

Algorithmic Marketing

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Abstract- Algorithmic marketing and big data analysis are among the increasingly important topics in today's business world. With the rapid advancement of technology, businesses need to leverage these new tools to stay competitive and provide better services to their customers. We will discuss the fundamental principles, application areas, and opportunities that algorithmic marketing and big data analysis offer to businesses. Additionally, we will also delve into the challenges that may be encountered and the points that need to be considered in the use of these technologies. Our goal is to provide readers with an understanding of the potential of algorithmic marketing and big data analysis and demonstrate how these technologies can transform business strategies. We hope this book will help businesses capitalize on these new opportunities and gain a competitive advantage. This article aims to provide a comprehensive overview of algorithmic marketing and big data analysis. In today's digital age, it has become inevitable for businesses to make data-driven decisions and base their marketing strategies on this data in order to succeed. The first section of the article offers a general overview of the fundamental principles of algorithmic marketing and how it works. It then delves into a detailed examination of why big data analysis is important for businesses and how it is implemented. The second section of the article addresses the application areas of algorithmic marketing and the differences between sectors. It extensively explores how algorithmic marketing can be utilized in various fields, from digital advertising to e-commerce and social media marketing. In the final section, the article discusses the opportunities and challenges that algorithmic marketing and big data analysis present to businesses. It also speculates on how these technologies could shape the future of the business world and influence business strategies. Readers of the article will develop a deep understanding of algorithmic marketing and big data analysis and learn how to integrate these new technologies into their business strategies.

Keywords Algorithmic, marketing, digital technologies, digital marketers.

1. Introduction

This paper aims to explore the transformative impact of AI in marketing, highlighting both the practical applications and the challenges it presents in modern business practices. Consumer preferences have fundamentally changed compared to previous years. Nowadays, consumers have easy access to vast amounts of information. They are presented with all kinds of options and continuously add new layers to their experiences. Additionally, with the increasing number of online influencers, the power to influence consumers is growing. Word-of-mouth communication through online crowds and social media platforms has also become a significant part of this change. Furthermore, detailed data about billions of consumers is now widely available [1]. The

analysis of this data has become a crucial source of competitive advantage in marketing, as even the smallest details of market behaviour have become complex. Marketers are increasingly using artificial intelligence. However, this situation increases power imbalances and makes them more vulnerable to the variability of algorithms. The impact of algorithms is causing concern among people outside the field of computer science. People's lives are increasingly being shaped by online and offline algorithms, raising concerns among those who previously paid little attention to how computers operate. Technological advancements, especially internet-based technologies, are fundamentally changing decision-making processes. Digital marketers now understand that the effectiveness of marketing activities largely depends on consumer surveillance technologies and

controlling consumer choices [2]. Digital technologies and the sharing economy seem to deceive expectations regarding consumer visions empowered by technology. These technologies are making human mediation or the understanding of cultural production, which is already difficult, even more challenging or changing it altogether. In the field of marketing, the 4Ps (Product, Promotion, Price, Place) approach, proposed by Neil H. Borden in the 1940s and developed by Jerome McCarthy in the 1960s, still holds significance. However, globalization and technological advancements are changing the classification and usage models of these components [3] Algorithmic marketing is an area where technological innovations and data science merge with marketing processes. Algorithms are fundamental elements that increase the value of data. Therefore, the use of algorithms has become inevitable in marketing research [4]

In this context, to better understand the concept of algorithmic marketing, fundamental concepts such as artificial intelligence, the power of algorithms, and the marketing mix should be addressed. Algorithmic marketing can be examined as part of the transformation from traditional marketing methods to digital marketing, leading to the emergence of new approaches in the field of marketing section, adequate literature review about the study should be given, the aims of the study and its importance in the literature should be emphasized. Detailed literature review and summary of results should be avoided [1], [2].

Here are some concrete examples and case studies showing how companies like Amazon, Netflix, and Tesla utilize AI in their marketing strategies, along with explanations of how these technologies transform their business models:

2. Amazon: Personalized Recommendations and Dynamic Pricing

Amazon employs AI algorithms to analyze customer behavior and preferences. This allows them to create personalized product recommendations based on past purchases, browsing history, and items in the shopping cart.

