

The role of big data marketing method based on statistical machine learning algorithm

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Abstract: In the background of the era of big data, computer technology is widely used in all fields, and gradually become the basic resources for the development of industry enterprise competition. Especially after into the development trend of economic globalization, the enterprise in order to in the increasingly competitive market environment to obtain the unique advantage, improve their own began to focus on data collection, data analysis, data induction ability, get rid of the traditional enterprise marketing mode, pay more attention to market dynamics, to understand the root of the consumer demand, Integration and application of statistical algorithms to achieve big data marketing innovation. Therefore, on the basis of understanding the machine learning algorithm and analyzing the application of big data marketing methods, this paper mainly discusses the big data marketing method with statistical machine learning algorithm as the core and its role.

Keywords: Machine learning; Big data; Enterprise marketing; Precision marketing

1. Introduction

Due to the permeability and universality of data information in the era of big data, enterprises must fully consider the influencing factors when integrating and using data resources. According to the current marketing effect of enterprises, how to use data resources to improve the production efficiency of enterprises is the main problem that enterprise construction managers focus on. On the one hand, the marketing of big data enterprises can not only control the production and management costs, but also formulate precise marketing strategies according to the needs and personality characteristics of various consumer groups, so as to prevent the imbalance of commodities. On the other hand, big data technology can maintain the good image of enterprises, quickly discover and remove negative information, so as to enhance the competitiveness of enterprise construction management. The comprehensive innovation direction of enterprises with big data marketing technology as the core is mainly reflected in the basic theory, application technology, practical innovation and other aspects. Therefore, the current enterprises use relevant technological theories to optimize the practical production and operation activities of innovation while changing the traditional marketing concept.[1.2.3]

In essence, big data marketing refers to the collection of a large amount of information through multiple platforms, the use of big data technology to analyze information resources and make judgments, improve the accuracy of online advertising, release product advertisements based on the network platform, and find the audience at the appropriate time to obtain more benefits. Nowadays, big data marketing has many characteristics such as channel diversity, timeliness of information and personalized consumption. Therefore, when enterprises are researching and innovating, they should first understand the target group, and then choose to buy relevant products in the prime time, so as to control the cost and expenditure through advertising. After entering the era of big data, brand new changes have taken place in the marketing model of enterprises. According to the analysis of big data technology architecture as shown in Figure 1 below, specific changes are reflected in the following points:[4.5.6]

