

The Complementary Relationship Between Digital Marketing and Artificial Intelligence: Future Insights

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Abstract

This study examines the complementary relationship between artificial intelligence and digital marketing in the context of modern digital transformations. It highlights the importance of artificial intelligence as a strategic tool that supports the development of marketing strategies by enhancing data management and analyzing customer behavior using technologies such as machine learning, blockchain, and chatbots. The aim of the study is to explore the impact of AI on accelerating marketing processes, improving responsiveness to customers, and enhancing marketing performance. It also sheds light on the practical applications of AI in digital marketing and illustrates how these technologies can improve the customization of strategies and contribute to business development. The study emphasizes the role of AI in creating innovative solutions that help organizations adapt to the increasingly competitive market demands and achieve more accurate and effective marketing outcomes.

Keywords: Digital Marketing, Artificial Intelligence, Digital Transformation.

Introduction

Digital marketing is considered one of the most prominent modern fields that has witnessed growing interest in recent years, significantly contributing to enhancing the promotional processes of goods and services, thereby stimulating demand. With the rapid advancements in information technology, innovative marketing methods have emerged, replacing traditional approaches. This shift has prompted marketing professionals to seek the latest applications and software that help implement promotional strategies effectively across various digital platforms.

As institutions across all economic and service sectors strive to adopt cutting-edge technologies to reach their target audiences and boost sales and profits, artificial intelligence (AI) has emerged as a vital tool supporting this orientation. Investing in AI technologies has become a fundamental step in the current era due to its pivotal role in transforming the marketing landscape. Its impact spans across various sectors, as it is now widely used to manage customer interactions in sophisticated ways. For instance, modern digital marketing requires instant responses to a vast number of messages and comments from consumers, as well as the automated delivery of detailed information about products and services.

By leveraging AI technologies such as machine learning, blockchain, and smart chat applications (chatbots), organizations can reduce dependence on staff for routine customer service tasks. These systems enable real-time responses and unrestricted interaction regardless of time or location and can automatically send required information to customers via email. This, in turn, eases the workload on teams, speeds up marketing processes, and enhances the efficiency of companies in dealing with the growing challenges posed by business expansion and intense market competition.

Therefore, the adoption of AI technologies in marketing is not only about enhancing marketing performance but also about developing business strategies, accurately analyzing customer needs, and supporting decision-making processes within organizations. These tools have become indispensable for achieving market leadership and excellence.

Based on the above, the main features of the research problem can be formulated in the following questions:

Main Research Question:

- What is the complementary relationship between artificial intelligence and digital marketing in light of modern digital transformations?

To delve deeper into the topic, the following sub-questions are proposed:

- What is meant by artificial intelligence, and what are its main uses in digital marketing?
- What are the key manifestations of AI usage in the field of digital marketing?
- What are the main AI applications and technologies used by organizations in marketing to enhance its effectiveness?

Objectives of the Study:

- To explore the relationship between artificial intelligence and digital marketing, and assess the extent of its impact on the development of modern marketing strategies.
- To highlight the most prominent AI applications used in digital marketing and demonstrate their importance in supporting business organizations as essential tools for enhancing and evolving marketing technologies.
- To contribute, even modestly, to raising digital awareness among Arab researchers regarding the practical applications of AI in digital marketing and its impact on marketing performance.
- To clarify the vital role of AI technologies such as blockchain, machine learning, and cloud computing in accelerating marketing processes, which positively affects sales growth and profit maximization.

Significance of the Study:

The significance of this study lies in exploring the effects of the digital era on modern marketing, where recent digital transformations have brought about a radical change in traditional marketing methods. These developments, which have swept across all sectors without exception, are pushing institutions to adopt innovative strategies to keep up with market demands. Among these developments, AI stands out as a strategic digital tool based on continuous innovation, making it a key element in enhancing the efficiency of marketing operations.

In a highly competitive business environment, it has become essential to seek advanced marketing solutions that help companies improve their performance and strengthen their competitive edge. AI is one of the main drivers of this transformation, as its various applications enable organizations to restructure their marketing strategies in line with modern technological developments. These applications have triggered a real revolution in the marketing world, giving rise to new concepts—most notably, robotic marketing.

Robotic marketing is defined as an advanced approach that relies primarily on AI to analyze market data and design effective global marketing strategies. It also uses advanced technologies, such as robotics and big data analytics, to gain accurate insights into customer behavior and needs, thus enhancing the efficiency of marketing campaigns and ensuring more precise and effective results.