2.1. Transformation of Business Model

- **Personalization:** Amazon’s recommendation system contributes significantly to its revenue, with about 35% of sales coming from personalized recommendations. By analyzing customer data, Amazon can tailor the shopping experience, leading to increased customer satisfaction and loyalty.

- **Dynamic Pricing:** AI also enables Amazon to implement dynamic pricing strategies, adjusting prices based on demand, competition, and customer behavior in real-time. This flexibility maximizes profits and helps maintain competitiveness [25].

3. Netflix: Content Recommendation and User Engagement

Use of AI: Netflix uses machine learning algorithms to analyze viewing patterns and preferences of its subscribers.

This analysis informs its content recommendation engine, suggesting shows and movies that users are likely to enjoy.

3.1. Transformation of Business Model

- **Content Creation:** The insights gained from AI analytics have led Netflix to invest in original content that aligns with viewer preferences, significantly shaping its production strategy. For example, shows like "Stranger Things" and "The Crown" were created based on data indicating viewer interest in specific genres and themes.

- **User Retention:** By providing highly personalized content recommendations, Netflix enhances user engagement and retention, resulting in lower churn rates [26].

4. Tesla: Autopilot and Customer Experience

Use of AI: Tesla’s vehicles utilize AI for their Autopilot feature, which processes data from cameras, radar, and ultrasonic sensors to navigate and drive autonomously.

4.1. Transformation of Business Model

- **Enhanced Customer Experience:** Tesla uses AI to provide a unique customer experience, including over-the-air updates that improve vehicle performance and add new features, keeping customers engaged and satisfied.

- **Data Collection:** Tesla collects vast amounts of data from its vehicles, which helps improve AI algorithms and informs future product developments. This continuous feedback loop allows Tesla to innovate rapidly and maintain a competitive edge [24].

These examples illustrate how AI technologies have fundamentally transformed marketing strategies for major companies. By leveraging AI for personalization, data analysis, and customer engagement, these organizations have not only improved their marketing efforts but also reshaped their overall business models to achieve sustainable growth and competitive advantages. Incorporating similar case studies and concrete examples into your article can enhance its credibility. Below are some tables summarizing how Amazon, Netflix, and Tesla utilize AI in their marketing strategies, along with relevant sources.

Table 1: Amazon's Use of AI in Marketing

Aspect	Description	Impact	Source
Personalized Recommendations	Utilizes AI algorithms to analyze customer behavior for tailored product recommendations.	Contributes to ~35% of sales through improved customer satisfaction and loyalty.	McKinsey & Company. "How AI is transforming the retail experience."

Aspect	Description	Impact	Source
Dynamic Pricing	Adjusts prices based on demand, competition, and customer behavior in real-time.	Maximizes profits and maintains competitiveness in the retail market.	McKinsey & Company. "How AI is transforming the retail experience."

Table 2: Netflix's Use of AI in Marketing

6. Artificial Intelligence: The Technology Shaping the Future

In today's age of technology, artificial intelligence (AI) is increasingly taking center stage in our lives. AI represents a field designed to give computer systems human-like intelligence and capabilities. This technology is pioneering revolutionary changes in many industries and sectors, impacting various aspects of our lives.

6.1. Fundamental Principles of Artificial Intelligence

The working principles of AI focus on how human-like thinking and learning abilities can be mimicked by a computer system. These principles include: Machine learning involves computer systems analyzing data to recognize patterns and acquire learning from experiences. This enables algorithms to improve over time and adapt to new data. Natural Language Processing (NLP) is a technology used for computers to understand and generate human language. It includes applications such as text analysis, translation, speech recognition, and generation. Artificial neural networks are artificial models that operate similarly to the neural networks in the human brain. These networks are used for tasks such as data analysis and pattern recognition, identifying complex relationships. Deep learning is a machine learning technique that utilizes multi-layered artificial neural networks. This technique is used to identify deep patterns in complex data sets and is particularly effective in areas such as image and speech recognition.

The impact of AI continues to shape the future technological and societal landscape. The use of AI is increasingly prevalent in automation, healthcare, transportation, education, and many other areas. However, concerns regarding the ethical and security implications of this technology also arise. Concerns about the use of AI include issues such as job displacement, data privacy breaches, and algorithmic bias. Many aspects of our lives in the future. Therefore, careful consideration and guidance regarding the development and implementation of this technology are important.

