LAB University of Applied Sciences

EFFECTIVENESS AND UNIVERSALITY OF ARTIFICIAL INTELLIGENCE IMPLEMENTATION IN MARKETING

MEDIA INDUSTRY AND COSMETICS INDUSTRY

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Abstract

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Title of the thesis

Effectiveness and universality of artificial intelligence implementation in modern marketing
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The thesis work was aimed at proving the effectiveness and universality of artificial intelligence implementation in modern marketing. Many entrepreneurs questioned artificial intelligence marketing effectiveness and many consumers had biased opinions on artificial intelligence. The following steps helped in unveiling artificial intelligence stereotypes and proving its benefits.

Theoretical section consisted of two chapters where the framework for artificial intelligence and marketing were explained. The main types of artificial intelligence were reactive machines, limited memory, theory of mind and self-aware artificial intelligence. Also, particular artificial intelligence technologies were discussed. Marketing mix (4 Ps: product, price, place, promotion) was the base for describing marketing theoretical framework along with 4 As from the customer perspective (acceptability, affordability, accessibility, awareness). The intersection of the two fields was represented by demonstrating artificial intelligence influence on each of the 4 Ps and 4 As.

Empirical section comprised two chapters. The data collected through two surveys served the base for qualitative analysis of people's awareness of and knowledge on artificial intelligence and artificial intelligence marketing. Moreover, two companies from different industries were case studied. Netflix (entertainment and media industry) and Sephora (beauty and cosmetics industry) both used artificial intelligence in their marketing strategies. The use cases were described and analysed with the regard of their influence on company's and customers' perspectives of the marketing mix.

The result demonstrates that implementing artificial intelligence technologies in marketing is effective. Artificial intelligence brings substantial improvements to the company's marketing mix and attracts customers as their prospect is also impacted positively. Furthermore, as both companies progress after artificial intelligence marketing application, the universality of the method for different industries is proven as well.

Further study is needed to reveal a more detailed impact of artificial intelligence on marketing, for example, taking 7 or 9 Ps concept. Also, other industries may use other artificial intelligence technologies in marketing that can be studied. Artificial intelligence field is significantly

Keywords

Artificial intelligence, marketing, marketing mix, effectiveness, universality, company, customer.

Contents

Appendices

Appendix 1. Questionnaire “AI awareness” results

Appendix 2. Questionnaire “AI marketing” results

1 Introduction

1.1 Subject of the thesis

The thesis topic lies in the field of technologies which are in the recent years saturating business world and marketing in particular. “Effectiveness and universality of artificial intelligence implementation in modern marketing” is the topic overviewing recent AI technologies and their effectiveness to businesses and consumers. The study is done for different industries and provides a practical example of its use in Sephora and Netflix. The two companies operate in very distinct areas of business, yet both have significant experience and positive results after AI implementation. However, before presenting a research and case study comparison of Sephora’s and Netflix’ performance after embedding AI in marketing operations, theoretical framework of marketing and AI should be established and explanations on why it is considered beneficial for business and marketing have to be investigated.

1.2 Objectives of the study

The objective of this study is to demonstrate the effectiveness and ubiquitousness of AI in marketing for both enterprises and customers. AI is often biased and misunderstood; however, it can add value to marketing of a company regardless the industry which will be proved. The work will focus primarily on two companies – Netflix and Sephora, however, other theoretical implementations of AI in marketing will also be covered in order to provide a complete picture of how marketing can benefit from AI. The study is not aimed at covering technical functionalities of AI, but mostly will present existing AI implementations in marketing and analyse their performance results.

The study objective is developed as follows:

1) Explaining theoretical framework of marketing and AI and revealing AI implementations in marketing.
2) Surveying people on their awareness of AI and AI in marketing and analysing results.
3) Describing and analysing actual AI implementations in marketing on the example of Netflix and Sephora from the point of effectiveness and universality for the companies and their customers.

To conclude, this thesis seeks to prove the effectiveness and universality of AI use in marketing. The study will provide a thorough research on AI to increase mass awareness

and understanding of AI's universality and value for the company and consumers in different business industries.

1.3 Theoretical framework

The theoretical framework of the study focuses on the concept of AI, its types and history as well as on its diverse implementations in marketing based on particular use cases. Moreover, the author will demonstrate competence in marketing by building a conceptual base to be used in this work. The study of AI as a phenomenon will provide the understanding of why and how it is applied in building marketing strategies.

1.3.1 AI: definitions and classifications

The definition of artificial intelligence is too diverse and complex to explain in one sentence. The common term offered in Cambridge dictionary states that artificial intelligence is *the use of computer programs that have some of the qualities of the human mind, such as the ability to understand language, recognize pictures, and learn from experience*. This explanation is very basic and presents the core meaning of artificial intelligence. However, to better understand the complicated nature of AI, a more elaborate explanation is needed. *A system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation* – this is another definition expanding further to a scientific and professional interpretation. (Haenlein & Kaplan 2019, 5.)

Despite introducing two definitions of AI, it is clearly seen that they are not enough to comprehensively describe the term. Therefore, it is crucial to outline the development of AI over time and establish the most appropriate for this study AI classification. There are undoubtedly many academic classifications of AI, however, in this study it would be viable to implement one particularly illustrative in terms of case companies. As for the types of AI there are reactive machines AI, limited memory AI, theory of mind AI and self-aware AI. (Lateef 2020). Marketing of the selected companies primarily relies on simpler AI types like reactive machines, limited memory AI and seldom theory of mind AI. A deeper categorisation of analysed in terms of marketing technologies is as follows: machine learning, computer vision and expert systems.

Nowadays, AI operates in many fields and can do a variety of things. The list of its most common applications includes the following: robotic vehicles, speech recognition, autonomous planning and scheduling, game playing, spam fighting, logistics planning,

robotics, machine translation, marketing decision making, etc. (Stuart & Norvig 2010, 28-29; Haenlein & Kaplan 2019, 9-10.)

1.3.2 Marketing and AI – overlapping areas

Marketing as a part of business structure generates many advantages and creates emotional connection to the brand. Marketing is aimed at customer engagement, and therefore, at building customer relationships in general. It creates customer value with the help of the marketing strategy. (Kotler & Armstrong 2017, 29.) A well-developed marketing strategy leads to remarkable brand awareness which results in new customers' increase. It is a goal of marketers as well to retain clients and build brand loyalty thus enhancing existing customer relationships.

The core part of marketing strategy is marketing mix. Marketing mix consists of the four Ps – product, price, place and promotion – which in this scheme are considered the tools that company uses to perform its marketing strategy. Each element of the marketing mix is intended to achieve organisation's marketing objectives and holistically create and deliver value to the consumers. (Kotler & Armstrong 2017, 77-78.)

Although marketing mix is the basis of a successful marketing strategy, it can be significantly improved and convey a greater value to the company as well as to the customers. The paradigm conveying customer benefits is called the 4 As – acceptability, affordability, accessibility and awareness. (Kotler & Armstrong 2017, 79.) Nowadays, one of the instruments to enhance the effectiveness of the marketing mix from both company and consumer sides is AI.

The development of AI has been ongoing for more than 60 years and, therefore, encountered its path in marketing as well. The diversity of AI applications in marketing has clear positive results for all parts of the marketing mix. Among the areas of AI, the following are frequently used in marketing: voice and text processing, image recognition and processing, decision-making, autonomous robots and vehicles. (Jarek & Mazurek 2019, 49-51.)

Product	**Price**	**Place**	**Promotion**
• New product development • Hyper-personalisation • Automatic recommendations	• Price management and dynamic price matching	• Convenient shopping • Faster and simpler sales process	• Creating a unique experience • Personalised communication

• Additional solutions beyond product category • Creating additional value		• 24/7 customer service • Purchase automation • Service-free shops • Consultant-less customer support • New distribution channels • Merchandising automation	• Creating the wow factor and offering benefits • Elimination of the process of learning product categories • Minimised disappointment

Table 1. AI impact on all areas of the marketing mix (Jarek & Mazurek 2019, 52)

The question on the reasons of AI marketing is often asked: why using AI if marketing and promotion function effectively in a conventional way? Why investing in such technological advances? Over the years, the answer to these questions became very thorough and well-prepared. The influence of AI on all four components of the marketing mix has been studied and the results proved the effectiveness of AI to both company and consumers. Table 1 by Jarek and Mazurek demonstrates a detailed description of the mentioned influence.

1.4 Research questions

The research questions are aimed at supporting the objectives of the study and helping in finding the right research path. They have to be in line with the thesis topic and relate to both theory and practice. In this paragraph the choice of research questions will be explained.

- How are AI and marketing overlapping as areas of expertise and in practice?
- What are the implementations of AI in marketing?
- How is AI in marketing effective to company and customers?
- Why is AI universal for marketing in different, non-scientific industries?

The first question aims at demonstrating competence in both marketing and AI not only explicit theory explanations are needed from both areas but also it is essential to highlight how these two fields are connected to each other theoretically and in practice. This question links theoretical concept of marketing mix to AI. The next question is quantitative as it names particular AI implementations in marketing. After linking theoretical content of marketing to AI, there is a need to make examples of technological practicalities applied in marketing from AI. Effectiveness is one of the key emphasis of this work, therefore, one of the research

questions targets the issue of efficiency. Stating the effectiveness of AI for entrepreneurs and customers requires justification and quantitative data subject to qualitative analysis. The third question examines not only theoretical effectiveness but also how real case companies and their clients benefited from using AI. The second core element of the topic is AI universality. The conducted surveys demonstrate mass hesitation about AI and its need in marketing, therefore questioning its universality in non-scientific cases. The last question focuses on the differences of case companies implementing AI in marketing and reveals AI usefulness for diverse enterprises and customers with distinct demands.

1.5 Research methods

The research methods include literature and web-based qualitative research. Moreover, the case study concentrates on two companies – Netflix and Sephora, implementing AI in marketing, although operating in different industries.

Quantitative methods are based on a survey that focuses on acquiring information on the extent to which people are aware of AI and its abilities in general as well as its possibilities particularly in marketing. The results of the survey will be subject to qualitative analysis.

1.5.1 Surveys on AI and AI in marketing

Two surveys as a part of research will be held in the age group of 18-51. The aim of the first questionnaire is to see whether society is adequately aware of what AI is, what it needs to function, how it can be applied. In other words, it will assess overall knowledge and mass exposure to AI as a topic. The second survey will deepen the subject and collect information on people's understanding of AI in marketing and evaluate individuals' ability to recognise AI marketing when they encounter it in real life. Consumers' awareness and understanding of AI can bring value to the company. Implementing AI is not easy and quite costly, therefore, not every business can afford it financially and technically. When a company implements AI and spreads awareness about it, it can improve the brand image. Implementing AI makes the brand innovative, high-tech and up to date from the customers' viewpoint. Moreover, as it is rather expensive to use AI, the brand appears as luxurious and large-scale.

1.5.2 Sephora, Netflix and AI – cases

The two case companies operate in different industries. Beauty and cosmetics and media and entertainment industries do not seem to have many aspects in common, especially,

when it comes to such a complex technological advance as AI marketing. Nevertheless, both companies succeed in using AI in their marketing strategies.

Sephora is considered to be one of the pioneers in AI field when among cosmetic brands. Sephora uses chatbots and augmented reality developments along with image recognition to help customers choose right cosmetic items (Sephora 2020). Netflix, although a company of a dissimilar profile, uses AI as well – deep learning-based recommendations suggest customers shows they would most likely enjoy seeing (Marr & Ward 2019, 162-164).

1.6 Justification

AI is currently a trend in marketing and many companies are introducing it as part of their strategy. However, there are still many hesitations and misunderstandings about it. Stereotypically, AI is considered dangerous, likely to completely replace humans at work and difficult to handle in terms of human/machine relationships (Sakalle 2017). Therefore, theoretical and practical content of this study will enhance knowledge about AI and eliminate stereotypes about mass adoption of it.

Regarding marketing mix, it is considered a milestone in marketing theory. Although many marketers already distinguish more Ps than four, the chosen basic concept can be justified as follows. Despite the fact that marketing strategies are becoming more complex over time due to rapid world changes, it cannot be denied that product (service), price, promotion and place (channel of distribution) are still essential parts of any strategy. The study cannot expand on other existing marketing mix concepts without observing the impact of AI on underlying framework. Moreover, providing only one typical outline of marketing mix in relation to influence of AI on each part of it, allows further researchers to focus on AI affecting other marketing Ps.

The surveys' age group is very large; however, this is suitable for the research. Such a varied group of participants encompasses people of different backgrounds, education and life experience, therefore, demonstrating how the masses react to AI and how they see AI effectiveness and universality particularly in marketing. This would provide business people with an understanding of customers' attitude towards AI implementation hence providing possibilities for further research on how to market the use of AI so that the clients are attracted and not afraid of seeing or experiencing it. Moreover, the results of the surveys show which age groups are more inclined towards AI and, therefore, would better react to such initiatives as a part of marketing strategy.

The choice of companies from different industries is justified by the emphasis of this thesis on diversity of AI implementation in marketing. To demonstrate the presence of AI in online

and offline businesses, prove its overall effectiveness to the company as well as to the customers and study opportunities it has, the author analyses AI marketing in two unrelated business fields. Moreover, providing AI marketing examples from such prominent companies as Sephora in cosmetics and Netflix in media industry, would increase people's understanding about need and universality of AI in the modern world in addition to helping them identifying AI in real life.

1.7 Delimitations

The subject of AI is very wide; therefore, this study has its delimitations firmly defined:

1) AI nature and variety

AI field is very diverse; hence it is nearly impossible to cover its full history and all classifications. The theoretical part of the study will only focus on the brief history outline featuring major events and the classification used will emphasize explanations of machine learning, expert systems and neural networks as they are key in Netflix and Sephora.

2) Technological delimitations

As the research is aimed at proving effectiveness and universality of AI implementation in marketing, it shall not cover the technical functionality and engineering aspects (programming, codes, mathematics) of presented programs. The objective is to examine forms of AI technologies and results they are able to produce.

3) Marketing delimitations

When demonstrating AI potential, the study will focus on marketing applications and will analyse them in particular rather than the whole scope of AI technologies of mentioned categories. The categorisation of AI technologies will be done based on the concept of marketing mix.

4) Company delimitations

Although existing AI marketing technologies will be described and examined, practical results and evaluation will be conducted only for AI developments applied by case companies - Netflix and Sephora.

1.8 Literature and sources

The literature used for qualitative research and analysis was found mainly through university library. These are primarily books and articles. Most of them have been chosen minding their publication year to be at least 2016 or newer. As an example, the books "Principles of

Marketing” by Kotler and Armstrong, “Artificial intelligence. A modern approach” by Stuart and Norvig, “Introduction to artificial intelligence” by Ertel, “Artificial intelligence in practice. How 50 successful companies used artificial intelligence to solve problems” by Marr and Ward, the articles “A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence” by Haenlein and Kaplan, “Marketing and Artificial Intelligence” by Jarek and Mazurek can be named as primary sources.

Websites will also be used as qualitative sources. The emphasis will be on official company websites of Netflix and Sephora. Sites of technology companies related to AI, IT and automation are considered secondary theoretic sources. Moreover, other sites such as Forbes, Analytic Steps, Edureka and other learning and educational platforms focusing on writing about AI technologies in different fields are assumed as reliable.

2 Explaining artificial intelligence

2.1 AI definitions and basics

Artificial intelligence is a versatile and complicated field, often misunderstood by many people. To make this work appealing to a general reader, entrepreneur or any other person not having comprehensive and complete knowledge on AI, key terminology, classification and history, related to the subject will be introduced in the first chapter.

As a vast area of research and implementation, AI has many definitions. Moreover, there are several approaches to AI definition, each one highlighting a certain important feature of the phenomenon. The approaches have been developing and substituting each other over time, however, overviewing them would create a more holistic picture of AI.

