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Machine Learning and Artificial Intelligence Use in Marketing

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Abstract: Business analytics, artificial intelligence, and machine learning can analyze and forecast customer behavior thanks to the abundance of transaction and demographic data. This increases customer happiness and boosts sales. Predictive analytics, for instance, use various algorithms to forecast the relationship between outcomes and factors and to spot data trends. Marketers study data trends using data mining techniques to forecast consumer interests. Marketers may now automate the pattern-searching and pattern-identification procedures to enable personalized and one-to-one marketing, delivering customized messages and product proposals to both current and potential clients. This analysis will concentrate on marketing efforts using AI and machine learning. Both an interview and a survey were used in this review. For the marketing and sales sector, it is crucial to research The Marketing Role of Artificial Intelligence and Machine Learning.

Keywords*: Artificial Intelligence, Machine Learning, Marketing, Process*

1. Introduction

Man-made brainpower, or artificial intelligence, is the recreation of human mind in machines and incorporates elements like discourse/picture acknowledgment, navigation, semantic pursuit, and AI. Man-made consciousness (simulated intelligence), the following enormous thing, is supposed to cause a tsunami of disturbance in the realm of computerized innovation.

The United States and China led global AI investment in 2016 with $5-8 billion and $1-2.5 billion, respectively, while Europe was a distant third with $1.1-1.7 billion. Although investment in AI has surged by around three times since 2013, just 20% of the market has adopted the technology overall [1]. "Organizations that outperformed their peers in several financial measurements are more likely to believe they are ready to use cognitive computing (88%) than other companies (57%), according to one of the studies published by the IBM Institute for Business Value. Additionally, they are more likely to think that the technology will be crucial for their company's future (91% vs. 64%) and that AI is developed sufficiently to be ready for the market (93% vs. 59%)".

There will be a wider gulf between the first to use AI and those who wait across a wide variety of sectors, geographies, and businesses as its use spreads throughout the digital frontier. While artificial intelligence (AI) is being employed at every stage of the value chain, the most significant investments are being made at the center of the business. According to Peter Drucker, the two most important tasks for any business are marketing and innovation. Given the sheer volume of data generated by these two departments, it's no surprise that they're two of the most heavily AI-enabled parts of the value chain [2].

1.1. Artificial Intelligence in Marketing

“Marketing is the managerial process in charge of recognizing, anticipating, and profitably addressing client field requirements” [2]. Understanding human intelligence and creating intelligent beings are goals of artificial intelligence [3]. Artificial intelligence has become increasingly present in a wide range of fields recently, including business, medical, education, science, engineering, and entertainment. In three business sectors, AI has the potential to grow and have a significant influence [4]. The modules are customer service, sales, and marketing.

1. Artificial intelligence (AI) is being used by marketers to increase the effectiveness of their media, content, goods, and digital channels.
2. Organizations in the sales industry employ algorithms to recommend material, which leads to reliable revenue generation.
3. AI in customer service provides automated processes, sentiment evaluation, speech recognition (NLP), and customized to manage relations with clients..

The integration of AI into marketing has both positive and negative aspects.

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A. Advantages

By recognizing user behavior and anticipating client needs, AI streamlines marketing operations.

With the assistance of computer based intelligence, we can take out exhausting, tedious errands, opening up the advertising and outreach group to zero in on additional significant activities. [4].

B. Disadvantages

1. AI makes conclusions based solely on logic, which can come out as cold to humans.[4].
2. Clients would still favor face-to-face encounters [4].

Because of the increase in computing power and decrease in the cost of that power, the availability of large data on the market, and the application of powerful machine learning models and algorithms, AI has become so important in marketing [5]. As a result, there are many marketing-related applications. As an illustration Prime Air from Amazon.com is one example of automated delivery via drone [6]. Second, Dominos is experimenting with using robots and autonomous cars to deliver pizza to customers [7]. Thirdly, Red Balloon uses Albert's marketing channel to draw in new clients [7]. Fourth, the "On Call" personal shopper service at Macy's in-store and employs Natural Language Processing (NLP) to answer customers' general question. Fifth, Lexus employs AI marketing tools. They employed IBM Watson to create the TV ad scripts. Additionally, while watching their TV advertising, they employed Affectiva's affective analytics, which detects emotions through verbal and facial expressions.

