

Relevance of Artificial Intelligence in Marketing: A Narrative Review and Future Directives

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Abstract: Technological innovations, for instance, Internet of Things, big data analytics, blockchain & Artificial Intelligence led to a paradigm shift in the ways the firms function. Amongst the total technological innovations, Artificial Intelligence is the contemporary innovation & acquires a huge marketing transformation competence. Theorists across the globe are striving to decipher the gold-standard Artificial Intelligence results for their marketing functions. Specifically, Artificial Intelligence agents led by machine learning formulas are significantly altering the marketing space, creating huge inquisitiveness from the empiricists. In the current paper, qualitative content review is done to analyze the secondary data sources and the findings of the content analysis resulted in an in-depth apprehension of Artificial Intelligence significance in the discipline of marketing. Deriving upon the evidence from the text analysis, the current paper provides a narrative review of the significance of Artificial Intelligence in the context of conventional marketing mix - product, price, place & promotion management. This article further uncovers the Artificial Intelligence driven marketing industry trends which include - interactive & media-enhanced, individualization & targeting, real-time optimization & computerization, and lastly consumer-journey attention. We then conclude with the future research directions of Artificial Intelligence & machine learning in the marketing context.

Keywords: *Artificial Intelligence, Content Analysis, Machine Learning, Marketing, Technological Disruptors.*

1. Introduction

Artificial Intelligence deals with the imitation of a human's intellectual capacity in devices that are prearranged to imagine & imitate human acts. These devices are developed to carry out the activities that usually necessitate human intelligence for instance problem-solving, investigating, judgment, comprehending natural language & decision-making. Artificial Intelligence, here onwards (AI) can analyze huge amounts of data, detect patterns, & adapt their behavior consequently.

AI is of mainly two categories. Firstly, artificial general intelligence which is a hypothetical type of intelligent agent has been the early attention of AI papers in addition to the central description of AI in the accepted culture. Despite the hurdles and intricacies related to the development of this type of AI, a large number of empiricists have shifted their focus towards artificial narrow intelligence which is the capacity of a device to execute a particular activity exceptionally well [1]. In the practical context, all the recent AI applications are regarded as artificial narrow

intelligence.

1.1. Conceptual development of AI

To conceptualize, AI problem is envisaged as "that of making a machine behave in ways that would be called intelligent if a human were so behaving" [2]. Earlier, AI studies concentrated on math & logical rational issues. Later on, the attention deviated to connectionism & neural networks between the 1980s and 1990s where the connectionist approach, influenced by the structure & function of the brain gained prominence during this period. Neural networks, computational models consisting of interconnected nodes (neurons) that learn from data, became a focus of research during this period. The backpropagation algorithm, which was introduced in the 1980s, enabled the training of multi-layer neural networks. During the 1990s, AI studies primarily concentrated on Machine Learning (ML) & statistical techniques. The universally accepted meaning of ML is "A computer program is said to learn from experience E concerning some class of tasks T and performance measure P, if its performance at tasks in T, as measured by P, improves with experience E" [3]. Later on, the emergence of ML as a subfield of AI brought a shift towards statistical and probabilistic approaches to modeling and prediction. Even though ML has evolved independently, it has become a crucial concept of AI research [4]. From 2010s-present, deep learning and modern AI have taken the pace where, deep learning, a branch of ML concentrated on neural networks alongside multiple layers, experienced a resurgence in interest due to advances in computational power, big data, and algorithmic improvements. The

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theoretical developments in deep learning include architectures like convolutional neural networks, recurrent neural networks & attention processes as well as optimization techniques like stochastic gradient descent and regularization methods.

2. Objectives of study

- i) To determine the significance of AI concerning the traditional marketing mix.
- ii) To identify various AI-driven trends in the context of marketing.
- iii) To summarize the future research directives in AI concerning the marketing subject.

3. Methodology of study

Qualitative content review is done to evaluate the secondary data sources and the content review findings resulted in an in-depth comprehension of the significance of AI in the discipline of marketing.

The remaining paper is organized subsequently. In Section 4, we determined the significance of AI in marketing concerning the four P's - product, price, place & promotion. In Section 5, we briefly present the AI-driven marketing trends. In Section 6, we present the future research directives of AI in the marketing context. We conclude in Section 7.

