

Role of Artificial Intelligence in Social Media Marketing

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Abstract

Artificial intelligence (AI) refers to any human-like intelligence exhibited by a computer, robot, or any other machine. This paper discusses the significance of AI in social media marketing. The paper outlines a framework for understanding how artificial intelligence impacts the marketing scenario on social media sites. This study investigates the implementation of AI in marketing, and the pros and cons associated with the use of AI-powered tools in marketing. Through secondary research, the paper finds out how companies reap the benefits of early adoption of AI in their businesses, and concludes that AI has become inevitable for a marketer who wants to enjoy a competitive edge over the others. It therefore advises businesses to welcome AI technology, and in particular, urges marketing managers to make AI training mandatory for their marketing teams.

Keywords: Digital Marketing, Social Media Marketing, Artificial Intelligence, Online Advertising, PPC Advertising, Machine Learning

Introduction

As we all know, the world is in a transmission phase; it is moving from manual to digital. Things are changing rapidly and so are the features of technology. AI has become the buzz word among the tech savvy. The term artificial intelligence was first used by American computer scientist John McCarthy in 1956. The US Department of Defense took interest in AI research to train computers for basic human reasoning long before Cortana, Siri, and Alexa came into existence. AI works by combining a huge amount of data with fast, iterative processing and smart algorithms. AI is a vast field of

study that includes many subfields like machine learning, neural network, deep learning, cognitive computing, computer vision, natural language processing, and so on. AI technology helps machines perform specific cognitive functions. For instance, voice assistants like Google assistant, Alexa, or Siri understand our words just like another person. Netflix and Amazon use AI recommendation engines to offer products based on browsing history and preferences. AI extracts insights from data that can be used to make predictions, decisions, and recommendations.

The digital boom during the last decade transformed social media into a platform for business. Social media sites have witnessed tremendous growth and are becoming advanced day by day. How we connect to different social media platforms and social communities have changed, and this evolution in social media is backed by artificial intelligence. AI analyses past behaviour, web searches, and so on, and accordingly provides feed on our timeline and sends notifications. The first experience of artificial intelligence (AI) for most of us was chatbots that were developed to respond to questions with predetermined responses. From Indian Railways' chatbot Disha to Netflix's algorithm-backed suggestions, restaurant recommendations on Zomato and Swiggy, to information about the real-time traffic situation on Google or Apple Maps, from smart cars and drones to dynamic pricing of Ola and Uber – these are all examples of the use of AI in digital marketing. According to a report by Salesforce, 51% of marketing leaders across the globe use AI, and about a quarter more are planning to do so in the next 2 years (*State of Marketing Insights and Trends from 3,500 Global Marketing Leaders*, n.d.).

The AI for the social media market is projected to grow more than \$2.1 billion by 2023 (*AI in Social Media Market Worth 2,197.1 Million USD by 2023*, n.d.).

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What is Artificial Intelligence?

In the words of John McCarthy, the father of AI, artificial intelligence is “The science and engineering of making intelligent machines, especially intelligent computer programs”.

AI refers to any human-like intelligence exhibited by a computer, robot, or other machines. In general terms, AI refers to the ability of the computer or machine to imitate the capabilities of the human mind, like learning from examples and experience, understanding and responding to what is said, decision making, solving problems, and combining these and other capabilities to perform functions a human might perform, such as driving a car. Demis Hassabis, CEO of Deepmind, an Alphabet Inc.-owned company, defines AI as the “science of making machines smart”. Systems are being developed with the intellectual characteristics of humans, such as reasoning ability, discovering meaning, and generalising or learning from past experience.

What is Social Media?

“Social Media is a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content” (Kaplan & Haenlein, 2010). In simple words, social media platforms are Internet-based applications that allow users to create and exchange content.

Objectives of the Study

- To study the scope of artificial intelligence in marketing.
- To study the pros and cons associated with the use of AI in marketing.
- To study the attitude of marketing managers towards AI.

Theoretical Framework

How is AI Affecting Social Media Marketing?

