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Research on the Construction of a Big Data-Based Real Estate Marketing Model Based on the Customer Life Cycle

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Abstract: As the real estate market becomes more competitive and consumer demands continue to evolve, traditional marketing models are increasingly inadequate in meeting the market's need for precise and personalized services. The emergence of big data technology has brought new development opportunities to the real estate industry, particularly in customer lifecycle management, where big data can provide deep customer profiling and behavioral analysis to help businesses develop more accurate marketing strategies. By integrating different stages of the customer lifecycle, this paper constructs a big data-based real estate marketing model. The model implements full-cycle management from potential customers to loyal customers through data collection, analysis, and modeling techniques.

Keywords: Customer Lifecycle; Big Data; Real Estate Marketing; Data Analysis; Marketing Strategy

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The real estate industry has always faced intense market competition and increasingly diverse consumer demands. With technological advancements, traditional marketing methods can no longer meet the modern consumer's need for personalized and precise services. The application of big data technology offers new opportunities for the real estate industry, especially in customer management and marketing decision-making. By analyzing the customer lifecycle in depth, real estate companies can more accurately grasp customer needs at different stages and develop more targeted marketing strategies.Customer lifecycle management not only helps improve conversion rates but also enhances customer loyalty, creating long-term value for businesses.

1.Big Data Applications in Real Estate Marketing

1.1 Current Status of Big Data Application in the Real Estate Industry

The application of big data in the real estate industry has gradually expanded from traditional market research and customer analysis to more complex intelligent applications. Currently, real estate companies mainly utilize big data to innovate in customer management, market forecasting, and marketing planning.

In customer management, businesses form precise customer profiles by analyzing multidimensional data such as purchasing history, browsing behavior, and social interactions. This data-driven personalized marketing significantly improves customer conversion rates and satisfaction. In market forecasting, businesses use big data technologies to analyze information such as market supply-demand changes and price fluctuations, enabling accurate predictions of future market trends, which serve as

references for project development and investment decisions[1]. In marketing planning, businesses use data-driven advertising placements and precise push strategies to improve marketing resource efficiency and reduce unnecessary costs.

1.2 The Value of Big Data in Real Estate Marketing

Big data enables real estate companies to extract deep insights from customer data, thereby offering personalized services to each client. By conducting detailed analysis of customer behavior, businesses can precisely identify potential customers and increase conversion rates through customized recommendations, targeted advertising, and other means. Furthermore, big data technology also helps businesses provide personalized property recommendations based on customer preferences, ensuring precise matching. This not only enhances the customer buying experience but also increases sales opportunities for the company.

Big data technology can also assist companies in optimizing resource allocation based on real-time data and market changes. In traditional marketing models, businesses often rely on experience and fixed budget allocation plans, which can lead to significant resource wastage and inefficienc[2]. Through big data analysis, companies can dynamically adjust marketing resources in response to changes in customer demand, precisely target advertising, and choose the most effective marketing channels, thereby reducing marketing costs and improving resource utilization efficiency.

The speed at which the market changes is increasing, and real estate companies risk losing market share if they cannot respond promptly to these changes. Big data technology helps businesses monitor market dynamics in real time and promptly access information about customer demand changes and competitors. By quickly analyzing this data, businesses can adjust their marketing strategies in a short period, optimize ad placements, promotional plans, and more, ensuring they maintain a competitive edge in the market. The real-time nature of big data enables businesses to respond immediately to market changes, enhancing their ability to adapt[3].

2.Customer Lifecycle and Marketing Strategy

2.1 Definition and Stages of the Customer Lifecycle

The customer lifecycle refers to the entire process from a customer's first contact with a brand or product to becoming a loyal customer who may continue to purchase and recommend it. Lifecycle management helps understand customer needs and behavioral characteristics at different stages and allows businesses to design marketing strategies accordingly. By segmenting customers in different stages, businesses can more accurately formulate marketing measures to improve customer satisfaction and conversion rates[4]. The customer lifecycle is typically divided into four stages: Initial Stage (Potential Customers), Growth Stage (Purchase Intent Customers), Maturity Stage (Purchase Customers), and Loyalty Stage (Repeat Customers). Each stage has distinct customer characteristics, needs, and behaviors, allowing businesses to design more fitting marketing strategies through deep lifecycle analysis, maximizing customer value.