4. Results & Discussions

4.1. Artificial Intelligence: Marketing Context

In less than two decenniums, AI has remarkably altered sectors for instance, biology, education, engineering, finance & healthcare where marketing is not a special case ([5]- [6]). The abundance of information has elicited firms to fund massively in machine learning to strengthen their marketing capacities. Advanced ML formulas accelerate the decision-support systems at e-business webpages & online platforms for instance, Amazon & Netflix; deep learning machines evaluate & flag billions of pictures on online media webpages for instance Facebook; computerized instruction formulas analyze a web browser's account in a microsecond timeframe to ascertain the ideal tender for an ad delivery; Talkbots participate in an individual-like chats with the consumers to preserve interrelationship & commitment. With the help of these & a multitude of other software for example social media mining, opinion mining & customer churn prevention, AI applications supported by ML formulas have exhibited their usefulness in refining comprehensive & unstructured information in the practical scenario, resulting in error-free projections to aid in the marketing resolutions.

AI renders consumer profiling on consumer behaviour which is necessary for attracting & retaining the customer. Technological executions resulted in AI investments for big

data analytics to produce market intelligence. AI is capable of programming the business process, acquiring knowledge on the insights from the previous information & producing consumer & market insights via a program-based formula [7]. Innovations for instance ML, deep learning & natural language processing instruct the devices to deal with big data to create market intelligence [7].

4.2. Applications of AI in Marketing

Gacanin and Wagner in their research study identified the execution challenges of independent consumer satisfaction management [8]. Nguyen and Sidorova in their paper found that consumer satisfaction is enhanced via an AI-driven Chabot alongside natural language processing [9]. AI & machine learning applications enable the effective refining of the data, which enables an individual to articulate an accurate finding [10]. AI programs are needed to determine consumer practices, shopping patterns, preferences, dissatisfactions & so forth [11]. CRM activities gain an advantage via an AI menu-driven interface [12]. AI & IoT have transformed conventional merchandising outlets into smart retail outlets, where, the smart retail outlets increased consumer satisfaction & effortless purchasing & in an improved value chain [13]. Apart from the old-fashioned outlets, AI directs the e-businesses as well. Sha and Rajeswari depicted the development of AI & presented an AI-supported engine, that is capable of tracing the five senses of individuals (vision, auditory perception, sense of taste, smell & touch). The findings depicted a superior product-brand association as well as a consumer-brand association in e-business [14].

4.2.1. AI application in product management

AI-aligned marketing analytical tools are capable of determining the relevance of a product design to the consumer wants & the consequential consumer experience [15]. Topic modeling connects the machine's capacities to service developments & designs [16]. Preference weight allotted to product traits in the course of the product quest enables marketing professionals to comprehend the product recommender systems & place the marketing plan of actions for purposeful product management [17]. Deep Learning is capable of personifying the point of interest suggestions & enables inspecting new places [18].

4.2.2. AI application in price management

AI-derived multi-armed bandit algorithm could strongly balance the prices in present-day situations [19]. In regularly altering pricing situations for instance e-business search engines, Bayesian inference in ML algorithm could swiftly balance the price points to align with the price of the contender's [20]. According to Dekimpe, effective response pricing formulas summarize consumer preferences, contender strategies & supply chains to maximize the changing prices [15].

4.2.3. AI application in place management

Product ingress & product attainability are the necessary elements of a marketing mix for an increased consumer experience. AI is the best strategy concerning place management by providing collaborative robots for product wrapping, drones for shipping, and IoT for tracing the order & reloading the order [6]. AI even provides consumer engagement options in the framework of services. Service robots deployed amidst emotive AI programs are easy to use in surface acting [21]. Embodied robots welcome & interact with consumers; nevertheless, human components must supplement the service atmosphere for increased customer satisfaction. Computerization of service processes alongside AI renders additional options for performance & prolificacy enhancement [5].

4.2.4. AI application in promotion management

Promotion management necessitates planning the media, arranging the media, management of the advertising campaigns, SEO & so forth. Pro-motion methods are undergoing modifications from physical to physical plus digital. Web marketing & online media activities led to an invasion because of the digital evolution around the world. In the developed high-tech globe, it is the consumers who determine the content, location & timing. AI renders actualization & tailoring of information according to the consumer profile & preferences [6]. Content analytics are capable of maximizing the value & the effectiveness of a message. Consumer preferences & dissatisfactions could be traced in present-day situations with emotive algorithms of AI. Online ethnography content provides the latest directions for marketing professionals to incline their marketing strategies according to consumer liking ([22]-[23]- [24]).

