Research on Marketing Management Enabled by Big Data Technology

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Abstract: In the era of big data, data has gradually become an important asset of enterprises, and the application of big data technology has gradually become the key to the optimization of enterprise marketing management mode. Enterprises take the initiative to meet the development trend of the times, rely on big data technology to effectively process and analyze data, innovate decision-making methods and operation models, and achieve efficient marketing and fine management, which is an important way to improve their market competitiveness. Therefore, the author first analyzes the empowering role of big data technology on enterprise marketing management, and then discusses the difficulties faced by enterprise marketing management in the era of big data, and finally puts forward targeted improvement strategies, aiming to provide a reference for enterprises to innovate and change the marketing management mode.

Keywords: Big data technology; Enterprise; Marketing management

1. Introduction

With the continuous advancement of the digital process, the marketing objectives, means, and time of enterprises are increasing, and the gap between the traditional marketing management mode and the actual demand is gradually emerging. Enterprises need to make use of big data technology to empower the marketing management of enterprises based on the development background of the times. Enterprises should attach importance to the application of big data technology, adopt effective data analysis and processing means, and change their decision-making methods and operation modes to better adapt to the market environment and gain greater competitive advantages.

2. The empowering effect of big data technology on enterprise marketing management
2.1. Reducing the cost of data collection and mining

In the conventional marketing management framework, companies rely heavily on extensive questionnaires and market research to gather necessary market information, which demands significant investments of time, effort,

and capital [1]. The integration of big data technology into marketing management enables businesses to minimize data collection expenses while acquiring more comprehensive market insights with reduced human, material, and financial resources. Leveraging big data tools, enterprises can access vast amounts of market data through online purchase histories, website browsing patterns, and social media interactions. This information is not only real-time but also diverse, offering a solid foundation for companies to gain precise and holistic understandings of market dynamics. Furthermore, the intelligent and automated analytical capabilities of big data technology help decrease labor and time expenditures associated with data collection and processing. By effectively analyzing data, uncovering its underlying value, swiftly identifying consumer behavior trends, monitoring market shifts, and implementing tailored marketing strategies, businesses can achieve cost reductions and enhance service quality [2].

2.2. Realizing precision marketing

By utilizing conventional methods like TV advertisements and flyers, companies extensively promote their products and services to capture consumer attention. However, these efforts often require significant investment while yielding limited results. This inefficiency stems from the inherent differences in preferences and needs among various consumer groups. Despite achieving broader reach through a "wide net" marketing approach, many potential users remain uncovered [3]. After integrating big data technology into marketing management, enterprises can refine their strategies by gaining deeper insights into target consumer segments and developing precise marketing plans. This approach not only covers potential users more effectively but also achieves optimal marketing outcomes. By analyzing consumer traits across multiple dimensions—such as purchasing behavior, geographic location, gender, and age—companies can recommend tailored services or products. This enhances the alignment between promotional content, advertisements, and consumer demands [4].

2.3. Enhancing the customer base stickiness of enterprises

As market competition becomes increasingly intense, enterprises face the critical challenge of retaining existing customers while attracting new ones. This issue requires in-depth exploration and strategic solutions [5]. By leveraging big data technology, companies can monitor their marketing performance in real-time, analyze consumer behavior using the vast amount of collected data, and address both current and potential issues within their marketing models. Such actions contribute to strengthening customer loyalty and attachment to the enterprise [6]. For instance, if a company detects declining consumer satisfaction during the analysis of sales for a particular service or product, it can promptly identify the underlying causes through data insights and implement appropriate corrective measures to improve consumer satisfaction. Additionally, based on the analysis of customer needs, enterprises can offer personalized services or products and adopt tailored customer relationship management strategies to enhance trust and reliance among their clientele.