Last but not least, Replika, a chatbot that mimics consumers' conversation habits and relies on Using machine learning, the program can predict how users are feeling and offer comfort. A combination of artificial intelligence and marketing will result in significant growth, according to Davenport and Rust (2020) [8]. AI can be applied to marketing to boost client satisfaction and business growth. Additionally, it has enormous potential to increase sales and company profitability. Figure 1 shows an illustration of AI in marketing..

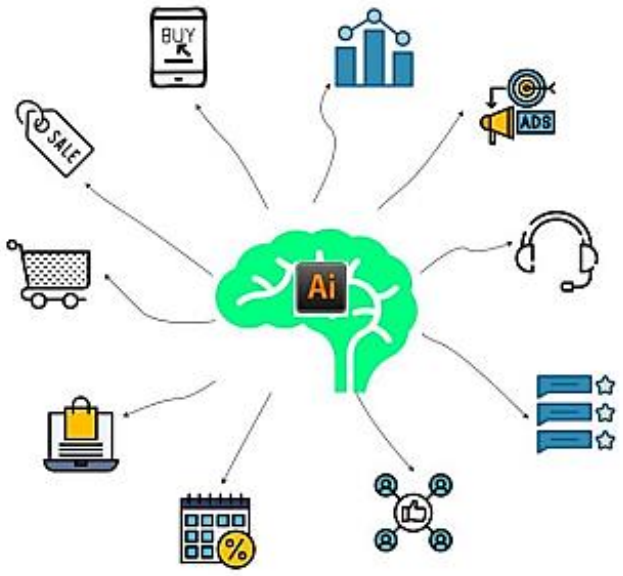

Figure 1: AI in marketing

1.2. Marketing Mix

The term 'marketing mix' is used to focus on many areas. It is frequently used to allude to a popular classification, the four Ps: product, price, placement, and promotion. this was popularized by McCarthy, E.J. (1978) [9], in order to separate 4ps from Neil Borden's idea of fulfilling the objective market (item, cost advancement, place)

Machine learning is having a profound effect on the marketing industry by increasing precision and making instantaneous response possible. Don't let this chance pass you by. Google, Netflix, Spotify, Facebook, and Uber are just a few examples of large digital native companies that have recognized the potential of these technologies to aid in the creation of platforms and applications that can understand users' demands and make recommendations based on those preferences [9].

As machine learning in marketing has found real application for a number of companies in the world, statistics show that 84% of marketing firms have adopted AI and ML efforts and 75% of corporations have reported increased customer satisfaction by 10% [8].

A few surveys on AI double-dealing in promoting uncover the effect of ML and Large Information examination on the computerized change of showcasing techniques and the difficulties to be defeated from an information and data the executives' point of view, however there is an absence of an integrative assessment exertion from an essential showcasing point of view [10]. With this foundation, this study seeks to examine the current and likely impact of ML and its developments in the marketing considering that innovations act as a catalyst for business methods, offering insight into the relevant implications for both enterprises and customers. [10].

There are now articles that give efficient surveys of ML's promoting applications. Obviously an organized interpretive system was expected; in spite of the way that these examinations yielded arrangements of significant bunch that certified our discoveries. Utilizing a subjective examination approach, we make a scientific categorization of AI applications in promoting [11]. The scientific categorization is organized progressively and according to a business viewpoint to research the execution of ML in promoting: We will refer to these reusable application procedures throughout the study as "activation recipes."

The several offshoots of this tree elaborate on the use of ML algorithms for various enterprise tasks. The activation scenarios at the bottom of the hierarchy [12] reflect their counterparts in the real world. We look at this classification system for machine learning applications in marketing, paying special attention to how these techniques have evolved to meet the specific demands of the marketing industry, such as the analysis and categorization of consumers [13]. The findings may contribute to a better understanding of machine learning's potential in marketing from a managerial perspective. They can be utilized to orchestrate information from the writing to find new roads for study and true applications. [14].

