

New Marketing Models in the Context of Digital Marketing

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Abstract: *Traditional marketing models have core problems such as insufficient customer insights and poor marketing efficiency. In the face of these challenges, this paper widely collects user behavior data from multiple channels such as social media, search engines, and e-commerce platforms, and conducts detailed cleaning and organization. On this basis, the Apriori algorithm is used to mine user data and build detailed user portraits. Based on the constructed user portraits, accurate advertising positioning and delivery are achieved. By matching user portraits with advertising content, ads can be accurately pushed to target audiences to increase advertising exposure and click-through rates. At the same time, the K-means clustering algorithm is used to optimize advertising creativity and content to make them more in line with user interests and needs, further increasing the attractiveness of advertising. During the advertising process, interacting with users and use the comment, like, share and other functions of social media platforms to collect user feedback and suggestions. The new marketing model has achieved results in increasing the click-through rate of advertisements, with the click-through rate increase ratio ranging from 10.5% to 34.6%. In terms of customer conversion rate, the customer conversion rate of the new marketing model is higher than that of the traditional model, showing its strong conversion potential and market adaptability. The maximum monthly sales of the new marketing model reaches \$64,700, which is higher than the \$35,000 of the traditional marketing model, indicating that the new marketing model can more effectively stimulate market potential and achieve higher sales performance. This paper provides a new path to adapt to the digital age, improve marketing efficiency and effectiveness, and help companies maintain their leading position in the fierce market competition and achieve sustainable development.*

Keywords: Traditional marketing; Apriori algorithm; User portrait; New marketing model; Monthly sales.

1. INTRODUCTION

Marketing strategies are undergoing unprecedented changes, and digital marketing has become a key area for companies to gain competitive advantages. Digital marketing has not only changed the way consumers interact with brands but also provided a new market environment for enterprises. In this context, enterprises must adapt to digital transformation and innovate marketing strategies to better meet consumer needs and market changes.

This paper explores the new marketing model under the background of digital marketing, analyzes its challenges to traditional marketing models, and proposes marketing strategies that adapt to the digital era. This paper analyzes how to reshape marketing practices and proposes a marketing model that adapts to current and future market needs. By analyzing user behavior data from social media, search engines, and e-commerce platforms, this paper constructs a detailed user portrait and explores how to achieve accurate advertising positioning and delivery. In addition, this paper also explores advertising creative optimization strategies based on user feedback, and how to enhance user interaction and collect feedback through social media platforms.

This paper first introduces the background of digital marketing, the contribution of this paper and the structure of the paper; then reviews the latest research progress in the field of digital marketing, including marketing model innovation, effectiveness evaluation of digital marketing tools and technologies, etc.; and describes the methods and processes of data collection, user portrait construction, precise advertising positioning and delivery, advertising creative optimization, and user interaction and feedback collection; demonstrates the effectiveness of the new marketing model in terms of advertising click-through rate, customer conversion rate, and monthly sales, and compares and analyzes the traditional marketing model; finally, summarizes the main findings of this paper and conducts a comprehensive evaluation of the effectiveness of the new marketing model, and proposes directions for future research.

2. RELATED WORK

With the emergence of new technologies and the evolution of consumer behavior, marketing strategies and models are undergoing profound changes. Zhang and Guo [1] conducted research on the innovation of marketing models

for tea culture ecotourism products and analyzed them from three aspects, namely, optimizing the marketing plan of tea culture ecotourism products, innovating the marketing methods of tea culture ecotourism products, and developing a variety of tea culture ecotourism products, including ecological activity projects, tourist routes, facilities and services, and peripheral products, etc., to provide reference and reference for the development of China's tea culture ecotourism industry. Jaas [2] evaluated the effectiveness of digital marketing tools and techniques by analyzing e-commerce marketing cases and strategies. Gu et al. [3] conducted a study on the short video marketing model of Yunnan small-grain coffee and found that the short video marketing of Yunnan small-grain coffee had problems such as homogeneity of video creation and low interaction between the brand and consumers. They proposed innovative countermeasures for the short video marketing of Yunnan small-grain coffee and finally realized the intelligent upgrade of the Yunnan small-grain coffee marketing system. Chandy et al. [4] explored the role of marketing in social and environmental issues by analyzing marketing practices and cases. They concluded that marketing can not only promote business success but also play a role in solving social and environmental problems. Zhang [5] revitalized private domain traffic through models such as public-private business domain linkage, decentralized direct-to-consumer marketing and content marketing. While tapping into the commercial value of private domain traffic, he explored a private domain marketing model with private domain traffic as the core, timely grasped consumer preferences in the private domain, guided consumer decision-making ideas, and resonated with users, thereby realizing traffic monetization and providing new ideas for enterprise digital transformation.

