THE INFLUENCE OF ARTIFICIAL INTELLIGENCE ON DIGITAL MARKETING AND IN-STORE CUSTOMER EXPERIENCE IN THE RETAIL INDUSTRY THROUGH THE PROSPECTED DEVELOPMENTS

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Executive Summary

This research investigates the influences of Artificial Intelligence on future marketing tools for the retail industry. Not only in the digital marketing industry but also customer experiences during these procedures. With the boom of e-commerce, the evolution of technology and the transformation of shopping habits, physical stores are faced with the challenge of digitization. Retail stores have to start adapting to these fast changes by implementing digital tools to maximize the potential of commercial spaces. They must offer visitors a unique and immersive experience to achieve a better brand visibility.

Many marketers are not fully aware of the importance of Artificial Intelligence in their marketing strategies. Implementing AI will keep you on a competitive level. Experts have mentioned that they started working and learning about this tool, 4-5 years ago. It is time for retailers to help consumers to find the right products on the right moment. Through this research is found that future marketing will be predictive commerce. Predictive ecommerce requires the merge of understanding human behavior with large data integration done by Artificial Intelligence. By analyzing data patterns from immense databases, we are able to detect purchase histories, product preferences and forecast demand. There is a strong relationship between the online and offline marketing industry. The right use of online marketing through AI, is creating more conversion towards the store because users receive a personalized promotion, mail or advert.

We are moving towards a personalized world, a world where future purchases can be predicted, where online and offline shopping are strongly related to each other and where the consumer does not have to think about which products could potentially suit him or her best. We will be provided with personalized stores for every individual. The prediction is that every individual will have its own personal store of the future.
Privacy laws remain a big concern for most marketers. The popularity of Artificial Intelligence grows exponentially with the confusion about data protection laws. Companies must be transparent about the actions that are taken to gather consumer information.

This research gives marketers in the retail industry, an insight of how marketing is predicted to develop through the prospected developments.

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Definitions

Artificial Intelligence

‘’The theory and development of computer systems that are able to perform tasks that require human intelligence such as visual perception, speech recognition, decision-making and data analyses.’’ (Webster, 2019)

Machine Learning

‘’Automates analytical model building. It uses methods from neural networks, statistics, operations research and physics to find hidden insights in data without explicitly being programmed for where to look or what to conclude.’’

A Neural Network

‘’A type of machine learning that is made up of interconnected units (like neurons) that processes information by responding to external inputs, relaying information between each unit. The process requires multiple passes at the data to find connections and derive meaning from undefined data.’’

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. Common applications include image and speech recognition.’’

Cognitive Computing

‘’A subfield of AI that strives for a natural, human-like interaction with machines. Using AI and cognitive computing, the ultimate goal is for a machine to simulate human processes through the ability to interpret images and speech – and then speak coherently in response.’’

Computer Vision

‘’Relies on pattern recognition and deep learning to recognize what’s in a picture or video. When machines can process, analyze and understand images, they can capture images or videos in real time and interpret their surroundings.’’

Natural Language Processing (NPL)

‘’The ability of computers to analyze, understand and generate human language, including speech. The next stage of NLP is natural language interaction, which allows humans to communicate with computers using normal, everyday language to perform tasks.’’

(Institute, SAS The Power To Know , 2019)

1 Introduction

''The science and engineering of making intelligent machines, especially intelligent computer programs'' – John McCarthy-

In the 21st century technological advancements have taken place more than ever before. Not everything is done manually anymore. A lot of processes are now done by machines and other automatic software technologies. Artificial Intelligence plays a big role in the future atomization of processes. Now, AI systems are able to do simple and complex problem solving without any human interaction.

The definition of Artificial Intelligence according to Venkat Venkataramani;
''AI is the craft of having computers make decisions without providing explicit instructions, thereby allowing the computers to make pattern match complex situations and predict what will happen.''- Venkat Venkataramani (Venkataramani, 2019)

AI has been steadily influencing numerous industries throughout 2017 and 2018, improving the way businesses carry out certain processes. One of the most hit industries remains agriculture, due to the suffering labor shortages. Second in place is the call center industry, with the use of automated chat bots to help customers with questions. (Roe, 2018) The third one, the most relevant one for this research is customer experience.

Retail is the most prevalent sector leveraging Artificial Intelligence today. Travel companies are a good example. They are interacting with customers through chat bots to create a personalized concierge level service at scale. AI is a very trending and upcoming topic in the retail industry, yet many companies are confused about the concept and how to adapt to this new technological trend. Through Artificial Intelligence we are able to get more work done, faster. The main motives behind AI are; error free and efficiency.

Artificial Intelligence and digital marketing are beginning to go hand in hand. The ability to collect data, analyze it, apply it and then learn from AI, is transforming the digital strategy. As it continues to advance, so will capabilities to use it to improve digital marketing strategies and valuable customer insights for companies.

According to Shinn S. (2017) ‘’The In Human Touch: Educators Teach the Nuances of Artificial Intelligence’’ the emerge of the concept of AI received great attention invading the society’s consciousness. In recent times, it is receiving massive discussions and some of the global consumers are quickly accepting its idea due to the frequent exposure. Many of the consumers interacted with the notions of AI through reading them in media channels or having personal experiences. Through this, the consumers gained confidence in the matter, especially if it leaves a positive impression.

With the increasing know how of AI, consumers are afraid of the artificial intelligence capabilities and potential associated with taking over all aspects of life. The tension resulting from accepting aspects of AI relates to its confusing nature. To prove this, Grewal D. (2017) ‘’The Future of Retailing: Journal of Retailing’’ conducted a survey and out of the 60% of the international consumers, 18% claimed to know much about it while 48% knew little. The remaining 34% admitted to knowing nothing about the topic. Even with these results, it is true that a huge percentage of consumers think that they are knowledgeable as far as AI is concerned but actually most of them could not even identify with its simplest abilities such as problem solving and learning.

Currently not all marketers are fully aware of the potential Artificial Intelligence might have in their respective marketing field. AI could give marketers the possibility to collect and analyze immense amounts of data in no time. This means that the technology behind Artificial Intelligence can give a retail company the opportunity to analyze customer data effortless which is not yet possible.

The data that is collected by AI, is analyzed and transformed into personalized customer recommendations without any human interaction.
Artificial Intelligence can help businesses and marketers to stay ahead of the curve. The more one knows about your consumer and how they behave in-stores, the more one can adapt your business and marketing strategies towards their needs.
Therefore, the main purpose of this dissertation is to give marketers the insight of the current and future possibilities AI can have for marketing practices in the retail industry.

We ask ourselves what exactly is the relationship between Artificial Intelligence and the retail industry? And how will future changes of technology influence buying patterns of consumers?

We want to find out how Artificial Intelligence is impacting the possibility of immense data collection and what marketers could potentially improve in their targeting strategies.
This dissertation will answer the following hypothesis question:
''The influence of Artificial Intelligence on Digital Marketing and in-store customer experience through its prospected developments.''

Sub-questions for the research topic are;

1. What exactly is Artificial Intelligence and Machine Learning?
2. How does Artificial Intelligence work?
3. What are the applications of Artificial Intelligence in the Marketing industry of Retail?
4. What do real-time employed experts think about this trending technological innovation?

These different research questions will be a guide through the dissertation and give great support towards the answer of the hypothesis question.
Through the use of primary and secondary sources, data will be gathered and a conclusion will be formed. The research methods used for this dissertation are; in-depth interviews which are the primary source. For the secondary resources, EBSCO, Google Scholar, online reliable articles and case studies will be used, see chapter 3: *''Methodology''*.

2 Literature Review

2.1 Artificial Intelligence and Machine Learning defined

Artificial Intelligence

The term Artificial Intelligence was used for the first time in 1956 by John McCarthy, an American Informatician and mathematician. The term itself refers to machines that demonstrate intelligence which makes them capable of performing tasks that normally require human intelligence (ex. Understanding human language, problem solving) (Manago, 2017). Artificial Intelligence can only be applied if there is sufficient data available for it to be analyzed.

''The ability of a computer to understand what you are asking and then infer the best possible answer from all the available evidence'' – Peter Diamandis (Diamandis, 2016)

AI systems are mainly developed to make a guess about an incomplete or uncertain type of information. Most data sets are enormous, this is where AI comes in and tries to apply human thinking to solve this particular issue. Machine learning is one of AI's biggest aspects. Machine learning means that a computer can teach itself from previous experience.

Machine Learning

Machine learning, is a term that was mentioned first in 1959 by Arthur Samuel. The definition according to Sales Manago is that machine learning is the ability to learn without being programmed. The process means that a machine can educate an algorithm. With educating is meant that the algorithm can learn due to previous experiences.

An example of machine learning is face recognition. It is a core part of Artificial Intelligence. Learning without any kind of supervision requires an ability to identify patterns in streams of inputs, whereas learning with adequate supervision involves classification and numerical regressions. (Techopedia, Techopedia , 2019)
Machine learning is only possible if there is sufficient data available. It is a process of continuous advancement through exposure to new situations. ML employs patterns and trend selection which is important for the analysis of customer data in the retail industry.

Our population is growing and people are able to reach an age of 100 in the 21st century. In combination with the growth of the population, there is also a growth in data from all these people. When it comes to retail, one of the most intensive processes are collecting data from your consumers and understanding them. The biggest barrier are our 2 different existing data bases: online and offline systems to analyze shoppers' data. These are often managed by different teams.

For example, at a large grocer, the loyalty team might be focused on in-store purchase behavior and loyalty-specific promotional tactics, while digital and ecommerce are focused solely on online purchases and digital marketing channels," says Waleed Ayoub, chief technology officer at Rubikloud, a Toronto-based provider of artificial intelligence software.

The main difference between AI and ML is that Artificial Intelligence stimulates natural intelligence to solve a complex problem, whereas Machine Learning learns from data on a certain task to maximize performance of this machine on that task. (Reese, 2017)

2.2 The History of Artificial Intelligence

‘’With the development of the electronic computer in 1941 and the stored program computer in 1949 the conditions for research in AI were given. Still, the observation of a link between human intelligence and machines was not widely observed until the late 1950s (Selvamnikkam, 2018).’’

In the 1950s, Alan Turing[1] invented a game to answer the following question: ‘’Can machines think?’’. He published his landmark paper that explained the creation of a computer system that could ‘’think’’ like an actual human-being. It was a method wherein Alan Turing proved that a computer was capable of thinking like a human being by mimicking human responses under certain conditions (Rouse, 2015). The Turing test succeeded if a conversation with a computer was indistinguishable from one with a human.

John McCarthy[2] first coined the term Artificial Intelligence in 1956 when he invited a group of researchers from a variety of disciplines to discuss what would become the field of AI. At that time researchers came together to clarify the concept of ‘’thinking machines’’. McCarthy picked the name Artificial Intelligence due to its neutrality. The conference said; ‘’The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to stimulate it.’’ (Marr, 14)

During the 1960’s Frank Rosenblatt presents an attempt to create an artificial neural network for image recognition. At that time, the newspaper, the New York Times called this: ‘’The first step toward a computer that can talk, see, write and reproduce.’’

[1] British mathematician, computer scientist, logician, cryptanalyst, philosopher and theoretical biologist.

[2] Joseph Raymond McCarthy was an American politician.

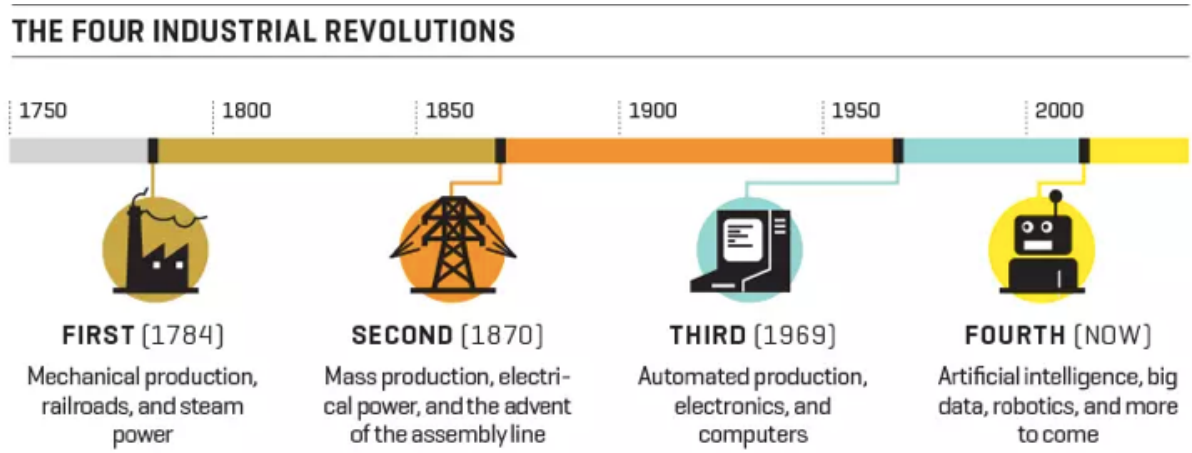
Marvin Minsky was the one to publish open information about his foundational paper in 1961. He called it: ‘’Steps toward Artificial Intelligence’’. Shortly after the publication of Marvin Minsky’s paper, Joseph Weizenbaum introduced ELIZA. This was the first ever existing chat program using programmed phrases.

In the late 1980’s Ernst Dickmanns demonstrates a Mercedes van that is able to drive autonomously. About 30 years after that, in 2012, Geoff Hinton’s lab is able to win the Visual Recognition Challenge with a deep-learning technology that could identify a 1000 different products right, 85% of the time. This meant a huge jump for Artificial Intelligence in accuracy.