Aspect	Description	Impact	Source
Content Recommendation	Employs machine learning	Enhances user engagement	Hariri, N. "How Netflix Uses
Data-Driven Content Creation	Uses AI analytics to invest in original content based on viewer interest.	Helps shape production strategy and align with audience preferences.	Hariri, N. "How Netflix Uses AI to Understand and Delight Its Users."

Table 3: Tesla's Use of AI in Marketing

6.2. The Concept of Artificial Intelligence and Its Operating Principle

Artificial intelligence (AI) facilitates the automation of consumer tasks and enables big data-driven marketing applications such as personalized content recommendation algorithms. Content recommendation algorithms help reduce search costs and better meet consumer preferences [5]. With the advancement of technology, computer-based business decisions are widely adopted even in small-scale businesses to obtain a clear picture of the business. Through analysis, an organization's market value increases, providing more benefits to its owners. Decision support systems are developed to reduce the human burden in analyzing organizational data. These systems provide quick decisions based on available information that can help improve organizational quality in a short period. Since data quality defines an organization's quality, it ensures that the right

Aspect	Description	Impact	Source
Autopilot Feature	Leverages AI to process data from various sensors for autonomous navigation.	Provides a unique customer experience and differentiates Tesla from competitors.	Heisler, Y. "How Tesla Uses AI to Create Autopilot."
Continuous Data Collection	Collects data from vehicles to improve AI algorithms and inform product development.	Creates a feedback loop for rapid innovation and improvement in vehicle performance.	Heisler, Y. "How Tesla Uses AI to Create Autopilot."

5. Materials and Methods

Since the article is a compilation, the research topic and the method of the research were determined by examining the relevant domestic and foreign literature, internet documents, scientific books, national and international periodicals, and the content of the theoretical part of the article was tried to be created by continuing the literature review. By working on the hypotheses of the study, the hypotheses were tried to be determined.

This review is based on a comprehensive search of scholarly articles, reports, and case studies from databases such as Google Scholar, Scopus, and JSTOR. Articles were selected based on relevance to AI-driven marketing strategies, with an emphasis on practical applications and recent developments in the field.

decision for directing growth can be made at the right time [6]. The scope and types of artificial intelligence applications are quite extensive. It can be said that the potential of what AI can do is unpredictable based on advancements and application areas. However, in principle, the application principle of artificial intelligence is based on input commands and output commands. This application principle can be realized based on machine learning. Thus, a specific command is taught to the machine, and as a result, outputs in different variations can be obtained.

As the volume of data doubles approximately every two years, algorithms are becoming increasingly important for analyzing this data. While data is often referred to as the gold of the digital age, it is the algorithms that make this data actionable, turning it into usable insights. Complex algorithms are therefore often referred to as the driving force of the digital world. When applied with the right business model, they open up new opportunities and enhance competitive advantages. Additionally, their automation capabilities provide significant convenience in operations, especially in high-intensity processing capacities [7].

Predictive analytics and recommendation systems play a significant role in today's marketing landscape. These systems aim to predict future events or provide users with personalized recommendations using large datasets. In this article, we will discuss the fundamental principles, operation, and industry applications of predictive analytics and recommendation systems. Predictive analytics and recommendation systems are fundamental in the fields of data analytics and artificial intelligence. These systems aim to predict future events or provide users with personalized recommendations through data analysis and machine learning techniques. The foundation of predictive analytics and recommendation systems relies on data collected from various sources and prepared accordingly. This involves processes such as data cleaning, transformation, and feature engineering. Following data preparation, predictive models are built using machine learning and statistical techniques. Various algorithms such as regression analysis, classification, and clustering are utilized in this stage. The predictive models developed in the modeling stage are fed with real data to predict future events. Recommendation systems analyze user preferences to offer personalized recommendations. The performance of predictive analytics and recommendation systems is evaluated using various metrics. Improvement efforts are made to enhance the model's accuracy. Predictive analytics and recommendation systems are widely employed across industries. Successful applications can be found in sectors such as e-commerce, media and entertainment, and finance. Advancements in artificial intelligence and machine learning technologies, predictive analytics and recommendation systems are expected to become more prevalent. These systems are anticipated to have a greater impact on marketing. For example, Amazon's recommendation system, powered by AI, analyzes user behaviors to offer personalized product suggestions, resulting in a significant increase in conversion rates. Similarly, Netflix uses machine learning algorithms to suggest content to users, which has enhanced user retention and engagement.

