goal of this research is to identify where artificial intelligence is already being used in the marketing activities and what the future holds. The technology enables new forms of marketing. It offers a lot of different tools and it is of importance for marketers to understand them and know when and how to use them to innovate their activities and establish a competitive advantage. Since this topic is trending very strongly right now a lot of professionals are trying to learn more about it. Unfortunately, the research is scattered across all the different dimensions of AI and less generally described but more based on specific cases. Therefore, this paper will provide an overview on the current developments and identify the needs for further in-depth research.

Learning about the impact of AI on marketing is very important in terms of understanding the current technological developments and thinking about their capabilities. Furthermore, it points out the opportunities they provide to develop further and improve efficiency in innovation processes. I think that it is very helpful to learn more about the technologies to fully understand the possibilities they offer, and the research agenda can be used when working on innovation and looking for information on how to incorporate artificial intelligence tools. It can help companies realize the opportunities of artificial intelligence that they can make use of and explain to them how it can improve their practices. The topic is very relevant for businesses since the technology can support and improve their marketing processes towards customer communication and innovation.

This paper will review how artificial intelligence is used to process data in order to improve the marketing practices. Since marketing involves multiple areas I will focus mostly on promotion and advertisement, customer relationship management (CRM) and innovation. In these areas artificial intelligence is being used in combination with traditional marketing practices and other tools to efficiently to improve the processing of information, customer interaction and automation of promotional and innovation activities. To structure the research the following research questions are used:

RQ: How can artificial intelligence improve and support marketing practices?

To answer this question the literature review is structured by the following Sub Questions:

SQ 1: What AI tools are currently used in marketing?

SQ 2: What trends are developing in AI?

SQ 3: How can the trends influence future practices?

The research is based on a systematic literature review. The search key words relate to the research question and sub questions and were used to search for relating literature in the fields of programming, technology, business and behavioral science. In this case it is difficult to only work with scientific research papers on the topic. Most papers have a set focus on more specific problems and their solutions and not necessarily an explanation on the technology in general. Another aspect is that machine learning is part of many different fields. It is not only used in business but also in health science, geography, engineering etc.. Therefore the search for relevant information was expanded towards books and appropriate internet sources as well as a broader scope towards digital marketing articles. I chose to mostly chose literature from the last three years since AI is a fast-developing topic and I wanted to make sure that the information is therefore as recent as possible. However, some more general literature is bit older, but since it explains the concepts more in general, I still consider it relevant for my research.

In the next section the literature will be discussed, and the different technologies explained and put into the context of digital marketing. In the following section the collected data will be summarized and related to the sub research questions. After that the conclusion will be discussed in terms of future developments and limitations.

2. LITERATURE REVIEW

This section is a collection of different literature and is structured by the sub research questions.

2.1 AI tools currently used in marketing

The term artificial intelligence was first termed by the researcher John Mc Carthy in 1956 at a workshop called the "Dartmouth Summer Research Project". Together with other researchers he thought about the future of "thinking machines" that can imitate human. (Marr, 2018) Artificial intelligence means that computers think and act like humans and furthermore augment the capabilities in terms of efficiency. Examples for this are speech recognition, decision making or visual perception. There are different types of artificial

intelligence. Strong AI technologies directly imitate the human behavior process while weak AI technologies are specialized on one narrow task that the computer was taught before (Hammond, 2015). An example for weak AI would be an online poker game, where the computer has been programmed to play certain scenarios (Kumar GN, 2018). Strong AI technologies are in the development and can be differentiated by their functionalities: reactive machines like basic chess robot that has programmed reactions on the other players moves, limited memory systems that make use of some past information for future actions like in chatbots, Theory of Mind AI where the machine can interact socially and interpret human behavior, and self-awareness AI where the machines is identical to a human being. (Kumar GN, 2018)

According to the American Marketing Association “Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.” (American Marketing Association, 2013). It is a collection of different activities that are involved when selling a product or service. Similar to other business activities it has entered the process of digital transformation and is now in the process of

adapting AI tools. Digital Marketing therefore can be viewed as “adaptive, technology-enabled process by which firms collaborate with customers and partners to jointly create, communicate, deliver, and sustain value for all stakeholders” (Kannan & Li, 2017).

The digital transformation describes the changing of processes within organizations through the use of technology. With the introduction of big data companies are enabled to transform the management and retailing style and adopt digital business models that allow them to improve the interaction with other actors like customers, suppliers, partners or employees. Another important aspect of the digital transformation is the change in the consumer behavior. Due to the increase in internet access among the customers there has been a shift towards online retailing. The new mobile technologies replace the need to for personal contact and allow for quicker, more personalized and better service. For the Marketing Practices. Because of this shift in focus many more activities take place online. That means automatic data creation. The data is really valuable for companies and should be used.

Data Mining refers to the process of working through the big data and analyzing it for patterns and correlations. The big data is a collection of historical results gathered all over the internet that can be best described by high volume, velocity, and variety (Perry, 2017) . By working through and analyzing the data marketeers can get useful insights into their, customers the environment or their competitors.