AI officially made its breakthrough in 2015 when costs of data storage could be dropped dramatically.
Google’s AlphaGo beats the world champion of the board game ‘’Go’’ during 2016.
(Review, 2016)

Artificial Intelligence can be seen as the Fourth Industrial Revolution. This 4th revolution is about augmenting human capabilities and accelerating the customer journey to the speed of thought.

Figure 3: The Fourth Industrial Revolution (Figure by: World Economic Forum through Fortune)



2.3 How Artificial Intelligence works

As mentioned above, Artificial Intelligence and Machine Learning, can only function if there is enough data available to make an analysis of. AI combines very large amounts of data with

fast, iterative processing and intelligent algorithms, allowing the software to learn automatically from patterns or features in the data (Institute, SAS The Power To Know , 2019). AI includes a lot of technologies, methods and theories. All the relevant definitions that are important regarding AI can be found in the chapter: *''Definitions''*.

Artificial Intelligence uses several technologies today that make the system successful. The four most important ones are summed up underneath:

1. Graphical Processing units

Graphical Processing units enable to provide the heavy computing power that is required for iterative processing. In order to train neural networks, big data and computing power are needed.

2. The Internet of Things

The Internet of Things is a topic that is very trending at the moment. It collects massive amounts of data from connected devices, from which most of the data has not been analyzed yet. By introducing AI in the IoT, we could be able to make more use out of the IoT.

3. Advanced Algorithms

Without algorithms, Artificial Intelligence could not exist. Algorithms are combined and developed in ways to analyze data at multiple levels even faster than ever possible. This process is key to make predictions and identify rare events. Also to understand complex systems and potentially optimize them by using unique scenarios.

4. API's (application processing interfaces)

An API is a portable package with a code that makes it possible to add an AI functionality to existing products and software packages. Examples you can add are; image recognition, capabilities to home securities and Q&A capabilities that describe data, create captions and headlines, or call out interesting patterns and insights of data (Institute, SAS The power to know , 2019).

A basic summary of how Artificial Intelligence works is that the technology provides software that can analyze a certain input in order to explain its possible output. These interactions will be human-like as that is the goal of AI, to create human-like responses with software. AI can offer decision support for very specific tasks. It is important to keep in mind that Artificial Intelligence is not a replacement for humans.

Table 1: Examples of different types of AI in our every-day life.

Term	Voice powered personal assistants	Behavioral Algorithms	Suggestive searches	Autonomously powered self-driving vehicles
Example	Siri (Apple) and Alexa (Amazon)	Gaming-theories	Netflix (movies) and Spotify (music) Amazon (online retailer)	Tesla (electric self-driving car brand)

2.3.1 Tools of Artificial Intelligence developed through time

1950s – 1970s: Neural Networks

Neural Networks are computing systems with interconnected nodes that work similar to neurons in a human brain. By using algorithms, the system is able to see hidden patterns and special correlations. These patterns and correlations are clustered and classified by the algorithms. Over time, these algorithms will be able to learn and improve continuously.

The retail industry uses neural networks to create more successful chat bots and to deepen customer intelligence, and perform network analysis (Institute, SAS , 2019).

Reasons for the importance of Artificial Intelligence regarding the marketing industry are:

- Targeted Marketing
- Character and voice recognition (Natural Language Processing)
- Process and Quality control
- Computer vision: facial recognition

Clarified with an illustration:

Biological processes in the brain.

The Application of neural networks to AI

1980s – 2010: Machine Learning

Machine Learning is a core concept for Artificial Intelligence. Machine learning means that systems can learn from massive amounts of data, identify this data and make decisions based on their outcome without human interaction.

In retail, websites are recommending you products that are based on previous purchases. This is possible due to machine learning. The system analyzed your buying history. Machine learning gives retailer the opportunity to collect data, analyze this data and based upon the outcomes, personalize any shopping experience (Institute, SAS , 2019).

Examples of the use of ML today:

- Self-driving car from Tesla
- Online recommendations from Amazon and Netflix
- Fraud detection
- Linguistic rule creation from Twitter (knowing what people say about something)

Today: Deep Learning

Deep learning is derived from Machine Learning. It is a system that is able to train a computer and give it the opportunity to perform human-based tasks. These tasks include; identifying images, making predictions and recognizing speech (Institute, SAS , 2019).

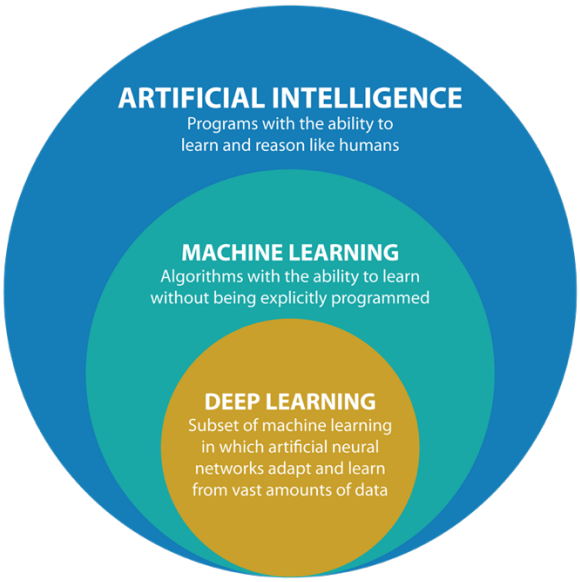
Importance of deep learning today:

- Improved accuracy of models
- Text translation and image classification
- Internet of Things (connected devices)

Examples of Deep Learning:

- Speech Recognition: Skype. Google Now, Apple's Siri
- Image Recognition: Tesla (self-driving cars)
- Recommendation systems: (Amazon, Netflix)

Figure 4: AI, ML and DL defined (WorldPress, 2019).



2.4 The Applications of Artificial Intelligence in the Marketing Industry of Retail

Machines have not taken over yet. However, they are affecting how we live, work and entertain ourselves. From voice-powered personal assistants like Siri and Alexa, to more underlying and fundamental technologies such as behavioral algorithms, suggestive searches and autonomously powered self-driving vehicles boasting powerful predictive capabilities. There are several examples and applications of Artificial Intelligence in use today. (Adams, Forbes , 2017)

2.4.1 Marketing Strategies

Traditional Marketing

Traditional Marketing is a category which includes all forms of advertising and marketing. It is the most known type of marketing, encompassing the advertisements that we hear and see daily. Most of these marketing strategies fall under one of four categories. These four categories are broadcast which includes radio and TV advertisements.

Also specialized forms like on-screen movie theater advertising, print which includes advertisements in newspapers, newsletters, magazines, brochures and other printed material for distribution. Another one is requested calling and cold calling of consumers over the phone which is called Telemarketing.

Lastly there is the strategy which includes fliers, postcards, brochures, letters, catalogs and other materials that are printed and mailed directly to consumers, this is called direct mail marketing. (Technology, 2019)

- Benefits of Traditional Marketing
    - Easily reach local customers
    - Material can be kept
    - Easy to understand

- Tactics used in Traditional Marketing
    - Word of Mouth
    - Business Events
    - Flyers
    - Flex boards
    - Business Cards

- Disadvantages of Traditional Marketing
    - Little interaction between the medium used and the customer
    - Costly
    - Not easy to measure

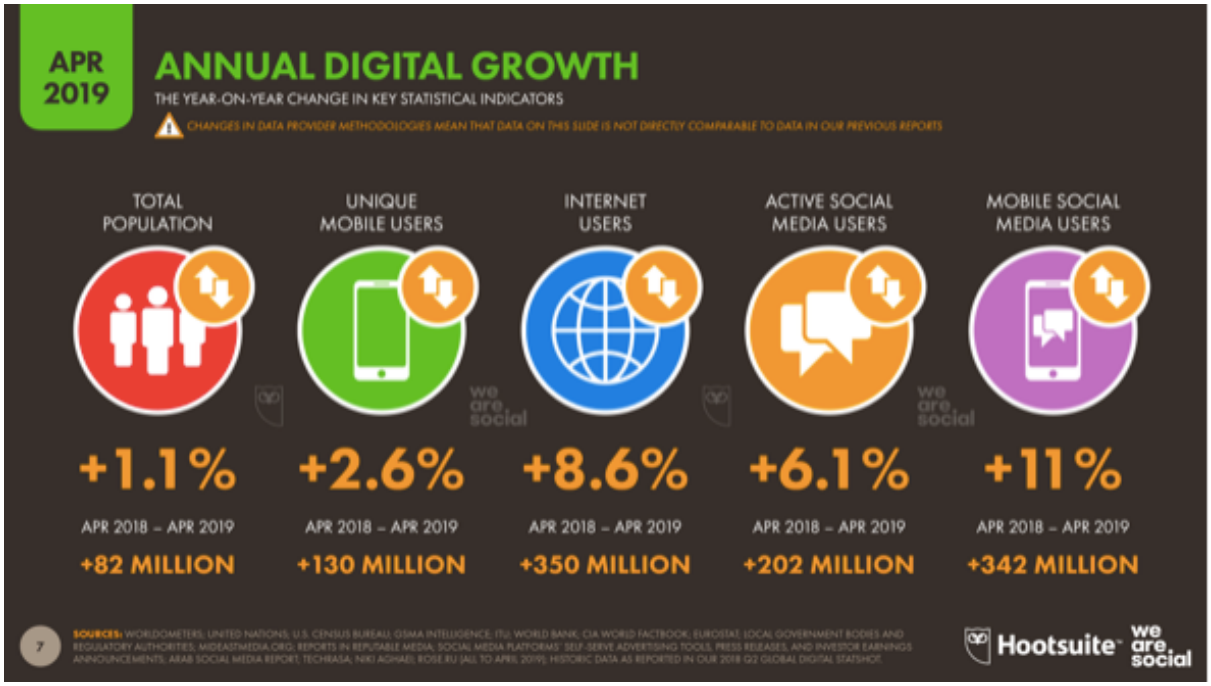
Digital Marketing

Digital Marketing is the use of the internet, mobile devices, social media, search engines and other online channels to reach the customer. Digital Marketing is considered to be an entirely new endeavor that requires a new way of approaching customers and new ways of understanding how customers behave compared to traditional marketing.

Today's brands exist in an upcoming technological era where-in they all wish to reach the customer on a personal level. Through digital marketing it is easier to track a consumer's behavior and make predictions of what that consumer might buy in future online visits. (Alexander, 2019)

The graphic below shows the relevance of digitalization and the annual growth numbers.

Figure 2: Annual Digital Growth (Kemp, 2019)



2.4.2 Artificial Intelligence in the Retail Industry today

AI influences the international business environment greatly providing important benefits to both the sellers and buyers in retail. The technology taps into retail domain's information pool associated with advertising, think-product development and online search among others. Since retailers embraced market research for many years, AI allows them to reengineer complicated data into streamlines and easier experiences for customers and retailers alike. Its machine learning and predictive instruments often offer relief to the buyer efforts. This is researched by Paul Greenberg (2017) ''Separating AI from AI Hype: Artificial Intelligence is about to go mainstream, so let's talk about what it is, and is not''.

It is true that AI plays a significant role in the background, monitoring consumer sentiments on the internet and social media. These social listing kits, driven by AI engines ensure that

consumers easily find their preferences. Consequently, these consumers often receive pop-up advertisements from relevant websites to find the products they need. It is also able to allow the consumers to save their data on an online domain without many processes such that it becomes comfortable to navigate the internet the next times one uses it. This was presented by Grewal D. (2017) ‘’The Future of Retailing: Journal of Retailing’’.

2.4.3 Personalized Recommendations

Artificial Intelligence is a tool that is able to analyze the behavior of individual customers. Through the analyses of these customers, the tool enables the prediction of future purchases. This comes in handy for marketing purposes. Because the algorithm can predict potential future purchases, it is possible to send personalized recommendations. Through all these steps, a company can get insights into customer purchase history, a buyer’s buying patterns, and the correlation between categories. In the end it is possible to market highly engaging and eye-catching offers to individual customers.

According to: The Power of Me: ‘’The Impact of personalization on Marketing performances’’, a 2018 report from Irving, a Texas-based digital marketing firm called Epsilon, some 90% of respondents in a 2018 survey said that they find personalization appealing. Another 80% said they would be more likely to do business with a company if it offers personalized experiences for the customer. Consumers who feel attracted to personalized recommendations are more likely to be a brands’ most valuable customer.

Consumers who feel attracted to personalized recommendations are more likely to be a brands’ most valuable customer.
Rich Coleman, VP at Conversant, a Chicago-based provider of personalized digital marketing solutions says that retailers are personalizing shelf tags and channel displays. Retailers do this to create transparency and improve the easiness of finding products. They also do this digital marketing to be able to recommend families to make healthy choices when going through the grocery store. The shelf tags and channel displays can be personalized for each customer through their feedback and loyalty data. (Hofbauer, 2019)

Another example that Rich Coleman explains is the fact that Kroger Co. has done a partnership with Microsoft to implement an electronic shelf technology. This technology enables to guide

shoppers to products that suit their consumer profile. Through this technology, shoppers are able to find the product much faster due to the personalized icons on the displays.

2.4.4 In-Store Customer Experience

Many of us consumers are inclined to share personal information for experiences that are magical and valuable. Retailers will need to create experiences that make this magic and value apparent. Tomorrow people will expect even faster and more-intelligent service than they do today. At a point in the very near future, the expectation will shift from on-demand to predictive commerce. (Sharma, Harvard Business Review , 2016)

Nowadays, it is not enough for a customer to buy a product. Consumers want the experience towards the purchase of a product. Through positive and extraordinary experiences, you are able to create brand loyalty and trust. Innovating technologies in-store will not only help you to reach them, but also to analyze them and get to know them better by collecting data from previous purchases or in-store shopping habits.