2.2 Lifecycle-Based Marketing Strategies

Real estate businesses should develop different marketing strategies for each stage of the customer lifecycle to maximize conversion rates and loyalty. The stages of the customer lifecycle and corresponding marketing strategies are shown in Table 1：

Table 1 Customer Lifecycle Stages and Corresponding Marketing Strategies

Lifecycle Stage	Customer Needs	Recommended Strategy	Marketing Tools
Potential Customers	Information seeking	Brand promotion	Advertising
Purchase Intent	Clear demand	Personalized recommendation	Custom solutions
Purchase Customers	Completed transaction	Experience enhancement	Customer follow-up
Loyal Customers	Long-term maintenance	Membership services	Social media

In the Initial Stage (Potential Customers), customers have limited awareness of the brand and product, and businesses should focus on brand promotion and attracting attention. Through multi-channel advertising, social media marketing, and content marketing, businesses can effectively increase brand exposure and enhance customer awareness and interest through educational content and interactive activities. In the Growth Stage (Purchase Intent Customers), customer needs gradually become clearer, and businesses should implement precise marketing strategies. Through data analysis, businesses

can identify customers' potential demands and further stimulate their desire to purchase with personalized recommendations and promotional activities. At this stage, increasing interaction with customers, providing special offers or events through email marketing or SMS push, helps improve conversion rates. In the Maturity Stage (Purchase Customers), customers have completed their purchase, and the focus should be on enhancing the customer experience. By providing high-quality after-sales service, customer satisfaction surveys, and product usage tutorials, businesses ensure positive brand recognition. At this stage, value-added services such as extended warranties, regular follow-ups, and membership cards can effectively increase customer loyalty, prompting repeat purchases. In the Loyalty Stage (Repeat Customers), businesses should solidify relationships through membership programs, reward points, and exclusive offers[5]. Loyal customers also have higher potential for word-of-mouth promotion, and businesses can encourage them to share on social media and refer new customers, further expanding the customer base.

2.3 Key Points of Customer Lifecycle Management

The key to customer lifecycle management lies in accurately identifying customer needs and implementing differentiated marketing strategies at different stages of the lifecycle. Big data technology provides strong support, helping businesses conduct in-depth analysis of customer behavior, preferences, purchase history, and other dimensions. Through data mining, companies can precisely identify the characteristics of different customer groups and their evolving needs, and formulate more personalized and accurate marketing strategies. Since customer needs and market environments are continuously dynamic, real-time monitoring and flexible adjustment of marketing strategies are key to ensuring marketing success. Big data technology enables businesses to monitor changes in customer behavior and market trends through real-time data analysis. By analyzing real-time feedback and purchasing dynamics, businesses can identify potential shifts in demand or market fluctuations and quickly adjust marketing strategies to ensure that marketing activities remain aligned with market trends. Customer lifecycle management goes beyond just product sales and involves long-term interaction and relationship maintenance with customers. By maintaining ongoing communication through multiple channels, businesses can better understand customer needs and expectations, enhance customer engagement, and improve loyalty. Whether through social media platforms, official websites, or offline activities, businesses can interact continuously with customers through these channels, enhancing customer brand recognition and deepening customer stickiness through regular communication.

3.Building a Big Data-Based Real Estate Marketing Model

3.1 Model Design Concept

The design concept of a big data-based marketing model is to integrate customer lifecycle management with big data analysis techniques to create a marketing framework that can dynamically adjust and precisely identify customer needs. The model framework includes three key components: data collection and analysis, strategy formulation, and performance evaluation. Data collection is the foundation of the big data marketing model, primarily involving obtaining raw data from customer behavior, market changes, social media, and other channels. Common data analysis methods include cluster analysis, association rule mining, and predictive modeling, which help businesses segment customers, identify potential customers, and predict future behaviors[6]. Based on the data analysis, businesses can develop marketing strategies targeted at different lifecycle stages. To ensure the effectiveness of marketing strategies, businesses need to evaluate the performance of marketing activities. This process requires comparative analysis of pre- and post-implementation data to evaluate the changes in key indicators such as customer conversion rates and customer satisfaction. Evaluation criteria include customer acquisition cost (CAC), customer lifetime value (CLV), and customer loyalty, which help businesses assess the effectiveness of their marketing activities.

