ARTIFICIAL INTELLIGENCE IN MARKETING THEORY AND MARKETING PRACTICE

Practical recommendations for companies on the best way to implement or develop AI

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Abstract

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Abstract

The study is devoted to the consideration of AI in marketing theory and marketing practice. The relevance of this work can be explained not only by the growing investment in the development of artificial intelligence, and the shift of technological trends increasingly in the direction of AI, but also the growing amount of unstructured data accumulated by companies and their importance, especially for marketing, because this type of data is a place where many effective insights into consumer behavior and not only. Also, the current situation with COVID-19 pandemic and related changes, namely the mass shift to remote working, changes in consumer behavior have added relevance to this topic. It is artificial intelligence in this situation can play an important role in providing a competitive advantage to companies that are already using it to solve marketing problems.

To achieve the objective, the different tasks need to be carried out: Analysis of the scientific literature on AI and marketing; Consideration of the theoretical aspects of marketing to understand where the application of artificial intelligence can be attributed; Analysis of existing applications of artificial intelligence in marketing, as well as existing models for implementation in marketing processes; Analysis of the market for AI-based solutions, highlighting existing solutions and classifying them according to their marketing objectives; Understanding the current state of Artificial Intelligence and possible directions for its development in the short term through empirical research, namely in-depth interviews with experts in the field of Artificial Intelligence.

The study analyzed the existing scientific literature on artificial intelligence and marketing and identified the main areas of research interest, namely personalization, textual information analysis, and analysis of the emotional content of statements. It shows that there is an evolution in analytics and an increase in its impact on companies.

Keywords

AI, marketing, chatbots, machine learning, SEO, recommendation system

List of terms

Artificial intelligence (AI)	A set of technological solutions to simulate human cognitive functions (including self-learning and finding solutions without a predetermined algorithm). The results of a specific task are, at a minimum, comparable to the results of human intellectual activity (Odden 2018).
Machine learning	An artificial intelligence application that empowers systems to learn automatically from a set of data and improve the accuracy of the results shown, without being detailed programmed in detail (Campbell et al. 2020).
Processing natural language processing (NLP)	AI technology that helps computers understand, interpret and control human language. It comes from several disciplines, including computer science and engineering, and computer-based linguistics, with the aim of filling the gap between human communication and computer-based understanding (SAS 2016).
Machine vision	It includes all industrial and non-industrial applications/solutions in which a combination of hardware and software provides operational guidance for devices to perform functions based on their ability to capture and process images (Automated Imaging Association (AIA)) (Venture Harbor 2018).
Search engine optimisation	The process of optimising a site (and the content on that site) so that it appears in a prominent position in organic search. Search engine optimisation requires an understanding of how search engines work, what people search for, why they search and how they do it. Search engine optimization aims to make a website attractive to users, it is a combination of technology and marketing (Goodwin 2018).
Recommendation system	An information filtering system designed to cope with information overload by filtering out important pieces of information from the large volume of information constantly generated according to the user's preferences, interests and observed behaviour. The system

	recommendation is able to predict whether a particular user would prefer a particular product based on of a completed user profile (Isinkaye 2018).
Programmatic advertising	A system for automatically buying and placing advertisements on websites and apps that uses real-time bidding (RTB) and which enables targeted placement in depending on the chosen target audience (targeting by selected tags) (Digital Marketing Institute 2019).
Insight	A clear, deep, sometimes unexpected insight into a complex problem or situation. In marketing, one can distinguish between market insight (the discovery of relevant, relevant, previously untapped insights into a target market based on in-depth data analysis) and consumer insight (a deeper understanding of the feelings and thoughts of the target audience, the use of which can be used to build more effective marketing strategies). (Cambridge Dictionary 2022).
Sentiment analysis	Contextual processing of textual information, which identifies and highlights subjective information in the source and helps companies understand public attitudes (opinions) about their brand, product or service through monitoring user communication on social media (Gupta 2018).
Chatbot	Artificial intelligence-based software that mimics human communication by using pre-computed key phrases and based on signal text analysis (Technopedia 2019).

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1 Introduction

1.1 Background

Artificial intelligence (AI) is an object of great interest in today's world, both from a scientific and a practical point of view. Its development is a priority for many countries around the world, many companies are spending large resources on the study and development of artificial intelligence.

The study is devoted to the consideration of AI in marketing theory and marketing practice. The relevance of the study can be explained not only by the growing investment in the development of artificial intelligence, the shift of technological trends increasingly in the direction of AI. It is also the growing amount of unstructured data accumulated by companies. This information is relevant especially for marketing because this type of data is shows insights into consumer behavior and not only. Also, the current situation with the COVID-19 pandemic and related changes, namely the mass shift to remote working, changes in consumer behavior has added relevance to this topic. In this situation, AI can play an important role in providing a competitive advantage to companies that are already using it to solve marketing problems. (Statista 2022; Gartner 2019.)

1.2 Thesis Objective

The objective of the research is artificial intelligence technologies, the subject of the research is the application of these technologies in marketing. The existing problems - firstly, the emergence of the term *Artificial Intelligence Marketing* without a clear definition of what it means and what place it has in marketing theory. Secondly, the lack of analysis of sources on the topic to get a complete view of the topic of AI in marketing.

The aim of the study – firstly, consolidation of various sources (scientific articles, studies), dedicated to the topic of artificial intelligence in marketing. Then identification of existing trends in the application of AI technologies in marketing. And lastly development of practical recommendations for companies on the best way to implement or develop AI.

To achieve the objective, the following tasks need to be carried out

- analysis of the scientific literature on AI and marketing
- consideration of the theoretical aspects of marketing to understand where the application of artificial intelligence can be attributed

- analysis of existing applications of artificial intelligence in marketing, as well as existing models for implementation in marketing processes
- analysis of the market for AI-based solutions, highlighting existing solutions and classifying them according to their marketing objectives
- understanding the current state of Artificial Intelligence and possible directions for its development in the short term through empirical research, namely in-depth interviews with experts in the field of Artificial Intelligence.

The practical significance of the study lies in the identification and analysis of existing models for the application of AI in practice in marketing. It is done based on several sources, of the best-known AI-based solutions for marketing and classification according to marketing objectives. And several assumptions are made based on this analysis. The scientific novelty of the study is an attempt to understand the place of AI in marketing theory and to identify models for the application of AI in marketing practice.

2 Artificial Intelligence in Marketing Theory

2.1 An Analysis of the Literature on Artificial Intelligence in marketing

The purpose of this chapter is to examine artificial intelligence within the framework of marketing theory by analyzing academic sources. They are on topic of artificial intelligence and marketing and by looking at the main marketing concepts, approaches, and marketing practices. It should be noted that the study uses the term artificial intelligence marketing to refer to artificial intelligence in marketing.

For the analysis, data from the Scopus scientific citation database was used. In terms of selection parameters, the keywords to search for sources were *Artificial Intelligence* and *Marketing*. A total of 1,767 articles were found for these keywords in the database, but before starting the analysis, it was necessary to identify the fields of knowledge that needed to be excluded. It was decided to keep *Business, Management, and Accounting*, *Decision Sciences*, *Social Sciences*, *Economics*, *Econometrics* and *Finance* in the *Branch of Knowledge* field, *Psychology* and *Multidisciplinary Industry* because of the multifaceted nature of marketing and the presence of almost every branch of knowledge in one way or another. After filtering articles, 143 articles remained. As the listed fields combine several sciences at once, the list of the analyzed sources changed and was reduced to 81. Figure 1 shows the main information on the articles: the keyword cloud and the distribution of the sources by the journal. Based on the keyword cloud, the most interesting scholarly phenomena in the topic can be identified: machine learning, personalization, digital marketing, social media, and marketing analytics.

Figure 1. Word cloud and distribution by academic journal of sources dealing with AI in marketing (Scopus 2022)

The remaining sources can be divided into four major groups

- expert systems and their modifications
- specific scientific cases with artificial intelligence to solve specific marketing problems
- the emergence of new elements in marketing processes/marketing theory
- the future of marketing in the age of artificial intelligence, predicts the further development of AI and its impact on marketing.

Let us consider each group in some detail to trace the evolution of artificial intelligence in marketing and identify certain milestones, and strongholds of its development. As for expert systems, their popularity peaked in scientific journals in 1990-2000, when the technology was in high demand and to some extent successfully implemented in other industries,ries, and scientists wondered how it could be implemented in marketing. An expert system is an artificial intelligence-based system that is formed around a knowledge base and makes it possible to use theory, scientific data, and the expertise of practitioners from real cases to make decisions. The marketing industry first proposed the use of an expert system in sales, seeing it as the most underestimated and potentially attractive. This was followed by several papers elaborating on the subject in other areas of marketing, in industrial marketing, in services marketing, as well as several real-world cases that looked at the process of establishing such a system. The field of marketing planning has gradually become a priority.

The advantages of expert systems were that the decisions made by marketers would become more consistent, as there was a reliance on the scientific basis and established practices. There would also have been greater use of expert knowledge, which in turn would have affected the decision-making system and the accuracy of the analysis of possible alternatives for the better. (Steinberg 1987; Mentzer & Gandhi 1993; Sisodia 1991; McDonald & Wilson 1990.)

However, there were also difficulties in developing a system in the field of marketing, as knowledge in marketing is rather unstructured and fragmented. The idea is that the existing marketing knowledge system is incomplete, that not everything has yet been studied in this field. It is therefore quite problematic to compile a comprehensive knowledge base on which to build an expert system. (Steinberg 1987.)

Consequently, two opposing views on the future of expert systems in marketing have emerged. Some academics, although they recognize the difficulties described above, argue that the creation of expert systems in marketing, e.g., marketing management, marketing planning, is possible (Malcolm & McDonald 1989). Other scholars, on the contrary, argue that marketing has not yet become an area where expert systems can be effectively implemented, as the theoretical basis has not yet been fully established (Wright & Rowe, 1992).

In addition, some modifications of expert systems should also be mentioned. They are not modifications in the direct sense of the word, but they can be described as such because they, like expert systems, have an auxiliary role in decision-making in the field of marketing. Decision support systems are distinguished by the database from which they operate - they are standard marketing databases. The systems themselves are needed to ensure that the marketer does not make decisions mainly with his/her intuition and expertise, but at the same time does not delve too deeply into a large amount of available data. (Gerrit et al. 2000.)

