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GROWTH FORECASTS AND PECULIARITIES OF USING ARTIFICIAL INTELLIGENCE IN MARKETING

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Abstract. The research explores trends in the development of artificial intelligence in the global market, focusing on its usage in marketing, sales, and e-commerce. It analyzes the current state of artificial intelligence market, forecasts its growth, and identifies key players. It also highlights technological trends and forecasts the development of artificial intelligence until 2030, considering such important aspects as explainable intelligence and autonomous decision-making. It outlines how artificial intelligence is currently classified in marketing and which tasks it is most commonly used for. The most prevalent software currently used by marketing professionals is also mentioned.

Key words: artificial intelligence, market forecast of artificial intelligence, artificial intelligence in marketing.

Introduction

Today, the impact of artificial intelligence (AI) on our lives is undeniable. Experts forecast significant market growth in the near future, and global companies are increasingly investing in developments utilizing AI. AI can be more than just a chatbot; it can also help handle a large

number of customer inquiries, predict market trends accurately, etc. The use of machine learning and deep learning lies at the core of this, which enables the prediction and analysis of large volumes of data.

Overview

AI is fundamentally transforming a range of industries, positioning itself as a key driver of new technologies such as big data analytics, robotics, and the Internet of Things (IoT). Additionally, the growth of generative AI tools like ChatGPT, Copilot, Midjourney, and Sora proves their popularity. With its trajectory, the AI industry intends to remain a powerful technological innovator fostering progress in the near future.

The global AI market was estimated at $150.2 billion in 2023, and it is expected to grow by 36.8% from 2023 to 2030, reaching $1,345.2 billion in 2030. The base year for estimation is 2022. According to recent research by Price Waterhouse Cooper, by 2030, AI will contribute over $15 trillion to the global economy and boost local economies by as much as 26% [1, 2].

Major players in the AI market have implemented various types of organic and inorganic growth strategies, such as launching new products, product updates, partnerships and agreements, business expansion, as well as mergers and acquisitions to strengthen their market offerings. Corporations currently investing in research include Google (USA), Microsoft (USA), IBM (USA), Oracle (USA), Intel (USA), Salesforce (USA), SAP (Germany), Cisco (USA), Meta (USA), Siemens (Germany), Huawei (China), NVIDIA (USA), Baidu (China), SAS Institute (USA), OpenAI (USA), Alibaba Cloud (China), General Vision (USA), Darktrace (UK), Blackberry Limited (Canada), Appier (Taiwan), Preferred Networks (Japan), Gamaya (Switzerland), Mostly AI (Austria), Sentient.io (Singapore), Fosfor (India), Jasper (USA), One AI (Israel), and others [2].

The projected trajectory of AI market development until 2030 encompasses achieving the following goals [2]:

– AI-generated content will reach human-level sophistication.

– There will be a reevaluation of artificial and human creativity.

– Wide deployment of public and private educational and research programs enables the creation of safe and scalable solutions in various fields.

– Explainable AI becomes a fundamental requirement for intelligent technology systems in all sectors. Explainable Artificial Intelligence (XAI) refers to the ability of AI systems to provide clear and understandable explanations of their actions and decisions. Its primary goal is to make the

behavior of these systems understandable to humans by elucidating the underlying mechanisms of decision-making processes.

– Enhanced processing of AI on peripheral devices for autonomous decision-making, real-time analysis, and efficient data processing in diverse environments.

AI generally describes computer software capable of performing tasks similar to those performed by humans such as learning, planning, and problem-solving. However, to understand the impact of AI technologies on the business sector, specific types of AI need to be considered:

1. Machine Learning. This technology enables the processing of large volumes of data in a short period and teaches algorithms to "improve" over time.

2. Deep Learning. It utilizes neural networks for complex calculations and unconventional thinking. This technology helps solve challenging tasks such as fraud detection or autonomous vehicle management by analyzing large amounts of data and making appropriate real-time decisions [2].

When considering AI in business, it supports human intelligence and creativity rather than replacing them, can process and analyze large volumes of data faster than the human brain. Then AI software can offer synthesized actions to humans, helping users predict outcomes and streamline decision-making processes. AI is referred to as the second coming of software that can make more decisions than traditional software.

Despite the growing interest in AI in the marketing sector, it is still a young subject with many untapped research opportunities. Marketing AI is the process of leveraging AI capabilities such as data collection, data-driven analysis, natural language processing (NLP), and machine learning (ML) to provide customer insights and automate critical marketing decisions [1].

AI helps improve customer service most often through chatbots, which increasingly apply its tools. Chatbots allow companies to automate many customer service procedures, freeing up staff time to focus on issues requiring a higher level of individual attention. The ability to understand user queries is often achieved by chatbots through the synergy of natural language processing, machine learning, and artificial intelligence [3, p. 35].

Let us consider the four main types of AI and how each type can enhance a company's marketing activity.

There are four main types of AI: Reactive Machines, Limited Memory AI, Theory of Mind AI, and Self-aware AI (Fig. 1).

