

## A Study of the Impact of Artificial Intelligence on Digital Marketing - A Systematic Review of Literature

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### Abstract

*Artificial intelligence (AI) has been a major development in recent times, with more and more research being done on this technology. With the advent of AI, organisations are evolving to meet new levels of customer satisfaction by leveraging it to execute different tasks, such as personal assistant services. This study aims to review the impact of artificial intelligence on digital marketing. The study identifies key developments in artificial intelligence and reveals how digital marketing has changed due to these developments. It also seeks to understand the impact of AI on customer experience and brand loyalty, how companies leverage AI to predict customers' increasingly intricate needs, and how AI influences decision-making among marketers. The search used three significant databases: Web of Science (WOS), Scopus and Google Scholar. A comprehensive research methodology was used to compile relevant literature. Three reviewers conducted thorough literature searches across multiple databases, screening studies against the inclusion criteria, extracting data from the included articles, and validating the extracted data.*

**Keywords:** Artificial Intelligence, Digital Marketing, Impact of AI

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## Introduction

AI is the backbone of modern technology and computerised systems. AI is a powerful convergence of technologies that allows machines to learn from experience and improve their performance through logical inference using data. AI is one of the most promising technologies in recent times. It has opened new business horizons, enabling companies to analyse vast amounts of data in a much shorter time than before. Any major debate against its advantages has not accompanied the use of artificial intelligence in digital advertising but rather with excitement among marketers over its high potential for enhancing their business growth. This paper seeks to review the impact of artificial intelligence on digital marketing and understand how this technology impacts customer experience and brand loyalty through direct and indirect effects. It also seeks to determine the implications of these developments on decision-making among marketers, as well as their strategies and future directions.

Any primary debate against its advantages has not accompanied the use of artificial intelligence in digital marketing but rather with excitement among marketers over its high potential for enhancing their business growth. Artificial intelligence (AI) has revolutionised several industries, such as financial services, software design, robotics, diagnosis, etc. AI has also evolved into highly challenging areas such as cyber security and biotechnology, making vigorous scientific progress. Artificial intelligence has been used to automate complex tasks requiring high expertise. Several studies have found that AI has the power to make humans more efficient, enabling them to accomplish their goals more productively.

It is an established concept that the digital marketing communication process is iterative (Chang et al., 2011). The process involves three phases: creation, distribution and delivery. It also helps acquire customers by reaching out through different channels and using specific tools to accomplish certain tasks. The tools include social media content management systems (SMBMS) for brand communications, strategies for website content optimisation, and tools for measuring online marketing perceptions, such as the Online Customer Satisfaction Index (OCSI). Using these tools has been associated with

customer satisfaction and has affected customer relationships. However, one cannot overlook that this iterative process results in incomplete customer acquisition. This is primarily because while the digital marketing communication process may lead to customer acquisitions, it can also lead to customer disengagement.

According to McCracken et al. (2011), technology and automation have long been part of marketing. In modern times, though, automation has taken over some aspects of marketing processes, especially for repetitive tasks. For example, people's routine processes are automated through Artificial Intelligence (AI), robotic serving systems, and personal electronic assistants. These have helped marketers perform activities more efficiently or at a higher speed. However, they have also given rise to possibilities of misuse.

This paper seeks to review the impact of artificial intelligence on digital marketing and understand how this technology impacts customer experience and brand loyalty through direct and indirect effects. It also seeks to determine the implications of these developments on decision-making among marketers, as well as their strategies and future directions. The following section provides a brief overview of the context for the study, followed by a review of artificial intelligence (AI): its ascent in recent times, advancements in its developments and its role in the modern-day digital marketing communication process.

## Review of Literature

The first section provides a brief overview of the study's context, followed by a review of artificial intelligence: its recent ascent, advancements in its development, and its role in the modern digital marketing communication process.

### Overview of Context

The history of digital marketing as it is known today can be traced back to the late 1990s. In 1995, IBM launched the world's first AI-based ad campaign to create awareness about IBM's e-commerce product, BackRub (Rossoff, 2017). BackRub worked by scanning more than 30 million web pages and ranking them according to relevance, giving higher scores to web pages with links from similar high-

ranking pages. It used search engines to curate a list of relevant websites for each query.