Also separate are systems based on the identification of new knowledge from available data using fuzzy logic and AI-based marketing information systems (Orriols-Puig et al. 2013; Casillas & Martinez-Lopez 2009). This excursion into expert systems was necessary to illustrate that scientists originally considered artificial intelligence as a decision-making aid. It would allow the individual to approach the process in a more balanced and consistent manner and increase the efficiency and effectiveness of the decisions made. This theme can be traced with greater or lesser frequency throughout the analyzed period (1987-2020), but there is a shift in emphasis away from expert systems towards the modifications outlined above. (Orriols-Puig et al. 2013.)

Now let us move on to specific cases where artificial intelligence is used to solve marketing problems. These marketing tasks boil down to forecasting, segmentation, and personalization. For example, the case of setting up recommendations and personalized advertising messages to consumers, distributed across segments using machine learning and a decision tree. (Kim et al. 2001.)

Another interesting case is the use of AI that would collect information from retailers and producers, analyze it and make informed decisions. So that producers can choose the most appropriate production strategies and product modification decisions (Daskou et al. 2003). The reference to decision support systems can be traced here.

Another concrete example of the use of artificial intelligence for marketing purposes is a network of small grocery shops, for which it was important to identify hidden behavioral patterns of their customers. There was a need to conduct segmentation based not only on quantitative but also on qualitative data to identify the group of customers who are likely to leave for competitors. In this case using a tool like LAMBDA (Learning Algorithm Machine for Data Analysis), gives results that are quite accurate and allows marketing strategies to be formulated on this basis. (Casabayo et al. 2004.)

In terms of forecasting, there is another case for using AI to forecast real estate market performance in the short term. The model built with AI was capable of predicting unexpected market performance with a +/- two % error, making this model relevant for market players to use to build their strategies. (Khalafallah 2008.)

The case of voice assistants is also a recent case study. They are a product of the new era of artificial intelligence and allow brands to get to know their consumers in their home environment, and in their everyday life. Speakers increase their influence on consumers and change their behavior, sometimes acting as advisers in product selection. (Smith 2018.)

Another interesting case study is the analysis of photos posted on Facebook of various brands. Using machine learning, the authors predicted indicators such as brand love, brand loyalty, and positive word-of-mouth effects for those users who posted such photos. This case study marks the transition to a more active use of other types of consumer data. The case studies are necessary for analysis because they show exactly which of the new technologies are being translated into reality, what practitioners can work with, and what they are adopting. (Kaiser et al. 2019.)

The next group of sources is the emergence of new elements in marketing/marketing processes. Topics such as unstructured data, online relationship marketing, real-time marketing, geo-targeting strategy, mobile marketing mix, changing consumer behavior

influenced by bots and smart speakers, conversational marketing, or marketing using conversational interfaces are covered here. (Orriols-Puig et al. 2013.)

On the topic of unstructured data, the ability to process and analyze large amounts of such data is potentially the most attractive area of application for marketers, as it is in such data that uses consumer insights hidden in large quantities. Unstructured data implies the non-digital and multifaceted nature of this data. Non-digital data require pre-processing for analysis, which distinguishes this type of data from highly structured data. Unstructured data refers to verbal data, which in turn is divided into spoken and textual data, and nonverbal data, which can be divided into animate and inanimate. The unstructured-structured data continuum is depicted in Figure 2. The multifaceted nature of data implies that there are many aspects within a unit of unstructured data that enable researchers to select and analyze exactly those aspects required within the research objectives. For example, voice data has many characteristics e.g., pitch, timbre, speed of speech, each of which is unique because it is responsible for different information about the speaker& Therefore, unstructured data, namely the ability to analyze it, is of great importance for modern marketing. (Balducci & Marinova 2018.)

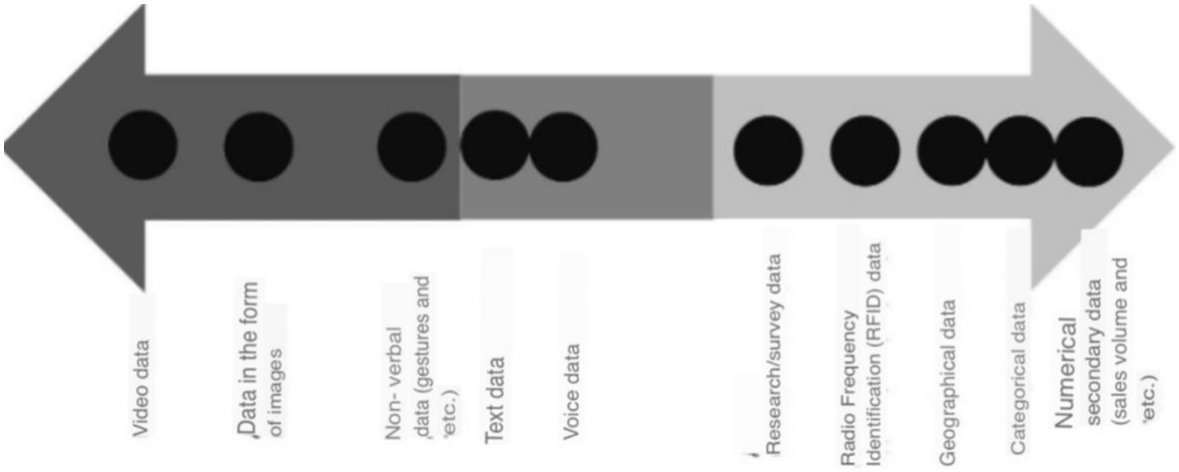

Figure 2. Continuum of unstructured-structured data. Unstructured data to the left has structured the right (Balducci & Marinova 2018)

Speaking of changing some elements of marketing processes, there is a change in consumer behavior patterns due to the use of AI. Moreover, the ability of marketers to influence consumers changed throughout the customer journey through advanced analytics of both structured and unstructured data received. (Marinchak et al. 2018; Kietzmann et al. 2018.)

Online relationship marketing as a marketing phenomenon has gone through four stages of development. The last stage, the symbiotic network, is directly related to the development

of artificial intelligence and the close interaction between consumers and technology. Online relationship marketing, unlike offline, allows smooth and seamless interaction with consumers, which is now highly valued by consumers, personalization at a deeper level, and thanks to the development of chatbots and voice assistants, online relationship marketing allows online communication to be endowed with human traits. (Steihoff et al. 2019.)

Another interesting phenomenon related to the rapid development of technology, including AI, is real-time marketing. This phenomenon is the ability to deliver a personalized and contextualized product or service while interacting with the consumer in real-time and co-creating experience for all stakeholders involved. (Buhalis & Sinarta 2019.)

As personalization plays an increasingly important role in today's world, we should also note the possibility of introducing a system for the intelligent generation of personalized advertising copy/messages. There are two parallel processes in the model, which are then combined. First, a database of search behavior and consumer data is used to perform personalized tagging, followed by an analysis of the emotional coloring of advertising messages to identify the highest priority. The second process is to create a set of advertising templates based on consumer-generated advertising copy and then the tagging and created templates are matched to provide personalized advertising. (Deng et al. 2019.)

Of equal interest is the geographical pricing model, which consists of four steps. First, it is the monitoring of competition in geographical space e.g., creating a geodatabase with quantitative and qualitative characteristics. Secondly, spatial factor analysis. Third, the identification of price zones using a factor map to identify, based on price and geographical location, zones with high and low competitive pressure. Fourth, targeting several of the previously identified geo-zones according to the company's marketing strategy. This model can also be used to evaluate the geographical pricing strategy of major competitors. Thanks to artificial intelligence, this process takes place in real-time, i.e. it is geographical dynamic pricing with response to changes in demand and automatic adjustments in line with changed external conditions. (Baray & Pelé 2020.)

The model of personalized mobile marketing strategies can also be noted. An adjusted marketing mix for mobile marketing planning has been proposed: At the heart of everything is personalization, followed by product, place, price, promotion, forecasting. (Tong et al. 2020.)

Finally, the phenomenon of "conversational marketing" or marketing using conversational interfaces should be mentioned. Here we are talking about the movement of marketing into messengers or virtual assistants. A total of 2 types of dialogue interfaces are distinguished:

chatbots and virtual assistants. It is also noted that there are five motivations for end consumers to use it: knowledge, communication, consumption, action, and service. In other words, it can be concluded that there is a change in consumer behavior patterns when they see messenger as a place to receive a service/place to consume. In addition, there is an increase in the importance of smart speakers, and virtual assistants (Klaus & Zaichkowsky 2020), namely explaining why consumers increasingly prefer voice assistants when purchasing products. There are three main reasons: the convenience and ease of use in practice; the sense of control and power that comes from using the voice to formulate some sort of command; and the positive emotions associated with using the voice to do something. This kind of change allows marketers to assess the extent to which familiar processes have been modified to develop new strategies and actions that resonate with end users. (Sotolongo & Copulsky 2018.)

Finally, the fourth theme touches on the future of marketing in the age of artificial intelligence. Here, it should be noted that there will be three major long-term technology trends: the growing ability of companies to communicate directly with their consumers; the growing ability of companies to collect and store a wide variety of consumer data; and finally, the growing ability of companies to analyze information obtained about consumers. However, as the influence of artificial intelligence on consumers grows and consumers are already delegating part of the product purchase process to smart technology, in the future marketers should consider that computer technology may be on the consumer side. Another important trend that is still partly visible today is the increasing complexity of the tasks that artificial intelligence is capable of performing: from mechanical automation of simple, repetitive steps to analytical tasks. However, the field of emotions remains a human prerogative for the time being, so it is the empathic skills that humans need to develop, as the future economy will gradually evolve from a thinking economy to a feeling economy. Another aspect of the future of artificial intelligence in marketing is the ability to use it to solve strategic tasks, whether it will continue to act as an assistant, or whether it is possible to delegate to it this area of activity, for which, until recently, it seemed that only humans could be responsible. The results of the expert analysis suggest that artificial intelligence is likely to increase its role, but so will assist in decision-making and marketing strategy development. An important factor to consider is organizational culture; companies must be prepared to use AI-based tools. (Eriksson et al. 2020; Rust 2019; Stone et al. 2020.)