2. Synergy Between Big Data and Advancements in Machine Learning

The enormous volume of data, or "Large Information," that overwhelms each organization today is just expanding and multiplying in size each 1.2 years, making it difficult to process with current strategies [14]. Be that as it may, arising advancements are making accessible always strong PC stockpiling and lightning-quick information handling instruments. The possible objective of these innovation developments is to further develop business digitization and progress procedures overwhelmingly, variety, and speed of large information. The ability of artificial intelligence (AI) to handle massive amounts of data and derive actionable insights is having a profound impact on the strategic decision-making practices of companies across all sectors [15]. Artificial intelligence (AI) has been variously characterized as "programs, algorithms, systems, and computers that display intelligence," and as "technology able to reproduce cognitive functions that belong to the human mind, especially the ability to solve problems and learn" [15]. An "intelligent agent" in computer science is any machine that can sense its environment and take activities that boost its chances of succeeding [16]. In addition, AI is increasingly being utilized to facilitate various types of consumer-brand relationships, which in turn improves advertising strategies [16].

Many firms apply AI and machine learning (ML) to enhance the customer experience by better understanding client demands, projecting future demand, increasing customer service, and enabling bots to reply to basic service requests. Companies like Amazon.com's Prime Air, which uses drones for automated shipping, and Lowe, which employs an autonomous sales robot named Lowe Bot to spot overlooked items in grocery shops and direct customers to the products they require, are merely two examples of the growing number of businesses that use AI applications to automate processes. [16].

3 The Role of Artificial Intelligence in Modern Marketing

In order to comprehend the range of study on AI's potential for enhancing the customer service experience; a literature review was done by the authors of [17], discussing the challenges of autonomous customer experience management (CEM).

The study also went over the processes that were taken to create the intelligence network and the essential economic value generator employing AI and ML. Artificial intelligence (AI) and Natural Language Processing (NLP) chatbots have improved the user experience.

Thanks to efficient data processing enabled by AI and ML algorithms, we arrived at the correct conclusion [18]. There is a need to apply AI to analyze data such as consumer spending habits, preferences, and more [19]. Artificial intelligence user interface (AIUI) has aided customer relationship management (CRM) operations [20]. Artificial intelligence and the Internet of Things have transformed conventional stores into smart, futuristic ones. Smart stores enabled a more efficient supply chain and a more enjoyable shopping experience for customers [21].

- **Maximize Business Profit**

The ability to maximize business profit is a significant advantage of using AI to the marketing sector. Because it is commonly understood that a company's capacity to produce a profit dictates its success, AI is becoming increasingly popular across virtually all industries,

particularly in marketing. AI has the potential to significantly reduce expenses while increasing revenues, hence increasing profitability.

Fig 2: Maximize Business Profit

Using mechanical arms or robots for manufacturing, organizing, and packaging will substantially decrease the rate of faulty goods and boost productivity; enabling AI to assume control over not only the easy and time-consuming work but also some executive positions such as decision-making positions will significantly reduce labor costs. Personalized recommendations, one-on-one marketing, and innovative and effective advertising strategies like robocall are just a few of the ways in which artificial intelligence (AI) can help increase revenue. Personalization features will do everything to meet the needs of each user, leading to a surge in purchases.

- **Maximize Effectiveness of Marketing**

The following points of view (figure 2) illustrate how to maximize marketing effectiveness, another core goal of AI in marketing. Individualized guidance and targeted advertising will initially cut down on failed transactions and ineffective promotions, boosting the efficiency of marketing and advertising..

Fig 3: Maximize Effectiveness of Marketing

Additionally, AI-based automatic website builders and variable pricing functions that adjust prices based on click-through rates, page views, and Marketing success can also be boosted by a number of other extraneous elements, such as the season and the weather. Furthermore, AI-based data gathering, processing, and analysis capabilities aid in the collection of trustworthy data and information, as well as the production of more effective and exact results.

4. New Marketing with Machine Learning and AI Innovations

Although artificial intelligence in marketing is becoming increasingly popular, it is still a relatively new industry with a wealth of unexplored opportunities (figure 3). Significant efforts have been made to categorize ML and AI deployments in marketing very recently, particularly after 2017 [22]. In a joint study with Deloitte, for example, projects deploying AI-based solutions across a range of

business roles and procedures were studied, giving some surprising outcome.

