

Review article on advanced technologies & their role in marketing

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Abstract:

This article provides a comprehensive analysis of the technological advancements in marketing that have revolutionized how businesses interact with their customers. It focuses on four key areas of technological advancement that are altering the face of contemporary marketing: hyper-personalization, artificial intelligence (AI), marketing analytics, and the metaverse. Beginning with a discussion of hyper-personalization and how it has transformed marketing strategies, the article then moves on to examine how it has altered business practices. It explains how businesses can use data and analytics to deliver personalized customer experiences, thereby boosting customer engagement and loyalty. The article then discusses the role of AI in marketing. It describes how AI-powered tools can assist businesses in automating marketing processes, analyzing customer data, and gaining insights that lead to more successful marketing campaigns. Additionally, the article examines the significance of marketing analytics and how businesses can utilize data to optimize their marketing efforts. It examines various analytical techniques and tools that businesses can employ to gain a deeper comprehension of customer behavior, preferences, and needs. The article concludes by discussing the concept of the metaverse and its potential effects on marketing. It explains how the metaverse can provide a new platform for businesses to engage with customers and deliver personalized experiences, and how it is poised to revolutionize the future of marketing. This article provides a comprehensive overview of the technological innovations in marketing that are altering the business landscape. It highlights the key trends and strategies that businesses must adopt to stay ahead of the curve and succeed in the digital landscape of today, which is rapidly evolving.

Keywords: hyper-personalization, artificial intelligence (AI), marketing analytics, metaverse, contemporary marketing.

Introduction:

Simply said, marketing is any action that a corporation can do to raise recognition and interest in their product or service. These acts might take many different shapes, but they always aim to offer a favorable client experience with the brand. Marketing attempts to provide prospects and customers with stand-alone value by presenting them with high-quality material that highlights the intrinsic value of the product. This strengthens the brand and increases client loyalty, which leads to increased sales. Digital marketing, also known as online marketing, social media marketing, and E-marketing, is a new era marketing technique. Nearly every element of human life has been transformed by the introduction of new technologies. Personalization and engagement have increased in marketing, allowing consumers to learn about products and services.

Marketing technology, often known as MarTech, is an industry buzzword that refers to a variety of systems, software, and solutions used to achieve marketing objectives. It can be used to target clients with targeted digital advertisements, increase sales through e-commerce platforms, and even collect information about potential customers.

In addition to the more well-known breakthroughs like the internet, increased processing capability, and mobile devices, social media is another innovation that has altered society. Similarly, radical new technologies such as augmented reality, robots, artificial intelligence, and the Internet of Things have an impact on the marketing tactics of businesses. By adding a new dimension to traditional marketing techniques, technology has enabled this business reach a whole new level. It is now possible for businesses to reach potential clients on a worldwide scale and build a broader customer base than ever before.

This should not come as a surprise, given businesses in practically every economic area are rapidly expanding their technological expenditures. This is due to the fact that businesses are investing in technology to achieve a range of goals. Retailers are investing in AI-powered writing assistants because they automate monotonous activities, provide high-quality content, and can be used by all departments to create articles and other forms of content. Manufacturers are

investing in 3D printing and robotic production processes in order to get a competitive edge in the marketplace and boost their production efficiency.

Scope of New Technologies in Marketing:

As consumers' access to information has developed over time, so have marketing strategies. In order to compete with the internet, traditional radio advertising has switched to television commercials. As television advertisements grow less successful and people devote more attention to their mobile devices, digital marketing has become increasingly important. In addition to normal market progressions, the COVID-19 pandemic is expanding the online scope of digital marketing. Digital marketing has always been an integral component of a company's online presence and visibility. With the rise of social media and digital marketing, there are now more options than ever before to reach potential clients.

With the incorporation of digital platforms into marketing strategies, daily life, and the manner in which consumers interact with companies and products in the 20th century, digital marketing campaigns have become a potent tool. They are believed to be more effective than conventional marketing techniques due to their unique capacity to demonstrate to potential buyers what they would receive from a particular product or service.