Social media marketing is all about analysing enormous and complex customer data. AI is playing a dominant role

in defining how today's social media functions. Popular social networks like Facebook, LinkedIn, Instagram, and so on leverage machine learning models for suggesting people/accounts to follow, job recommendations, identifying visuals, tracking current engagements, and so on. According to Gartner's report, 37% companies are leveraging AI for content curation and management (*Gartner Survey Shows 37 Percent of Organizations have Implemented AI in Some Form*, n.d.). As per the 2021 *State of Marketing Artificial Intelligence Report* released by *Drift and Marketing Artificial Intelligence Institute*, a majority of marketers know the importance of AI for business, but 70% of respondents find lack of training and education a barrier in the adoption of AI in marketing (*New Report Shows Marketers Lack the Education, Training to Effectively Adopt Artificial Intelligence*, n.d.). To create customer recommendations, machine learning and natural language processing models derive social insights by analysing brand performance over time. AI is a key component in the popular social networks we use every day.

Facebook uses advanced machine learning application of the artificial intelligence to do things like displaying posts similar to those one has earlier interacted with, recognising faces in the tagged photos, advertising, and sending pop ups. Facebook-owned social networking service Instagram uses AI to identify and remove fake messages from accounts. Snapchat leverages the power of computer vision, an AI technology, to track users' features and overlay filters that move with his/her face in real-time. AI is leveraged within LinkedIn to do things like LinkedIn automated bidding, job recommendations, suggest people one might like to connect with, serving specific content in feed, help advertisers in targeting audience, and conversion tracking.

This is just a glimpse of how artificial intelligence technology works in the backstage of the world's most popular social networks. AI and machine learning regulate how the content is created and the advertisements by marketers are placed in front of users across various social media platforms. Thus, it can be said that AI is a fundamental part of how today's social media functions. However, it is a fact that AI, which operates in the background of popular platforms, is often biased and regulated by the platform owner.

From the above discussion, it is clear that artificial intelligence (AI) is a machine displayed intelligence that mimics human behaviour or thinking, and can be trained to solve complex problems. Machine learning and deep learning together make AI. AI models that are trained using big data volumes have the required potential to make intelligent decisions. Artificial intelligence has been basically classified into 2 categories, namely weak and strong AI.

Weak AI, also called narrow AI or artificial narrow intelligence (ANI), is one where the AI is trained and

focused on performing specific tasks; it enables some very impressive applications, including Apple's Siri, Amazon's Alexa, and self-driving cars.

Strong AI, also known as artificial general intelligence (AGI), is an entirely theoretical concept aimed at creating intelligent machines that fully replicate the autonomy of the human brain. Optimists believe that AI would be able to solve many types/classes of problems and will even choose the problems it wants to solve, without human intervention.