According to BRP's Special Report: The State of Store Technology; ''the store is still a major part of the customer journey. 79% of all the customers indicate that they purchase products in a store frequently. With an increased focus on customer engagement and the convergence of physical and digital, the point of sale or commerce platform plays a critical role in shaping the customer shopping experience. The right technology foundation is essential to support the best in-store customer experience.''

"Stores remain center stage in the shopping experience, and that experience is an ever-increasing factor in where consumers choose to shop," said Brian Brunk, principal at BRP Consulting. "Retailers understand the importance of keeping up with customer expectations, in fact, 75% are considering cloud-based platforms as part of their in-store technology plans over the next several years."
(Consulting, BRP POS/Consulting , 2019)

Some facts about in-store customer experience that BRP's Special report has researched:

Customer expectations:

- 96% indicate that ease of checkout and payment are important factors when choosing where to shop
- More than 55% indicate that in-store technologies like self-checkout, product locator, inventory lookup, and endless aisle are important factors when choosing where to shop
- 68% are likely to choose a store offering buy anywhere, ship anywhere services over one that doesn't

Retailer's actions:

- 53% are focused on adding additional capabilities to existing POS[3] and 48% plan to replace their POS within three years to improve the checkout experience
- As retailers make decisions on new POS systems, 75% indicate they plan to have cloud-based solutions within three years
- 94% plan to address holistic customer engagement with the implementation of a single unified commerce platform

The previous numbers were found on: (Consulting, The State of Store Technology , 2019)

Virtual Technology

A grocery store can take his digital marketing one step further by tracking customer's movements within the store. This is mainly done through eye tracking and sensor technology. All these aspects are an underlying term for Artificial Intelligence.
David Rich, CEO of Chicago-based simulation software provider InCon-text Solutions, points to a test by Deerfield, Ill.-based drug store chain Walgreen Co.

"Walgreens recently piloted a technology at six of its stores that equips commercial refrigerators and freezers with cameras and eye-tracking technology," he notes. "As customers walk past the store's glass beverage cases, the surface of the glass actually changes via an LED screen display to highlight a specific product in the case."

As a consumer you will be watched during your stay at the grocery store. The technology basically highlights a product based on your scanned characteristics. An example of these

[3] Point Of Sale

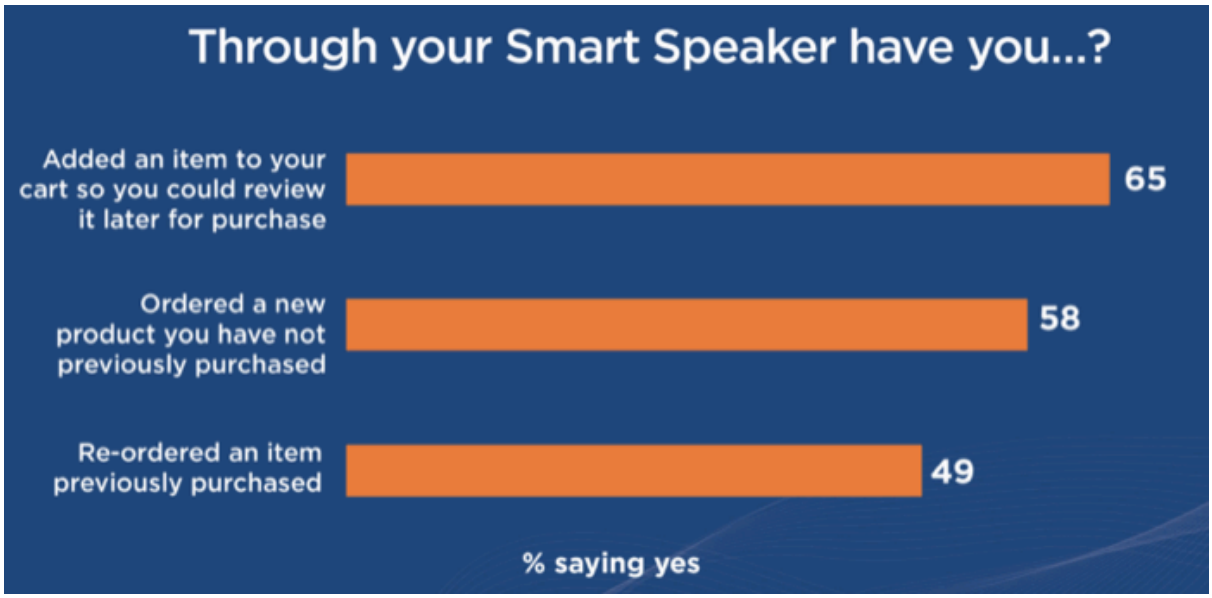
characteristics are age and gender. To create an even more personalized experience, grocery stores can also analyze emotional reactions towards products (Roggeveen, 2017).

Smart Assistants

A fast rising popularity of smart assistants like Google home or Alexa, will definitely have a big influence on the way we shop tomorrow or even today. By speaking into smart speakers, consumers can expect immediate service or accurate information about the product they are looking for.

Through a survey done by NPR and Edison Research, can be explained that the following graphic shows the potential of smart-assistants as e-commerce drivers. 65% of all the smart-device users have added items to review them while 58% have ordered a new product through the device for the first time. 49% mentioned to be re-ordering previously purchased products. People are getting more familiar with new technologies and as soon as they recognize the convenience and easiness of these devices, they gain trust and start buying products from their homes. (Sterling, 2017)

Figure 2: The influence of Smart Assistants on out buying behavior

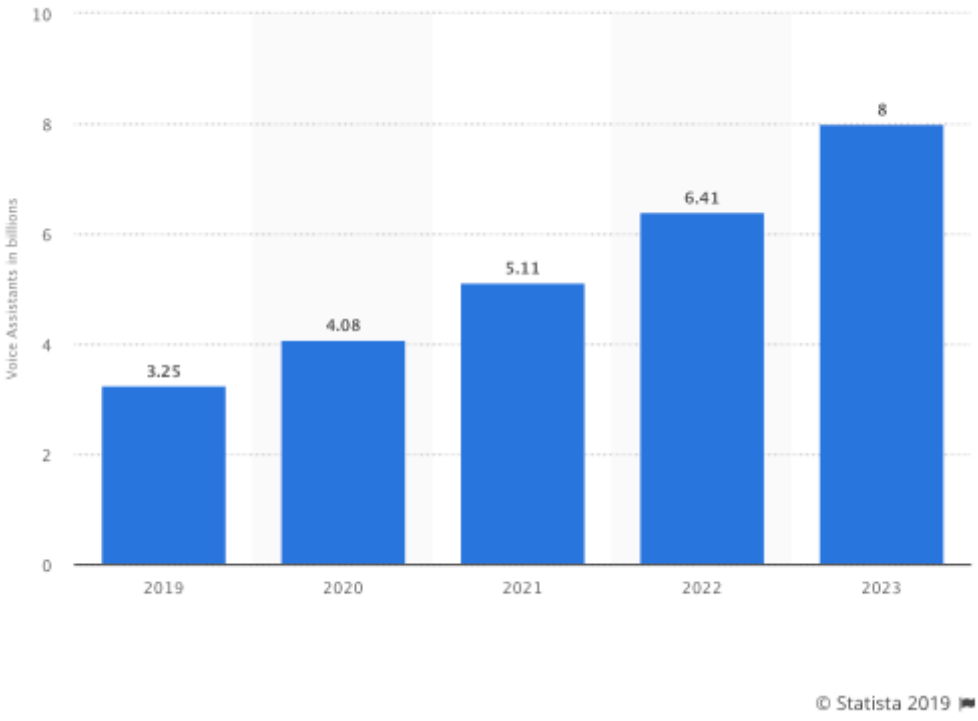


The generation of smart assistants and connected devices will learn from user habits and pick up on behavioral and environmental patterns in order to make these experiences more predictive. Devices like the Echo will access data from everyday interactions to predict specific opportunities for a transaction. (PWC, 2018)

‘’A new study from Juniper Research has found that there will be 8 billion digital voice assistants in use by 2023, up from an estimated 2.5 billion at the end of 2018.’’ (Smith, 2018)

‘’This statistic shows a forecast of the total number of digital voice assistants in use worldwide from 2019 to 2023. The digital voice assistant market is projected to experience continued expansion in the coming years, with number of voice assistants in use increasing from 3.25 billion in 2019 to around 8 billion by 2023.’’ (Liu, 2019)

Graph 1: Total number of digital voice assistants in use worldwide from 2019 to 2023



While smartphone assistants will be the largest platform by volume thanks to Google Assistant and Siri, Juniper’s new research found that the fastest growing voice assistant categories over the next 5 years will be:

1. Smart TV’s: 121,3% CAGR[4]
2. Smart Speakers: 41,3% CAGR
3. Wearables: 40,2%

[4] Compound Annual Growth Rate

In these categories, Amazon's Alexa has already established itself as the leader; setting pace for the market. In addition, Chinese companies will make inroads internationally in the future.

The demand for multi-platform assistants increases in the time period of 2019 towards 2013. However, standalone apps made by independent vendors for smartphones and tables will decline, these revenues are expected to fall in key markets from 2022 according to Juniper (Moar, 2019).

Juniper's report also shows that voice commerce will grow substantially; reaching over 80 billion dollars per annum by 2023. However, this includes money transfer and purchases of digital goods alongside its use for more traditional purchases (Smith, 2018). ''We expect the majority of voice commerce to be digital purchases, until digital assistants offer truly seamless cross-platform experiences'' remarked author James Moar. ''Connected TV's and smart displays are vital here, as they can provide a visual context that is lacking in smart speakers.''

Smart assistants in Retail Stores

There is huge potential for connected devices in retail stores to predict consumer behavior and respond to individual needs (Foot ID). Many stores are already using smartphones to follow consumers' activity and deliver context-specific offers. The evolution of biometrics, identifying technologies and location sensors will allow retailers to personalize content based on factors such as how you are feeling, how much time you have to browse and whether you are coming from the office or you just finished a work-out. (Daugherty, 2018).

2.5 Future Speculations of Artificial Intelligence in Marketing for the Retail Industry

2.5.1 Market total revenue

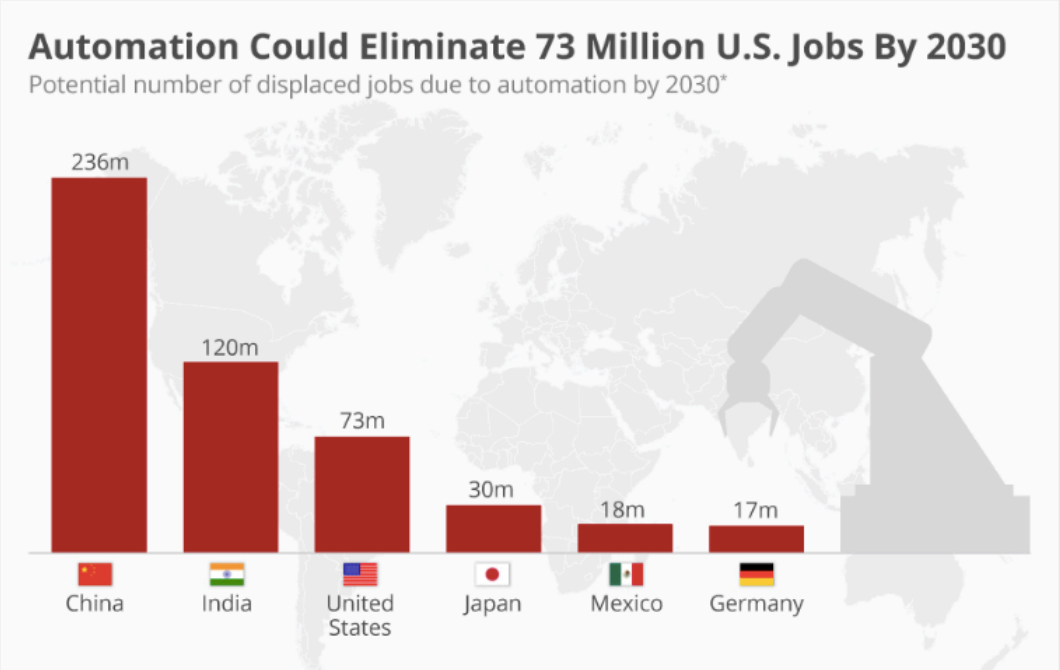
In sizing and forecasting the total global AI market, Tractica has created a taxonomy of 191 real-world use cases for AI, organized into 27 different industry sectors and corresponding with six major technology categories, plus multiple combinations of technologies. Some use cases such as image recognition, algorithmic securities trading, and healthcare patient data management – have huge scale potential, while others are niche applications. Likewise, a few key industry sectors including consumer products, business services, advertising, and defense applications will drive significant revenue for AI software implementations in addition to AI-

driven hardware and service sales, but during the coming decade the technologies will have an effect on almost every conceivable industry sector. Annual global AI software revenue is forecasted to grow from 9.5 billion in 2018 to 118.6 billion by 2025 (Tractica, 2019)

2.5.2 Employment

‘’The jobs most threatened by automation tend to be physical and predictable with examples including workers in the fast food sector or machinery operators. The safest jobs are generally less predictable, including managers, engineers, scientists, teachers and plumbers.’’ (McCarthy, 2017)

Graph 2: Potential number of displaced jobs due to automation by 2030.