There are four types of AI definitions (Stuart & Norvig 2010, 2):

- Based on “Thinking humanly” approach
- Based on “Acting humanly” approach
- Based on “Thinking rationally” approach
- Based on “Acting rationally” approach

As seen from the list, the categorisation is made either emphasising behaviour vs thinking process or human vs rational traits of AI. It is also important to note that rationality in this context is not considering human irrational in a sense of emotions and feelings but rather represents the fact of systematic errors in human reasoning that cannot be totally avoided (Stuart & Norvig 2010, 1). Each approach focuses on a combination of named dimensions. Further, brief explanations of AI definitions depending on the approach are provided.

2.1.1 Thinking humanly – cognitive modelling approach

Considering that intelligence is one of the key characteristics of humans, it is logical to include a cognitive modelling approach for AI development. Thinking humanly involves understanding human brain and its processes effect on human behaviour and, therefore, defining AI from this perspective means basing computer programs on cognitive science research (Stuart & Norvig 2010, 3). Here, the simplest way to explain AI would be *the ability of digital computers or computer-controlled robots to solve problems that are normally associated with the higher intellectual processing capabilities of humans* (Encyclopaedia Britannica 1991). In other words, AI is a “machine with mind”, thinking humanly in the dimension of decision-making and problem solving (Stuart & Norvig 2010, 2).

2.1.2 Acting humanly – Turing's tests

Turing's test is the earliest practical instrument to recognise the intelligence of a machine. Its basic principle is to test whether the produced by a machine output is the same as the result of a human action. It examines such capacities as natural language processing, knowledge representation, machine learning, automated reasoning and now also computer vision and robotics. However, not only the presence of these technologies is assessed. The output must be human-like to the extent that a human would not identify its artificial origin. Although the test was invented around 60 years ago, it is still actual and comprises almost all technologies that AI represents nowadays. The definition of Rich and Knight (1991) for this approach would be *the study of how to make computers do things at which, at the moment, people are better* (Stuart & Norvig 2010, 2-3).

2.1.3 Thinking rationally – the "laws of thought"

The core of this approach is the science of logic. The logicist tradition is based on statements about all the objects and relations between them. In principle, AI is what develops programs that solve any problems with the help of logical notations. This approach is very valuable because it was the first one to demonstrate key drawbacks such as information uncertainty or excessive number of facts in a problem when writing an intelligent problem. From the "laws of thought" approach, an adequate AI definition according to Charniak and McDermott (1985) is *the study of mental faculties through the use of computational models*. (Stuart & Norvig 2010, 2, 4).

2.1.4 Acting rationally – the "rational agent"

The most general and appropriate definition of AI proceeds from the "rational agent". A rational agent is an entity that aims at achieving the best possible outcome. (Stuart & Norvig 2010, 4.) Although it is a simple idea, in reality it is an "umbrella term" unifying all three approaches to AI. Firstly, programs tested via Turing's test are able to act rationally. Secondly, rational agent focuses on the best solution which cannot be incorrect, therefore, featuring laws of thought and logic. Moreover, thinking humanly can be represented as a program relied on cognitive studies on the brain operation which affects human behaviour. It means that rational agent is able to adapt to human thinking. (Stuart & Norvig 2010, 4-5). As seen, acting rationally combines all AI definitions hence producing the one scientifically and ethically most complete: *a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through*

flexible adaptation (Haenlein & Kaplan 2019, 5). This definition is, therefore, considered as the core used in the thesis.

2.2 AI history and development

Abovementioned approaches have been implemented throughout the development of AI creating its time baseline. To understand how AI appeared and came to its current form is essential because history generates practical results of theoretical definition discussed in the previous subsection.

To begin with, 1956 Dartmouth Summer Research Project on Artificial Intelligence (DSRPAI) conducted by Marvin Minsky and John McCarthy is considered the birthday of AI term. However, the first ideas and concepts related to this field had been developed during the Second World War and represented after it in 1950 by Alan Turing – the famous resolver of the Enigma code – in his work "Computing Machinery and Intelligence". These two milestones established the foundation of modern research community. Turing's contribution is now the basis of testing whether a machine is intelligent or not via so-called Turing's test. (Haenlein & Kaplan 2019, 7.)

In 1963 the first AI Lab at Stanford was created by John McCarthy (Ertel 2017, 6). As many novel ideas, high expenditures on AI research had been severely criticized even when valuable programs appeared throughout years of work. The criticism led to poor advances in the field and until 1981 the most remarkable examples of continuing studies were Eliza – the program able to talk to people in a natural language – and PROLOG – a logic programming language invented by Alain Colmerauer. (Haenlein & Kaplan 2019, 8; Ertel 2017, 6.) It was only in 1981 when AI initiatives received more support as Japan started a heavily funded "Fifth Generation Project" aimed at building PROLOG machine (Ertel 2017, 6). This became a key driver to the further advances such as IBM chess computer DeepBlue defeating World Chess Champion Gary Kasparov in 1997, the raise of service robotics as a major AI research field in 2003, self-driving cars engineering by 2009 and, most importantly, artificial neural networks success in 2015 when AlphaGo, a program by Google, could beat world champion in the Go board game which is significantly more complicated than chess. This was possible due to deep learning algorithms implemented in AlphaGo which are now the essence of all modern programs labelled as AI. (Haenlein & Kaplan 2019, 8; Ertel 2017, 7.)

2.3 Common AI stereotypes

Technologies with rather complex content in terms of coding, mathematics and research are often misunderstood. AI development is associated with consciousness and self-aware machines which evoke fear in people's minds. Fantasy books and films generate frightful myths that are converted to mass stereotypes about AI. Hence, demonstrating the efficiency of AI would not be enough to unveil stereotypes. There is a need to explain why existing myths should not be taken as facts.

Firstly, many people believe that AI will replace all jobs. That is why many employees do not support their management's intentions to introduce AI technologies. Of course, AI and automation in particular are able to replace human workers, however, they will not lead to large-scale unemployment. History had an example of industrial revolutions and changes in employment patterns as factories replaced manufacturers. Despite the fact that production became mass and less people could actually work manufacturing products, the overall number of jobs remained constant. AI is expected to follow the same pattern. Moreover, automating a number of jobs would create a possibility for a more productive economy due to waste reduction and leveraging monotonous tasks and tasks that require spending large time resources. (Marr 2017.) In fact, as an example, Amazon human hiring rate has jumped to 23% during recent years despite having over 200 000 robots working in warehouses and retail (De Lea 2020).

Secondly, literature and cinematography tend to picture AI as an entity that can easily become uncontrollable and dangerous. Therefore, it is a common stereotype that AI might enslave people or cause human race extinction. Many scientists have expressed their concern about this issue as well, however, counterarguments are powerful enough to contravene the myth. AI technologies are logical in their core which proceeds from the "thinking rationally" approach. Therefore, their emotional, "human" thinking is only depending on what people teach them. By now, it is a fact that AI can never achieve human-level emotionality and intuition. Hence, it is highly improbable that a machine will develop a will to kill or enslave people. Moreover, Elon Musk reminds of regulations and checks that are always done before implementing AI in real life. If people develop and use AI wisely, AI cannot be loose. The cases where AI had caused deaths (e. g. self-driving car causing death of a pedestrian) are the examples of AI failure as a result of human mistakes in the development or implementation process but not technology willingness to kill human race. (Omisola 2020.)

Finally, a less fearful stereotype is that many people consider AI too complex to manage and implement elsewhere but science and IT. According to the survey on AI awareness

conducted by the author of this work, 74% of people in the age group of 18-55 either never can or are not sure whether they can identify AI in real life. It means that the awareness on AI is generally not very high, hence people cannot objectively assume the complexity of AI and its potential usefulness in many aspects. However, according to Statista, as of fiscal year 2019, the biggest revenue growth from implementing AI was noticed in marketing and sales operations. AI adoption for such tasks as pricing or forecasting led to a five percent or more increase in revenue in 79% of responses in Global AI Survey (Statista 2020). Consequently, AI is not too complex to implement in different circumstances. On the contrary, it is worth of implementing, especially, demonstrating such remarkable results.

2.4 Classification of AI

Having given a definition of the term with the help of different researchers, historical reference and modern outlook, it is essential to establish a classification that would be illustrative for this study. AI is classified differently and there are many criteria on which classifications exist, however, the chosen one is particularly suitable for demonstrating core AI functions and implementations in case companies.

The types of AI to be discussed in this subsection are (Lateef 2020):

1) Reactive machines AI
2) Limited memory AI
3) Theory of mind AI
4) Self-aware AI

Reactive machines are the simplest AI systems due to their inability to recollect memories and learn from them. These machines perceive their surroundings and base their decision on current situation. They are usually made for performing a narrow immediate task. (Hintze 2016.) Moreover, their performance is not improving over time, they always react to the same situations in the same way. (Ray 2018.) As an example of it, one shall remember the IBM chess computer DeepBlue which was mentioned in the historical subsection. Apparently, it was made for a specific purpose of chess playing and it defeated world chess champion indicating that its reactive nature was suitable enough to choose the next move from the available based on the present circumstances on the chess board. (Hintze 2016.)

Limited memory AI is a little more complex in terms of their functioning. In essence, self-driving cars and Siri are the most illustrative examples to explain the nature of limited memory AI. These machines can store information for a short period of time, but they never

learn from it. Limited memory can look into the past and add these short-term memories to a preprogramed world representation in order to make instant decisions. (Hintze 2016.) As an example, autonomous cars detect vehicles and pedestrians near them, their speed contain static data like traffic lights and lanes that is used to inform better decision-making in the nearest future and avoid accidents (Lateef 2020).

As the types are placed in an ascending order by their complexity, the next one is theory of mind AI. This type is very important regarding its significance in dividing AI on what people build now and what people would like to build in the future (Hintze 2016). The work on creating such machines is in progress and there are many improvements. Theory of mind is a psychology term used for describing people's and creatures' ability to feel and have thoughts, beliefs, memories and expectations that affect their behavioural decisions. Regarding AI, such machines have to be able to comprehend people's emotions and act depending on them. In other words, AI should relate to humans and not only perceive emotions but also how the circumstances influence them. (Kumar 2018.) The scientists have to develop emotional intelligence of the robots. This is of key importance because theory of mind AI will be able to interact socially among people and, therefore, not only a rationally best behaviour should be chosen but the one that matches emotions, beliefs and expectations of humans. Although there are robots that can detect facial movements, this type of AI still needs a more profound research to finally assemble "a computer with mind". (Ray 2018.)

Lastly, the self-aware AI is typically the representation demonstrated in action movies of which many people fear. These machines do not exist yet because they are considered an extension of theory of mind AI. The difference is that self-aware AI is conscious, able to understand its own characteristics and emotions and act according to them, whereas theory of mind only aims at machines understanding other humans' emotions. This type of AI could predict other's internal states based on its own state and past experiences. (Hintze 2016.) In essence, it is a complete human being (Kumar 2018). However, the developments in this area are at a very initial stage and a fully built self-aware machine is a rather distant and far-fetched reality (Davies n.d).

This classification is not an example of a purely scientific categorisation, nevertheless, its aim is to overview AI types so that it can be easily understood by an ordinary reader, not an AI specialist. The presented types give a comprehensive perspective of further AI development stages and already existing types. Moreover, applying this categorisation to marketing would mean that only reactive machines and limited memory AI will be discussed as technologies used in the field.

2.5 AI technologies

Describing a classification suitable for correlating it with marketing leads to narrowing it to branches that develop particular devices, applications or programs. As a result of reviewing different branches representation, a decision to withdraw an own AI branching was made. This own branching would be beneficial for a more ubiquitous understanding as it covers more AI-related areas. Also, an own approach results in a more complete picture of available AI developments. The output of this compound structuring is presented below.

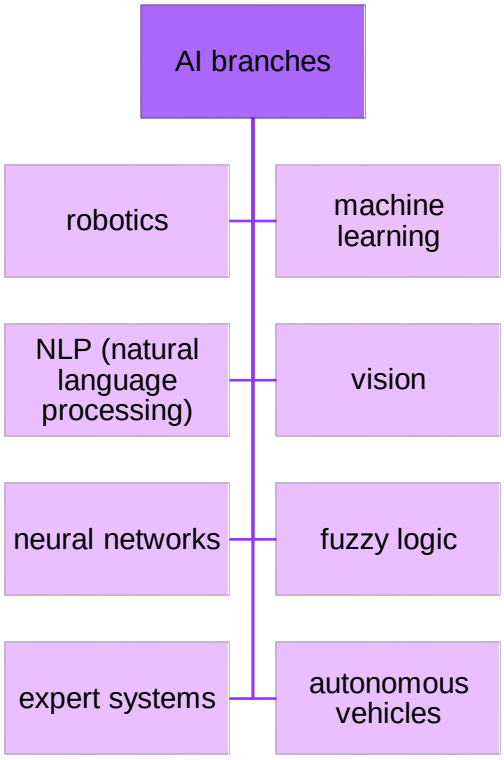

Figure 1. Generalised representation of AI branches (adapted from Kumar 2018; Lateef 2020)

AI is a vast field, therefore, offered branching fosters further research and can be expanded. The named areas are enough for building a complete representation of AI in the present. Nevertheless, only naming the technologies would not explain their implementation, thus, it is essential to expand on each of them.

Robotics is the area of AI aimed at building robots that would act in real world thus achieving accountable results (Lateef 2020). Mostly, the robots perform tasks that are difficult for humans as such or difficult to be performed constantly. The application for them is often found in assemble lines, logistics and cleaning. (Kumar 2018.)

Machine learning is an approach that teaches machines to interpret, process and analyse data to be able to solve real problems (Lateef 2020). Unlike in many cases, these programs

are not made based on unambiguously denoted codes, they are taught to identify particular objects or any targets that could be needed to achieve the final goal (Kumar 2018). The learning can be conducted in different ways such as supervised, unsupervised or reinforced (Lateef 2020).

Neural networks are essentially an extension of machine learning and are often classified as a fourth type of it. Neural networks mimic how human brain functions and are able to learn from experience. Therefore, they are often referred to as deep learning. Neural networks can solve more advanced problems than other types of machine learning and are applied in many branches of AI. (Bakshi 2019.)

Natural language processing (NLP) is a field that is now widely used by people. Many smartphones have Siri or Google Assistant that can recognise voice and convert it to text with further answering to the enquiries. Example tasks of NLP are speech recognition, grammatical tagging, natural language generation. It is now applied in a variety of cases such as spam detection, machine translation, chatbots, social media sentiment analysis, text summarising. (IBM Cloud Education 2020.) As seen from implementations, it would be one of the core focuses of this thesis further, as it is useful in marketing.

Vision or computer vision as logically derives is aimed at getting insightful information from pictures, videos or any other visual inputs. Machines observe and analyse visual information to produce recommendations or act based on it. Computer vision can be applied for the following: object detection, image classification, object tracking, content-based image retrieval. (IBM n.d.) Moreover, computer vision is also one of the technologies used in AI marketing.

Expert systems are decision-making applications that base their decisions not only on codes and heuristics but also on the knowledge from human experts in a particular field. These systems can solve advanced problems of any specialised domain. Their implementations and functions are very wide because they can acquire knowledge from a specialist in any field. Expert systems can interpret, predict, diagnose diseases, design and plan, monitor and control, instruct. (Das 2019.) As mentioned before, the extensive implementation limits allow the use of expert systems in marketing as well.

Fuzzy logic imitates human reasoning. It can output not only typical Boolean “True/False” results but also the degrees of truth between them. Fuzzy logic creates the so-called fuzzy sets that match different truth degrees. Its implementation is beneficial in metrics control such as altitude and speed, decision-making, NLP and is compatible with neural networks. (Sayantini 2019.)

