Research Article

Optimizing the digital marketing landscape: A comprehensive exploration of artificial intelligence (AI) technologies, applications, advantages, and challenges

Junaid Rahman[1], Asif Raihan[2*], Tipon Tanchangya[1], Mohammad Ridwan[3]

[1] *Department of Finance, University of Chittagong, Chittagong 4331, Bangladesh*

[2] *Institute of Climate Change, National University of Malaysia, Bangi 43600, Malaysia*

[3] *Department of Economics, Noakhali Science and Technology University, Noakhali 3814, Bangladesh*

* Corresponding author: Asif Raihan, asifraihan666@gmail.com

ABSTRACT

This study investigates the profound influence of artificial intelligence (AI) technologies, including machine learning (ML), deep learning (DL), and big data, on improving marketing efficiency. The goal is to examine how these AI tools enhance marketing tactics and tackle the obstacles that marketers encounter. This study employs a thorough literature review technique to investigate the various uses and advantages of AI in tailoring advertising, forecasting customer behavior, and improving customer engagement. The results demonstrate that AI greatly enhances marketing accuracy and productivity through the automation of repetitive processes, the facilitation of real-time personalization, and the provision of more profound insights into client preferences. Nevertheless, obstacles such as the requirement for data of exceptional quality, significant infrastructure, and proficient experts impede the complete realization of AI's capabilities. Businesses should prioritize investing in reliable data management systems, implementing cloud-based AI solutions to lower expenses, and maintaining openness in data utilization to establish consumer trust. In order to properly manage the intricacies of AI in marketing, the report suggests integrating AI with human expertise, consistently assessing AI performance, and precisely establishing company objectives to ensure the effective alignment of AI tools. Implementing these tactics can improve marketing results and cultivate a customer experience that is driven by data and tailored to individual preferences.

Keywords: artificial intelligence; digital marketing; big data; machine learning; deep learning

1. Introduction

The field of artificial intelligence (AI) is currently seeing a resurgence, similar to the one it had when computers were initially introduced in the 1950s[1]. This can be partially attributed to the progress in computers and the enhanced capabilities of big data, which have allowed computer scientists to create algorithmic models capable of recognizing patterns and acquiring knowledge in real-time[2]. Currently, AI applications extend beyond traditional computing domains and are being utilized in a growing range of situations and devices[3]. These examples encompass cellphones[4], recommender systems[5], and customer

service[6]. They also assume complex responsibilities in domains that were previously thought to depend on human intelligence, such as journalism[7], artistic endeavors like painting[8] music creation[9], and marketing[10]. Although AI is rapidly gaining popularity among marketing managers and consumers, there is currently no comprehensive study that thoroughly covers the body of knowledge generated on AI in the closely linked domains of marketing, consumer research, and psychology. It is noteworthy that the psychological foundations of AI adoption in consumer behavior and the utilization of AI in marketing are frequently interconnected with studies in the wider field of psychology. Moreover, the significance of comprehending psychological processes in relation to the field of AI is apparent. The first objective of scientists working on AI was to create machines capable of performing tasks that would typically require human intelligence. Consequently, it has become crucial to comprehend how algorithms might imitate cognitive processes. The connection between the subject of marketing and AI is crucial, as marketing is one of the primary domains where AI is extensively applied[10].

The significance of AI in marketing is growing as a result of the rise in computing power, reduced computing expenses, the abundance of large data, and the progress of ML algorithms and models. AI is extensively utilized in diverse marketing domains. Amazon.com's Prime Air utilizes drones to automate the process of shipping and delivery. Domino's pizza is now doing trials using autonomous vehicles and delivery robots in order to transport pizza directly to customers' residences. RedBalloon utilizes Albert's AI marketing platform to identify and engage with prospective clients. Macy's On Call utilizes natural language processing to offer an in-store personal assistant to customers. Lexus used IBM Watson to compose the screenplays for their television commercials, titled "Driven by Intuition." Affectiva, utilizing effective analytics, detects consumers' emotions during the viewing of adverts. Replika, an AI chatbot powered by ML, offers emotional solace to users by imitating their unique communication patterns. Some experts argue that AI will have a significant impact on the future of marketing[11,12].

In the future, AI will be a fundamental component of every business worldwide[13]. The emerging trends in AI-powered automation signify significant transformations in the AI domain. The enterprise's adoption of AI is clearly demonstrated by the reconfiguration of ideas, interests, and investments in the sector[14,15]. This technology possesses a high level of complexity, enabling it to accurately identify and distinguish faces and objects. This capability holds significant ramifications for a wide range of business applications. Facial recognition is employed for security purposes to differentiate between individuals, while object detection is utilized to differentiate and analyze photos. AI processes human photos as if they were cookies, enabling the provision of highly customized services tailored to users' tastes. Several organizations are already conducting trials with facial recognition technology to analyze the emotional states of their clients and then provide tailored product suggestions[16].

AI focuses mostly on enhancing user engagement and optimizing lead conversion in the field of digital marketing. Employing intuitive AI chatbots, intelligent email marketing, interactive web design, and other digital marketing services, can steer a user toward the path that is in line with the objectives of the organization. Various variables influence the effect of AI on digital marketing. ML is a branch of AI, that focuses on computer programs that have the ability to retrieve data and autonomously learn from it. The system aggregates data from diverse sources, such as social media profiles, menus, online reviews, and websites. AI utilizes the provided information to generate and distribute content that is pertinent to the target audience. The utilization of AI software allows for a comprehensive online examination of eateries and their clientele[17,18]. By integrating AI into their marketing strategy, organizations may optimize the utilization of existing data and effectively target potential customers with compelling advertisements during opportune moments.

Digital marketing uses AI to enhance advertising on social media and digital platforms like Facebook and Instagram, providing clients with a visually appealing experience. These platforms meticulously evaluate customers' information prior to guiding them towards offerings that are suitable for their preferences. AI aids marketers in the identification and prediction of trends[19,20]. It serves to prevent excessive expenditure on digital advertising by the organization and guarantees that the funds are utilized effectively. Computer vision is the term used to describe a computer's capacity to identify objects, scenes, and actions in images. Some applications include medical image analysis, facial identification, public security, and security monitoring. When computer vision and AI are combined effectively, robots have the ability to anticipate future events and respond accordingly by taking into account prospective alterations[21,22].

AI has streamlined the process of creating client profiles and understanding the consumer journey. It enables marketers to efficiently and effortlessly deliver useful customized content to different customer profiles at every point of the marketing funnel and across all channels. AI systems in digital marketing might utilize past data to ascertain the material that is most probable to attract customers back to the site. The AI system detects the customers who are most likely to cancel their subscription to a particular service and analyzes the common qualities among those who have unsubscribed. Based on these insights, marketers can strategize their upcoming efforts and adopt techniques that promote customer retention[23,24].

The present research focuses on analyzing the effects of implementing AI technologies, such as ML, DL, and big data, on the transformation of marketing. This study aims to comprehend the role of customers in marketing automation, segmentation, and targeting, as well as to enhance the effectiveness of marketing campaigns by gaining a deeper understanding of customers. The current study aims to answer the following research question: what are the practical applications and benefits of artificial intelligence (AI) in marketing? It aims to enhance the comprehension of how these AI techniques can be integrated with conventional marketing strategies to achieve superior outcomes. Moreover, the aim of this study is to ascertain the benefits and drawbacks of AI applied in the field of marketing. These benefits encompass the utilization of AI to forecast consumer behavior, enhance analysis of customer engagement, target specific audiences, and streamline marketing operations through automation, resulting in time and effort savings. Nevertheless, obstacles like the need for adequate infrastructure for AI adoption, the necessity of high-quality data, budget constraints, and the desire for experienced personnel must be addressed. This study seeks to offer new knowledge and practical solutions for using AI opportunities in marketing and mitigating potential obstacles. This study aims to provide a comprehensive review of the selection of AI tools for marketing tasks, the management of data quality in AI applications, the transparency and privacy issues in the use of AI tools or services (i.e. whether the outcomes or processes are transparent to end-users), and the potential enhancement of AI solutions with human expertise. These objectives align the outcomes more explicitly with the goal of enhancing marketing practice through the use of this rapidly advancing technology field.

2. Methodology

This study did a detailed review of numerous literature pertaining to the use of AI in marketing. The document search was conducted using popular databases such as Scopus, Web of Science, and Google Scholar. The search keywords for these digital resources included the application of AI technologies such as ML, DL, and big data to the transformation of digital marketing. A total of 32 papers were chosen based on several criteria, including a feasibility analysis of the application domain, digital marketing, emphasis on future implementations, accuracy of results obtained using AI methods for marketing strategies, clarity in model deployment, and clarity in the write-up. Furthermore, to ensure the quality of the documents, we only

choose publications from peer-reviewed journals. Emphasis was placed on research articles published between 2010 and 2024. **Figure 1** depicts the sequence of review criteria used to choose appropriate papers.
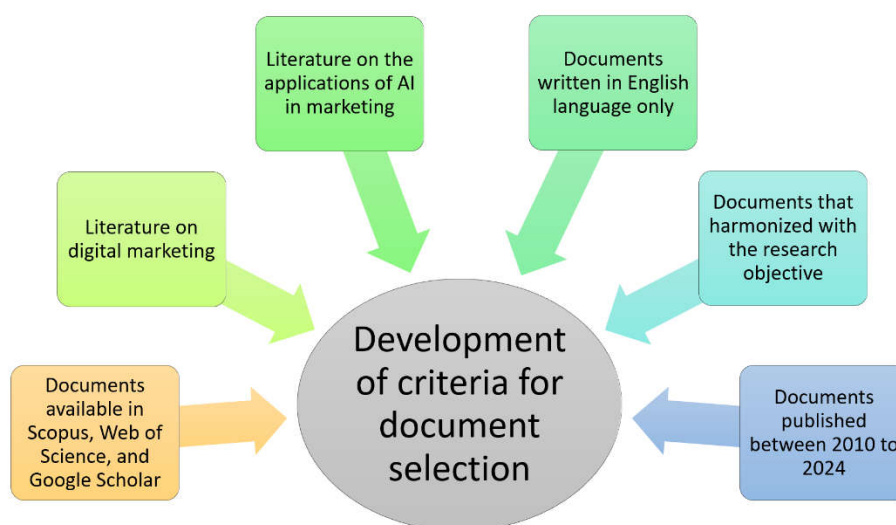

Figure 1. The criteria for the document selection.

