

APPLICATION OF ARTIFICIAL INTELLIGENCE IN MARKETING

PRIMJENA UMJETNE INTELIGENCIJE U MARKETINGU

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ABSTRACT

The fourth industrial revolution brought up until now unpredictable possibilities, which can significantly support companies in achieving their goals. Artificial Intelligence (AI) lies at the core of this revolution, shaping the beliefs of customers all around the world. The paper provides a review of how AI in marketing can be used to meet the needs of contemporary customers, in terms of marketing research, marketing strategy, and marketing action, providing real-life examples of its implementation. Additionally, the paper contributes to the growing literature in a way that it provides systematic coverage of available findings from the published works.

REZIME

Četvrta industrijska revolucija donijela je nepredvidive mogućnosti, koje omogućavaju kompanijama ostvariti ciljeve. Umjetna inteligencija leži u srži ove revolucije, oblikujući vjerovanja potrošača širom svijeta. Rad daje pregled načina na koji se umjetna inteligencija može koristiti u marketingu da bi se zadovoljile potrebe potrošača, u smislu marketing istraživanja, marketing strategije i marketing akcije, dajući primjere iz stvarnog života. Osim toga, rad doprinosi rastućoj literaturi na način da daje sistematski pregled dostupnih rezultata istraživanja objavljenih radova.

Keywords: Marketing, Artificial Intelligence, Machine Learning

1. INTRODUCTION

Throughout the years, technology has revolutionized not only the way of living but also the way of doing business. It has changed the way companies promote their goods and services, manage their resources, and exchange information with stakeholders. When it comes to consumers, it has significantly impacted their consumption, empowering them to be part of the product acquisition process [3]. The emergence of the technologies, such as big data, artificial intelligence (AI), and blockchain, promoted innovation in all aspects of life, and marketing is no exception. By acting as marketing catalysts, these transformations fostered new marketing trends and archetypes in marketing analytics and digital marketing [2].

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Contemporary marketing is data-driven, automated, and intelligent, which in turn has a great influence on marketing outcomes, proving that it can work hand-in-hand with artificial intelligence to make a difference [17, 22 as cited in [4]].

When a group of 2260 global business leaders were interviewed about artificial intelligence in 2022, 94% of them agreed that AI is crucial for success in the next five years. Moreover, 79% of the leaders reported that they achieved full-scale deployment for three or more types of AI applications, which is an increase of 17% compared to the year 2021 [6]. Thus, it is not hard to believe that firms are now investing a lot of resources in the development and integration of AI into their operations, with \$2.5 billion U.S. dollars being invested by marketing companies in 2018 [15], and this amount is only expected to increase to \$98 billion U.S. dollars by 2023 [23]. [9] shows in his survey that 41% of respondents reported accelerated revenue growth / improving performance, and 34% reported generating greater ROI on campaigns.

Due to everything aforementioned, one concludes that AI is not something that we should deal with in the future, as it is rather present in many aspects of our lives, without us even noticing it.

Artificial intelligence (AI) can be defined in many ways, but the broadest definition would be according to [17], who states that it is “intelligence exhibited by machines”. It is an idea that computers can, by using software and algorithms, think and perform tasks like humans, thus shaping human life through personalization [14]. Overgoor [16] define marketing AI as “the development of artificial agents that, given the information they have about consumers, competitors, and the focal company, suggest and/or take marketing actions to achieve the best marketing outcome” From a strategic point of view, AI is becoming increasingly important in marketing, where companies enhance their performance through adaption of AI-based platforms, such as Google Assistant, Amazon Lex, Microsoft Cognitive Services [20]. Data integration is an important aspect of artificial intelligence, which collects the data according to the requirement, and analyzes large chunks of data. Often these chunks are impossible for humans to analyze, especially in the case of big companies, such as Amazon, Google, or Apple. This is done with the assistance of machine learning, deep learning, and natural language processing, which are the main three concepts behind AI.

Machine learning enables machines to learn to do some tasks without pre-existing code by providing them with problems and examples through which machines learn the tasks.

Deep learning is based on imitating neurons, and brain cells, where the human brain process is imitated by neural networks [19]. Natural language processing (NLP) enables computers to understand textual and spoken words the same way humans can, creating machines that can speak to humans in the most intuitive, natural way without them being able to determine if it is another person or a bot on the other end [13].

2. AI AND MARKETING

The awareness of AI's usage in marketing is believed to have begun in 2012 when Target figured out that a young woman was pregnant before her father did by analyzing her shopping habits and sending her baby-related advertisement, grabbing the attention of many scholars and researchers [5].

