



# Strategic Framework for Leveraging Artificial Intelligence in Future Marketing Decision-Making



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**Abstract:** Disruptive technologies such as the big data analytics, blockchain, Internet of Things, and artificial intelligence have each impacted how businesses operate. The most recent example of disruptive technology is artificial intelligence (AI), which has the most potential to revolutionize marketing completely. Practitioners worldwide are searching for artificial intelligence (AI) solutions most suited for their marketing functions. Artificial intelligence can provide marketers with assistance in a variety of ways to boost client satisfaction. This article looks at the exciting new developments in artificial intelligence (AI) and marketing that have been occurring recently, it examines the latest developments in marketing using artificial intelligence (AI). These breakthroughs encompass predictive analytics for analyzing customer behaviour, integrating chatbots to enhance customer support, and implementing AI-driven content personalization tactics. This article also covers the horizons and problems of artificial intelligence and marketing, the precise applications of AI in a range of marketing segments, and their impact on marketing sectors. Additionally, this article examines the particular applications of AI in marketing.

**Keywords:** Artificial intelligence; Marketing; Disruptive technologies; Decision making

## 1 Introduction

Disruptive technologies [1] have been changing the face of marketing for quite some time now. In today's rapidly changing world, new technologies are emerging at a breakneck pace, forcing marketers to adapt and evolve their strategies to stay ahead of the curve [2]. One of the most significant disruptive technologies in marketing is AI [3]. AI can transform the marketing industry by providing powerful tools for data analysis, predictive modeling, and personalized marketing. For example, AI can help marketers create targeted advertising campaigns based on individual customer preferences and behaviors, leading to more effective marketing efforts and higher conversion rates [4].

AI has evolved into a potent marketing tool [5]. The ability of AI to analyze large quantities of data, make predictions, and automate routine tasks has transformed the design and execution of marketing campaigns [6]. This paper will examine the function of AI in marketing and its impact on the industry. AI's ability to analyze data is one of the primary advantages of AI in marketing. With the assistance of AI, marketers can obtain insights into customer behavior, which can be applied to developing effective marketing strategies [7]. AI can analyze data from social media platforms, for instance, to determine how consumers interact with a brand and its products [8]. This data can then be used to develop targeted advertising campaigns and customized consumer experiences.

AI also automates mundane duties, allowing marketers to devote their time to more strategic endeavors [9]. AI can create personalized email marketing campaigns, generate content, and recommend products to consumers [10]. By automating these duties, marketers can work more efficiently, and businesses save money by not hiring additional staff to complete them manually. AI's capacity to enhance the consumer experience is a significant marketing advantage [11]. Chatbots, for instance, are gaining popularity as a means for businesses to respond immediately to consumer inquiries [12]. Chatbots utilize AI to comprehend natural language and provide appropriate responses, reducing the workload of customer service teams and enhancing response times [13].

Additionally, AI can be utilized to optimize digital advertising campaigns [14]. AI can determine the most effective ad targeting and messaging strategies by assessing past campaigns and identifying trends. This can result in more successful campaigns with increased conversion rates and return on investment. Nevertheless, the use of AI in marketing presents some obstacles. Privacy and security of consumer data are primary concerns [15]. As AI algorithms rely on data to function, there is a risk that sensitive consumer data could be exploited or exposed to security risks. This requires organizations to prioritize data security and regulatory conformance [16].

Another area for improvement is the possibility of over-reliance on AI. Although AI can automate routine tasks and provide valuable insights, it cannot replace human creativity and intuition [9]. A greater reliance on AI could stifle innovation in marketing campaigns and limit the ability of businesses to differentiate themselves in a competitive marketplace. To summarize, AI has become an indispensable marketing tool, providing insights, automating routine duties, and enhancing the customer experience [17]. AI in marketing has enabled businesses to work more efficiently, make more informed decisions, and optimize their marketing efforts. However, there are obstacles to overcome, such as data privacy and security concerns and possibly overreliance on AI. To achieve the best possible results, businesses must balance AI and human creativity as the marketing field evolves [18] (see Table 1 and Figure 1).