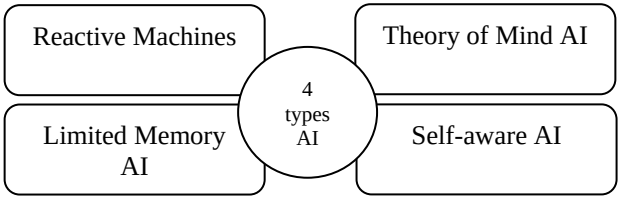

Fig. 1. 4 Types of Artificial Intelligence in Marketing

1. Reactive Machines react and respond to various cues. AI does this without using memory or a broader understanding of context. Additionally, it does not retain memories, so it does not learn from past experiences or adjust its gameplay.

Reactive AI utilizes many marketing tools. A prominent example is chatbots. These programs use Reactive AI to respond to messages (or input) with the correct information.

2. Limited Memory AI. It can learn based on natural constraints, allowing it to adapt to various conditions and tasks; however, it does not store data for the long term. A good example of this approach is ChatGPT. Its ability to adapt to limitations of 4000 tokens allows it to work effectively in various situations, but at the same time, it cannot store data from previous conversations. Thus, if a conversation contains 4097 tokens, ChatGPT will focus on analyzing only the last 97 tokens [5].

In marketing, Limited Memory AI can be used to analyze large volumes of data, helping marketers make more informed decisions regarding strategies and tactics. It can also provide forecasts and recommendations based on collected data, enhancing the effectiveness of marketing campaigns. However, algorithms with limited memory are efficient but not reliable; they can make mistakes or provide inaccurate forecasts, especially when working with outdated data.

3. Theory of Mind AI exists only as a concept and represents an advanced class of technologies that can understand the mental state of people. For example, if a user yells at Google Maps for going the wrong way, AI responds by finding an alternative route but does not offer emotional support. The concept of Theory of Mind is to create machines that can interact with humans more effectively as they understand their needs, goals, motivation, and disappointments of dissatisfied customers and react more tactfully.

4. Self-aware intelligence is considered the next phase in the evolution of the Theory of Mind, where machines can understand human emotions

and have their own emotions, needs, and beliefs. Currently, this type of AI exists only hypothetically [5].

Currently, three key areas from which marketers and managers can benefit from AI and ML are segmentation, targeting, and positioning. Personalized advertising is an illustration of machine learning in this structure. By uncovering patterns that human intuition and experience may have overlooked, data analysis can assist in identifying segments [3, p. 40].

Enhanced hyper-personalization and automation of offerings are anticipated with the creation of new products. Apple Pay, Google Pay, and PayPal are just a few examples of payment automation tools utilizing AI technology. Reinforcement learning algorithms can dynamically adjust pricing considering customer preferences, competitive activity, and offer characteristics. Regarding pricing actions, IoT can optimize retail operations, while external presence can be automated through round-the-clock customer support chatbots. Finally, AI technologies can automate media planning, keyword research, real-time bidding, and social media targeting in many of their applications, including social media marketing, mobile marketing, and search engine optimization.

Analyzing and simplifying the above material, the model of AI usage by task execution level may look like this (Fig. 2):

– Level I – Automated tasks;
– Level II – AI thinking;
– Level III – Emotional AI [4, pp. 90–91].

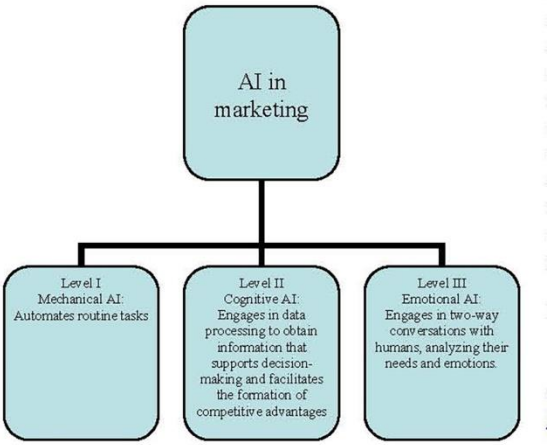

Figure 2. AI-based Marketing Model

Numerous tools have been developed for content generation in marketing:

– Text content: ChatGPT, Claude 2, Gemini, Mistral Large, Microsoft 365 Copilot;

– Images: Midjourney, Leonardo Ai, Diffusion Logo, Flair, Adobe Spark, DALL-E;

– Video: Runway, Sora, Heygen, Pixverse, Lumen;

– Audio: Soundraw, Tome, OpenAI Jukebox, Magenta Studio, Amper Music, etc.

Another area where most end consumers can see the implementation of AI in action is retail trade and e-commerce. Retail businesses are always looking for methods to determine trends in customer behavior to better align their strategy and outsmart competitors in this highly competitive industry. It can be confidently said that AI has reached its highest level in the sales and promotion of goods. Product suggestions in a user's account on Amazon, AliExpress, or other marketplaces are nothing but the use of complex AI algorithms in real-time to determine the products most likely to be purchased by the customer. AI applications are also more frequently used to enhance consumer experience. For example, many chatbots on e-commerce websites work based on AI and are designed to provide instant responses to various customer inquiries.

Conclusions

Therefore, the trend of researching and using AI in various industries is irreversible and promises significant revenue growth for businesses in the coming years. A significant number of global corporations are investing in AI research. AI helps improve business processes, especially in marketing, through automation and data analysis. The use of AI in chatbots is becoming more widespread and contributes to improving customer service. Overall, AI defines new opportunities and challenges for modern businesses and society as a whole and is a key innovative direction on the path to future progress.

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