It should also be noted that the analysis of scientific sources can highlight priority areas in the development of artificial intelligence at the present stage. These are in-depth personalization, which is the subject of a large number of articles, as artificial intelligence

technologies allow us to search for valuable, working insights at the micro level, which is why this phenomenon has received so much attention. (Daskou et al. 2003.)

Sentiment analysis, or the analysis of the emotional content of statements, is another area. In the digital sphere, understanding users' emotions is one of the sources of competitive advantage because people share their thoughts and emotions, including for certain brands, publish reviews, and this part is also very important for marketers. (Orriols-Puig et al. 2013.)

Generally, it is the topic of unstructured data that is very important for marketers now, because it is a deeper understanding of consumer behavior and their way of thinking. Users willingly share this information in large volumes online, and the development of applications with artificial intelligence to process such a large amount of unstructured data, primarily for marketing purposes, is certainly on the agenda, as this is where a large number of hidden opportunities lie which will determine future marketing processes. (Sotolongo & Copulsky 2018.)

Thus, artificial intelligence in marketing is beginning to play an increasingly important role, gradually increasing its influence on marketing processes. Let us now move directly to marketing theory, and analyze existing concepts, consider paradigm shifts and marketing practices to understand where artificial intelligence marketing has positioned itself within the theory.

2.2 Analysis of Paradigms, Concepts, and Marketing Practices

Let us start directly with the concepts of marketing management. Five concepts are commonly identified (Kotler et al. 2017)

- the concept of operational excellence
- the concept of product improvement
- the concept of intensifying commercial efforts
- the concept of pure marketing
- the concept of socially oriented marketing.

A closer look at these concepts is necessary to understand what they were based on, what possible tools were used, and what goals were pursued. It should be noted that the concepts represent marketing's response to changes in the external environment.

The concept of manufacturing excellence implies that the target audience is interested in widely available low-cost products, so the company's main efforts should be directed toward manufacturing excellence and efficient product distribution. This may occur in two cases: when demand for the company's products far exceeds supply and a growing market is likely

to expand production capacity. Or if the cost of goods produced is too high and only when production expands can it be reduced through economies of scale. The main tool in using this concept is production costs. The goal is to win the market and gain more market share and higher profits. (Kotler et al. 2017.)

Product improvement implies that consumers always choose high-quality products, so the company's efforts are focused on improving the products it produces. This concept is typical when the market is gradually saturated when companies have a diverse range of products. However, this concept can often fall into the trap of 'marketing myopia, which is that companies do not see global change, or new trends outside their market because they overlook the fact that people are not buying the best in every way the tool to achieve the goal, in this case, is advanced technology. (Kotler et al. 2017.)

The concept of commercial intensification is that a company needs to take action to promote and sell products so that consumers notice them. Most of the time, these are products of passive demand that consumers do not think about. It is also a concept used in overproduction to get rid of large quantities of stockpiled products. This approach can be dangerous in that companies focus their efforts on selling what is produced without regard to the wishes of consumers. In this case, there is no interest in building long-term relationships; the main thing is to sell off accumulated stocks. The tool of this concept is aggressive advertising and aggressive action by salespeople. (Kotler et al. 2017.)

The concept of pure marketing focuses on understanding the needs and requirements of the target audience. This concept relies on external factors, puts the interests of consumers at the center, and conducts primary research to identify them. However, companies must always remember that the primary objective of their activities is not the maximum satisfaction of people's needs, but the profitable satisfaction of needs and wants. The tools of this concept are consumer research as well as the marketing mix (the 4Ps of marketing - price, product, place, and promotion). (Kotler et al. 2017.)

Finally, the fifth concept of marketing management is socially oriented marketing, according to which a company should not only strive to meet the needs of specific people but also promote the well-being of society as a whole. The company faces quite conflicting issues, for example, leads to whether the satisfaction of short-term needs to the growth of people's welfare in the long term. This is why the so-called socio-ethical marketing triangle stands out, illustrating the three objectives that a company pursues, which should not conflict with each other: company profits, the satisfaction of the needs of the target audience, and the well-being of society as a whole. (Kotler et al. 2017.)

There are other concepts as well, but they are somewhat separate from the basic five, as highlighting such concepts is quite subjective. For example, the concept of green marketing is sometimes highlighted separately, but it can also be part of socially oriented marketing. There is also the concept of global marketing, which is a response to the rise of globalization. However, it is rather the marketing of international companies that operate in markets in different countries simultaneously and has to follow neither national strategies nor take a unified approach to reduce costs. This concept has not been highlighted separately in the study because the phenomenon of globalization is still at an early stage of development, perhaps when globalization moves to a new, more mature level of development it will also be possible to speak of a global marketing management concept. (Lipsitz 2012.)

In addition to the concepts of marketing management, there are also concepts such as the shift in dominant logic and the development of the relational paradigm e.g., the shift from a transactional to a relational paradigm, as described by O.A. Tretiak. Consideration of these phenomena is also relevant to this study to define with greater precision the place of artificial intelligence in marketing. Let us proceed directly to consider the main features inherent in the above phenomena. (Vargo & Lusch 2004; Tretiak 2013.)

The change in the dominant logic of marketing is a transition from a commodity-centered to a service-centered marketing logic. Six signs and eight fundamental assumptions proving this transition are described. Signs of the shift in the dominant logic are the original subject of exchange; the role of goods; the role of the consumer; definition and concept of value. (Vargo & Lusch 2004.)

Speaking about the fundamental assumptions, the authors consider the following:

- The application of special skills and knowledge as the main subject of exchange.
- Indirect exchange hides the main subject of the exchange.
- Goods represent a distribution mechanism for the subsequent supply of services.
- Knowledge is a major source of competitive advantage in an ever-changing environment.
- All economies are service economies.
- The consumer is always involved in the creation of the final product.
- A company can only offer value.
- The service-centered approach is customer-centered and relationship-based.

When looking at relationship marketing, it is necessary to highlight why there is a shift toward the relationship paradigm, that is, to highlight how traditional (transactional)

marketing differs from relationship marketing. Transactional marketing focuses on single, multiple transactions, whereas relationship marketing is built on the retention mechanism of existing customers. That is, one of the elements of relationship marketing and an asset of the company is the customer base, whereas in transactional marketing it simply does not exist because it is not needed. In transactional marketing, the seller meets the consumer only once, whereas in relationship marketing a continuous chain of consumer contacts is built. Transactional marketing focuses on short-term activities, while relationship marketing focuses on long-term activities. As there are only one-off contacts, there is no interest in a high level of service in transactional marketing, whereas in relationship marketing the level of service plays high, if not decisive, role. Because of the short duration of the customer relationship, in transactional marketing, there is only a limited commitment to customer expectations, whereas in relationship marketing such demands are very high. In transactional marketing, an attribute such as quality is the prerogative of the production department, whereas in relationship marketing, it is the prerogative of the entire company and all departments combined and product quality is the responsibility of all. (Tretiak 2013.)

The next aspect of the theory is marketing practices. This is a rather complex concept and there are not many sources that describe this phenomenon. There are different approaches and groupings of approaches, for example, traditional approach (4P), extended approach, specialized, and pluralistic (Rebyazina & Davis 2014, 107). There are also some difficulties with the definition of the concept, for this study the definition formulated by V.A. Rebyazina and A.O. Davii:

> "*Marketing practices are a set of marketing activities of a company implemented at the tactical and strategic level, taking into account the market in which this company operates". However, since the concept is quite comprehensive, other definitions must also be considered, namely that marketing practices are also tools reflecting the processes, tactics, and routines of an organization; the implementation of the marketing function through specific activities; specific marketing activities, processes, and tasks at the micro level." (Dibb et al, 2014; Newbert 2012; Ellis 2005; Rebyazina & Davii 2014.)*

In addition to the above theoretical aspects, the types of marketing should be mentioned separately. Depending on the classification features, the following types of marketing are distinguished (Nozdreva 2014)

- marketing concept aspect e.g., managerial, behavioral, experiential marketing, integrated marketing, innovation marketing, direct marketing, strategic marketing,

environmental/green marketing, social/social-ethical marketing, enlightened marketing

- territorial criterion e.g., domestic, international, global, multinational, export, import, foreign trade, foreign science and technology, foreign direct investment marketing, foreign trade
- type of goods and services e.g., marketing of consumer goods, industrial goods, banking and finance, trade, services marketing, agricultural, construction, tourism, science and technology, events, show business, ideas marketing, campaign marketing
- type of marketing subject e.g., marketing of commercial organizations, non-profit organizations, personal, organizational
- nature of demand e.g., conversion, stimulating, remarketing, synchro marketing, sustaining, demarketing, counteracting
- degree of market coverage e.g., undifferentiated coverage, differentiated coverage, concentrated coverage
- marketing techniques e.g., interactive marketing, digital marketing; content marketing, social media marketing, email marketing, viral marketing. (Velichko 2018.)

Thus, this paragraph has highlighted some elements of marketing theory that will help define the place of artificial intelligence.

2.3 Defining the Place of Artificial Intelligence in Marketing Theory.

The question of determining the place of artificial intelligence in marketing theory arose when analyzing various kinds of sources on the subject and in some of them the term artificial intelligence marketing appeared. However, the term has not gained sufficient traction in marketing circles and the impact of artificial intelligence on marketing theory has not been described. Therefore, this study attempts to define it in theory at the current stage of technology development, as its place may change and become more important in the future.

The term Artificial Intelligence Marketing was coined in 2016 by Paul Roetzer, co-founder of Marketing Artificial Intelligence Institute. In 2017, the 5Ps of artificial intelligence marketing were derived: planning, production, personalization, promotion, and metrics/results. Looking in more detail at each element of this adjusted marketing mix, we can see the following. (McCarthy 1960.)

- Planning involved the following steps: defining goals, creating a consumer profile, identifying keywords/tags and creating clusters, analyzing existing content to identify gaps and opportunities, identifying companies that can be converted from potential to real, and predicting churn.
- Production consists of creating a draft for social media updates, content creation, content management, website development, etc.
- Personalization is divided into recommending highly targeted content, sending out predictive product recommendations; engaging consumers through bots and chats; providing contextualized promotional messages based on the user's history and location; personalizing and optimizing the timing of emails.
- Promotion consists of adjusting advertising costs in real-time with a breakdown into channels; testing landing pages, and creatives; sending out targeting ads, etc.
- Metrics imply monitoring activity, scoring leads, getting insights, and predicting campaign performance.