Research

Following the study and analysis of the research topic, the descriptive-analytical method was adopted to comprehensively address all aspects of the subject. This approach aids in accurately diagnosing the research problem and studying its various dimensions. It also allows for an in-depth understanding of the role of artificial intelligence in digital marketing by reviewing its various applications and their impact on modern marketing strategies. Furthermore, the study is supported by a set of tables and statistical figures that illustrate the rates of AI usage in this field, providing a clear view of its adoption in digital marketing practices.

Methodology:

1. Theoretical Framework of the Study
1.1. Introduction to Digital Marketing

Digital marketing is one of the most widespread and modern concepts in today's business environment. It represents a contemporary approach that emerged as a result of the digital evolution and the massive technological revolution in

information and communication fields. This approach aims to harness and effectively utilize available data to support marketing activities and enhance organizational performance.

When exploring the concept of digital marketing in depth, it becomes clear that it is a dynamic process that involves the intelligent use of digital technologies, with a focus on developing marketing strategies aligned with future trends. This contributes to improving the efficiency of digital resources by leveraging expertise, databases, and digital tools available online to create a strong competitive edge in the digital marketplace.

Accordingly, marketing in general can be considered the primary driver for achieving organizational goals. Its core role revolves around accurately identifying the needs of target audiences and developing effective strategies to earn customer loyalty in ways that surpass competitors, thereby reinforcing the institution’s position in the rapidly evolving digital business environment.

Digital marketing is also defined as the optimal use of digital software and technologies, with a particular emphasis on information and communication technology as a key factor in enhancing the efficiency of marketing operations. This approach aims to improve the productivity of marketing activities—either by developing organizational functions or by enhancing the performance of other marketing processes—thus contributing to more effective and sustainable outcomes in digital business environments (Al-Sharif, 2013).

Various theoretical and scientific frameworks have addressed the concept of digital marketing in detail. Some view it as the optimal utilization of specialized expertise in the marketing field to formulate and develop new strategies that enable organizations to achieve their current and future goals more efficiently than traditional marketing methods, which rely on standardized approaches.

Therefore, digital marketing—also known as e-marketing—is one of the latest branches of marketing knowledge that has recently emerged. Although research in this field is still in its early stages, it has experienced rapid growth thanks to the radical changes in information technology and digital communication systems. Digital marketing has become one of the most powerful technological tools capable of driving fundamental transformations in the philosophy, trajectory, and applications of marketing, making it a central element in shaping the future of business and directing marketing strategies toward greater efficiency and innovation (Naji, 2020).

1.2. Methods of Digital Marketing (*Parminder Kaur, 2015*)

- **Search Engine Marketing (SEM):**
Search engine marketing has proven to be an effective tool that allows companies to precisely target consumers by displaying ads on search engines. This method is an efficient strategy for attracting the largest possible audience and differs from traditional online advertising in that advertisers only pay when users actually click on the ad.

In this context, most online advertising campaigns aim to achieve two main objectives: enhancing brand awareness and prompting immediate user responses. SEM campaigns are generally divided into two main types: Pay-Per-Click (PPC), which focuses on paying for each click on an ad, and Search Engine Optimization (SEO), which aims to organically improve website ranking in search results to increase visibility and engagement.

- **Online Public Relations (PR):**
Online public relations involve promoting an organization, its brands, products, services, or websites through its presence on the internet and third-party websites, in addition to other digital media. This also includes distributing press releases via email or posting them on the company’s website before submitting them to online news platforms.

Digital PR activities typically include several key components:

- Link building and media coverage through editorial content.
- Utilizing blogs, online communities, and RSS feeds to increase engagement and communication with audiences.
- Managing how the brand is presented across digital platforms, with a focus on generating interest and utilizing viral marketing to raise awareness and interaction with target audiences.

- **Email Marketing:**
Email marketing is a highly effective method for distributing information about products or collecting customer feedback and inquiries regarding a product or service. This is achieved by sending emails to current and potential customers. Email addresses may be collected or purchased for marketing purposes.

This form of marketing is considered one of the most prominent types of direct marketing, contributing significantly to the effective promotion of products and services, increasing profits and sales, and delivering special offers on new products. Email marketing strategies include two main directions: subscribing to receive updates and offers, and unsubscribing from mailing lists at the customer’s discretion.