Autonomous vehicles appear as a mixture of many AI branches and are often used as a synonym for self-driving cars. However, that is why autonomous engines in this study are separated to a different branch. The difference is that autonomous machines can drive under any circumstances and with no geo-limits whereas self-driving systems might ask humans to participate in the process and the driver should be present when the engine operates. Autonomous cars are in essence human drivers, therefore, represent a more complex structure and can be distinguished as a different type of AI. (Robotage 2020.)

All in all, AI is very varied and ever-growing field where new branches appear frequently. However, nowadays, the presented ones are the most well-known and developed, thus, appropriate for forming an understanding of AI diversity and sense.

3 Marketing and artificial intelligence

3.1 The concept of marketing mix

After establishing AI concepts applicable for this study, the competence in another referred field has to be demonstrated. In this chapter the basic concept of marketing mix is explained and expanded on its connection to AI.

Understanding marketing and its essential concepts is vital for the reader because only unifying two areas of expertise, effectiveness and universality can be assessed. Marketing is generally an easier term for a mass reader than artificial intelligence. However, it is as much wide and multifaceted as AI and, therefore, one paradigm is chosen to introduce it.

Marketing is a substantial part of customer relationships; thus, company's image is highly influenced by its marketing strategy. Definition of marketing is nowadays well-established and there is no need in multiple interpretations as they all have a similar idea.

Marketing - the process by which companies engage customers, build strong customer relationships, and create customer value in order to capture value from customers in return. This is the definition offered by Kotler and Armstrong in their book "Principles of Marketing" dated 2017. Here the focus is largely on customers and their relationships with the organisation, however, the main elements of this relationships are customer engagement (interaction with the clients, making them participate), customer value (how the company satisfies customers' needs) and value exchange (what customers can convey). All these elements help the company to build a strong brand and enhance customer retention and loyalty. (Kotler & Armstrong 2017, 41, 44, 54-55.)

Having customer engagement, customer value and value exchange is important, nevertheless, they are the result of the marketing strategy implemented by the organisation. Marketing strategy is a set of tools, plans and actions that lead a company towards customer value creation and lucrative customer relationships. An appropriate marketing strategy is aimed at segmenting and targeting customers in order to define whom to serve. Moreover, the issues of differentiation and positioning are also significant as they outline how chosen customers will be served. Yet again, segmentation, targeting, positioning and differentiation intend to produce a customer image so that a company knows exactly how and when to reach the audience with the maximum efficiency. Thus, the mentioned instruments establish a customer value-driven marketing strategy. (Kotler & Armstrong 2017, 74-75, 77.)

The strategy itself is a very vast concept and therefore needs elaboration. The details of the marketing strategy are the factors that company can develop, plan and control to engage customers and deliver them value. These factors altogether form an integrated marketing mix. Marketing mix – is a blend of tactical instruments that firm combines to generate the desired response in the target market. The classic marketing mix consists of the 4 Ps: product, price, place and promotion. There are now more paradigms presenting a greater number of Ps, however, in this study 4 Ps would be enough to prove AI effectiveness for marketing strategy. Another important assumption is that the 4 Ps describe the marketing strategy from the business point of view, in a way that is understandable and reasonable for an entrepreneur. The customer may see the 4 Ps differently, converted to the 4 As: acceptability, affordability, accessibility and awareness. (Kotler & Armstrong 2017, 77-79.)

The first P is Product. It is a supply of goods and services a company offers in the market. According to Kotler & Armstrong, a product is *anything that can be offered to a market for attention, acquisition, use, or consumption that might satisfy a need* (244). Product is the core part of value brought to a customer. A product may consist of the following marketing tools: variety, packaging, brand name, quality, design, features and services. Company can choose a set of these tools or use all of them when developing a product. Regarding the 4 As, Product corresponds to Acceptability because it is intended to satisfy certain customer needs. Clients tend to develop expectations about the products; hence acceptability measures the degree to which a product exceeds those expectations. (Kotler & Armstrong 2017, 77-79.)

The second element is the Price. Price is the amount of money charged for the product or service. However, it is not a random number, prices are set as a result of pricing strategy, considering many organizational and market factors. In other words, price is the money equivalent for value that customer receives from a company. It may seem that price is a complete tool itself and has nothing under the term, nevertheless, it is not right. Price is also a diverse marketing instrument that can include list prices, credit terms, discounts, payment methods and periods, allowances. From the point of view of a customer, price must be affordable in order to stimulate buying decision. Thus, Affordability, as the degree to which the clients want and are able to pay for the product, is corresponding to the second P. (Kotler & Armstrong 2017, 78-79.)

Place is the third P of the marketing mix. Place in marketing means delivering the product to the customer in the right place at the right time. This P is overlapping another crucial business field – logistics – which in this case serves as one of the instruments under the 4 Ps. The other place instruments are channels, coverage, suppliers, transportation,

inventory, locations. The way of managing product flow makes the product available to the target customers. Here, the consumers assess the third A - Accessibility – degree to which the buyers can promptly obtain the product. (Kotler & Armstrong 2017, 78-79.)

Finally, the last element is Promotion. It is marketing communication that convinces consumers to buy the product and stimulates the growth of sales. Promotion is aimed at presenting the product in the media and creating or enhancing the demand for it. The tools used are advertising, personal selling, digital and social media marketing, direct marketing, sales promotion, public relations. An appropriately implemented promotion mix raises awareness about the product among target audiences and increases brand recognition. Thus, Promotion from the business side correlates with what customers call Awareness – degree to which the target market is reached, informed about product qualities, persuaded to buy it and retained with the brand. (Kotler & Armstrong 2017, 78-79.)

All in all, the effectiveness of a marketing strategy is measured by the extent to which its elements are integrated and form a program in line with company's marketing objectives. The reason why many interpretations and extensions of this paradigm exist is that some tools mentioned under the classic 4 Ps are separated as distinct elements of marketing mix. However, the importance is not how many Ps are considered independent but how the framework itself is designed to be useful in creating a holistic marketing strategy. (Kotler & Armstrong 2017, 74.) As mentioned, the key goal is integration of all 4 Ps, therefore, this thesis demonstrates AI implementations for all of them, so that the approach to AI marketing is viewed as all-inclusive.

3.2 AI implementations in marketing

To merge marketing mix concept with AI applications for measuring impact hey would have, firstly, most common AI technologies used in marketing should be named and described. Thus, four key AI areas commonly noticed in marketing are voice and text processing technologies, image recognition and processing, decision-making technologies, autonomous robots and vehicles (Jarek & Mazurek 2019, 49-51). Further, each of them is described more in detail.

Voice processing is logically related to recognising, understanding and implementing languages. The most well-known example of such technology are voice assistants like Siri or Alexa, and they can naturally be used in marketing. These assistants convert speech to text, match results semantically with the knowledge bases and return text to speech answers. Smart speakers can indeed be an effective marketing channel helping companies

to engage their consumers. Moreover, there is a possibility of voice-enabled purchases with such aps as Alexa Skills. (Maksymenko 2020.)

The use of text processing is more widespread than of the voice assistance. Here, many useful implementations can be named. For example, sentiment analysis representing an algorithm that examines customer feedback and classifies positive, negative and neutral comments. This later helps in planning of new strategies and forecasting demand for certain products. Another use is determining resonating content for social media. NLP applications are helpful in analysing unstructured social media data massive and extract valuable and relatable content for the customers which supports engagement. Moreover, chatbots which are a type of expert systems powered by NLP technologies are able to consult clients, answer their inquiries and solve the majority of their simple problems requiring an immediate answer. These chatbots have proven to increase conversion due to assisting consumers in decision-making. (Maksymenko 2020.) Furthermore, data analysis is also a beneficial application of text processing technologies. It can be used for competitive analysis extracting competitor mentions in different articles or customer comments, as well as for customer analysis through exploring their digital behaviour, needs, demands and interests. (Bushkovskyi n.d.)

Image recognition and processing is a part of computer vision that is aimed at identifying content on the picture. It is based on model training from which deep learning techniques are considered the most effective. Marketing benefits from image recognition and processing in many cases. Firstly, it helps to extract data about the customers from the images in social media. Secondly, image recognition enables visual search which enhances a more satisfactory customer experience and therefore leads to a better brand image. Thirdly, this technology offers another way of building an engaging and interactive customer experience. Visual mirror is a solution that is widely used online to help customers understand how certain clothes or make up would look on them. (Kantarci 2021.)

Decision-making enforced by marketing is one of the most popular AI applications. Most of the recommendations on the websites and services are enabled due to AI. Moreover, based on a person’s browser history or music preferences, certain applications can suggest products or even travel destinations. Also, AI can be tailored to offer the products that match buying history of a consumer based on prices to increase the probability of acquiring them. (Jarek & Mazurek 2019, 50-51.)

Finally, overviewing autonomous robots and vehicles in marketing it can be said that they are not very widespread due to their expensiveness and complexity. However, there are a few implementations. As an example, service-free shops which are now gaining popularity.

Furthermore, autonomous robots are well applicable for such part of the marketing mix as Place. They can check stock levels, product arrangements and report problems or mistakes in these aspects. (Jarek & Mazurek 2019, 51.)

3.3 Impact of AI on all parts of the marketing mix

After overviewing the most common AI applications in marketing it is essential to prove their effectiveness. This is done by demonstrating the effect of AI implementation on all parts of the marketing mix. Table 1 on the page X represents a compressed outline of this subsection. Here, these effects are described and analytically explained. Moreover, a framework for impacts of AI on customer perspective of marketing mix (4 As) is developed.

3.3.1 Product

There are several important impacts of AI on the Product and thus on the Acceptability of it. Firstly, AI contributes to new product development. As mentioned before, all the text, voice and image recognition and processing technologies automatically collect data about consumers, making it possible to identify key interests, needs, wants and demands. This leads to the opportunity to foresee new tendencies and develop products that would best suit market situation. From the point of view of the customer it would increase acceptability because the needs can be satisfied at the time they appear, and the customer would not need to wait until the product is on the shelf. Predicting demand would make products available at the time when consumers realise, they have a certain need.

Secondly, collecting customer information with the AI enables hyper-personalisation. Hyper-personalisation is *a way of communicating and targeting individual online customers with tailor-made marketing and products and delivering on these promises, without fail* (Stein 2019). In other words, the idea is that consumers are offered different products based on online presence data they generate while shopping, texting or browsing. These are commonly seen automatic recommendations that arise on most of the online marketplaces or other paid service platforms. They create a sense of an excellent service alike in a brick-and-mortar store when a shop assistant carefully listens to the client and offers the best product for the requirements. Similarly, when one returns to the shop premise, the shop assistant already knows what to suggest and demonstrates new products assuming they are of interest of a particular consumer. AI helps to conduct a similar process online.

Thirdly, AI enables the development of additional solutions beyond product category (Jarek & Mazurek 2019, 52). For the company it means that AI not only impacts a certain product category but can also help to integrate it with other categories. Furthermore, it can generate

entirely new solutions involving development of new product categories that might be of popularity in the market. For the consumers it leads to a wider range of goods available and an opportunity to choose a preferrable way to satisfy arising needs. As an example, buying new products from a certain favourite brand in spite of having substitutes from other brands with less emotional appeal from a particular customer.

AI effect on the Product is clear and beneficial for the company as well as for the customer. AI produces additional value for the marketed products. Businesses receive helpful customer information that can be used with the goal of buying conversion increase on the websites. Customers unconsciously develop brand loyalty and willingness to return for new purchases due to enhanced personalisation and substantially more accurate and specific customer journey and experience.

3.3.2 Price

As Price is a numeric equivalent of product value, it is more difficult to appropriately adopt AI solutions to impact this part of marketing mix beneficially for both entrepreneurs and consumers. However, it is not impossible and there are AI technologies for this purpose.

Price management and price matching to customer profile are the AI implementations that are widely spread nowadays. According to Forbes, automated price management with AI increase total revenue by 5%. Pricing algorithms are able to identify the most lossmaking and unproductive discounts and segments, optimise price across the customer and product mix, define propensity of customers to respond to applied bundling or pricing strategies, increase overall profitability, determine the most lucrative discounts and offers based on historical data. (Columbus 2020.) This is vital for the company as it improves revenue management.

Regarding Affordability criterion for the consumers, pricing AI applications suggest products of a particular price range typically acquired by certain client. This leads to a higher conversion and creates a sense of reasonable pricing as most of the automatically shown offers are correlating with buying potential of the consumer. Moreover, special discounts are displayed for specific customer groups identified by AI technologies which increases customer retention and willingness of the consumers to collaborate with the company that cares about its clients through offering beneficial terms of purchasing.

3.3.3 Place

The concept of Place is significantly overlapping with logistics where the use of AI is very extensive. Hence, the impact of AI on this aspect of the marketing mix is seen as very diverse and substantial as well.

AI developments make shopping more convenient and faster for the customers due to processes automation. The use of autonomous robots that monitor stock level improves the Accessibility of the product as the risk of a stock-out is minimised. Moreover, raising spread of service-free or self-service shops reduce time resources that customers may spend at the queues. (Jarek & Mazurek 2019, 51-52.) For the company, it means that less resources could be spent on wages for shop assistants or cashiers. Furthermore, automated purchasing is another technology increasing sales for the company and accessibility for the consumer (Jarek & Mazurek 2019, 51-52). These algorithms offer customers the products that have already been bought somewhen, therefore, increasing the probability of remembering them and then adding to online shopping chart.

As place also includes managing distribution channels, AI is useful from this side too. AI helps to highlight the most beneficial distribution channels and even may suggest new ones that have proven to be effective for the competitors. Referring to text processing technologies, AI can extract information about existing market trends in distribution that are emerging and thus implemented only by a few companies. (IBM Cloud Education 2020.)

Regarding consumers and Accessibility that they assess in the sales process, AI enhances their customer experience when providing 24/7 customer service with the help of chatbots and expert systems (Jarek & Mazurek 2019, 51-52). Automated answers to simple questions make accessibility more error-free and prompter. Likewise, in Acceptability benefits, these chatbots create a feeling of exact, fast and outstanding service. For the company it means saving on HR expenses for online consultants.

3.3.4 Promotion

The promotional facet of the marketing mix is heavily relying on the emotional side of the customers. In this case, AI has a role of creating a unique experience, emotionally appealing to the consumer as the “wow” factor (Jarek & Mazurek 2019, 52). This “wow” factor can be used offline as well as online despite common stereotype of AI online delimitations (more about this aspect in the subsection 5.3). The influence of “wow” factor on the company is as follows: it builds an innovative and extraordinary brand image which contributes to a confident establishing on the market. For the consumers, it raises the Awareness through

word-of mouth. Fascinated by technological advances clients narrate about their customer experience and encourage others to try it.

Another important effect on promotion is in personalised communication built with the customer (Jarek & Mazurek 2019, 51). It correlates with product hyper-personalisation enabled with AI. This minimises disappointment due to customised approach tailored for every specific client with the help of different information processing and analysing AI technologies mentioned before. Moreover, AI eliminates process of learning product categories making it an automated task, which leverages company resources for solving other issues that cannot be automated (Jarek & Mazurek 2019, 52).

Not to omit, a set of AI technologies involving text and image processing and decision-making is able to produce advertisements based on consumer data that would be more effective. According to IBM, the use of AI in creating and displaying ads improves marketing ROI due to reducing advertising expenditures (IBM Watson Advertising 2020). From the point of view of the customer, AI ads target more precise audiences at more exact times and therefore raise a better awareness and are in general less annoying than poorly targeted meaningless ads.