The concept of marketing automation was introduced in 2007. This automation enables businesses to segment their clients, execute marketing campaigns across several channels, and provide customers with individualized information. Numerous gadgets may now access digital media, which has led to a dramatic growth in digital marketing initiatives. The arrival of advanced technologies has generated massive new potential for digital marketers to improve the consumer experience and have a significant impact on our way of life. Big data and predictive modelling have assumed a central role in determining the performance of a business and in assisting firms in making decisions in real time.

NFTs, or Non-Fungible Tokens, are a new sort of digital asset that may be traded safely. They are swiftly becoming the next big thing on social media sites, as Facebook just announced that its 3 billion users would soon be able to post NFTs on Facebook and Instagram for secure trading. As the reach of digital marketing technologies continues to expand, businesses are staying current and ahead of the curve by depending on a number of digital marketing methods that can be used to both their traditional brick-and-mortar stores and used to establish an online presence.

The majority of consumers use smartphones and conduct product research online prior to making a purchase; therefore, it is crucial for firms to employ effective digital marketing techniques with a high Return on Investment to reach these potential customers (ROI). In 2020, the market was worth \$3.6 billion, and by the end of 2027, it is projected to reach \$9.6 billion. Research assessing the worldwide marketing technology environment determined that the martech business is valued 344.8 billion U.S. dollars in 2021.

New Technologies in marketing discussed in this paper are:

- Hyper-personalization
- Marketing Analytics
- Metaverse
- Artificial Intelligence

Hyper Personalization:

The Oxford dictionary defines “personalization” to mean- “the action of designing or producing something that meets someone's individual requirement.” Marketing personalization is a way to acknowledge the uniqueness of each customer's needs by satisfying them with products that are tailored precisely to their preferences. (Suprenant & Solomon, 1987).

Never before has the need of providing a tailored experience been greater. This is demonstrated by the fact that a 5 percent - 15 percent gain in revenue is directly attributable to successful personalization, along with a 10 percent - 30 percent boost in marketing efficiency within a single channel. Companies now have access to client records and may customize items to the tastes and preferences of individual customers. A one-size-fits-all strategy is not as effective as it once was since targeting a more specific group of clients will create more opportunities.

To improve sales, commercial customization employs demographic and psychographic data to build individualized products. Relational personalization leverages social and relational data to fulfil emotional and socialization demands.

Classification of personalization:

According to Aksoy et al	According to Fan and Poole
What is personalized?	What is personalized? functionality, content, interface, channel
How the personalized design is communicated to the customer	For whom it is personalized? (Individual or Group)
who does the personalization	who does the personalization (customer initiated or firm initiated)
what kinds of data are used	motivation behind personalization and the objective of personalization (architectural, relational, instrumental, and commercial)
where the data comes from? how it is personalized?	

Personalization can be classified into different types based on various criteria. Here are some common classifications of personalization:

Basis of Classification	Type
Based on data source	Implicit personalization: Based on user behavior, such as browsing history or search queries. Explicit personalization: Based on user-provided information, such as age, gender, or location.
Based on application	Content personalization: Customizing content based on user preferences and interests. Product personalization: Customizing products or services based on user preferences. Advertising personalization: Customizing ads based on user behavior and interests.
Based on scope	One-to-one personalization: Customizing experiences for individual users. One-to-many personalization: Customizing experiences for groups of users with similar characteristics.
Based on level of customization:	Rule-based personalization: Personalization based on predetermined rules and conditions. Machine learning-based personalization: Personalization using machine learning algorithms that can learn and adapt to user behavior over time.
Based on mode of delivery:	Online personalization: Personalization delivered through websites, apps, and other digital channels. Offline personalization: Personalization delivered through physical stores, events, and other offline channels.

There are a number of benefits that come with personalizing your marketing efforts:

1. improved customer engagement: When you personalize your marketing, you are more likely to capture the attention of your target audience. This can lead to improved customer engagement and ultimately, better results.
2. increased sales and conversions: Personalized marketing can also lead to increased sales and conversions. By tailoring your message to the specific needs of your target audience, you are more likely to persuade them to take action.
3. higher customer retention rates: Personalization can also help you to build stronger relationships with your customers. These deeper connections can result in higher customer retention rates, as well as repeat business.
4. better brand awareness and loyalty: Finally, personalization can also help you to create a more powerful brand identity. When customers feel like they have a personal connection to your brand, they are more likely to become loyal fans. This can lead to improved brand awareness and loyalty over time.