1.3. Communication in Digital Marketing Models:

Communication in marketing is not a new concept—it has always been essential since the inception of marketing. Marketing professionals have always needed to engage in effective communication with various external audiences, including clients, consumers, and other entities targeted for the promotion of goods and services. This communication is facilitated through the following models:

- **Affiliate or Sub-Program Marketing:**
This strategy is considered one of the most successful in digital marketing. It relies on revenue sharing between the advertiser or merchant and the publisher of affiliate programs. Many multilingual websites allow marketers to display their products with detailed accompanying information. These platforms also help familiarize audiences with the products through promotional articles, thereby increasing product reach among a wide range of users. (Ahmed, 2014)
- **Marketing via Interactive Advertising:**
This involves a collection of articles and advertisements displayed on large, highly visited websites with strong audience engagement. It is crucial to verify the site’s market reputation and ensure that the platform is dedicated to the specific product category being marketed—not unrelated products. Prominent platforms used in this form of marketing include www.amazon.com and www.eBay.com, among others that contribute to enhancing digital marketing opportunities. (Ahmed A., 2019)
- **Sales Forecasting:**
The market is a constantly volatile environment, influenced by economic and social factors that shape its dynamics. These negative fluctuations can cause significant changes for companies—for instance, the 2008 global economic recession.

With the integration of artificial intelligence into various sectors, it is now possible to forecast future market trends with greater accuracy. This enables the implementation of effective digital marketing strategies based on these predictions, thus helping to mitigate many potential future challenges. (Parminder Kaur, 2015)

1.4. Performance Measurement Tools in Digital Marketing
(*khamasat.com, 12/03/2022*)

- **Google Analytics:**
This tool is used to monitor key performance indicators (KPIs) for websites that significantly impact digital marketing. These indicators include:
 - Number of visitors to the website
 - Duration of visits and time spent browsing
 - Bounce rate, indicating the percentage of visitors who leave after viewing a single page
 - Number of page views per session

Such data helps evaluate the website's effectiveness and improve digital marketing strategies based on visitor behavior.

- **Facebook Insights:**
This feature provides detailed information on key metrics for Facebook-based digital marketing, such as:
 - Better understanding of the audience and identifying content they prefer
 - Tools to measure views and likes on posts
 - Insights into audience interaction with posts through metrics like comments and shares

- Identification of traffic sources to the page, aiding in understanding how visitors arrive
- Determining peak times when followers are most active

These tools enhance marketing strategies on Facebook, enabling deeper audience understanding and better content customization.

- **Twitter** **Analytics:**
This tool reveals how audiences respond to marketing content on Twitter by measuring:
 - Tweet views
 - Engagement rates (likes, comments, retweets)
 - Types of interactions received
- **YouTube** **Analytics:**
A powerful tool that offers deeper insights into current and potential audiences. It provides valuable data for digital marketing by analyzing high-performing videos. Key features include:
 - Average watch time per video
 - Traffic sources that led users to the content
 - Audience demographics such as age, location, and interests

Digital marketing has become a modern approach to studying customer behavior, relying on metrics such as downloads, likes, visits, views, comments, ratings, and survey feedback. This marketing form is evolving rapidly, significantly impacting consumer behavior and the broader market. As a result, companies are redesigning their strategies to better utilize modern communication networks and available data, enabling ongoing interaction between businesses and customers.

Digital marketing contributes to a fundamental shift in business practices by leveraging the Internet as a primary platform. It allows businesses to adapt to customer needs while reducing transaction costs. It also enables customers to shift from time-and-location-based behavior to unrestricted digital engagement. Through these strategies, companies can minimize reliance on sales agents and instead focus on building databases that reach both current and potential customers.

Moreover, digital marketing allows companies to connect with customers who are difficult to reach through traditional channels due to time or location constraints. This expands outreach and reduces costs. Through this, businesses can provide unlimited information to audiences with minimal human intervention, and tailor content to create products and services that meet individual customer needs.

Digital marketing platforms also offer efficient ways to complete transactions between companies and customers, as seen with major firms such as **Dell** and **Amazon.com**. (Yazdanitard, 2014)

Looking Ahead: Promising Prospects for Digital Marketing

The future of digital marketing appears full of promise, especially with the growth of social media platforms, which are among the most profitable virtual tools for marketing. These platforms significantly contribute to creating opportunities and options for global audiences, offering services efficiently, affordably, and in record time.

Continuous technological advancements are turning digital marketing into a field rich with opportunities, guided by the following emerging trends: (Banerjee, 2020)

- **Cost-Per-Click (CPC)** **Mechanism:**
Given that a large part of online marketing relies on digital technologies, the scalability and effectiveness of advertisements are deepened using this method. Although there's a risk of market saturation, CPC remains profitable, especially under current inflationary trends.
- **Cost-Per-Action Model and Digital Advertising Technologies:**
These are key areas of focus for online advertisers, with significant portions of promotional budgets allocated to them. Thus, digital marketing is considered the ideal method for conducting and promoting business. It reduces expenses and enhances business profitability compared to traditional methods.