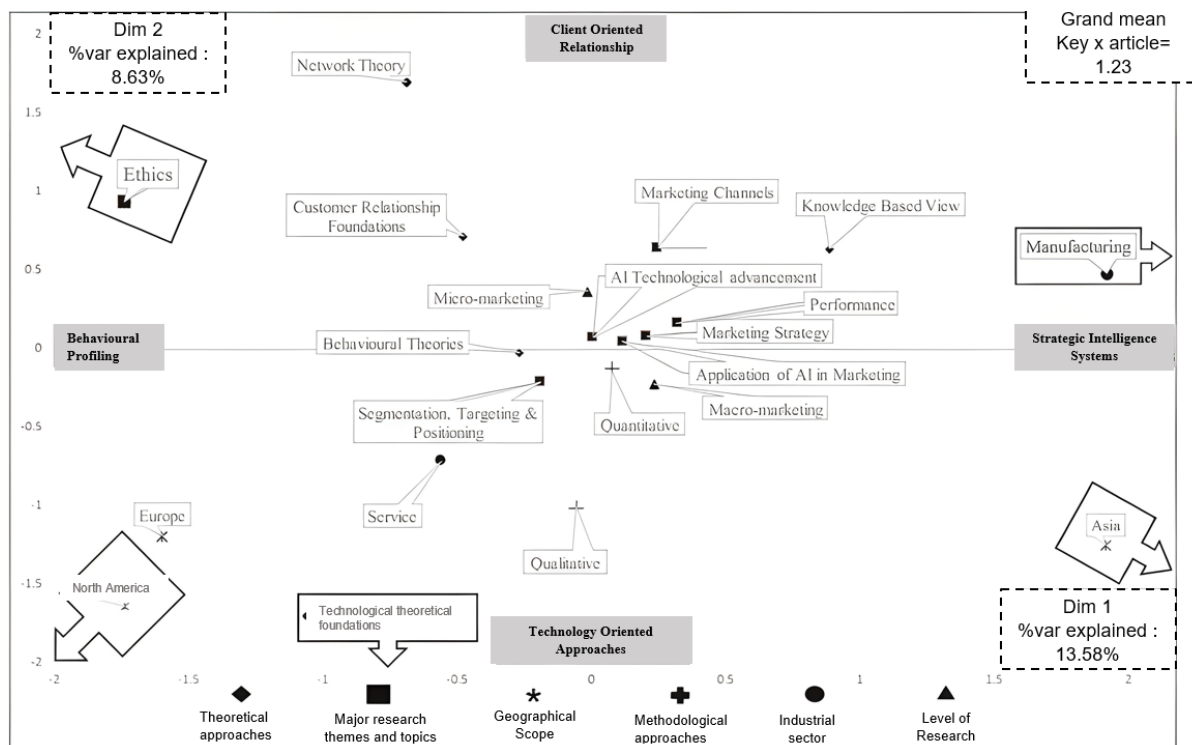


Figure 1. Map of AI and marketing research field

Table 1. Descriptives that represent the axis' poles

Axes	Descriptor	Descriptions	Interesting Research
X Left	Behavioral Profiling	Behavioral Theories; Segmentation, Targeting & Positioning; Ethics	[19–22]
X Right	Systems for Strategic Intelligence	Marketing Strategy; AI Technological Advancement; Knowledge-Based View	[21, 22]
Y Upper	Relationship Focused on the Client	Customer Relationship Foundations; Marketing Channels; Micro-Marketing	[22–24]
Y Lower	Technology Orientated Approaches	Technological Theoretical Foundations; Macro-Marketing, Services	[5, 25, 26]

## 1.1 Research Problem

Traditional advertising has given way to online platforms intended to improve user experience and customer satisfaction [3]. Marketing has developed from this evolution. There has been significant progress made in technological areas. It is only a matter of time before AI systems emerge as autonomous competitors in the natural or digital marketplace. This study concentrates mainly on the following areas of inquiry:

- An introduction to AI and an explanation of why AI is important in marketing.
- To investigate the many ways in which marketers are utilizing AI.
- To investigate the function of AI in the overall marketing strategy.
- To address the significant roles that AI plays in marketing applications.
- Provide a list of both the benefits and drawbacks of using AI in marketing.

## 2 Literature Review

Researchers are looking to explore how Innovations in technology have an effect on businesses' ability to use their expertise to meet the demands of their customers and provide them with products and services [21]. Marketing research on digital and technology growth has moved at a breakneck rate [27]. Research that has already been conducted in the marketing field is full of studies that analyze how various technologies can be applied to improve marketing performance and their respective consequences. However, research at the intersection of marketing and AI has only received more attention in recent years. Recent research requests have spurred increased investigation of AI-related subjects and their applications in marketing [9]. This has only begun to happen in the last few years. Keeping this in mind, we accept the concept of AI as "computational agents that act intelligently" [28]. This idea departs from conventional wisdom, which has traditionally held that the scope of AI is restricted to computers capable of displaying intelligence on par with that of humans. In this regard, we agree with the concept of marketing AI that states it is "the development of artificial agents that, given the information they have about consumers, competitors, and the focal company, suggest and/or take marketing actions to achieve the best marketing outcome" [29].