Acceptability	Affordability	Accessibility	Awareness
• Immediate need satisfaction • Sense of excellent online service • Opportunity to form an emotional appeal to a brand	• Sense of reasonable pricing • Will to return for more discount offers	• Less time spent on shopping • Improved overall customer experience • No need for remembering or searching for preferred products • Feeling of outstanding, exacter and faster service	• Word-of-mouth enhances • Emotional fulfilment raises • More precise and less annoying ads

Table 2. AI influence on the marketing mix from the buyer's viewpoint

3.3.5 Impact overview

As seen from the Table 2 where the impacts of AI on the marketing mix from the consumers' perspective are summarised, AI is not only beneficial for the business. It adds value for the customer as well, thus, naturally supporting customer retention and loyalty. A substantial part of the influence bases itself on emotions and psychology, however, this observation is

very logical. As mentioned before, marketing mix is a part of company's marketing and branding strategy. A brand is *an identifying symbol, mark, logo, name, word, and/or sentence that companies use to distinguish their product from others.* Distinguishing often means engendering certain emotions that company believes to be appropriate for its brand. (Kenton 2020). The table also represents many other positive impacts; however, it is not necessary to comment on them again as they have been already referred to before.

To summarise this table, it is reasonable to say that the framework with influence of AI on each part of the marketing mix provided by Jarek and Mazurek was helpful in generating a similar framework but from consumers' viewpoint. As this thesis is aimed at demonstrating overall AI effectiveness, it should focus on sellers' perspective of the 4 Ps as well as on customers' benefits of the 4 As.

4 Statistics: surveys on artificial intelligence

4.1 Survey 1: AI awareness

This survey collected data on the extent to which people are aware of artificial intelligence and its nature. The participants were asked how often they encounter AI mentions in their daily life, how much they are interested in the topic and how they assess their expertise in AI. There were also practice-oriented questions such as recognising AI in real life. They identified people's understanding about AI implementations and use cases. There are 11 graphs and diagrams in total as the result of this survey, their detailed view is presented in the appendix 1.

The survey reached 185 people in total. The participants were mostly female (59%) and 3% preferred not to specify their gender. The predominant age group was 18-25 (79%), followed by significantly smaller groups of 26-31 (10%) and 32-45 (5%). The educational background of the respondents was mostly an unfinished higher education (students – 66%). Fifteen percent claimed to be higher education graduates, while 12% had only secondary school education. The least popular education background was vocational school.

Analysis

As the first survey encompassed overall AI topic, it was aimed at observing people's attitude to AI and general understanding of the area. It resulted that most of the participants (58%) encounter AI mentions often and a little more than a third sometimes notice this topic in their media landscape. In so doing, 36% of the participants do not refer to AI as a field that interests them more than other topics. However, a total of 54% of the respondents are either very interested or interested in AI. It means that people are generally exposed to AI-related content only in case they consider it one of their strong interests. Here the conclusion is that there are no loud appearances of AI in the recent times in the overall media landscape and the topic is not widely discussed outside concerned communities.

Even though a substantial percentage of people is curious about AI, 41% and 29% either "kind of understand" AI or "understand it bad" accordingly. Only 17% of the respondents claim to understand AI very good or with little gaps. It can be said that despite common interest in AI, people might only follow news about it, but they do not consider learning how it works and admit their superficial knowledge on the topic.

The following questions were of a more practical orientation. Therefore, their goal was to analyse participants knowledge on AI and information on it they had gained from the media regardless their key interests or education. From the four given definitions, the absolute

majority (74%) chose the one considered the most professional and precise. This definition is used as a basic AI definition in this study: *a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation* (Haenlein & Kaplan 2019, 5).

As for the AI implementation areas, the participants were asked to choose all the possible areas they think are suitable to use AI. Looking at the figure 2, the least popular choice was politics with 51 people voting and the most popular was expectedly IT with 171 respondents. However, the business use of AI in such areas as economics, logistics and marketing was the second most widespread choice (153 votes). Healthcare, home and science followed to be chosen rather often.

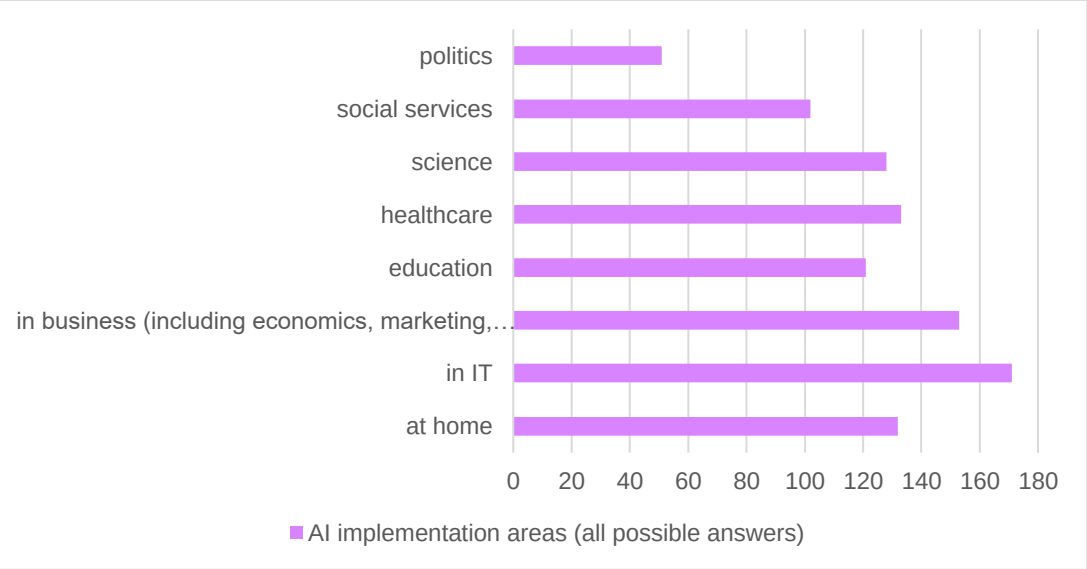

Figure 2. AI implementation areas (all possible answers)

This question demonstrates that people are largely aware of AI presence in many areas of life including daily routine. Moreover, the results prove that AI is mostly associated with IT, nevertheless, the participants are conscious of AI business use.

In spite of being aware of vast AI implementations, figure 3 shows that 71% of people are not confident in their ability to recognise AI in real life. However, it is promising that almost a quarter of participants claim recognising AI on the contrary to 6% of those who can never do it.

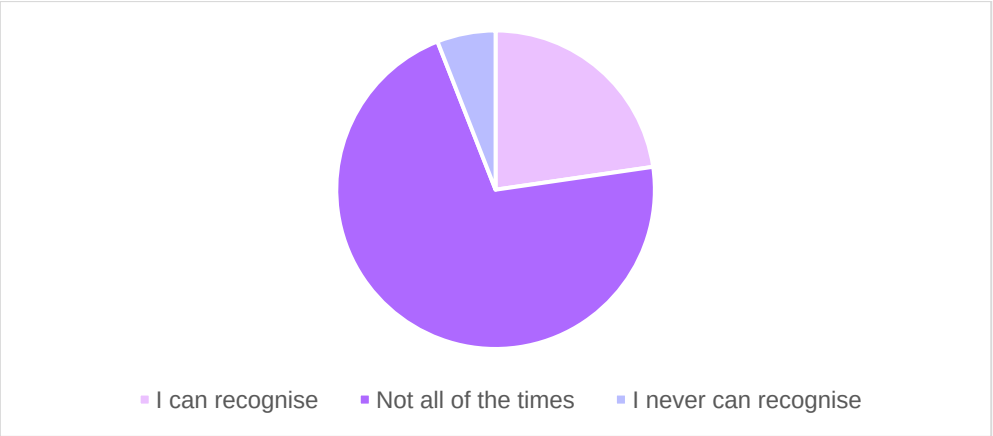

Figure 3. Recognising AI in real life

The next logically deriving question features exact AI implementation examples. Here the respondents could have chosen all the possible answers. Out of all the options, self-driving cars prove to be the most widely known AI use case. Siri followed not being left far behind. Nevertheless, other examples, though all representing AI use cases, scored on average almost two times less than first two leaders. The least chosen example is target advertisement in social media despite the fact that social media in most cases use neural networks and AI to process consumer data on base of which the ads are displayed to particular customers (IBM Watson Advertising 2020).

Lastly, a stereotypical question collected data on the attitude of participants towards AI. A total of 54% thinks that AI is either dangerous, mostly dangerous or can be dangerous or harmful for the humanity. This proves the stereotype that many people are afraid of mass AI adoption and perceive it with suspicion.

All in all, this survey confirms that many people even of a young age between 18-31 being higher education students or having their higher education finished are not extensively aware of the topic of AI. They consider their knowledge sporadic and inconsistent and are predominantly doubtful about their ability to recognise AI. Hence, many of the participants believe AI stereotype on its danger and mostly choose traditional AI implementation areas. However, people acknowledge AI adoption in many fields and suppose it is widely implemented. For the companies, it would be beneficial to spread awareness on AI through adopting it and showcasing what results it brings to them and how it improves customer experience. It would create remarkable media appearances of AI which might attract customers. In this case the consumers would most likely want to engage with AI technologies and study them more as the survey demonstrated a genuine interest in the topic.

4.2 Survey: AI in marketing

This survey was aimed at deepening the subject of AI and inclining it towards marketing. The participants were asked questions on the examples of AI implementation in marketing, their opinion on the effectiveness of AI marketing and whether they think AI can be used in brick-and-mortar stores. A number of questions were business-oriented and identified the extent to which people consider AI marketing universal across industries and whether they believe AI marketing investments to be worthy for a company. All the 11 graphs and diagrams representing full results of data collection are attached in the appendix 2 so as not to overload the text with visual material.

The survey reached less people than the first one. In this case the sample is represented by the total of 123 people. The same people as previously were ought to answer this survey. However, due to a smaller sample of people reaching the survey, the background data collected is different and has to be represented. The overall results would not differ from the first survey, but the exact percentages can vary, therefore, for a better perception and more precise analysis background information is described below.

The gender representation is similar to the previous case: female – 53%, male – 46%, prefer not to specify – 1%. The major age group is 18-25 (85%). However, smaller percentages following are from the groups 46 and more (6%) and 32-45 group (5%). All in all, the age range of the participants is almost equal to the first survey results. As well as in the preceding questionnaire, most of the respondents are higher education students (63%). The ones who only finished secondary school follow with 17% and higher education graduates comprise 14% of the participants. Vocational education is the least popular option scoring 6%.

Analysis

As logically derives from the first survey where people have chosen business as the second most popular area of AI implementation, a 67% has heard of AI marketing in particular. Therefore, most of the participants (63%) either mostly disagrees or totally disagrees with the statement that AI is too complex scientifically to be implemented in marketing. However, similarly to the question on recognising AI in real life, 57% of respondents are insecure of being able to name particular examples of AI marketing. Moreover, 34% claim not being able to name anything in this regard. This means that despite AI marketing is nowadays a rather widespread field known by most of the people, they cannot be precise or sure in recalling any real use cases of AI marketing. They know it exists but mostly it is perceived as an abstraction with no particular examples.

The practical question on AI technologies to be implemented in AI marketing may appear confusing to people with no decent background in AI. This is done on purpose to analyse which AI technologies ordinary people see as potentially valuable for marketing implementations. According to figure 4, image recognition and processing are the easiest for the respondents to be imagined within marketing strategy (100 votes). Voice and text processing along with natural language processing and AI decision-making follow the top of choices. It denotes that these AI technologies are the most widely understood by people. Therefore, they might expect companies to use those in marketing. However, deep learning and autonomous robots are mostly not conforming with respondents' perception of AI marketing.

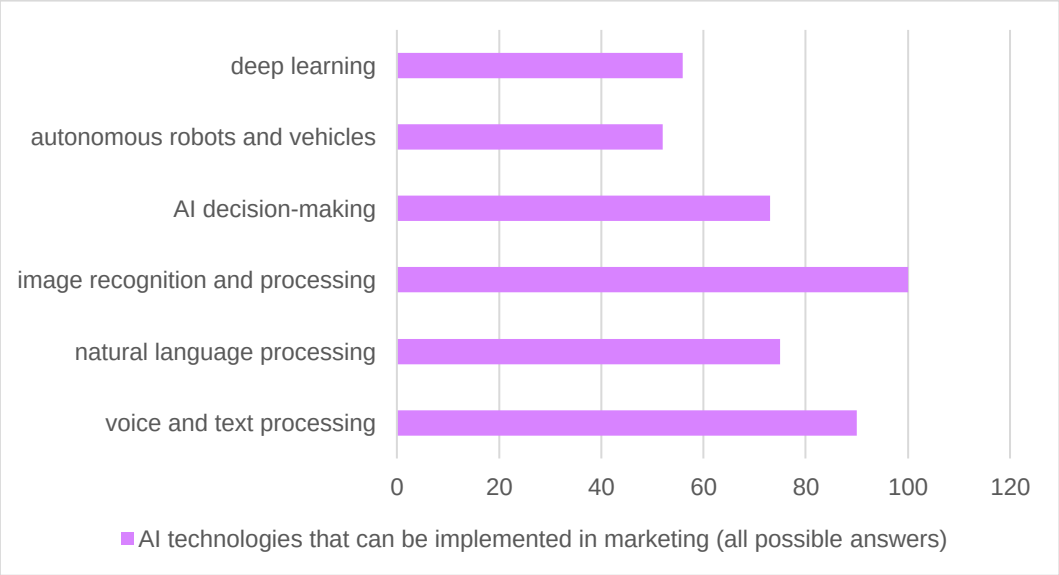

Figure 4. AI technologies that can be implemented in marketing (all possible answers)

In spite of being unable to name real AI marketing examples, 67% of the participants are sure that it can be used for promotion in brick-and-mortar stores. Also, almost the same number of people as in previous question believe in universality of AI marketing across industries. This is precisely proven by the next practical question. The respondents were asked to choose all the possible industries where AI marketing is least likely to be implemented. However, slightly less than a half of participants has chosen the option "all of them can implement AI in marketing". Generally, people think that AI marketing is universal for many industries. As for further analysis of figure 5, beauty and cosmetics are more associated with AI marketing than entertainment. However, the most AI marketed industry in the eyes of consumers is healthcare and the least are retail and services (tourism, education, financial).

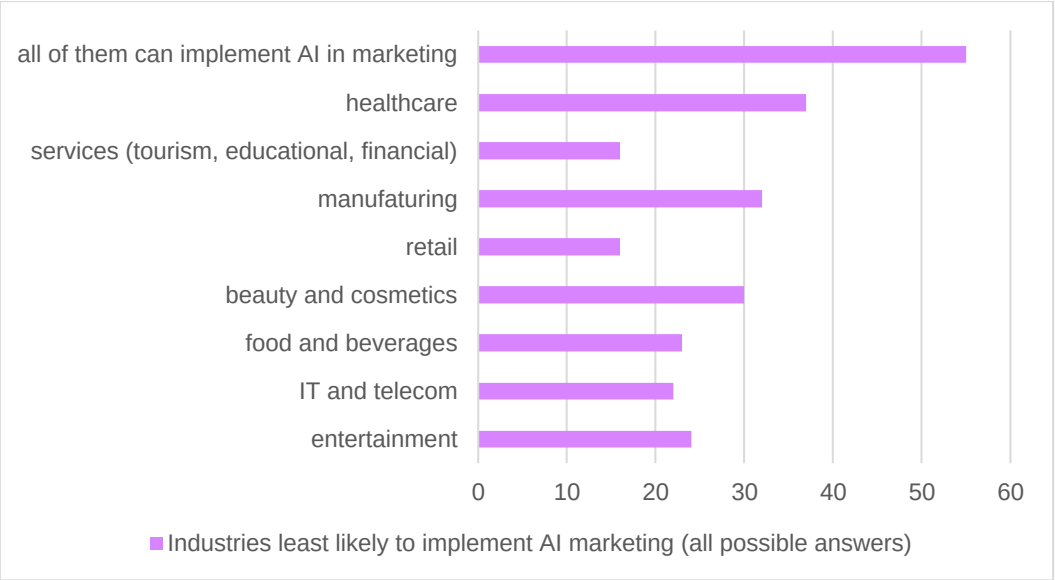

Figure 5. Industries to least likely implement AI marketing (all possible answers)

Considering AI marketing a universal tool for online and offline promotion as well as across different industries, people are mostly positive about investing in AI. They think investing in AI marketing initiatives is either totally worthy or worthy in most of the cases (78%). It means that regular consumers believe that there will be value for them too if companies invest in AI marketing.