We can conclude that these are the enumeration of unified steps for conducting activities in a digital environment. These 5Ps describe a consistent process of action, whereas the 4Ps, the traditional marketing mix (McCarthy 1960) are the four areas of marketing planning with their implementation steps, i.e. it is a broader concept. This point is paid attention to, as the formulation of the 5Ps may speak in favor of the marketing concept.

The view of artificial intelligence in marketing has a right to exist. However, it is necessary to compare artificial intelligence itself at this stage of its development with the theoretical foundations discussed earlier.

If we talk about artificial intelligence as a new marketing logic, it should be noted that even in an era of significant technological change, services are still at the center, and there is no dramatic shift here. However, if artificial intelligence has a significant impact on consumer behavior and influences consumer choice, i.e. consumers see personal assistants as trusted advisors or even close friends on whose opinions they can rely, or replace consumers altogether, even when purchasing products that require a high degree of involvement, all functions will be delegated to artificial intelligence, then a shift of focus in macretailing is possible. (Rust, 2019; Jones 2018; Klaus & Zaichkowsky 2020.)

Speaking of the move to a relational paradigm, the importance of the relationship with the end consumer is taken to a new level with the use of artificial intelligence in marketing. There are more and more opportunities to conduct one-to-one marketing as artificial intelligence technologies make this method less costly. Therefore, we can assume that AI is now within the paradigm of relationship marketing and contributes to its further

development, as companies seek new ways to interact with customers to obtain new kinds of information from which deeper, more non-trivial, working insights can be gleaned that constitute a competitive advantage. (Velichko 2018.).

Artificial Intelligence Marketing may represent a new type of marketing under the classification of marketing technology, but a more in-depth analysis can be attempted. Therefore, of all the theoretical frameworks considered, at this stage artificial intelligence in marketing rather represents a new type of modern marketing practice that combines features of database marketing and e-marketing, but one can also speak of distinctive features of so-called artificial intelligence marketing. The similarities and differences are presented more clearly in Table 1.

Table 1. Artificial intelligence as a modern marketing practice versus database marketing and e-marketing (Tretiak et al. 2015)

Criterion	Artificial intelligence marketing	Marketing databases	E-marketing
Purpose of the activity	Information for a deeper in-depth relationship with the consumer	Information and economic transaction	Information for the development of relationships
Nature of communication	From company and from the firm to the individual customer	From company to the target segment or individual customers	From a firm with technology, to the mass market
Type of contacts	Personalised, remote	Partly personalised	Personalised, remote
Duration of interaction	Ongoing interactions	Discrete transactions	Repeat transactions in mode real time, supported by internet technology
Management intentions	Constant communication with consumers	Customer retention	Establishing dialogue with consumers with

			the help of internet technology
Management focus	Mass customisation	Product/brand and consumers in the target market	Mass customisation of consumers
Management investment	Operating assets	Internal assets	Operational assets and integration of functional

Thus, we can see that some of the criteria for e-marketing and AI marketing are similar, but there are also differences, so we can consider AI marketing both as part of e-marketing and as a separate type of modern marketing practice, especially when taking into account the constant development of artificial intelligence and the collectivity of this kind of phenomenon. (Tretiak et al. 2015.)

An analysis of the scientific citation database to understand the perspective in which academics considered artificial intelligence in marketing. Already at this stage, it could be concluded that artificial intelligence represents the set of tools for performing marketing actions most effectively, which will be necessary for the future for all actors in the market to face competition. The main milestones of marketing theory were then examined to have an idea of which aspects need to be compared with to determine the place of the theory. Based on this analysis, it was revealed that at the present stage artificial intelligence in marketing can be attributed to modern marketing practices, but that this phenomenon has the potential to evolve into a new dominant marketing logic over time. And in the transition to a new dominant logic, a new marketing concept around artificial intelligence will emerge as a response to changes in the external environment. (Tretiak et al. 2015.)

Based on the above, Assumption 1 can be formulated.

Assumption 1. Artificial Intelligence Marketing at the present stage is a tool that increases the efficiency of marketing processes, requires a certain organizational culture, and whose application has an impact on business processes in the company, which allows to classify it as a kind of modern marketing practices, but which has the potential to develop into a new marketing logic (Vargo & Lusch 2004; Eriksson et al. 2020; Tretiak et al. 2015; Rust 2019).

3 Artificial Intelligence in Marketing Practice

3.1 Areas of Application of Artificial Intelligence in Marketing Activities

Based on the analysis, the following applications of AI in marketing can be identified: deep search engine optimization, recommendation systems, programmatic advertising, forecasting, intelligent segmentation, machine vision, content management, content creation and generation, dynamic pricing, chatbots and personal assistants (Faggella 2019; Sterne 2017, Gentsch 2019).

However, there is another way of looking at the issue. There are several models developed on this topic which are highlighted in this paragraph, namely

- artificial Intelligence Matrix in Marketing (Gentsch 2019; Fagella 2019)
- a model of AI application based on the customer lifecycle (Sterne 2017)
- applying artificial intelligence and big data at every single stage of the customer journey to increase the efficiency and effectiveness of marketing efforts
- AI model in marketing depending on the goals pursued (Seligman 2018)
- a 9-step model of the marketing process with the potential to use artificial intelligence (Campbell et al. 2020).

Before moving on to the models described above, another topic should be addressed, namely the so-called maturity model, as this model help to explain the prevalence of certain applications of AI by companies in their marketing activities. The maturity model also describes the degree to which a company is ready for deeper adoption of AI. In this study, two maturity models are considered: the model developed by Microsoft and the Gentsch model (Charran & Sweetman 2018; Gentsch 2019).

Let us start with the model proposed by Microsoft. The model consists of four levels: foundational, emerging/approaching, ambitious, and finally mature. At the first foundational level, a company is just learning about artificial intelligence, trying to understand where and how it can be applied, how it is being applied by competitors in a particular industry, to take note of it. At this level, companies have misconceptions about artificial intelligence or feel disillusioned with the technology, also companies are characterized by a low level of digitalization and basic analytical capabilities. Companies may even initially incorporate artificial intelligence into their operations, but these are only standalone solutions developed by large companies, such as Microsoft, to solve specific problems.

The approaching level is characterized by the fact that the company continues to implement cultural changes to adjust the way employees think and make data-driven decisions. Such

companies are characterized by the process of digitalization already underway, as well as the search for ways to optimize existing business processes. The introduction of artificial intelligence is taking place to automate processes. This move indicates that the company is ready to learn how to implement its AI-based solutions. Approaching organizations are demonstrating a willingness to make multiple leaps and an ability to evaluate the useful lessons learned from those leaps.

Ambitious companies are already aware that artificial intelligence will help them compete in the marketplace and transform their operations in response to external changes. These companies are often aware of how their competitors are using artificial intelligence. At this stage, companies are motivating their employees to work together to create new business models. The hallmarks of an ambitious level of adoption are a high level of digitization, a desire to create new business models, and a data-driven culture. Such companies should focus their funds on advanced analytics.

Finally, the maturity level is characterized by an understanding of the lifecycle and the construction of foundational data architecture. These companies have already fully embraced a culture that includes an attitude of continuous growth and continuous, ongoing learning. Strategic initiatives are fully supported by data, which then enables identified insights to be translated into action. Companies also know how to treat AI development staff and how to organize their activities so that multiple AI initiatives can be worked on simultaneously. At this level, companies are beginning to ask ethical questions because they know they can develop an AI solution, but whether they should, that is the key question at the highest level of maturity.

The second model also presents four levels of maturity, but the fourth stage is rather difficult to predict, as it is a company that is fully managed by artificial intelligence, so the first three stages, namely companies not using algorithms, semi-automated companies and fully automated companies are of interest within this study. As for the characteristics to analyze and compare each stage of the maturity model, they are strategy, organization of activities, decisions, data, and analytics. (Gentsch 2019.)

Companies not using algorithms are characterized by the following features: strategy e.g, no decision on AI strategy, data is not seen as a critical resource for success, analytics is part of the company's technical department, people/organization e.g., no chief data processing and analysis officer position, no data scientists with data, limited ability in analytics, the presence of marketers in the classical sense, analytics e.g., decisions are made entirely by humans, no slightest automation of processes, only rule-based systems are used, data e.g., focus on structured data, different data sources are not linked, data is

not used systematically, no automation of data collection and analysis, analytics e.g., simple analytics using tools like SPSS, XLS, etc.

Semi-automated companies are characterized by: strategy e.g., undeveloped artificial intelligence/algorithms strategy, data is seen as a meaningful resource for the business, alignment with partial goals, namely marketing, sales, and service department goals, people/organization e.g, chief data processing and analysis officer position not yet allocated, analytics-focused staff, cooperation between IT department and marketing, sales and customer service departments, solutions e.g., algorithms provide recommendations on data, analytics e.g., advanced analytics, forecasting, A/B testing; analytical models are not automatically integrated into company processes.

Finally, the features of fully automated companies are strategy e.g., well-designed and developed AI strategy, data and analytics as integral parts of business processes and business models, data as a value driver and competitive advantage, predictive analytics applied to optimize and automate decisions made by the company, fit for purpose, analytics is part of a dedicated department in the company, IT acts as an assistant, people/organization e.g., chief executive position present, advanced analytics e.g., analytics results are automatically used to create and optimize business processes, real-time optimization of the customer journey, automated analysis and content creation. At all three stages, it is possible to use artificial intelligence either more in-depth or superficially to solve point problems or to optimize entire processes.

Now, after considering this model, let us move directly to the models for the application of AI in marketing. The first model is actually two models, but they are not separable as they simply list the application areas, dividing them into areas that are sufficiently developed and those that are developing to play a significant role in creating competitive advantage in the future - presented by Daniel Faggella and Peter Getsch (Faggell 2019; Gentsch 2019).

D. Faggella identifies five main areas of application of artificial intelligence in marketing (Faggella, 2019): search engine optimization, recommendation system, programmatic advertising, machine vision and image and content generation e.g., turning specific sets of information into readable text, an example being the creation of product descriptions and features as well as articles aimed at highlighting the application of a product in different situations entirely through the use of AI.