From a tactical point of view, AI is becoming an increasingly significant marketing component. Companies like Rare Carat, Google, Under Armor, and Spotify are among the growing number of businesses improving their performance by adopting AI-based platforms (such as IBM Watson Amazon Lex, or Google Assistant). This trend is expected to continue in the foreseeable future [30]. This technique improves their market forecasting and automation and their contact with their customers across all of their marketing channels. Because of this, AI has been acknowledged as the most impactful technology for business, and its market value is projected to increase from \$10.1 billion in 2018 to \$126 billion by 2025 [31]. A recent poll among business leaders indicated that one of the most critical areas for deploying AI in marketing and sales, with 24% of US organizations already utilizing AI and 60% projected to utilize it by 2022 [32]. In addition, according to the workplace trends list compiled by SIOP [33], AI is seen as the most crucial development in the workplace.

Research has shown that the application of AI in marketing has been successful, with significant contributions appearing, particularly after 2017. After a period of relative quiet spanning over two decades, AI has recently acquired substantial attention in the scientific world [34, 35]. This is even though academic interest in AI extends back to the 1980s, with an emphasis on expert systems and robotics. The rise of Big Data, improved access to processing power, and the evolution of AI approaches and technical enablers are the three primary elements ascribed to this revived interest in marketing among researchers and practitioners [36, 37]. The confluence of these elements is directly responsible for the rise in the popularity of AI in marketing over the past several years.

## 3 Research Methodology

### 3.1 Theoretical Foundations

#### 3.1.1 Customer relationship management (CRM) fundamentals

Customer relationship management, or CRM, refers to utilizing processes and systems to cultivate profitable and long-term connections with individual customers [38]. It is more expensive for organizations to gain new consumers than maintain relationships with the ones they already have. Thus it has grown increasingly vital in recent years. AI can assist in improving customer relationships by predicting which customers are most likely to respond to marketing activities. Customer relationship management (CRM) has emphasized using new technologies and approaches to achieve this goal. The usage of data that has been acquired and interactive features can help to promote customer relationships, as well as co-creation and co-production. AI is essential in translating data into marketing insights, with conversational agents demonstrating intelligence akin to humans, improving customer service and overall effectiveness [39].

It is crucial to consider two spectrums to describe AI's value inside CRM. These spectrums are the service encounter characteristics and the customer features that need to be regarded as permanent adjusters of conversational agents. Service encounters are essential to understanding how AI may help in various contexts, from customer profiling

to CRM management activities, and ultimately optimizing the customer experience across all touchpoints [40]. These contexts include anything from customer profiling to CRM initiatives [41]. The many stages of the sales funnel can benefit from advanced marketing intelligent systems, which can increase the customer lifetime value by boosting loyalty programs and one-to-one marketing activities.

It is essential to regularly update the data that has been collected in order to successfully manage interactions with customers and take into consideration the ongoing adaptation of bots [42]. An AI-powered credit card fraud detection system had difficulty keeping up with customers' unpredictable actions during the COVID-19 outbreak. According to the algorithms currently in place, specific customers were exhibiting peculiar consumption patterns regarding particular goods and services, which did not fit with the predicted behavior [19]. AI-powered marketing systems must modify and adapt when client behavior shifts, learning from new experiences and circumstances [22].

### 3.1.2 Behavioral theories

The goal of marketing science is to understand and forecast the behavior of consumers regarding the items they purchase; however, the rise of new customers who are aware and demanding, combined with the pandemic of COVID-19 [43, 44], has created extra obstacles for marketers. Using AI in conjunction with analyzing user data found on the internet, namely digital footprints and web facilities, can help develop successful goods and services. AI can recognize patterns of behavior and deliver insights, which can assist marketers in making strategic decisions and reducing the rate of customer turnover. To increase the number of times, potential customers use AI devices, these products must provide both practical value and a higher hedonic value. It has been determined that AI's influence on the so-called "psychology of automation" might lead to users becoming overconfident in the technology's capabilities [45]. There is still a place for human judgment, and it is essential to ensure that AI is regarded as an ethical problem-solver requiring commitment from all hierarchical levels inside an organization. In order to make effective use of marketing tools that AI powers, those tools must be in line with customers' perceptions, and the managerial decision-making process should be founded on an effort to understand customers [16, 20].