Throughout the years, the topic of marketing and artificial intelligence has gained significantly more attention, where digital marketing and e-commerce are some of the most researched concepts, along with human aspects of AI, especially ones related to the functional implications of sales and marketing. Chintalapati and Pandey [4] conducted a systematic literature review on AI in marketing and illustrated the popularity of the topic throughout the years. As shown in Figure 1, the time of COVID-19 pandemic was the time when digitalization was enforced on all parts of society. At the same time, probably due to it,

significant attention was drawn to AI and marketing, whose number of citations per release year of publication significantly grew [4].

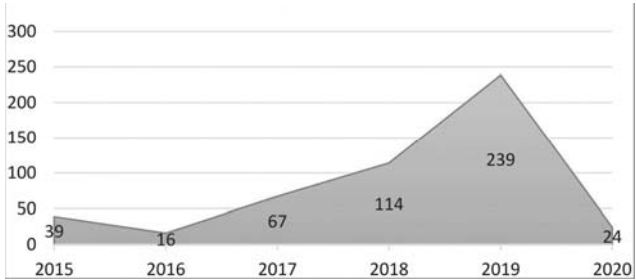


Figure 1. Number of citations per the release year of publication. [Chintalapati, S. and Pandey, S.K., 2003]

When it comes to the topics analyzed over time, Figure 2 illustrates the beginning phase a basic understanding of the research topic, which has evolved later on. From the year 2017, the research was moved toward emerging concepts like big data, machine learning, neural networking, deep learning, etc. [19].

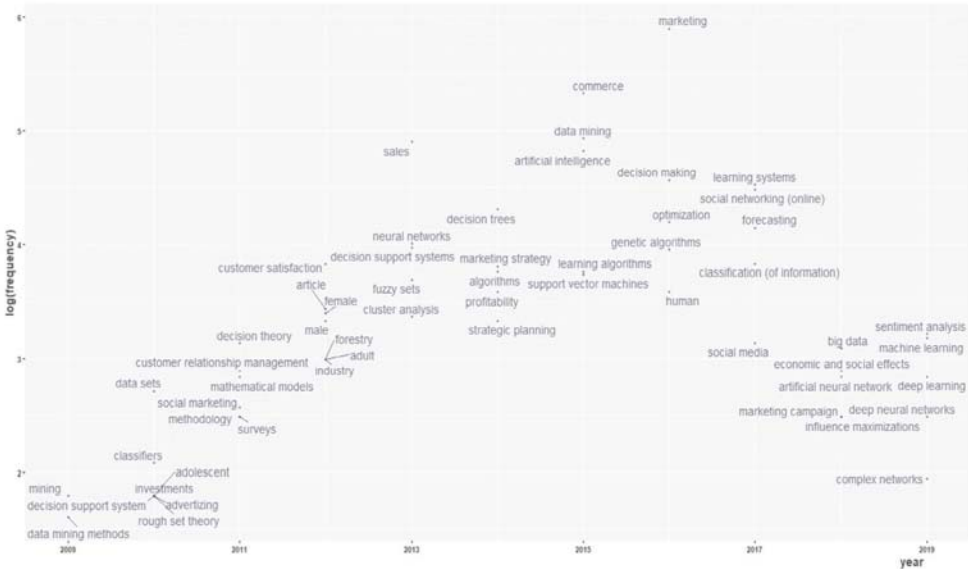


Figure 2. Topic trend. From Verma, S. et al. [19] ‘Artificial Intelligence in Marketing: Systematic Review and future research direction’, *International Journal of Information Management Data Insights*, 1(1), p. 100002. doi:10.1016/j.ijime.2020.100002.

Leading countries with contributions are India - 22%, the United States of America - 20%, and Romania - 10%. Other countries with smaller contributions to the discussion are the UK - 6%, Sweden - 6%, Germany - 4%, Greece - 4%, Bosnia and Herzegovina - 2%, etc. [19]. All of the papers try to raise awareness of the importance of understanding, accepting, and integrating artificial intelligence and its concepts into everyday business.

There are various aspects of marketing where AI could be used, from market research to promotion. Roughly speaking, we can distinguish between three main areas within marketing where the implementation of AI would be of strategic benefit to the company. They include marketing research, marketing strategy, and marketing action. This framework was presented

by Huang & Rust [11], who argue that, unlike other frameworks, this one does not omit the role of strategy, but rather views it as a circular process, which entails marketing research, developing strategies for segmentation, targeting, and positioning; and design market actions that will help execute the strategy.