Hoffman et al. [6] analyzed the impact of new technologies on marketing and proposed a framework to evaluate the application of these technologies. In order to improve the quality of agricultural product live streaming sales, promote the implementation of the rural revitalization strategy, and promote the long-term development of agricultural product live streaming sales marketing, Cao [7] used literature research methods, case analysis methods, communication and economics, etc. to analyze the characteristics of China's agricultural product live streaming sales marketing model, marketing model types, problems existing in the marketing model, and corresponding optimization suggestions. Bulchand-Gidumal et al. [8] analyzed the application of artificial intelligence technology in hotel and tourism marketing and explored its impacts and challenges. Wu [9] took Shanwei City as an example to study the current situation and problems of the city's cultural tourism market. He proposed to use big data mining technology to analyze the characteristics of tourists' needs, and based on this, he conducted innovative research on the cultural tourism marketing model of Shanwei City. He took all-round tourism as an important means to promote the city's economic and social development, and rural tourism as an important means to implement the rural revitalization strategy, further polishing Shanwei's red cultural business card and promoting the integrated development of "red culture + green ecological tourism". Hollensen et al. [10] explored the potential role of the metaverse in marketing by analyzing its characteristics and applications. A comprehensive analysis of the above research shows that new marketing models in the context of digital marketing are gradually becoming a key force in promoting business development and innovation. These studies not only reveal the latest trends in the marketing field but also provide strategies for how to effectively respond to market changes. On this basis, this paper systematically analyzes how digital technology reshapes marketing practices and proposes a marketing model that adapts to current and future market needs.

3. METHODS

3.1 Data Collection

In order to build a new marketing model, this paper first collects user behavior data from multiple channels such as social media, search engines, and e-commerce platforms [11]. Social media platforms such as Facebook, Twitter, and Instagram provide rich user interaction data, including text, pictures, videos, comments, likes, etc. These data can help companies understand user behavior, predict trends, discover hot topics, etc.

Data collection methods include API calls, Web crawling, database queries, etc., among which API calls obtain data through the API interface provided by the social media platform. Search engines provide user search behavior data to help companies understand users' query habits and interests, and obtain relevant data from search engines through crawler technology. E-commerce platforms provide a variety of ways to collect product data, including using API interfaces, RPA technology, database connections, and Excel data downloads. The e-commerce platform's own database, user behavior records, market research, etc. are all important data sources. Table 1 shows the collected user data:

Table 1: User behavior data

User ID	Post Interactions	Comments	Likes	Shares	Keyword Searches	Search Engine Clicks	Product Views	Cart Adds	Orders	Avg. Order Value	Reviews
U1001	135	35	950	65	220	110	600	25	4	\$140	3
U1002	95	28	550	40	170	85	400	20	3	\$110	2
U1003	160	45	1100	70	280	140	800	35	5	\$160	4
U1004	110	30	750	55	200	100	550	22	3	\$130	3
U1005	85	25	500	35	150	75	350	18	2	\$100	1
U1006	140	40	1000	60	240	120	700	30	4	\$150	3
U1007	100	30	650	50	190	95	450	22	3	\$120	2

The collected data needs to be cleaned and organized to ensure the quality and usability of the data. Data organization includes data formatting, standardization, classification and archiving, etc., and it is necessary to ensure that all data has clear labels and descriptions. Data cleaning preprocessing includes removing duplicate data, correcting errors and inconsistencies, filling missing values, etc., in order to improve data quality and ensure the effectiveness of data analysis results.

3.2 User Portrait Construction

In the context of digital marketing, the construction of new marketing models increasingly relies on the accurate construction of user portraits, which is not only to achieve personalized promotion but also to improve user experience and marketing effects [12-13]. In this process, by applying the Apriori algorithm, this study analyzes user behavior data, reveals hidden consumption patterns and interest preferences, and provides strong support for building rich user portraits.