### 3.1.3 Knowledge-based view

The knowledge-based view, also known as the KBV, views knowledge to be an exceptional resource, one that may be either explicit or tacit [46]. Explicit knowledge can be easily passed on to others through systematic language, whereas tacit knowledge is more difficult to express and decode. Within the KBV, there has been a significant interest in knowledge integration, which refers to the process of applying or sharing specific knowledge to create new knowledge [47]. Researchers have developed expert systems and other knowledge-intensive computer programs to manage knowledge and find solutions to issues. Knowledge management systems, often known as KMS, have been developed as a foundational component of AI. These systems provide the potential to ease the integration of knowledge. On the other hand, AI applications are typically better suited for acquiring explicit knowledge. On the other hand, tacit information, which can be acquired through experiential learning, insight, intuition, the senses, or implicit rules of thumb, constitutes a considerable barrier to the application of AI technology [48].

Regardless of this, AI applications have successfully acquired customer knowledge and enabled businesses to create meaningful content for customer journeys through marketing automation [28]. Predictive models' ability to analyze prospective customers' purchase propensity and find high-quality leads can contribute to increased marketing efficiency. Knowledge-based technologies, such as semantic computing, can infer conceptual and affective information linked with natural language, and natural language processing can also achieve gender classification of text [49]. The KBV, on its whole, sheds light on the significant part that automation plays in producing, codifying, transferring, and applying knowledge. This, in turn, enables a more comprehensive awareness of the requirements and behaviors of consumers across all devices, platforms, and products [42].

### 3.1.4 Network theory

Networks are increasingly important in marketing and other disciplines due to their ability to explain social phenomena and their interdisciplinary nature. Networks consist of actors who have relationships or interactions with each other [50]. A node's position in a network determines its opportunities and constraints, which are vital to its outcomes. Centrality is a widely studied characteristic of networks that help identify a node's importance or prominence in a network. Centrality measures have emerged as powerful predictors of a person's influence in a network, making them helpful in decision support systems applications [51].

Researchers in the marketing field have used networks to investigate the effect of customer networks on the efficacy of word-of-mouth advertising, decisions regarding the purchase of services, consumer equity, and the spread of products across international borders. One of the primary areas of concentration has been locating people with extensive networks of connections who wield significant power over others. It has been demonstrated that central people are essential in information dissemination, which is why centrality measurements are efficient predictors of impact [52].

An example is an application that uses web topology to indicate a page's value. One such application is Google's search engine powered by the PageRank algorithm. It has been shown through computational tests conducted on both

natural and artificial networks that influencers considerably increase the amount of message spread. The amount of information about a subject spread throughout a network can be used as a proxy for calculating a person's level of social influence. Researchers have used social media platforms such as Twitter to evaluate a user's influence, notably in viral marketing [53].

The introduction of competitive influence maximization, in which individuals compete with one another to become influencers, is an intriguing new development in this field of research. The Competitive Influence Improvement algorithm can determine the minimum number of influential nodes inside an influencer's network. The increasing use of AI applications, such as algorithms, to detect impact patterns affecting customer decisions and enterprises' product offers underscores the significance of networks in marketing and AI [42].

### 3.2 Major Research Themes and Topics

Marketing has recently seen an increase in the use of AI applications due to rapid advancements in information technology. There needed to be more applications of intelligent systems in marketing in the past, but the 21st century has brought about significant changes [54]. AI is now used in different circumstances, such as automated fact-checking in journalism and chatbots on e-commerce websites. The study utilized multiple sources and systematic search methods to identify the reference points of AI in marketing. Content analysis was used to identify four important scientific topics that align with the technological advancements and AI application in marketing while considering potential dangers to user privacy and increased user susceptibility [55].

#### **Theme 1: Marketing channels**

The marketing channels act as the critical link between the producers and the customers, allowing them to trade goods and services [36]. The marketing industry has recognized the enormous potential for improvement offered by AI technologies and applications, such as voice assistants and robots. This is because AI can efficiently receive and interpret data, learn from it, and intelligently apply it. Recent technology advances have piqued the interest of academics and industry practitioners, which has led to the incorporation of AI into various retail organizations, including North Face, Amazon, and 1-800-Flowers.com.

AI in marketing channels can assist organizations in recognizing the demographics and psychographics of their customers, paving the way for improved customer profiling and forecasting of consumer preferences. AI can also help with physical distribution, improving the whole consumer experience by providing alternatives to the traditional methods of helping customers make purchases. As a result of the COVID-19 epidemic, there has been a spike in demand for marketing channel improvements. This is because customers must stay in their homes and visit physical stores [56].