Various strategies can be designed within this type of marketing to reach targeted or specialized customer segments—those with specific expectations and preferences—helping to achieve campaign objectives regardless of expenditure. This makes digital marketing more dynamic and flexible, relying primarily on online digital media accessible anytime, anywhere.

For example, any promotional campaign can be accessed via websites at any time of the week, with instant content updates and message changes—free from geographical constraints.

2. The Complementary Relationship Between Artificial Intelligence and Digital Marketing

Artificial Intelligence (AI) can be described as a set of advanced technologies aimed at simulating human cognitive abilities through intelligent computer systems. These systems are capable of performing various tasks such as learning, planning, problem-solving, reasoning, and evaluation. The knowledge produced by these systems is typically advanced and self-directed. A prime example is the *Analytics* program, which is designed to handle complex and unstructured issues, providing solutions or suggestions in a manner that resembles expert performance. Consequently, it is sometimes referred to as an "expert system." This field, known as Artificial Intelligence, includes applications such as expert systems, natural language processing, speech recognition, and computer vision (Mohamed, 2021).

It is self-evident that digital marketing cannot be conceived without relying entirely on digital tools and technologies. This underscores the necessity of studying the technological infrastructure that underpins and supports this form of marketing. These technical components are closely tied to AI technologies, and their most prominent features can be outlined as follows (Prokopis Theodoridis, May 2019):

- **Social Media Marketing:** Recent research focuses on analyzing large volumes of scientific publications addressing marketing use rates on these platforms. These studies often explore consumer behavior, intentions, and interpretations of digital images. Data is analyzed using machine learning algorithms and advanced data mining methods to identify trends and improve marketing strategies.
- **Content Production, Predictive Marketing:** These processes involve analyzing data extracted from blogs, websites, e-commerce platforms, and social media. Techniques include data mining, image analysis, text mining, and machine learning models such as keyword extraction, expert systems, decision-support tools, text analysis, and predictive modeling—all aimed at producing high-quality content tailored to user interests and behavior.

2.1. Aspects of Artificial Intelligence in Digital Marketing

Marketing—particularly digital marketing—is among the fields that benefit most from AI technologies. Organizations have begun adopting this technological shift to keep pace with contemporary market trends. It has become increasingly evident that marketers are recognizing the intrinsic value AI brings, especially in terms of efficiency, personalized experiences, and enhanced marketing performance.

Key practical applications of AI in digital marketing include (Holmi, 2021):

- **Automated Content Generation:** Using advanced algorithms, AI can create marketing texts aligned with audience interests.
- **Data Organization:** AI is utilized to filter, analyze, and extract the most valuable insights from large datasets.
- **Email Marketing:** Personalized messaging and optimized timing are achieved through machine learning techniques.
- **Targeted Digital Advertising:** User behavior analysis is leveraged to deliver highly relevant advertisements.
- **Online Search:** AI models enhance search result accuracy by interpreting user intent more effectively.
- **Chatbots:** These systems provide real-time, interactive support, enhancing the overall user experience.
- **Predictive Analytics:** AI is used to anticipate future customer behavior and support data-driven decision-making.

AI has significantly advanced the field of online search and search engine optimization (SEO), notably with the development of voice search and algorithms such as Google RankBrain, which employs machine learning to interpret user queries and return more precise and relevant results (Jarek & Mazurek, 2019). This shift has enabled marketers to utilize

AI as a powerful tool for data analysis, feedback collection, and the extraction of actionable insights that bolster digital marketing strategies.

A vital aspect of marketing lies in the use of databases. This approach entails the intensive reliance on information systems to manage and analyze customer databases. These databases collect, store, and process customer data to enhance and precisely direct marketing strategies toward targeted segments. Stored digitally, these databases enable organizations to track customer preferences and behaviors, thereby contributing significantly to the achievement of marketing objectives.

Organizations are increasingly committed to creating dedicated customer databases that contain detailed and comprehensive information, with the capability for continuous updates—especially regarding new customers. A customer database can be defined as an organized system that contains detailed data on both current and potential customers and serves as the foundation for building targeted marketing campaigns.

Among the practical applications of such databases is the "scoring" technique. This tool involves assigning points to evaluate potential customers based on pre-defined criteria set by the organization. These criteria may include, for example, the customer's level of engagement with email messages and the number of orders placed. This technique also facilitates customer segmentation into distinct groups and the customization of suitable content for each segment through various communication channels, including websites (Leila, 2016).