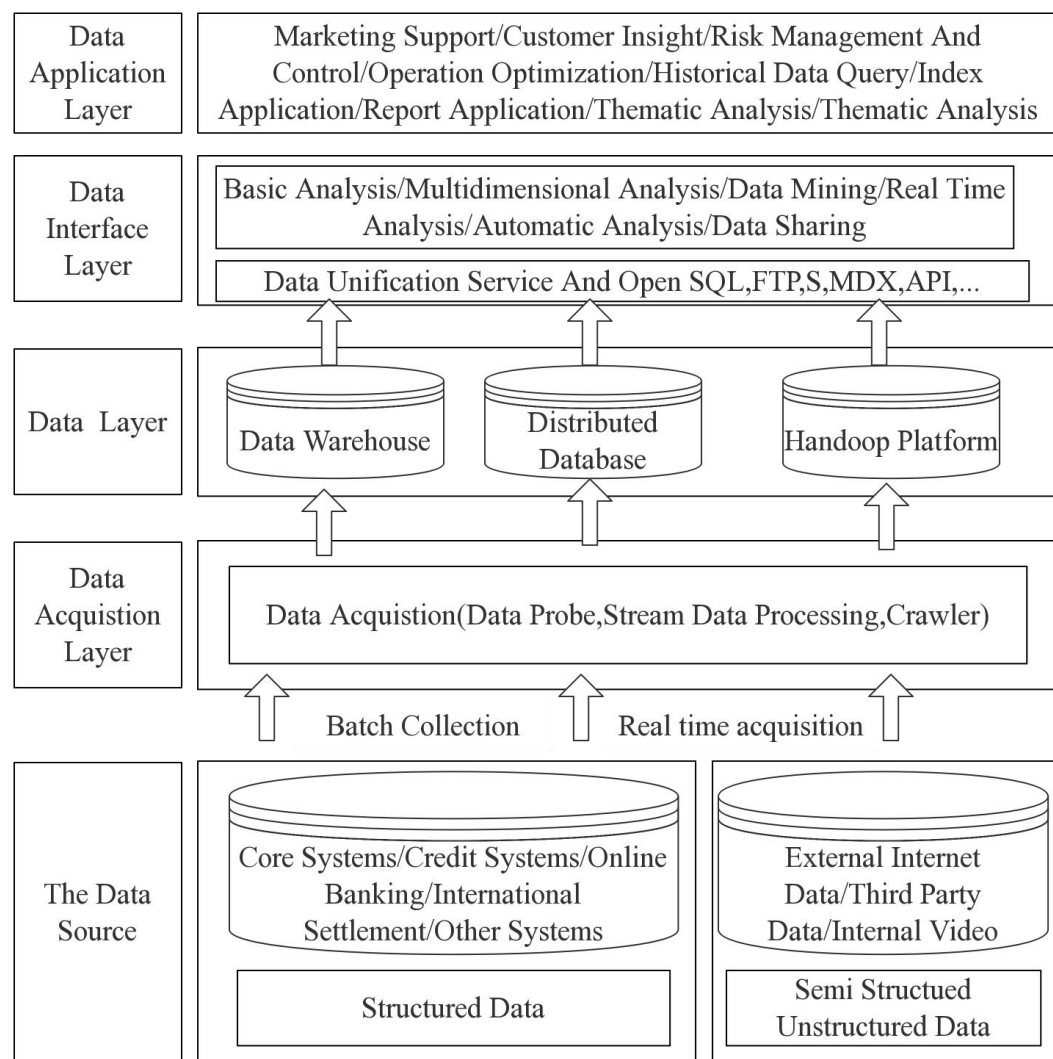


Figure 1 Big Data technology architecture diagram

First of all, precise marketing strategy. Enterprise marketing management personnel can according to the network platform, to collect consumer information of web pages, on the basis of the knowledge of product purchase rate and search green, accurately grasp the characteristics of different consumer groups and buying habits, and then adjust the supplement the original marketing plan, ensure all the information and specific operation has timeliness and pertinence. At the same time, the staff in the collection of information, to ensure that the product has personalized and special, fully meet the consumer demand for products and services, so that the enterprise in the image and reputation to obtain more advantages.[7.8.9]

Second, accurately predict consumption behavior. Enterprise marketing management personnel can predict and analyze the behavior changes of consumer groups on the basis of the research of various data, and integrate the internal record information of the application system and the external system record information, so as to ensure the rationality of the design and implementation of enterprise marketing activities.

Third, strengthen the close relationship with customers. The staff of the department should use big data technology to find core customers within the enterprise, and conduct deep mining for the needs of such customers, and gradually optimize the product quality and service system, so as to help the enterprise gradually innovate in marketing and obtain more high-quality customer groups. Finally, cross product marketing strategy. After collecting and sorting out large quantities of information resources, it is necessary to put forward targeted marketing strategies for products often purchased by consumers, integrate the application of established marketing strategies and

promotional marketing strategies, and ensure that enterprises can reap benefits in the following period of time. After understanding machine learning algorithms, this paper focuses on big data marketing methods with statistical machine learning algorithms as the core, and determines the positive role of big data marketing methods combined with practical and cumulative experience.

2. Method

2.1 Method Analysis

In the gradual deepening of digital professional, revitalizing the stock of customers and improving the marketing level have become the main issues for enterprises to realize big data marketing. This paper USES statistical machine learning algorithm, precision marketing, big data, to build a machine learning model, all aspects of forecast is most likely to complete the purchase goal, product features related to the purchasing behavior or with customers, and then output the corresponding target customer list and portrait characteristics, make enterprise sales staff for this kind of customer group set clear marketing strategy, In order to improve the success rate of enterprise marketing, combined with the operation flow chart shown in Figure 2 below, it can be seen that the overall method design involves the following steps:



FIG. 2 Flowchart of method operation

Firstly, select the customer data sample, set the observation period according to the sample information, plan the time point and performance period during the observation period, statistically analyze the target product purchase behavior contained in the customer data sample, and regard this kind of user as the target customer;

Second, collect the characteristic data of target customers and preprocess this information;

Thirdly, the candidate classification models are brought into the feature data for training and analysis, and the candidate classification models are evaluated with the evaluation parameters specified. Then the final classification model is selected according to the evaluation parameters of the classification model, so as to obtain the contribution rate of the classification model, its parameters and feature parameters to the model.[10.11.12]

Fourthly, the customer data outside the sample is taken as the prediction data into the classification model, and the purchase probability of all users for the target product is accurately calculated, and the partition threshold of the target user is determined. The prediction probability above the partition threshold of the classification model is regarded as the target customer, and the final result is output.

Fifth, according to the contribution rate of each feature data to the classification model, the feature with greater contribution rate is selected as the core feature, the specific performance of

target customers in the core feature is counted, and the characteristic portrait of target customers is output combined with the basic information of customers.