Traditional marketing technology relies on humans instructing machines on what to do and how through code. Artificial intelligence has the power to define its own rules, identify new pathways, and unlock unlimited potentials that create advantages in the industry. Although artificial intelligence may seem like a futuristic concept, it is used countless times every day, often without awareness. Some examples include [8]:

- Alexa and Siri answering your questions,
- Amazon predicting your next purchase,
- Apple's Face ID unlocking your iPhone,
- Facebook targeting you with advertisements,
- Gmail completing your sentences,
- Google Maps directing you to your destination,
- LinkedIn organizing your homepage and reminding you of connections,
- Netflix recommending shows and movies,
- Spotify learning your favorite music,
- Tesla's autopilot accelerating and braking your vehicle,
- YouTube suggesting videos,
- Zoom automatically copying your recorded meetings.

Machine learning-based, predictive analytics, and recommendation systems accelerate the entire marketing process, allowing marketers to identify niche customers and reach them through targeted multichannel campaigns. Thus, machine learning helps companies develop a sustainable competitive advantage by avoiding brand excesses, saving on unnecessary advertisements, analyzing real-time data, and tracking post-purchase behaviours. However, marketing experts have warned that many companies attempt to manipulate machine learning systems by developing biased algorithms using non-representative data to create an unfair advantage through marketing, thereby increasing sales revenue. This can be considered as discriminatory practice limiting fair access to marketing offers for specific customer groups [9].

Traditional marketing technology has relied on codes determined by humans for many years. However, with the rise of artificial intelligence (AI) and other new technologies, the marketing world is undergoing a profound change. In this article, we will discuss the role of artificial intelligence technology in marketing and the transition from traditional approaches to new methods. Traditional marketing technology was based on codes and instructions determined by humans. Marketing strategies were designed and implemented by people. However, this approach began to show its limitations over time. Artificial intelligence brings a revolutionary change to the marketing world. AI has the power to determine its own rules, define new paths, and unlock limitless potential. These features enable marketers to create more effective and personalized strategies. While artificial intelligence technology may be perceived as a futuristic concept by many, it is actually used frequently and often unnoticed in daily life. Platforms such as Alexa, Siri,

Netflix, and Amazon are just a few examples of how artificial intelligence technology is integrated into everyday life. In the field of marketing, artificial intelligence is used in a wide range of applications, from personalized recommendations to the analysis of customer behaviours. This technology enables marketers to better understand customer needs and reach the target audience more effectively. The rise of artificial intelligence technology is leading marketers away from traditional methods toward new and innovative approaches. Marketing strategies are now becoming data-driven and machine-learning-supported. Traditional marketing technology is evolving with the rise of new technologies like artificial intelligence. Artificial intelligence plays a significant role in marketing and provides marketers with the opportunity to create more effective, personalized, and data-driven strategies. Therefore, marketers should shift away from traditional approaches and focus on AI-supported new methods.

7. Results and Discussion

7.1. Artificial Intelligence in Marketing: The Beginning of a New Era

In today's rapidly advancing technological landscape, the world of marketing is also undergoing profound changes. The rise of innovative technologies such as artificial intelligence (AI) is transforming marketing strategies and practices. So, what does the use of artificial intelligence in marketing mean, and what are its potentials in this field?

7.2. Artificial Intelligence and Marketing: Definition and Applications

Artificial intelligence refers to the technology designed to give computer systems human-like intelligence. In the field of marketing, artificial intelligence can be utilized across a wide range of applications. For example, it can analyse customer behaviors to create personalized marketing strategies or optimize advertising targeting processes on social media platforms. Additionally, AI-powered chatbots can enhance customer service and improve customer satisfaction.