Digital marketing has evolved from simply designing targeted advertisements to emphasizing greater customer engagement and interaction, as well as building long-term relationships based on a continuous understanding of behavioral changes and evolving needs. In this sense, digital marketing is viewed as a dynamic, adaptable process grounded in technological enablement—where firms collaborate with customers and partners to create, exchange, and sustain value in a participatory manner.

Digital marketing encompasses a wide array of areas, most notably: social media marketing, mobile marketing, e-commerce, and the use of tools for customer data extraction and analysis. It also includes multiple applications of digital technologies such as the Internet, mobile devices, digital television, email, and databases—all deployed to support both interactive and non-interactive marketing activities aimed at effectively attracting and retaining customers.

Within this context, digital touchpoints between the organization and its customers are considered fundamental components of the modern marketing experience. These touchpoints include social media platforms, search engines, e-commerce interfaces, and mobile applications. Meanwhile, digital communication interfaces refer to tools used by marketers—such as market research, email campaigns, digital advertising, and search engine optimization (SEO)—to provide customized and relevant content for each customer segment.

The use of data in digital marketing has significantly advanced thanks to investment in a data-rich digital environment. This includes information such as clicks, ratings, reviews, blogs, tags, comments, shares, and tweets, in addition to various forms of consumer interaction—both with the organization and its competitors. Digital media and devices—such as computers and smartphones—are employed to reach customers with increasing precision.

This reliance on digital technologies has elevated the importance of data, turning it into a critical tool for understanding customer behavior, analyzing market and competitive dynamics, and developing effective marketing strategies that assess outcomes and optimize performance. Researchers argue that the vast volume of available data allows organizations to track patterns in customer preferences online, deliver more accurate marketing responses, and even predict future behaviors. Moreover, this digital data can be leveraged to comprehensively and continuously evaluate corporate performance (Eriksson, 2020).

2.2. AI-Driven Marketing

Artificial Intelligence Marketing (AIM) is a modern approach aimed at leveraging advanced technological capabilities and customer data to enhance and optimize the user experience. This approach relies on a suite of tools and technologies such as big data analytics, machine learning, and deep insight extraction about target audiences. The emergence of this paradigm has led to the current era being referred to as the "Age of Smart Marketing," due to the fundamental transformation it has introduced in how marketers interact with their customers compared to traditional models.

The following are a set of advanced digital tools and techniques expected to play a pivotal role in shaping future marketing strategies using AI (Piyush Jain, 2020):

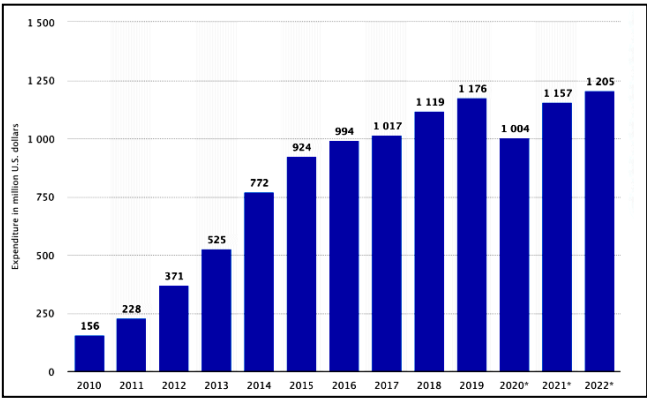
- **Deep Prospecting:** As technology use expands, customers now have instant access to the information they need via advanced search engines like Google and Yahoo. AI technologies assist marketers in analyzing search behaviors and identifying high-interest points where marketing efforts should be concentrated.
- **Genius Ads:** With the availability of vast amounts of data, companies can design digital advertising campaigns that are more personalized and efficient. AI technologies help analyze keywords and user behavior on social media, leading to the creation of ads that align with individual needs and preferences.
- **Filtered Content:** AI enables marketing teams to analyze individual user data and design tailored content for specific target segments. This approach is used to identify potential buyers and deliver offers that match their interests and purchasing behaviors.
- **Chatbots:** AI-powered tools like chatbots are effective means of maintaining customer engagement by offering real-time interactive services. These tools enhance the customer experience and help sustain long-term relationships.

AI has significantly reshaped the marketing landscape, with data analytics now forming an essential part of this domain. These advancements have provided marketing teams with powerful tools to extract value from AI-driven data resources.

Artificial intelligence is defined as the ability of automated systems to perform cognitive tasks traditionally associated with humans, such as reasoning, learning, problem-solving, interaction, and creativity. In the marketing context, AI contributes to three core pillars: **personalization**, **prediction**, and **automation**:

- **Personalization:** Involves customizing marketing messages and offers to suit each individual customer by using personal data to create a unique interaction.
- **Prediction:** Involves building predictive models based on behavioral pattern analysis to anticipate future scenarios and guide marketing decisions.
- **Automation:** Refers to AI-supported decision-making processes, such as recommending products or implementing dynamic pricing—improving operational efficiency while saving time and effort.

