Transactions on Social Science, Education and Humanities Research
ISSN: 2960-1770, eISSN: 2960-2262 | Volume 13
ECSS 2024

The Specific Application of Big Data Analysis in the Development of E-commerce Marketing

He Li

School of Management, Liaoning Communication University, Shenyang 110136, China

176866986@qq.com

Abstract. With the rapid development of technologies such as big data, cloud computing, and the Internet of Things, the application of big data has become increasingly widespread. The adoption of these new technologies has impacted the traditional business environment, simplifying the traditional business model from production and logistics to sales, primarily through e-commerce marketing, thereby shifting the market from a seller-centric to a consumer-centric approach. In online e-commerce, buyers and sellers do not need to meet in person; the transaction process is handled by a third party. This credit model, based on internet information technology, enables comprehensive coverage of the e-commerce marketing network. E-commerce marketing relies on big data analysis, which can effectively analyze information capacity, help e-commerce companies clearly identify consumer positioning, and target core marketing. It also effectively summarizes consumer preferences and habits, plans a distinctive sales market, and brings higher economic profits to e-commerce enterprises.

Keywords: Big Data Analysis, E-commerce Marketing, Specific Application.

1. Introduction

Big data analysis refers to a data analysis method based on internet technology, which can collect, store, and process massive amounts of data, allowing for the extraction, organization, and analysis of market data. This process provides valuable marketing strategies for enterprises, helping them better understand consumer needs and, in turn, offer more precise and personalized products and services. Today's work and life are mostly developed based on big data. E-commerce companies can use big data analysis technology to determine the direction of industry development and marketing, deeply explore and analyze the characteristics and hidden value of big data in the e-commerce industry, and break through the limitations of traditional marketing in terms of space and audience[1-3]. By gaining insights into user behavior in various aspects such as e-commerce scenarios and channel customers, companies can achieve personalized marketing and services, injecting new vitality into enterprise development.

2. The Role of Big Data Analysis in Promoting E-commerce Marketing

2.1. Providing Information Security Services

In today's digital era, e-commerce has become a crucial driver of the global economy. With the widespread use of the internet and rapid technological advancements, e-commerce marketing is no longer confined to traditional frameworks but instead relies on powerful information technology to innovatively build bridges between enterprises and consumers. In the course of development, the use of new e-commerce marketing models can target specific product promotions to consumers, satisfying their preferences and needs. Through this marketing model, businesses can promote products and establish a positioning relationship between products and consumers. In the process of big data analysis, it is also essential to strengthen consumer information protection because consumer information, such as phone numbers and addresses, is involved in online shopping. Ensuring the security of consumer information is crucial for promoting the development of e-commerce marketing models from a consumer-centric perspective[4]. Currently, with the continuous development of

information technology, e-commerce marketing can effectively guarantee consumer information security, address the defects and vulnerabilities in internet technology usage, and gain more user support.

2.2. Changing Traditional Marketing Models

In the wave of globalization and digital transformation, big data analysis is reshaping traditional enterprises' marketing models with unprecedented power, guiding them towards a new era of intelligence and precision. Facing increasingly fierce market competition, innovation has become the key to a company's competitive edge. Therefore, in their development process, companies should actively innovate e-commerce marketing models based on their development needs, which opens up broader development opportunities. The rise of e-commerce giant Alibaba is a vivid example of this trend[5-6]. By continuously innovating its e-commerce marketing model, Alibaba has not only successfully created iconic products like Taobao and Alipay but has also profoundly changed people's consumption habits and lifestyles, demonstrating the immeasurable value of innovation for sustained corporate growth and social progress. For a company in the ever-evolving field of internet technology, enhancing innovative e-commerce marketing models is an effective path to achieving sustained development.

2.3. Providing Precise Data Services

In today's rapidly changing world of internet information technology, the deep integration of big data and cloud computing is driving a profound transformation in the business world. This context brings new opportunities and challenges for enterprise development. The digitalization and personalization of consumer behavior are becoming increasingly evident, with many preferring online shopping because it offers a novel consumption experience. The selection process is guided by platforms based on consumer preferences, akin to customized services that attract more attention. Therefore, in the era of big data, companies seeking long-term development must rely on precise data to change traditional marketing models. Furthermore, in the process of data analysis, e-commerce companies need to find suitable marketing solutions to stand out in intense market competition and achieve sustainable development[7].

3. Obstacles to the Development of E-commerce Marketing

3.1. Data Management Challenges

As market competition intensifies, e-commerce companies find themselves in an era filled with both opportunities and challenges. To stand out in fierce industry competition, they must face and address the increasingly intense competitive landscape. In the era of big data, how to effectively analyze vast amounts of data is a significant challenge in the development of e-commerce marketing. The complexity and diversity of massive data make it difficult for e-commerce companies to process data effectively during marketing. Therefore, enterprises should utilize professional software and computer technology to handle large volumes of data effectively. However, the workload of data processing has multiplied geometrically with the development of e-commerce, yet this growth has not achieved the desired results. Companies struggle to handle massive data effectively, making it difficult to grasp marketing conditions in real time, which can lead to unnecessary losses.