5. AI-driven marketing trends

5.1. Interactive & media-enhanced

Online networks & media as well as cellular phones have significantly enhanced the associations between companies & customers, with the data encrypted in media-enhanced configurations for instance, content, pictures & videos. The companies need to recognize the customer impressions & likings and acquire the required brand positioning demands based on this media-enhanced content. With their advanced capabilities, AI tools fuelled by ML procedures are dependent on creating insights & suggesting recommendations in these interactive & media-enhanced settings.

5.2. Individualization & Targeting

Marketing is progressively becoming customized ([25]-[26]- [27]). In markets where the data abundance is widespread & online platforms create customized offerings simple to distribute, ML techniques are driving widespread

context-dependent customization & aiming to an advanced level. Endless perfection drives individualization, where every single customer represents a unique segment, acquiring customized offers based on their profile. A significant amount of individualization & context-oriented targeting is powered by strong ML applications & these actions furthermore direct the methods' speedy evolution.

5.3. Real-time optimization & computerization

Fine-grained segmentation & repeated consumer associations considerably make it essential to eliminate the individual agents amidst the critical path. The assessment of targeting strategies for multiple segments is feasible humanly, for hundreds of accurately described microsegments, automation is an indispensable tool. Repeated communications also necessitate real-time reactions. Whenever mobile tracing identifies an inbound customer, for instance, a window of a few minutes subsists to render a promotional offer. Real-time optimization & computerization are turning out to be the modus operandi of marketing where ML techniques are the go-to solutions.

5.4. Consumer-journey attention

Companies are progressively acquiring a comprehensive viewpoint of the complete consumer journey. Automated innovations turned out to be viable for gathering fine-grained consumer point-of-contact data, that changes the perception of an aggregate-level purchase funnel amidst the company's point of view, to the perspective of constant decision journeys with feedback loops amidst the viewpoint of independent customers. For instance, to just move a customer via the awareness challenge, a handful of encounters with any of the company's advertisements might be sufficient. Anticipating the complete journey, however, multiple encounters of particular varieties may be preferable to maintain an ever-lasting affinity eventually. Reinforcement learning & deep learning techniques could aid the companies in restraining the complete decision journey. Even before consumers arise, a company observes user-generated content channels to forecast or mold the demand. At the time of lead, a comprehensive perspective of the customer facilitates delineating a program to steer the consumer through the purchase journey. ML techniques play a significant role in handling customer decision journeys, that possibly steer the effectiveness of marketing to a new level.

6. Future research directions

Linguistic knowledge & ML for an in-depth customer insight will render upcoming empiricist latest strategic directives [28]. Psychically led & brain-inspired reasoning formulas might even enhance the predictability of customer behavior. Blended ML methods will aid in finer sentiment categorization down the line [29]. Optimization models based on existing postulates of marketing foster the

application of AI in marketing [30]. Progression of short text & anaphora resolution for resolving strong sentiment analysis might strengthen the upcoming empiricist potential [31]. Co-creation of knowledge-based systems enhances market acceptance & upcoming empiricists must attempt to generate combined market intelligence [32]. Upcoming empiricists must study high-inflection languages & take into account emotional lexicons for big data sentiment analysis for instance Twitter set of data [33].

7. Conclusions

AI helps marketing professionals generate significant customized experiences for consumers by analyzing a huge proportion of data to determine consumer tastes, behaviors & purchase patterns. This degree of customization could considerably increase consumer satisfaction & loyalty. Furthermore, AI tools can process huge quantities of unstructured data via numerous sources, for instance, online media, emails & customer feedback to extract valuable insights. These insights enable marketers to understand sentiment, identify emerging trends and hence make data-driven decisions. To conclude, AI applications in marketing renders immense potential for driving business growth, improving customer experiences, and gaining a competitive edge in today's digital landscape. Nevertheless, marketers need to address AI adoption thoughtfully, considering both its benefits and ethical implications. By leveraging AI responsibly, marketers can unlock new opportunities and achieve sustainable success in the ever-evolving marketing landscape.

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Conflicts of interest

The authors declare no conflicts of interest.

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