The data collection forms the base for later processes. In these processes one needs to differ between labeling and deep learning. Labeling means that a human works through data and teaches the machine how to recognize a certain aspect (Chui, Manyika, & Schwartz, 2018).

There are multiple possibilities for AI technologies: natural language processing like in email spam software, vision technology where the human eyesight is imitated and augmented to see through walls for example, robotics where engineered machines that help the human performing tasks more efficiently like at an assembly line, and deep learning (Kumar GN, 2018). Deep learning or also called machine learning (ML), enables to convert the endless amounts of data into useful information. It offers a non-linear prediction solution that is not only based on regression and correlation analysis (Lapuschkina, et al., 2019) but more simulates the human learning process. This process can be described by Kolb’s learning cycle.

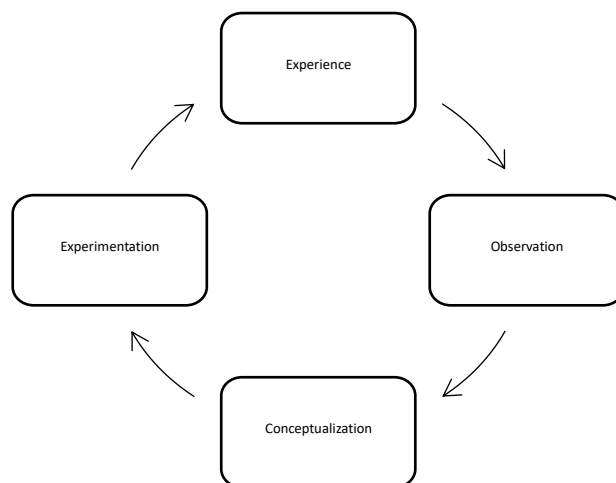


Figure 1. Kolb’s Learning Cycle

Through algorithms the computers autonomously learn and improve their processes based on the data they have gathered and analyzed in their continuous experimentation.

The algorithms are programmed to recognize patterns and trends in the data. The computer learns from the and adopts his practices accordingly. These technologies can be used to automate processes and experiment with solutions and to make predictions about outcomes The more the technology is developing the cheaper it gets to use it, the more it gets adapted (Agrawal, Gans , & Goldfarb, 2018).

The deep learning technology can be used for AI tools like profiling, automation and augmentation of tasks, customization. The tools are based on the information and results of the big data analysis and are offering new opportunities of interaction between the customers and the marketeers. An example for this is the “IBM Watson Customer Experience Analytics” tool. This program can be connected to your company’s website and analyzes all the data. It performs behavioral analytics and identifies the patterns. Based on this the marketeers are enabled to understand their customers interaction with the website and service better and can identify obstacle, drive conversion and improve the satisfaction. (IBM, 2019)

Profiling customers can be sorted into both areas: promotion and CRM. Profiling means “describe(s) customers based on their attributes (...) in order to identify the characteristics of a group of people and describe what they are like.” (Walters & Bekker , 2017). The big data analysis helps the marketeers better understand the customers and enables them to target them better and customize the marketing messages. Before the profiling there is the segmentation step, divided in market and customer segmentation. The market segmentation scans the customers in the market for similarities and sorting them into homogenous groups. This is very useful for marketeers when working on an overall marketing strategy. The customer segmentation is more detailed and takes a look at each customer individually and analyzes their behavior (recency, frequency and monetary value of purchases for example) and their customer value (lifetime customer value). This information is useful in specifically targeting customers. Both types of segmentation aid the profiling by providing sorted information. (Walters & Bekker , 2017). There are different ways of profiling. The demographic profiling, where the analysis is based on demographic categories like gender, age, income, education, etc. These profiles help describing the market and give a direction on how to appeal to

the customers better. Another form of profiling is the behavioral profiling. This approach focuses more on the attitude, use and response of customers when encountering a product. Examples are occasion, benefits, user status or usage rate. The analysis is useful when interacting with existing customers and help with forecasting and predicting user actions. This can be done on existing customers or to analyses potential customers.

AI is used in segmenting and profiling by accessing and working through the data. During the segmentation marketeers use unsupervised machine learning. That means that the algorithms scan the data and looks for similarities and between the entities and groups them based on that. For the profiling they use the supervised machine learning. Here a supervisor gives an input variable and the algorithm scans the selected items for the wanted information. In both cases the AI helps the marketeers to learn about their customer. (Walters & Bekker , 2017)