3.2. Risk of Information Leakage

With the rapid development of e-commerce marketing, the interaction between e-commerce companies and consumers is becoming more frequent. However, this also exacerbates information asymmetry and presents challenges in data privacy protection, as shown in Figure 1. Consumer demand and preferences generate a large amount of user data. However, when collecting and organizing this data, it is important to note that user data belongs to their private information, which may lead to information leakage. Most customers shop online, which exposes them to various security

risks such as hacker attacks, viruses, and data breaches. Data breaches not only infringe on consumer rights but also pose a severe threat to the data security system of e-commerce companies[8-9]. After data is collected, if timely measures are not taken, large amounts of data can be exploited by hackers for malicious operations. Moreover, hacker intrusions not only threaten user information security but also can attack the database systems of e-commerce companies, causing them to crash or halt services within a short time.

Figure 1. The Dangers of Information Leakage

3.3. Weak Integration Capabilities

Currently, the e-commerce field is characterized by a multitude of small and medium-sized enterprises, with large companies leading the way. Large companies like Taobao and JD.com, leveraging their strong financial strength and technological advantages, can build advanced data processing systems, efficiently integrate and deeply analyze massive amounts of data, and provide strong support for strategic decision-making. However, most small and medium-sized enterprises have limited accumulated data and lack data analysis capabilities in terms of software, hardware, and talent, making it difficult for them to collect data in multiple dimensions, multiple channels, and in real time. This limits their ability to effectively integrate data, preventing them from fully utilizing the advantages of big data analysis. The disparity in data integration capabilities among enterprises, along with the ongoing transformation of big data analysis in e-commerce, presents significant challenges for small and medium-sized enterprises in effectively applying it to e-commerce marketing. Data, such as artificially generated data (e.g., fake orders), can affect the entire data analysis process during data cleaning, hindering the progress of the entire e-commerce industry toward higher levels of development.

4. Strategies for the Application of Big Data Analysis in E-commerce Marketing

4.1. Innovating Marketing Management Models

With the rapid iteration of internet technology, consumer behavior patterns and demand preferences have also changed, ushering in an unprecedented period of transformation for the e-commerce industry. Traditional e-commerce marketing models can no longer meet the growing consumer demands. Big data analysis can precisely analyze and process the transformation of e-commerce marketing models, thereby integrating real and effective scientific data. With the development of the big data era, for e-commerce to transform traditional marketing management work models, it must fully utilize big data to effectively and reasonably analyze various data information, determine the primary marketing models at the current stage, and innovate marketing models to achieve accurate data analysis in business management (see Figure 2). Simultaneously, the widespread application of big data in the logistics field has also significantly improved the efficiency and service quality of e-

commerce logistics, making it possible for e-commerce enterprises to build more efficient and intelligent supply chain systems, further promoting the overall upgrading and development of the e-commerce industry.

Figure 2. Innovation in Marketing Management Models

4.2. Creating a Secure E-commerce Environment

As data breaches become more frequent, consumer awareness of personal privacy and security is increasing. E-commerce companies must actively build a safe and trustworthy online environment to gain consumers' trust and loyalty. Protecting user privacy requires the creation of a secure network environment, achieving technological upgrades in both software and hardware, and improving the construction of big data sharing and analysis platforms to ensure the security and effectiveness of data within these platforms. Additionally, by combining management with technology, further regulations should be established for data collection, and rigorous rules should be set for using, sharing, and managing data. These measures include defining access permissions, enhancing unified management of big data platforms' comprehensive application capabilities, and improving the security and scientific nature of data use[10]. Furthermore, e-commerce companies must stay up to date with legal regulations, thoroughly study and strictly adhere to relevant laws such as the "E-commerce Law," ensuring that product information, service processes, and contract terms are legal and compliant. This effort will effectively protect consumer rights and create a healthy and orderly e-commerce market environment.

4.3. Strengthening Professional Team Building

In today's competitive business environment, talent is a key factor. Building a professional team ensures sustainable development for enterprises. Currently, big data analysis places high demands on the data analysis teams of e-commerce companies, necessitating the strengthening of these teams. E-commerce companies should consider big data analysis as a core function, enhancing the professionalism of their data analysis teams. In practice, companies should regularly conduct professional training for team members to improve their knowledge and skills in big data analysis. Within the company, a well-established performance appraisal system should be in place to motivate employees' enthusiasm and initiative in big data analysis tasks. In this context, strengthening the construction of big data analysis teams is not only a necessary choice for enterprises to address market challenges and improve competitiveness but also a crucial step in promoting the intelligent and refined transformation of the e-commerce industry.