Figure 2 depicts the methodological steps used for the systematic review in the present investigation. Once the research topic was selected, this study progressed by identifying and retrieving pertinent articles, doing analysis and synthesis of several literature sources, and generating written materials for article evaluation. The synthesis step involved gathering a diverse variety of publications, which were then combined into conceptual or empirical analyses that were relevant to the final research.
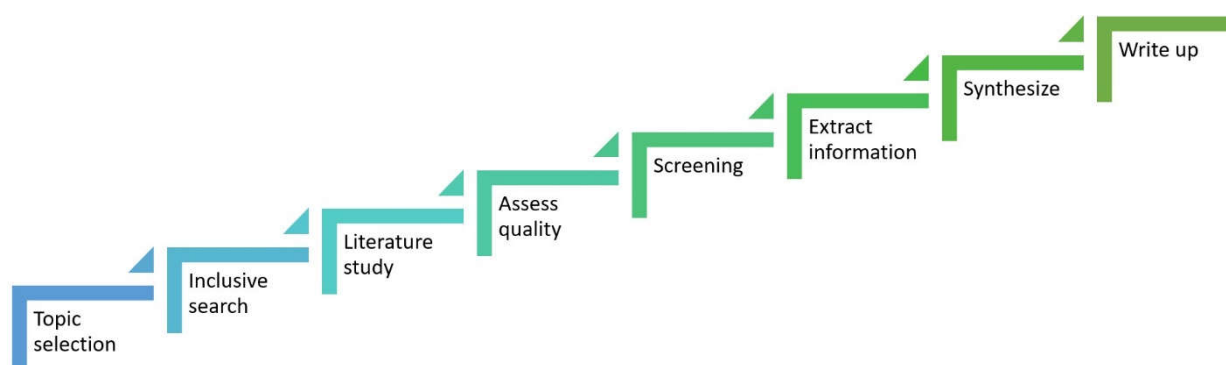

Figure 2. The methodological steps used for the review.

3. Marketing and AI

Marketing is the strategic combination of artistic and scientific elements, involving the effective presentation of products for successful sales and the methodical process of initiating transactions through a planned series of actions. From an organizational standpoint, marketing is defined as a multifaceted domain that includes activities, institutions, and processes designed to create, communicate, deliver, and exchange valuable offerings for customers, clients, partners, and society as a whole[25]. From a customer's perspective, marketing can be defined as the strategic coordination of many operations with the goal of increasing the value for different stakeholders, while keeping the price or cost within a certain range. Marketing, on a

societal level, is defined as a collective process in which individuals and groups satisfy their needs and wants by creating, presenting, and openly trading valuable items and services with others[26].

AI marketing is not merely a trendy term; it is a powerful force that is fundamentally changing the marketing industry. AI marketing enables marketers to leverage extensive data resources and derive significant insights. It is akin to having a group of highly skilled analysts and strategists working with you, providing assistance in navigating the intricacies of the contemporary marketing environment. Marketers have the opportunity to access a valuable source of information, evaluate it, and use AI algorithms to make decisions based on that data, resulting in improved outcomes. It is akin to having a highly skilled marketing expert assisting you in developing customized campaigns, reaching the appropriate target group, and providing outstanding customer experiences.

The ongoing growth of AI in marketing has significantly advanced its ability to reform and enhance obsolete marketing methods. Extensive research has been conducted on the applications of AI in marketing, which include analyzing customer buying patterns[27] and efficiently understanding consumer needs by monitoring data[28]. AI systems and services are mostly utilized for analyzing large amounts of web data and creating marketing plans based on data[29]. Organizations can employ AI systems to analyze consumers' data and provide tailored suggestions based on their previous actions, such as determining their next purchase or best price[11]. Furthermore, AI technologies automate laborious procedures, allowing marketing professionals to dedicate their efforts to value-generating activities that foster improved client engagement[30].

AI systems consume this data, scrutinizing it to provide patterns, trends, and useful insights. Marketers can utilize this feature to efficiently divide their audience into distinct groups, accurately recognize potential advantages, and make well-informed choices. AI solutions assist in automating processes such as generating content, optimizing campaigns, and segmenting customers. This allows marketers to allocate more time to strategic planning. AI algorithms enhance their effectiveness through continual learning, refining their predictions and recommendations to achieve superior results. Envision the ability to forecast consumer preferences, anticipate their requirements, and provide customized experiences that genuinely make them feel appreciated. The use of AI in marketing is no longer simply a hypothetical concept, but a tangible reality[31,32].

4. Efficient Marketing with AI

Figure 3 highlights the significance of email marketing. Approximately 35% of organizations utilize AI. Consequently, numerous firms are presently implementing AI in their marketing strategies, as indicated by the following data. Approximately 91% of Fortune 1000 firms are augmenting their investments in AI. This suggests that these prominent organizations are aware of the potential of AI and are eager to incorporate and embrace its capabilities. AI automation is being utilized by 77% of marketers. This affirms that AI automation is no longer a novelty in the realm of marketing techniques, be it for B2B marketing or any other type of marketing. 42% of firms are utilizing AI to decrease expenses, which is one of the primary advantages of AI. It enables the improvement of efficiency and the execution of various operations with reduced prices in the marketing field. AI technologies are causing a substantial shift in the marketing industry. DL, big data, and ML are three crucial factors in driving this transformation. **Figure 4** presents the linkages among AI, ML, and DL.
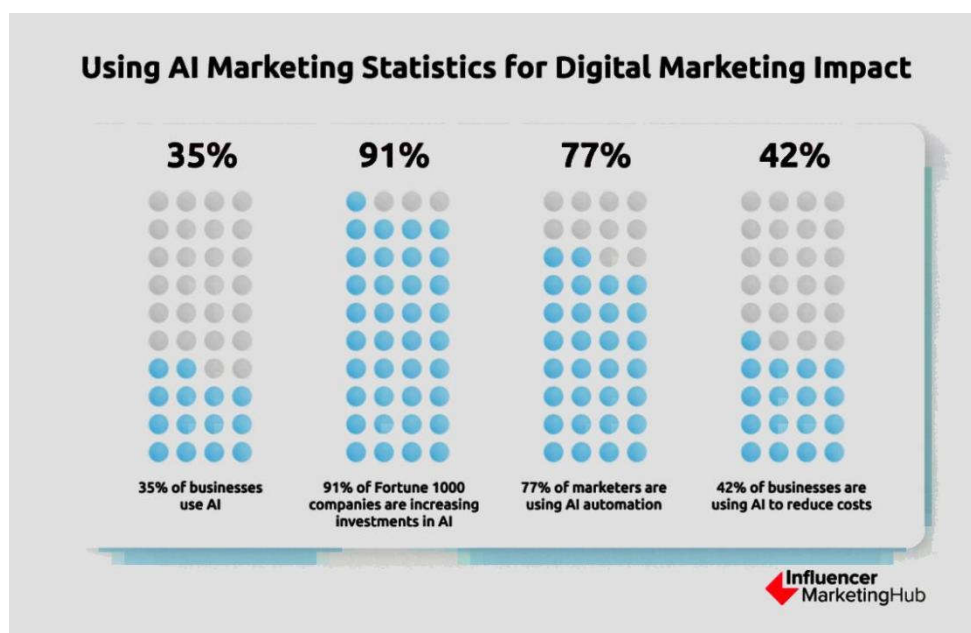
Figure 3. Utilizing AI marketing statistics to assess the influence of digital marketing [33].
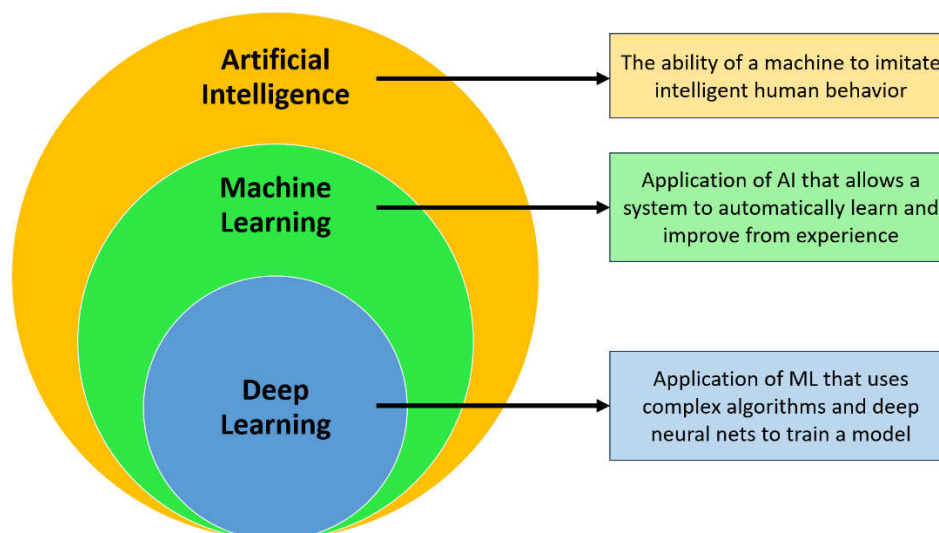

Figure 4. The linkages among AI, ML, and DL[34].