Access to data from both internal and external sources is made possible by AI because of its capabilities in language processing and picture identification, as well as the leverage of solid tools and algorithms. This function offers a technology that may be used on-premise at no additional cost and serves as the foundation for improved dynamic attribution and online targeting. AI can construct databases through semantic recognition, which can be mined by marketers for information and used to gain additional knowledge about customers. This strategy provides valuable insights into the 'new normal' landscape generated by the COVID-19 epidemic, as indicated by unexpected business measures and customer behavior [22].

#### **Theme 2: Marketing strategy**

The application of intelligent algorithms to marketing strategies is revolutionizing how firms function. New opportunities and paradoxes have emerged in the marketing field due to the development of AI technology. These include the need to balance massification and personalization, combine luxury and premium brands with the mass market, and combine niche and big markets via e-commerce. AI solutions handle various challenges, from strategic alignment to product development, communication, pricing, sales management, advertising, and tailored mobile marketing strategies. The constant evolution of AI technology is changing the strategies for the Future of marketing, with AI solutions being used to tackle various problems [56].

In service sectors, several kinds of AI, such as analytical, mechanical, and intuitive AI, are increasingly being acknowledged as sources of innovation and enablers of better productivity levels. A more mechanical form of AI should be used for routine tasks in order to pursue a cost leadership advantage, The pursuit of qualitative management advantages should be maintained using a more analytical form of AI for duties involving learning with data, and a relationship advantage should be pursued using a more intuitive form of AI for tasks that rely on experiential learning. The type of AI used should depend on the task at hand [57].

It is necessary to address the ethical challenges and data protection issues associated with AI, despite AI bringing significant benefits. The General Data Protection Regulation (GDPR) and prior customer agreement are prerequisites for data-collecting activities, including speech recognition and other methods. In order to alleviate customer uncertainty and prevent speciesism against AI, practitioners need to adhere to ethical rules and prioritize data protection [40].

In a nutshell, AI technology is reshaping marketing tactics while presenting new chances for companies. Businesses



may implement various forms of AI to improve the efficiency of their service tasks and increase their overall output. However, ethical concerns and protecting users' data must take precedence if businesses want customers to believe in AI technology [58].

### **Theme 3: Performance**

AI and marketing have been the subject of academic research, studied from two different approaches. The first viewpoint draws parallels between the capabilities of AI tools and techniques and those of more conventional approaches. This contrast is beneficial for resolving the trade-off between precision and expense, as mentioned in the previous sentence. It has been discovered that AI is superior to human performance in terms of outcome prediction due to its capacity to manage intricate interactions between inputs and outputs. The second viewpoint examines AI's influence on performance in terms of its role as an outcome variable. Businesses using AI to enhance their marketing and sales tactics can result in a durable advantage over the competition [22]. AI can benefit marketers in several ways, including assessing the net customer lifetime value and decision support systems. As has been proved in the hospitality and insurance industries, AI may also be utilized to increase the production of value for customers. Businesses can improve their sales funnels by predicting what clients want to buy, thanks to marketing solutions powered by AI [36].

Additionally, AI can assist businesses in predicting shifts in consumer demand and trends, improving a company's overall sales performance. Several AI techniques, such as Support Vector Machines and Neural Networks, can be utilized for sales forecasting. AI has enormous potential to improve the results of firms' marketing and sales efforts [59].

### **Theme 4: Segmentation, Targeting, and Positioning (STP)**

Recent advances in STP research have focused on addressing issues related to managing a company's customer base through various variables such as demographics, psychographics, geographic considerations, and behavioral segmentation. These are all areas in which AI is beneficial. Acquiring new clients, segmenting existing clients according to their preferences, and improving sales effectiveness while targeting existing clients have received much attention from marketing academics and professionals [19]. These advancements in the industry make it possible to provide better service to a wider variety of customer cohorts and generational subgroups, to predict customer profile transitions and post-demographic consumption better, and to better place the appropriate proposition within the appropriate customer subgroup. In order to improve the placement of brands, researchers have been looking into methods that use several options to model and analyze the decisions made by companies about their brands [9].

The accurate recommendations that Google's algorithms provide due to the millions of unintentionally wrong entries constitute one of the most impressive demonstrations of the strength of AI. Much of the published work associated with this line of inquiry has been on neural networks (NN) and artificial neural networks (ANN). One sort of AI computing is called a neural network. It is based on a nonlinear, nonparametric regression model that attempts to mimic the structure and function of the human brain. The ability of neural networks to estimate complex associations is the primary benefit that they offer. Therefore, when classifying potential customers for market segmentation, they are more accurate than discriminant analysis and logistic regression. When it comes to estimating brand share, neural networks have the potential to perform better than multinomial logit [42].