It is predicted that every one person out of five will use AI technology to complete their work. (Cuofano, 2019)

Even though AI technologies have a higher chance of influencing the future trends of workplace and employment, it is hard to precisely examine its present effects, advantageous or disadvantageous. It is true that the use of AI in the employment systems will affect the future of employees in the work market because it will shift the demands for skills. AI will also affect the workforce location and size. But AI will create new employment categories due to markets that are connected to AI. Researched by Kristin L. (2017) ‘’Artificial Intelligence, Automation and the Economy: Chinese and American Forum’’.

2.5.3 The level of prediction

You are leaving the house and a device on your coffee table says: ‘’It looks like you will use the last bit of your milk tomorrow, and milk is on sale for 1,19$. Would you like to pick up an order from the Trader Joe’s?’’. If you say yes, Alexa can confirm and the order will be ready for the pickup in about 15 minutes.

This scenario is not far off. Amazon, Facebook, Google and Apple are accelerating consumer expectations and what’s technologically possible, from same-day delivery to machine powered image recognition. You can call Uber with Siri and book a flight entirely through a Facebook Messenger bot.

Responsive retail has peaked, and today we are about to enter the era of predictive commerce. It is time for retailers to help people find products in their precise moment of need. This shift will require designing experiences that merge an understanding of human behavior with large scale automation and data integration. This level of prediction requires detecting subtle patterns from massive data sets that are constantly in flux: consumer’s purchase histories, product preferences, and schedules; competitors’ pricing and inventory; and current and forecasted product demand. This is where AI and machine learning comes in and where companies are investing.

Retail giants have been using machine-learning algorithms to forecast demand and set prices for years. Amazon patented predictive stocking in 2014. Saying that AI, machine learning and personalization technologies have improved since then is an understatement. Retailers need to think more like tech companies, using AI and machine learning not just to predict how to stock stores and staff shifts but also to dynamically recommend products and set prices that appeal to individual consumers.

Predictive retail involves inspiring consumers in different contexts. Before, during and after a purchase. Commerce is not just smartphones that make browsing and buying spontaneous; Amazon’s dash buttons and Alexa-powered Echo devices are enabling purchases in the home. You can ask Alexa to purchase a bouquet of flowers for your mother’s birthday when you remember it is next week.

Imagine walking past a Nike store and receiving a notification for an offer on a new pair of sneakers. Your current pair is worn down from running almost 500 miles (all logged by a chip in the sole that sends data to your fitness app). You swipe the notification to select the styles you want to try on, and an in-store map guides you to an associate waiting with your shoes.

The future of predictive retail requires designing new ecosystems for commerce. These systems must be built around the human, rather than around a particular device or around an online or offline experience. These systems will need to incorporate human connection and storytelling, spatial design and context, and a lot of data.

Sephora

Retailers are getting ahead of this shift (above) by creating innovation labs, teams and spaces dedicated to incubating new ideas and testing digital experiences that connect the online and in-store worlds. Sephora's innovation lab is an example. The brand introduced a ''store mode'' for its mobile app, which integrates a user's online shopping cart and beauty insider loyalty card to remind them of the products they have saved, the points they have earned and the benefits available to them, such as a free makeover.

AI can connect multiple sources for an even better personalized experience

There is a huge potential to layer predictive capabilities on top of this AI driven infrastructure. Imagine a store window that connects with your phone (future) to display personalized content. For instance, you might see gifts for your partner's birthday or swimsuits for your next vacation based on the boards you follow on Pinterest and the brands you follow on Instagram. By connecting data from multiple sources and designing for the user, retailers can create more relevant experiences that pull you into a store, website or app. Even more powerful, they can predict what you want before you do.

Privacy and trust

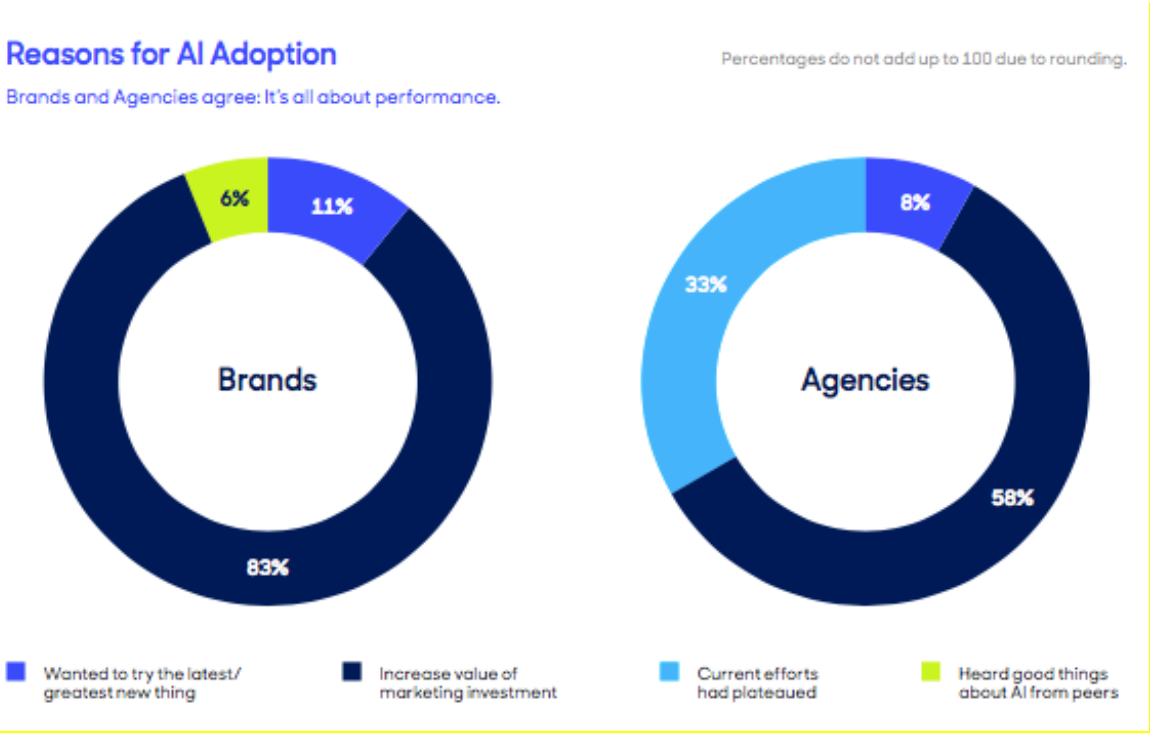
There is always a trade-off between privacy and personalization; this has been true for every generation of technology. Retailers need to move forward with transparency, respect and security as their priorities. Google has done this well through personalized search results and services such as Google now, which integrates with your calendar and Google Maps to alert you that traffic to your meeting is heavier than usual and tell you when you should leave the office to arrive on time. Many of us consumers are inclined to share personal information for experiences that are magical and valuable. Retailers will need to create experiences that make

this magic and value apparent. Tomorrow people will expect even faster and more-intelligent service than they do today. At a point in the very near future, the expectation will shift from on-demand to predictive commerce. *Written by: ''Amit Sharma – Founder and CEO of Narvar, former executive at Apple and Walmart''*

2.5.4 New insights created by Artificial Intelligence for marketers in the Retail Industry

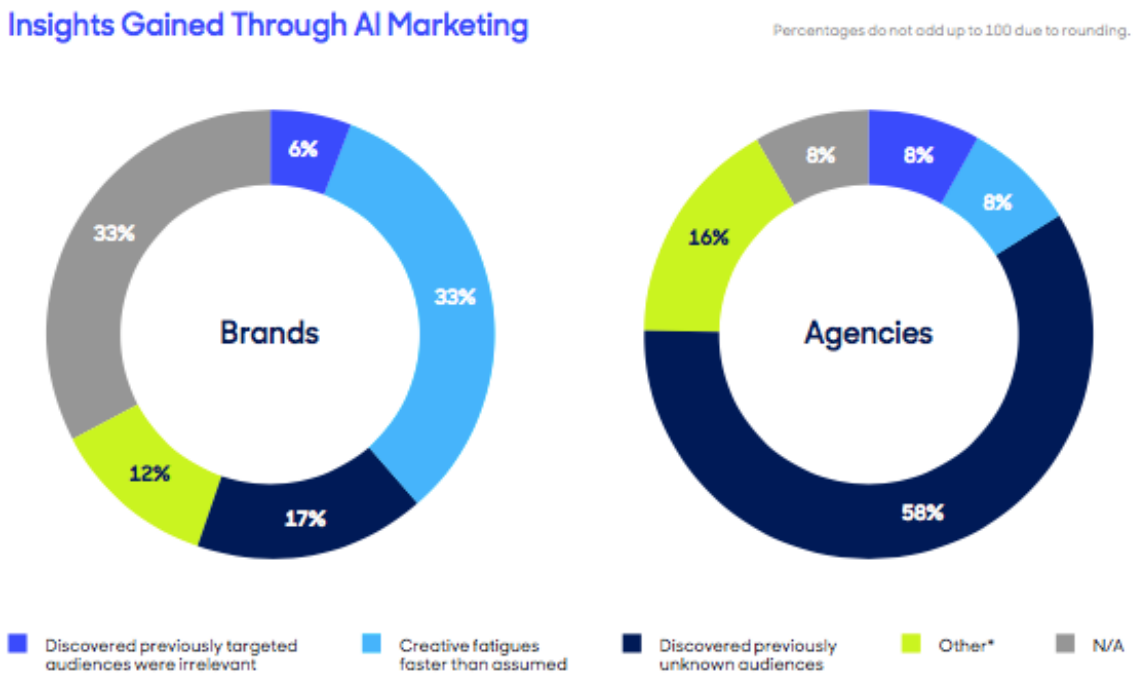
A survey done by Albert Technologies, discovered what the potential of Artificial Intelligence could give marketers in the retail industry. The survey was held in late 2017 and the respondents were 35 brand marketers and 17 advertising and digital marketing agencies (Technologies, 2018). Some of these marketers were already aware of AI for marketing practices. Half of the respondents came from the retail and apparel sector. The other half come from the following sectors: media and entertainment, travel and leisure, consumer packaged goods, pharmaceuticals and healthcare and transportation.

Figure 5: Reasons for Artificial Intelligence's Adoption



The main issue that most of the marketers are thinking to be solving through AI is, to get more value from their marketing investments. The survey found that 83% of the brand marketers were looking for more value and 58% for the advertising and digital marketing agencies. Usually, marketers respond with saying they want to be innovative, and try the newest and greatest tool to get closer to their customers.

Figure 6: Insights gained through Artificial Intelligence's Marketing



Both the brand marketers and the advertising and digital marketing agencies stated that they gained more insights on unknown audiences and discovered creative fatigue[5] faster than they previously assumed.

Audience Discovery

Surprisingly, only 17% of the brand marketers said they discovered new audiences through the use of artificial intelligence. While 60% the advertising agencies reported to have found entirely new audiences that were very insightful. Brand marketers are generally more interested in finding new markets instead of finding a new group of customers. Marketers like to explore buyer segments rather than new individual consumer groups. Advertising agencies are likely to offer audience development insights and capabilities to their clients with no additional effort by using Artificial Intelligence.

[5] Occurs when consumers stop noticing an ad because it becomes a routine part of the environment

Creative Fatigue

8% of the advertising agencies were surprised by how fast a creative ad is boring for targeted audiences. On the other hand, 33% of the brand marketers found this insight extremely revealing. Advertising agencies are trained to know how fast a campaign creates fatigue. They research how to keep new campaigns fresh and interesting. For brand marketers there might be a lack of effort or ability to measure the effectiveness of certain campaigns.
(Technologies, 2018)

Summarized

The biggest gap for the adoption of AI is: the application. The application difficulty of AI will decline once users get an idea of the use of the system and what it can do. Brand marketers understand that the integration from data into an analytics system is of high importance when analyzing consumer insights. The smartest agencies will notice that AI offerings secure a client's business. AI using advertisement agencies will be able to structure their pricing model differently than they do today.

Sub-Conclusion

Artificial Intelligence and Machine Learning defined

Through this research is found that Artificial Intelligence can be split up into two sub-concepts. These are; decision-making and perception. Decision-making can be explained through the way that machines can base their decisions on data analysis. Perception means that these decisions are based on the ones from a human-being.
Machine Learning is one of AI's most important applications. From the literature review is concluded that Machine Learning is successful when there are large data sets available. The machine uses these large data sets to learn from them. The algorithms in the system, detect patterns and are able to make predictions.

''We can compare Machine Learning with a young child. A child needs time to learn how to make decisions, and we guide a child to make the best decisions.''

– Lavinia Arl

How Artificial Intelligence works

We realized that the most common misconception of Artificial Intelligence is that it is robots and self-driving cars only. We completely forget about AI's science behind it. Artificial

Intelligence's major application is collecting and then analysing the data to find new outcomes.

The three key words for Artificial Intelligence to work are;

1. Neural Networks
2. Machine Learning
3. Deep Learning

Machine Learnings makes it possible to learn from experience without being programmed by a human being as seen in the literature review. Deep Learning is a subset of Machine Learning. It uses artificial neural networks that are able to learns by processing data. The interesting part about these neural networks is, that they are mimicked from the biological neural networks from the human brain (Otte, 2019). This gives the system such a human touch. The neural network is therefore able to make associations. An example is; by having analysed and seen over 1000 pictures of an elephant, it will be able to answer a question such as; ''Is the image an elephant or not?''.