P. Gentsch identifies the following uses of artificial intelligence (Gentsch 2019)

- pricing
- sales volume forecasting

- predicting leads and creating profiles of these consumers;
- automated customer service
- automation of marketing processes
- conversational commerce
- media planning
- content creation
- chatbots and digital advisers/assistants
- product/content recommendation
- consumer Insights
- recognizing marriage/fraud.

However, of greater interest is the artificial intelligence matrix created by the author, which analyses the purpose of the and the impact on business, the prevalence of, use, and the level of maturity of the referral. This matrix is presented in Figure 3.

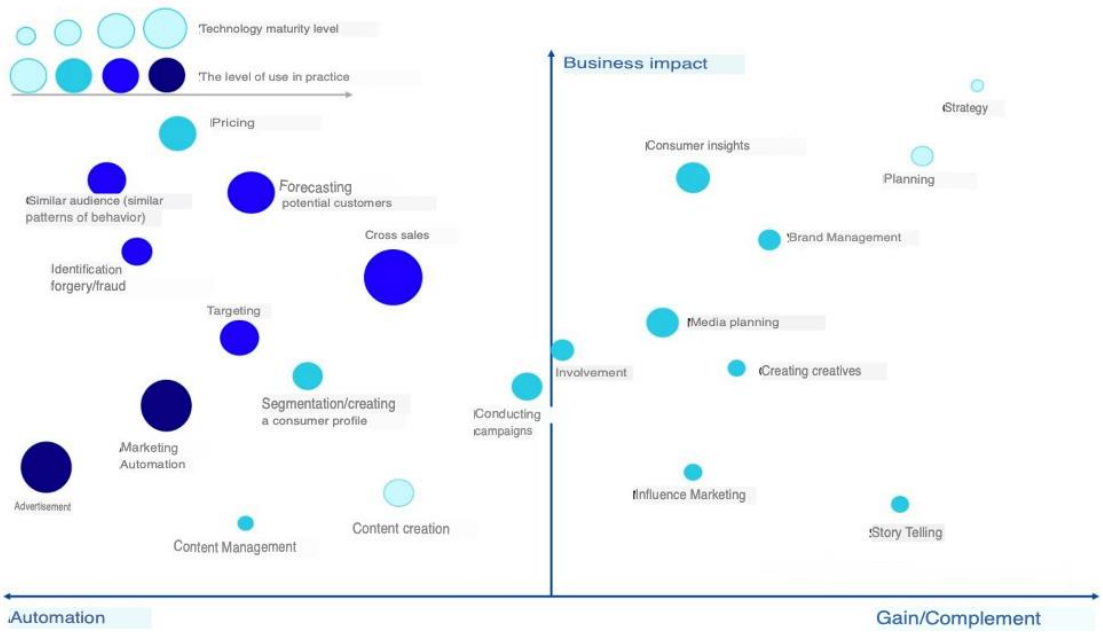

Figure 3. Artificial Intelligence Matrix in Marketing (Gentsch 2019)

Thus, several conclusions can be drawn from this diagram: advertising and marketing automation as areas are already very well developed and widespread in practice. It is these areas that are the beginning of the adoption of artificial intelligence by companies that are at the first level of maturity models discussed earlier. Also, quite mature and widespread in practice are forecasting of potential consumers and cross-selling. Areas such as targeting, and identifying similar behavioral patterns are quite common, but not yet mature enough; there are ways to further enhance their in-depth development. Of the areas that have more

impact on the company/business, the author identifies pricing, identifying similar behavior patterns, detecting counterfeit/fraud, forecasting leads, cross-selling from the automation side of the activity and strategic direction, planning, identifying consumer insights, brand management from the amplification/addition side. Reinforcement/addition implies that this activity will not be fully automated, but artificial intelligence can make it more efficient.

The next model is the application of artificial intelligence based on the customer life cycle (CLC) (Sterne 2017). The author identifies three main stages of the customer lifecycle, which are increasing awareness, attraction, and retention. The outlined model considers the use of artificial intelligence to perform a range of marketing activities that each stage entails.

Increasing the awareness of potential consumers involves several activities:

- An analysis of the market in which the company operates to determine the main competitors, market capacity, and the degree of preparedness of potential consumers for the launch of the new product.
- Segmentation. The main areas in carrying out segmentation are competitive analysis to highlight the segments targeted by competitors and social media monitoring and social media influence monitoring, e.g., analysis of influxes and trendsetters.
- Directly increasing awareness through search engine optimization, advertising, content consumption analysis, and public relations, as well as by combining offline and online tools e.g., targeted advertising by analyzing content shared by people in a certain geo-zone at a certain time.

The next stage of the LCC is direct consumer engagement. At this stage, artificial intelligence is used to engage most marketing channels, so we can talk about two phenomena: multi-channel marketing, where all marketing channels of a company are not linked, and omnichannel marketing, where all channels form a single base or platform and information received from the consumer on one channel is automatically distributed to all other channels, which has a positive impact on the customer experience. So, the main applications of artificial intelligence at this stage are:

- Offline interaction, namely the customer experience in the shop but in this case, for the company, it is more about omnichannel, the ability to recreate a customer profile by combining information from online sources about their preferences, financial capabilities, and a map of their movements around the shop, interactions with

employees, etc. Separately in this sub-stage, the author also identifies shopping assistants as a type of virtual assistant on offline sites as well.

- Interaction with consumers via the telephone. Analysis of consumer calls to call centers, identifying keywords, counting mentions of competitor brands, identifying consumer geo-zones, the nearest shop to it, the best offer for it to get possible exit strategies to attract the customer, etc.
- Interaction through the website. Using web analytics, identifying the most important sections of the website, determining their economic value, A/B testing, creating tasks that the consumer must complete on the website to move to the next stage of the conversion funnel, using recommendation and personalization systems relevant to each specific use.

Finally, there is the third stage, customer retention. The phenomenon of ever-increasing consumer expectations, which to a large extent determine whether the consumer will want to stay with the company or choose another one, should be noted at the outset. The author roughly subdivides this stage into:

- Customer analysis by using machine learning-based models, identifying high lifetime value customers to retain first.
- Sentiment analysis, the most common name for it, is the analysis of the emotional coloring of statements to understand the reasons for dissatisfaction, what are the shortcomings, wand and what the company needs to take into account and correct to improve company-consumer interaction.
- Customer service centers.
- The most attractive area for companies is predictive customer service as it will help the company build a long-term competitive advantage by anticipating customer needs and climbing the value ladder beyond the reach of competitors with high-profit margins.

The third model deals with the same process as the second, but only from a direct consumer perspective, namely the application of Artificial Intelligence in the Customer Journey Map (CMJ) (D'Arco et al. 2019).

So, this model considers three major stages of the customer journey and eight sub-stages. Each sub-stage highlights the types of customer data that need to be tozed to build more informed marketing actions and suggests ways to apply AI. For example, at the need awareness stage, AI can be used to create profiles of potential customers, at the consideration stage targeted advertising can be used, and at the search stage itself, customer engagement can be used. This is all part of the promotion strategy. In the major

stage of purchase, when a choice is made from a limited list of possible alternatives, dynamic pricing can be used and the customer's purchase history can be analyzed. The post-acquisition period is characterized by the application of predictive analytics, and for the same purpose it is necessary to analyze the emotional coloring of users' statements after using/consuming the product. And this is where the various CRM activities that a company uses to evaluate and retain highly profitable customers come into play.

The fourth model groups the applications of AI in marketing (Seligman 2018). The author identifies five major applications of AI

- content generation and creation e.g., this refers to the kind of content that contains objective facts and data, such as a description of a new product, or a response to certain kinds of consumer queries that do not require value judgment
- voice/text recognition
- personalized marketing e.g., creating profiles for each consumer, reaching a deeper, emotional level of customer understanding
- understanding consumer behavior e.g., tracking consumers online, identifying their favorite sites to build a more accurate profile and enable more accurate targeting
- sales optimization e.g., managing the sales calendar, creating notes during sales meetings, forecasting, and targeting.

Finally, the latter model focuses on the entire marketing process of a company, which can be grouped into nine stages, at each of which the implementation of artificial intelligence makes decisions more informed, offers different alternatives, and generally contributes to the effectiveness and efficiency of the company's marketing activities (Campbell et al. 2020).

So, the first step is to understand the current situation in the market, assess the macro factors of the external environment, and try to predict the direction of the category. In this context, artificial intelligence can be used to monitor social media/public opinion analysis to analyze judgment online conversations on various kinds of forums - to understand the importance of the product category. (Campbell et al. 2020).

The second stage implies an understanding of markets and consumers, i.e., an analysis of the micro-factors of the external environment. In this case, artificial intelligence is used for web analytics and the organization of customer interaction centers e.g., call centers and beyond. AI also enables the assessment and analysis of a person's emotional state e.g., facial expressions, gestures, eye movements, voice, heartbeat.

The third stage is STP, what is segmentation, targeting, and positioning. The use of artificial intelligence in this area is well known, but marketers should always monitor the situation to ensure that there is no discrimination.

The fourth stage marks, planning the direction of campaigns, objectives, and marketing support. Mostly at this stage, AI is used to increase the quality of feedback received from consumers through chatbots, and AI can also formulate recommendations on which agent/consultant to assign to which customer based on the analysis of each agent's performance and the value of each customer.

The fifth step is product strategy. Artificial intelligence can help with the identification of market gaps for creating a new product, facilitating the process of producing exactly the goods to consumer specifications and optimizing delivery and logistics.

Product promotion can also be touched upon at this stage. Namely the application of AI to analyze conversations and posted images on social media. It is needed to find insights that can be emphasized to create a more impactful campaign.

The next stage is pricing strategy. Here the use of AI is also justified to assess the price elasticity of customer demand, and price anomalies e.g., errors, acts of fraud, and separately there is the identification of unprofitable customers. However, the most common application of AI is dynamic pricing.

The seventh step is to develop a sales strategy, selecting better logistics channels. Artificial intelligence can provide access to new channels e.g., visual search platforms, where consumers take pictures of things in a shop, upload them to a platform, and find them or their equivalents. As for logistics, then AI allows for zonal estimation of demand and determining the number of warehouses required to optimize the delivery process.