User portraits, as a comprehensive mapping of user characteristics, cover multiple key dimensions. First, age is the basis for understanding user consumption habits and preferences. Users of different age groups often show different consumption tendencies. Secondly, gender differences also significantly affect consumer choices. In the fields of fashion and beauty, men and women have very different preferences. Furthermore, regional factors cannot be ignored. Regional culture and climate characteristics will affect user needs.

In addition to basic demographic characteristics, user portraits also explore users' interests, preferences and consumption habits. By carefully analyzing users' digital footprints on social media, video platforms, etc., this study gains insights into their interests and thus tailors personalized content recommendations for them. At the same time, analysis of consumer habits, including shopping frequency, channel preferences and payment methods, will help merchants optimize marketing strategies and improve user satisfaction and loyalty.

3.3 Precision Advertising Positioning and Delivery

The precision advertising positioning and delivery process in the new marketing model mainly involves two aspects: matching user profiles with advertising content, and improving advertising exposure and click-through rate through such matching [14].

The matching of user portraits and advertising content is based on the analysis of the target audience. Through user portrait analysis, we can understand the audience's interests, behavioral characteristics, purchasing habits, etc. The advertising platform mines and analyzes data such as user historical behavior and browsing history, so as to deliver targeted advertisements and improve the click-through rate and conversion rate of advertisements. In this process, the click-through rate (CTR) is used as an important indicator to measure the effectiveness of advertisements. Its calculation formula is:

$$CTR = \frac{\text{Number of Clicks}}{\text{Number of Impressions}} \times 100\% \quad (1)$$

Number of Clicks is the number of times the ad is clicked, and Number of Impressions is the number of times the ad is displayed. By optimizing ad content and delivery strategies, it can increase CTR and improve ad effectiveness.

In order to increase the exposure and click-through rate of advertisements, this study implemented precise geo-positioning, placing advertisements in specific areas based on the user's geographic location information to

achieve precise coverage. At the same time, targeted advertising is carried out, and relevant advertisements are placed on platforms and media that users are most likely to pay attention to based on user portrait information. For users who like to buy home furnishings, home furnishings advertisements are placed on home furnishing websites, social media, emails and other channels.

3.4 Advertising Creative Optimization

In the context of digital marketing, advertising creative optimization in new marketing models involves the application of K-means clustering algorithm and the matching of advertising content with user interests.

As an unsupervised machine learning algorithm, the K-means clustering algorithm calculates the similarity between sample items and divides the data set into multiple different categories according to the data features existing within the data, so that the data within the category is more similar and the data similarity between categories is relatively small. In advertising creative optimization, the K-means algorithm helps to divide users into different groups based on their behavioral characteristics and preferences, thereby customizing personalized advertising content for each group:

$$\text{Minimize } \sum_{i=1}^k \sum_{x \in S_i} \|x - \mu_i\|^2 \quad (2)$$

Among them, k is the number of clusters, S_i is the i -th cluster, μ_i is the center point of the i -th cluster, and x is the data point in the cluster. By minimizing this objective function, the K-means algorithm finds the best clustering centers and thus divides users into different groups.

Matching advertising content with user interests is the key to ensuring advertising effectiveness [15]. By mining and analyzing these data, user interest tags are formed to provide a reference for advertising push. The advertising push platform has established a huge advertising content library and categorized and labeled the advertising content. In this way, when pushing advertisements, it can filter out advertisements related to the user's interests and push them according to the matching degree between the user's interest tags and the advertising content tags.

3.5 User Interaction and Feedback Collection

Social media platforms provide rich interactive functions such as comments, forwarding, likes and private messages, which enable users to interact with others in real time on the platform and share opinions and information. Businesses can use these features to strengthen connections with users and increase brand loyalty and user engagement. Through the comment function, users can directly provide feedback on the content released by the brand, and the brand can also communicate directly with users by replying to comments, answer questions and collect feedback. The forwarding function allows users to share the brand's content to their own social networks, expanding the reach of the information and expressing their opinions by adding personal comments. The like function provides companies with direct feedback on user engagement.