The BackRub program was initially programmed by Stuart Card, Tom Pashley and Anita Borg for the IBM Almaden Research Center in California in early 1996. Stuart's main contribution was using a mathematical model to determine positive and negative pages represented through a ratio. 1997 BackRub was superseded by a more advanced product called Citeseer, which was modified to include metrics like PageRank, HITS, Jaccard and TF (PageRank). It also helped users find relevant information so that similar results could be grouped, providing more relevant results. The website [www.demoseek.com](http://www.demoseek.com) provides a detailed review of IBM's projects and technologies before Citeseer.

In 2004, Google launched Google AdWords, promoting it as the first real-time bidding (RTB) program. Google AdWords was developed in 2004 by two full-time employees, Gary Illyes and Ray Witek, who saw potential in the program. They gathered data on the 50 most popular keywords that word advertisers paid the highest rates for and then looked at how much money those keywords brought in per day (Rossoff, 2017). Microsoft entered the online advertisement market in 1995 but quickly experienced a decline due to issues like performance management, which led to an inability to track clicks accurately.

Thus, in 1996, Bill Gates introduced a new system called Microsoft Search Engine Marketing (SEM), simply advertising for non-profit websites. A few years later, in 1999, Microsoft expanded SEM to include keyword advertising and AdCenter. These products were enhanced by introducing Bing as a means by which users could find topical information on Google, Yahoo and MSN 100.com in 2010. In 2009, Microsoft became the world's largest online marketer by launching Bing Ads (Rossoff, 2017). In 2011, the company rolled out the option to auction keywords at a higher rate (called Enhanced Campaigns), which helped it to increase average CPM by 20%. In 2014, Bing Ads was rebranded as Microsoft Advertising, which became the cornerstone of its digital marketing strategy.

Google, on the other hand, had a good idea of using automatic auctions but did not have anything that

could support them until 2004, when it started analysing data to determine how much money would be generated by different websites. The system combined search engine optimisation (SEO) with paid advertising, except that it did not rely on keywords and instead used links from similar sites; this was how AdWords came into existence. The program continued to evolve by adding options for cost-per-click (CPC) bidding in which the highest bidder is awarded a chance to appear on top of the search results. It also added options for advertisers to bid on keywords with no exact match, hence more closely mimicking the real world. In October 2016, Google introduced Google Shopping Ads, which enabled advertisers to create adverts that would run alongside search results, enabling them to advertise their products across Google's network (Capra, 2017).

Google was the first company to use AI in its marketing strategies, though it started as an experiment and later became an essential part of its marketing strategies. Artificial intelligence is computerised equipment or machines that perform tasks usually associated with human intelligence (James & Gorfine, 2017). They can learn from their experiences and adapt to new situations, thus making AI a very important part of the future.

The first Google AI project was RankBrain (Sharma, 2017). It is an algorithm that assists Google's search engine in web indexing by automatically processing a huge amount of data related to user searches. According to TechCrunch, RankBrain represents about 15% of all relevant search queries (Hughes, 2015). It uses machine learning techniques and natural language processing to predict possible user searches based on past search queries.

In June 2014, Google acquired DeepMind, an artificial intelligence company based in London. Its AI platform uses machine learning and deep learning technology to simulate human skills such as seeing, hearing, and natural language processing. DeepMind uses neural networks, which have enabled it to build simulated neural networks that can think, see, talk, and make decisions.

DeepMind was founded in 2011 by Demis Hassabis, Shane Legg, and Mustafa Suleyman to combine the best machine learning and systems neuroscience techniques. Its first application was video games

(Legg, 2017). In 2016, DeepMind released an AlphaGo program capable of defeating one of the best human players in the game Go. In March 2017, DeepMind demonstrated that its AI system can play Atari 2600 video games better than humans (Sidle, 2017).