Sixth, accurately calculate the distribution of characteristic data of target customers and non-target customers, identify the differences between the two kinds of customers, and put forward effective big data marketing suggestions according to the activity plan.

2.2 Data Preprocessing

After collecting the characteristic data of target customers, the data information should be processed, and the missing value should be comprehensively processed. The variables whose missing rate exceeds the set value should be regarded as not distinguishable and directly deleted. For variables with a missing rate less than the set value, the corresponding missing should be selected according to the business significance and data type of the number segment, and the numerical processing method should be filled. The closing number uses the score to detect the abnormal value, accurately identify and keep away from the special groups of most stores, and directly remove the influence of abnormal data on the model composition. One or more features were screened by means of variance shaving and missing rate elimination.

2.3 Classification Model

The overview feature data is divided into test set and training set. The candidate classification model is brought into the training data for training analysis. The test set was used to validate the candidate classification model. After generating the validation results of the sample, the evaluation parameters were obtained according to the results. The customer data after the observation period is used for out-of-sample verification of the candidate score samples, so as to obtain the corresponding results and get the evaluation parameters; Compare and analyze the evaluation parameters inside and outside the sample, select two groups of better classification models to look at the final model; According to the final model, the contribution rate of the machine parameters and feature data of the classification model is accurately calculated.

3. Result analysis

In the era of big data, according to the analysis of the precision marketing structure chart shown in Figure 3 below, the big data marketing method with statistical machine learning algorithm as the core has the following advantages:

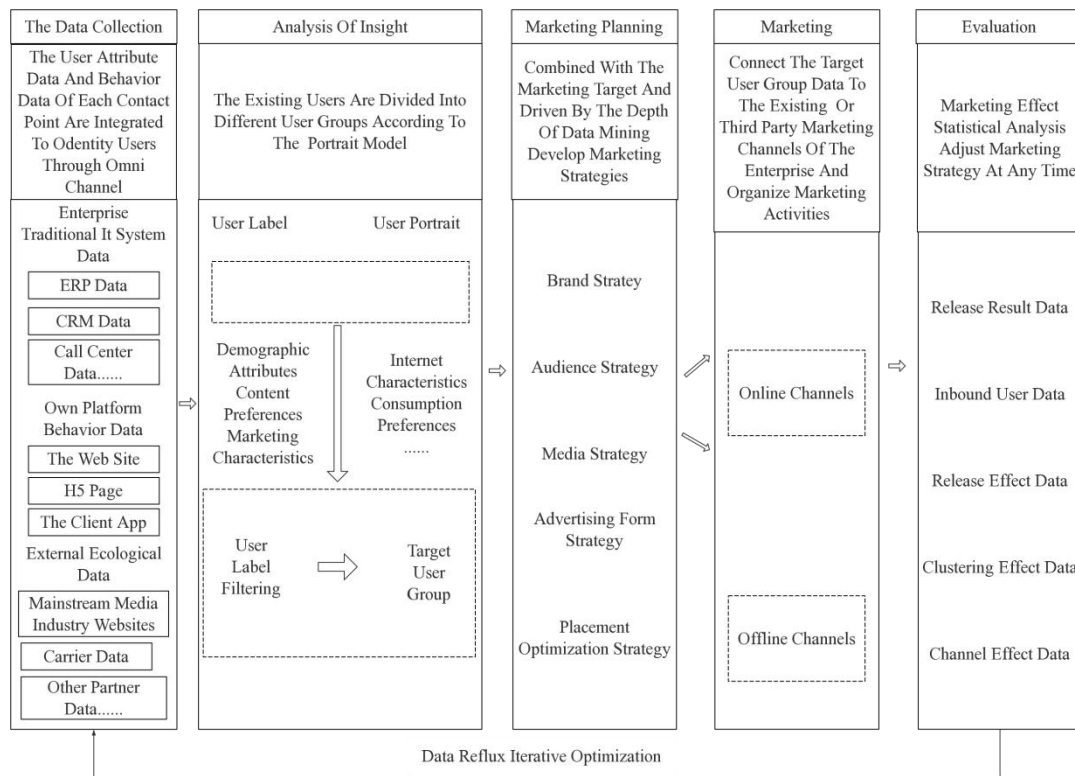


Figure 3 Structure of big data precision marketing

First of all, it can clarify the basic orientation of current consumers. In the past marketing activities and market development, although enterprises also carried out some research and analysis on consumer groups, most of them could only classify consumer groups from the superficial perspective of gender, age, purchasing trend and so on, unable to deeply understand and master the purchasing behavior of consumers. In the context of the era of big data, enterprises can widely collect the information and browsing behavior of consumers and potential consumers of network users through the application of precision marketing mode, and have a more comprehensive understanding of the career, income, education and other information behind network users based on network information technology. Application of big data technology can help companies from a network of consumers for structured data and unstructured data information, at present a more detailed, with data support for enterprise of consumer buying behavior analysis, help enterprises to develop more targeted marketing plan, in the implementation of the consumer guide at the same time, meet the psychological needs of consumers, Improve the economic benefits of enterprises.[13.14]