Customer Relationship Management (CRM) is a very important aspect in marketing. Like many business processes it can be optimized with the help of AI tools. One example for this is the is improving of managing and scheduling the staff in retail shops (Daugherty & Wilson, 2018). Based on the results of the data mining and profiling, deep learning tools can optimize the scheduling and task assignment of the staff to provide the customers with a better service. Furthermore, tools like beacons and service bots can augment the capabilities of the staff and make the stores more customer aware. The stores shift from being handled by humans only to a human-machine collaboration. By implementing enterprise cognitive computing into their service, companies can automate the more repetitive and formulaic tasks to reduce time and increase productivity. (Tarafdar, Beath, & Ross, 2019). These bots provide the advantage that they are dynamic and can learn from new input and change their responses. Furthermore, one digital bot can assist millions of customers at the same time and can evaluate information in seconds. These tools enable the brick and mortar stores to personalize their services to the customer and improve their experience but are also transferrable to the online environment. Companies can track their customer behavior online and can make use of all the data they leave behind. Their learning algorithms form the base of chatbots that offer their services to online customers to help in the case of questions. Furthermore, the gathered information is used for customized recommendation functions and adjustments to the interface to personalize the service. Companies like amazon have taken this another step further by creating smart home assistant that assists the customers at home. The virtual assistant provides help with controlling music or lights within the house but also offers assistance with actions like searching for information, performing digital tasks or purchasing items online. The smart speakers and home assistants offer companies a closer and quicker form of interaction with their customers. The assistant connected to the speaker becomes a companion of the user, that is with them all the time and can track all sorts of actions and develop a profile of them. (Taken Smith, 2018). It is expected that by 2022 around 55% of American households will have a smart speaker (Braiker, 2018). The speakers take over tasks that where performed by smartphones before with the difference that they are able to interact with multiple consumers in the same household at the same time and offer them assistance and advice anywhere they go at any time. Companies can make use of them in multiple ways for their marketing. The direct interacting with the assistant enables an easier search process for general matters but also for product information. The consumers elaborate more on their search when formulating it verbally, which leads to more information that adds to the profiling and the relevance of the

search. Furthermore, the dialogue with the assistant provides opportunities for recommendations and suggestions but also for a more seamless and easier buying process. This can either be done in connection with a certain shop like Amazon and Alexa or as disintermediation. (Taken Smith, 2018). The assistant takes an intermediate position between the consumer and multiple retail platforms while also assisting the consumer throughout his day to day actions (). In return the included algorithm learns from the customer behavior and is able to adjust his service through deep learning. This hyper networking is enabling marketeers to approach their customers in a new way by not only selling a product but also a connected service. Especially when the assistant

In the area of promotion and advertisement AI is mostly used to learn more about the customers and target them more specifically and personalize the messages towards them (Daugherty & Wilson, 2018). When using virtual assistants and smart speakers that requires a shift. Digital advertisement was manly based on the developments of screens, but not all virtual assistants and smart speakers are connected with a screen, furthermore it is one of the main aspects that they offer assistance without screens. The advertisements here need to rely fully on audio messages and the direct voice-based interaction with the customer. The advertisement messages can be sent in two ways direct and indirect. Indirectly they can be integrated into the service actions of the assistant. By monetizing the advice function, the assistant can recommend certain brands and products. The other option is direct advertisement messages that are similar to the commercials on the radio. In this case the assistant would offer the advice without being asked for it. The advantage towards radio announcements is that the consumers build a relationship with the virtual assistant and perceive the message as voiced by a close companion. Furthermore, the assistant can customize and target the message due to his deep knowledge about the customer. The difficult part with the direct messages is that must not be too intrusive. The users need to feel in control of receiving the message and should not feel forced, which is a fine line. Another advertisement option that is provided by the assistants and speakers is based on the direct interaction with the customer. Not only does the algorithm learn from their behavior but the customer has the option to give real time feedback and input on the products and services as well as their own needs and ideas. Again, the voice-based interaction removes boundaries and eases the process. (Taken Smith, 2018)

The main areas of current artificial intelligence tools in marketing can be summarized in the following table:

Profiling (Segmentation)	CRM	Connection	Interaction
-access to data -form knowledge about customers -learn about behavior	-customer aware -personal targeting and customizing -augmented capabilities	-service and products -company and customer -customer and network	-machines and humans - entering everyday life - becoming indispensable

All these categories are interrelated and enable each other.

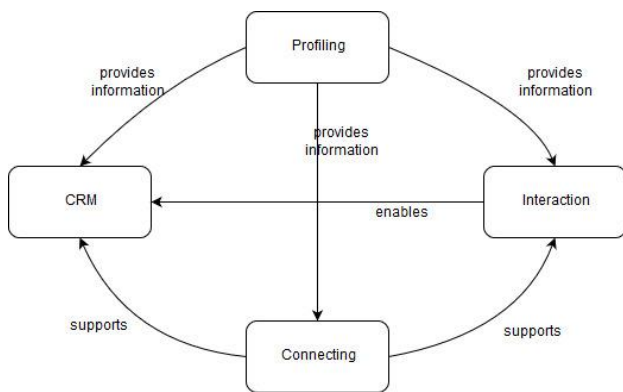


Figure 2. Interrelatedness of AI Marketing categories

2.2 Future trends

Currently the development of AI tools is shifting more towards developing more commercial applications. These are programmed to make the industry more efficient and rely mostly on automation. In comparison to this the development of scientific applications is focused on less. So called platform companies are disrupting the existing industries by being an intermediate platform that connects other applications with each other (Kiron & Unruh, 2018). According to Saher Ghattas from Forbes, the key is to better understand this disruption which is based on three core behaviors of network, the quick and convenient access to information, the one-on-one engagement between customer and service, and the customization of the online experience. (Ghattas, 2018)