7.3. Artificial Intelligence and Data Analysis

One of the greatest advantages of using artificial intelligence in marketing is its ability to perform big data analysis. AI algorithms can quickly analyse millions of data points, providing valuable insights to marketing professionals. These insights can be used to understand consumer behaviours and adjust marketing strategies accordingly.

7.4. Artificial Intelligence and Customer Experience

While developing marketing strategies, improving customer experience should also be a significant goal. Artificial intelligence can be a powerful tool to personalize and optimize the customer experience. For example, AI-

powered recommendation systems can offer customers personalized offers or product recommendations based on their interests.

The marketing world continues to explore the potential of using artificial intelligence. AI offers significant opportunities in areas such as data analysis, customer experience, and marketing strategies. However, ethical and privacy concerns associated with this technology should also be considered. Marketers should aim to use artificial intelligence wisely to add value to customers and build long-term relationships. The use of artificial intelligence in marketing represents the beginning of a new era. Exploring and implementing this technology correctly is essential to transform marketing strategies and customer experiences.

The emergence of artificial intelligence (AI) has transformed the dynamics of the business world. One significant application of AI is in the field of marketing, which assists in enhancing business performance. Shadid and Li [10]. aimed to determine the impact of AI on marketing from the perspective of marketing professionals and emphasized the need to integrate AI into marketing functions to improve business performance, profitability, and gain a competitive advantage.

Advancements in AI in marketing research have made technology more affordable and reliable, even for marketing and advertising initiatives [11]. Integration of AI in marketing and retail sectors has addressed marketing challenges more effectively. AI-based mobile and web applications extend to identifying data sets and creating personalized experiences in marketing [12]. AI satisfies customers with many high-tech and high-touch experiences, ranging from websites to stores, voice assistants to chatbots, and from augmented reality to virtual reality. AI has significantly impacted the e-commerce industry, along with various sectors, with smart solutions [12;13].

8. The Concept of Algorithm and the Power of Algorithms

In today's world, the importance of algorithms is growing in fields such as computer science, artificial intelligence, data analysis, and many others. Algorithms are sets of instructions or steps that form the basis of computer programs. In this article, we will explore the concept of algorithms and the power they hold.

An algorithm is a guide that provides step-by-step instructions to solve a specific problem or accomplish a particular task. It defines a series of steps from the initial state to the final state and typically produces an output. The power of algorithms can be seen in the way they are used across various domains. For example, in computer science, algorithms are fundamental building blocks for data processing, sorting, searching, and various computations. In the field of artificial intelligence, algorithms are used to solve complex problems and recognize patterns. In data analysis and big data processing, algorithms analyse large datasets, detect patterns, and make predictions. Algorithms are widely used in various fields. For instance, technologies and applications such as search engines, recommendation

systems, autonomous driving technologies, medical diagnosis systems, and financial analysis tools rely on algorithms. Algorithms are also used in everyday life, such as calculating travel routes, suggesting social media content, and providing shopping recommendations. The use of algorithms raises many debates and discussions. Issues such as data privacy, biases in algorithms, and ethical considerations are important topics of discussion. Moreover, debates also focus on how algorithms impact human lives and the roles they play in societies. Algorithms play a significant role in information processing and decision-making processes in the modern world. Their power makes them essential tools widely used across various industries and in daily life. However, it is important to consider the implications of algorithms, as they can have negative consequences when misused or employed for malicious purposes.

When we look at the literature, algorithms are fundamentally limited as a group of rules or procedures logically connected to solve a problem or achieve a particular task [15]. Informally, an algorithm is any well-defined computational procedure that takes an input value or set of values and produces an output value or set of values in a finite amount of time. Thus, an algorithm is a series of computational steps that transform the input into the output. An algorithm can also be seen as a tool to solve a well-defined computational problem, typically specifying the desired input/output relationship for problem instances, which are often large-scale examples of problems [16].

Algorithmic marketing is defined as an automated marketing process that can be guided by setting a business objective in a marketing software system. This means that the marketing system needs to be smart and knowledgeable enough to understand high-level goals, such as planning and executing a series of business actions like an advertising campaign, to acquire new customers or maximize revenue. Additionally, the marketing system needs to be oriented towards learning to achieve the goal and make inferences from the results to reach the goal and optimize actions when necessary [17].