There are a variety of techniques for personalizing marketing messages and content. Here are few instances:

1. Use customer data to segment your audience and customize your message for each segment.
2. Use customer data to create targeted campaigns based on specific interests, needs, or demographics.
3. Use behavioral data to personalize the user experience on your website or app.
4. Use social media data to create targeted ads and content that is personalized for each user.
5. Use location data to deliver relevant, personalized content and messages to users based on their current location.

Marketing Analytics:

About 64 percent of the world's population uses the internet, supplying a large quantity of data to marketing initiatives. Data analytics typically refers to approaches, instruments, and technologies that provide individuals and enterprises with database knowledge and insights. With marketing exerting a disproportionate amount of impact in the research applications of data analytics, it provides valuable data and information for efficient and effective decision-making in a variety of parts of organic business operations.

Marketing analytics tools are among the technical tools used by firms today to uncover hidden information. In recent years, social media, digital marketing, big data, and marketing analytics have significantly altered the landscape of marketing theory and practise. Marketing analytics encompasses the study and analysis of small, large, structured, and unstructured data, as well as qualitative and quantitative data. The objective is to achieve comprehension, gather insights, and generate actionable solutions for efficient and successful marketing decision-making.

Marketing data must be obtained, handled, and analysed in order to get information and understanding of marketing operations, strategies, surroundings, and efficiency and effectiveness (using descriptive, causal, diagnostic, predictive, and prescriptive techniques and approaches).

Marketing management decisions in both for-profit and non-profit organisations require insights from business analytics models, which are a component of marketing analytics models. Numerous types of marketing analytics models, including as descriptive, diagnostic, predictive, and prescriptive models, are required to develop and provide insights for efficient and effective marketing decision-making. Numerous conceptualizations of marketing analytics could impede comprehension and application, despite the fact that they are applicable to a wide variety of business kinds. Marketing analytics can improve retailing, marketing performance review, general marketing management decisions, customer analytics, and other marketing activities.

Customer analytics is a key component of marketing analytics that links big data to concerns relating to consumer and client behaviour. It deals with the gathering, administration, analysis, and strategic use of information about customer and client behaviour toward a company's goods and services. Technologies and solutions for customer analytics assist marketers in making sense of massive amounts of data from customers and clients.

Branding strategy, customer acquisition, customer insight, customer retention, digital marketing, product development, product positioning, and promotional strategy are some more marketing domains where marketing analytics can be used.

Metaverse:

The metaverse is a shared virtual environment that people access via the Internet. A novel chance to expand their reach and interact with others in a virtual environment exists thanks to the metaverse, a new and developing technology. The Metaverse is an extension of the idea of virtual reality, and businesses are using it to create brand-new products that are based on the concept of the Metaverse.

This extended reality has paved a way for new potential metaverses, new digital properties and the way of owning them using non-fungible tokens. The Metaverse has the potential to be utilised in a variety of public relations and commercial efforts.

Businesses need to be aware of the potential advantages and disadvantages of this cutting-edge technology when it comes to marketing in the Metaverse. Businesses may now reach a wider audience than ever before, which is one of the key advantages of marketing in the Metaverse.

Businesses can conduct virtual events or construct virtual stores in the metaverse. Additionally, the Metaverse gives businesses the chance to gather information about their target markets. Using this information, marketing messaging can be customised to better reflect consumer behaviour. The Metaverse has the potential to become a very useful instrument for the purposes of marketing and branding.

Although they are far from the only ones, Microsoft and Meta are among the businesses developing technologies that will enable people to engage with virtual worlds. Numerous more big organisations, including Nvidia, Unity, Roblox, and even Snap, as well as numerous smaller companies and enterprises, are laying the groundwork for additional digital landscapes that are more like our real-world environments.

Virtual worlds are being used more frequently to facilitate social networking. This use is spreading increasingly widely. They offer a setting where individuals can interact with one another in a way that is both engaging to and fascinating to one another. Consider a scenario in which you wish to buy a home in your hometown despite working and living abroad. Your real estate agent ought to be able to provide you a virtual tour of your dream property if you are unable to physically travel to your native nation to confirm the specs. The way humans interact with technology and one another may change as a result of the metaverse. Companies will be able to operate more effectively as a result, and people will be able to interact with one another in novel ways.