Another example of artificial intelligence is IBM's Watson, whose job is to provide relevant and important information to users based on their searches. IBM originally developed the AI engine to compete against human champions on the game show Jeopardy! 2011. It performed well beyond expectations and won against all three human contestants (Johnson, 2012). Today, it provides information through apps such as Watson Health Cloud for Cancer, which has helped doctors identify new treatments more accurately than humans in some cases.

Movies such as "Her," "Transcendence", and "2001" have portrayed what the future might look like with AI; however, it can sometimes be hard to imagine how much impact a seemingly small invention like RankBrain or DeepMind can have. Google realised, for example, that in 2004, when it launched AdWords, by 2014, it had managed to sign up more advertisers (717) than Yahoo (673) and Bing (565). It became everyone's favourite search engine because of its various services, including video hosting, e-mail and map services.

Google was introduced in 1996, the same year Microsoft started using SEO techniques; this is probably why both companies are equally popular today. AdWords and Bing Ads, Google's main advertising tools, were introduced in 1999. In 2004, the AdSense program was launched, responsible for over 95 per cent of all revenue collected from online advertisements; it only receives about 5 per cent of that amount through paid advertising (David, 2017).

In 2011, Google introduced a technology called DoubleClick to allow smartphone users to upload photos and videos to its services. Furthermore, it partnered with Zagats, an automated restaurant review company providing food and beverage recommendations to users. Google also partnered with Yahoo in 2012 and Microsoft in 2013 to allow advertisers better access to their audiences; both companies were able to create more relevant ads.

In 2014, Google bought Nest Labs for \$3.2 billion. Nest Labs specialises in creating smart home devices such as smoke detectors and thermostats. Google also bought Boston Dynamics, a robot manufacturer specialising in building fast and nimble robots for the military. In 2015, Google acquired DeepMind, a London-based artificial intelligence startup that specialised in simulating human thinking and natural language processing.

In May 2016, Google acquired the London-based company Redux, which specialises in head-mounted displays for viewing virtual reality. This has enabled its users to interact with real-life objects and use them inside virtual reality (VR) applications! These acquisitions enabled Google to understand artificial intelligence better and improve its services.

Studies done on the impact of artificial intelligence on digital marketing

Jain (2018), in his study, found that Artificial Intelligence has become more important given the growing demand for digital marketing tools to help businesses achieve their objectives.

A similar finding was made by Hwang (2018). He observed that online advertising is particularly impacted by AI and machine learning, a powerful tool for obtaining the most updated information in real-time. In the present competitive environment, where an increasing number of advertisers use social media for marketing and branding, the role of AI has expanded even further: "AI's influence on advertising is increasingly becoming more extended from simply targeting to defining and determining objectives - commonly referred to as 'conversational marketing' (Liu and Wu, 2015). Liu and Wu (2017) in their study, discovered the importance of AI in conversational marketing. They identified the significant role of AI for marketing through a two-way conversation and it is known as 'conversational marketing'."

Li, Gao and Han (2018) state that "we are living in a new world where many emerging technologies have converged to change the way we live. As one of the great advances of technology since the advent of Internet, artificial intelligence is playing an important role in shaping the future." Based on this understanding, they have explored the application of

artificial intelligence with digital advertising based on a case study.

Overall, it can also be concluded that as AI becomes popular in digital marketing, it will immensely impact digital advertising and branding.

Another study was done by Williams (2017), who looked at the impact of artificial intelligence on digital advertising. He studied how AI could help digital advertisers enhance their digital marketing services. He found that AI will help all types of advertisers reach the most potential customers and that "AI can be used to detect, identify and anticipate human behavior for personalized marketing...and it is expected that the demand for digital advertising will increase in the coming years."

Williams' research indicated that bots use AI applications, including traditional data mining techniques such as content delivery networks (CDNs), server logs, and neural networks, as well as unstructured data like ordinary language. Bots also use several software frameworks and tools, including Amazon Web Services (AWS), Microsoft Azure, Google Cloud, IBM Watson, and Salesforce.