3. Dilemma of enterprise marketing management in the era of big data

3.1. Lack of big data talent reserve

In the process of innovating their marketing management models, many enterprises encounter the challenge of insufficient big data talent. Big data technology plays a crucial role in enterprise marketing management, encompassing areas such as data analysis, social media operations, optimization of digital media delivery, creative marketing content development, and strategic marketing planning. This technology imposes numerous demands on the specialized skills required of professionals. Nevertheless, most companies, particularly small and medium-sized enterprises, lack a comprehensive big data talent development system. While the current marketing management personnel in these enterprises may possess relevant academic qualifications and work experience,

they often have not systematically studied big data technology and lack a structured knowledge framework. Additionally, inadequate investment in employee skill enhancement and continuing education fails to satisfy the learning needs of marketing management staff regarding big data technology [7].

3.2. Lack of digital marketing tools

In the process of integrating big data technology into marketing management, companies are required to leverage suitable digital marketing tools for support. Nevertheless, constrained by strategic insight, specialized skills, and financial resources, many enterprises have adopted only a limited number of digital marketing tools. This limitation creates challenges in terms of data collection and analysis [8]. Over the past few years, digital marketing tools have progressively advanced in terms of technical maturity, significantly enhancing the convenience of enterprise marketing management activities. However, utilizing high-quality digital marketing tools often entails substantial costs, as companies must either purchase them outright or subscribe to their services. As a result, many enterprises weigh the cost implications and opt for low-cost or free alternatives, thereby restricting the broader application of big data technology within marketing management to some extent.

3.3. Low ability of customer data management and analysis

In modern enterprise marketing management, customer data serves as the central resource, and precise, efficient analysis of such data is crucial for achieving targeted marketing. Consequently, the limitation in customer data management and analytical capabilities stands as a significant factor hindering the innovation of enterprise marketing models and impacting the implementation of big data technology. Certain companies fail to comprehensively plan customer data collection efforts, leading to silos between departments, delays in data updates, a lack of unified standards for data collection and application, and relatively narrow data dimensions. Additionally, some enterprises lack a comprehensive and specialized data management platform, along with practical experience in areas such as metadata management, master data management, and data warehousing. Customer data is stored in a fragmented manner across social media, office systems, and business systems, without establishing a unified application interface or cohesive data perspective [9].

4. Paths of big data technology empowering enterprise marketing management
4.1. Adopting precision marketing model
4.1.1. Optimizing data collection

Enterprises ought to enhance the data collection process by leveraging their existing customer relationship management systems, sales platforms, third-party data suppliers, and external social media to gather consumer information while broadening data acquisition pathways [10]. During this process, companies should prioritize the completeness and precision of data to achieve dependable analysis outcomes. They should consolidate data from diverse sources, construct a comprehensive consumer database, and elevate data quality via methods such as removing duplicates and cleansing to maintain consistency and uniqueness within the dataset. Additionally, through the implementation of data integration strategies, enterprises can align and connect data from various origins to create a more thorough and precise consumer profile [11].

4.1.2. Analyzing the data deeply

By extensively gathering consumer data, enterprises should leverage big data technology to conduct in-depth analysis of the information stored in their consumer databases. This process aims to extract crucial insights regarding consumers' purchasing needs, preferences, and habits, thereby supporting the implementation of

precise marketing strategies. For instance, companies can examine purchase histories to identify patterns such as buying times, spending amounts, and purchasing behaviors. By integrating these critical metrics, businesses can predict consumers' short-term purchasing intentions and capabilities. Additionally, through correlation analysis, enterprises can uncover connections between various consumer demands, enabling them to bundle products or services more effectively [12].

4.1.3. Precising recommendation and service

By leveraging the results of big data analysis, companies can effectively suggest products or services to customers and offer targeted support throughout the purchasing process—before, during, and after—to enhance their overall experience. For instance, businesses can examine customer browsing patterns and purchase histories, evaluate pertinent data, and identify their current needs to provide tailored recommendations. When customers are searching for or exploring products, companies can present discount information to increase their likelihood of making a purchase and facilitate transactions. Additionally, firms can deliver personalized recommendation services by analyzing users' activity trails and social interactions within mini-programs, payment platforms, and social media networks [13].