More than three billion individuals play video games worldwide, according to data from the gaming Metaverse. Any sector changes might potentially have a significant influence on the economy given the size of the audience. By establishing a strong presence, interacting with users, and offering value, businesses can use the Metaverse for marketing, branding, and advertising purposes.

A number of major technology companies, including Microsoft, Nvidia Corporation, and Facebook (now known as Meta), are spending millions of dollars to create a digital universe that adheres to the idea of the metaverse.

Artificial Intelligence:

The development of consumer-generated data and the expanding availability of Machine Learning (ML) tools are revolutionizing marketing strategies. The continuous accumulation of data is both an opportunity and a challenge for businesses. IoT, a network of physical objects embedded with sensors, software, and other technologies to connect and share data with other devices and systems via the internet, is becoming increasingly accessible. Using artificial intelligence (AI) and machine learning (ML), it is possible to analyze collective behavior on a massive scale by analyzing a vast quantity of data.

By examining the results of prior acts and acting independently, AI systems can change how they behave. ML, on the other hand, is the complicated system of techniques used to build systems that learn or enhance performance based on the data they use in AI applications.

With 84% of marketing agencies embracing AI and ML projects and 75% of large organisations increasing customer satisfaction by 10%, machine learning in marketing is becoming a reality in many businesses around the world.

These machine learning systems have been divided into three separate classes based on the algorithms used for supervised learning, unsupervised learning, and reinforcement learning. Algorithms used in supervised machine learning simulate interdependence and correlations between input variables and desired results.

Algorithms in unsupervised machine learning systems do not try to anticipate a certain result. Instead, their goal is to uncover the underlying structural characteristics of the incoming data in order to produce meaningful representations of the data set.

Applications of AI can be divided into three categories:

- (1) Robotics and cognitive automation, which uses robotic process automation to automate back-office financial and administrative tasks;
- (2) Cognitive insights, which uses machine learning algorithms to find patterns in data and turn them into knowledge; and
- (3) Cognitive Engagement, which uses chatbots, intelligent agents, and machine learning to engage customers and employees.

Other attempts to standardise AI and ML applications in marketing offer more widespread classifications based on marketing actions, Product, Price, Place and Promotion (PPPP), and marketing strategies, Segmentation, Targeting and Positioning (STP) (4Ps).

Numerous instances of AI applications in marketing were analysed by Jarek and Mazurek (2019), who demonstrated how the examples reflected the marketing mix (Product, Price, Place and Promotion (PPPP)). Jarek cites hyper-personalization, automated recommendations, and the creation of new products as examples of applications for AI in product actions. Apple Pay, Google Pay, and PayPal, for example, use AI technology to automate price actions for payments, and reinforcement learning algorithms are able to dynamically alter prices by taking into account consumer preferences, competition activity, and supply characteristics.

Personalization is the process of designing messages specifically for a given consumer based on socio-demographic trends and past purchasing behaviour. Harley-Davidson The company used Albert AI, an AI-driven marketing platform, to identify high potential consumers and tailor the marketing campaign appropriately. By the third month, sales had increased as a result. NY could serve as an example of an ML application. Netflix employs a sophisticated recommendation engine that foretells what viewers will like to watch and makes suggestions in line with that prediction. In a similar vein, LinkedIn makes use of this technology to expand users' networks by suggesting "people you may know."

AI also is concerned with the customer experiences entailing improvements to the products, the user experience, and digital customer support. Great advancements in this field are being made by Internet of Things (IoT) technologies based on AI, particularly in the areas of product creation, product support, and customer relationship management. For instance, the home automation business June created a "do-it-all oven" that combines seven different appliances into one. With the aid of machine learning and computer vision technology, it might be able to recognise and prepare food, and offer an appropriate cooking method.

The influence on customer satisfaction is unclear, and some customers still prefer speaking to a human operator who can assist them with their needs rather than a chatbot. A human over a chatbot is preferred by nearly 50% of consumers in the UK and 40% of consumers in the US. Our research reveals that market knowledge and consumer sensing are the two key areas where decision-making may be improved. Computer vision and deep learning algorithms may identify emotions from facial expressions, body gestures, speech, and eye movements when users interact with AI (such as conversational bots), giving businesses more insights into user preferences.