Neural networks have been utilized in several studies, including the prediction of Mobile telecommunications industry consumer churn by using contractual subscriber information and changes in call patterns, the forecasting of market growth, and the creation of an analytical model with three phases by utilizing a variety of methods, including decision trees (DT) and NN, to facilitate customer acquisition in B2B environments. Because of these developments in STP research, marketers can better serve their various customer segments, anticipate future customer behaviors, and position their products and services in the appropriate customer segment with the assistance of AI [60].

## **3.3 Multiple Benefits of AI**

AI [21] is an umbrella term for technologies that make it possible for machines to learn, reason, and carry out activities that generally require human intelligence. AI has evolved as a game-changing technology during the past few years, offering significant benefits across various industries. In this piece, we will discuss some of the most essential advantages AI offers.

In the first place, AI can bring greater efficiency and production. Machines do not experience the same limitations as people, such as weariness, boredom, or feelings of emotion. AI enables machines to labor persistently and continuously, doing repetitive jobs without making mistakes. This feature has substantial repercussions for various industries, including manufacturing, logistics, and transportation, where automation can lead to a more streamlined and effective workflow [61].

Additionally, AI can facilitate improved decision-making. AI enables machines to evaluate large volumes of data and recognize patterns people might overlook. This skill is helpful in various industries, including finance, where AI may assist in analyzing financial data and making more informed investment decisions. Additionally, AI can be utilized in the medical field to analyze patient data and assist physicians in arriving at more precise diagnoses.

AI's capacity to improve customer experience is another crucial advantage of this technology. Businesses can now

provide more individualized and effective customer support by utilizing chatbots driven by AI. Chatbots can give customer service around the clock and quickly handle difficulties, increasing customer satisfaction rates. In addition, AI can evaluate client data and make personalized product recommendations, which can lead to increased sales and customer loyalty [62].

Additionally, AI has the potential to change the educational landscape completely. Teachers can customize students' educations and pinpoint areas in which pupils require additional assistance by using tools driven by AI. AI can also be used to analyze student data and provide feedback to teachers, enabling the teachers to adjust their teaching techniques per the findings [63].

The subject of science is another one in which AI has the potential to make essential contributions. Researchers can now examine massive volumes of data and recognize patterns that the naked eye might miss. This is made possible by AI. The ability to do so has led to several ground-breaking discoveries in astronomy, where AI has assisted in identifying new planets and galaxies.

Lastly, AI can make essential contributions to society. The advent of AI has made it possible for computers to carry out perilous labor, such as search and rescue missions in areas ravaged by natural disasters. AI can help increase sustainability by minimizing waste and optimizing energy use [64].

In conclusion, AI is a game-changing technology that benefits various industries. AI can alter how we live and work in various ways, including higher efficiency and productivity, improved decision-making, and improved customer experiences. It is necessary, however, to ensure that AI is developed and deployed ethically and responsibly, with applicable rules in place, to ensure that the benefits of AI are maximized while simultaneously reducing any potential negative repercussions [9].

### 3.4 Current Limitations of AI

AI has made remarkable progress in the last few years, with applications ranging from speech recognition and natural language processing to image and video recognition. Despite the impressive advances, AI still faces several challenges and limitations that limit its full potential. In this article, we will discuss some of the current limitations of AI [20, 55, 65].

*Lack of Creativity:* AI systems are designed to solve specific problems and are very good at performing repetitive tasks with high accuracy. However, they still lack the creativity and imagination of humans. They cannot come up with new ideas or solutions that go beyond their programming.

*Limited Understanding of Context:* AI systems can analyze vast amounts of data and identify patterns and correlations, but they need help understanding the context in which the data was generated. They cannot infer meaning from a situation or consider subtle cues a human would easily recognize.

*Data Bias:* The presence of biased data in AI systems can have profound societal implications as it reinforces and perpetuates pre-existing imbalances. AI systems can potentially magnify biases related to gender, race, and socioeconomic status present in the training data, leading to unjust outcomes. For example, biased AI systems can significantly impact several domains, such as recruiting procedures, loan sanctioning processes, and determinations made within the criminal justice system. This can perpetuate and strengthen existing discriminatory practices. Scholars emphasize various bias causes, including unconscious bias, sampling bias, and overfitting to training data. The mitigation of AI bias necessitates a comprehensive approach that integrates technical remedies with an understanding of societal prejudices and the utilization of complete training data. Current research endeavors are focused on developing algorithms that are more resilient to biases and that actively promote fairness in the decision-making processes of AI. Efforts aimed at mitigating prejudice in AI systems encompass a range of strategies that entail ethical concerns, the inclusion of diverse teams, and the promotion of algorithmic transparency. These measures are implemented to ensure that AI fosters equitable growth.

