

## An analysis to understand the role of machine learning, robotics and artificial intelligence in digital marketing

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### ABSTRACT

Focusing on the assumption that both physical and cognitive activities may be substituted by Artificial Intelligence, Machine Learning, and Robotics, this study explored the role of Artificial Intelligence (AI) in Digital Marketing utilizing a descriptive research technique. An examination with professionals from various sectors linked to marketing and AI reveals that AI has an influence on marketing operations and will have a greater impact in the future. By integrating new data-driven methods to digital marketing strategies, exponential technical advancement provides chances for strategic edge. By identifying lessons from vast volumes of produced data, Machine learning (ML) can forecast future events and aid decision-making. This feature has a significant influence on and simplifies businesses' strategic decision-making processes. As per the study needs assessment, little is known about marketers' attitudes towards, and understanding of, ML technologies, as well as their uptake and use to support operational and strategic administration. Intelligent robotics and technologies are ideal for internet marketing. Everyone agrees. They can determine what consumers want, customize offers, simplify content creation, gather vast quantities of data, and apply it to business choices.

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### 1. Introduction

Artificial intelligence is a buzzword that needs a strong, strict meaning. It is the process of creating machines intelligent, and intelligence is the property that allows an object to perform correctly and predictably in its surroundings. Literally, artificial intelligence is a process that integrates cloud technology, network equipment, robotics, computer and digital media generation, as well as different business procedures, technologies, and day-to-day operations. Artificial intelligence computers have existed in the past, is currently in use, and will be in the future. Accepting and developing Ai Technology is critical for future marketing initiatives. Businesses use artificial intelligence software every day to

optimize their own operations, minimize expenditure, reduce delivery time, and enhance production. Technology is changing at an incredible rate, and organizations who have already made the transition to marketing AI software have a unique edge in terms of being able to capitalize on the next breakthrough. The tremendous advancements in data and communications technology in the public and private industries in recent years has triggered the creation of a new digital marketing ecosystem [1]. A large amount of information is presently being created as a result of the expansion of information technologies. Each day, 2.5 Quintilian bytes of data are produced, and this amount is expected to rise with the advent of the Internet of Things (IoT) [2]. It is also predicted that 90 percent of the world information has been created in the last two years. Reliable data must be generated, accessed, and used in order to make quick and accurate business choices. As a result of rapid technology advancement and its barrier-free

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worldwide distribution, chances for gaining a competitive edge by using new data-driven methods to marketing management have arisen [3]. Digital marketing evolved as a logical reaction by businesses to capitalize on and profit from the increasing customer focus on the Internet. Businesses, hospitals, colleges, professional groups, councils, and non-governmental organizations (NGOs) all employ digital marketing as part of its marketing strategy and roll out plans. A few of these businesses may have their own e-commerce platforms, although the Internet is mostly used as a channel/medium in their communications plan. These organizations generally serve as clients or marketers, which are also referred to as trademarks. Several types of businesses participate in the digital marketing area as well. The Online world enables businesses to discover more about their customers with a few clicks of the mouse in the proper assessment technique [4]. The most significant advantages of digital marketing over traditional marketing tools and platforms are its capability to be measured. Every Internet user's digital footprint includes a large quantity of information that may be used as input for marketing research. Such advanced analytical tools utilize machine learning (ML) to understand from historic information and aid in the planning of future operations [5].

**2. Machine learning driven analytical tools in digital marketing**

Digital marketing is commonly used as a catch-all phrase for online marketing, Internet marketing, and mobile marketing [6]. It is advertising that employs digital technology (hardware, software, and communication technologies) in the execution of marketing plans. Market analysis, surveys, different types of

advertising, search engine optimization, publications, and social media marketing are all techniques used in digital marketing. Marketing analytics is an essential component of properly utilizing any of these technologies [7]. To retrieve relevant information and enhance the success of their digital marketing activities, all three types of companies (advertisers, agencies, and media) require the understanding and capacity to work with huge volumes of information (see Figs. 1,2)

Premised on substantial information processing, it is possible to infer that ML can give the data required for marketing professionals' decision-making processes [8]. In Table 1. Shows the incorporation of machine learning-driven tools into digital marketing presents a slew of new difficulties and possibilities. Among the most significant advantages of employing these technologies in marketing are:

There are no clear drawbacks to using ML to marketing analytics tools. However, In Table 2. based on the type of tool, there are a number of issues or limitations to its effective usages:

**3. The relationship between artificial intelligence and digital marketing**

As a result, artificial intelligence (AI) is a hot topic in the marketing world. According to some, it is the next step in marketing. There are several breakthroughs in the field of artificial intelligence (AI). Artificial Intelligence is a concept that refers to innovation that attempts to mimic human understanding. AI encompasses a comprehensive range of capabilities, including speech recognition, image identification, machine learning, and semantic search, among others [11]. A lot of marketers are fond of extolling the vir-