4.1. Machine learning (ML)

ML is a subset of AI and pertains to the innate ability of contemporary machines to acquire knowledge through algorithms and statistical analytic tools. This is accomplished by utilizing comprehensive databases, ultimately providing marketers with practical insights that enable sophisticated automation and decision-making. ML applications can be attributed to the detection of market trends or recurring patterns in datasets. It facilitates the accurate anticipation of typical observations, responses, and behaviors, assisting marketers in understanding the underlying reasons for failures and the likelihood of repeated actions. Consequently, this enables the adaptation of prompt remedies. There are several business applications for ML algorithms, which include a wide range of techniques such as K-means clustering, Neural Networks, Decision trees, Reinforcement learning, and others[31,32,35].

ML algorithms, which are the foundation of AI-powered marketing, utilize extensive datasets to discover patterns and trends in client behavior. By utilizing this technology, marketers are able to enhance their comprehension of their target demographic, anticipate forthcoming behaviors, and tailor promotional initiatives for optimal effectiveness. For instance, an e-commerce platform may employ ML to examine a customer's website clicks and browsing history, thereby suggesting products that correspond to their preferences[36].

4.2. Deep learning (DL)

DL is a specialized area of ML that utilizes sophisticated artificial neural networks to detect subtle patterns in data, typically outperforming conventional ML algorithms in this regard[37]. DL is highly effective in tasks such as image and voice recognition, which makes it a powerful tool for marketing applications. Marketers can employ DL techniques to automate the development of advertisements, tailoring graphic elements according to client data. Envision an AI system that produces video commercials featuring products that a buyer has already seen on the internet. In addition, DL can be employed to examine the emotions of customers in social media posts, thereby offering important insights into the perception of a company[38].

DL is extensively used in several public domains, such as cybersecurity and warfare, smart city management, transportation optimization, signal processing, medical informatics enhancement, and meteorological phenomena interpretation[39]. DL is based on artificial neural networks that mimic the connections seen in biological neural systems (**Figure 5**). This technique closely corresponds to the problem-solving and decision-making characteristics of the human brain. Prominent technological giants like Google, Facebook, Twitter, and YouTube, with their massive user base, regularly generate enormous volumes of data. These organizations make significant investments in disruptive technologies, data analytics tools, data monitoring and analysis approaches, as well as related business models, with the goal of creating long-term value[31,32].
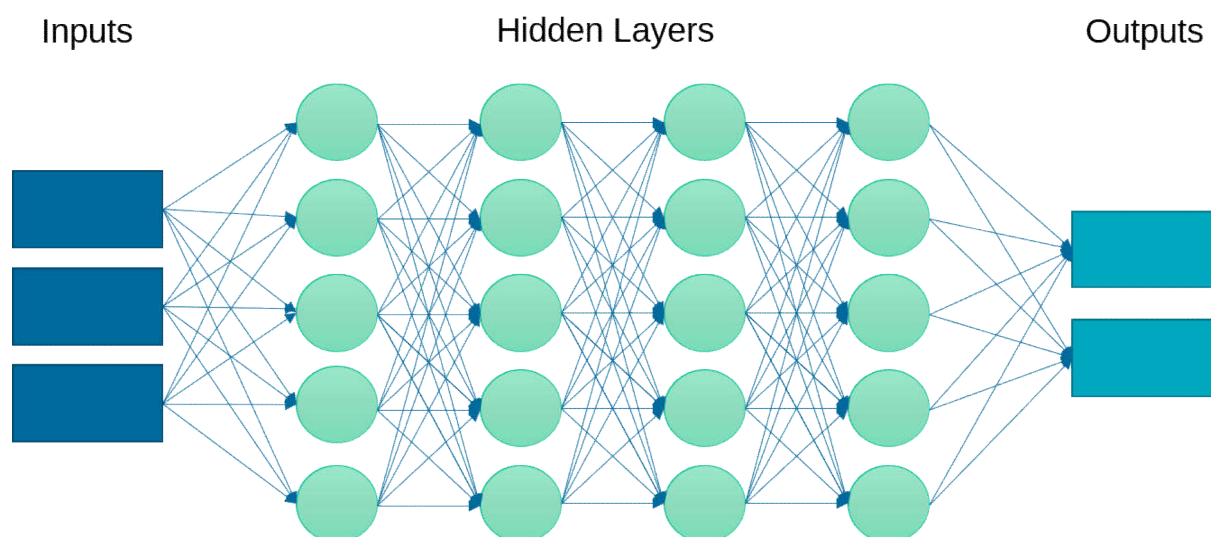
Figure 5. Deep learning neural network[34].

4.3. Big data

Big data refers to the process of businesses collecting a large volume of data through important access points, demonstrating their serious dedication to this task[40]. Big data is characterized by three factors: volume, diversity, and velocity. It refers to the marketer's ability to gather and categorize large amounts of data with minimal manual work, utilizing technology to its fullest potential[41]. Marketers utilize technology

data to tailor their product offers according to customer-centric demands. Modern IT infrastructure enhances organizational capabilities by using a blend of analytical tools, statistical methodologies, data interfaces, visualization approaches, and software analysis[42]. The process of transforming large amounts of data into more meaningful and insightful information takes place, and this enhanced data is then used to make informed business decisions that generate value.

These AI technologies collaborate harmoniously to enhance marketing endeavors. ML algorithms acquire knowledge from large datasets, offering valuable information that DL may utilize for activities such as customization and content generation. This collaboration streamlines monotonous chores, liberating human ingenuity for strategic analysis and decision-making. In essence, AI provides marketers with data-based insights to create impactful campaigns that yield exceptional outcomes. Big data encompasses the continuously expanding amount of data gathered from many sources, such as consumer engagements, website analytics, and social media platforms. AI relies on large datasets, as they provide the necessary input for ML algorithms to acquire knowledge and enhance their performance. Marketers utilize big data to acquire a thorough comprehension of their clients, including their demographics, interests, and purchasing behaviors. Adopting a comprehensive perspective enables the implementation of highly focused marketing initiatives that effectively connect with particular groups of people, resulting in higher levels of interaction and conversion rates[43].

5. Application of AI in Digital Marketing

5.1. Predictive chatbots

Chatbots are driving a transformation in the digital marketing domain. Primarily, they can be utilized for the following purposes: (1) Gathering preliminary lead information — Acquiring initial lead information enables you to obtain the necessary data to initiate any significant conversation. The information may encompass contact details and locations requiring assistance. (2) Scheduling — Chatbots can assist in arranging appointments for customer service calls, sales calls, or onboarding sessions with your customers. (3) Addressing Frequently Asked Questions (FAQs) — Instead of expending time and money on responding to the same set of inquiries, you can employ chatbots to provide answers on your behalf. (4) Greeting clients upon their initial visit to your website - Just like traditional stores have staff members who welcome customers, online retailers have a similar function. However, chatbots are now capable of fulfilling that function. It is possible to program them to automatically send customized welcomes to each customer who visits your webpage[44].

Chatbots serve as a company's primary customer care tool. They provide prompt assistance in addressing client inquiries and resolving issues efficiently. Additionally, it serves as a valuable sales instrument to guarantee the conversion of your website visitors into paying consumers. Popular chatbots include ManyChat, The ChatMate, and Mobile Monkey. One can develop their own chatbots by utilizing any developer platform. Chatbots have provided significant assistance to companies. These chatbots acquire knowledge through interactions with new clients and comprehend the elements that constitute a successful conversation. They subsequently apply these lessons to improve future talks.

5.2. Programmatic media buying

Programmatic media buying refers to the utilization of automated technology [11] for purchasing media, as opposed to relying on manual or traditional approaches. Media buying refers to the act of purchasing advertising space. The programmatic system of media buying utilizes data analysis to provide a website's user with accurate information, at an appropriate price, and at the optimal moment. In order to fully

comprehend programmatic media buying, it is necessary to familiarize oneself with various terms. Real-time bidding (RTB) refers to the process of determining inventory pricing through real-time auctions. Accessible to all publishers and advertisers, it is regarded as a highly efficient method of increasing the scope of the audience. In addition, private marketplaces (PMPs) are similar to RTB and are sometimes referred to as open auctions. Nevertheless, a notable distinction exists in that there is a restriction on the individuals eligible to partake in this particular instance. Unlike RTB, access to this platform is limited to a select group of advertisers. It is exclusively limited to individuals who have received an invitation. Publishers may, in certain instances, provide advertising with the opportunity to participate by permitting them to request an invitation. Subsequently, the publisher chooses from the list of applications. Furthermore, programmatic direct refers to the process of selling media inventory to advertisers at a fixed cost per thousand impressions (CPM), either to a single advertiser or numerous advertisers simultaneously[44].

Programmatic media buying consists of three primary components. Firstly, a sell-side platform (SSP) is software that enables publishers to sell mobile and video ad impressions to potential purchasers through an automated system in real-time. This empowers publishers with greater autonomy over their inventory and enables them to optimize their CPMs. Secondly, a demand-side platform (DSP) that enables marketers and agencies to purchase their ad inventory across several cross-platforms. An ad exchanger is the mechanism via which supply-side feeds are integrated into the ad exchange. It allows agencies, marketers, networks, and publications to purchase and sell advertising space. The automated approach of programmatic media offers increased velocity and enhanced effectiveness, addressing some of the deficiencies found in traditional media purchasing. The latter is impeded by laborious operations like as human negotiations and physical entry of orders[44].