The eighth step is the development of the communication and influencer strategy itself. The focus here is on delivering the right message to consumers at the right time to create and increase brand awareness in the eyes of customers. AI enables the use of historical and optimize real-world data to assess consumer behavior and direct the right message to them. AI also enables the creation of personalized content with a focus on the interests of the individual user.

The last stage is characterized by the development of metrics to monitor and adjust actions promptly. The main application of AI at this stage is A/B testing, as well as analysis of combined historical and current data to identify hidden trends and formulate recommendations.

This study has selected the most relevant models that demonstrate different approaches to the application of AI: for solving point-to-point marketing problems or for gradual incorporation into the whole or part of marketing processes. The next step for analyzing artificial intelligence in marketing from a practical perspective is to analyze the market for AI-based solutions.

3.2 Market Analysis of Artificial Intelligence Solutions

The market can be analyzed in several ways, namely by geography, by technology, and by key players. The high interest in AI-based solutions is evidenced by the growing amount of invested funds and the projected high revenue from AI-based software, ranging from USD 9.51 billion in 2018 to USD 118.51 billion in 2018. The high level of interest in AI solutions is evidenced by the growing volume of investment. The projected high returns on AI-based software are also high, with US$9.51 billion in 2018 to US$118.6 billion in 2025. (Statista 2020.)

In terms of regions for the development of artificial intelligence, the standard is North America (USA, Canada, and Mexico), Europe (UK, Germany, France, Russia, and the remaining countries), Asia-Pacific (China, Japan, South Korea, India, Australia) and combine Latin America, the Middle East, and Africa (due to the small number of companies specializing in developing AI solutions) (Allied Market Research 2018). If we talk about the race for leadership in the AI market, we can highlight the United States of America with 1393 startups as of 2018, followed by China with 383 startups, Israel with 362 startups, the UK with 245 startups, and Canada with 131 startups. If we look at Europe as a single region, we can identify four major players: North America (US AND Canada), Europe, China, and Israel1. However, it is important to note that even though the US leads in the number of start-ups and the amount invested, the country is behind Israel, which is in first place in the world, and China in terms of average revenue, according to 2018 data (Tech Nation 2018). The data is presented in Figure 4.

Also, in terms of private investment for 2018-2019 in the development of new AI companies per capita, Israel ranks 1st in the world, and the US 3rd (AI Index 2019; Stanford HAI 2019). Speaking of the top 20 areas of investment, startups that are developing facial recognition technology 3rd place, digital content 4th place, database management 8th place, cloud solutions 16th place, for e-commerce and marketing applications 17th place, and sales automation 19th place, as these areas relate to the marketing activities of companies should be highlighted. Talking about the areas of private investment in 2015-2019, and more specifically the growth rate, the top 17 areas are facial recognition 5th place; semantic

analysis 10th place, speech recognition 16th place, and chatbots 17th place (AI Index 2019; Stanford HAI 2019). It is these areas that can find application in marketing.

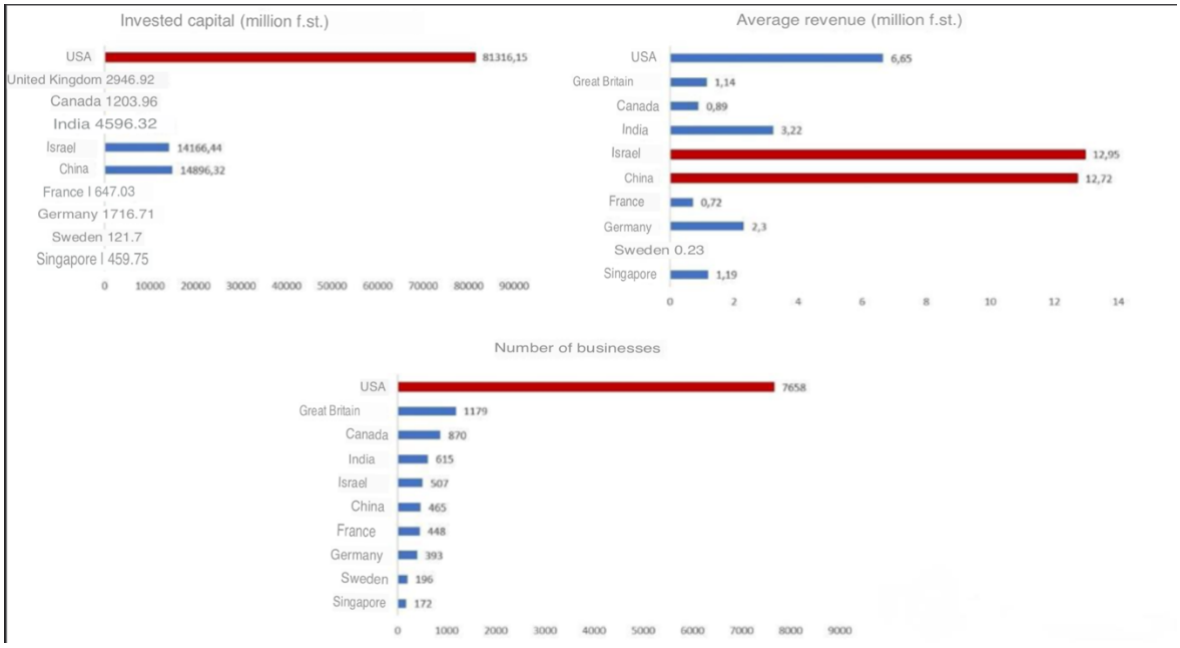

Figure 4. Artificial Intelligence solutions market data: number of companies, invested capital in £m, average revenue in £m for 2018 (Tech Nation 2018)

If we touch on the breakdown of startups that have received funding by area, the top five in 2018-2019 include text analytics, chatbots, and marketing and advertising technology (AI Index 2019; Stanford HAI 2019). In terms of the division of artificial intelligence technologies, the standard research and analysis agencies distinguish the following machine learning, adaptive learning, natural language processing, advanced analytics, and machine vision. The methodologies of different agencies may differ due to the lack of a common methodology regarding artificial intelligence, but the core remains the same. (Market Research Future 2020.)

The list of key players in the artificial intelligence solutions market driving its growth remains fairly stable. They are IBM Corporation; Google (Alphabet); Facebook; Amazon.com, Inc. Intel Corporation; Microsoft Corporation; NVIDIA Corporation; Salesforse.com, Inc.; Twitter; Sentient Technologies, Inc.; Samsung; Baidu, Inc.; Albert Technologies Ltd Oracle Corporation; Micron Technology, Inc.; H2O.ai; Oculus360.

Also of interest for market analysis is the list of AI-based solutions that were highly rated in 2020. Evaluation methodology: 276 trending solutions currently on the market were analyzed, namely their features, ease of use, customer service, proposed integrations, and mobile device support. The data is presented in the table 2.

Table 2. AI-based software Rating and description (Finance Online Review for Business 2020)

Cloud Machine Learning Engine	Rating: 9.6. A cloud-based platform for building predictive analytics models for data of all sizes. The software is also integrated with Google Dataflow, which means it has access to Google BigQuery and Google Storage.
Azure Machine Learning Studio	Rating: 9.5. Cloud interactive software tool for predictive analytics. Provides access to an AI library. Easy to understand user interface interface. Ability to provide access offline users.
Salesforce Einstein	Rating: 9.4. The software is designed solely for the purpose of processing sales data. The solution gives access to tools that can help improve customer interaction.
IBM Watson	Rating: 9.3. The platform provides all the tools needed to accelerate research, forecasting through the use of advanced AI technologies and machine learning.
Apache PredictionIO	Rating: 9.2. An open service that gives access to machine learning technologies and libraries. A flexible machine learning platform that enables both web and mobile integrations.
Nvidia Deep Learning AI	Rating: 9.1. The security is equipped with visual identification and threat protection. Also offers certain products, depth models training and load-sharing management.
TensorFlow	Rating: 9.0 Mathematical A machine learning library created by Google. An open

	platform that uses image/speech recognition algorithms and language translation. Can also be used on Android and on iOS.
IBM SPSS	Rating: 9.0. A platform for using predictive analytics to produce accurate data for actionable business results.
OpenCV	Rating: 8.9. An open source resource that gives access to machine learning and machine vision libraries. Users have access to more than 2,500 algorithms to develop advanced programs e.g., facial recognition and items).
scikit-learn	Rating: 8.9. An open service that enables tasks such as neuroimaging, predicting consumer behaviour.
Trint	Rating: 8.7. Ensuring for to create transcripts from audio or video format to text format.
Infrrd OCR	Rating: 8.0. A mobile app that highlights data such as expense type, merchant name, transaction date, transaction amount.

However, when analyzing the market, it is still necessary to consider the solutions currently available specifically for marketing purposes. There are many sources, no list is exhaustive, and some sources do not divide by the direction of application of AI-based solutions. Figure 5 shows an attempt to map AI-based skills that can use this predictive analytics tool.