Table 4: AI-based Marketing Tools and Their Applications

Tool	Application Area	Benefits
Recommendation Systems	E-commerce, Media	Increased Conversion Rates, User Engagement
Chatbots	Customer Support	Enhanced User Experience, Cost Efficiency
Predictive Analytics	Ad Targeting, Sales Forecasting	Optimized Campaigns

Algorithms are assumed to be precise, rational concerns that combine the certainties of mathematics with the objectivity of technology (Seaver, 2019: 412). Data mining and machine learning algorithms are developed to produce solutions to marketing problems. Among the recommended techniques are association rule algorithms that also consider the number of purchased items, improved association rule algorithms that reveal product relationships contributing to business profitability, and automatic algorithms that examine customer purchasing patterns and recommend products [18].

Algorithms optimize and even recreate operational functions and value-added chains through accuracy, speed, and automation. However, the question arises as to how algorithms are developed and nurtured. Since the algorithm is essentially related to the fundamental knowledge base, it has less to do with the operation, software, and technical programming capacity. The correlation between the algorithm and artificial intelligence (AI) is determined by the complexity and degree of structuring of the basic tasks.

One of the best examples of the working principle of algorithms can be given in search engines like Google. When search requests are entered into the search box on Google's homepage, a search algorithm specific to the requests is applied to decide which information the user will receive. The more relevant data the machine receives, the more accurate its predictions will be. As the algorithm gains experience, it becomes increasingly applicable to other contexts in the future. Google's machine notices what you wrote instead of its 'suggestion' and uses the content algorithm to make a better guess in the next application. However, the most well-known use of machine learning is image recognition. For example, a solid image-based data set combined with algorithms can allow a machine to correctly predict whether an image is of a furry dog or a doormat based on the observed features labeled as one or the other in other similar images [19].

Algorithmic bias in machine learning-based marketing models arises from non-representative data sets, inadequate models, weak algorithm designs, or elements such as value creation (e.g., service offerings), value presentation (e.g., channels), or value management (e.g., pricing and promotions). Examples include Optum's racial bias in a medical algorithm when serving patients, Facebook's gender bias in advertising targeting, Orbitz's travel service offers exclusive to Mac users, and Uber or Lyft's higher pricing for destinations with a large African American population. Ethical issues related to algorithmic bias and artificial intelligence have been discussed more broadly in other business and management domains as well [20].

8.1. Algorithmic Marketing: Marketing Transformation with the Power of Data

Generally, data-driven business intelligence is not a new concept; humans have always tried to model the universe around them based on the information they receive. More commonly, methods of data collection, analysis, and subsequent strategic evaluation are practiced within the fields of "Data Science" and "Market Research." However, Algorithmic Marketing can be considered as dependent on both. Companies have discovered communication tools and feedback systems that offer exponential rewards for those willing to invest time and effort into carefully optimized planning, as they gain the ability to track customers throughout their journey, aiming to learn their habits and preferences. Companies striving to create well-designed survey systems, find what appeals to their customers, build brand awareness, and align external brand image with strategy have achieved growth and steady development through horizontal and vertical integration [21]. According to

a report by McKinsey, companies that use AI in their marketing strategies experience a 10-20% increase in revenue, with personalized recommendations contributing to 35% of Amazon's total revenue.

In today's digital world, there is a revolution in access to data, which forms the foundation of marketing strategies. At the center of this revolution lies algorithmic marketing. Algorithmic marketing is an approach aimed at developing targeted, personalized, and effective marketing strategies by analyzing complex datasets. In this article, we will explore what algorithmic marketing is, how it works, and the opportunities it offers for businesses. Algorithmic marketing aims to optimize marketing strategies using large amounts of data. Its key principles include:

Data Analysis and Prediction; Algorithmic marketing allows understanding consumer behavior and predicting future trends by analyzing large datasets. This enables marketers to reach their target audiences more effectively and adjust their strategies accordingly.

Personalization: Algorithmic marketing enhances interaction by offering personalized content and offers based on consumer preferences and behaviors. This is a powerful tool for brands to increase customer satisfaction and loyalty.

Real-time Optimization; Algorithmic marketing enables marketers to achieve instant results by monitoring and optimizing marketing campaigns in real-time. This allows marketers to adapt quickly to changing market conditions and continuously improve their strategies.