A trend that is gaining popularity is the principle of deep reasoning. This is the advanced version of the deep learning. Deep learning algorithms are only able to draw conclusions from the analyzed data on which a human can base a decision. The practitioners define relations beforehand which the machines then generalize over the data. This form of relational reasoning does not necessarily work in the case of small data input or in the case of variations (Santoro, et al., 2017). The next step is to let the computers think themselves. Deep reasoning is supposed to enable machines to not only learn from data to provide knowledge but also use that knowledge to act independently (Kahiri, 2019). An example in the marketing industry the further expansion of the service bots. Where they do not require human input anymore to carry out certain actions but decide themselves if the actions are needed and what exactly to do. Another example would be that computers would be enabled to design and innovate independently as well. Based on what they have learned from previous data they could come up and implement their own solutions without the need for a human researcher. This trend is also connected to the desire of eliminating the labeling/ teaching of machines. The aim is to make the machines more independent and to decrease the human preparation (Chui, Manyika, & Schwartz, 2018). The deep reasoning technology will enable systems like Pedro Domingos' "Core 7" a master algorithm for a fully integrated marketing eco system. In traditional programming an algorithm acts like a key to unlocking technology actions but the problem is that as soon as there is a slight change in the concept the key is useless, and the algorithm needs to be reconfigured. Through the machine learning and reasoning the computer is able to "rapidly change, grow and change when new data is inputted" (Conick, 2017). The master algorithm can be specified to the industry and then be adapted everywhere throughout the industry, augmenting the human workforce. (Conick, 2017)

AI tools are more and more being used in the innovation processes as well. Innovation in any kind is defined by extensive research. The process follows steps of asking questions, making observations, devising a hypothesis, designing and conducting an experiment, collecting data and develop generalized theories which start the cycle again (Daugherty & Wilson, 2018). The process can be optimized by artificial intelligence in multiple ways. It enables the processing of more data, speeds up the process, makes it more cost efficient, takes away the task of retesting and connects to cases outside of the original scope. The computers are able to work through large amounts and can identify more concepts and connections than the human researcher. It enables them to learn from positive outcomes as well as failure and visualize trends easier. The researcher can than base his questions based on these observations. The next step of hypothesizing can be enhanced by AI as well since the computers can analyze more data in shorter time to find correlations and can uncover connections the research would have not been able to make due to the human limitations. Due to its access to so much data the computer can optimize the designing process for solutions as well. Later in the testing stage it relieves the research of the long process of running endless tests and retests with its advanced simulations and forecasting technologies. The computer runs the experiments and immediately analyzes the results and adjusts the experiment accordingly. Throughout these steps the deep learning technology optimizes the research and development. In terms of innovation of product and service design that means that the computer collects and analyses the customer data and therefore creates a better insight into the customer preferences. It enables a more personalized and customizable experience (James & Daugherty, 2018, p. 76).

Another aspect where artificial intelligence is being involved more and more is in the strategy development. Since a company's strategy is based on the key performance indicators, AI can help identify those and support the clarification of the measures. Companies like Google, Amazon or Netflix have been using their algorithms to analyze the needs of their customers and rely heavily on the data for their strategy formation. (Schrage & Kiron, 2019)

2.3 Influence on Future Practices

Overarching over the new developments, one can say that artificial intelligence is developing "beyond human" capabilities, that will make human interactions sort of obsolete since the computers perform better. For the humans it will become more convenient to adjust to machines and let them take over. (Conick, 2017)

The previously mentioned technologies are constantly growing and developing further.

With the further developments in the technologies some **changes** will come along as well. More machine applications in the service area will lead to fewer **human** personnel being needed. Furthermore, it will lead to certain changes in the lifestyle of people since the computers are becoming more and more involved in their daily life. The people would adjust their day towards the technology ore and more and this would lead to further changes within the market and further develop the industry. Based on this new needs and demands will arise and others will lose their importance. Furthermore, it will come with a shift in the decision-making process from human employees to machines (Conick, 2017).

Along with the changes there will be quiet some **problems** that come along with the new technologies.