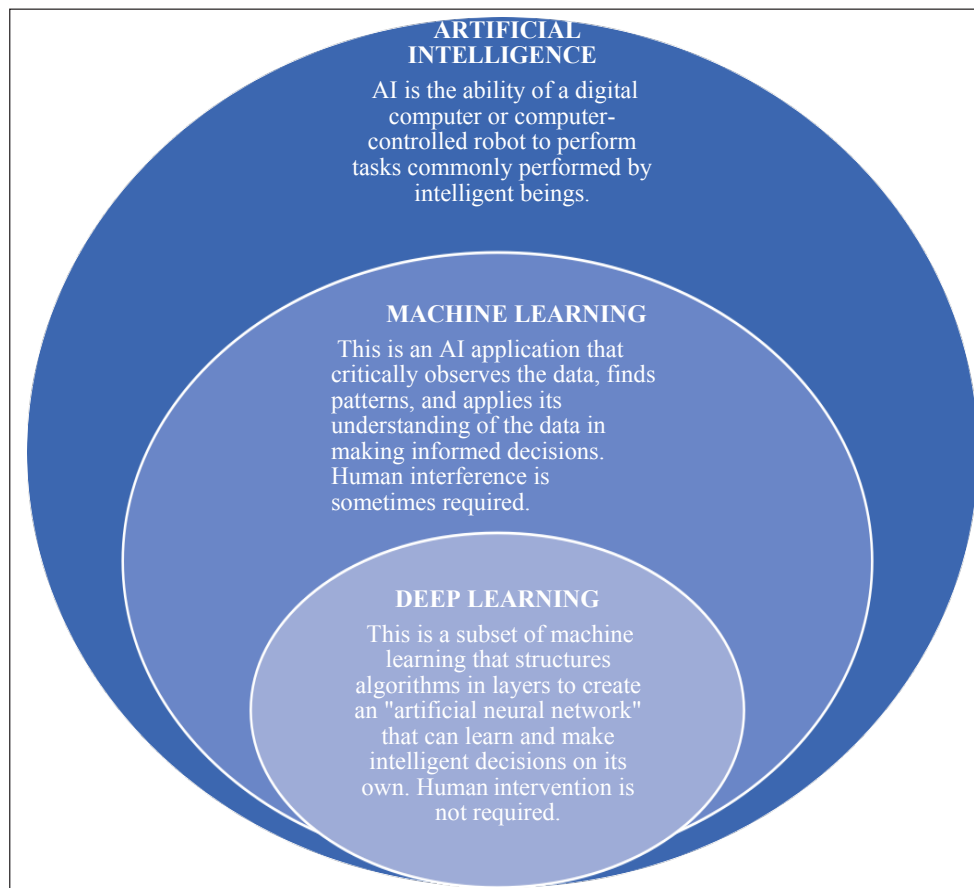


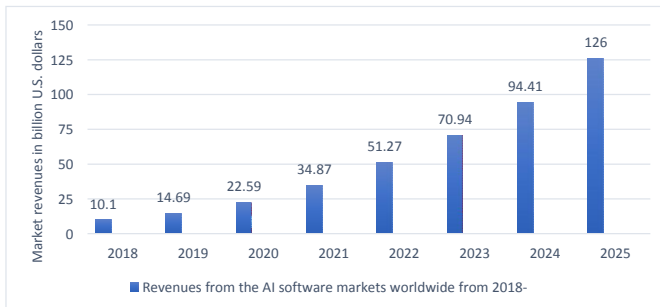
Fig. 1

AI Facts and Figures

- According to the latest release of International Data Corporation, worldwide revenues for the AI market, including software, hardware, and services, will break the \$500 billion mark by 2024, with a compound annual growth rate of 17.5% (*IDC Forecasts Improved Growth for Global AI Market in 2021*, n.d.).
- As per *Gartner*, 37% of organisations have implemented AI in some form. The percentage of enterprises employing AI grew 270% over the past four years (*Gartner Survey Shows 37 Percent of Organizations have Implemented AI in Some Form*, n.d.).
- According to an article published in AI Business, a leading content portal for artificial intelligence and

its real-world applications in 2018, Servion Global Solutions report predicts that by 2025, 95% of customer interactions will be powered by AI (*AI will Power 95% of Customer Interactions by 2025 – AI Business*, n.d.).

A recent 2020 report from *Statista* reveals that the global AI software market is expected to reach a forecast size of \$126 billion by 2025 (*AI Market Size 2018-2025 | Statista*, n.d.).



Source: Statista.

Fig. 2

Various Artificial Intelligence Applications

Some popular applications of AI are as follows.

- **Natural Language Processing (NLP):** Natural language processing is a subfield of artificial intelligence that enables machines to comprehend human language. NLP uses the power of computer sciences and linguistics to create intelligent systems capable of understanding, analysing aspects like syntax, semantics, and so on, and extract meaning from the text and speech. The sentiment analysis feature of NLP enables marketers to analyse posts, product reviews, and online surveys, and classify them as positive, negative, or neutral. Digital assistants (such as the aforementioned Siri and Alexa), chatbots, and other text-based virtual assistants work on the NLP technology of artificial intelligence.
- **Speech Recognition:** Speech recognition is AI technology that converts spoken words into digitised text; it also has the ability to recognise individuals based on their voice commands. Tech giants like Google, Amazon, and Apple have developed many devices with voice recognition ability. Amazon's Alexa, Google Home, and Apple's Siri are a few examples.
- **Real-Time Recommendations:** Retail and entertainment websites use neural networks to recommend additional purchases to a customer, based on his past activity and other factors, including time of the day and the weather. Recommendation algorithms make items more visible to customers. It increases the likelihood of buying them. The importance of real-time recommendations is evident from the fact that 75% of what consumers watch on Netflix and 35% of what they purchase on Amazon are a result of product recommendations based on such algorithms (*How Retailers can Keep up with Consumers | McKinsey*).
- **Image Recognition:** It is the AI technology that enables systems or software to identify people, objects, writing, and even actions, within the images. It uses machine vision technologies typically driven by deep neural networks and trained algorithms to recognise images through a camera system.
- **Virus and Spam Prevention:** Today's virus and spam detection software employs deep neural network AI to detect new types of viruses and spams. AI spam filters scan incoming messages and put a label on objectionable content. Intelligent learning capabilities label a warning sign on malware. If any message containing this malicious software is found in the inbox, it alerts users not to open it.
- **Ride-Share Services:** Uber, OLA, Lyft, and other ride-share services use artificial intelligence to match up passengers with drivers to minimise wait times and provide reliable ETAs (expected time of arrival), and even curbs the surge in price due to heavy traffic.
- **Household Robots:** These robots are basically used for cleaning, entertainment, and domestic security purposes. For example, iRobot's vacuum cleaner Roomba has advance decision making capabilities. It uses AI to scan the size of a room, identify, and avoid obstacles. New robots are also embedded with voice recognition technology.
- **Autopilot Technology:** AI offers autonomy to drones and aircrafts. By using a combination of sensors, collision avoidance technology, robotics, GPS technology, image recognition, and natural language processing, AI guides an aircraft safely through the skies. It provides the ability to estimate the posi-