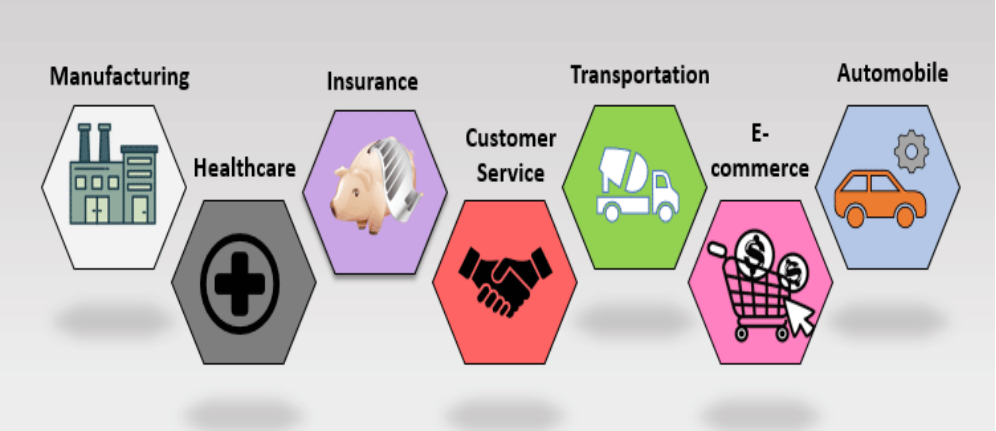

Fig 4: Marketing Applications of Ml and AI

Davenport was able to classify AI uses into three groups, as shown in his research: (1) Robotics and cognitive automation, which makes use of RPA to automate administrative and financial back-end processes; (2) Cognitive Insights, in which ML algorithms finds trends and patterns in data and decode them into information and (3) Cognitive Engagement, which employs human-like inputs to engage with consumers and staff.

Other efforts to organize AI and ML applications in marketing include broader categorizations based on marketing strategies such as segmentation, targeting, and positioning (STP) and marketing operations such as product, pricing, place, and promotion (4Ps) [23].

Our findings indicate that the vast majority of those polled favor the use of AI for marketing purposes and have belief in the technology's ability to do jobs quicker and better than humans [24]. Furthermore, there aren't many differences in the viewpoints of the participants; practically all of them appreciated AI in marketing more than issues or fears. As a result, it is essential that we explore and understand the marketing advantages made attainable by AI [25].

Companies who embrace the Fourth Industrial Revolution and its reign of intelligence can be assured that they will thrive. The vision for the Fourth Industrial Revolution includes integrating customer and product data across all channels and products, then using that data to gain a deeper understanding of the end customer experience and greater visibility into how different parts of the business are performing. [26].

5. Conclusion

Artificial intelligence (AI) and machine learning (ML) have become crucial in big data analytics for predicting and delivering guided experiences that meet user expectations. By conducting this research, the authors present a holistic view of AI's potential for enhancing the quality of the service provided to customers. Using artificial intelligence and predictive analytics is the key to generating experiences that inspire loyalty and advocacy from the customers [27]. Event-based architectures combining artificial intelligence and predictive analytics are the wave of the future.

There is no final destination for corporations in the era of the Fourth Industrial Revolution, but they must all go on the journey anyway [28]. Disruptive technologies such as the internet of things, big data analytics, blockchain, and artificial intelligence have altered the way businesses are run. Manufacturing, pharmaceuticals, healthcare, agriculture, logistics, and digital marketing all stand to benefit greatly from the next disruptive technology: artificial intelligence (AI). Many professionals and researchers throughout the world are on the lookout for the most effective AI tools for their respective businesses. In spite of the growing interest in the application of AI to the marketing sector, there is a dearth of bibliometric data to support the idea that this field has been extensively researched [29].

Finally, we recognize that further research is required to fill in some gaps in this work. First, we acknowledge that SCA is useful for subjectively categorizing and studying materials, but we also feel that quantitative approaches, such as natural language processing and topic modeling in particular, can help us arrive at more complete and objective conclusions. Second, our findings might be bolstered by include more use cases, which could be accomplished through a comprehensive surveying exercise or a more comprehensive examination of the literature based on more sources [30]. This research missed a major opportunity to help organizations prioritize spending by failing to provide quantitative

estimates of the effect that ML has on key performance indicators for marketing.

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

Declaration of Conflicts of Interests

Authors declare that they have no conflict of interest.

Declarations

Author(s) declare that all works are original and this manuscript has not been published in any other journal.

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