Algorithmic marketing has a wide range of applications across various industries. Some prominent areas of use include:

Digital Advertising; Algorithmic advertising is used to optimize advertising budgets and increase conversion rates. This provides advertisers with a more effective and efficient way to advertise.

E-commerce; Algorithmic marketing boosts sales on e-commerce platforms by providing personalized product recommendations and promotions. This improves the customer experience and influences purchase decisions.

Social Media Marketing; Algorithmic social media marketing involves understanding platform algorithms to increase organic reach and create targeted advertising campaigns. This helps brands increase engagement and brand awareness on social media.

Algorithmic marketing offers a more efficient and effective approach compared to traditional marketing strategies. Through big data analysis, personalization, and real-time optimization, brands can engage with consumers more deeply and improve business outcomes. However, ethical and privacy concerns related to algorithmic marketing should also be considered. Therefore, marketers should develop algorithmic strategies carefully and protect consumer rights while doing so.

8.2. Algorithmic Marketing

Algorithmic marketing, also known as programmatic marketing, is a marketing approach that uses algorithms to automate and optimize various marketing processes. It relies on data analysis, machine learning, and artificial intelligence to deliver personalized and targeted marketing messages to consumers. In this article, we will explore the concept of algorithmic marketing, its challenges, and important considerations.

Algorithmic marketing is a highly automated marketing process that leverages algorithms to analyze data, predict consumer behavior, and optimize marketing strategies in real-time. It involves the use of advanced technologies such as machine learning and artificial intelligence to deliver personalized and targeted marketing messages to consumers across multiple channels.

Algorithmic marketing has the power to revolutionize the way companies approach marketing. By leveraging data and advanced algorithms, marketers can gain insights into consumer behavior, identify trends, and make data-driven decisions. This allows them to deliver highly personalized and targeted marketing messages that resonate with consumers, leading to higher engagement and conversion rates.

The Approach of Henry Ford has, thanks to big data and artificial intelligence, made times when one couldn't know which part of a person's or manager's budget worked generally outdated. The automation of marketing processes has become a widespread practice since around 2001, where big data collection has gained importance. For instance, big data sets include customer databases or clickstreams, which are records of a customer's navigation across various websites. However, data volumes have increased almost exponentially; 90% of all data has emerged this way in the 12 months before the beginning of 2016. Many companies are yet to discover the full potential of big data as they do not know how to utilize these data volumes with their legacy database systems and software solutions. Traditional methods of automating marketing also do not provide in-depth insights into data, do not predict the effects of measures, and do not impact customers in real-time. However, when algorithms are used for marketing, data sets can be processed more efficiently. Algorithms can analyze large data sets, segment them, and recognize both patterns and trends. They can observe changes and make recommendations in real-time, i.e., during customer interactions. Additionally, the implementation of algorithms allows marketers to undertake more challenging tasks, resulting in a more efficient and cost-effective marketing process. In the long run, due to the use of algorithms in marketing, companies can achieve higher levels of customer loyalty and competitive advantage due to increased customer proximity [22].

9. Results and Discussion

While AI offers revolutionary opportunities in marketing, such as personalized recommendations and predictive analytics, it also presents ethical challenges. Businesses must navigate issues related to data privacy, algorithmic bias, and transparency to harness AI's full potential responsibly.

While algorithmic marketing offers many benefits, it also presents several challenges and key issues that marketers need to address. These include:

Data Privacy and Security: Algorithmic marketing relies heavily on consumer data, raising concerns about data privacy and security. Marketers need to ensure that consumer data is collected, stored, and used in compliance with relevant privacy regulations.

One significant challenge is the ethical use of AI in marketing. There have been concerns about algorithmic bias and how it can lead to unfair targeting in advertising. Additionally, the use of large datasets for predictive analytics raises questions about data privacy and user consent, as highlighted by GDPR regulations in Europe.

Algorithmic Bias: Algorithms can sometimes exhibit bias, leading to unfair or discriminatory outcomes. Marketers need to be aware of this risk and take steps to mitigate bias in algorithmic decision-making processes.