The found sub-definitions are;

1. Cognitive Computing
2. Natural Language Processing
3. Computer Vision

Cognitive Computing enables AI to improve and imitate interaction between humans and machines (Turing Test). It creates a human thought process in a computer. While Language Processing can understand the meaning of a language (interpreting, recognizing and producing human speech). Computer vision gives AI the opportunity to understand images. It is different from neural networks (Otte, 2019). It does use Deep Learning in the process, the new part to this is; pattern identification. It can interpret the content of an image (pictures, tables and graphs). We can conclude from this research that Artificial Intelligence is not just a ''thing'' on itself. It is a definition that describes several technologies that make AI possible. The combination of all these subsets of AI, are highly relevant to make AI what it is today.

The application of Artificial Intelligence for Marketing practices in the Retail Industry

In a few years there is so much data available about all the products on this planet, that Artificial Intelligence is a crucial tool to use when wanting to analyse all these data. By applying Artificial Intelligence in our data analyses, we are able to create a better marketing experience for our consumers. A new online and offline experience will be created in the near future. We will be provided with personalized stores for every individual. The prediction is that every individual will have its own *personal store of the future*. This store will contain products that are suited for the consumers' requirements only.

Marketing gaps that are solved by the use of Artificial Intelligence for Marketing purposes.

Table 3: Marketing gaps solved by Artificial Intelligence

Unique customer behaviours	Advanced personalization	Number of possible customer segments	Identification of unknown actions leading to conversions
Price sensitivity	Analysis of correlations between multiple variables in the same time	Unique customer preferences	Real time process adjustment to changes in customer behaviour

"Aligning marketing messages and merchandising, and ultimately the retailer's customer value proposition, to their customer's personal values and beliefs will create trust, loyalty and a differentiation from their competitors. This spells a growth in market share and maintaining sales and trips to the store (Conservant, 2019)."

3 Methodology

This chapter will explain the science and philosophy behind this research.

3.1 Research Objective

The main objective of this research is to analyse what will happen to retail companies if they implement intelligent systems like Artificial Intelligence within their marketing strategies. AI provides virtual shopping capabilities that offer personalized recommendations and discuss purchase options with the consumer. Stock management and style layout technologies are also improved through the use of Artificial Intelligence (Goodnight, 2019).

Generally, AI is not here to replace us or make our lives miserable. Artificial Intelligence gives us the ability to be better at what we do already.
This research paper explains the influence of Artificial Intelligence on the marketing practices of the retail industry.

3.2 Research Questions

The following questions are derived from the hypothesis question; *''The influence of Artificial Intelligence on Digital Marketing and in-store customer experience''*. These will be a backbone for the research that will be done and give better understanding to answer the research objective.

1. What exactly is Artificial Intelligence and Machine Learning?
2. How does Artificial Intelligence work?
3. What are the applications of Artificial Intelligence in the Marketing industry of Retail?
4. What do real-time employed experts think about this trending technological innovation?

3.3 Data Collection Process

For this dissertation, primary and secondary research has been used. Through primary research is solely focussed on answering questions that are relevant to the proposed dissertation title. The aim is to gather fresh, new data from different sources. This is data that will be collected for the first time.

Primary data has been obtained through 4 different interviews. The type of interview that was used for this research, is semi-structured. Semi-structured interviews are also called in-depth-interviews. Each interview consisted of 8 questions. With the first one being an introduction of the interviewee and the other 7 about the research objective meaning the interviewees' knowledge about Artificial Intelligence, the use of Marketing tools and their personal opinion about AI. Every question was created based on the derived questions from the hypothesis question.

The outcomes of the interviews will be compared with the outcomes of the literature review for the first 3 sub-questions. The reason why the comparison is made is due to the fast developments of Artificial Intelligence. There might be a possibility that the adoption of AI moves slower in real companies than the literature reviews states. It is important to find out whether the developments according to science are similar to the ones from the experts in the field. We are finding out if the experts have the same knowledge as the information given on the online web.

1. *What exactly is Artificial Intelligence and Machine Learning?*
2. *How does Artificial Intelligence work?*
3. *What are the applications of Artificial Intelligence in the Marketing industry of Retail?*

For the last sub-question, only the outcomes of the interviews will be relevant.

1. *What do real-time employed experts think about this trending technological innovation?*

The four interviewees, who will be introduced in the next paragraph, have been chosen based on their position and knowledge about Marketing and Artificial Intelligence.
Through phone calls and emails, data was gathered and an outcome was made. In order to get a better idea of the interviewees, a brief introduction about their background was done. None of the interviews were recorded, but notes have been taken of keywords in order to write out a full answer later on. Each interview took between 30 and 45 minutes. In the table below is shown who the interviewees were and for which company they are currently working.

Table 2: The Interviewees

INTERVIEW	INTERVIEWEES	COMPANY
1	Danny Sanders	VerzuimSignaal Unit 4
2	Evelien de Boer	Heineken
3	Wienke Truijen	A.S. Watson – Kruidvat
4	Whitney Frijns	Frijns Industrial Group

Danny Sanders

The first interviewee was Danny Sanders. The interview was held through email on the 12th of July 2019. Danny Sanders is the General Director of a Dutch company called Unit4 Verzuimsignaal B.V. in Utrecht. Mr. Sanders is working for a software-company which makes him suitable for the subject of Artificial Intelligence.

Evelien de Boer

Evelien de Boer was the second interviewee chosen for this dissertation. Mrs. De Boer was spoken to on the 16th of July in 2019. The interview was done via a phone call and lasted 35 minutes. Mrs. De Boer is the Retail Director in the Netherlands of the well-known international brewer Heineken.

Wienke Truijen

One of the most relevant interviewees regarding this dissertation was Wienke Truijen. On the 18th of July, a phone call of 45 minutes was held to answer the questions for this research. Mrs. Truijen is the Head of Marketing of Kruidvat in Belgium, the Netherlands and France.

Whitney Frijns

Whitney Frijns was the last interviewee for this dissertation. Ms. Frijns is the Director of the Frijns Industrial Group in Valkenburg, the Netherlands. The interview was held through a phone call and took 25 minutes on the 24th of July 2019.

All the interviewees are Dutch citizens. The 4 interviews were held in the Dutch language and therefor translated to English afterwards.

Secondary research has been done through the use of already existing data and information. Questions derived from the dissertation title were used as a guidance to answer the main hypothesis question. Secondary research is already-existing data from online resources. Examples of secondary resources used in this dissertation are; EBSCO, Google Scholar and reliable case studies done by expert companies are universities.

Secondary research:
The following questions focus on observations that are relevant for this dissertation.

1. What exactly is Artificial Intelligence and Machine Learning?
2. How does Artificial Intelligence work?
3. What are the applications of Artificial Intelligence in the Marketing industry of Retail?

3.4 Validity and Limitations

In order to prove that the research done is valid, 8 interview questions have been created based on the findings in the literature review. This literature has been based on how relevant it is for the research question. The interview was answered by 4 different interviewees. The questions were controlled upon understandability and time consumption. The interview was held privately with each of the 4 respondents and has been translated and rewritten anonymous afterwards. This proves the validity of the research.

There were several limitations to this research. Even though the required respondents were 4, it is stated that the sample size is limited. It could have brought up a general lack in knowledge on the benefits and limitations of Artificial Intelligence. Also the geographical use of the interviewees was restricted as all the interviewees were Dutch. Further research with a more international view could have brought up a different outcome.

4 Analysis and Findings

This chapter presents an overview of how Artificial Intelligence is influencing our digital marketing strategy in the retail industry and additionally the consumers buying experiences in-stores. The data collected from primary (interviews) and secondary (online resources) will be discussed in this chapter.

All the interviewees have stated to be aware of the topic. The interviewees will be presented as; Interviewee 1; Interviewee 2; Interviewee 3 and Interviewee 4 respectively.

4.1 The opinion of real-time employed experts about Artificial intelligence for Marketing practices in the Retail Industry

4.1.1 First Interaction with Artificial Intelligence

The first interaction with Artificial Intelligence was about 3-5 years ago for all the interviewees.

''Artificial Intelligence has been on top of our agenda since the last 5 years. At Heineken, we recognize that technology is moving extremely fast, just like our consumer do.'' – (Interviewee 2)

Interviewee 1 and 2 state that they are actively using Artificial Intelligence in their business models. Both use immense amounts of data to predict speculations.
Through machine learning, we are able to provide decision support, based on employee behavior (Interviewee 1). Consumers are always a starting point and through the use of AI we are now able to analyze these consumers and get a closer look at their preferences. This gives us the opportunity to adapt our marketing strategy towards the consumer (Interviewee 2).

''Reaching consumers via mass media is getting more expensive and less people are using mass media, it is time to find alternative ways to reach audiences.'' (Interviewee 3)

It is extremely difficult to reach consumers nowadays. You have to be innovative and creative to catch somebody's attention. It is time to find out what it relevant for each individual (Interviewee 3). Innovation can be driven due to the use of algorithms that make predictions of commercial routes (Interviewee 2). An example of Artificial Intelligence for marketing purposes, that we get in touch with daily, are cookies, or products that appear to be on every website you visit just because you have previously purchased them (Interviewee 4).

4.1.2 The relevance of Artificial Intelligence for Marketing practices in the Retail Industry

Artificial Intelligence has great potential for data collection purposes in the Marketing industry for retail. Algorithms are already actively used to predict future preferences, and it is 100% sure that these tools will get more advanced (Interviewee 2). The strategy used is called: Predictive Analytics and makes sure that data is predicted based on historical data in order to steer the direction of innovations.

> *''It is crucial that we implement tools like Artificial Intelligence, otherwise we will not be competitive enough.''* (Interviewee 3)

A lot of data is collected to create personalized experiences. What most consumers don't know, is that we use persona's for these personalization's. This gives you the feeling that you get a 1 to 1 recommendation, when actually your preferences are based on a group. There is no customer that has a specific preference without anybody else having the same preference (Interviewee 2).

A lot of different consumer groups are created and through using AI, we are able to assign the most optimal advertisement for a product. Recently a big part of our marketing budget moved towards the digital marketing platform for further research in Artificial Intelligence (Interviewee 2). Interviewee 3 mentions that the company uses mass media, digital marketing and in-store marketing to reach consumers. As mass media is getting more expensive, the company is shifting to a more digital marketing strategy. The digital marketing tools that are used, are mainly: the online web shop and online campaigns such as banners and SEO (Search Engine Optimization).

For in-store marketing, ceiling advertisements and promotional price tags are used. The company has a trick to attract consumers which is: making the store look messy.
The first application of AI that the company uses are loyalty cards. The loyalty card of Kruidvat has a user base of over 4 million and that makes it the third most used loyalty card in the Netherlands after AirMiles and the Albert Heijn Bonus Card. With 4 million users, the company gains an immense amount of data from the clients. Through the loyalty card, we can follow our consumer's purchases and we know in which category they belong. Our company

does a lot of mailings. Through the use and analyses of the loyalty card, we are able to send personalized mailings. Artificial Intelligence can analyze these findings about consumers.

Firstly, we were sending out promotional emails to all our existing consumers. Now, through the use of AI we can be selective. The conversion towards the store and the conversion after purchase was much higher due to the use of selective emailing.

''We are researching digital screens that are able to adapt to the weather situation of the day to display and sell suitable products.'' (Interviewee 3)

If it rains outside we want to screen to display umbrella's, how much they cost and where they can be found in the store. If the sun is shining, we want the screen to display where the sunscreen can be found and how much it costs.

FASE 1: We manually install the displayed products
FASE 2: Introduce Artificial Intelligence and make the system recognize temperatures. Less than 15 degrees means; offer sweaters. More than 25 degrees means; offer sunscreen.

4.1.3 Artificial Intelligence for Marketing Practices: Opportunity or Threat?

The question here is, if it is used carefully enough. Do we want to be pushed by products and preferences we have in order to buy it? A sales assistant that helps you based on her knowledge about you, gives you a feeling of trust rather than being pushed (Interviewee 3). The influence on our privacy is a trending topic regarding AI for marketing proposals.

We must keep in mind that there are a lot of consumers that do not like the idea of being watched (Interviewee 1). Brand engagement is an important definition when it comes to Artificial Intelligence. Do we want our relationship to be artificial with one of our favorite brands? The brand that you receive personalized recommendation from, should be one of your trusted companies. Not a random company that you once visited.

Interviewee 4 states that Artificial Intelligence makes decision-making easier. It is a guidance through the buying process and through recommendations, you will make decisions easier

and faster than before. It is very important to keep your customers updated about any data you gather. Being transparent as a company helps to gain trust. If you are not willing to share the way your company is gathering customer data, you might get in trouble with the legislation (Interviewee 1). Interviewee 2 strongly believes that AI is an opportunity for marketing purposes. It is extremely cost effective for media investment spending. We highly value privacy and data protection. It is the heart of our company to be trusted by our consumers. We cannot afford to make a mistake in our data protection laws as we reach big audiences from all over the world. A lack in the privacy laws for our consumer could be a great reputational risk.

''The popularity of Artificial Intelligence will grow exponentially with the concerns about data protection laws.'' (Interviewee 2)

You want to create a personal relationship with your consumer. Keeping the ethical side in mind means that you should know how you want to behave as a company. As long as Artificial Intelligence does not cross any borders of how we want to be seen by our consumer, everything is okay. Artificial Intelligence is an absolute must-have and opportunity, but we must consider how this goes together with our privacy policies. Data analysis and privacy policies are only separated by a very thin line. At our company, we sell medication and this is highly personal and private (Interviewee 3).