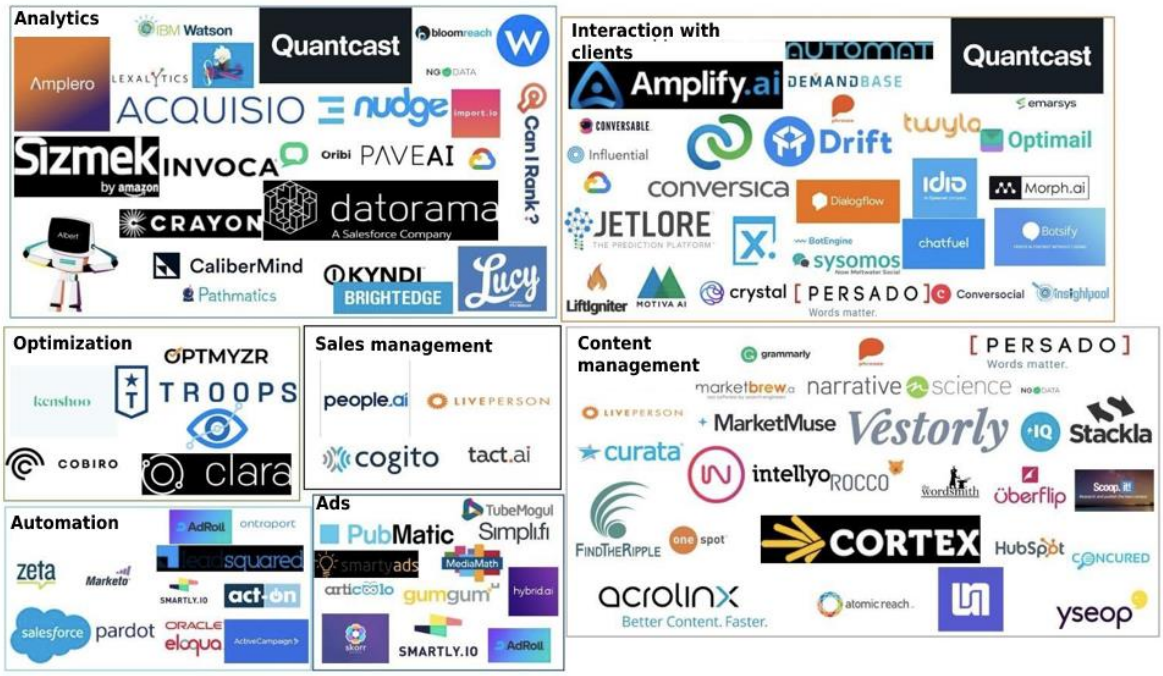

Figure 5. Artificial intelligence solutions for marketing purposes (Online Marketing AI & Machine Learning Tools You Can Try Today 2020; Venture Harbour & 2018; Chowdhury 2020; 50 Must-Have AI Software Tools For Market 2020; Deshpande 2020; Odden 2020; TopRank Marketing 2018)

A total of seven application goals are highlighted:

- marketing analytics e.g., analysis of competitors, analysis of consumer behavior, analysis of the emotional coloring of statements, analysis of the influence of influencers, analysis of expenditure on competitors' marketing campaigns, etc.
- interaction with consumers e.g., communicating with consumers, identifying insights, chatbots, text analysis, etc.
- content management e.g., text generation, text impact analysis on users, tailoring content to a particular user at a particular time, etc.
- sales management e.g., assistants, proper communication with prospective and existing clients, meeting schedules, cross-functional communication, etc.
- optimization
- automation
- advertising e.g., setting up advertising in the digital environment, comparing with competitors, crafting messages relevant to the target audience, etc.

It should be noted that the division is rather arbitrary, as AI-based solutions may include analytics, consumer interaction, and partial content management. That is, there may be

overlap. The choice was made based on the main purpose for which the solution was intended according to the developer company.

Thus, we can say that at the current stage of artificial intelligence development not much data on the market has been accumulated in the public domain, as it undergoes significant changes almost constantly due to the high popularity of the artificial intelligence topic. However, the main trends that can be highlighted are as follows: the main three regions of AI development can be identified as the US, China, and Israel, with an emphasis on the latter two due to the number of companies that are steadily operating in the market and their stable profitability. It is also possible to identify the main technologies by which the AI solutions market is divided: machine learning, advanced analytics, deep learning, natural language recognition, and machine vision with a predominant share of machine learning. As for AI solutions for marketing, the main areas are analytics, customer interaction, and content management. We can also talk about advertising, sales management, and optimization, but on a smaller scale of distribution.

It is also important to note that the market for AI solutions operates within a legal framework, but the regulatory system for AI has not yet been developed due to the early stage of development of the phenomenon itself. At the moment, three levels of regulation can be conventionally distinguished: self-regulation (company initiatives for joint efforts to control AI), national regulation, and supranational/international regulation. As AI is still developing, most regulatory institutions are heavily involved in research and study of AI and its capabilities, and governments are creating an enabling environment for the study of artificial intelligence and its further development (China National Programme 2030). Based on market analysis and a review of the main models for applying artificial intelligence in marketing practice, the assumptions can be made.

Assumption 2: Artificial Intelligence in marketing practices can be profitably applied both to solve point problems, to optimize parts of marketing processes, and to optimize and increase the performance of the entire marketing process in a company (Campbell et al. 2020; McKinsey Analytics 2019; Gentsch 2019; Sterne 2017; Faggella 2019; D'Arco et al. 2019).

Assumption 3: The main area of application of artificial intelligence in marketing remains the digital sphere with areas such as analytics in particular predictive analytics, segmentation at a deeper level, automation, chatbots, content management, and advertising (Sterne 2017; Gentsch 2019).

4 Empirical Research

4.1 Research Methodology

Participant observation and interviews were used to get the data. The in-terview served as the main technique for gathering data, and supporting data were gathered from the observations. The interview approach was chosen due to its effectiveness in generating interpretations and comprehending the content (Warren 2011). It was utilized to comprehend the many difficulties and possible solutions to create useful and workable AI services. Using triangulation, participant observation was employed to improve the dependability of the data collection. Additionally, it allowed for the observation of behaviors that would not be covered in an interview setting. Participating in context-relevant everyday activities including meetings, projects, and conversations, as well as going to conferences in the area, allowed for the completion of the observations. Most of the work was done close to the analytics and data scientist team.

A semi-structured interview approach was used because, according to Guest et al. (2017), it is a common technique for in-depth interviews and allows for the use of probes to elicit additional information. In order to get in-depth case study answers while addressing the time constraint, purposeful samples were used in the interview study.

The sample was split into two groups, the first of which was made up of "experts" who were thought to be knowledgeable in both commercial and technical AI, either via academic study or real-world experience. The goal was to comprehend the difficulties, wisdom, and best practices of these case-external players inside the research community. The internal stakeholders for the development of AI services, who represented the various departments inside the case organization, made up the second group, which was context-related. The goal of this group was to comprehend the many demands, viewpoints, and difficulties that contribute to the contextual complexity. Table 3 lists the interview samples together with information on the subjects' backgrounds or current positions and the duration of the interviews.

Table 3. A table over interview participants of each sample and a description of their experience along with the duration of the interview.

	Experience	Duration of the interview in minutes

Interview 1 – Expert	Business advisor for a significant provider of analytical solutions	70
Interview 2 – Expert	Technical specialist for a deep learning-focused software startup. further managed the AI effort's construction.	58
Interview 3 – Expert	A researcher with extensive experience in AI who has participated in numerous AI projects and worked on a variety of research projects in the industry	45
Interview 4 – Expert	A member of top management with experience in product development.	56
Interview 5 – Internal	Manager	32
Interview 6 – Internal	Manager	21
Interview 7 – Internal	Manager	32
Interview 8 – Internal	Manager	23

Eight experts in the field of artificial intelligence took part in the study. An invitation to participate in the study was sent to 35 experts. Thus, the response rate was 34%.

Some of the refusals can be attributed to a significant increase in the workload of AI professionals due to the shift to remote working for most companies and the need for uninterrupted networking for a significant number of remote meetings. For the same reason, the majority of the experts, stated that they did not have time to conduct online interviews. Therefore 10 experts provided written answers to the pre-compiled questions, subject to the obligatory clarification and additional explanations of the contentious points.

Before moving on to the findings, it is necessary to cite the pre-compiled list of questions that were sent to the experts. Three groups of questions can be identified.

Technologies and applications for Artificial Intelligence at present shortly:

Which artificial intelligence technology do you think will develop most rapidly shortly (one-three years): machine learning, natural language processing, machine vision, or robotics and autonomous vehicles (if the list does not include the technology that will develop most rapidly, please specify your option)? Why?

What do you think are the main applications of artificial intelligence today? Will the picture change shortly (one- three years)? Why?

The level of adoption of AI in companies and the development of artificial intelligence on its own at present and in the future:

What do you think is the current level of adoption of artificial intelligence in companies around the world: low or high? And what will the picture of AI adoption be in three-five years, will it change?

Do you think artificial intelligence is most prevalent in large companies or small and medium-sized businesses? Will the picture change shortly (one-three years)? Why?

Do you think that companies that use artificial intelligence in their operations develop it themselves in most cases for their own needs or buy off-the-shelf solutions? Is the picture in the world identical, or is it different? Why?

In your opinion, will companies mostly develop artificial intelligence on their own in the future? If yes, what obstacles might they face? If not, why not?

The potential for strategic use of artificial intelligence by companies:

Do you think artificial intelligence is currently used only for tactical tasks or is it already being used at the strategic level as well? What are your predictions regarding the strategic use of artificial intelligence by companies in the next three-five years - will artificial intelligence with its capabilities be the core of company strategy formation or will it only act as a set of tools at the operational level?

After reviewing the research methodology and the questions posed to the experts, we can move directly to an analysis of the findings of the study.

4.2 The Results of the Empirical Study.

Regarding the first group of questions, when talking about artificial intelligence technologies that will be rapidly developing shortly, the researchers clarified the wording, namely that machine learning cannot be called an artificial intelligence technology. Strictly speaking, it is a tool that can predict but not explain results. They also singled out machine vision and natural language processing, noting that the development of the technology would be fraught with a host of problems.

"The next level is technologies such as machine vision, speech recognition...Machine vision will certainly develop, and it will get better, although there are a lot of problems there too. The fastest development will be those applications that are the best developed at the moment."

Development experts have given a more technical answer to this question, namely that computer vision, processing of various data sequences e.g., using recurrent neural networks, neural networks with memory and action control will be developing most rapidly. The reason for this is that the above technologies are based on the use of deep neural networks that allow the building of more complex dependencies, the accuracy of which is quite high; for this reason, these directions are gaining momentum in the application aspect.

User experts cited machine learning, natural language processing, and machine vision as the fastest-growing technologies.

"These technologies are used in the consumer segment and have the largest database, allowing you to build more accurate models. The number of chatbots has grown, banks are moving to call centers, and the use of voice assistants."

Thus, if we consider machine learning as an inherent toolbox of artificial intelligence, we can assume that it will continue to evolve and improve at a higher rate. The development of technology such as natural language recognition is evidenced by the growing number of new companies engaged in

The development of this technology and which have received funding, while machine vision represents one of the most attractive areas of research (Elsevier 2018; AI Index 2019; Stanford HAI 2019).