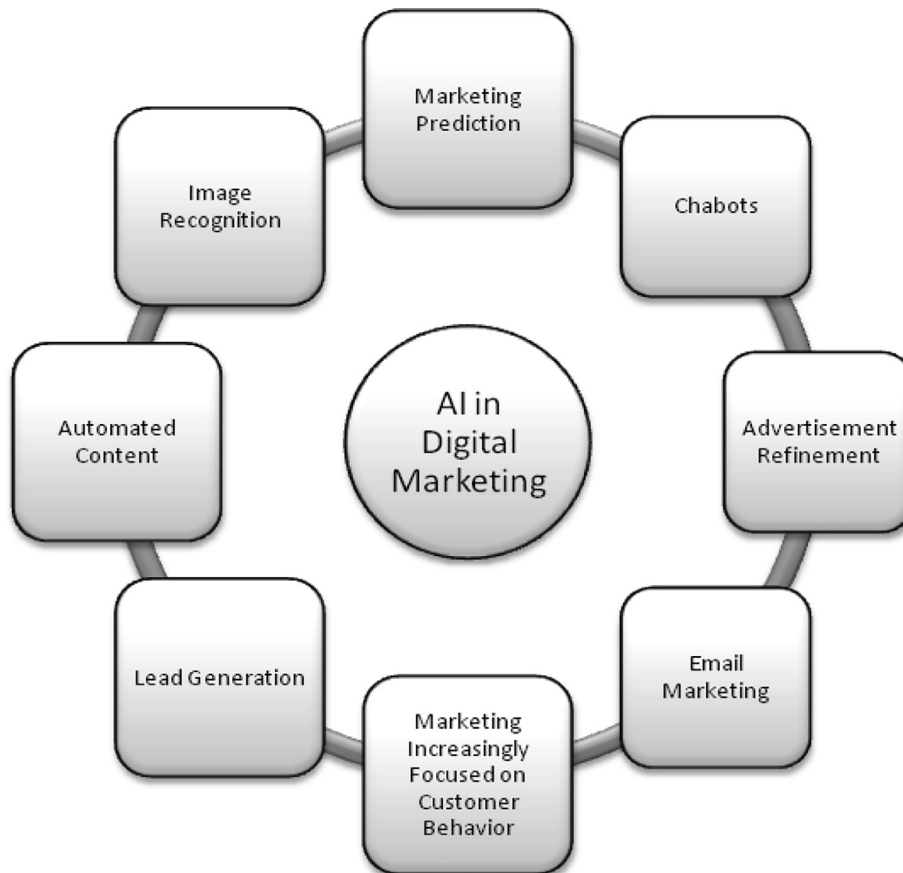


Fig. 1. Artificial Intelligence (AI) in Digital Marketing.

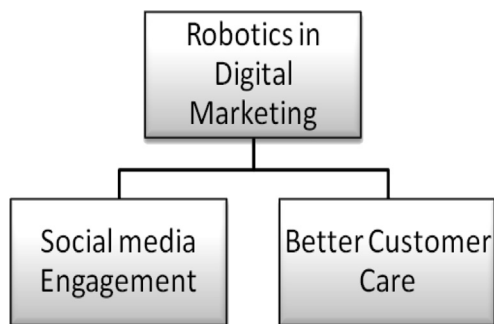


Fig. 2. Robotics in Digital Marketing.

Table 1  
Incorporation of machine learning-driven tools into digital marketing.

Maximum efficiency	Machines consistently work at 100% since they can be interrupted or diverted.
Automatization of repeatable tasks	Simple tasks may be extremely efficiently automated using machine learning. In digital marketing, for example, ML may help with the creation of frequent reporting on marketing campaigns in social media marketing.
Personal digital helpers	Individual personal helpers are already in widespread usage [9]. Complex activities may be handled by ML-driven algorithms, and everyday routines can be optimized.
Exploring regions that humanity cannot access	For a variety of causes, a person is unable to execute the essential responsibilities in numerous areas. Humans, for example, cannot go to the darkest levels of the oceans or handle the massive quantities of information created on the Internet every minute. Machines may be programmed to respond to practically any situation, and computing can perform even the most complicated mathematical-statistical processes.
Error rate reduction	Errors that are typically affected by people factors are eliminated. Machines usually follow a specified method while doing a task.
Quicker decision-making	The amount of time it takes for a machine to make a judgement is governed by the amount of information available. Machines can make (nearly) instant decisions after a brief computation. Personal variables such as sentiments, individual interests, views, and so on have no bearing on the choice.

tues of new technologies and breakthroughs. Pictures and voice are recognized using Artificial Intelligence (AI). Data leaks are also prevented, and drones are better targeted at remote networks.