The biggest concerns that come with the further technological development are about the loss of the human touch. The growing automation of tasks leads to less human involvement. Even though this might make the tasks quicker, cheaper and optimizes the outcomes, consumers are concerned whether they want machines to take over. They do not trust the machines to make ethical decisions based on the fact that the decisions come from logical algorithms and not individuals that have a personality and feel empathy. Furthermore, not all customers feel comfortable missing out on the human interaction. They are concerned that the missing interpersonal contact will isolate individuals more and change the society too much. Not only the machines are lacking the human touch, but a growing concern is the decrease in self reflecting and moral behavior. Because the direct human interaction is replaced more and more by AI powered service tools the customers do not have to control their responses and act compassionated. The moral checking mechanism that balances between shaping the world to the personal needs and adjusting one own behavior to the environment is not trained anymore. (Friedland, 2019)

Most AI tools automate human tasks, to make them more efficient, cheaper or faster. In that way the tools start replacing the humans workers in certain areas, therefore we can expect that AI automation will create more unemployment than it will create new jobs (Kiron & Unruh, 2018). The general opinion is that through the technical innovations new industries will be created that will offer new employment opportunities to replace the ones that are lost through the automation. Companies therefore need to understand the changes and work out what type of skills they will require and communicate this to the public (Davenport & Barro, 2019). An example for this is the development of self-driving cars, where scientists are “teaching” the machines how to recognize cars by analyzing video images (Chui, Manyika, & Schwartz, 2018) Since the current developments in AI are more in the direction of commercial applications and less on scientific applications, it seems like there is no space for more employment (Kiron & Unruh, 2018). According to Conick the human marketeers will become more involved in “redefining and negotiating the boundaries” between humans and machines. (Conick, 2017)

Since artificial intelligence is still quite a recent addition to the business practices like marketing and because it constantly developing the technology bares some risks that can impact the future of their application. The previously mentioned changes and problems can lead to privacy violations, discrimination, accidents or manipulation. In return these effects lead to unintentional consequences for individuals, government, and the organization. Examples for the organizational consequences are reputational damage, revenue loss, regulatory backlash, criminal investigation, and a loss in public trust. The pitfall of AI tools is the overlooking of risk and the overestimation of capabilities. To avoid this the marketeers, need to work with a multidisciplinary approach of staying risk aware. (Cheatham, Javanmardian, & Samandari, 2019) The more the technologies develop the more risks are possible.

Since the AI augmented process are about the close interaction of humans and machines. All the tools are based on analyzing data. This data is being gathered from direct customer input but also from traces the customers leave when using technology. Due to the intrusiveness of the information collection a lot of ethical concerns stand against the use of AI technology.

One problematic arising here is the privacy. The data is constantly collected and most of the time the customer is not aware of it in that moment. That means the machine knows everything about them since there is no way if keeping actions private when using computers and machines the daily life. In recent years the public concerns about the privacy of personal information has been discussed more and more. Especially in terms of machines collecting information on their online behavior and companies making use of that information. Privacy covers a range of values that consumers feel hesitant for example physical security, liberty, autonomy, intimacy, dignity, identity, and equality (Francis & Francis, 2014). New privacy regulations for websites have been drawn up informing the user about the cookies and asking them to accept the conditions, fully disclosing what the collected data will and will not be used for. Even though the users are now informed about the data collection they do not necessarily feel comfortable with being observed the whole time. Especially in the case of AI technology augmenting and assisting in the non-online life. Virtual shop assistant and smart home systems collect data on them non-stop, even in their private homes while they are not actively feeding the information. Consumers are worried that they are under constant surveillance and have no option to privacy anymore. These concerns can interfere with the development and use of AI tools and marketing tools since they are based on collecting and analyzing more customer information especially the one, he is not actively sharing to help marketeers get a better understanding of the customer and to enable customized marketing messages. Another possible drawback is that asking for the consent of user to collect their information may lead to consent bias, that means that the consumers might behave differently knowing that their behavior is monitored, not necessarily because they want to mess with the results of the analysis but because they want to make a good impression like in real life. (Ioannidis, 2013)

Another ethical issue is about control and trust. Along with the concerns about the privacy of personal information comes the worries about misuse of the collected information. Even if they are aware that the information is collected, they do not trust that it will be handled with care, especially with hacking, fraud, spam and online scams being a constant danger. Due to the loss of the human touch the consumers feel less in control which leads to trust issues. (Constantinides, 2004) . These problems should be handled with care by marketeers since, scandals of misuse will hurt the success of AI connected products and services, which is what they need to connect better with their customers.

Problems and limitations should not confine the development of technology. They should be viewed as challenges to improve current practices. When looking at the challenges of AI tools in marketing practices there are possibilities to avoid scandals.

In terms of the loss in human touch, the development towards a more human appearance of the machines will become very helpful. There is already quiet some progress especially in the areas of virtual assistants. Providers are giving their assistants names and characteristics to create a personality. Furthermore, the development of the voice responded is in a constant cycle of improvement to give the impression that the user is interacting with a real-life human being. Looking towards the future, developers are looking into making those personalities even more flexible and dynamic to offer more customized experiences according to the customers preferences, to make them feel even more comfortable interacting with the computers behind the assistant. Deep reasoning technology works on features that enable to the assistant to support them human customer in the

actions, like a good companion would, to make it easier for them to act and therefore generate more relevant data for marketing processes. Marketeers should keep this in mind when using AI technology that at the human contact points they need to use these tools to ensure that the customer experience does not feel too digital and in-human.

Concerning the problems on the labor market there is no doubt that it will change.