At the moment, the advantages are bigger than the threats for AI. Lately we hear a lot of issues with data protection. Big corporates get fined because of a leak in the data of users. Online web sellers are only seeing the advantages but as soon as a consumer will feel watched, they back off faster than we assume (Interviewee 4).

4.1.4 The future of Artificial Intelligence for Marketing in the Retail Industry

According to Interviewee 1, a correct implementation of Artificial Intelligence will be a major challenge due to the lack of data science specialists. Technology will develop faster than we think. We have to follow the trend and keep adapting (Interviewee 2).

The shift from mass communication to personalized communication will happen very soon (Interviewee 3). Marketers will be excited about the future developments of AI to get more

insights of their consumers. But there will be a turning point where the negative factors will outgrow the advantages (Interviewee 4). The future for our company in marketing, which is actually already used but will get more advanced, is IDDM: Individual Data Driven Marketing. Experimenting is a very common tool used for the brands within the company Heineken. This way we are able to find out which target group belongs to a product. Due to the experiments we are able to stay creative.

By using ‘’cookies’’, Kruidvat can follow a consumer’s click-behavior. By implementing AI, we can potentially be able to be more selective with our analysis of all this data and give product reminders on a personal basis.

Sub-Conclusion

What do real-time employed experts think about this trending technological innovation?

We can conclude that the majority of the employees agree that Artificial Intelligence is a trending topic in their agenda’s. For most of the interviewees, the interest and knowledge started about 4 to 5 years ago. Three interviewees mention to use Artificial Intelligence for Marketing practices today. AI is mostly used for data gathering purposes to make personalized recommendations and to find out where the preferences of their consumers go.

In general, all the interviewees have a positive mindset about the use of AI for marketing practices in the retail industry. It makes promotions and mailings more personal and creates a higher conversion towards the store. Buying products will get easier, more convenient and extremely personal. The future of marketing with Artificial Intelligence means; gathering consumer data due to clicks, loyalty cards or historical purchases and then providing a personal recommendation or even predicting your preferences.

4.2 Comparison between the findings of primary and secondary research

Table 4: Comparison between primary and secondary research

	Primary Research	Secondary Research
Privacy Protection laws	Of high concern for experts	Not mentioned frequently
Personalized recommendations	Already applied	Mentioned frequently
Use of voice assistants	Not applied and not mentioned	Mentioned frequently
Digital Marketing development	Highly used and researched	Mentioned frequently
In-store marketing development	No applied and not mentioned frequently	Mentioned frequently (voice assistants, virtual technology)

In conclusion, we can state that the main difference for the analysis and the literature review is that companies are investing and researching digital marketing tools a lot more than in-store marketing. In-store marketing is considered to be a future tool and that gives it low importance. Privacy protection laws are not frequently mentioned in secondary sources while all the interviewees mentioned to be concerned about this matter.

5 Conclusion

Innovation can be driven through the use of algorithms analyzed by the tool Machine Learning. These algorithms make predictions of commercial routes. Through this innovative tool, marketers will be able to predict purchases and trends before the market does. Due to the discovery of new customer segments, companies are able to create the best suitable advertisement for each product with a focus on that particular consumer group.

This makes an advert more successful and therefore gives higher ROI. Loyalty cards are a big step towards data collection. Due to the great use, companies can collect data, analyze them and then sent personalized mailings or advertisement. One interviewee mentioned to be having a major change in conversion to the store and after purchase due to selective mailings. Overall, Artificial Intelligence has a positive effect on Marketing in the retail industry.

There is a strong relationship between the online and offline marketing industry. The use of a loyalty card creates more conversion towards the store, the conversion towards the store increases because users receive a personalized promotion, mail or advert. These actions are happening due to the implementation of artificial intelligence in marketing strategies.

There is a major downside towards Artificial Intelligence for marketing practices due to privacy laws. Not every consumer likes the feeling of ‘’being watched and controlled’’ by technology all the time. As a company you need to be transparent about the actions you take to gather data and analyze consumer preferences. Brand Engagement should not cross any borders. As a company you want to be trusted and overusing artificial intelligence can create and artificial relationship with your image towards a company. Keeping it personal might be a challenge when using AI to gather consumer information.

In conclusion, Artificial Intelligence gives marketers a lot of benefits. We are moving towards a personalized world, a world where future purchases can be predicted, where online and offline shopping are strongly related to each other and where the consumer does not have to think about which products could potentially suit him or her best.

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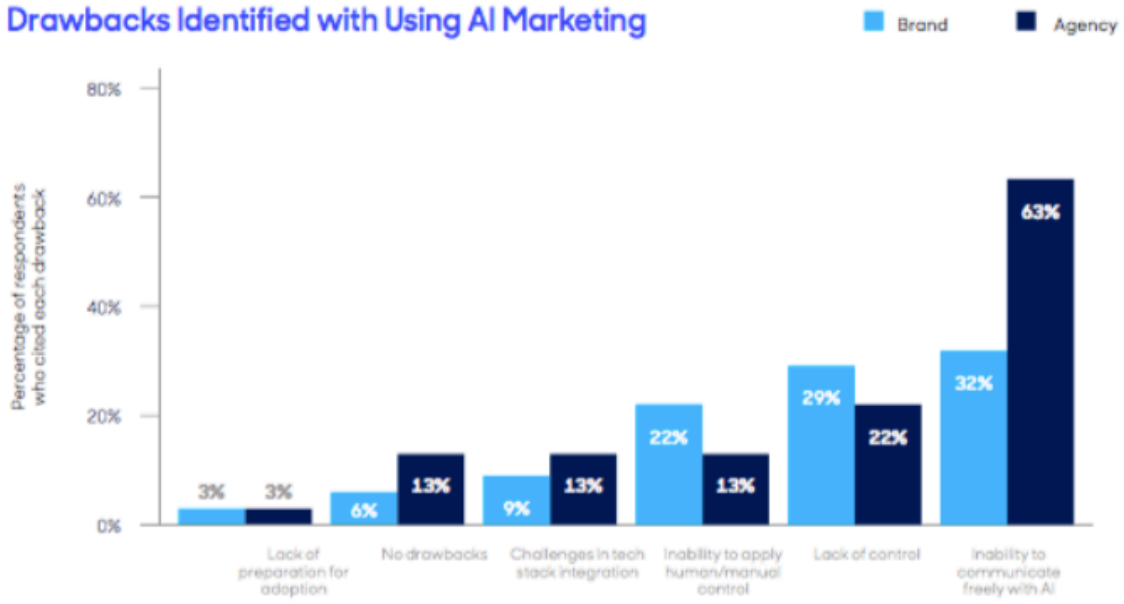
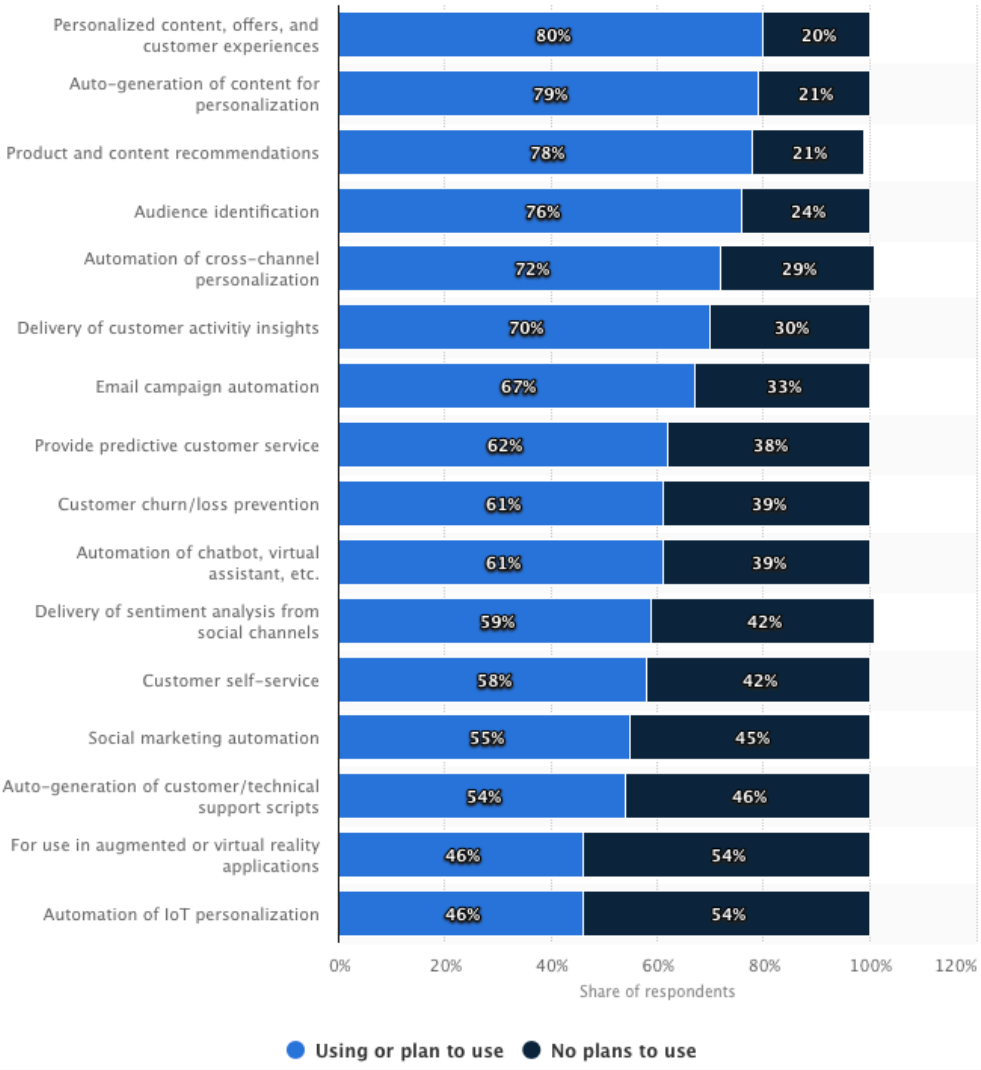
Appendix

The possible drawback from AI adoption in Marketing are displayed in the chart below.



‘’This statistic presents the adoption of artificial intelligence in marketing personalization according to industry professionals worldwide in 2018. According to the findings, 78 percent of respondents stated that they were either currently using or planning to use artificial intelligence in product and content recommendations, while 21 percent said they had no pans to use AI for this purpose.’’ (Statista, 2019)

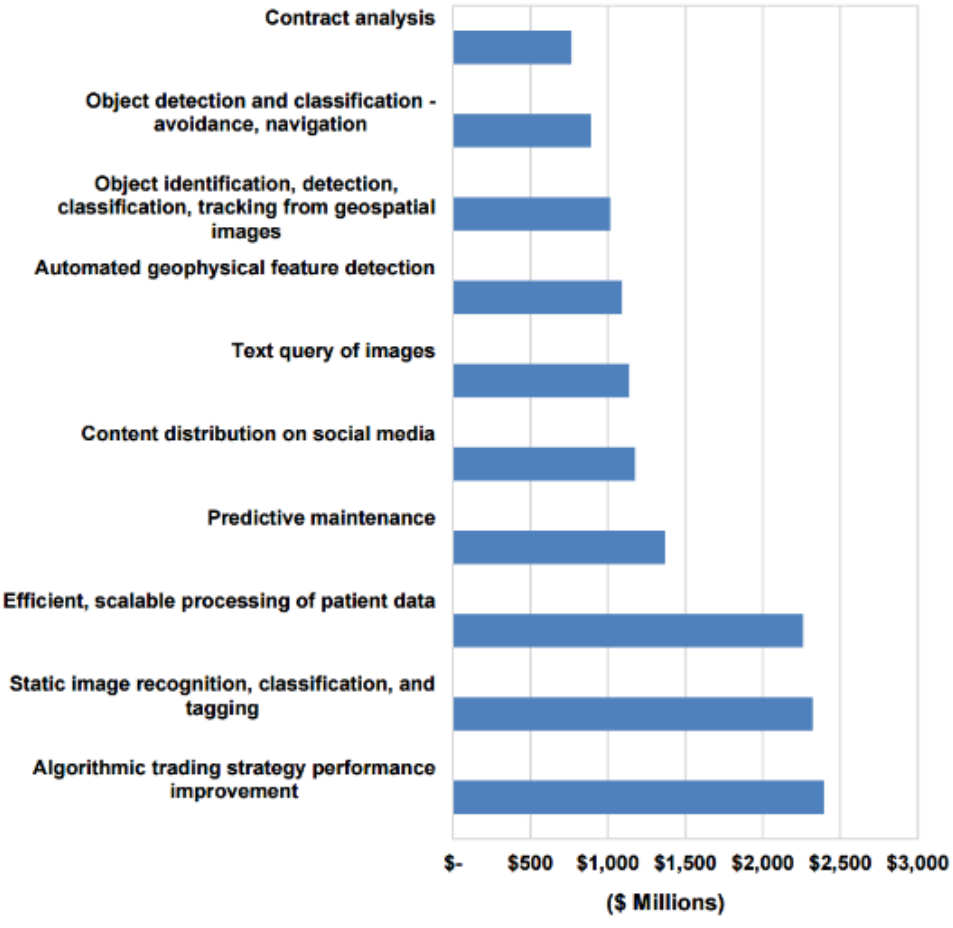
1. **Adoption of artificial intelligence (AI) in marketing personalization according to industry professionals worldwide in 2018**



‘’Tractica forecasts that the revenue generated from the direct and indirect application of AI software is estimated to grow from $643.7 million in 2016 to $36.8 billion by 2025. This represents a significant growth curve for the 9-year period with a compound annual growth rate (CAGR) of 56.8%.’’[6] (D., 2019)