*Lack of Emotional Intelligence:* AI systems can recognize emotions in text and speech but struggle to interpret facial expressions or body language. They cannot understand the nuances of human emotion or respond appropriately to complex emotional situations.

*Security and Privacy Concerns:* As AI systems become more widespread, there are concerns about data security and privacy. AI systems can collect vast amounts of data; if it falls into the wrong hands, it can be used for nefarious purposes. Data security problems related to AI have brought attention to the urgent requirement for safeguarding privacy. One such instance involves data breaches in facial recognition technology, which resulted in the exposure of personal information and compromised user privacy. The mismanagement of sensitive patient data in the healthcare sector presents ethical quandaries. Preventive measures comprise implementing robust encryption protocols, enforcing stringent access control mechanisms, and adopting ethical principles in designing and developing AI systems. Trusted approaches for data anonymization play a crucial role in mitigating the risk of exposure. Legislative endeavors, such as implementing privacy laws and regulations, play a crucial role in ensuring the protection of personal data and establishing the responsibility of organizations in the event of data breaches. The research primarily centers around the augmentation of transparency, explainability, and bias detection in AI systems, aiming to ensure the

responsible deployment of AI technologies. The resolution of AI security challenges requires the participation of multiple disciplines, including technology developers, policymakers, and ethicists. This collaborative effort aims to construct a complete framework that places utmost importance on safeguarding data privacy and security in the context of AI applications.

*Limited Explainability:* AI systems can generate accurate predictions, but they need help explaining how they arrived at their decisions. This lack of transparency can be a significant challenge in critical applications such as healthcare or finance, where the consequences of incorrect decisions can be severe.

*Hardware Limitations:* AI systems require significant computing power to process vast data and generate accurate predictions. This requirement can be a significant obstacle for organizations that need more resources to invest in high-performance computing infrastructure.

*Cost and Complexity:* Implementing AI systems can be expensive and complex, requiring significant investments in hardware, software, and personnel. These costs can be prohibitive for smaller organizations, limiting their ability to leverage AI for their business. The retail sector illustrates the considerable expenses and intricate nature of implementing AI technologies. Consider a hypothetical scenario wherein small-scale retail enterprises endeavor to incorporate AI-based inventory management systems. To accomplish this objective, acquiring specialized AI software is vital, improving the physical infrastructure to process and analyze data effectively and employing competent individuals with the necessary expertise to create, install, and sustain the system. The financial burdens associated with various expenditures, such as software licensing, IT infrastructure, and employee pay, can pose significant challenges for smaller enterprises with constrained resources. Moreover, the necessity for continuous upgrades, implementation of security measures, and the possibility of encountering technical difficulties can result in supplementary expenditures. Consequently, although the potential advantages, such as enhanced inventory management and more customer satisfaction, these cost obstacles can dissuade smaller enterprises from ultimately harnessing AI technology for their operational needs.

In conclusion, AI has made impressive progress in recent years, but it still faces several challenges and limitations that must be overcome. Addressing these limitations will require significant research and development investments and collaboration between academia, industry, and policymakers. By addressing these limitations, we can unlock the full potential of AI and create a future where machines and humans work together to solve complex problems.

#### **4 Proposed Suggestion**

Because of the enormous amount of data produced daily, the difficulty of making judgments, and the requirement for immediate results, we have reached a stage where we need to design a model that can be implemented in as many different digital marketing strategies as practically possible. In order to accomplish that, we need to collect the necessary information and choose the most effective next step. The majority of marketing strategies make use of big data, which consists of a large number of features and cases as well as complex algorithms for decision-making and optimization. Upon request, we would require a model that sorts data into categories and then optimizes those categories to improve accuracy [2]. By integrating the business plan with the right AI, the application can assist digital marketers in acquiring appropriate shareholders.

It is possible to include AI in the content strategy that a corporation is already doing. The term “artificial intelligence technology” (AI technology) refers to a wide range of applications, some of which are computer vision, deep learning, natural language processing, and machine learning. Its capacity to perform data analysis, as well as the analytical tools it provides, has a considerable impact on the digital marketing environment. Almost every company that does business in the digital realm has access to publicly available algorithms and machine learning services. As a result, businesses have a much easier time collecting data and gaining insights from interpreting the behavior of their customers and developing predictive models for analysis. By linking the company plan with the right AI, the application can assist digital marketers in obtaining the necessary permits from the relevant stakeholders. The expectation of instant gratification from automatic protection against digital abuse has also become important. Fundamental ideals include identifiable data morality, personification, community transactions, entertainment flow, and avoiding deep fakes and disinformation [35]. While fundamental values include rapid problem-solving, consistently dependable media sources, and trustworthy media sources, fundamental values include fast problem-solving.