Looking at the ethical concerns there is no full solution but more a too keeping the scandals within limits. Companies should expand their ethical risk sweeping to the technology they are using not only within in their products but also within their services and marketing practices. By supporting the awareness of possible privacy and control concerns, marketers can on the one hand prevent them from becoming problems and on the other hand prevent the concerns from arising in the first place. By closely examining the concerns by looking at their origins and learning from past experiences and other examples the marketeers can avoid scandals. At the moment the main reason for the big concerns seems to lack of knowledge what happens to the gathered data. To prevent this uncertainty decreasing the use, companies try to create more transparency on how they work and what they do with the information. Furthermore, privacy policies have been obligated giving the customer more information and offering to opt-out which makes them feel more in-control by having the option to stay private, even if they choose not to.

3. CONCLUSION

3.1 Review of Findings

The main goal of this paper is to identify how artificial intelligence can improve and support marketing practices? For that we looked at the current use of AI tools in marketing, developing trends and their influences on future practices.

The results can be summarized in this table:

SQ 1	SQ 2	SQ 3
What AI tools are currently used in marketing?	What trends are developing in AI?	How can the trends influence future practices?
<u>Deep learning and Labeling</u> -profiling -CRM (automation and augmentation of services) -targeting and customizing -connecting multiple layers -interaction in everyday life	<u>Deep reasoning (Independent machines)</u> -more customization -intense customer interaction -improvement of innovation and strategy -connecting and networking between different actors	<u>Changes in customer behavior</u> -new needs -loss of human touch - more concerns - new consequences

Track and Learn more about customers.	More interaction and connection	More information, more possibilities = more risk and problems
---------------------------------------	---------------------------------	---

Artificial intelligence tools are important to make sure that a company stays competitive and efficient in today's dynamic environment. The tools are adapted to the existing marketing practices to augment capabilities and automate tasks. Overall the digital transformation has led to a shift in focus of the practices. Due to the big availability of data new dimensions of analysis are available. Deep learning and labeling tools enable more detailed profiling of customers and the environment. This information can be used to improve the customer relationship management on multiple levels. Employees in the physical and digital business environment are able to work more efficiently and service can be better targeted and customized to the customers and their needs. In return more data is generated and collected that than again will be used to improve the interaction with the customers for example through personal service bots that not only assist during the shopping experience but connect the everyday life at home to companies and their products and services, customizing the marketing approach even more.

The future for artificial intelligence tools is all about further supporting the shift towards the more digital environment. Business is developing to be more connecting and networking between different services than only commercializing the own capabilities. The focus lies on understanding the customers' needs for access, engagement and customization to improve the interaction between them and organizations. In terms of automating tasks and augmenting capabilities, research is going into deep reasoning and independent machine actions that make the internal marketing processes more efficient. Especially in the field of innovation and strategy development the independent computers can help out a lot and enable new opportunities.

These new developments will have quiet an impact on the future of marketing. The changes in technology will lead to a change in customer behavior as well which means that they have different needs and demands. Another aspect is fewer human personnel employed in the marketing processes. This will not only influence the shift in the labor forces but also decrease the human and personal touch. The concerns are that machines lack the ability for moral behavior and reasonable decisions.

Furthermore, since the technologies are still very new and still developing there can be quite a few unforeseen consequences affecting not only the organizations but also the individuals and government which in return influence the organization as well. Issues in terms of privacy and the loss of trust and control are quiet dominant. In order to prevent these consequences from negatively affecting the business and failing the technologies marketeers need to actively create awareness for potential pitfalls and include different perspectives in their risk analysis.

Overall it can be concluded that currently artificial intelligence is to gather information about customers and use it to interact with them on a more targeted and personalized level. The technologies are developing towards even more and better customization and independent machines. For the future of marketing practices that means that there will be more information available and more ways to interact with the customers but also more problems due to increased concerns about the high involvement of machines.

4. DISCUSSION

This section will reflect on the findings and discuss implications for future research as well as the limitations to the outcome.

4.1 Reflection

In my there is still a lot to come in this field. As far as artificial intelligence has been implemented in the field of marketing practices it has been done within limits of not changing too radically. This is very reasonable since than the change comes naturally and in cooperation with the developments in the customer behavior and environmental factors. Marketing Processes can profit quiet strongly from further implementing the technologies and developing their approaches. It helps marketeers to get more insight into the black box that is between the company and its customers. Furthermore, I think that over time the customers will learn to appreciate the opportunities that artificial intelligence provides in terms of interaction with companies and their products and services. As with everything new and unknow there are a lot of concerns and insecurities in the beginning. But if the researchers address them right and develop their practices in accordance, they can lower the barriers and gain the appreciation of the customers.

4.2 Research Agenda

As mentioned before the trend of the use of AI tools in marketing practices is towards more independent machine actions to provide more customization and more intense customer interaction. This will require more in-depth research in multiple areas. One of these is along the programming of a “Master Algorithm”. Not only does this topic require more investors but also more dedicated research. The programmers need to look into the technical features and possibilities of such an algorithm and the marketeers need to develop a concept on how they want to use it, define the boundaries for the industries and evaluate implementations. The questions that arise than are whether a master algorithm is as useful and effective as imagined and how it will change marketing practices and the market environment again.