5.3. Propensity modeling

Propensity marketing refers to the strategic approach of targeting clients who have a high likelihood of successfully navigating the buyer's journey and ultimately making a purchase[45]. This strategy decreases the expenses associated with the media and enhances the overall return on investment resulting from a media campaign. Propensity marketing is a strategy where brands target specific consumer segments based on their probability of engaging in specific actions. In addition, they focus on consumers who bear resemblance to consumers belonging to those groups, with the assumption that their conversion rates are comparable to those of consumers in those segments.

Propensity marketing necessitates the examination of numerous data sets, frequently encompassing. By analyzing the first-party historical data, it is possible to determine the consumers who are most likely to convert or retain based on their previous conversion or retention rates within a specific time period. Third-party data sets are typically, clients who are more likely to convert are identified using additional demographic and behavioral data from external sources. Second-party data sets are utilized for the purpose of media targeting. The data sets are utilized to develop a correlation between similar individuals and customer categories across digital platforms[44].

5.4. Voice search analysis

Voice search is a recent addition to the field of AI applications in digital marketing. Google, Amazon, and Apple have developed the voice search feature, which you may simply make full use of. Utilizing voice search in the business strategy enables marketers to achieve organic growth. When consumers use voice search, they often have a strong intention to purchase the product or service they are searching for. Therefore, it might be really advantageous for the firms[46].

These tech businesses employ conversational audio AI-OS in conjunction with visual media integrations as part of their AI strategy. An increasing number of digital marketers are seeing the potential of incorporating voice search technologies to enhance lead generation. The emergence of vocal personas and their cultural repercussions. Voice persona refers to the combination of text-based AI and certain personality traits. It introduces a far higher degree of velocity, frequency, and timbre. For instance, Voice AIs such as Google Assistant are already programmed to effortlessly transition between male and female voices and occasionally adopt Australian or British accents[44].

Certain speech personas can accurately replicate the cognitive processes and behaviors of a human in specific circumstances. While text AI has demonstrated its utility over time, voice AI offers a higher degree of personalization and convenience. In an imminent era of speech-centric dominance, it is imperative to embrace voice AI technology in order to facilitate effortless product searches for clients. This is especially essential for an online retail store. When utilizing voice material, it is important to make sure that it includes long-tailed keywords and imitates real speech patterns to the greatest extent possible. Despite being in its nascent phases, speech AI presents an opportunity for gaining a competitive edge by harnessing its potential. Implementing this strategy would provide a significant advantage over the opponents[44].

5.5. Predictive analytics

AI apps in digital marketing have the capability to analyze vast amounts of data from the internet and provide accurate insights that are relevant to the organization. It provides valuable information on the price point that generates the greatest number of conversions, the optimal time to post, and the most successful subject line to get attention. Nevertheless, it is essential to adequately familiarize oneself with this speculative data before relying on it as the foundation for all marketing campaigns[46].

Predictive analytics identifies patterns and predicts future probabilities using large sets of data. The main method of implementing predictive analytics in digital marketing is enhancing the understanding of customers. As a digital marketer, it is imperative to provide consumers with exclusively pertinent material. Not doing so could result in decreased email click rates and bounce rates. By using a customer-centric paradigm, it is possible to effectively enhance these performance indicators. Identify the specific online acts that can cause, or influence decisions made in the offline world. Predictive analytics provides insights into the most probable occurrence of unknown occurrences. Predictive analytics can assist in identifying specific online material that has the potential to elicit tangible behaviors in the offline world. Maximizes the efficiency of email frequency. Excessive email frequency might agitate customers, while insufficient frequency may fail to capture their attention. Predictive analytics assist in determining the ideal frequency required to guarantee conversion. Enhances the process of evaluating and ranking leads. In the modern era, it is exceedingly simple to squander both time and money by producing material for potential customers who are not already inclined to make a purchase. Predictive marketing enhances lead-scoring accuracy. Marketers truly benefit from the implementation of predictive analytics. Assists in determining the most appropriate social media influencers. Prior to this period, it was possible to achieve a significant conversion rate just by engaging a social media influencer with a substantial number of followers. That is no longer true. By employing predictive analytics, one may gain a deeper comprehension of the most effective advertising platforms and quantify the extent of improvement achieved via the implementation of AI in digital marketing. This includes assessing the impact of hiring a social media influencer for a certain product. It can be utilized to collect data regarding the influencer's post, including metrics like engagement, clicks, and impressions. It can be a significant error to hire an influencer just based on their follower count. By utilizing data obtained from predictive analytics, it is possible to ascertain the optimal choice for your target audience[44].

5.6. Dynamic pricing

Individuals perceive the variability in flight costs while making internet bookings. Individuals also notice variations in the pricing of a product that they previously encountered on an electronic commerce platform. There are two factors contributing to this phenomenon. Owing to variations in demand and supply, AI acquires knowledge about your preferences by means of tracking and analytics.

Dynamic pricing refers to the utilization of clever algorithms to implement a flexible pricing strategy that is influenced by the current market demands and customer trends. Dynamic pricing, often known as time-based pricing or demand pricing, is a term that refers to the practice of adjusting prices according to factors such as time or demand[44]. Businesses employ dynamic pricing strategies to determine the optimal pricing for their products or services in order to remain competitive and enhance their profit margins rapidly. AI-powered dynamic pricing modules allow businesses to accurately determine the prices of their services, even within limited time periods. AI in marketing is highly profitable.

5.7. Retargeting

Individuals who have a preference for purchasing eCommerce products through online platforms likely have encountered the act of visiting an eCommerce application or website, perusing various products, exploring available possibilities, but ultimately refraining from making a purchase. While browsing different websites or apps, users are inundated with advertisements for the product they were previously seeing or had added to their wishlist. The aforementioned situation pertains to retargeting, which involves delivering customized advertisements to potential customers after they have demonstrated interest in specific products or services. Although it may not be entirely accurate for certain potential customers, in general, it is effective because there could be other factors that caused a potential customer to show interest but not complete the transaction[47].

The utilization of AI in marketing greatly facilitates the implementation of retargeting strategies. By utilizing ML and DL algorithms, AI consistently examines the behavior of potential customers, and their purchasing history, and detects patterns. Using ML, it is able to effectively differentiate between purchasing, actual conversion, and browsing activity. This allows businesses to target potential customers who are more likely to be moved toward the conversion stage. By utilizing digital superintelligence or AI, companies can implement intelligent marketing strategies, and dynamic retargeting techniques, and make use of the important information obtained from users to efficiently retarget them[47].

5.8. Web and app personalization

Providing a consumer with precisely what they desire significantly increases the likelihood of them becoming a customer. The use of AI in digital marketing greatly facilitated the process of personalization. Understanding the personal tastes, likes, and dislikes of individual clients is beneficial. By utilizing this approach, marketers have the ability to provide consumers with a customized and tailored experience. Web and App Personalization is intricately linked to enhancing customers' experience and facilitating the expeditious achievement of their objectives. Utilizing AI in marketing allows for the customization of a website or app's services and content, which is the initial stage in implementing personalized marketing campaigns and fostering meaningful customer engagement[47].

Customizing the services and content of a website or app refers to aligning them with the interests of the audience, therefore directing them towards the conversion phase. By utilizing an advanced marketing automation platform driven by AI, there is the capability to meticulously chart the path that customers take by scrutinizing their interests and behaviors. Subsequently, a company may provide them with the most pertinent content, dispense suitable messaging at the optimal moment, and enlighten them about the

advantages of the products and services. In addition, businesses can focus on the microelements of their content to attract attention and achieve significant client interaction[47].

5.9. Targeted advertising

If someone conducts a search for "white shoes" on Google, they would subsequently be exposed to advertisements pertaining to white shoes across other social media platforms. This represents an alternative method of utilizing AI applications within the realm of digital marketing. Precision marketing enables the delivery of highly pertinent communications to individual customers or the focusing of efforts on a specific audience. ML and digital marketing enable the segmentation of client data into distinct groups based on several variables, like age, gender, and location. This allows for the targeted delivery of appropriate messages to specific individuals[46].

To improve audience targeting, the initial step involves gathering data on the intended audience. Companies can achieve this by embedding little snippets of code, known as pixels, onto their web pages. These pixels are specifically designed to collect data about the online activities of visitors to their website. The feature enables the company's web sites to set cookies that can gather anonymous data about these visitors. Companies can enhance their audience targeting by accurately identifying individuals who click on ads and subsequently make a purchase or complete a desired action. By analyzing pixels, firms may track the exact moment when visitors accessed their web pages, identify which visitors clicked on their advertisements, and determine the number of visitors who completed a desired action or converted. This data can assist companies in categorizing their audience in their Data Management Platform (DMP) or Demand-Side Platform (DSP) into segments based on clickers and converters. Given that these individuals are the most probable to convert, firms can optimize their efforts by creating content that guides them throughout the buyer's journey. Implementing this approach allows a company to optimize its marketing strategies, resulting in improved conversion rates while minimizing expenses. Companies may be missing out on significant opportunities as digital marketers if they refuse to embrace this trend[44].

The universal strategy is ineffective in digital marketing. Companies want to optimize their marketing investments by sending tailored communications to their target, leveraging the data insights they have collected. This strategy is more efficient than generic advertisements. Produce and maintain valuable and well-crafted material. The importance of producing content of superior quality is equivalent to that of ad targeting. The reason for this is that low-quality content and badly designed advertisements are unlikely to generate attention, even when they are specifically targeted at the intended population. The fight for people's attention is intense, and organizations must generate high-quality material to capture their interest. Companies must broaden their audience's reach. Companies can broaden their target demographic by using the characteristics of their existing audience. Undoubtedly, employing lookalikes is a highly efficient strategy for broadening the scope of the target audience[44].