4.2. Maintaining customer relationships well

In the realm of marketing management, sustaining strong customer relationships is a critical component. Therefore, companies should effectively leverage big-data technologies to gather and analyze customer information, creating precise data profiles that reveal their preferences, needs, and even latent demands. This enables businesses to implement more targeted strategies for maintaining customer relationships. To construct accurate customer profiles, enterprises must collect data from various dimensions, including purchasing tendencies, behavioral patterns, purchase history, and fundamental customer details. By analyzing these elements, businesses can identify customer traits and requirements, providing a foundation for developing effective customer relationship management strategies. When profiling customers using data, it is crucial to emphasize both the completeness and accuracy of the information to ensure that the profiles genuinely represent customer characteristics. Based on these profiles, companies can segment their customer base, grouping those with similar preferences and needs, and offering them tailored services or products. This approach enhances customer satisfaction with the company [14]. Furthermore, by utilizing customer profiles, businesses can identify high-value customers and design exclusive incentives and service models to boost their purchasing intent and loyalty. For instance, if a decline in loyalty is detected among high-value customers through profiling, companies can respond by offering personalized, exclusive services, gifts, or discounts to re-engage them.

4.3. Setting up a variety of marketing means
4.3.1. Integrating online and offline marketing

Enterprises ought to combine traditional offline marketing resources with digital online marketing resources, enhancing the linkage between online and offline marketing efforts. This approach allows for comprehensive consumer service and improves their overall experience. At the data level, online platform resources primarily consist of consumer behaviors such as searching, purchasing, and browsing, whereas offline physical stores mainly gather information on shopping preferences and habits. By integrating these data resources, enterprises can gain a holistic understanding of consumer behavior patterns and needs, providing a foundation for the strategic planning of future marketing initiatives. For instance, agricultural product companies can gather data on consumers' browsing history and purchase records from e-commerce platforms, along with sales figures and feedback from brick-and-mortar stores. After analyzing this information, they can adjust procurement, pricing, and

promotional strategies accordingly. Furthermore, enterprises can organize interactive events both online and offline to strengthen engagement with consumers, thereby deepening their understanding of products or services and boosting brand reputation and influence. In the case of foodservice businesses, companies could implement "order online, enjoy discounts offline" campaigns to drive traffic. This way, consumers benefit from the convenience of online ordering while experiencing unique dining environments and services in-store. Additionally, enterprises can host food tasting sessions, develop cooking classes, and promote them via online channels, encouraging more consumers to learn about and participate in these activities, ultimately enhancing brand recognition [15].

4.3.2. Social media marketing

At present, the influence of social media on enterprise marketing is gradually increasing, and social media marketing is becoming an important factor affecting enterprise development. Enterprises should pay more attention to social media platforms, strengthen communication and interaction with consumers on social media platforms, and enhance user stickiness. For example, tourism enterprises can open official accounts on platforms such as Kuaishou, Douyin, and WeChat, and regularly or irregularly release useful and interesting information about scenic spots and tourist routes to attract consumers' attention. Based on the analysis results of the characteristics of scenic spots and tourist routes, as well as the recent analysis results of consumers' travel demand, tourism enterprises can develop the "customized content of scenic spots + live broadcast" model, share information with consumers through various social media platforms, so that tourists can enjoy the beautiful scenery through the "cloud" and learn about the special food near the scenic spots, which can attract more consumers' attention. Moreover, the browsing traces, purchase information, and consumer feedback generated on these social media platforms can also provide reference for scenic spots to adjust their service content and optimize their service methods. This smart tourism mode, which introduces modern technology, can bring a new and immersive tourism experience to tourists and form a word-of-mouth effect in scenic spots.

5. Conclusion

In conclusion, in the context of the era of big data, enterprises should take data as an important asset and the application of big data technology as an important way to optimize the marketing management model, and provide a scientific basis for building the operation model and making decisions through effective analysis and processing of massive data. This requires enterprises to be fully aware of the enabling role of big data technology on marketing management of enterprises, and take corresponding improvement measures to solve the problems existing in marketing management such as insufficient reserves of big data talents, slow promotion of digital marketing tools, low customer data management and analysis ability, to keep up with the trend of the times to optimize marketing management mode and better adapt to the market environment.

Disclosure statement

The author declares no conflict of interest.

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