Another important research aspect for the future is the concept of real-life interaction with the customers. This refers to further developments with personal assistants. Marketers need to put more research into where they can interact with consumers during their everyday aspects. The research needs to look into the different opportunities a personal assistant offers and how they can use them for marketing messages. Furthermore, they need to think about how to address the customers appropriately without interfering with personal space, privacy, and or becoming too intrusive. This will require studies into customer behavior and needs. The research needs to focus on understanding the changing customer profile and their new needs and demands to make sure that the technologies are met with understanding and appreciation.

Researchers also need to look more into the strong AI technologies like the Theory of Mind for Human Interaction and self-aware AI. These functions are still very raw. With these technologies marketing processes will shift more towards becoming “beyond human” and creating more opportunities in the area. For researchers it will become very interesting to look into implications that will carry for the different actors in business like customers, government, marketeers or computer programmers.

The general question now is, how to prevent the problems that come along with the independent technologies from having

negative impact on the further development. Future research needs to look into customers and the one-on-one interaction, and the ethical concerns involved. The research can either focus on the direct interaction with the customer or the indirect consequences for the market environment like labor, rules and regulations and technological requirements.

Overall it can be said that future research should be done in the areas of master algorithms, real- life customer interaction, independent machines and strong beyond human artificial intelligence as well as the potential ethical problems that come along.

4.3 Limitations

The limitations to this study refer to the fact that the subject of artificial intelligence is quite new, very broad and dynamic. That means that not much academic study has been done on the subject and if it is it either already too old and not reflective of the current state anymore or it is too specifically focused on another area of artificial intelligence. Additionally, a lot of the knowledge is based on common sense and relating of different sources done by the author and therefore hard to reference.

5. ACKNOLOGEMENTS

In this part of the paper I would like to say a few words of thank you. I would like to thank the teachers and supervisors at the university for teaching me over the last years. Thank you also to my friends for giving me advice and input and to my family for always supporting me in my work. A special thanks goes to Dr. Efthymios Constantinides for being my supervisor and helping me with my research and trying his best to guide me through the process.

6. REFERENCES

- Kannan, P., & Li, A. (2017). Digital marketing: A framework, review and research agenda. *International Journal of Research in Marketing*, 34(1), 22-45. Retrieved from https://www.researchgate.net/publication/311393872_Digital_marketing_A_framework_review_and_research_agenda
- Agrawal, A., Gans , J., & Goldfarb, A. (2018). *Prediction Machines: the simple economics of artificial intelligence*. Boston Massachusetts: Harvard Business Review Press.
- American Marketing Association. (2013, July). *Definitions of Marketing*. Retrieved June 07, 2019, from American Marketing Association: <https://www.ama.org/the-definition-of-marketing/>
- Braiker, B. (2018, January 12). *Ad Lib: What Really Works in Voice -- and Why Google is Smarter Than Amazon*. Retrieved May 25, 2019, from AdAge: <https://adage.com/article/podcasts/ad-lib-fresh-digital-s-doug-robinson-works-voice/311928>
- Chaffey, D., & Smith, P. (2013). *Emarketing excellence: planning and optimizing your digital marketing* (4th ed.). Oxon: Routledge.
- Cheatham, B., Javanmardian, K., & Samandari, H. (2019, April). *Confronting the risks of artificial intelligence. McKinsey Quarterly*. Retrieved June 17, 2019, from <https://www.mckinsey.com/business->