Figure 01: Adoption Rates of Artificial Intelligence Applications in Digital Marketing



Source: Statista, 2022

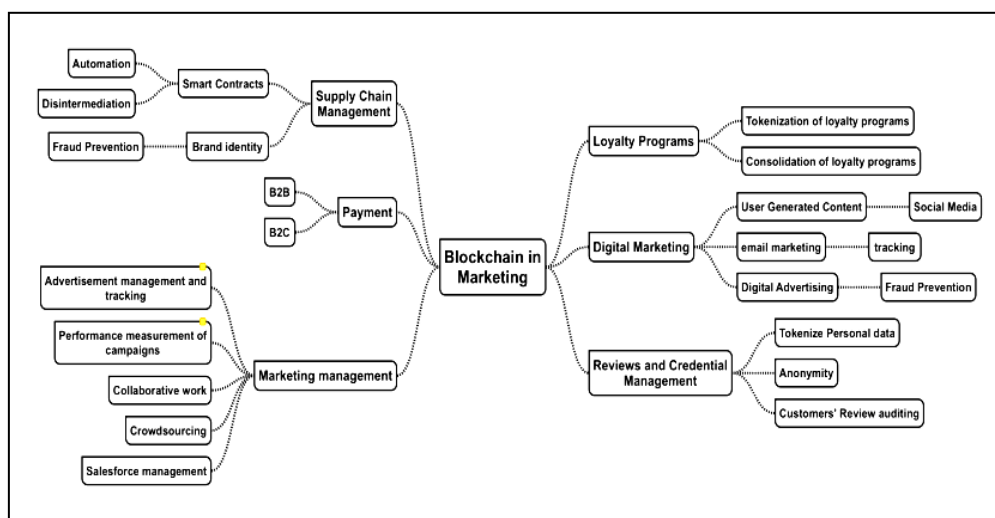
3. Applications of Artificial Intelligence in Digital Marketing

3.1. Blockchain Technology
Blockchain is considered one of the most promising technological innovations of the 21st century, introducing a significant shift in traditional business models across numerous sectors such as finance, supply chain management, commerce, and beyond. This technology is grounded in the concept of *Distributed Ledger Technology (DLT)*, which allows transactions to be recorded in a decentralized and secure manner.

Blockchain provides innovative solutions to the challenges faced by businesses, particularly in achieving high levels of transparency and operational security. Although its use is most common in financial sectors, there is growing interest in

expanding its applications to include administrative processes and various industrial domains—highlighting its potential to create deep and lasting impacts on the future of business (Loannis Antoniadis, 2019).

Figure 02: Applications of Blockchain in Digital Marketing



Source: Taher M. AL Ahwal, 2021

Blockchain also plays a vital role in data verification and secure reward distribution. DLT facilitates automated payments across different platforms, allowing brands to offer financial incentives—even with limited customer interaction.

One of blockchain’s most distinguished features is its ability to foster transparency and trust. It assists advertisers in identifying the most suitable publishers for their marketing efforts and enables precise evaluation of advertising campaign outcomes. Moreover, it enhances trust among all involved parties and mitigates fraud risks, ultimately reducing costs and accelerating transaction speed ([source](#), 2022).

Recent technological advancements have accelerated the pace of business environments, pushing marketing into advanced phases of development. In today’s digital era, adapting to digital trends is indispensable. The platforms used in online promotion are equipped with sophisticated algorithms capable of identifying optimal target audiences. Experts are now increasingly focused on analyzing the role of AI in marketing and how it can offer innovative and effective solutions to major marketing challenges (Dan Dumitriu, 2019).

The use of AI in digital marketing has grown significantly in recent years, and this evolution is expected to drive major changes in marketing strategies and consumer behavior in the future. As such, marketing professionals must develop a multidimensional framework to understand AI’s impact—covering levels of intelligence, task types, and the nature of intensive interactions during practical applications. There is also a pressing need to study the ethics of AI usage, especially as its effectiveness increases in the near-future digital landscape (Thomas Davenport, 2019).

3.2. Literature Review: Machine Learning in Marketing

Machine learning is one of the most prominent applications of artificial intelligence and holds a vital position in various business domains. This field primarily focuses on developing systems that improve their performance over time. Algorithms are the core drivers of such systems. Thanks to these algorithms, AI agents powered by machine learning are bringing about rapid changes in the business world, prompting increasing interest from researchers and experts to develop new marketing studies aimed at maximizing the benefits of machine learning technologies.