Marketing research helps the company understand the market, customers, and competitors, which is necessary for strategy development and execution. However, the cycle does not stop at marketing action, since the results of the action will feed back as data for marketing research, which then creates a continuous cycle. There are three AI intelligence that marketers can leverage: mechanical, thinking, and feeling.

Mechanical AI imitates mechanical and repetitive tasks, like classification algorithms, machine translation, etc. It is used to provide standardization benefits, for example, drones distributing physical goods.

Thinking AI is used to process data, which are usually unstructured, to arrive at new conclusions. This type of artificial intelligence is good at data mining, machine learning, etc. It offers personalization benefits, which are crucial for marketing. One example is the personalized recommendation system used by Netflix and Amazon.

Feeling AI is about two-way interactions with humans, where it analyzes human speaking and feeling. The most common use of this intelligence is in customer service, such as their satisfaction, complaints, and moods [11].

All three AI intelligence can be used in each stage of the three-stage cycle.

2.1. Marketing research

Mechanical AI can facilitate data collection about the market, company, customers, and competitors. Studies show that these data could be easily attained when customers are using connected devices, or by using analytics to capture unstructured market activities [11]. For example, Soleymanian et al. [18] provide an example of tracking driving behavior by planting chips in cars to determine the insurance premium. The power of mechanical AI lies in the fact that it is not limited to observable behavioral data, but can also be used for experimental data collection with the aim to capture consumer psychographics and opinions. On the other hand, Thinking AI is more focused on competitors in terms of predicting their next step, which is why many fashion brands use it to predict fast fashion trends. Big data marketing analytics is used to gather marketing insights by using a neural network language model. This model is used to analyze simultaneous occurrences of products in shopping carts, finding copycat apps (Gabel et al., [8]; Wang et al., [21] as cited in Huang and Rust, [11]). Feeling AI is used to detect what customers want, need, or who they are. Major retailers have been using AI to obtain retail analytics, as they believe that the recognition of their demographics will help in customer profiling and will provide them with the ability to predict customers' choices (Vlačić et al.,) [20].

2.2. Marketing Strategy

Marketing strategy has largely been affected by the development of AI, in the sense that the most relevant problems have been solved by AI. As a result, there has been a significant improvement in business model decisions, pricing, sales, and product development. Moreover, the service industry specifically benefits from higher productivity, where routine tasks could be performed by mechanical AI [20].

Segmentation is essential for reaching each customer in the appropriate way, where AI can provide ease of aggregating the market into one and disaggregating it into numerous ones.

Huang & Rust [11] mention many studies about how data mining can be used to reveal patterns that are difficult for humans to detect. Especially in this scenario, machine learning and natural language processing are used to analyze loan requests and rank potential

borrowers according to their credit scores. Moreover, data mining can be used to find tourist segments based on the meaning of the destination to customers.

Targeting entails a bit narrower knowledge about the domain, intuition, which can be achieved by various AI-based search engines.

Positioning is often seen as speaking to customers' hearts and shaping at the same time brand perception. For this purpose, feeling AI is the perfect tool to help develop the campaign slogans by understanding what is it that customers are looking for.

2.4. Marketing action

Huang and Rust [11] write about how in this segment, all types of AI intelligence can be utilized. Mechanical AI can be used for service standardization, like for fast-food ordering and delivery, and budget service. Additionally, it can support the distribution, logistics, and tracking of products through the entire supply system. Thinking AI can be used for service personalization, and feeling AI for service realization, where AI can be trained to have a brand personality to interact with customers or recommend TV channels based on someone's mood. Moreover, it is used to facilitate research and development.

There are frameworks based on Bayesian inference which find the optimal price for e-commerce in terms of profit [1], which usually required careful calculation. Feeling AI can be used for price negotiation, where it is designed to detect customer reactions to price changes.

AI can be used for content creation or for stimulating human creativity by using AI writers, like ChatGPT. However, customers' reactions are still largely measured by traditional research methods [11].

3. CONCLUSION

The fourth industrial revolution today has forced companies to integrate the data about customers, markets, and competitors, using it to understand and predict customer experience. An enormous part of this is supported by artificial intelligence and machine learning, which act to ensure that the company meets customers' expectations [19].

Domingos [7]) argues that AI is our goal, it is the planet we are all heading to (Conick et al. [5], 2023). It is therefore necessary for companies to integrate and welcome all new findings in AI if they are to become market leaders, fulfilling their customers' wants and needs. Integration of such practices can be of a great benefit, as firms can now get ever-so-close to customers, while at the same time optimizing their internal processes, shaping them into effective and efficient business structures.

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