tion, orientation, and velocity of the vehicle; provides the ability to compute and execute necessary commands, map the environment, and also provides real-time navigation facility.

E-commerce, automated stock trading, navigation, robotics, human resource management departments, healthcare, agriculture, gaming, automobiles, banking, and social media marketing are some of the major areas where AI applications are predominantly used.

Advertisers can take AI services of open sources like Google or can avail the services of a third party like Persado, Lately, Socialbakers, Cortex, Phrase, Worldstream, Linkfluence, and so on for a price mostly determined by lead conversion rate.

Key Differences between AI Marketing and Non-AI Marketing

Table 1

Sr. No.	AI Marketing	Non-AI Marketing
1.	Creates its own algorithm and lays down a path to advanced marketing.	Built on algorithm, human-coded set of instructions that tell a machine what to do.
2.	AI can read and write natural language.	It cannot read natural language; traditional social media tools help in creating content for social media.
3.	Automates decision making.	Marketing teams take the decision.
4.	One-to-one approach.	One-to-many approach.
5.	Programmatic demand-side platforms can use hundreds of targeting signals to individualise the advertisement, and even the target, according to lifestyle or behaviour, when integrated with customer data platforms.	Manual advertising campaigns (even those performed with professional tools) take into account three or four targets: the keyword, time of day, and location.

Advantages of using Artificial Intelligence in Social Media Marketing

AI has touched almost all facets of life. However, marketing is the sector that is the most affected by this advanced technology. Employing AI technology in

SMM saves a lot of time and money spent on reviewing analytics, creating performance reports, drafting social media posts, building promotion strategies, and so on. The marketers who leverage AI technology in their social media marketing campaigns have the opportunity to create a significant and sustainable competitive advantage for their businesses. AI enables marketers to:

- *Decrease cost:* AI can automate some of the tasks which require more time and toil. This includes activities like scheduling and uploading posts, pulling relevant links and hashtags, and conducting research into what to post easier and faster.
- *Increase revenue:* AI can help someone to better determine what to post, whom to target, which mediums of promotion will be beneficial, and so on. AI can even write more effective advertisements than humans.
- *Create social media posts faster:* The AI tool uses historical data to learn what really works and what social media posts to share next; they help marketers produce posts on a large scale.
- *Develop right message for each platform:* AI can automatically develop creative messages suiting a brand across the platforms to increase social media engagement.
- *Measure brand and trends across social media:* AI-powered social media intelligence can help companies measure and improve brand equity, detect consumer trends, and understand target audiences.
- *Determine what to post for maximum effect:* AI-powered social media tools can analyse marketer’s posts, and the posts of other companies, to recommend what to post.
- *Find product logos, brands in posts online:* Using image and face recognition tools, marketers can identify logos and brands on the Internet.
- *Find the right influencer:* AI-powered influencer research platforms analyse a variety of social media analytics, to understand which accounts can provide the most engagement, reach, and influence for a specific industry.
- *Manage and improve social media advertising:* AI helps pay-per-click advertising by displaying the right advertisement to the right people at the right time, and has also taken over some repetitive tasks

of PPC management. AI can analyse PPC (pay-per-click) advertising across Facebook and Instagram, and offers recommendations to improve performance-based data.