Turning to the level of adoption, researchers have noted that the level of adoption of artificial intelligence by companies depends on its so-called enthusiasm because when it comes to process automation, there are already industries that produce without human intervention, but one must take into account the fact that reducing human involvement in production may

result in reduced demand for the goods produced, which people will not be able to buy. However, it has already been proven that process automation does not reduce the need for people, it modifies human tasks.

All development experts say that despite the high degree of interest in the topic, the level of adoption of artificial intelligence by companies is still low.

"Globally, interest in artificial intelligence and Big Data algorithms is high, but the level of adoption is still most often at an early stage. Within three-five years, the level of adoption of artificial intelligence algorithms will change due to the ongoing digital transformation of businesses worldwide".

Some development experts observe that the level of adoption will be directly dependent on the growing need to create a highly efficient alternative to unskilled labor and to improve the efficiency of skilled labor, which partly overlaps with the views of academics.

It should also be noted that expert developers are very positive about the speed of development and adoption of artificial intelligence, as they predict a transition to an average level of adoption in companies in the next three-five years.

The expert practitioners approached the question a little differently. Almost all, referring to the general implementation level, answered that implementation is now mainly in large companies.

"AI is still mostly used by large companies, I think in five years small and medium-sized businesses will also be using it more often, as the services they use will be more likely to function based on AI."

Even though, in general, the level of AI adoption can be assessed as low as measured by maturity models, it is still necessary to identify companies and industries where the potential for using AI is higher e.g. banking, online retailing, etc. The current level of AI adoption can also be assessed as medium-low due to the high prevalence of automation activities (Gentsch 2019).

Speaking of companies that apply AI to a greater extent in their operations, it should be noted that the experts in all groups answered this question identically, that it is large companies that can obtain and implement a quality artificial intelligence product, but each group highlighted different advantages of large companies over small and medium-sized businesses:

- Researchers primarily point to the high research capacity of large companies, which is needed to create breakthrough technologies.

- Development experts primarily point out that large companies have the necessary capacity to implement artificial intelligence, i.e. they note the technological resources for data storage and the computing resources to process it in a quality manner and produce results.
- Expert practitioners, in turn, single out large companies because of their financial capacity.

However, one of the representatives of expert developers expressed a different opinion, which is strikingly different from the above, namely, he argues that it is not the size of the company that matters for implementing artificial intelligence, but the existence of applications that can be solved more efficiently by implementing artificial intelligence technologies. That is, the main criterion is the existence of an application problem.

"It does not depend on the size of the companies. AI technology is being introduced in transport and traffic management. Small companies have implemented chatbots that work there instead of secretaries. There are a lot of examples. The main thing is the application."

Here, it is also necessary to highlight the degree of readiness of the company to implement artificial intelligence. This degree can be assessed by the maturity model indicators (Gentsch 2019): understanding of artificial intelligence, level of digitalization, the role of data and analysts, etc. In addition to this, an organizational culture should be created,

in which data and artificial intelligence play a central role (Eriksson et al. 2020). Therefore, the level of implementation depends not only on financial means, capacity, and research potential, and not only on the existence of a need/application, as to solve this task as effectively as possible, but a company also needs to be ready to use AI. Related to this is the high level of frustration with AI, where companies have expected a surge in results when implementing it but have encountered many problems and unjustified inflated expectations.

When it comes to the self-development of AI solutions by the companies that implement them, the experts gave the following answers:

- Researchers argue that companies buy off-the-shelf solutions because independent development is too resource-intensive. This picture can be observed both globally; only 15-17% of developments by large companies are successful, and there are many mishaps and pitfalls in self-development.
- Development experts say that companies develop solutions independently for their own needs, but resort to either using project teams e.g., outsourcing or using off-the-shelf models, but to develop for their own specific needs.

- User experts are divided into two groups: some argue that companies buy ready-made solutions from IT giants e.g., Amazon, IBM, Yandex and refine them, which overlaps with the opinion of expert developers. Others argue that large companies develop solutions entirely on their own because it is their investment and development for future competitive advantage. And smaller companies resort to using open resources and services.

Given the growing number of start-ups that are developing off-the-shelf AI solutions (AI Index 2019; Stanford HAI 2019), it can be assumed that companies are currently purchasing these solutions to try and incorporate AI into their operations, but without spending significant resources.

As for the future self-development of solutions based on artificial intelligence, opinions are as follows:

- Researchers expressed skepticism about mass self-development.
- Development experts have stated that in the future, every company will develop AI solutions independently because the programming language for AI algorithms is becoming increasingly high-level, meaning that less and less code needs to be written to run calculations.
- Practitioners are of a similar opinion to developers that there will be boxed solutions or bases that will be further modified independently or with the help of external specialists to suit the company's goals and objectives. And there will only be a few major AI centers around the world that will be dedicated to its in-depth development.

Likely, there will remain large companies that will generally develop AI, while others will use the basic solutions for further modification to suit their purposes and needs, or, for lack of necessity, resort to open services whose performance is rated quite highly.

Finally, turning to the possibility of applying artificial intelligence at the strategic management level, it should be noted that all experts expressed a similar opinion that the strategic application of AI is a priority, but due to the early stage of development at the moment, this area has not been fully elaborated. However, in the future artificial intelligence will be used as an assistant in adopting and developing company strategies. However, decision-making at the strategic level will remain a human prerogative, but artificial intelligence will necessarily play a supporting role. But this is mainly a picture for large businesses; small and medium-sized businesses will mostly use AI for tactical tasks.

It is likely that the role of artificial intelligence in strategic planning and strategy development will increase in the future, as creative analytics with artificial intelligence (which is of the

greatest value to companies) will evolve, because artificial intelligence has brought historical data processing to a new level, is now actively developing real-time search and insights of the analyst using current data), but this area of AI application is not yet mature enough (Gentsch 2019; Eriksson et al 2020; Stone et al. 2020), the next stage is based on this empirical research and literature analysis, the following assumptions can be made regarding the technologies that will be developing most rapidly shortly, the level of adoption of artificial intelligence by companies, and the possibility of applying artificial intelligence at a strategic level.

Assumption 4. In the short term (one-three years), machine learning, natural language recognition, and machine vision will develop most rapidly.

Assumption 5. At the current stage of development, most companies are at the first foundational level of maturity but already close to medium maturity, which implies a low degree of adoption of artificial intelligence in company operations; however, the development potential is quite high, as evidenced by the growing number of start-ups developing AI-based applications for marketing purposes (AI Index 2019; Stanford HAI 2019).

Assumption 6: Artificial Intelligence is currently mainly used in the operational activities of companies, to support decision-making at the tactical level, but in the future, it is possible to apply AI at the strategic management level as a support tool for strategic decision making (Eriksson et al. 2020; Stone et al. 2020).

The study's main limitations include the time frame.

In terms of future research directions, we should note the expansion of the pool of interviewed experts to include representatives from other countries, especially the countries that are pioneers in the development of AI - the US, the PRC, Israel, and European countries. It is also necessary to include a group of marketers, to analyze the process of actually introducing AI into companies' marketing activities.

5 Conclusion

5.1 Summary

The study analyzed the existing scientific literature on artificial intelligence and marketing and identified the main areas of research interest, namely personalization, textual information analysis, and analysis of the emotional content of statements. It shows that there is an evolution in analytics and an increase in its impact on companies. Six Assumptions were formulated along the way.

Artificial intelligence in marketing was also considered from a practical point of view, five models or possible scenarios of implementing AI in marketing activities based on LCC, AI matrix, customer journey, and whole marketing processes were analyzed. In addition, the most developed and widespread use areas were identified: advertising, targeting, automation, forecasting of potential buyers, and identification of similar scenarios of consumer behavior.

The results of the empirical study identified the main technologies that will be rapidly developing in the near term. analyzed the level of adoption of AI by companies and the possibility of strategic application of AI as one of the development priorities in the medium or long term.

5.2 Recomendations

As far as practical recommendations are concerned, they can be summarised as follows:

- For companies, the current stage is the most favorable for the adoption of AI. Introducing AI into marketing activities is a necessity not only to face competition in the future but also to optimize marketing activities now, the current situation with the COVID-19 coronavirus pandemic, which has adjusted consumer behavior and consolidated some previously observed trends, has moved most consumers online to purchase products, including those requiring a high degree of involvement in the purchasing process. (Ipsos 2020.)
- For the smoothest possible implementation of AI in marketing activities and to maximize the results of its implementation, it is necessary to conduct a pre-implementation process in line with the first stage of the maturity model. It is also possible to use one of the five models (mainly three from an application perspective: customer lifecycle management; customer journey management; and AI-enabled optimization of the entire marketing process of a company, as they most fully

illuminate the implementation opportunity together with a description of the potential of AI) to smooth the process of AI implementation.

- If a company is interested in developing an AI solution for its specific purposes and needs, it can use one of five ways to do so, depending on the resources available.
- While implementing a 24/7 helpdesk is sometimes impossible, especially for smaller companies, AI chatbots come in handy. The big advantage of those chatbots is that they can work 24/7 every day to help consumers with their problems. Moreover, some companies have programmed messenger bots to take orders and process purchases.
- When you visit almost any website, you may notice a pop-up window with a cookie statement. These messages inform users that their browsing data, collected through tracking cookies, will be used to improve user experience and customer satisfaction. This helps companies understand your preferences and create ads that are relevant to you.
- Today, users usually find what they are looking for, and AI helps them by providing hints in the search bar. Of course, there may be exceptions, but this is usually in niche areas where digital information is lacking. For example, not much can be found when searching for a description of an old telephone system, although search engines will still provide the most relevant results available on the Internet.
- Users don't just randomly receive ads on websites or digital platforms. The AI has analysed the consumer's search history, websites visited and previous purchases to display those ads that will interest that user.

The following are the advantages of this approach: the use of the open source solution (the advantage is the organic creation of the necessary organizational culture); the hiring of a project team (the advantage is a streamlined work process, fast solution creation time); the purchase of existing solutions (the advantage is a wide choice on the market); the modification and modification of existing box solutions for own needs (a less costly way with a sufficient level of specification) and, finally, the use of open services (some have a rather high rating among the user companies).

Artificial Intelligence will continue to evolve and its practical application will continue to grow, so continuing to analyze its development and application, both scientifically and practically, in marketing is more relevant than ever and should be continued.

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