To conclude, the participants have demonstrated a fair level of AI marketing understanding. Although there were difficulties with identifying technologies popular for AI marketing, in general, people are willing to see AI marketing examples and believe they can bring good for businesses. Another observation is that the respondents, though having superficial comprehension of AI all in all, are better acquainted with AI marketing as a subfield of AI. Probably, it happens because AI itself is perceived as a more complex subject in terms of studying and researching than its intersection with marketing. Marketing is a field familiar to many people and its understanding is becoming increasingly globalised which cannot be said about AI. Therefore, the respondents tend to have more competence and confidence in their knowledge when answering the questions on the intersection of AI and marketing. Companies should consider it in their marketing strategies and could exercise a more transparent policy of exposing their AI initiatives. Learning about AI from the perspective of marketing can help in mass adoption of AI and in discrediting the stereotypes about AI technologies. People are interested in knowing more about AI and suppose it is useful, universal and worthwhile, hence, AI marketing initiatives can be an effective instrument for a company.

Concluding on both surveys it can be said that it would be beneficial for companies to expose their AI use cases to the consumers. The customers perceive AI positively and think of AI as of a good investment. Moreover, as they consider AI a complex technology, spreading awareness on AI use cases within the company would increase business' brand perception as an innovative and future-oriented company. Maintaining a brand that supports current technological trends is important because it can enhance appearance in the media. There are many AI-related events where a company can demonstrate its technological advances and showcase B2B as well as B2C advantages of AI implementation. This would also contribute to business' image as a caring and customer-centred entity. Furthermore, being transparent about AI initiatives may attract those consumers who are afraid of AI because they do not have substantial knowledge about it. Explaining consumers how AI is used and what value it brings to them, can help in unveiling stereotypes and therefore engage with those customers who do not trust AI.

All in all, surveying people on AI awareness showed that companies can develop their brand through building a high-tech image. This would be optimistically recognised hence influencing brand awareness and attracting more consumers including those who might have been unsure of AI safety. As many people are overall interested in AI, they might share their favourite brand's AI use cases showcasing an effective word-of-mouth marketing powered by AI. Consequently, it is important not only implement AI in marketing as such but also openly display it in the media.

5 Media industry and cosmetics industry cases

5.1 Netflix: company background

Netflix is a streaming service with more than 200 million members worldwide (Netflix 2020). Although it is not one of a kind, it is the most well-known and trustworthy. The idea appeared in 1997 and it started as a brick-and-mortar business of renting DVDs by mail. Reed Hastings and Marc Randolph launched the first website for their service in 1998. The business was expanding rapidly and in 1999 the subscription service was launched. A prototype of modern Netflix recommendations was introduced the next year. By 2003 Netflix had gained 1 million subscribers. The existing image of Netflix as a streaming service emerged in 2007 when streaming feature was enabled. In 2010 the global expansion of Netflix started bringing the business to Canada along with allowing streaming on the mobile devices. The year 2012 was remarkable due to spreading to the UK and Europe. Next milestones in the company development are the years 2013 and 2015 when first original series and a film were produced. In 2017 the membership reached 100 million. That year Netflix won the first Academy Award. Now Netflix is the most-nominated studio at the Academy awards. In 2019 Netflix expanded its production to London, Madrid and Toronto. (Netflix 2020.) The company is very concerned with environmental and inclusion issues, that is why such aspects are a substantial part of its strategy. Netflix has an extensive list of values which demonstrate *who gets rewarded or let go*. Among these values there are courage, integrity, inclusion, selflessness, innovation, impact. (Netflix Jobs n.d.)

5.2 Sephora: company background

Sephora is an omni-retail of beauty products with over 2 700 stores worldwide in 35 countries. The company was found in 1970 in France by Dominique Mandonnaud. (Sephora 2021.) The story was challenging at first and for a long period of time the business was unprofitable. In 1993 the founder merged 38 Sephora stores with another project – Shop 8 – which had 12 stores. The brand Sephora appeared in 1995 including body and bath products. Since 1997 Sephora started its going global path because LVMH chain (Luis Vuitton Möet Hennessy) purchased Sephora. As LVMH is a world's leading luxury goods seller, it contributed to Sephora's image as a quality brand. In the following two years Sephora opened the stores in European countries and the USA. In 1999 online shopping was launched. At the beginning of 20 century Sephora started its active partnering activities and launched Beauty Insider loyalty program. (Schwanke n.d.) By now Sephora has partnerships with Klarna, Pantone, Kohl's and JCPenney (Sephora 2021). Throughout years of operations Sephora hasn't changed its "try before buy" concept. All the shops and

free stands of Sephora still have the famous Beauty Bars. (Schwanke n.d.) As well as Netflix, Sephora claims to be committed to diversity and inclusion. Its mission in this regard is *championing all beauty fearlessly and building inclusive environments for our employees, consumers, and communities*. Company states seven core values among which respect, passion, innovation, expertise and balance. (Sephora 2021.)

5.3 Real-life AI solutions

As both companies name among their essential values innovation, it is directly reflected in their strategies. Netflix and Sephora extensively use AI solutions for marketing purposes and focus their research on areas related to it.

5.3.1 Netflix and its practices

Netflix is a company often appearing near AI concerns. Netflix website features research subdivision which outlines key fields of investigation. Many of these fields are closely related to AI: machine learning platform, recommendations and computer vision. (Netflix Research n.d.)

Recommendations are one of the most well-known attributes of Netflix customer experience. They appear when a user loads the service or immediately after a show or series end. Netflix has more than 10 000 movies and series on its platform and more than 200 million users worldwide which creates a challenge for the company to offer personalised recommendations that would actually work as an effective marketing tool. At first, only IMBD rating and viewing history had been used as base data for forming recommendations. However, the company wanted to improve it as this information was not enough for truly tailored solutions. Even though the most important data used for this feature now is still about customers' viewing habits and history, it is used in a more efficient and optimised way. The viewing data collection is stored in Vectorflow, a deep learning library especially developed by Netflix. The content is tagged based on its genre and other semantic aspects. There are uncountable numbers of tags so that each show can be assigned with proper ones. The library measures how these pieces of tagged content match viewers' habits and history to select particular profiles. After that, the engine recommends these pieces of content to users with similar profiles. (Marr & Ward 2019, 162, 163.) Nevertheless, it is not the only implementation of Vectorflow. Netflix research article showcases another marketing implementation of the library. It helped to solve a problem arisen with promoting Netflix originals on the home page. (Rostykys 2017.)

Vectorflow is not the only AI powered instrument used to shape personalised recommendations. The Bandit Infrastructure is another tool for personalisation use cases. This engine is used to identify top titles that would increase the probability of play. Bandit Infrastructure not only recommends a particular show but also chooses an artwork that would appeal to most of the audience. (Siddiqi 2019.) Whereas the Bandit Infrastructure represents a generalised artwork recommendation that works for the majority of audience, there are contextual bandits which base their algorithms on online machine learning. This means that contextual bandits do not need excessive amounts of time to learn a model from full batch of data and do not need an A/B test conclusion of their result. Contextual bandits find the personalised artwork selection for each user and context. Typically, there is a dozen of potential artworks do be displayed for the member. The selection is done based on ranking of images across titles learning how other members engaged with those artworks. Another contextual aspects are considered in the process too. For example, the titles played, the genres played, interactions with specific titles, country, preferred languages, used device, time of day and day of week. (Grandrashekar et al 2017.)

As mentioned before, Netflix also implements computer vision to its marketing strategy. It is represented by AVA. It is a set of instruments and algorithms for identifying high-quality imagery from the content provided by the platform. In essence, AVA functions at the intersection of computer vision, filmmaking and photo editing. The aim of AVA is to quickly and effectively find static video frames from the shows that would build the best representation of a particular Netflix title. The engine selects suitable frames according to Frame Annotation. Frame Annotation is a tool processing frames through computer vision algorithms and applies certain properties to them. These properties can be named as visual metadata (e.g., brightness, colour, blur), contextual metadata (e.g., face and object detection, motion estimation) and composition metadata (e.g., characteristics based on principles of photography, cinematography, aesthetics). After that the images are ranked to choose the best one for the case. Here, the foundation of assessment can be actors, their pose and facial expressions, frame diversity (e.g., camera shot type, visual similarity, colour) and filters for maturity (images representing nudity, unauthorised branding, violence are ranked lower). Based on this scarce automated mechanism the most convenient shot for the title is selected and displayed on the platform. (Riley et al. 2018.)

5.3.2 Sephora and its practices

Among cosmetic and beauty industry companies Sephora is one that endeavours for innovation. In 2015 the company created a special Innovation Lab in one of its warehouses. All the digital initiatives of Sephora are developed and tested there. (CBInsights 2018.)

The most well-known Sephora's AI powered feature is Virtual Artist. It was launched in 2016, a year after the Innovation Lab started to operate. Virtual Artist is a tool using augmented reality (AR) and artificial intelligence to enhance customer experience. With the help of it, consumers can try online different shades, lipsticks, lashes and other beauty products sold in the stores. The app uses facial recognition that scans the face and detects its parts in order to place the product correctly. There is also a function of full looks available which will match the colours of cosmetics to your skin colour type. (Sephora 2020.) The technology was developed in collaboration with Modiface – a company aimed at creating AR tech for beauty industry. Modiface has also provided in-store tech modules so that the customers can use Virtual Artist offline. (CBInsights 2018.) Modiface CEO Pahram Aarabi says that the program was trained to measure where certain facial parts are in real time and track those points using computer vision (DeNisco Rayome 2018).

As seen from the first case, Sephora uses AI both online and in-store. Another in-store implementation was launched in selected stores about 7 years ago. Fragrance IQ was a breakthrough technology allowing to test fragrances without trying them on a person. The system offers its users to take an in-store questionnaire based on a digital module which will identify a fragrance that suits consumer's preferences and lifestyle. The technology InstaScent developed in collaboration with cloud-based scent system Inhalió emits fragrances through a dry air delivery system. There are 18 scent families available without trying them on. (CBInsights 2018.)

Regarding online AI applications in Sephora, a remarkable case is Dynamic Yield collaboration. Dynamic Yield is a company that provides digital solutions to enhance customer experience via personalisation and optimisation. In essence, Sephora's case is similar to Netflix here because a substantial part of the work performed is revolving around personalisation and recommendations. The recommendations on Sephora page are powered by machine learning. The program is trained to choose the most effective strategy of recommendations display based on data about number of products added to cart and paid orders. (Dynamic Yield n.d.)

Finally, a typical AI implementation is a chatbot. Sephora has several bots on different platforms. One of the bots is a typical Facebook bot used to set in-store appointments. It supports natural language processing and, as any other similar recommendations tool, is powered by learning from data provided by consumers. It was made as a collaboration with Assi.st later acquired by Conversocial. This is called Sephora Reservation Assist. (Parisi n.d.; Conversocial 2021.) The second Facebook bot is aimed at assisting customers in matching products to their inquiries. There the users can match lipstick colours to their

clothes, get contouring tips based on their face type and get recommendations on purchasing certain items. (Parisi n.d.) To an extent, it is a simplified version of Visual Artist that offers augmented reality cosmetics try on. Moreover, Sephora did not omit the opportunity to reach younger audiences. The third AI powered bot is on a messenger platform Kik widely used by American teenagers. The mechanism and idea behind Kik bot are the same as in Facebook bots: take quizzes, communicate needs and select desire products. This bot provides tips for makeup and cosmetics use as well and it is not limited to teenagers as there is an option of selecting the age group at initialisation of the bot experience. (Arthur 2016; Kik 2021.)

5.4 Proving effectiveness and universality

As seen from the use cases, both companies extensively use machine learning as a marketing tool. In case of Netflix, it is represented by Vectorflow, Bandit Infrastructure and AVA. Each of these instruments is effective and brings quantitative and measurable results. Vectorflow provided accurate recommendation mechanisms to its viewers which increases lifetime value of the company. People tend to prolong their subscriptions. Knowing customers' interests Netflix can make original production matching their preferences at the stage of screenwriting (Marr & Ward 2019, 164). From company's side, it influences positively on the product, place and promotion aspects. Tailored recommendations add value to the product (subscription) and make the use of the platform more enjoyable. Place is improved due to better distribution of movies and shows – they appear in the recommendations of those people who might be interested in watching them. As described in the section 5.3.1, Vectorflow has also helped in solving a problem with originals promotion. That is a clear indication of effectiveness of the AI tool to different parts of marketing mix from company's perspective. For the customers Vectorflow enhances the following As accordingly: Acceptability, Accessibility and Awareness. Acceptability is improved because of the ability of Netflix to immediately satisfy consumers' needs in particular shows. New show is suggested as soon as the viewer finishes watching an episode. The customer does not need to find anything him/herself. Thus, accessibility is also increased. A person automatically sees pieces that may be appealing to him or her. The recommendations raise awareness about particular series as well. The user might not know about certain shows and would never encounter them him/herself. Netflix recommendations promote "may be interesting for you" pieces therefore forming awareness of the diversity and personalisation of its product. Another benefit to acceptability is that knowing the customers leads to predicting what they will like and helps in creating original production.

Bandit Infrastructure and contextual bandits essentially demonstrate similar to Vectorflow results. They improve the accuracy of recommendations only that base their predictions on other general and contextual factors. Whereas Vectoflow is a library, these are tools that shape the recommendations. The Bandits lead to creation of a personalised home page for each subscriber and recommendations worth of 1B$ (Siddiqi 2019). As Bandits are aimed at higher personalisation, they provide the customer with attractive titles, artworks and thumbnails (Grandrashekar et al 2017). This contributes to product and promotion similarly as in Vectorflow case and to acceptability and awareness accordingly. This tailoring produces a sense of an excellent online service and makes advertising useful for the consumers and not annoying. Netflix obtains the opportunity to run tests and measure the effectiveness of its titles and artworks in each personalisation case. Information collected contributes to product development and continuous improvement as well as to minimised disappointment and personalised communication for promotional purposes.

AVA is also effective for both company and consumers. Here the base of functioning is computer vision. With its help the most suitable and appropriate artwork for any audience is identified. This leads to increased viewing from different audiences. (Riley et al. 2018.) Such technology adds value to the product and creates a unique experience as a part of promotion aspect. Customers receive an emotional appeal to artworks presented in their recommendations and therefore also increase their appeal to the brand. Furthermore, when they see their favourite actor or an interesting scene on the thumbnail, they become emotionally fulfilled that the recommendation suits their taste and is enjoyable visually and semantically. These examples illustrate contribution of computer vision to acceptability and awareness.

Sephora uses machine learning, natural language processing and computer vision in its marketing strategy. Remarkably, Sephora applies its AI technologies in the brick-and-mortar stores as well as online which proves the universality of AI implementation. It is effectively used in both cases. As an example, Sephora's Virtual Artist powered by AI and AR to make customer experience more engaging and tailored gained 8.5 million visitors of the feature online (Trackmind n.d). Moreover, more than 200 million shades have been tried in the app since its launch and most of the users return to the app several times per month to check for updates and messages (DeNisco Rayome 2018). It means that the technology attracted many potential consumers and retained a large part of them. As for the influence on the marketing mix, this application mainly contributes to place and promotion. It makes make up items available for online try on which certainly leads to more convenient shopping and simpler sales process as well as serves a new distribution channel. The promotional effect is seen from the numbers of attracted and retained customers using the app. For the

consumers, Virtual Artist increases accessibility of products. There is no need to go to the store and physically try every item on. The preliminary selection can be done everywhere, and, in the store, one only asks for the item chosen or orders it online. The shopping time is reduced, the service appears exacter and faster leading to a more satisfying customer experience. Furthermore, Virtual Artist suggests different products of which the consumer might not have heard before. This is a contribution to awareness that AI brings to the clients.