Secondly, it can enhance the overall value of consumers. In the context of big data era, precision marketing model is mainly a marketing model based on research on consumers, and the specific structure is shown in Figure 4 below. In the development of the current society, the improvement of people's cultural quality promotes the development of the society toward a more personalized direction. Under the development trend of individuation, consumers' purchasing behavior and consumption psychology have gradually presented the characteristics of individuation. In this case, the marketing model of enterprises should gradually move closer to the personalized consumers, and use the precision marketing model to meet the personalized needs of consumers. In this way, the overall value of consumers will be improved, so that enterprises can more respect and take care of the preferences and needs of consumers when making marketing plans, which can not only meet the development needs of enterprises, but also meet the purchase needs of consumers.



Figure 4. Digital marketing loop

Finally, it can gradually improve the level of big data marketing of enterprises. The high efficiency of Internet and network information technology also drives the high efficiency of enterprise marketing behavior when enterprises apply precision marketing mode. In the application of precision marketing mode, the big data technology used by enterprises can provide data information for the formulation of marketing plans in a more convenient and efficient way, and help enterprises to find the positioning of products, services and consumers more accurately and quickly. After enterprises fully meet consumers' psychological expectations and consumer demands, consumers will deepen the relationship of trust with enterprises, so that consumers can bring more potential users to enterprises, and then improve the efficiency of enterprises and expand the market scale of enterprises. In the context of rapid changes in the modern market environment, the efficiency of this marketing behavior can effectively help enterprises to consolidate their market position, reduce the risk of enterprises due to environmental changes in the market development, and play an important role in promoting the development of enterprises. The enterprise marketing process in the era of big data is shown in Figure 5 below:[15]

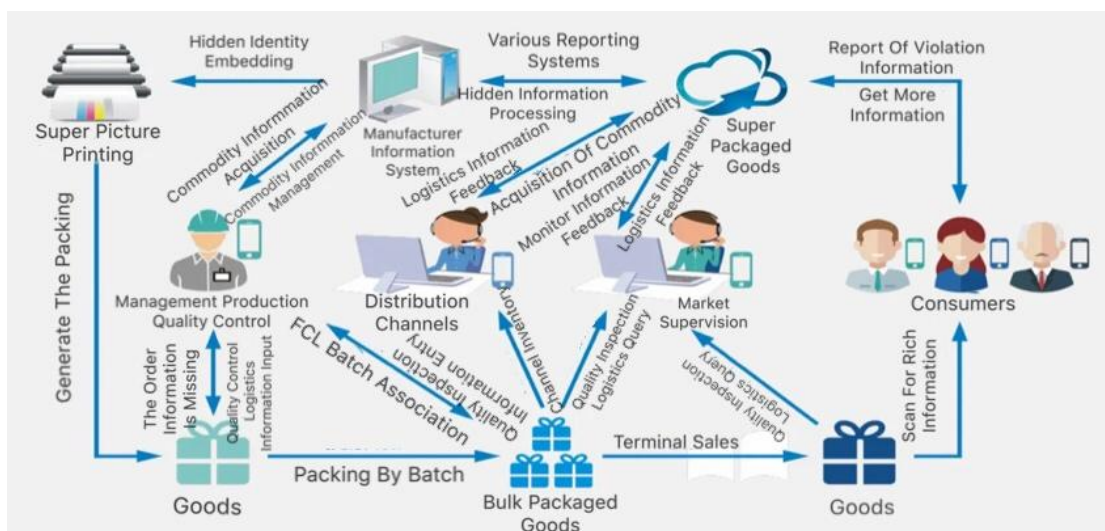


Figure 5 Enterprise marketing process based on big data technology

4. Conclusion

To sum up, in this article the research system, the machine learning algorithms in big data has played a positive role in the marketing method, can help the enterprise marketing personnel to quickly understand the differences between the target customer, and according to the industry enterprise activity plan and the basic needs of target customers, make big data marketing method to improve, so is the main content of research scholars, It has a positive influence on improving the marketing mode of enterprises. At the same time, enterprises should strengthen the training of professional and technical personnel, pay attention to the introduction of advanced technology theory from an all-round perspective, so as to build a high-quality big data marketing environment.

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