Technological Complexity: Algorithmic marketing requires a deep understanding of data analysis, machine learning, and artificial intelligence technologies. Marketers need to invest in training and education to develop the necessary skills to effectively implement algorithmic marketing strategies.

Ethical Issues: Algorithmic marketing raises ethical concerns related to issues such as data manipulation, transparency, and consent. Marketers need to ensure that their algorithms are used ethically and transparently to build trust with consumers.

In the future, algorithmic marketing will continue to play a central role in marketing strategies. As technology advances and data analytics capabilities improve, algorithmic marketing will become even more sophisticated, enabling marketers to deliver highly personalized and targeted marketing messages at scale.

Algorithmic marketing represents a powerful approach to marketing that leverages data and advanced algorithms to deliver personalized and targeted marketing messages to consumers. While algorithmic marketing offers many benefits, marketers need to address challenges such as data privacy, algorithmic bias, and ethical issues to ensure its success.

Big data has provided an excellent environment for experiments, design, planning, and management to carry out many more actions, including realizing creative ideas, tracking performance indicators, considering competition, and generally evaluating the business environment. In accordance with board standards, while increasing shareholder value, the management aims to continually improve internal customer experience and expertise in its field by providing up-to-date goods and services. For example, the management team of "McDonald's" switched to data-driven decision-making a long time ago and is currently focusing on predictive analytics (design, consumption, trends) to provide the best transition experience, alongside the overall increase in supply chain efficiency. Therefore, data and insights relevant to the marketing system (situational

factors, performance indicators, marketing mix factors) are collected to obtain information that can improve the customer experience. The process of manipulating these causal or independent variables of the marketing system is considered data analysis, providing the ability to further solidify accuracy and conduct the core decision operation process on an empirically supported basis and provide an experimental environment with the ability to support key features [23].

10. Conclusion

The effective organization of data in tables enables quick and efficient access to a large amount of information. Details and outcomes of discussions become easily reviewable and analyzable. Additionally, data analysis provides a valuable tool in identifying trends and priorities. In light of this information, the ability of companies to make strategic decisions and guide their future activities is based on a stronger foundation.

It is evident that algorithmic marketing, utilizing technological tools such as big data and artificial intelligence, offers many advantages to businesses. The automation of marketing processes and big data analysis can make marketing strategies more efficient while also improving the customer experience. The data obtained through the use of algorithms enables better decision-making and the establishment of closer relationships with customers.

However, there are also some concerns associated with algorithmic marketing and the use of big data. Issues such as data privacy and security, as well as algorithmic bias, are important considerations that need to be carefully addressed. Therefore, it is important for companies to adhere to ethical standards and legal regulations when utilizing these technologies. Algorithmic marketing and big data analysis have the potential to have a significant impact on shaping future marketing and business strategies. Especially in an environment of increasing competition and constantly changing consumer expectations, making data-driven decisions and basing marketing strategies on this data is of critical importance. Big data analysis and algorithmic marketing enable businesses to have a better understanding of their customers, leading to the creation of more effective and personalized marketing campaigns. This, in turn, enhances customer satisfaction and strengthens customer loyalty. Additionally, through data analysis, businesses can better understand market trends and anticipate future demands. However, there are also some risks and challenges associated with algorithmic marketing and big data analysis. Concerns about data privacy, data security risks, and algorithmic bias are important issues that businesses need to address. Additionally, there are technical challenges such as the complexity of big data analysis and misunderstandings about algorithms. Algorithmic marketing and big data analysis can make businesses more competitive and help them provide better customer experiences. However, careful planning, proper data analysis methods, and the selection of appropriate algorithms are important for effectively utilizing these technologies.

The results obtained should be included in this section and supported by figures and tables if necessary. The findings can be compared with the relevant literature if required. Results should be clear and concise. In the discussion section, the important results of the study should be highlighted, and excessive citation and literature discussion should be avoided.

The conclusion section should stand alone. The aim of the study and its significant results should be given briefly in a concrete way. In addition, suggestions and opinions that are requested to be conveyed to the readers regarding the results of the study can be stated.

As AI continues to evolve, its role in marketing will expand, providing marketers with new tools to engage customers more effectively. However, it is essential that businesses adopt AI ethically and with transparency to build trust and ensure long-term success.

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