Marketers must maintain continual, updated, knowledge-driven contacts with customers on an individual basis, and artificial intelligence is crucial to gaining the economic upper hand in this constantly connected, continuing reality [12]. Brands who have realized the importance of Artificial Intelligence and have put in place the proper structure to scale are able to get an advantage that is exceedingly difficult to duplicate. When it comes to artificial intelligence (AI), content and context are intertwined. Apple’s Siri and Google’s DeepMind are just a few examples of artificial intelligence usage in the consumer and commercial arena today. Siri, for example, interprets voice instructions using natural language processing (NLP) and responds appropriately [13]. Deep Mind, on the other hand, is a Google division that utilizes deep learning. Rather than depending on predetermined behavioral techniques, it learns from experiences and uses raw data as inputs

Table 2  
Number of issues based on tools.

Moral and ethical standards	People are human because they have the capacity to make choices, experience emotions, and understand ethics and morality. It is debatable if machines will ever have this capacity, or whether it will be created in the future. There are legitimate worries about whether computers will be continuing to function in the interests of humanity and within moral and ethical bounds as technology advances.
Without human interaction, machine learning tools cannot function.	Human minds will still be required in the upcoming generations to work with ML systems and create and refine these technologies.
ML and the Workplace	In digital marketing, there exist systems that can partially replace human labor. For example, automatic social media post posting, automation article reader assistance, and so on. It is crucial to emphasize, however, that these systems would never function well without human assistance.
Innovation	Much of the marketing decision-making and implementation is dependent on imagination. Innovation is the consequence of integrating various human-native characteristics, with emotions, intuition, and empathy playing a key role. Machines will have a difficult time replicating these three components.
Customers’ preferences	Users are not always eager to engage with robots or software. As a result, it is predicted that in the near future, the desire for connection with a human being would remain preferable, with customers having more trust in such communication.
Methods can be incorrect.	Decisions based on mathematical calculations and statistics generated by MLs may result in erroneous actions being made as a consequence of faulty instructions or information. Any modern information system is designed to serve people first and foremost. As people’s requirements change and evolve over time, ML-based solutions may no longer provide the best outcomes in their present setup. Examples include automated answers to social media inquiries or automatically produced discounts in the event of dissatisfaction with the purchase process [10].

in order to make connections and achieve meaningful conclusions. With the help of Deep Mind, Google was able to increase the productivity of its own capacity communities and reduce cooling energy use by 40 percent. As a result, AI has become a must-have innovation in the current corporate world. These technologies are used by small and large businesses alike in order to increase the efficiency of company operations and to provide customers with better, more individualized experiences.

Since its inception, marketers have been wary about integrating artificial intelligence into their plans. As a result of this, marketers have been remarkably confident about its use in the past year. A growing number of divisions have just gotten big incentives as a direct consequence of the lessened uncertainty in viewing results. Data is everywhere, making physical procedures more difficult. As a result, human behavior is characterized by a lack of knowledge and a reliance on instincts. Artificial Intelligence emerges as a regulated machinery in this type of circumstance, as instinct won’t

lead to shrewd conclusions [14]. Artificial intelligence is bringing about changes throughout every aspect of our professional lives. This will affect everything from the way marketers conduct their campaigns to the way campaigns themselves are calculated and operated as a result of this. Now and in the future, sophisticated displaying will be guided by artificial intelligence.

#### 4. AI has changed digital marketing in a number of different ways

##### Marketing Prediction

As a result of social media's ability to acquire more personal information about a potential consumer, marketers are better ready to interact them in a meaningful way. New data is provided and prepared for Artificial Intelligence evaluation with each click, no matter where the customer is on the internet. In order to provide the most relevant statistics to the marketer, this information is vital.

##### 4.1. Chatbots

In a natural language environment, artificially intelligent systems communicate with consumers. Marketers are getting increasingly interested in these initiatives, as social media usage is increasingly moving to private messaging platforms like What's App and Facebook Messenger. This is a great chance for interaction that's hard to pass up. While most sophisticated marketers view chatbots as a way to provide personalized client service at scale, they are not considered a valid marketing tool. Visit bots, on the other hand, may also be used to guide clients through a customer journey to a sale.

##### 4.2. Advertisement refinement

Commercials and their distribution are also refined with the help of artificial intelligence (AI). PPC efforts in the U.s are dominated by Google and Facebook, as per marketing experts. Advertisers may benefit from artificial intelligence by discovering new marketing communications for their PPC campaigns, according to a recent study. Advertising benefits from artificial intelligence since rivals may not use these platforms.