5.10. AI content creation and curation

It is remarkable that AI has the ability to generate content from the beginning. Undoubtedly, data is necessary to develop content, but it appears that AI content production has become more advanced. AI enables the creation of enhanced content experiences for the target audiences. These systems have the ability to generate reports and news articles by processing and utilizing input data and information. Content generated by AI can significantly reduce the amount of time companies spend on creating content. By customizing the content for certain segments of the target audience, companies may optimize its effectiveness and gain a competitive edge. By using the power of AI, businesses can enhance and streamline their content marketing strategy. While AI cannot completely replace the content creation process, it remains

valuable for lesser jobs such as creating social media posts. Therefore, it serves as an exemplary illustration of the utilization of AI in the field of marketing[47].

One of the often-neglected uses of AI in marketing is AI content curation. AI content production refers to the process of using AI to generate content and personalize it for the customer experience. AI-driven content curation enables businesses to effectively engage visitors and maintain a prominent position in their thoughts by offering them pertinent content and additional value, all while showcasing the industry's expertise. It possesses a multitude of applications, including customizing communications and providing enhanced recommendations to users. AI facilitates the process of creating content, but the human workforce remains crucially significant. Marketers will be required to develop editorial calendars, select appropriate visual elements, and ensure the alignment of visual elements with the intended narrative.

AI-driven content curation can be highly beneficial for subscription-based services. Data plays a crucial part in ML algorithms and improves the patterns of content recommendations provided to users. Amazon's Prime Video and Netflix utilize a sophisticated recommendation engine to adjust recommendations based on the user's viewing history on their platforms[47].

5.11. Personalized and dynamic emails

Emails are a highly efficient method for establishing personal connections and cultivating relationships with individuals. AI in the field of digital marketing has the ability to consistently enhance its effectiveness. A propensity model is a tool used to determine the preferences of clients and identify which items and services they are likely to be interested in. This information may then be used to tailor the content of the following newsletters[46].

Similar to marketing automation, the utilization of insights derived from ML can generate personalized and dynamic emails on an individual basis. By utilizing both the propensity model and predictive analytics, businesses can accurately assess the probability of their leads converting[48]. The system calculates this by analyzing past internet behavior and subsequently showcases the most pertinent products in newsletters.

Figure 6 presents data obtained from a study that surveyed 401 marketers in the United States to assess the positive effects of AI on email marketing. This is followed by the advantage of increasing revenue by 41.29%. Additional benefits of utilizing AI in email marketing include enhanced click-through rates of 13.44%, improved open rates of 7.64%, and increased deliverability rates of 1.13%. Hence, the utilization of AI can boost the click-through rates, which represent the percentage of those who opened the email and clicked on the links. AI can enhance deliverability by preventing emails from being flagged as spam.
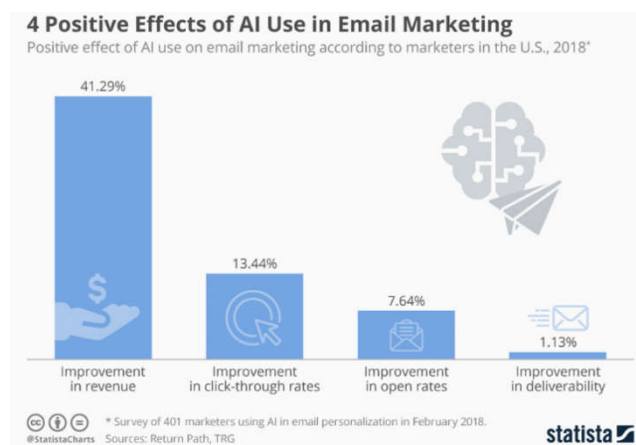

Figure 6. Benefits of using AI in email marketing [49].

5.12. Image recognition technology

One of the most thrilling advancements in the field of AI is Image Recognition Technology. Using this technology, buyers have the ability to upload an image of a desired product and subsequently locate the same goods on the company's website. This technology enhances client experience and increases customer happiness. This bears a striking resemblance to the manner in which image tagging operates on popular social media platforms such as Facebook and Instagram. With this functionality, the software enables image recognition, allowing users to view photographs on their feed, even if they were shared by other users.

5.13. Lead scoring

ML-based propensity models can provide insights into the most popular and highly sought-after blog topics. By doing this, companies may concentrate their efforts and attention on locations where leads are assured or, at the very least, more probable[46]. There are three distinct categories of lead scoring models: demographic model, online behavior model, and engagement model.

The demographic model is a conventional model employed to evaluate audiences based on specific characteristics. This model is optimal for targeting individuals within a given demographic. Consider, for instance, if the target audience consists of elderly people or teenagers. Landing pages allow businesses to gather demographic data from visitors to the website, which may then be used to inform decision-making.

The online behavior model is another popular lead-scoring model. This model analyzes the behavior of leads who ultimately became customers and examines the specific steps they took in the process of converting. When utilizing the online behavior model, it is important to gather the following information: the specific pages that users visited on the company's website; the total number of pages that were visited on the website; whether or not users signed up for emails or followed the company's social media profiles; the offers that users downloaded; the total number of offers that were downloaded; and the amount of time users spent on the company's webpages.

The engagement model approach, while similar to the online behavioral model, specifically emphasizes the way in which leads connect with the company. Instead of focusing on historical conversion rates, the primary concern is the level of customer involvement with the company's brand. The premise of this statement is that a strong level of involvement or participation results in a significant increase in the number of successful conversions[44].

5.14. Predictive customer service

Propensity modeling utilizes an analysis of prevalent attributes among consumers exhibiting signs of unsubscribing to predict which customers are most likely to unsubscribe from the company's newsletter. Reaching out to these specific client groups in order to offer them incentives, reminders, and support is a more efficient way to prevent them from leaving. AI enables the provision of intelligent, effortless, and convenient customer support to customers at every stage of the customer experience. The integration and optimization of customer experience are of great importance[46].

It is well recognized that retaining existing consumers is more effortless than acquiring new ones, particularly in businesses that operate on a subscription model. Having a high turnover rate might be extremely expensive. Predictive analytics enables the identification of consumers who are likely to cancel their subscriptions and identify the specific characteristics that are absent in their current service. Equipped with this knowledge, companies may proactively engage with these clients who are at risk of leaving by providing them with enticing incentives and reduced prices in order to prevent customer churn[47].

5.15. Marketing automation

Marketing automation strategies focus on the automation of repetitive marketing operations and activities. It is a set of precise guidelines that, when activated, initiates conversations with potential customers. Marketing automation greatly facilitates the generation of new leads, the cultivation of current leads, and the accurate measurement of marketing success from the beginning. The utilization of AI in marketing is particularly crucial for marketing automation as well. Using ML, AI rapidly collects and analyzes customer data, and may then utilize those findings on a large scale. Utilizing AI allows for quicker segmentation, sorting, and prioritization of this information[47]. The marketing automation approach is being significantly transformed by AI-driven marketing automation solutions. These platforms are advanced and offer enhanced marketing strategies by adapting to changing demands, such as providing more tailored services to customers. Integrating AI into marketing automation solutions allows marketers to promptly discover qualified prospects, devise more intelligent nurturing tactics, and provide pertinent content[47].

The automation tools that are most frequently utilized include HubSpot, Marketo, Pardot, and Oracle Eloqua. HubSpot marketing and sales serve as highly valuable tools for small and medium-sized enterprises[50]. These tools enable organizations to acquire data insights from social media marketing campaigns, SEO optimization, and web analytics, which in turn aid in the development of effective marketing campaigns. Furthermore, numerous organizations and brands use Marketo to generate revenue through mobile marketing and lead management. The marketing automation platform, which operates through cloud computing, provides customized messaging across many marketing channels. Moreover, Pardot enables brands to expedite their sales processes and drive sales by utilizing sales intelligence, social media marketing, and other marketing strategies. In addition, Oracle Eloqua is a marketing automation platform that is a web-based cross-channel marketing tool specifically developed to monitor and analyze clients' activities at every step of their purchasing process. This application enables users to create automatic and customized marketing programs[44].

6. Advantages of AI in Marketing

The field of marketing has not yet fully harnessed the potential of AI to achieve more substantial influence and outcomes. Fortunately, significant progress is being achieved to enable digital marketers, such as, to enhance customer interactions and product recommendations. AI has the capability to aid in tasks such as content generation and other related activities. A significant portion of tasks that were formerly performed manually can now be efficiently mechanized using AI[51,52]. **Figure 7** illustrates the benefits of AI in the field of marketing.
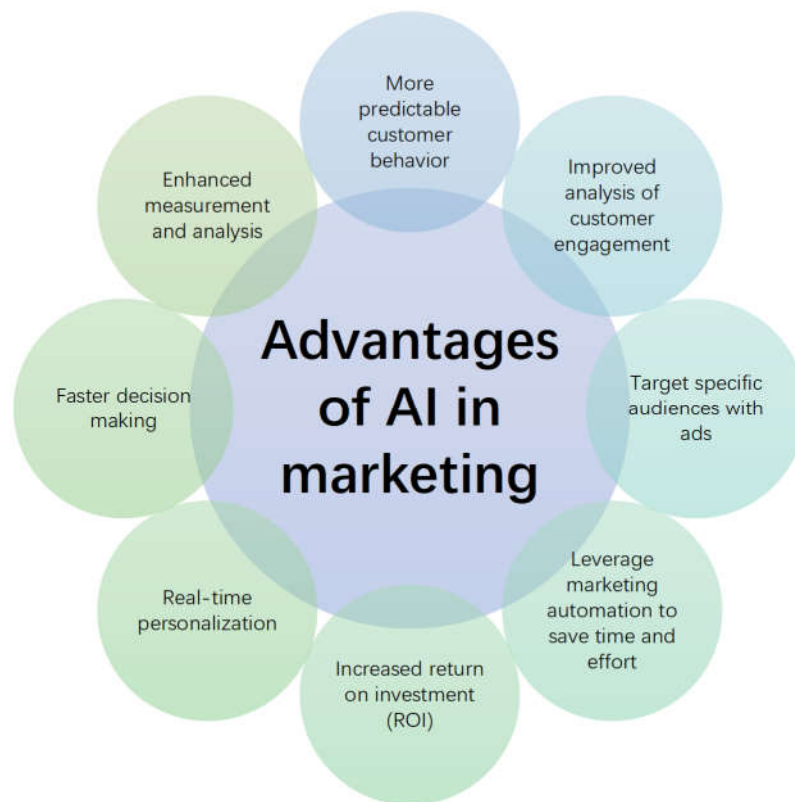
Figure 7. Advantages of AI in marketing.