The chart below shows Tractica’s top 10 AI use cases in terms of revenue in 2025

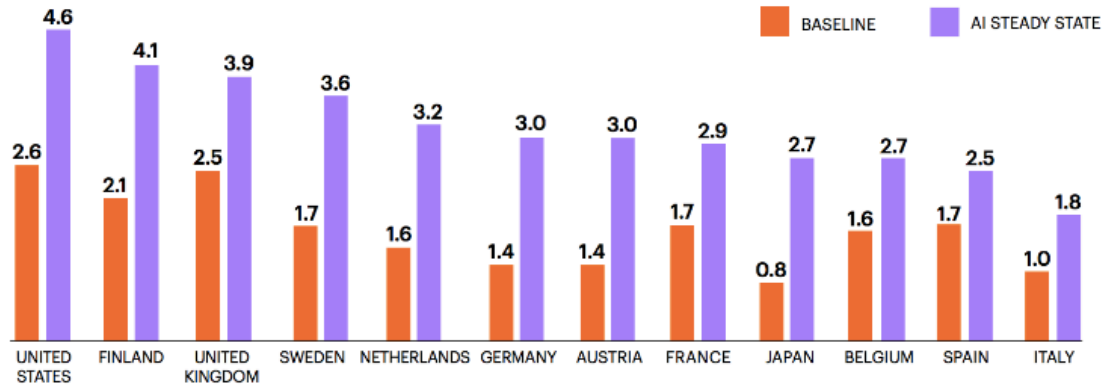
Chart 1.2 Artificial Intelligence Revenue, Top 10 Use Cases, World Markets: 2025



(Source: Tractica)

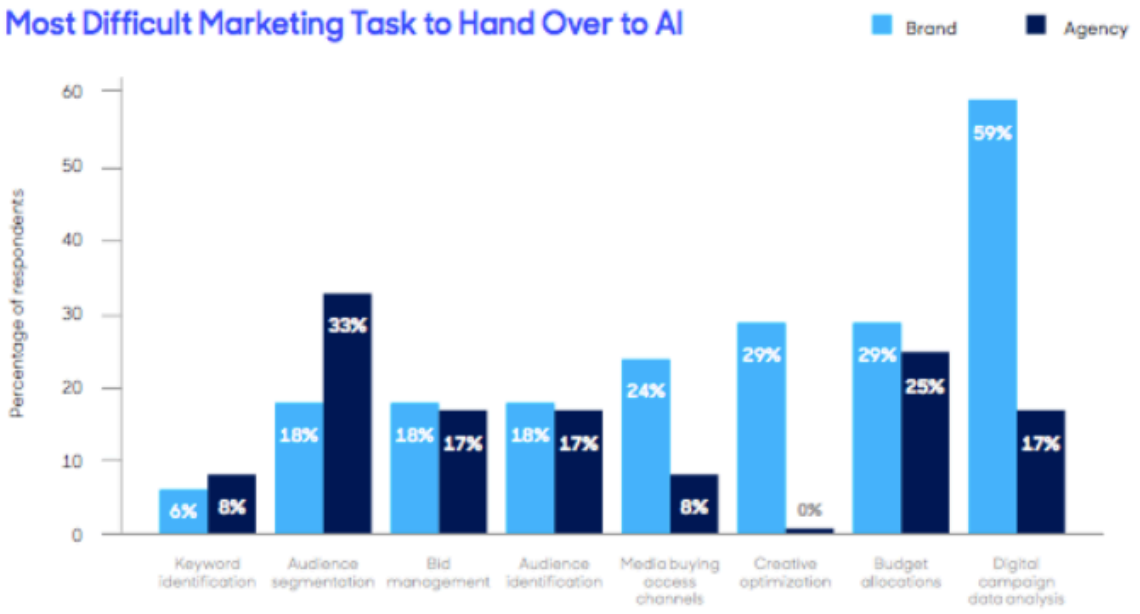
‘’Accenture, in association with Frontier Economics, modeled the potential impact of AI for 12 developed economies that together generate more than 50 percent of the world’s economic output.’’[7]

Accenture’s stacked column chart of GVA growth for 12 selected countries with AI as factor in production:



Real gross value added (GVA) (%, growth)

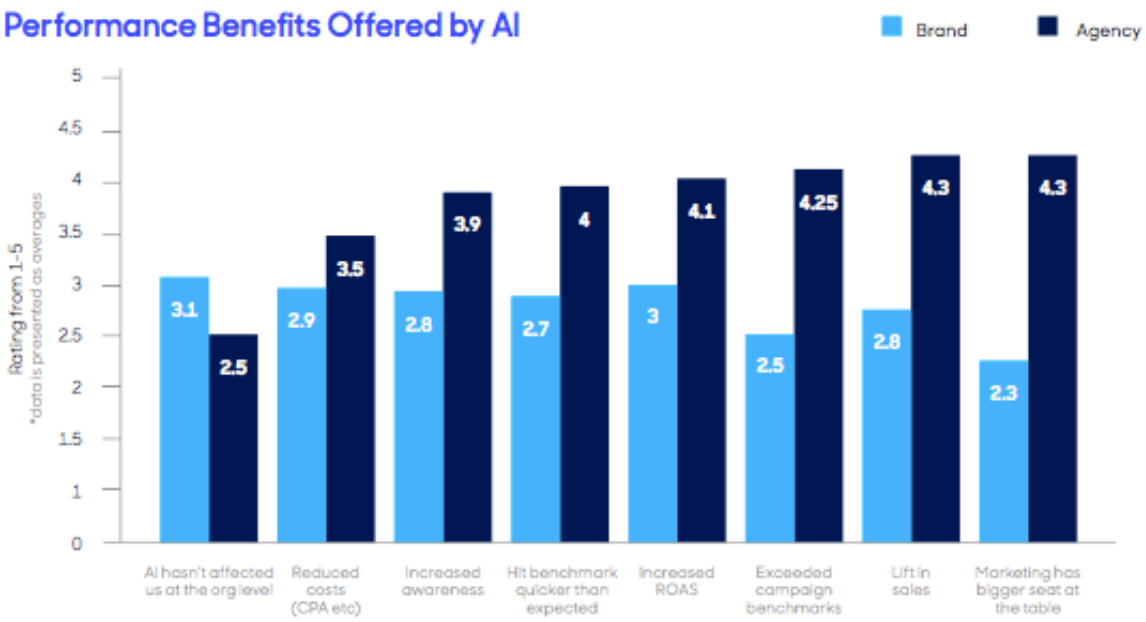
Source: Accenture and Frontier Economics

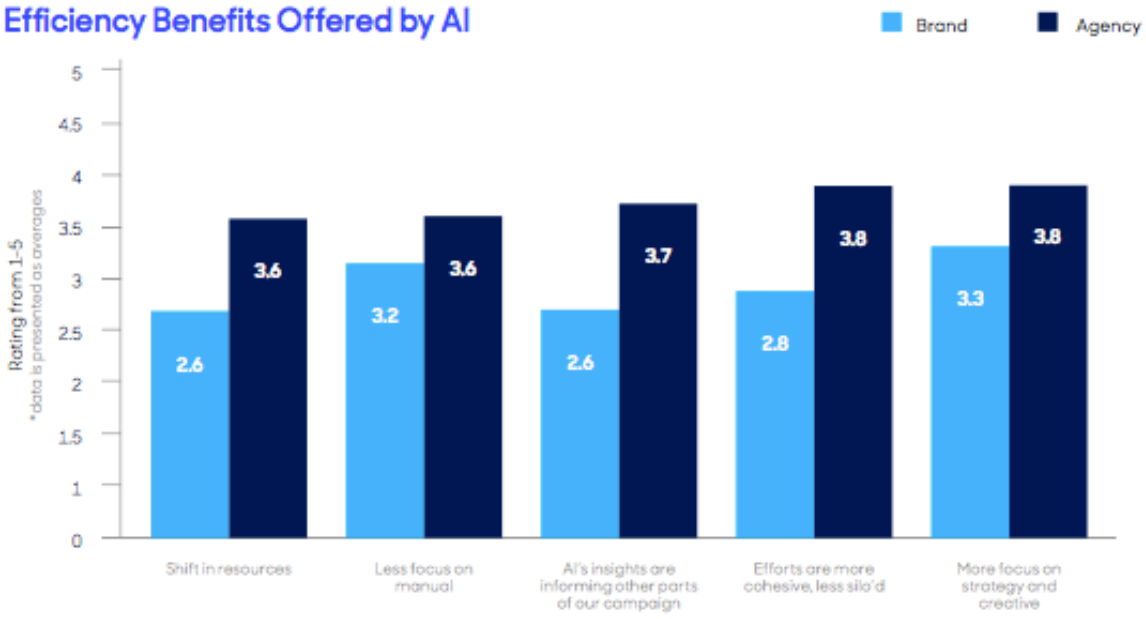


Budget allocation seems to be the most difficult task to hand over to an automated system

like AI.

For the brand marketers, 59% found it hard to give up their digital campaign analysis, while 33% of the advertising agencies had difficulties with giving up their audience segmentation.





In-Depth Interviews

''The influence of Artificial Intelligence on Digital Marketing and In-store customer experience in the retail industry through its prospected developments''

INTERVIEW 1: DANNY SANDERS

Could you introduce yourself and explain your role at Unit4 VerzuimSignaal?

Danny Sanders, General Manager of Unit4 VerzuimSignaal. Short intro on VerzuimSignaal:

- Number 1 player in the Dutch absence management software market
- Serves 427 customers (corporates, health & safety service providers and insurers) and 2.4m registered employees
- Enables customers to gain deep insight into the absence of their employees in a highly efficient way, which is critical to:
    - Guarantee full compliance with the applicable rules and regulations that employers are faced with
    - Effectively manage the costs associated with absence
- Flexible, complete solution with a broad set of tools, modules and connectivity
- Solution pricing based on number of employees drives high degree of recurring revenues (91%) and strong visibility

When did you first become familiar with the concept of Artificial Intelligence, and could you explain what exactly you know about it?

I have read about it for many years, but since heading to Unit4 VerzuimSignaal, we started investigating the opportunities of AI within our business. The first steps we are taking:

- Leverage the vast amounts of data present in VerzuimSignaal
- Provide decision support based on employee behavior using machine learning
- On an aggregate level, provide benchmark data on absence and other relevant metrics
- Prevent long term sickness by identifying employees at risk early on
- Monetize largest database in the Netherlands

What are the most used Marketing tools for Unit4 VerzuimSignaal? (Digital Marketing, Traditional Marketing, In-store customer experiences…)

We use Marketo and PerfectView. For sales we use:SalesForce.com. No B2C & In store marketing. We are B2B focused with a major role for the sales team. We do social selling via LinkedIn.

Do you believe that Artificial Intelligence could be a helpful tool for market research in the retail of Unit4 VerzuimSignaal?
If you are already using Artificial Intelligence in your company, could you explain how it is used and what kind of effect it has had since the implementation?

We don't use the Retail channel (see 2./3.).

What is your opinion about the use of Artificial Intelligence for Digital Marketing? (data collection, personalized recommendations…)

It does have a lot of potential, but be aware of public opinion. Customers have more and more issues with the idea of the "big brother" watching them.

Would you consider Artificial Intelligence a threat or an opportunity for Marketing purposes? (legal issues, data protection…)

I am optimistic in this very important, but we must show customers the upside. Be transparent about what you do and what is in it for them. If you skip this step, you will catch the falling knife named GDPR/legislation.

How do you think Artificial Intelligence will develop during the upcoming years within the (Marketing) Industry (of Unit4 VerzuimSignaal)?

Implementation will be a challenge because of lack of sufficient number of data science specialists.

Are there any comments you would like to make regarding this interview?

I like your subject Lavinia, good luck!

INTERVIEW 2: EVELIEN DE BOER

Could you introduce yourself and explain your role at Heineken?

Good afternoon!
My name is Evelien Sanders and I am from the Netherlands and currently living in Zeist. My office is based in Utrecht. For the last 5 years I have been employed at Heineken as the Retail Director of the Netherlands. Additionally, I am a member of the management team of the Netherlands. These roles make me responsible for all the retail activities in the Netherlands. Examples are; sales, management and e-commerce strategies. At Heineken I am mostly doing retail activities with companies as; Ahold, Jumbo, Superuni (a bying alliance) and Aldi. These are examples of supermarkets in the Netherlands. I am responsible for the distribution of Heineken products to these supermarkets and finally the end-consumer. Before my role at Heineken, I was employed at SCA Hygiene Products for over 10 years as their Commercial Director Retail for the Benelux countries. SCA Hygiene Products was a company that was offering personal care products, forest products, baby diapers, feminine care, consumer tissues and solid wood products.

When did you first become familiar with the concept of Artificial Intelligence, and could you explain what exactly you know about it?

My first interaction with AI was 5 years ago. AI has been on top of the agenda ever since in the business of Heineken. We recognize that technology is moving extremely fast, just like consumers are. At Heineken, it is becoming more and more important to connect with our end-users/consumers/shoppers to begin with. We are a centric-shopper organized business. Consumers are always our starting point and through the use of AI we are now able to analyze these consumers and get a closer look at their preferences. This gives us the opportunity to adapt our marketing strategy towards the consumer. Heineken is a data-driven commerce organization and we have a high need to predict data based on our analyzed consumer behavior data. Through these types of data, we are then also able to drive our innovation. Our innovation can be driven due to the use of algorithms that make the predictions of commercial routes within our company possible.