##### 4.3. Email marketing

As a result of artificial intelligence, email marketing has become even more effective for both marketers and their customers. Every marketer's ambition is to be able to personalize at size, and artificial intelligence makes it feasible. As a result of prior encounters with the brand, artificial intelligence may produce tailored emails for each of the corporation's subscribers. Content consumption, wish list items, and sites visited may all be taken into account when customizing the experience. The artificial intelligence, for instance, can send various messages with the most useful details to each user, if one person often opens links to products sites in the company's email, but another never does.

##### 4.4. Marketing increasingly focused on customer behavior

A large part of artificial intelligence's application involves integrating data from multiple sources. When customers access the internet, they leave behind bits and pieces of private details. The data is gained independently of whether they shop, publish, or browse [15]. Artificial insight programmed are now processing these large numbers and learning about the online activity and digital identity of the customers. Heavily scrutinized client designs are

analyzed and stored by platforms nowadays in order to develop robotized structures and customer profiles that concentrate on certain markets. PCs will soon be able to dig deeper into customer profiles and behavior, allowing them to create copy that is more in line with the speech of the customers they are monitoring on the internet.

##### 4.5. Lead generation

As a result of the data, it actually has and the software it's employing, artificial intelligence can sort through mountains of data to discover the right solution for consumers, customers and even coworkers. But it may also forecast or assess the hotness of a leads. The marketing will have more time to spend on things like presenting and sales calls.

##### 4.6. Automated content creation

Artificial Intelligence (AI) is being used by several companies to automate content production. Content production has become faster and easier as a result of this technological breakthrough. Coca Cola, for example, automates their advertising campaigns using artificial intelligence. Obviously, logos and music are created in conjunction with the environment.

##### 4.7. Image recognition

In Artificial Intelligence, picture recognition is one of the most exciting and probably most significant advances. People who want robots that can think and respond like we do, such as self-driving cars, must also be able to see as we do [16]. It is presently possible for PCs to differentiate and recognize basic objects, events or circumstances. Contrary to human perception and perception, these PC structure squares have enabled certain major mechanical occurrences, and they continue to do so. Without the caption, Image Recognition helps marketers to discover pictures via social media networking media.

#### 5. Robots and digital marketers work well together

Internet advertising would not have been so sophisticated and precise without artificial intelligence and robotics. The purpose of tools and apps is not to replace human marketers, but to assist them. Rather than serving humans, robots fulfill duties and obligations that digital marketers simply do not have time for. Robots are constantly available and never get sick, which is a huge advantage. As a result, it should come as no surprise that warehousing bots are so popular. Your chances of seeing robots there are high. This is done by scrolling through a series of pictures after the industrial robot arm has picked up an object and determining its location.

Digitization has forced firms to improve their work and simplify internal procedures.

##### 5.1. Social media engagement

Social media is an integral component of any digital marketing plan. To be more specific, a business may use social media to control its reputation, maintain a competitive edge, and retain connections. Few people know that social media sites are really AI systems designed to keep users engaged by giving them what they want to see.

What exactly does a social bot do? Well, the computer functions as an agents that talks on social networking sites, wielding significant power over dialogues and influencing thoughts and behaviors [17]. Businesses that want to make the most of social media deploy

bots to engage with customers and simplify operations. We're not talking about bots that generate bogus accounts or followers. We're talking about AI systems that can communicate independently or semi-autonomously. They are not malicious.

### 5.2. Better customer care

Ordinary people no longer have to engage with screens. They have access to gadgets such as Alexa and Google Home. Robots assist customers in resolving issues and businesses in increasing revenue. People will soon run their businesses online as well as through machines. Automation is not necessarily a bad thing for the user experience. It is capable of doing the most difficult task, namely, providing personal assistance.

When it comes to improving customer experience, we must not overlook relevant material. AI-powered bots choose what material is appropriate for all types of clients, giving them the impression that the brand was created specifically for them. Personalization encourages visitors and gives websites lasting power. The longer visitors stay on a website, the more likely they are to become devoted clients.

## 6. Conclusion

Based on the data gathered from both the researched papers and the interviews conducted as part of this study, it is determined that AI will have a greater influence on the future of marketing and that even SMEs can adopt AI. Companies who are currently performing marketing operations without the use of AI-based technologies must brace themselves for transformation. Creating training for a successful AI strategy in marketing is only possible if there is a solid technical (technology, data, and procedures) and organizational foundation (people, skill and culture). In this research we examine Machine Learning driven analytical tools in digital marketing and we study about the relationship between artificial intelligence and digital marketing and Last in this paper we explain Robots and digital marketers work well together.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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