Fragrance IQ is the AI technology used to enhance in-store experience. It was not widely adopted in Sephora shops worldwide, however, the technology itself is definitely a promotional instrument influencing word-of-mouth marketing. Such technology is not widespread therefore people who has seen and has used it would most probably spread awareness on their unique AI-driven customer experience.

Regarding Sephora's online AI experience, Dynamic Yield collaboration has brought substantial results to the company and its customers. Essentially, Dynamic Yield developed search engine advertising (SEA) powered by machine learning for Sephora's online shopping experience. The results were as follows: sixfold return on investment in recommendations engine and 82 live personalisation cases created. Moreover, 30% of returning visitors in different markets added items to cart. Now, these recommendations serve as 100% of the website traffic. (Dynamic Yield n.d.) For Sephora, Dynamic Yield impacts price, place and promotion while for consumer – affordability, accessibility and awareness. The engine suggests people the products based on their last viewed or purchased items. The average price of the products seen or bought by the person is also taken into consideration. The company does dynamic price matching to clients' profiles which makes them feel that products have a reasonable price within consumers' buying potential. Moreover, as Dynamic Yield also powers special offers recommendations, it enhances customers' will to return for more interesting and beneficial offers. Thus, affordability of the products increases from consumers' point of view without actually changing pricing strategy for the company. As for accessibility and place, the case is similar to Netflix recommendations: the clients do not have to endlessly search for desired items with suitable price themselves, the engine suggests these products automatically. This is automatised purchasing and merchandising, service-free shopping and all in all a more satisfying shopping experience that company arranges for the customers. Learned from Netflix case, recommendations are an effective instrument for enhancing promotion. Suggested products could almost be impossible to find manually on the website and therefore the probability of a consumer buying them was low. Through recommendations, the appropriate for each user items appear automatically and spread awareness on existing brands, offers and assortment.

Lastly, the common feature of many companies nowadays are AI chatbots. Sephora also uses them across different apps and for different purposes. These are expert systems that learn from the specialists in the field to serve the consumers in an interactive manner. They use natural language processing and in some cases image recognition. The results of the Kik bot implementation, for example, were significant. More than 600 thousand users interacted with the bot, 132 thousand viewed the Sephora Live on Facebook and 1 100 reacted to it. (Kik 2021.) As seen, bots are notably influencing product, place and promotion. These bots are a solution beyond product categories, they are yet another distribution channel attracting more consumers to the community and, what is more important, engaging with this community. For the customers the product becomes more acceptable because the bots communicate in the natural way forming the feeling of an extraordinary and attentive customer service with no disruptions. Also, chat bots are basically of the same interface as regular messengers therefore accessibility of the products not only increases but appears as a casual feature: the make-up items are reachable from anywhere at any time effortlessly. As for awareness, bots suggest products based on mentioned customer preferences, age and buying behaviour. Hence, the mechanism for enhancing promotion and awareness is similar to the one driving recommendations.

In conclusion, AI use cases in both companies has proven to be effective. Results in numbers and analytical insights demonstrate a substantial influence of AI initiatives on all parts of the marketing mix both from the companies' (product, price, place, promotion) and customers' (acceptability, affordability, accessibility and awareness) sides. Moreover, AI marketing demonstrates notable results both online and offline and across two chosen unrelated industries. This proves the universality of AI use.

6 Summary

The thesis aim was to prove effectiveness and universality of artificial intelligence implementation in modern marketing. This is needed due to often encountering bias about artificial intelligence and generally sporadic knowledge of people on AI. Many companies start implementing AI marketing with substantial results while others are missing their opportunity because of fears or not enough knowledge on why it is effective.

In order to conduct theoretical as well as empirical study, diverse literature sources were used. The books and articles by AI specialists such as Stuart, Norvig, Haenlein, Kaplan, Ertel and others served a foundation for theoretical chapter on AI. Due to the fast development of artificial intelligence, web resources could not have been omitted too. Research websites of various AI-related companies such as IBM and of educational entities such as Edureka provided the necessary up to date information on AI use cases and technologies. As for the marketing base, most of it is derived from the book by Kotler and Armstrong on basic theoretical marketing principles. Data on Netflix and Sephora use cases was collected from companies' websites and online magazines featuring business technologies (e.g., Forbes). Lastly, the surveys provided original quantitative information which helped in proving the objective as well.

Step-by step study implementation went as follows. Firstly, the framework of AI was established. Basic concepts of AI, its types and classifications were presented and explained. The AI definitions have four explanations from different approaches: cognitive modelling approach, Turing's tests, the "laws of thought" and the rational agent. Four approaches led to a scientifically comprehensive definition taken as the basis of the study: AI is *a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation* (Haenlein & Kaplan 2019, 5).

The classification of AI consisted of four major AI types: reactive machines, limited memory, theory of mind and self-aware AI. Machine learning, computer vision and expert systems (using natural language, text and image recognition and processing) were the core technologies used in marketing strategies of the case companies and therefore studied and described more thoroughly as a deepening of classification.

Secondly, marketing framework has been chosen and implemented. The 4 Ps of marketing mix are the most common and understandable theoretical base for overlapping it with the complex field of AI. Product, price, place and promotion have a defined by researchers outline of AI influence on them. From the customers' perspective there are acceptability,

affordability, accessibility and awareness. The impact of AI on consumers' side has been aggregated and determined by the author.

Additionally, two surveys collected data on people's perception of AI as such and AI marketing in particular. The results show that the overall awareness of AI presence is satisfactory although not many people understand it and can detect it in real life. As for AI marketing, most of the respondents had a more substantial knowledge on it than on AI in general. The participants positively perceive AI marketing which means it could be an effective promotional tool. Moreover, people generally consider AI a good investment for marketing and think it could be implemented in versatile areas of business. For example, forming consumers' AI awareness, a company can build an innovative brand image and surge appearance in the media and word-of-mouth marketing. This proves the effectiveness and universality of AI marketing from a general non-scientific perspective.

However, to practically prove the effectiveness and universality of AI implementation in marketing it is not enough to base the assumptions on ordinary people's opinions. Therefore, the companies with diverse backgrounds and from different industries were analysed in the extent of their AI marketing instruments. Case studies of Netflix and Sephora demonstrated qualitative and quantitative results that AI tools bring to each part of the marketing mix. AI positively affects company's perspectives of 4 Ps, as well as customers' perspectives of 4 As. Both companies extensively use AI in their marketing and the analysis was based on discussing several particular technologies from each organisation. Netflix use cases comprised the Vectorflow deep learning library, Bandit Infrastructure for recommendations and artworks and the AVA imagery personalisation. The Virtual Artist app, Fragrance IQ, Dynamic Yield recommendations and multiple chatbots were Sephora's ground of the AI implementations analysis. All the technologies influence 2-3 aspects of the marketing mix which overall represents a substantial impact on the strategy and results of each company. As Netflix and Sephora have a completely different business idea, industry and strategy, universality of AI marketing for various enterprises is also proven.

In conclusion, theoretical as well as practical parts of the study have reached the goal of proving effectiveness and universality of AI implementations in modern marketing. Nevertheless, the field of AI is developing at a high pace, therefore, appearing opportunities of AI impact on marketing should be studied. Moreover, the study can be expanded further to other industries analysing their ways to implement AI in marketing. Another suggestion is to expand 4 Ps framework as there are more detailed marketing mix concepts which have not been studied from AI perspective. Furthermore, the use case examples provided refer to large international companies where AI implementation could have been a matter of time

due to impressive customer numbers. Another study idea may feature a small local business which may encounter problems introducing AI. It could be a return on investment in AI analysis of a struggling small-scale company. The advantages and disadvantages of AI for a modest business can be overviewed and a reasonable AI solution to improve it can be withdrawn. Observing AI on mastodon corporations is useful, however, small organisations are also an important part of business landscape.

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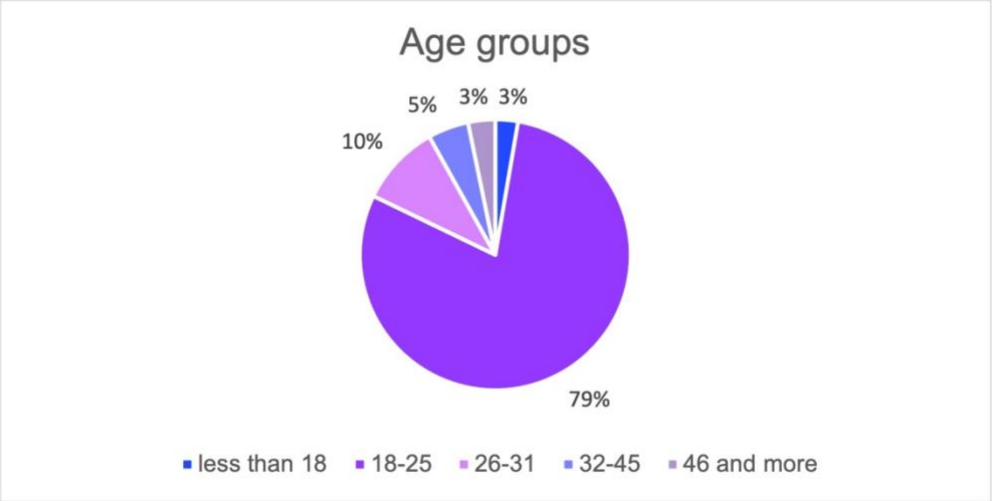
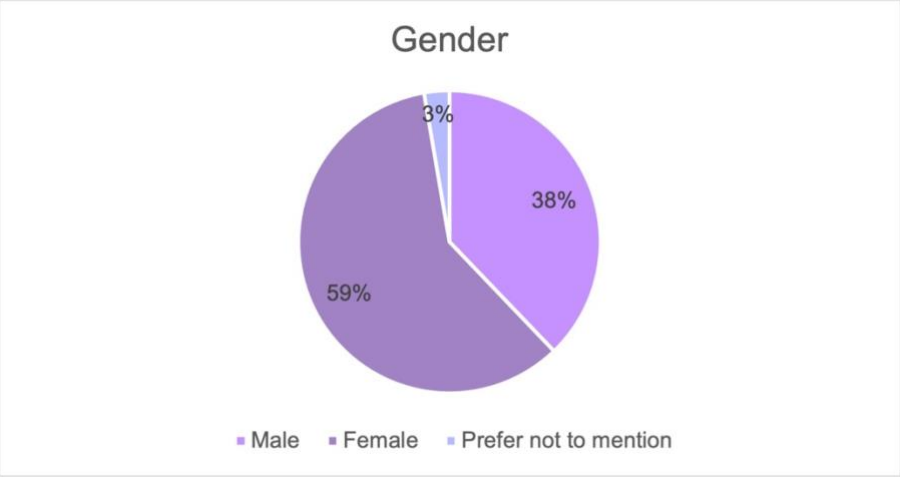
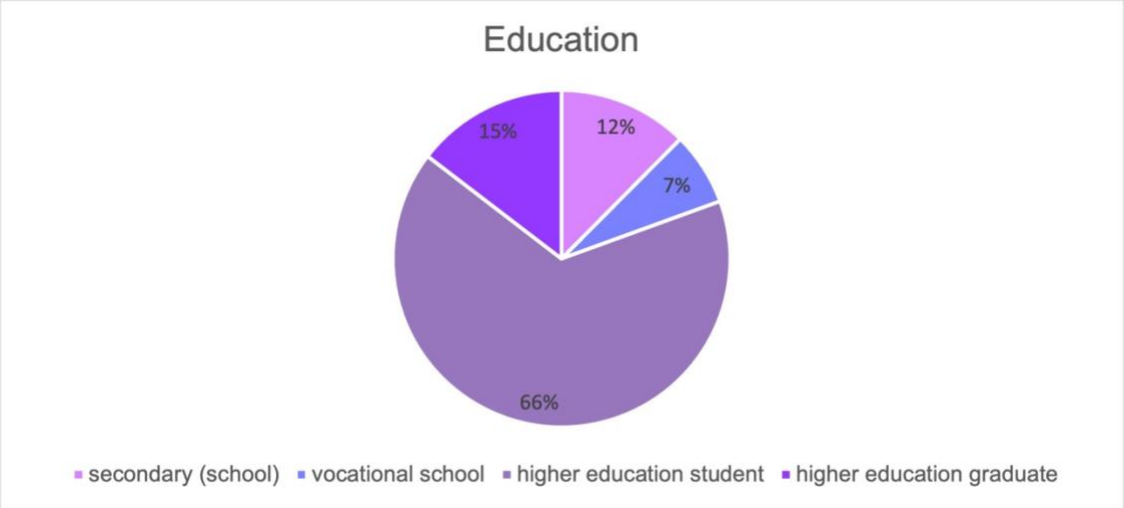
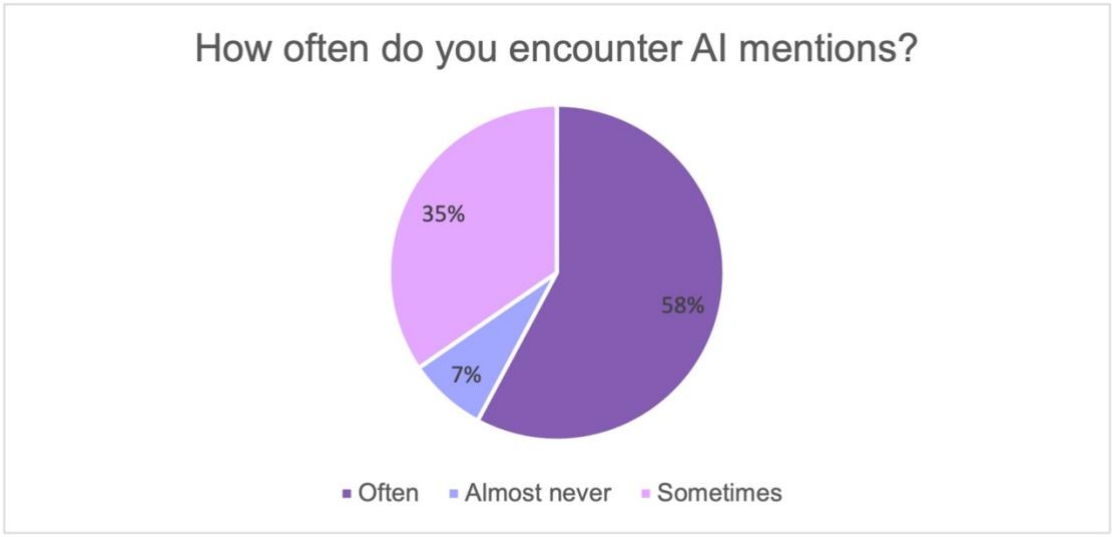
Appendices