Companies can collect user feedback on their products or services through online surveys, user reviews, etc., and make improvements based on the feedback. The types of user feedback can generally be divided into functional requirements, bugs, pure complaints, etc. By classifying user feedback and extracting keywords, companies can more accurately grasp user needs and market trends. For example, by analyzing users' comments and interactions on social media, companies can gain insights into users' emotions and tendencies, thereby optimizing products and marketing strategies.

4. RESULTS AND DISCUSSION

4.1 Advertising Effect

The new marketing model greatly improves the attractiveness of advertising through accurate data analysis and target audience positioning. Through innovative design techniques and personalized content presentation, the advertisement not only successfully attracted the attention of target users but also stimulated their curiosity and desire to explore. Figure 1 shows the click-through rate improvement ratio of new marketing models under different advertisements:

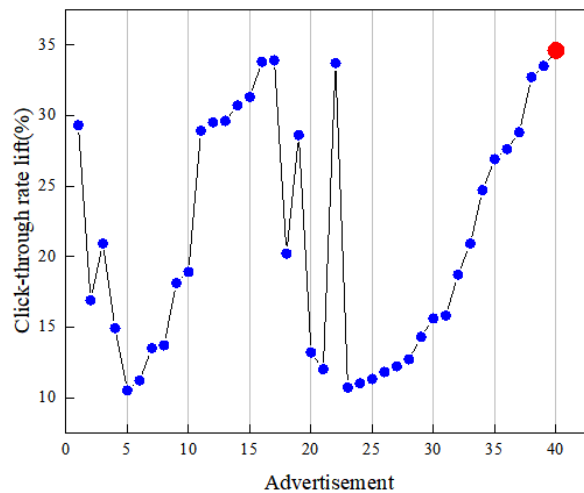


Figure 1: Ad click rate improvement ratio

As shown in Figure 1, the click-through rate improvement ratio is between 10.5% and 34.6%. This data range shows that the new marketing model has achieved remarkable results in improving advertising click-through rates. The significant increase in click-through rate means that the advertising content more accurately reaches the interests and needs of the target audience, thereby stimulating their clicking behavior. This not only proves the success of the new marketing model in advertising strategy, but also reflects its advantages in improving advertising effectiveness and user engagement. In addition, this data also reflects the accuracy of the new marketing model in data analysis and target audience positioning. By deeply analyzing user behavior and preferences, the new marketing model can more accurately identify the target audience and customize more attractive advertising content, thereby significantly improving the click-through rate.

4.2 Marketing Strategy Adjustment

The new marketing model is reshaping the market in an unprecedented way. By deeply mining user feedback, it is possible to accurately capture the subtle changes in the market and the real needs of users. These valuable feedbacks guide the direction of adjusting marketing strategies. When we learn from users that they value product cost-effectiveness, high-quality after-sales service and efficient logistics and distribution, we respond quickly and achieve precise optimization of marketing strategies by strengthening cost-effectiveness publicity, improving after-sales service quality and optimizing logistics and distribution systems.

This series of strategy adjustments based on user feedback not only greatly improved user satisfaction and loyalty, but also invisibly promoted the continuous improvement of marketing effectiveness. The increase in conversion rate, the continuous enhancement of user stickiness and the growing brand influence are all direct reflections of this process.

It can be said that the new marketing model has achieved a continuous leap in marketing effectiveness by constantly listening to the voice of users and optimizing marketing strategies. This is not only a profound change in the field of digital marketing but also the key for enterprises to achieve sustainable development and market competitive advantages in the context of the new era.

4.3 Marketing Effect Evaluation

In order to evaluate the specific marketing effect of the new marketing model proposed in this paper, this paper compares it with the traditional marketing model based on market research and direct marketing, using customer conversion rate and monthly sales as comparison indicators. The results are shown in Figures 2 and 3:

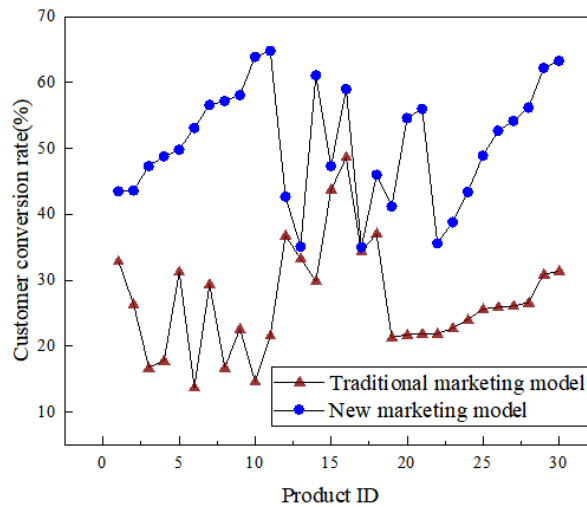


Figure 2: Customer conversion rate

From the customer conversion rate comparison data in Figure 2, we can clearly see the advantages of the new marketing model over the traditional marketing model in attracting and converting customers. Among all products, the customer conversion rate of the new marketing model is higher than that of the traditional model. This trend is not only reflected in low-conversion rate scenarios but is also further verified in high-conversion rate scenarios. Whether it is data points with lower customer conversion rates, such as Product 6 (13.6% vs 53.1%) and Product 7 (29.3% vs 56.6%), or data points with relatively high customer conversion rates, such as Product 15 (43.7% vs 47.3%) and Product 16 (48.6% vs 59%), the new marketing model has demonstrated its strong conversion potential and market adaptability. This fully demonstrates the superiority of the new marketing model in accurately positioning target customers, optimizing marketing content, and improving user experience.

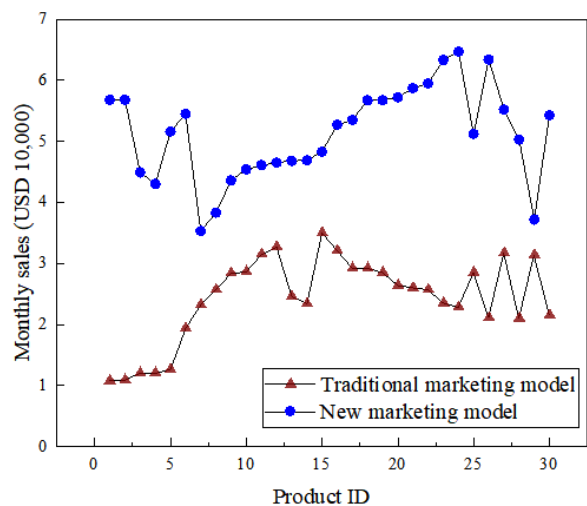


Figure 3: Monthly sales

From the monthly sales comparison data of different products in Figure 3, it can be clearly seen that the new marketing model has demonstrated advantages over the traditional marketing model at both the maximum and minimum extremes. Specifically, the maximum monthly sales of the new marketing model reaches \$64,700, significantly higher than the \$35,000 of the traditional marketing model, which shows that the new marketing model can more effectively stimulate market potential and achieve higher sales performance. At the same time, in terms of the minimum monthly sales volume, the new marketing model maintains a level of \$35,300, much higher than the \$10,800 of the traditional marketing model. This shows that the new marketing model can maintain a relatively stable sales bottom line, showing its strong market adaptability and risk resistance. Therefore, whether in terms of the explosiveness of sales peaks or the stability of troughs, the new marketing model has shown superior performance than the traditional marketing model.

5. CONCLUSION

This paper analyzes the new marketing model under the background of digital marketing and solves the problem of how to effectively use digital tools and technologies to improve marketing effectiveness. By collecting and analyzing user behavior data from social media, search engines, and e-commerce platforms, this paper constructs user portraits and achieves accurate advertising positioning and delivery. In addition, this paper also explores advertising creative optimization strategies based on user feedback, and how to enhance user interaction and collect feedback through social media platforms. Although this paper provides valuable insights and strategies, the research may not be able to fully predict future market and technological changes. Due to the limitations of data collection, the construction of user portraits may not cover all relevant dimensions, which may affect the effectiveness of precise advertising targeting. Future research can further explore the application of emerging technologies such as augmented reality in digital marketing and how these technologies can help companies better understand and meet consumer needs. At the same time, with the deepening of globalization and cross-cultural communication, digital marketing strategies also need to consider the specific needs of different cultures and regions.

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