6.1. More predictable customer behavior

Attempting to cater to all individuals within the specific target market of the eLearning firm would require a significant allocation of resources, including both time and effort. Fortunately, people can circumvent this chaotic situation by utilizing AI systems to filter across dispersed audiences. Utilizing AI, one can accurately discern the potential customers who are very likely to convert to e-learning offers. By incorporating an AI tool, one can utilize its statistical decision tree. By utilizing AI, businesses may establish marketing goals and analyze historical data.

Furthermore, an intriguing capability is to employ AI and ML models for the purpose of scrutinizing client behavior. By doing this, one can discern recurring patterns. These patterns will assist in formulating digital marketing tactics. An additional commendable suggestion is to develop these models in accordance with one's goals. Companies need to specify the desired outcomes for their marketing endeavors. Does it aim to enhance the conversion rates for the Learning Management System (LMS)? Enhance website traffic? Alternatively, may lead generation be a possibility? AI is an effective tool for achieving marketing objectives with greater efficiency and reduced costs[51,53].

6.2. Improved analysis of customer engagement

Assessing client engagement is crucial for evaluating successes and failures, primarily because the expenses associated with acquiring new customers are far more than those for retaining existing customers. One application of AI is to utilize it for the purpose of monitoring and analyzing each campaign. AI can enhance marketers' understanding of the specific client categories they should focus on. Another notable advantage of AI systems is their ability to generate insights through the comparison of past and current clients. Through this process, AI can instruct on how to attract a larger number of consistent clients who closely resemble the target audience. Throughout the process, businesses can enhance customer satisfaction

by specifically focusing on past customers. Additionally, it is intriguing that the system provides relevant information regarding the preferences of the clients and offers strategies to target them on an individual basis. AI is essential for achieving tailored marketing and enhancing the client experience. It can also be utilized to monitor and analyze the actions and patterns of the audience. The acquired insights will enhance the ability to effectively engage with the audience.

For instance, AI is an excellent method to analyze ongoing consumer conversations in real-time. Moreover, it might assist in identifying the underlying causes of the conversations across various social media sites. Consequently, businesses will be able to more accurately focus on clients by employing efficient strategies tailored to each specific audience. Overall, AI is essential for effective customer relationship management. The distinctive aspect of AI lies in its ability to acquire and analyze real-time information, which in turn assists in determining the most advantageous course of action. Examining and evaluating preferences will unveil the promotional strategies that can be employed to maintain a strong sense of brand loyalty. Numerous prominent corporations have already attempted to combine AI with virtual reality in order to provide clients with a complimentary opportunity to test their products[51,53].

6.3. Target specific audiences with ads

Convincing potential customers is a major challenge in marketing. Every eLearning marketing specialist will attest to the immense difficulty of the task. It is difficult to persuade unfamiliar individuals that the companies own the most suitable product for their requirements. Thankfully, businesses can effectively convince potential customers by combining AI with predictive consumer segmentation. In addition, it is possible to combine AI with virtual assistants or utilize intelligent design to enhance client experiences with a higher level of personalization. The era of conventional advertising is coming to an end, as it has become significantly less efficient. On the other hand, eLearning companies that employ targeted marketing strategies based on specific interests stand to benefit significantly. As a result, an increasing number of marketing specialists are capitalizing on the growing prominence of AI. Predictive analytics can be employed to determine client interest in making a purchase prior to soliciting payment or credit from them[51,53].

6.4. Leverage marketing automation to save time and effort

Combining AI with automation and personalization is an optimal strategy for individuals seeking to attain a superior degree of marketing customization. One significant benefit of AI in marketing is its ability to automate digital marketing while maintaining precise audience targeting. Ensuring the success of one's eLearning business in acquiring clients is crucial. Indeed, it is an essential requirement for every eLearning organization in the rapidly expanding market. Currently, AI systems can be employed to automate several aspects of digital marketing such as search engine marketing (SEM), pay-per-click (PPC) advertising, search engine optimization (SEO), keyword research, conversion rate optimization, and social media marketing (SMM). Furthermore, AI can be employed to enhance the efficiency of communications and effectively reach the appropriate consumers at the optimal moment. By utilizing AI, a company can effectively find subjects that are likely to captivate the audience's interest. Additionally, a company can provide material that is more simply comprehensible to the audience by focusing on topics that resonate with their preferences. Incorporating chatbots into the website will enhance the automation of procedures, providing customers with a more comprehensive understanding of eLearning services[51,53].

6.5. Increased return on investment (ROI)

Intelligent AI systems assist marketers in collecting precise and focused information for certain campaigns. This reduces the overall marketing expenditure by eliminating the need to spend on ineffective techniques of collecting irrelevant data. The use of AI enhances the understanding of client behavior by

analyzing large data sets, enabling businesses to make immediate decisions. By narrowing down the target audience and raising conversion chances, it enhances the return on investment (ROI)[51,53].

6.6. Real-time personalization

Personalization involves gaining insight into the preferences of clients and tailoring solutions to meet their specific needs. The use of AI aids in collecting information such as demographics, location, and purchasing history, enabling the creation of personalized marketing campaigns in real-time. Through predictive analysis, AI comprehends customer behavior and offers relevant recommendations. This technology is utilized by prominent platforms like Netflix, Google, and Instagram for providing suggestions[51,53].

6.7. Faster decision making

AI enables real-time decision-making throughout a campaign, eliminating the need to wait until the finish. AI enables the utilization of real-time data and facilitates the process of making well-informed decisions through the implementation of ML techniques. With the advent of AI, the need to manually sift through extensive amounts of data is eliminated. AI provides all the necessary information for decision-making[51,53].

6.8. Enhanced measurement and analysis

Analyzing data and measuring results are valuable tools for enhancing focused marketing initiatives. It enables businesses to trace both successes and failures back to certain campaigns, enabling businesses to select the appropriate strategy for their future marketing initiatives. In the absence of AI, vast quantities of disorganized data can lead to deceptive conclusions. Hence, this leads to difficulties in organizing forthcoming arrangements[51,54].

7. Challenges of AI in Marketing

Undoubtedly, AI is a highly discussed subject, with a significant 61% of marketers having already included AI in their marketing endeavors. Nevertheless, using AI technology is not without its shortcomings. Although AI-powered platforms have gained popularity, there are numerous challenges associated with utilizing AI for marketing purposes[51,52]. Figure 8 illustrates the challenges that arise in applying AI in the field of marketing.

Figure 8. Challenges of AI in marketing.

7.1. Lack of sufficient infrastructure

In order to harness the capabilities of AI for marketing operations, it is imperative to establish a robust IT infrastructure. In addition, it is necessary to have pre-existing high-performing gear. If one is engaging with a smaller company, it implies they have a limited financial allocation. Therefore, establishing such an infrastructure would involve a significant amount of effort, mostly due to the exorbitant cost of the necessary computer system configuration. Fortunately, businesses can depend on cloud-based solutions instead. This will allow businesses to utilize fewer resources and reduce expenses[51,54].

7.2. Lack of sufficient data

In order for an AI campaign to be successful, it is imperative that the data utilized by the AI system is of superior quality. In addition, AI will require a substantial amount of data in order to comprehend the entirety of the subject matter. Furthermore, it is imperative that any pre-existing data sets are free from any errors or inconsistencies. If the data is of poor quality, the AI campaign is likely to fail or have a limited impact due to the unreliability of the data[51,54].

7.3. Insufficient budget

Every competent marketer desires a comprehensive set of technological tools, known as a tech stack, along with other MarTech tools, to enhance their marketing endeavors. AI systems are undeniably boosting that. Therefore, there is a possibility that companies may exceed their allocated budget. Therefore, it is imperative to devise strategies to demonstrate to the leadership team the immense benefits that AI can bring to marketing initiatives. When presenting the arguments, it is important to incorporate both forecasts and extremely pertinent business facts[51,54].

7.4. Lack of skilled professionals

Regrettably, there exists a substantial disparity in AI proficiency. Consequently, even prominent enterprises are still grappling with the development of internal AI-driven marketing solutions. In addition, AI talent necessitates specialized skill sets. That indicates that its growth rate is relatively sluggish in comparison to other roles in the technology industry. Regardless of whether the eLearning firm utilizes pre-built AI marketing solutions, it is imperative to adequately train the staff to effectively handle and appropriately analyze the outcomes[51,54].

7.5. Requires training

This does not pertain to the process of educating and preparing the staff to effectively operate and utilize AI systems. That presents a very distinct challenge. In this context, experts are discussing the process of instructing business AI technologies to synchronize with marketing objectives. Regrettably, the functionality does not resemble a switch that can be easily toggled to promptly get the necessary outcomes. AI necessitates training and a period of time, similar to that of a human, in order to comprehend the broader context, patterns, and customer behavior, and develop expertise. AI can only deliver the desired outcomes if it is equipped with appropriate training[52,54].