- *Improved personalisation and recommendations:* Consumers are more likely to interact with personalised marketing messages. AI enables marketers to personalise their communications on an individual level.
- *Dynamic pricing:* AI can be used to set the price of the products dynamically, depending on demand, availability, popularity, and other factors, to maximise both sales and profit.
- *Customer service chatbots:* Organisations are using chatbots to deal with frequently asked questions. Chatbots provide replies 24×7. These are programmed to provide a set of replies to FAQs and direct the conversation to a human agent if the conversation is complicated. Chatbots are cost effective and sometimes can be more effective and polite than humans.
- *Search engine optimisation:* Integrating AI into search engines can help pick up misspellings and suggest alternatives, influenced by users' past browsing or shopping behaviour. Marketers can use AI to optimise voice search, improve SEO, and site traffic.
- *Pay-per-click advertising optimisation:* AI advertising optimisation is used on social networks like Instagram. The algorithm analyses the accounts that a user is following and shows advertisements that are most relevant to this user.

Challenges of Artificial Intelligence in Social Media Marketing

A study done by the data analytics firm Teradata found that 80% of big business-level companies were at that point utilising some type of AI in their business (32% of those in marketing). Over 90% likewise anticipated some boundaries in full adoption and integration (*State of Artificial Intelligence For Enterprises*, n.d.). Some crucial barriers in the adoption of AI technology are as follows.

Inadequacy of IT Infrastructure: A powerful IT framework is crucial for an AI-driven marketing procedure. For this,

high-performance computers and software are required. This is an obstacle, especially for smaller organisations.

Investment of Resources: AI requires complex software and high-performance hardware, which is expensive to deploy and maintain. However, a large number of AI developers are coming out, which means organisations no longer have to rely on developing in-house solutions. In addition, organisations like Google, Amazon, and IBM are offering their algorithms to the world; some third-party services are open source, while others are available for some consideration. A few organisations may need to allocate budget towards hiring AI experts.

Lack of Talent: Presently, there is a huge AI skill gap. This issue is expected to become worse as the number of AI technology organisations develop.

Lack of Data or Poor Data Quality: AI requires a large amount of standard data, to get insight about the users. Substandard or inadequate data will result in poor results from the AI software.

Lack of Trust in AI Software: AI is a new and suspicious technology. Laggards in technology and even technical employees not trained in AI are suspicious of its use. Privacy of users is at stake as well, as data collected for one purpose can be sold to some other marketer for a different purpose.

Certain AI Applications Seem Unethical: For example, figuring out an unmarried customer is pregnant by analysing her purchase patterns, preferences, browsing, and so on; this is a practice that many users dislike, and which develops a negative perception of AI.

Privacy and Regulations: Some businesses may be restricted in the storage of data offsite for regulatory reasons, which may mean that they are not able to use the services of cloud-based AI marketing vendors.

Algorithm Biases: AI algorithm is not coded by humans, but is developed by AI itself, based on machine learning. For example, if in an organisation, during the recruitment drive for civil engineers, applications of most of the female candidates have been rejected on previous occasions due to any reason, based on this observation, AI may develop an algorithm that will give lesser preference to female candidates.

Unemployment – As we all know, AI-powered tools have the capability to perform many functions which are usually performed by intelligent beings. Therefore, there is a fear of job loss in many industries which rely on technology.

AI Might Limit Creativity: Excessive use of technology will eventually degrade individuals' creativity.

Suggestions

- Stakeholders must make sure that existing data sets are cleaned and that the data being collected is of standard quality.
- By explaining AI algorithms and educating users about when, where, and how information about them is gathered, customers' trust and loyalty can be increased.
- AI cannot be left all alone to work on itself. Human intervention and control are always required.
- Marketing managers should make AI training mandatory for their marketing teams.
- If possible, companies should create in-house marketing solutions and should not remain dependent on third-party services for AI.

Conclusion

AI is revolutionising industries with its vast applications and helping in solving complex problems. There is no proof required to accept the growth of AI in marketing. With the help of AI, marketers are able to identify potential customers, create content, and follow the leads. Incorporating AI can assist marketers, individuals, and advertising agencies in making social media marketing more efficient. Machine learning models, advance analytical tools, and deep learning network algorithms have the potential to increase the benefits of using AI in social media over time. The functions and popularity of artificial intelligence are soaring day by day. AI has significantly evolved over the past few years and has found its applications in almost every business/sector. AI has widened its reach in all the fields of life, but has made its way deeper in the marketing sector. The marketing sector has witnessed rapid technological changes over the last decade. There is no better time for marketers to

start leveraging AI-powered marketing technologies and cognitive computing, among many others, to enjoy the competitive edge.

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