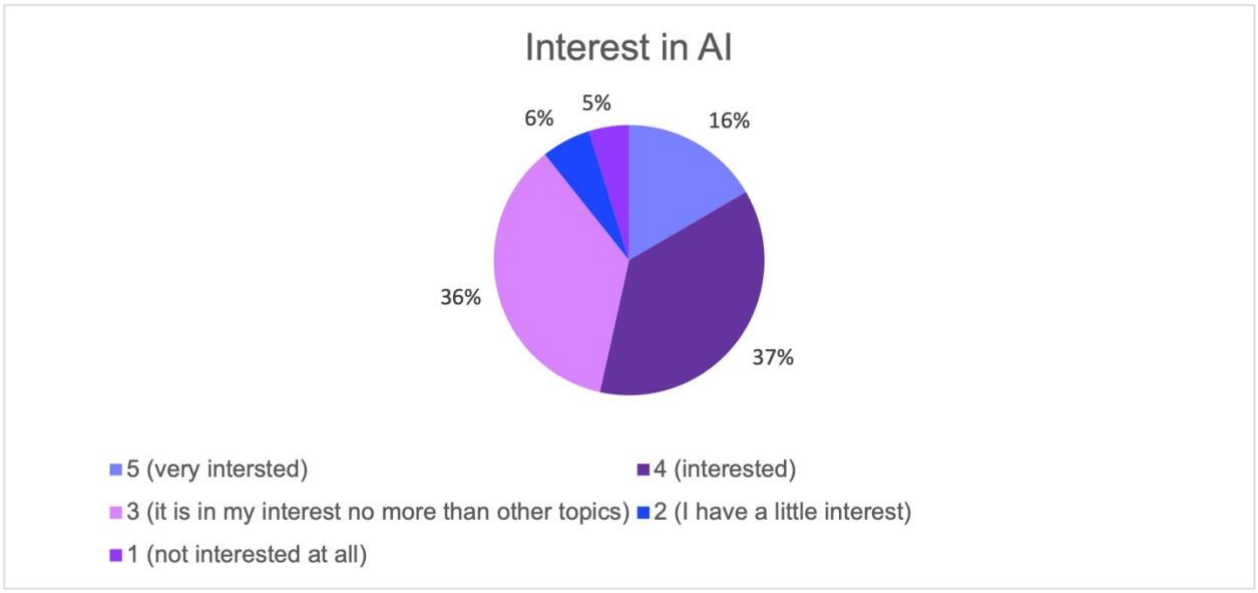
Appendix 1. Questionnaire “AI awareness” results

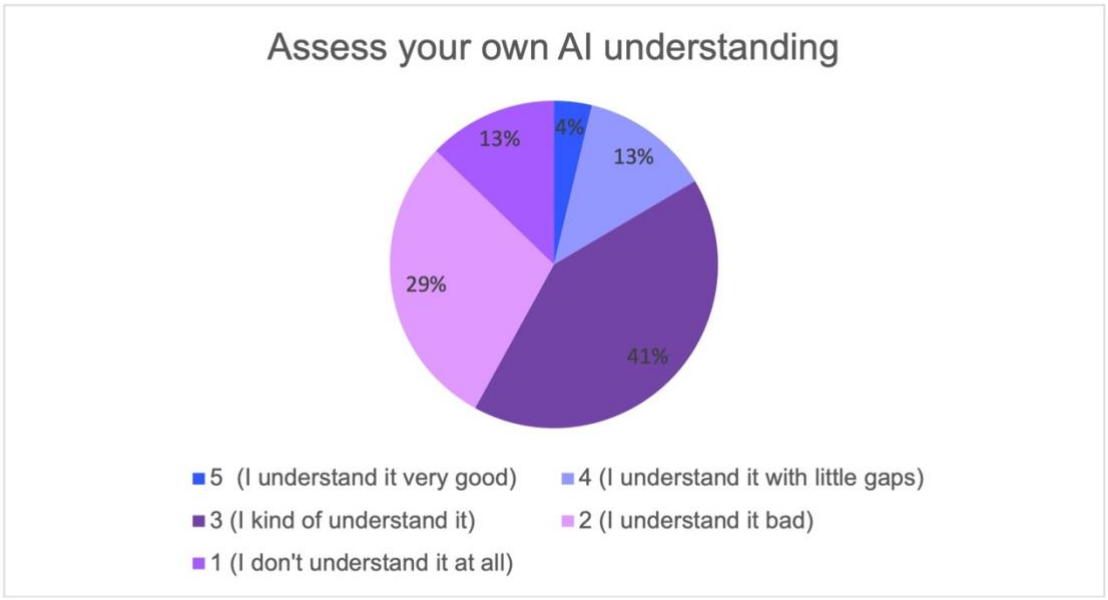




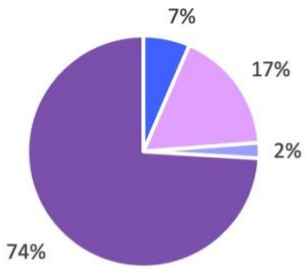



How often do you encounter AI mentions?
35%
58%
7%
Often
Almost never
Sometimes


Interest in AI
6%
5%
16%
36%
37%
5 (very intersted)
4 (interested)
3 (it is in my interest no more than other topics)
2 (I have a little interest)
1 (not interested at all)

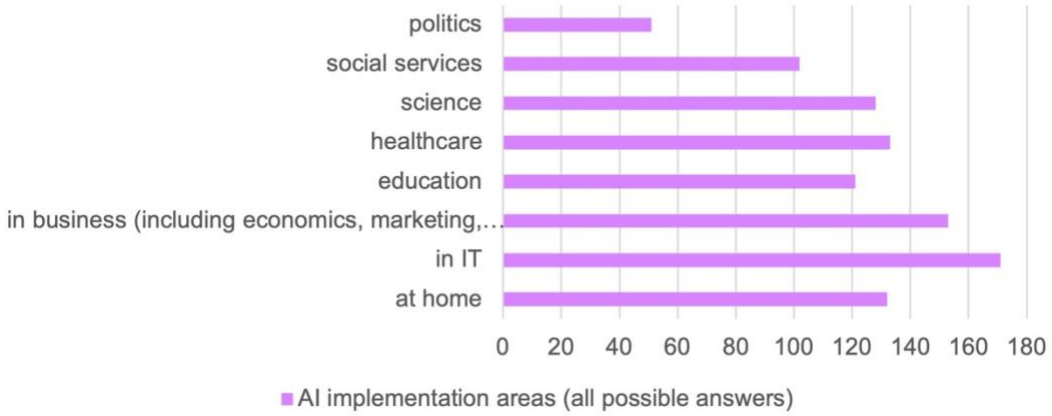

Assess your own AI understanding
13%
4%
13%
29%
41%
5 (I understand it very good)
4 (I understand it with little gaps)
3 (I kind of understand it)
2 (I understand it bad)
1 (I don't understand it at all)

AI definiton

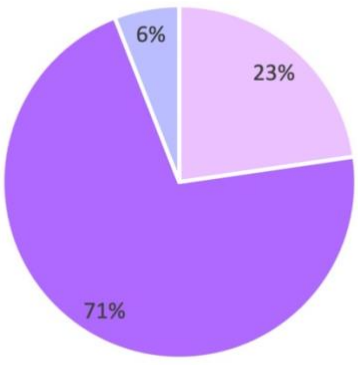


- AI is a technology aimed at developing machines that behave as though they were intelligent.
- AI is the ability of digital computers or computer controlled robots to solve problems that are normally associated with the higher intellectual processing capabilities of humans
- AI is the study of how to make computers do things at which, at the moment, people are better.
- AI is a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation

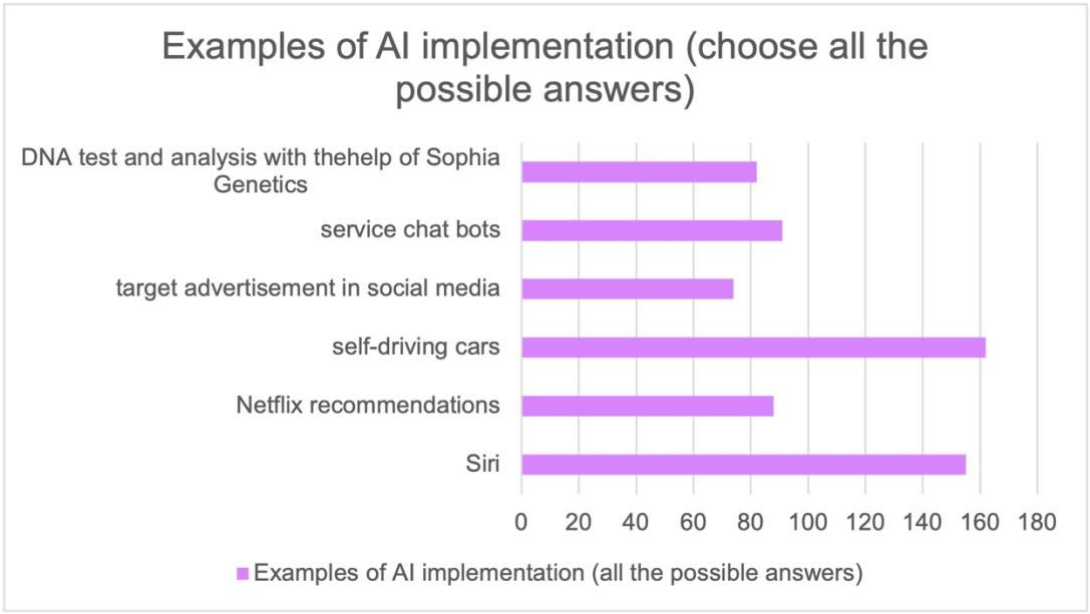
AI implementation areas (choose all possible answers)

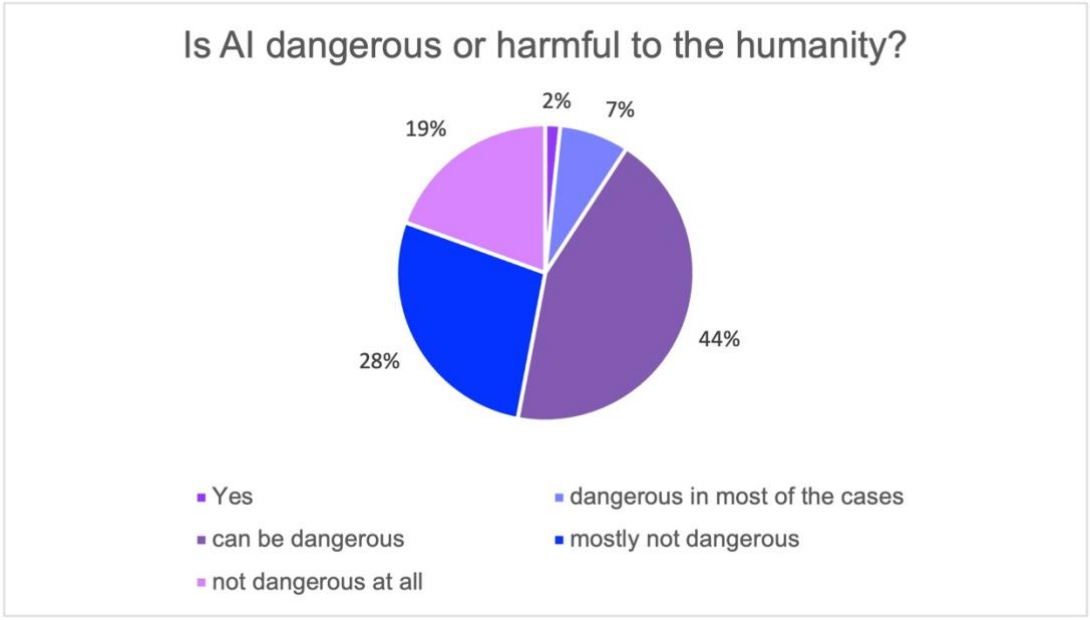


Can you recognise AI in real life?

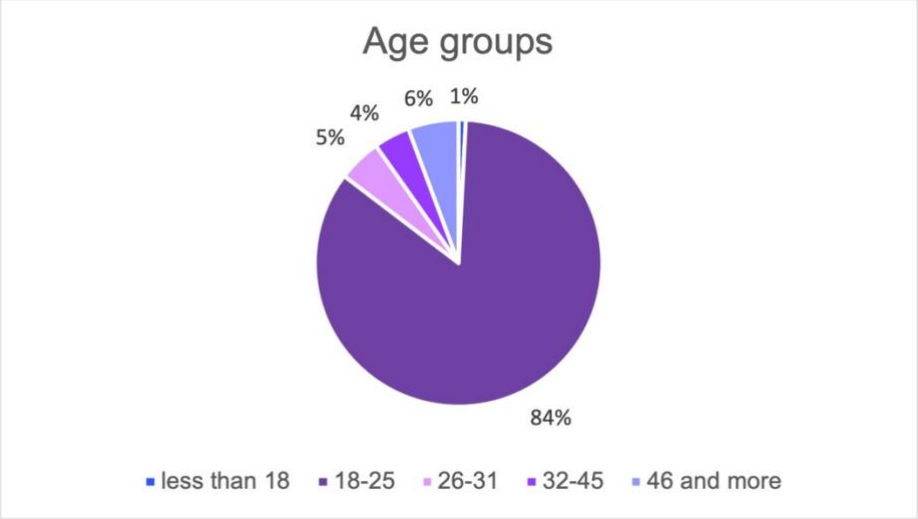


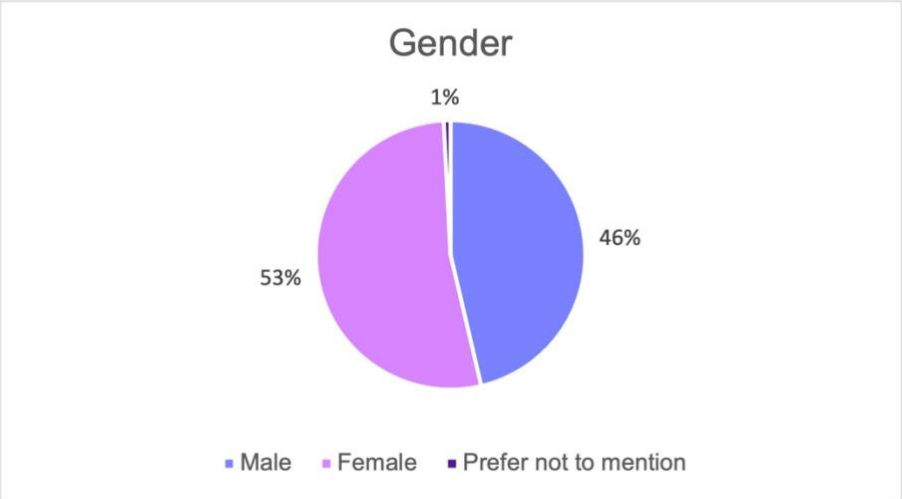
I can recognise Not all of the times I never can recognise

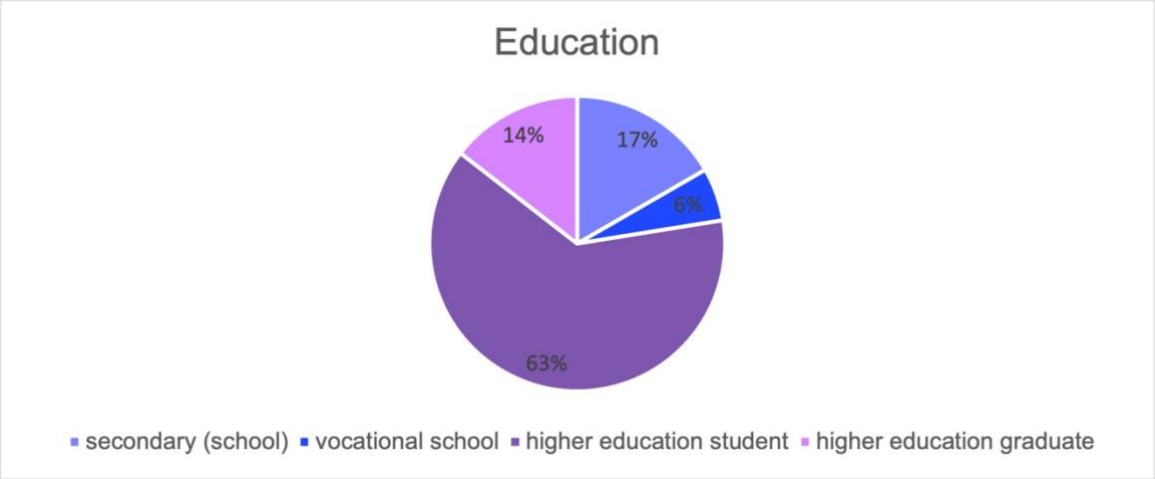

Examples of AI implementation (choose all the possible answers)
DNA test and analysis with thehelp of Sophia Genetics
service chat bots
target advertisement in social media
self-driving cars
Netflix recommendations
Siri
0 20 40 60 80 100 120 140 160 180
Examples of AI implementation (all the possible answers)