7.6. Needs high-quality data

Precise and high-quality data is the essential element for effectively training the AI. To effectively train the AI systems, it is imperative to collect data from appropriate sources and verify its reliability. By utilizing low-quality data, there is a risk of training an inept AI system that lacks comprehension of consumer requirements[52,54].

7.7. Privacy breaches

Contemporary individuals are highly conscious of firms utilizing their data, and regulatory agencies are actively assisting them. When collecting data, it is essential to adhere to the General Data Protection Regulation (GDPR) guidelines to prevent any violations that may result in legal consequences. In order for AI to extract valuable information from campaigns, it is necessary to gather and analyze substantial quantities of lead and customer data, which consequently gives rise to concerns over data privacy and security. Transparency is crucial for building confidence with customers. Therefore, it is imperative to inform them about the methods the company uses to acquire, process, and safeguard their data. After conveying this information, allow them to determine if they wish to continue disclosing their data to the company or not. Implement additional security protocols to protect the client data businesses have gathered in order to prevent any unauthorized access or breaches of data[52,54].

8. Navigating the Advantages and Challenges of AI in Marketing

8.1. Defining clear business objectives

Companies need to begin by precisely articulating their marketing goals. It needs to gain a comprehensive understanding of how AI is in line with business objectives and pinpoint precise domains where AI can provide significant benefits. By establishing a well-defined plan, businesses can give priority to AI solutions that specifically target the business's requirements and prevent unneeded complications.

8.2. Choosing the right AI tools

Companies need to perform comprehensive research to uncover AI technologies and platforms that are in line with their specific marketing needs. It needs to take into account variables such as the simplicity of incorporating, the flexibility to expand, and the suitability of the present systems. Companies need to seek out AI solutions that offer a smooth and uninterrupted user experience, as well as strong and reliable capabilities that specifically address their marketing requirements[55,56].

8.3. Investing in data quality

The quality of the output is determined by the quality of the input. The efficacy of AI is contingent upon the caliber and purity of the data. Companies need to verify that their data is precise, comprehensive, and current. They need to optimize the efficiency of AI algorithms and obtain dependable insights by purifying and arranging their data. It is advisable to consider investing in data analytics solutions that can assist in comprehending the extensive volume of data available to businesses[55,56].

8.4. Emphasizing transparency and privacy

Companies need to ensure clear and open communication with clients regarding their data gathering and utilization procedures. They need to express their dedication to safeguarding data privacy and adhere to the legislation. Establishing trust is essential for developing enduring partnerships. Companies need to effectively convey the information gathering and utilization rules in a transparent manner to establish confidence and guarantee adherence to data privacy regulations. Companies need to conduct routine audits of their AI systems to detect and address any biases or ethical issues that may emerge[55,56].

8.5. Augmenting AI with human expertise

AI is an immensely potent weapon, without question. However, human creativity, empathy, and critical thinking are indispensable and cannot be substituted. Although AI offers significant benefits, it is crucial to achieve a proper equilibrium between automation and human skill. Acknowledge that AI serves as a tool that amplifies human talents, rather than serving as a substitute for human intellect. Harnessing the potential of

AI-generated insights in conjunction with the ingenuity, compassion, and analytical reasoning of the marketing staff. The collaboration between humans and AI can provide impactful outcomes and guarantee the continued effectiveness and empathy of marketing endeavors [55,56].

8.6. Continuously monitoring and evaluating performance

Companies need to consistently oversee and assess the effectiveness of their AI-driven marketing endeavors. They need to establish key performance indicators (KPIs) that are in line with their objectives and consistently monitor them. Companies need to utilize AI analytics solutions to acquire valuable information regarding the effectiveness of marketing campaigns, level of customer interaction, and return on investment. By closely observing and studying the results, companies may make informed adjustments based on data and enhance their AI methods to get superior outcomes[55,56].

9. Conclusions and Implications

9.1. Conclusions

The present study aims to provide an overview of AI in digital marketing, particularly, the technologies, applications, advantages, disadvantages, and its navigation in the marketing landscape. The use of AI technologies in marketing tactics signifies a significant change towards improved and productive client involvement in the fast-changing digital environment of today. The integration of AI, big data, and ML is transforming the way businesses comprehend, engage with, and serve their target markets. AI-powered ML algorithms are leading the way in this shift, utilizing extensive datasets to discover subtle trends in customer behavior. Marketers may now utilize advanced data analysis techniques to forecast customer preferences and tailor their outreach efforts with exceptional precision, using a wide range of data points including browser history and social media interactions. This feature not only improves client satisfaction by providing personalized experiences but also optimizes marketing strategies for the most influence. DL, a subcategory of ML, boosts these skills even further by analyzing intricate data like images and voice inputs. This technology empowers marketers to generate highly customized content and adverts that strongly resonate with individual preferences, ultimately enhancing engagement and conversion rates. Furthermore, the utilization of big data in business has enhanced the implementation of AI in marketing, as big data serves as the fundamental component required by ML algorithms. The ability to collect and combine large amounts of data about customers, products, sales, and other relevant information enables marketers to gain a comprehensive understanding of their target customers. Additionally, there is the advancement of comprehensive category communication strategies that provide the careful consideration of individual promotions with significantly higher return on assets (ROA) and consumer loyalty.

Nevertheless, challenges related to AI in marketing include issues of privacy, data protection, and other inconveniences, as well as the costs connected with infrastructure and acquiring skilled human labor. These challenges can be elucidated by implementing data ethics in businesses, it is feasible to achieve a harmonious equilibrium between the influence of recommender systems and the enhancement of the IT infrastructure, as well as the understanding of payroll workers on the potential of AI, thereby enabling them to effectively leverage its benefits. Thus, it is crucial to carefully choose a strategy that is most effective for operating in the AI-driven marketing landscape. This includes the determination of necessary actions for AI deployment, the selection of suitable tools for integrating AI in a specific company and emphasizing the importance of quality and open data. Therefore, it is crucial to incorporate further AI automation in creative sectors to avoid complete automation without human input. On one hand, the use of AI technologies in marketing is seen as a way to bring about improvements in personalization, automation, and predictive analysis. On the other hand, it is evident that achieving these goals requires consideration of strategic planning, ethical factors, and

dynamic consumer behavior. Pioneering initiatives and proactive measures to integrate AI into organizations establish a scenario in which enterprises are not only prepared to survive in the forthcoming automated business landscape but also poised for financial success.

9.2. Research implications

The outcomes of this study pose multiple practical implications for experts in the field of marketing. To highlight the importance of transparency and clarity, marketing professionals must give priority to openness and clarity in their utilization of AI. This entails ensuring that clients are thoroughly informed about the gathering and utilization of data for targeted advertising purposes. Marketers may cultivate customer trust and mitigate the adverse effects of a lack of transparency by advocating for openness and elucidation. Marketing professionals must formulate ethical principles for the development and execution of AI-driven marketing initiatives. Complying with ethical standards assures adherence to legal norms and is consistent with the organization's beliefs and ideals. In order to reduce the potential dangers linked to AI in marketing, marketers should invest resources in the creation and implementation of systems that can detect bias and enhance privacy. These solutions have the capability to detect and rectify biases in AI algorithms, protect customer privacy, and generate valuable insights from consumer data.

Furthermore, the societal implications of this study highlight the necessity of adopting a comprehensive strategy to tackle the ethical and legal obstacles posed by AI in the field of marketing. This encompasses the implementation of a conscientious innovation framework, the encouragement of ethical leadership, the utilization of ethical decision-making frameworks, and the execution of multidisciplinary research. By implementing these strategies, marketers may responsibly negotiate the intricacies of AI in marketing, cultivate an ethical organizational culture, make well-informed ethical choices, and create effective solutions. These approaches foster public confidence, guarantee the fair allocation of advantages and disadvantages, and reduce any adverse societal effects linked to AI in marketing.

9.3. Limitations and future research

Although this review of AI in marketing has provided interesting insights, it is crucial to acknowledge the research's limitations. This study highlights the key ethical and legal concerns related to the use of AI in the field of marketing. Further research should thoroughly examine potential consequences, including those related to intellectual property, contracts, and licensing. Although this study provides multiple responses and optimal strategies for addressing the mentioned ethical and legal issues, the feasibility and effectiveness of these solutions may vary based on the specific circumstances and sector. Therefore, further investigation and empirical analyses are necessary to assess the suitability and effectiveness of these methods in different scenarios. This research primarily relies on a comprehensive examination of existing literature and may not accurately reflect the perspectives or viewpoints of all individuals involved in AI-driven marketing. Additional research could entail conducting interviews or surveys with marketing experts, customers, and other important stakeholders in order to gain a comprehensive understanding of the practical challenges and potential solutions. Due to the swift pace of technological advancement, the ethical and regulatory implications of AI in marketing are consistently expanding. Therefore, this work should serve as a catalyst for further research and ongoing discussions on this topic.

Conflict of interest

The authors declare no conflict of interest.