- functions/mckinsey-analytics/our-insights/confronting-the-risks-of-artificial-intelligence
- Chui, M., Manyika, J., & Schwartz, D. (2018). The real-world potential and limitations of artificial intelligence. *McKinsey Quarterly*. Retrieved June 17, 2019, from <https://www.mckinsey.com/featured-insights/artificial-intelligence/the-real-world-potential-and-limitations-of-artificial-intelligence>
- Conick, H. (2017, December 1). *The Past, Present and Future of AI in Marketing*. Retrieved June 26, 2019, from American Marketing Association: <https://www.ama.org/marketing-news/the-past-present-and-future-of-ai-in-marketing/>
- Constantinides, E. (2004). Influencing the online consumer's behavior: the Web experience. *Emerald Insight*, 14(2), 111-126. Retrieved from <https://doi.org/10.1108/10662240410530835>
- Daugherty, P. R., & Wilson, H. (2018). *Human+machine:reimagining work in the age of AI*. Boston, Massachusetts: Harvard Business Review Press.
- Davenport, T., & Barro, S. (2019). People and Machines: Partners in Innovation. *MIT Sloan Management Review*. Retrieved June 17, 2019, from <https://sloanreview.mit.edu/article/people-and-machines-partners-in-innovation/>
- Favaretto, M., De Clercq, E., & Bernice Simone Elger, B. (2019, February 5). Big Data and discrimination: perils, promises and solutions. A systematic review. *Journal of Big Data*, 6(12), 27. Retrieved from <https://journalofbigdata.springeropen.com/articles/10.1186/s40537-019-0177-4>
- Francis, J. G., & Francis, L. P. (2014). Privacy, Confidentiality, and Justice. *Journal of Social Philosophy*, 45(3), 408–431. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/josp.12070>
- Friedland, J. (2019, June 11). AI Can Help Us Live More Deliberately. *MIT Sloan Management Review*. Retrieved June 17, 2019, from <https://sloanreview.mit.edu/article/ai-can-help-us-live-more-deliberately/>
- Ghattas, S. (2018, March 28). *What Is The Future Of Digital Marketing?* Retrieved June 10, 2019, from Forbes: <https://www.forbes.com/sites/forbesagencycouncil/2018/03/28/what-is-the-future-of-digital-marketing/#4ab3d75031e3>
- Hammond, K. (2015, April 10). *What is artificial intelligence?* Retrieved June 28, 2019, from Computer World: <https://www.computerworld.com/article/2906336/wh-at-is-artificial-intelligence.html>
- Ianenko, M., Ianenko, M., Huhlaev, D., & Martynenko, O. (2018). Digital transformation of trade: problems and prospects of marketing. *IOP Conference Series: Materials Science and Engineering*, 497, 5. Retrieved from <https://iopscience.iop.org/article/10.1088/1757-899X/497/1/012118>
- IBM. (2019). *IBM Watson Customer Experience Analytics*. Retrieved from IBM: <https://www.ibm.com/nl-en/marketplace/customer-experience-analytics>
- Ioannidis, J. (2013, March 20). Informed Consent, Big Data, and the Oxymoron of Research That Is Not Research. *The American Journal of Bioethics*, 4, 40-42.
- Kahiri, A. (2019, April 10). *What's Next For AI? Enter: Deep Reasoning*. Retrieved May 04, 2019, from Towards Data Science: <https://towardsdatascience.com/whats-next-for-ai-enter-deep-reasoning-fae8b131962a>
- Kiron, D., & Unruh, G. (2018, January 23). How AI Will Define New Industries. *MIT Sloan Management Review*. Retrieved June 14, 2019, from <https://sloanreview.mit.edu/article/how-ai-will-define-new-industries/>
- Kumar GN, C. (2018, August 31). *Artificial Intelligence: Definition, Types, Examples, Technologies*. Retrieved June 28, 2019, from Medium: <https://medium.com/@chethankumargn/artificial-intelligence-definition-types-examples-technologies-962ea75c7b9b>
- Lapuschkin, S., Wäldchen, S., Binder, A., Montavon, G., Samek, W., & Müller, K.-R. (2019, March 11). Unmasking Clever Hans predictors and assessing what machines really learn. *Nature Communications*, 10. Retrieved from <https://www.nature.com/articles/s41467-019-08987-4>
- Marr, B. (2018, February 14). *The Key Definitions Of Artificial Intelligence (AI) That Explain Its Importance*. Retrieved June 28, 2019, from Forbes: <https://www.forbes.com/sites/bernardmarr/2018/02/14/the-key-definitions-of-artificial-intelligence-ai-that-explain-its-importance/#2e9da44d4f5d>
- Perry, J. S. (2017, May 22). *What is big data? More than volume, velocity and variety....* Retrieved 05 16, 2019, from IBM Developer: <https://developer.ibm.com/dwblog/2017/what-is-big-data-insight/>
- Santoro, A., Raposo, D., Barrett, D., Malinowski, M., Pascan, R., Battagli, P., & Lillicrap, T. (2017). *A simple neural network module for relational reasoning*. London, United Kingdom: Deep Mind. Retrieved from <https://arxiv.org/abs/1706.01427>
- Schrage, M., & Kiron, D. (2019, June 11). Strategy For and With AI. *MIT Sloan Management Review*. Retrieved from <https://sloanreview.mit.edu/article/strategy-for-and-with-ai/>
- Taken Smith, K. (2018). Marketing via smart speakers: what should Alexa say ? *Journal of Strategic Marketing*. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/0965254X.2018.1541924>
- Tarafdar, M., Beath, C., & Ross, J. (2019, June 11). Using AI to Enhance Business Operations. *MIT Sloan Management Review*. Retrieved June 17, 2019, from <https://sloanreview.mit.edu/article/using-ai-to-enhance-business-operations/>
- Twin, A. (2019, June 25). *Marketing*. Retrieved June 29, 2019, from Investopedia: <https://www.investopedia.com/terms/m/marketing.asp>
- Valacich, J., & Schneider, C. (2016). *Information Systems Today: Managing the Digital World* (7th ed.). Essex: Pearson Education Limited.
- Walters, M., & Bekker, J. (2017). Customer Super-Profiling Demonstrator To Enable Efficient Targeting In

Marketing Campaigns. *South African Journal of Industrial Engineering*, 28(3). Retrieved from

http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2224-78902017000300011