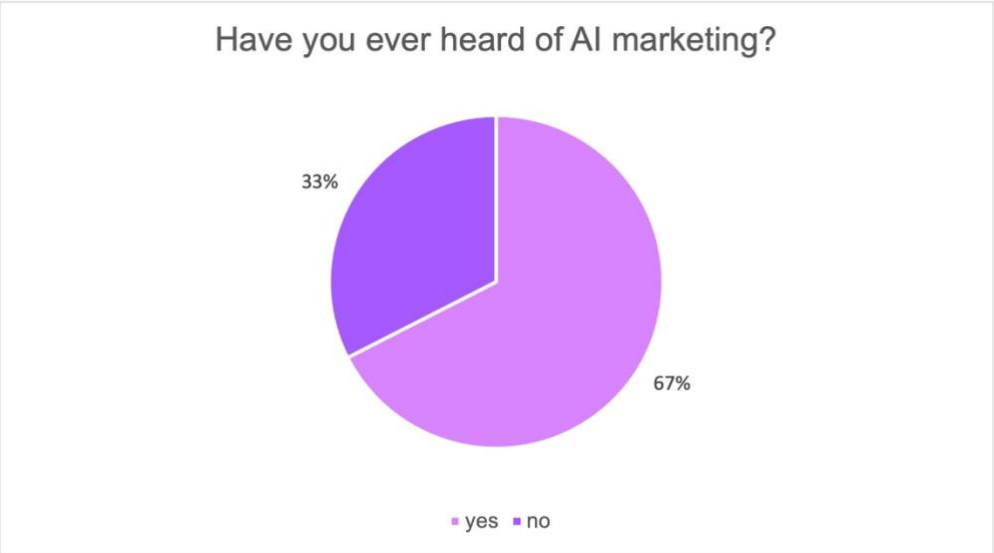

Is AI dangerous or harmful to the humanity?
2%
7%
19%
44%
28%
Yes
dangerous in most of the cases
can be dangerous
mostly not dangerous
not dangerous at all

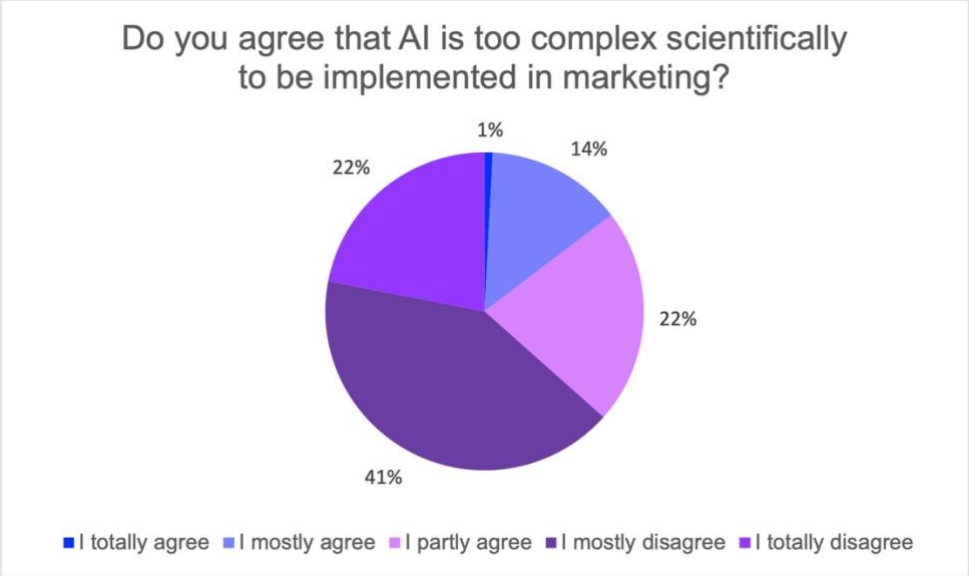
Appendix 2. Questionnaire “AI marketing” results



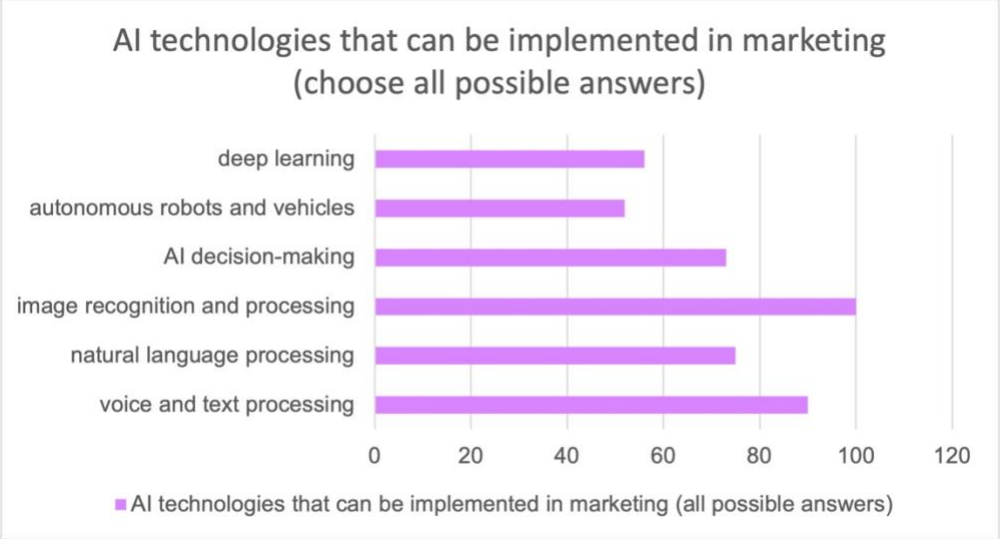


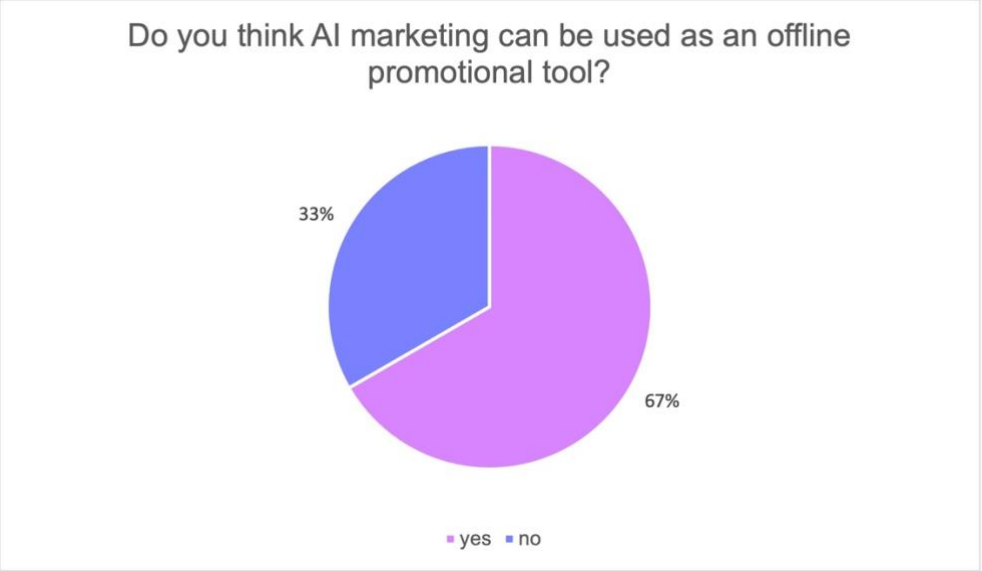


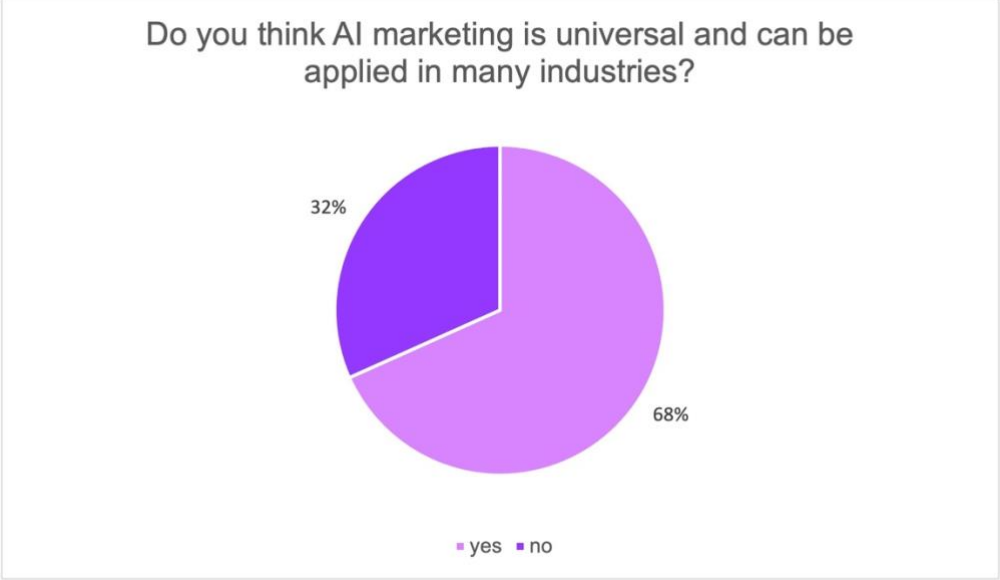

Have you ever heard of AI marketing?
33%
67%
yes
no

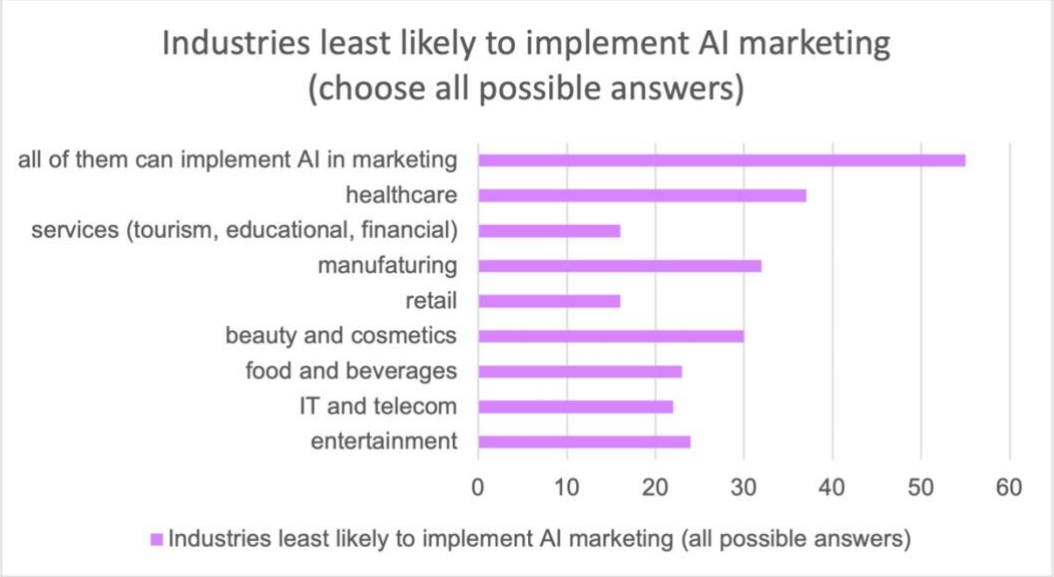

Do you agree that AI is too complex scientifically to be implemented in marketing?
1%
14%
22%
22%
41%
I totally agree
I mostly agree
I partly agree
I mostly disagree
I totally disagree

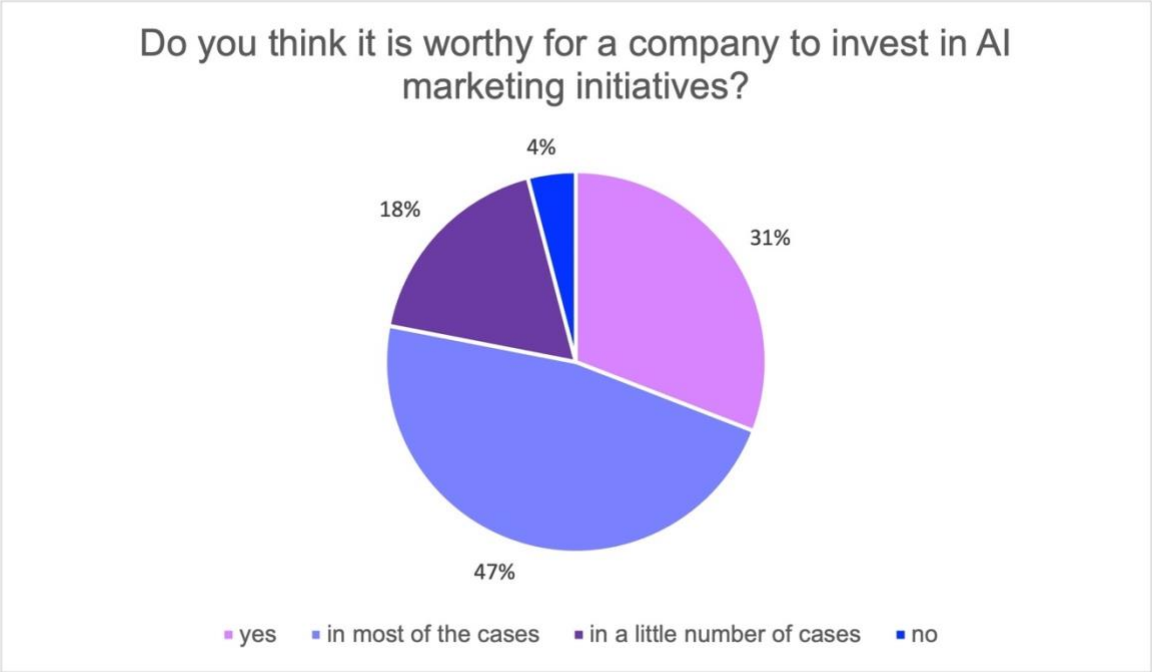

Can you name any examples of AI marketing?
9%
34%
57%
I can name many
I can probably name some
There is nothing I can name


AI technologies that can be implemented in marketing (choose all possible answers)
deep learning
autonomous robots and vehicles
AI decision-making
image recognition and processing
natural language processing
voice and text processing
0
20
40
60
80
100
120
AI technologies that can be implemented in marketing (all possible answers)


Do you think AI marketing can be used as an offline promotional tool?
33%
67%
yes
no


Do you think AI marketing is universal and can be applied in many industries?
32%
68%
yes
no


Industries least likely to implement AI marketing
(choose all possible answers)
all of them can implement AI in marketing
healthcare
services (tourism, educational, financial)
manufaturing
retail
beauty and cosmetics
food and beverages
IT and telecom
entertainment
0
10
20
30
40
50
60
Industries least likely to implement AI marketing (all possible answers)


Do you think it is worthy for a company to invest in AI
marketing initiatives?
4%
18%
31%
47%
yes
in most of the cases
in a little number of cases
no