AI presents a diverse array of opportunities for enhancing the processes of material generation, distribution, and analysis. One of the notable advantages of employing automation solutions is their ability to enhance efficiency and streamline repetitive processes.

Additionally, these tools can provide valuable assistance in generating ideas, conducting research, composing written content, editing, and optimizing it. Consequently, content creators can enhance their productivity and efficiency, resulting in the production of superior-quality content. Furthermore, using AI-driven tools enables the customization of content dissemination by examining user preferences and behaviors, guaranteeing the precise targeting of material to the appropriate audience during optimal periods. AI-powered analytics can offer significant insights into content performance, audience engagement, and sentiment analysis. These insights can be precious for



content creators, enabling them to make well-informed decisions regarding future content initiatives.

The application of AI has the potential to streamline and enhance the process of repurposing and distributing material across several platforms and languages. The aforementioned objective can be accomplished through the utilisation of AI-generated summaries, translations, and voiceovers. The incorporation of AI has been seen to greatly enhance the efficacy of numerous procedures, elevate the degree of individualization, and provide actionable insights of considerable worth. Consequently, the incorporation of AI technology in the processes of generating and disseminating content has demonstrated significant efficacy and impact.

## **5 Conclusion and Further Research**

The term “artificial intelligence” refers to a set of methodologies that enable robots to carry out complicated tasks that generally need the intellect of a human. Machine learning and deep learning are two of the most well-known approaches to AI. It might be helpful to marketers in identifying significant characteristics that customers want to read about. According to the research findings, engagement and interaction with consumers is only possible with digital marketing. The use of technology in digital marketing helps marketers achieve greater levels of success. People now live in a new world where everything can be done in a shorter time and with more ease. People today spend most of their time online because we live in an internet age.

Consequently, advertisements are moving away from print media and digital media, even though transitioning from traditional marketing to digital marketing has several challenges and safety considerations. However, when contrasted with the benefits it provides, the drawbacks are hardly worth mentioning.

Because of the severe competition between every alternative product in each market, AI has rapidly become essential to all business operations. Businesses strive to attract the attention of customers through the use of creative marketing strategies. The effectiveness of marketing tactics can be improved by using AI technology to process customer data. AI would benefit businesses if it helped them construct models that could handle the dynamic changes that occur in digital commerce and if it improved their awareness of the underlying linkages across datasets. Businesses would benefit from AI. Marketers can use AI to analyze customer patterns and behavior, predict the results and improve advertising. It does this by analyzing data, employing algorithms, and utilizing the most recent developments in AI technology. AI will bring optimization benefits to marketers by making use of trends and data in order to distribute content at the optimal time.

AI systems learn to optimize the results and provide the most optimal solutions as they process more information. The goal of machine learning is to make it possible for computers to learn on their own, autonomously, and without much assistance from humans in the form of data observation. However, businesses utilize these technologies to determine broad trends rather than specific ones using personalized data. As a result, AI plays a vital role in digitized marketing and will efficiently conduct marketing.

The integration of AI in digital marketing is poised to bring transformative changes to the field. AI can revolutionize customer targeting, personalization, and engagement by analyzing vast datasets to identify trends and behaviors, resulting in more accurate customer segmentation and tailored marketing strategies. Automation enabled by AI can streamline routine tasks such as email campaigns, allowing marketers to focus on strategic decision-making. Real-time data analysis can provide insights into customer preferences, enabling marketers to adjust campaigns on the fly for optimal results.

However, challenges also arise. Privacy concerns may intensify as AI gathers and processes large amounts of user data, prompting the need for robust data protection regulations. The evolving landscape may necessitate upskilling for marketers to use AI tools effectively. Ethical considerations, like transparency and bias in AI algorithms, demand attention. AI’s future in digital marketing promises enhanced efficiency, targeted campaigns, and deeper customer insights, but these benefits must be balanced with responsible and ethical implementation.

### **Author Contributions**

Nouri Hicham drafted the initial manuscript, Habbat Nassera review and editing, Sabri Karim visualization and supervision. The published version of the work has been reviewed and approved by all authors.

### **Data Availability**

The data used to support the research findings are available from the corresponding author upon request.

### **Conflicts of Interest**

The authors declare no conflict of interest.

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