3.2 Model Implementation and Key Technologies

In a big data marketing model, due to the diversity of data sources and the varying quality of data, it is essential to use data cleaning techniques to filter and process raw data, removing noise and redundancy. By using ETL (Extract, Transform, Load) technology, businesses can standardize data from various channels into a unified format, creating a complete dataset for analysis.

Customer lifecycle analysis is at the core of the big data marketing model. Through customer behavior prediction and customer value assessment algorithms, businesses can predict future behavior based on customers' historical actions and evaluate their future value. Commonly used customer behavior prediction algorithms include regression analysis, time series analysis, and machine learning algorithms (such as decision trees and random forests). These algorithms can predict customers' future purchasing intentions and timing based on their purchasing records, browsing history, and social behaviors[7].

Customer value assessment is primarily based on the RFM (Recency, Frequency, Monetary) model. By analyzing customers' recent purchase timing, purchase frequency, and spending amount, businesses assign a value score to each customer. Based on this score, businesses can better identify high-value customers and optimize the allocation of marketing resources.

Personalized recommendation systems leverage big data techniques to recommend the most relevant products or services to customers based on their historical behavior, preferences, and similar users' behavior data. By using collaborative filtering and content-based recommendation algorithms, the system can accurately push real estate information that matches customer needs, improving conversion rates.

3.3 Marketing Model Performance

To verify the effectiveness of the big data marketing model in the real estate industry, businesses need to use historical data for model validation. This process primarily depends on customer behavior data, market trend data, sales data, etc., which are typically sourced from CRM systems, website analytics tools, social media platforms, and other sources. The model validation process includes data splitting (such as dividing the data into training and testing sets) and cross-validation methods. To further demonstrate the actual effectiveness of the big data marketing model, a study was conducted on a real estate company. This company faced the issue of fragmented and insufficient customer data in their daily marketing efforts, and the lack of in-depth analysis of customer behavior led to ineffective marketing outreach to potential customer groups. Additionally, the low advertising return on investment (ROI) meant that marketing resources were not being efficiently allocated. The company urgently needed to integrate data to enhance precise marketing capabilities and increase customer conversion rates.

To address these issues, the company decided to implement a big data-based marketing model. Initially, the company performed customer lifecycle analysis to segment customers and offer personalized marketing solutions for each customer group. By utilizing behavior prediction models, the company could predict future customer needs based on historical behavior, further enhancing the precision of marketing strategies. Additionally, by using personalized recommendation systems, the company could recommend real estate listings aligned with customers' interests, thereby improving conversion rates.

After implementing the big data marketing model, the company's key indicators showed significant improvements. The performance metrics after six months of model implementation are shown in Table 2：

Table 2 Performance Analysis of the Marketing Model

Metric	Pre-Implementation	Post-Implementation	Improvement Percentage
Customer Conversion Rate	3.5%	6.2%	+77.14%
Customer Acquisition Cost (CAC)	500 yuan	450 yuan	-10%
Return on Investment (ROI)	1.5	2.8	+86.67%

By implementing a big data marketing model, the company achieved significant improvements in customer conversion rate, customer acquisition cost, and return on investment. The increase in customer conversion rate indicates that the company can more effectively turn potential customers into actual buyers; the reduction in customer acquisition cost demonstrates that precise marketing has helped control the cost of acquiring customers; and the improvement in return on investment reflects a more efficient use of marketing resources. Through personalized recommendation systems and targeted customer segmentation strategies, the company is better able to meet customer needs and drive purchasing decisions, thereby significantly enhancing marketing effectiveness.

Conclusion:By applying big data technology, the real estate marketing model not only improved customer conversion rates and satisfaction but also significantly optimized resource allocation and marketing efficiency. As customer demands diversify

and market competition intensifies, big data-based marketing strategies provide businesses with stronger market adaptability and precision. This model, by fully integrating customer behavior, market trends, and real-time data feedback, allows companies to implement personalized marketing strategies at each stage of the lifecycle, effectively increasing customer loyalty and brand value. As technology continues to advance, future big data marketing will increasingly focus on real-time and automated systems, achieving more efficient decision support and strategy execution, thus further driving the digital transformation of the real estate industry.

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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