Conclusion:

Marketing is any action that a corporation can do to raise recognition and interest in their product or service. Digital marketing, also known as online marketing, social media marketing, and E-marketing, is a new era marketing technique that allows consumers to learn about products and services. Marketing technology, often known as MarTech, is an industry buzzword that refers to a variety of systems, software, and solutions used to achieve marketing objectives. New technologies such as augmented reality, robots, artificial intelligence, and the Internet of Things have enabled businesses to reach potential clients on a worldwide scale and build a broader customer base. Companies are investing in 3D printing and robotic production processes to get a competitive edge in the marketplace and boost their production efficiency.

Digital marketing has become increasingly important due to the COVID-19 pandemic and the rise of social media and digital marketing. It is believed to be more effective than conventional marketing techniques due to its unique capacity to demonstrate to potential buyers what they would receive from a particular product or service. Marketing automation enables businesses to segment their clients, execute marketing campaigns across several channels, and provide customers with individualized information. NFTs, or Non-Fungible Tokens, are a new sort of digital asset that may be traded safely on social media sites. Businesses must employ effective digital marketing techniques with a high Return on Investment to reach these potential customers.

Hyper-personalization is a way to acknowledge the uniqueness of each customer's needs by providing products that are tailored precisely to their preferences. Companies now have access to client records and may customize items to the tastes and preferences of individual customers. To improve sales, commercial customization employs demographic and psychographic data to build individualized products. Personalization can be classified into different types based on data source and implicit personalization based on user behaviour. Machine learning-based personalization is a form of marketing that uses machine learning algorithms to learn and adapt to user behaviour over time.

It can lead to improved customer engagement, increased sales and conversions, higher customer retention rates, and better brand awareness and loyalty. There are a variety of techniques for personalizing marketing messages and content, such as segmenting customer data, creating targeted campaigns based on specific interests, needs, or demographics, using behavioural data to personalize the user experience on your website or app, using social media data to create targeted ads and content that is personalized for each user, and using location data to deliver relevant, personalized content and messages to users based on their current location. Marketing analytics tools are among the technical tools used by firms today to uncover hidden information. Marketing analytics is the study and analysis of small, large, structured, and unstructured data to achieve comprehension, gather insights, and generate actionable solutions for efficient and successful marketing decision-making. It can improve retailing, marketing performance review, general marketing management decisions, customer analytics, and other marketing activities.

The metaverse is a shared virtual environment that people access via the Internet, allowing them to expand their reach and interact with others in a virtual environment. Businesses need to be aware of the potential advantages and disadvantages of this cutting-edge technology. The Metaverse has the potential to become a useful instrument for marketing and branding, allowing businesses to reach a wider audience and gather information about their target markets. It also offers a setting where individuals can interact with one another in a way that is both engaging and fascinating. Major technology companies, such as Microsoft, Nvidia Corporation, and Facebook, are spending millions of dollars to create a digital universe that adheres to the idea of the metaverse.

Artificial Intelligence is also being revolutionised by the development of consumer-generated data and the expanding accessibility of Machine Learning (ML) tools. The use of artificial intelligence (AI) & Machine Learning (ML) in marketing is becoming increasingly common, with 84% of marketing agencies embracing AI and ML projects and 75% of large organisations increasing customer satisfaction by 10%. These machine learning systems have been divided into three classes based on the algorithms used: supervised, unsupervised, and reinforcement learning. AI applications can be divided into three categories: robotics and cognitive automation, cognitive insights, and cognitive engagement. Jarek and Mazurek (2019) demonstrated how the examples reflected the marketing mix (Product, Price, Place and Promotion (PPPP)).

Examples of applications for AI in product actions include hyper-personalization, automated recommendations, and the creation of new products. Personalization is the process of designing messages specifically for a given consumer based on socio-demographic trends and past purchasing behaviour. AI is being used to improve customer experiences, such as product creation, product support, and customer relationship management. However, customer satisfaction is unclear and some customers still prefer speaking to a human operator. Computer vision and deep learning algorithms may identify emotions from facial expressions, body gestures, speech, and eye movements when users interact with AI, giving businesses more insights into user preferences.

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