References

1. Tan, K. H., & Lim, B. P. (2018). The artificial intelligence renaissance: deep learning and the road to human-level machine intelligence. APSIPA Transactions on Signal and Information Processing, 7, e6.
2. Raihan, A. (2023). Artificial intelligence and machine learning applications in forest management and biodiversity conservation. Natural Resources Conservation and Research, 6(2), 3825.
3. Raihan, A. (2023). An Overview of the Implications of Artificial Intelligence (AI) in Sixth Generation (6G) Communication Network. Research Briefs on Information and Communication Technology Evolution, 9, 120-146.
4. Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. Futures, 90, 46-60.
5. Zhang, Q., Lu, J., & Jin, Y. (2021). Artificial intelligence in recommender systems. Complex & Intelligent Systems, 7(1), 439-457.
6. Lu, V. N., Wirtz, J., Kunz, W. H., Paluch, S., Gruber, T., Martins, A., & Patterson, P. G. (2020). Service robots, customers and service employees: what can we learn from the academic literature and where are the gaps?. Journal of Service Theory and Practice, 30(3), 361-391.
7. Carlson, M. (2018). The robotic reporter: Automated journalism and the redefinition of labor, compositional forms, and journalistic authority. In Journalism in an Era of Big Data (pp. 108-123). Routledge.
8. Quackenbush, C. (2018). A Painting Made by Artificial Intelligence Has Been Sold at Auction for $432,500. Time Magazine. Available at: https://time.com/5435683/artificial-intelligencepainting-christies/ (Accessed: 3 July 2024).
9. Marshall, A. (2018). Is this the world's first good robot album? BBC Culture. Available at: https://www.bbc.com/culture/article/20180112-is-this-the-worlds-first-good-robot-album (Accessed: 3 July 2024).
10. Sterne, J. (2017). Artificial intelligence for marketing: practical applications. John Wiley & Sons.
11. Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. Journal of the Academy of Marketing Science, 48, 24-42.
12. Rust, R. T. (2020). The future of marketing. International Journal of Research in Marketing, 37(1), 15-26.
13. Raihan, A. (2024). A review of the digitalization of the small and medium enterprises (SMEs) toward sustainability. Global Sustainability Research, 3(2), 1-16.
14. Dimitrieska, S., Stankovska, A., & Efremova, T. (2018). Artificial intelligence and marketing. Entrepreneurship, 6(2), 298-304.
15. Verma, S., Sharma, R., Deb, S., & Maitra, D. (2021). Artificial intelligence in marketing: Systematic review and future research direction. International Journal of Information Management Data Insights, 1(1), 100002.
16. Yang, X., Li, H., Ni, L., & Li, T. (2021). Application of artificial intelligence in precision marketing. Journal of Organizational and End User Computing (JOEUC), 33(4), 209-219.
17. Javaid, M., & Haleem, A. (2020). Critical components of Industry 5.0 towards a successful adoption in the field of manufacturing. Journal of Industrial Integration and Management, 5(03), 327-348.
18. Hermann, E. (2022). Leveraging artificial intelligence in marketing for social good—An ethical perspective. Journal of Business Ethics, 179(1), 43-61.
19. Van Esch, P., & Stewart Black, J. (2021). Artificial intelligence (AI): revolutionizing digital marketing. Australasian Marketing Journal, 29(3), 199-203.
20. Wisetsri, W. (2021). Systematic analysis and future research directions in artificial intelligence for marketing. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(11), 43-55.

21. Forrest, E., & Hoanca, B. (2015). Artificial intelligence: Marketing's game changer. Trends and innovations in marketing information systems, 45-64.

22. Dumitriu, D., & Popescu, M. A. M. (2020). Artificial intelligence solutions for digital marketing. Procedia Manufacturing, 46, 630-636.

23. Gkikas, D. C., & Theodoridis, P. K. (2019). Artificial intelligence (AI) impact on digital marketing research. In Strategic Innovative Marketing and Tourism: 7th ICSIMAT, Athenian Riviera, Greece, 2018 (pp. 1251-1259). Springer International Publishing.

24. Saura, J. R., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2021). Setting digital marketing in artificial intelligence-based CRMs: A review and directions for future research. Industrial Marketing Management, 98, 161-178.

25. Gamble, J., Gilmore, A., McCartan-Quinn, D., & Durkan, P. (2011). The Marketing concept in the 21st century: A review of how Marketing has been defined since the 1960s. The marketing review, 11(3), 227-248.

26. Kotler, P. (2009). Marketing management. Pearson Education India.

27. Chatterjee, S., Ngyun, B., Ghosh, S. K., Bhattacharjee, K. K., & Chaudhuri, S. (2020). Adoption of artificial intelligence integrated CRM system: An empirical study of Indian organisations. The Bottom Line, 33(4), 359–375.

28. Wirth, N. (2018). Hello marketing, what can artificial intelligence help you with?. International Journal of Market Research, 60(5), 435-438.

29. Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., Dahistrom, P., Henke, N., Trench, M. (2017). Artificial intelligence: The next digital frontier. McKinsey&Company

30. Nanayakkara, N. (2020). Application of artificial intelligence in marketing mix: A conceptual review. International Conference on Business and Information (ICBI), (pp. 530–542). Srilanka.

31. Shaik, M. (2023). Impact of artificial intelligence on marketing. East Asian Journal of Multidisciplinary Research, 2(3), 993-1004.

32. Arumugam, T., Arun, R., Natarajan, S., Thoti, K. K., Shanthi, P., & Kommuri, U. K. (2024). Unlocking the Power of Artificial Intelligence and Machine Learning in Transforming Marketing as We Know It. In Data-Driven Intelligent Business Sustainability (pp. 60-74). IGI Global.

33. Influencer Marketing Hub. (2023). Top AI Marketing Statistics to Leverage Your Marketing Strategy. Available at: https://influencermarketinghub.com/ai-marketing-statistics/ (Accessed: 3 July 2024).

34. Raihan, A. (2023). A comprehensive review of artificial intelligence and machine learning applications in energy consumption and production. Journal of Technology Innovations and Energy, 2(4), 1-26.

35. Biju, A. K. V. N., Thomas, A. S., & Thasneem, J. (2024). Examining the research taxonomy of artificial intelligence, deep learning & machine learning in the financial sphere—a bibliometric analysis. Quality & Quantity, 58(1), 849-878.

36. Improvado. (2023). AI Your Marketing Analytics: 5 Innovative Ways to Leverage AI for Deeper Data Insights. Available at: https://improvado.io/solutions/marketers (Accessed: 3 July 2024).

37. Marketing AI Institute. (2023). Deep Learning in Digital Marketing. Available at: https://www.marketingaiinstitute.com/ (Accessed: 3 July 2024).

38. Sentien Technologies. (2023). Sentiment Analysis: How AI Reads Between the Lines. Available at: https://www.meltwater.com/en/blog/analyse-sentiment-with-media-intelligence (Accessed: 3 July 2024).

39. Raihan, A. (2023). A Comprehensive Review of the Recent Advancement in Integrating Deep Learning with Geographic Information Systems. Research Briefs on Information and Communication Technology Evolution, 9, 98-115.

40. Hu, H., Wen, Y., Chua, T. S., & Li, X. (2014). Toward scalable systems for big data analytics: A technology tutorial. IEEE access, 2, 652-687.

41. Gandomi, A., & Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. International journal of information management, 35(2), 137-144.

42. Roski, J., Bo-Linn, G. W., & Andrews, T. A. (2014). Creating value in health care through big data: opportunities and policy implications. Health affairs, 33(7), 1115-1122.

43. IBM. (2024). What is Big Data?. Available at: https://www.ibm.com/topics/big-data-analytics (Accessed: 3 July 2024).

44. Nair, K., & Gupta, R. (2021). Application of AI technology in modern digital marketing environment. World Journal of Entrepreneurship, Management and Sustainable Development, 17(3), 318-328.

45. Blut, M., & Wang, C. (2020). Technology readiness: a meta-analysis of conceptualizations of the construct and its impact on technology usage. Journal of the Academy of Marketing Science, 48, 649-669.

46. Stefanini Group. (2021). Artificial Intelligence Applications In Digital Marketing That Companies Are Using. Available at:
  http s://stefanini.com/en/insights/articles/artificial-intelligence-applications-in-digital-marketing-compan (Accessed: 3 July 2024).

47. Aritic. (2023). Top 14 Super Applications of AI in Marketing. Available at: https://aritic.com/blog/aritic-pinpoint/applications-of-ai-in-marketing/ (Accessed: 3 July 2024).

48. Bulearca, M., & Tamarjan, D. (2010). Augmented reality: A sustainable marketing tool. Global business and management research: An international journal, 2(2), 237-252.

49. Statista. (2019). 4 Positive Effects of AI Use in Email Marketing. Available at: https://www.statista.com/chart/17222/artificial-intelligence-marketing/ (Accessed: 3 July 2024).

50. Erokhina, T. B., Mitko, O. A., & Troilin, V. V. (2018). Digital marketing and digital logistics in consumer communication. European Research Studies, 21, 861-867.

51. Elearning Industry. (2023). The Pros And Cons Of AI In Marketing: Focusing On The eLearning Niche. Available at:
  https://elearningindustry.com/advertise/elearning-marketing-resources/blog/pros-and-cons-of-ai-in-marketing-tips-for-elearning-marketers (Accessed: 3 July 2024).

52. Unlayer. (2023). AI in Marketing: Benefits, Challenges, Use Cases and More. Available at: https://unlayer.com/blog/ai-in-marketing (Accessed: 3 July 2024).

53. Hussain, H. N., Alabdullah, T. T. Y., Ries, E., & Jamal, K. A. M. (2023). Implementing Technology for Competitive Advantage in Digital Marketing. International Journal of Scientific and Management Research, 6(6), 95-114.

54. Veleva, S. S., & Tsvetanova, A. I. (2020). Characteristics of the digital marketing advantages and disadvantages. In IOP Conference Series: Materials Science and Engineering (Vol. 940, No. 1, p. 012065). IOP Publishing.

55. SurveySparrow. (2024). The Pros and Cons of AI in Marketing: An Analysis. Available at: https://surveysparrow.com/blog/the-pros-and-cons-of-ai-in-marketing/ (Accessed: 3 July 2024).

56. Moradi, M., & Dass, M. (2022). Applications of artificial intelligence in marketing: Challenges and future directions. Industrial Marketing Management, 107, 300-314.