What are the most used Marketing tools for Heineken? (Digital Marketing, Traditional Marketing, In-store customer experiences…)

Heineken consists of many different type of beverages. This means that every beverage has a different target group. The marketing mix is adapted towards each product.
We use the marketing mix for every product differently:

- Television
- Sampling
- Billboards
- In-store communication
- Example fridges in each Heineken store
- Horeca outlet: design for their outlet
- Digital tools: IDDM: Individual Data Driven Marketing

Experimenting is a very common tool that is used for the brands within the Heineken company to figure out which target group belongs to a product.

Example:
For our product ‘’Desperados’’ we are currently only using billboards, digital marketing tools, festivals and events. Desperados is a product with a very specified target group. This group does not watch television anymore. Recently we have moved a big part of our marketing budget towards the digital marketing platform of Heineken.

Do you believe that Artificial Intelligence could be a helpful tool for market research in the retail of Heineken?
If you are already using Artificial Intelligence in your company, could you explain how it is used and what kind of effect it has had since the implementation?

Heineken is already using algorithms to predict future tastes of beverages on I am 100% sure this tool will get more advanced. I definitely think that AI is a helpful tool for Heineken and any other big corporate company. At the moment Heineken is predicting the future based on

algorithms, this tool is called: predictive analytics and makes sure that you can predict the future based on historical data in order to steer the direction of innovations.

What is your opinion about the use of Artificial Intelligence for Digital Marketing? (data collection, personalized recommendations…)

We collect a lot of data which is not extremely personalized but based on persona which makes it look like that you get a 1 to 1 recommendation but actually *you are you* based on a group. The use of different types of digital advertisement is based on data in order to select the most optimal advertisement for a certain product. A lot of testing is done before you are able to know which advertisement strategy is most useful for any product.

Would you consider Artificial Intelligence a threat or an opportunity for Marketing purposes? (legal issues, data protection…)

At the moment I strongly believe that AI is an opportunity for marketing purposes. It is extremely cost effective when it comes to media investment spending.

At Heineken we value privacy and data protection a lot. It is in the heart of our company that we want to be trusted by our consumers. A big corporate like Heineken cannot afford a mistake in data protection laws as we reach an extremely big audience all over the world. A lack within our privacy and data protection policy could give us a reputational risk, and at Heineken we believe our reputation is of high importance. Legal issues and AI will become a bigger struggle, the more popular AI becomes during the upcoming years. When keeping the ethical side in mind, you should know how you want to behave as a company. As long as the use of AI in our data system does not cross borders of how we want to be seen by a consumer, everything is okay.

Example:
We are not allowed to advertise beer on television before 9PM. But we can advertise our 0.0% beer before 9PM. Ethically we chose not to advertise any alcoholic beverage that Heineken is selling because the first thing in mind of a consumer when they see Heineken is: alcoholic beer.

How do you think Artificial Intelligence will develop during the upcoming years within the (Marketing) Industry (of Heineken)?

Will develop extremely fast – even faster than we think – due to technology development, also competences of young people are evolving.

Are there any comments you would like to make regarding this interview?

You chose a very interesting topic, very upcoming and very innovative. Looking into the future is never a bad idea on your age! A lot of big companies are currently doing a lot of research towards the implementation of Artificial Intelligence.

INTERVIEW 3: WIENKE TRUIJENS

Could you introduce yourself and explain your role at Kruidvat?

My name is Wienke Truijens. I am currently employed at A.S. Watson which is one of the biggest health and beauty retailers worldwide. I am the Head of Marketing in this company for the Netherlands, Belgium and France. Additionally, I am also head of Marketing for the Dutch company called; Trekpleister. A.S. Watson is the number one retailer for health and beauty in the Netherlands and Belgium. The organization dominates about 60% of the market.
I have a team of 70 people working for me at the moment. Together we are creating campaigns for the Netherlands and Belgium. I am responsible for the launch of weekly campaigns of Kruidvat.
Examples are; daily promotions, seasonal topics… These campaigns are also adapted towards the television, radio, our website and online channels.

On average we create;

- 6 television campaigns
- 4 radio campaigns
- 15 online campaigns
- 7 Facebook campaigns
- 7 Instagram campaigns

These categories consist of all the possible products that Kruidvat has to offer (Health, baby products and beauty). I am also responsible for all the social media channels and for our content marketing. Other than that I also create the brochure of Kruidvat. Regarding in-store advertisements, I am responsible for the banners, displays and posters to get the consumers' attention.

When did you first become familiar with the concept of Artificial Intelligence, and could you explain what exactly you know about it?

I became familiar with the concept of AI about 4 years ago. At that time it was not relevant for our company yet but we were keeping an eye on the trend because it could potentially give us many opportunities. The way I got to know about it was mainly through our advertisement offices and media offices. These are Initiative Media in the Netherlands and The Green House Group. They present us the media trends every once in a while.
Brands like Nike, L'Oreal and Facebook are doing tests with these offices. The outcome of these tests is presented to companies like Kruidvat. Kruidvat is reaching a lot of audiences through television, radio and brochures. At the moment this works very cost effective for us. AI would be a big investment and very time consuming. The marginal cost of AI at this moment is not big enough to start adapting towards the use of it. Now, about 3 years later, we are coming towards our dilemma. There are three reasons why Kruidvat is strongly considering the implementation of AI in its marketing strategies;

1. Reaching consumers via mass media is getting more and more expensive and less people are using mass media, so we need to find alternative ways to reach these audiences
2. It is difficult to get the consumers' attention now a day, you have to be creative and innovative to get that attention
3. We need to find out what is relevant for an individual

Relevance and individual preferences are two key words that AI could help Kruidvat with. What is relevant information for an individual?

What are the most used Marketing tools for Kruidvat? (Digital Marketing, Traditional Marketing, In-store customer experiences…)

At Kruidvat we are using all the existing marketing tools to reach our audiences.

Mass media:

- Television
- Radio
- Online campaigns
- Outdoor campaigns

  → These are getting more expensive and less effective because our society is using these channels less.

Digital marketing:

- Online shop
- Online campaigns:
  - Banners
  - SEO (Search Engine Optimization) – not paid for but easy to track due to an algorithm

In-store marketing:

- Ceiling advertisements
- Price tags
- Popular Trick at Kruidvat's in-store experience: a little mess
  - In the middle of the aisle there are boxes and displays, which make you stop during your walk through the aisles. These stops give you impulses to buy little things like a lip balm or a nail polish.

Last but not least, we are offering our consumer a loyalty card. The loyalty card that we offer at Kruidvat has 4 million users and this makes the card the third most used loyalty card in the Netherlands. The first one is Air Miles and the second one is the AH bonus card which is a Dutch supermarket. Our loyalty card gives us a lot of client data. Through this card, we know exactly what our consumer buys and in what category they belong.
At Kruidvat we do a lot of mailings, so with the use of this loyalty card we can sent personalized mailings.

Example:
If a consumer buys beauty products 3 times a month, we will send them a mail saying that there is a special promotion for her certain beauty product brand. A pregnant woman will not receive promotional mailings about beauty products because that is not her interest. She will receive baby product information.

Artificial Intelligence is a tool that can analyze such findings about consumers. Analyzing information of over 4 million people is not possible by a human. At first we would send out any promotional email to all our existing consumers but through the use of Artificial Intelligence we can be selective. We can send mailings with beauty products to young woman and baby products to young mothers. This sums up that AI gives us the opportunity to send relevant products to an individual. After a test that we have done, we found out that selective mailings are way more effective then general mailings. The conversion to go to the store is higher and the conversion after purchase is also higher after selective mailings. Kruidvat is also analyzing a consumers' click behavior through the use of cookies. We save your click behavior to see where you interest goes and what you are looking for on our online website. If we implement AI, we would be able to select and analyze this data on a personal basis and give product reminders.

After a year of practice with this system we were able to create targeted advertisements. This was done by people in an office but soon this will not be possible anymore and then we will have to implement an AI system. At Kruidvat, we are researching a future marketing tool to create a better in-store experience. We would like to install digital screens that adapt on a daily basis to the situation of the day.

For example:
If it rains outside, we want that screen to light up and tell the consumer were the umbrellas are in the store. If it is 30 degrees we want the screen to display the sunscreen.
FASE 1: we want to make these displays ourselves and give the screen inputs
FASE 2: introduce AI in the system to make the system recognize when it rains or when it is hot. If it is less than 15 degrees, we offer sweathers and if it is more than 15 degrees we offer deodorant.

Do you believe that Artificial Intelligence could be a helpful tool for market research in the retail of Kruidvat?
If you are already using Artificial Intelligence in your company, could you explain how it is used and what kind of effect it has had since the implementation?

It is more than helpful. If we are not implementing systems like AI, we will not be competitive enough. Supermarkets are one of our strongest competitors in the field and they have a great online presence. It is easy for supermarkets to advertise an additional shampoo with a purchase.

What is your opinion about the use of Artificial Intelligence for Digital Marketing? (data collection, personalized recommendations…)

My question is rather, is it used carefully?
In the earlier days I would walk into a store and the sales assistant would come up to me and give me a recommendation because she knew me personally because I was a loyal customer. Now I feel pushed quite a lot because all my information is available online and I am constantly receiving recommendations. We have to keep in mind that we should not forget to use the right brand engagement. Is the brand I am receiving recommendations from, one of my important brands or a rather irrelevant brand. For any brand it is important to be ‘’friends’’ with the consumer.

Would you consider Artificial Intelligence a threat or an opportunity for Marketing purposes? (legal issues, data protection…)

I consider AI a must-have and an opportunity (80% positive). But we must consider to take a close look at our privacy policies when it comes to data analysis with AI. We have to be very care full with client data. At Kruidvat we also sell medication and the purchase of medication is very personal and private.

How do you think Artificial Intelligence will develop during the upcoming years within the (Marketing) Industry (of Kruidvat)?

I believe that AI will be bigger, faster than we think. We will make a fast shift from mass communication towards personal communication. AI will make this shift easier.

Are there any comments you would like to make regarding this interview?

Your subject is very strategic. You are looking into the amount of investments done in technology and that is a very trending topic right now.
You have to keep in mind to look at the term ‘’Brand Engagement’’ when researching AI. Also bear in mind to control your juridical data management policies regarding this topic.
For me, there is no use of AI without the juridical data management and brand engagement strategies. At the moment we are investing in mass media, but this investment will slowly shift to the investments towards the technological aspect because in the end, this will create more return on investment. Example: We first use a sample of 1000 people to see if the technological investment is worth it, if it is, we use it on 1 000 000 people.

INTERVIEW 4: WHITNEY FRIJNS

Could you introduce yourself and explain your role at Frijns Industrial Group?

I am Whitney Frijns, general manager of the Dutch part of Frijns Industrial Group, a steel construction company. We have 2 establishments in Holland, as well as 2 establishments in Qatar.

When did you first become familiar with the concept of Artificial Intelligence, and could you explain what exactly you know about it?

I have read articles about artificial intelligence, as well as watched documentaries. Also AI is also a popular and exciting subject in movies. Speaking of AI in marketing, we all know about cookies, and see our viewed products and interests returning in ads everywhere on the internet. This is already an early stage of AI, which will only be developed more and more in the (near) future.

What are the most used Marketing tools for Frijns Industrial Group? (Digital Marketing, Traditional Marketing, In-store customer experiences…)

We are very active in the (petrochemical) industry. The marketing tools we use are mostly advertisements in branch magazines. Since especially the petrochemical projects are very specific, not every steel company is certified and capable of doing these jobs, due to safety rules and strict demands.

Do you believe that Artificial Intelligence could be a helpful tool for market research in the retail of Frijns Industrial Group?
If you are already using Artificial Intelligence in your company, could you explain how it is used and what kind of effect it has had since the implementation?

At the moment I don't think AI would be a very helpful marketing tool in a company like ours. Our products/constructions are not only based on personal preferences. If a client for instance wants to build a new company workshop hall, we have to consider many more factors than only how the client wants it to look like and the measurements. We have to calculate the forces, consider the (weather) circumstances, maximum loads etc. The practical factors define how the building needs to be built, prior to the aesthetic preferences. On the other hand, I believe that AI could be helpful in our producing machines to simplify the fabrication process.

What is your opinion about the use of Artificial Intelligence for Digital Marketing? (data collection, personalized recommendations…)

When I think of AI as a marketing tool for my personal life, I think that it would make life easier. But on the other hand I believe it will also have a big influence on our privacy. I think our lives are already made so easy by all the (digital) developments that we need to consider how far we need to go. In my opinion we have almost reached the top, and if we go too far it Will at a certain moment have more disadvantages than positive consequences.

Would you consider Artificial Intelligence a threat or an opportunity for Marketing purposes? (legal issues, data protection…)

As I said before I believe that we are on the way up, but not far from the top. The advantages are at the moment still bigger than the negative consequences. Privacy is already a big issue and people get more aware of the negative consequences the digital world creates. Companies as web shops for clothing have big advantages from digital marketing, but when it goes too far and people feel like they are watched and their privacy is intruded it will go downhill very fast.

How do you think Artificial Intelligence will develop during the upcoming years within the (Marketing) Industry?

I think in the near future there Will still be a big development in AI in marketing. In the beginning it will be exciting and people will want to be part of it, until the negative factors will outgrow the advantages. In the end people will want to keep their personal life personal and not have the feeling that Big Brother is watching all the time.

Are there any comments you would like to make regarding this interview?

My conclusion is that AI can be very helpful for marketing purpose, and also for private persons as long as it is limited.