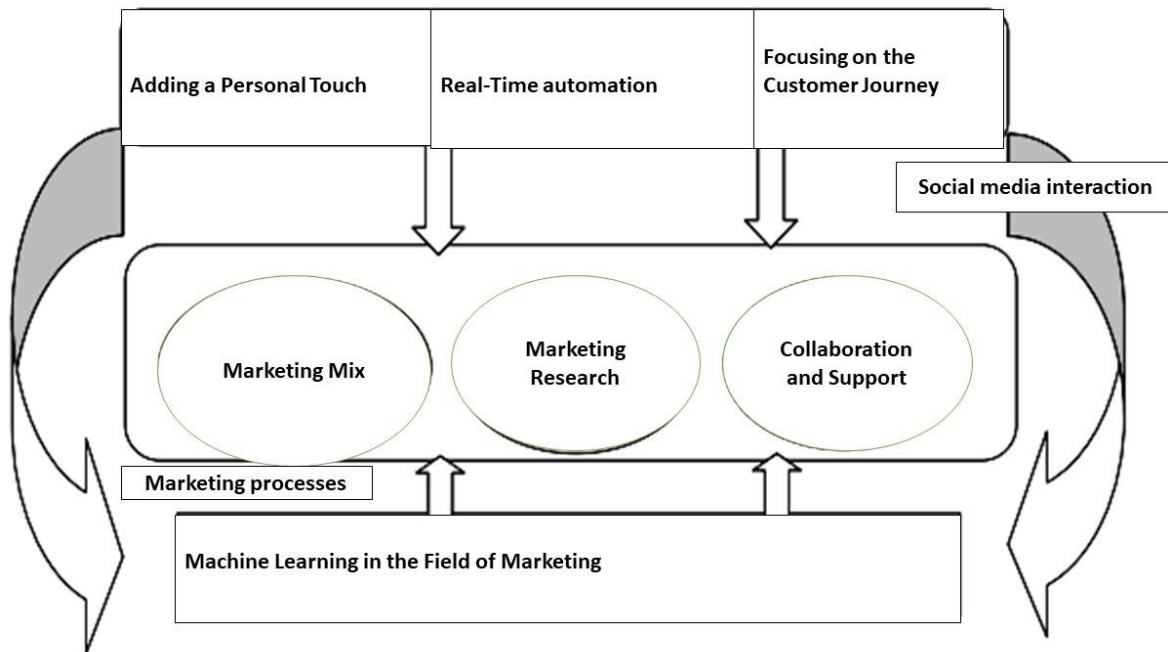
In recent years, numerous academic marketing studies have adopted machine learning methods, which are becoming increasingly prevalent. Below are the most prominent machine learning techniques used in marketing:

- **Support Vector Machines (SVM):** SVM is among the earliest machine learning techniques introduced to marketing. Several international studies have compared SVM with multidimensional logarithmic models, finding that SVM often outperforms these models in predictive accuracy. Researchers argue that while polynomial logistic models may be useful for insight generation, SVM excels in wide automated settings. These studies also revealed

that machine learning techniques generally outperform traditional marketing methods such as logistic regression and hierarchical models.

- **Traditional Text Mining:** This cutting-edge approach in machine learning focuses on *Natural Language Processing (NLP)* to convert unstructured texts from documents and databases into structured formats. This method is used to analyze market structures and visualize data—such as reviews on platforms like *Epinions*—which facilitates the creation of brand maps. In this context, machine learning is used to redefine how computers make predictions or perform tasks based on modeled data (Liye Ma, 2020).

Figure 03: The AI-Based Marketing Landscape



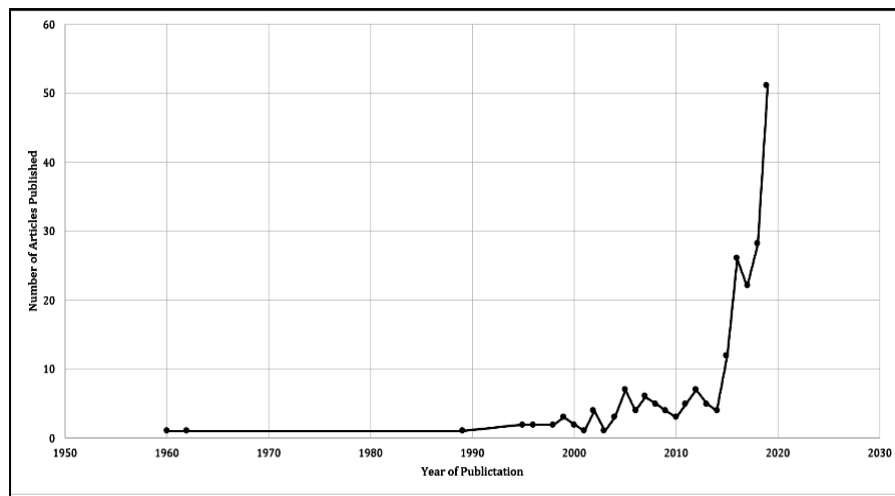
Source: Prepared by the researchers based on Liye Ma & Baohang Sun, 2020, p. 489