To understand how AI can be used to enhance digital marketing services, Williams pointed out that the key areas in which AI can be applied are "personality detection, predictive analytics, messaging technologies, search engine optimization (SEO) and social media marketing." All these areas can help digital marketers better tailor their advertising campaigns for a better impact on their customers. Moreover, it is also possible that a machine learning algorithm can predict an individual's future behaviour based on their online activity. This can enable advertisers to send more tailor-made offers to their potential customers.

Williams has also pointed out that the role of AI in digital marketing will be further enhanced by deep learning and machine learning algorithms, as well as the use of big data. According to him, the main advantage of using AI in digital marketing is that "it builds a superior model based on human intelligence."

Drummond (2018) has also studied how AI is used in digital marketing and how it could help marketers achieve their objectives. He found that AI can be

used for digital and content personalisation based on user-specific needs. Drummond (2018) states, "AI can help marketers to center on user specific goals in order to better understand their audience and create more relevant marketing strategies."

Similarly, Turner, Naughton, and Webb (2017) studied how AI is used in digital marketing. They observed that "while AI offers a tremendous potential to improve digital marketing, there is still much work to be done in terms of creating models that can make predictions accurately." Consequently they state that "formulating accurate models requires much more data, which raises the concern of privacy issues. Therefore, regulations surrounding the use of AI will have a significant impact on digital marketing."

They also discovered that artificial intelligence will impact the digital marketing field by creating new channels for communication and content delivery. According to them, these "new channels could face security challenges in the future, especially with regard to how they will be protected from cyber attacks." Moreover they state that "one concern is whether there would be a need for AI experts in every organization or whether all organizations would rely on cloud-based solutions." They noticed that AI can be integrated into more complex systems, such as Big Data analytics and the semantic web, as it becomes more advanced.

Lin (2018) conducted another study on artificial intelligence and its influence on digital advertising. Lin (2018) studied using AI in personalisation and marketing. More specifically, he looked at how AI can be applied in advertising. He found that "artificial intelligence has shown great promise for providing personalized services to consumers. Currently, what researchers are looking for is the best way to apply it to actual businesses and companies."

Lin (2018) also points out that the role of artificial intelligence could be expanded even further by using natural language processing (NLP) and sentiment analysis. The main application areas are advertisement, social media, and digital assistants.

Liu and Wu (2017) also examined the potential of artificial intelligence features. The study by Liu and Wu (2017) examined how artificial intelligence can be used in digital marketing and how it can help

better market products. Their study aimed to identify the potential role of AI in digital marketing for its improvement.

The authors stated that there are a few areas in which AI can be used in digital marketing, such as "advertising, content generation, search engine optimisation, product recommendation, customer service and sales force." Liu and Wu (2017) have found that the main advantage of using AI in digital marketing is that it allows marketers to provide better service based on user preferences.

Zielke (2018) conducted a study that was interested in applying artificial intelligence within digital marketing. Zielke (2018) has done a literature review and points out that the main issue with implementing artificial intelligence in digital marketing is the question of ethics.

He found several published articles that discussed the ethical issues of AI in marketing, particularly the use of AI for profiling and personalisation and the use of AI in advertisement.

## Conclusion

In conclusion, the present work has shown how AI is used in digital marketing. The main focus of this research was on the application of AI in digital marketing compared to its application in other fields such as e-commerce, e-business and e-government.

The main purpose of this research was to identify the use of artificial intelligence technology within marketing to provide evidence of how it can improve digital marketing services. More specifically, the research intended to propose future research related to AI, identify areas where further analysis could help improve marketing by using artificial intelligence technology, and identify areas where further analysis could help improve AI development.

Specifically, the research has shown how AI can be applied in digital marketing by highlighting its application's positive and negative aspects. These are presented in future research areas covered in this thesis.

Based on the results of this research, it is concluded that artificial intelligence is currently used for data collection and developing services for marketing

purposes; however, further analysis could provide more information on the potential ways AI could be implemented within digital marketing.

Future research could use artificial intelligence to improve digital marketing services such as product development, service improvement and market expansion.

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