4.4. Improving Data Analysis Quality

In today's digital age, the e-commerce industry is thriving, and market competition is becoming increasingly fierce. The complexity and variability of consumer behavior present higher demands on e-commerce companies' ability to conduct precision marketing. As the core driving force of e-commerce marketing, the quality and efficiency of big data analysis directly impact whether companies can accurately grasp market trends, effectively reach target customers, and ultimately achieve performance growth. For e-commerce companies, improving the efficiency of big data

analysis is reflected in several key areas (see Table 1). First, companies should increase efforts to attract professional talent, ensuring that data analysts possess high-level data analysis skills, which provides a guarantee for enhancing data quality. Second, companies should increase investment in data storage facilities, system software, and other hardware equipment to ensure that big data analysis can be completed in a shorter timeframe[11]. Third, companies should strengthen the development and application of big data analysis system software to ensure that large volumes of data can be efficiently processed and stored, providing richer and more effective data resources for e-commerce companies.

Table 1. Factors for Improving the Quality of Big Data Analysis

Key factors	Specific measures	Goals
Bring in professionals	Increase the introduction of high-level data analysis technicians	Improve data analysis ability and ensure data quality
Hardware investment	Increase investment in data storage facilities, system software and other hardware equipment	Ensure that big data analysis can be done in a short period of time
System software development and application	Strengthen the development and application of big data analysis system software	It realizes the efficient processing and storage of massive data, and provides rich and effective data resources

4.5. Achieving Precision Marketing Models

In the context of the big data era, information about users' consumption habits and behaviors needs to be collected and analyzed. E-commerce companies can use big data technology to analyze users' data, thereby achieving a precise match between user needs and product information through data mining and analysis techniques, which in turn improves the efficiency of the company's marketing efforts. This goes beyond collecting basic consumption behavior data, such as frequency and amount of purchases, and delves deeper into uncovering users' intrinsic needs and potential preferences, such as purchasing power, interests, and emotional inclinations. This process allows companies to understand not only "what users buy" but also "why they buy" and "what else they might buy." For example, Lin's Wood Furniture, in collaboration with China Post's Desert Post Office, launched a rigorous quality challenge by testing its flagship products in the extreme environment of the Tengger Desert, showcasing their excellent quality. This type of cross-industry collaboration breaks traditional marketing boundaries and attracts the attention of consumers from different fields[12]. By designing products or services tailored to the unique needs of different groups, companies can offer personalized experiences to thousands of customers, achieving "a thousand faces for a thousand people."

5. Conclusion

In summary, as China's comprehensive national strength continues to rise, it brings more opportunities and challenges for enterprise development. To achieve stable growth in a competitive industry, companies must keep pace with the times and actively innovate. At the current stage, as China's e-commerce marketing models continue to evolve, changing traditional marketing models and applying big data analysis in the e-commerce environment can effectively increase the value of companies' business and marketing activities. This helps more companies tap into potential consumer markets, continuously innovate during the development process, adjust industry structures, and promote ongoing enterprise development to the fullest extent, thereby enhancing their e-commerce marketing capabilities. From another perspective, the use of big data analysis can also bring objective benefits to enterprise development by obtaining precise consumer demand, adjusting marketing strategies, achieving marketing goals, and simultaneously improving the reputation of e-commerce brands, which fosters the continuous progress and development of the e-commerce industry.

References

[1] Han Yaofeng. (2021) "Analysis of 'the Influence of Large Data Analysis on Marketing in E-commerce," Mall Modernization, vol.15, pp.38-40.

[2] Yin Zhou. A Brief Discussion on The Role of Taobao's Big Data Analysis in Taobao Marketing [J]. China Academic Journal Electronic Publishing House, 2018:147.

[3] Davenport, T. H., Barth, P., Bean, R. (2012) "How 'Big Data' is Different," MIT Sloan Management Review, vol.54, pp.43–46.

[4] Min Xu, Ying Wang. Analysis of E-commerce Marketing Strategy Under New Media Environment [J]. Modern Business, 2020(15):41-42.

[5] Chen Yue. (2017) "The significance of Big Data analysis in promoting e-commerce marketing," Industry & Technology Forum, vol.16, pp.98-99.

[6] Jiahui Chen. Research on the Impact of Big Data Analysis on International Marketing Activities of E-commerce Enterprises [J]. China Academic Journal Electronic Publishing House, 2021:65-67.

[7] Kiron, D., Prentice, P.K., Ferguson, R. B. (2014) "Raising the bar with analytics," MIT Sloan Management Review, vol.55, pp.29–33.

[8] Agarwal, R., Weill, P. (2012) "The benefits of combining data with empathy," MIT Sloan Management Review, vol. 54, pp. 35.

[9] Peng Gao. Analysis of Business Opportunities and Challenges in the Era of Big Data [J]. China Equipment Engineering, 2021:228-230.

[10] Mengyuan Zhu. Research on The Precision Marketing Strategy of Micro E-commerce Enterprises of A Taobao in The Context of Big Data [D]. Donghua University, 2017.

[11] Haiying Li. Discussion on The Application of Big Data in Cross-Border E-commerce Industry Chain [J]. E-Business Journal, 2020(05):28-29.

[12] Wixom, B.H., Yen, B., Relich, M. (2013) "Maximizing value from business analytics," MIS Quarterly Executive, vol. 12, pp. 111–123.