4. Descriptive Overview of Major Publications on Artificial Intelligence in Marketing

The first marketing article on artificial intelligence was published in 1960, followed by another in 1962—both appearing in the *Journal of Marketing*. These two articles were far ahead of their time, as the third publication in this field did not appear until 1989. However, the number of AI-related marketing articles remained quite limited and did not reach double digits annually until 2015.

Beginning in 2016, a noticeable surge in publications on this subject was observed, with no fewer than 20 articles published per year. This figure reached 51 articles by 2019, marking a clear indication of the growing interest among researchers in this area. This growth is largely attributed to the rapid technological advancements in artificial intelligence and its increasing applications in marketing. The trend is expected to continue rising significantly through to 2030 (Mekhail Mustak, 2021).

It is worth noting that the majority of these publications stem from international research institutions and economic scholars who are actively working to optimize digital marketing structures. In contrast, there is a notable lack of Arabic-language studies and research addressing these advanced topics in AI-based marketing.

Figure 04: Annual Growth of Published Articles on Artificial Intelligence in Marketing

Source: Mikhail Mustak, 2021, p. 8

The following table presents the most significant journals and the number of published articles related to artificial intelligence in marketing between 1996 and 2019:

Table 01: Number of Annual Publications on Artificial Intelligence in Marketing

Journal name	Year of Publication																			Total	
	9	9	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		1
	6	9	1	2	3	4	5	6	7	8	9	1	1	2	3	5	6	7	8		9
Journal of Business Research	1	1		1		2					1				1		3	1		4	15
Industrial Marketing Management	2		1				1	1		2		1			1		1				10
International Journal of Market Research						1		1	1		1				1				1	2	8
Technological Forecasting and Social Change																	3		2	3	8
Journal of Business & Industrial Marketing													1						4	2	7
Journal of Technology Innovation Management Review																			2	4	6
Marketing and Innovation																		3		1	4

Managem nt																		
Marketing Science											1	1			1	1		4

Source: Prepared by the researchers based on the previously cited reference, p. 10

Conclusion

This study has highlighted digital marketing as one of the most transformative technologies that has fundamentally reshaped the way marketing activities are conducted in the modern era. The tremendous technological advancements in the fields of the Internet and Artificial Intelligence (AI) have brought about a major shift in the philosophy and practice of marketing applications. Over the years, digital marketing has become an essential component of business strategies across companies and institutions worldwide. This is largely due to shifts in consumer behavior and digital trends that have influenced virtually every sector. AI, in particular, has played a pivotal role in supporting these developments by introducing innovative tools and techniques that have added a new dimension to the field, making digital marketing more efficient and effective.

Based on the insights gathered through this study, several key findings emerge that reflect the current reality and future direction of digital marketing:

- I. Contemporary Digital Orientation and Technological Advancement:
In recent years, the use of the Internet and digital services has expanded rapidly, making the virtual world the preferred space for most individuals to search for and purchase products and services. We are witnessing a major shift in consumer behavior, as people increasingly rely on the Internet in their daily lives. Consequently, it has become imperative for marketing practices to evolve accordingly, positioning digital marketing as the most effective option to reach target audiences. As a result, most companies now allocate substantial budgets to digital marketing in order to meet the growing demands of the digital marketplace and to develop promotional strategies aligned with these technological transformations.
- II. Artificial Intelligence as a Core Tool in Digital Marketing:
With the significant progress in AI applications, this field has become central to the digital marketing industry. AI has driven a digital revolution in how data is analyzed and customer behavior is understood. It has introduced advanced tools such as machine learning and predictive analytics, which have enabled companies to tailor their marketing strategies with greater precision and effectiveness. AI has become indispensable for digital marketers, offering them the ability to process vast amounts of data and deliver highly personalized marketing solutions that align with the unique needs of each individual customer. This capability to design intelligent and customized campaigns has firmly established AI as a fundamental tool for organizations striving to achieve competitive advantage in the marketplace.

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