Precision Marketing of Wuhan Pharmacies Based on Big Data Analysis

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Abstract. With the development of information technology, big data analysis can help enterprises mine existing data and identify different groups of customers, so that enterprises can formulate different marketing strategies, achieve the purpose of precision marketing in marketing, and reduce marketing costs while increasing sales and expanding market share. Based on the analysis of the existing problems of Wuhan pharmacies, this paper combines precision marketing, customer segmentation theory and big data analysis technology, and carries out big data analysis according to the sales record details of the pharmacies. After obtaining the corresponding results, this paper develops precision marketing strategies for the segmented customers, designs marketing mix and product promotion strategies for the products with strong relevance, and reasonably allocates resources for Wuhan pharmacies it provides data basis for improving marketing efficiency.

Keywords: big data · pharmacy · precision marketing · customer segmentation

1 Introduction

With the development of information technology, drugstore enterprises have popularized system software for purchase, sales and inventory management, which has brought a lot of data [1]. However, although pharmacies have begun to use system software to manage the purchase, sales and inventory, many enterprises only stay at the level of recording data, and do not really analyze and use data, so that many pharmacies still stay in the traditional extensive mode of marketing [2, 3]. At present, the needs of consumers are diversified and personalized, while the traditional marketing model is difficult to meet the increasing needs of consumers, which leads to many pharmacies unable to keep up with the pace of social development, unable to meet the personalized needs of customers, and thus lose the competitiveness of enterprises [4]. Therefore, in the current era of big data, how to use the data generated in the daily operation process to conduct more scientific and accurate marketing through big data analysis is a problem that many enterprises have been exploring.

I. A. Khan et al. (Eds.): HWESM 2023, ASSEHR 760, pp. 380–386, 2023.
https://doi.org/10.2991/978-2-38476-068-8_48

2 Current Situation and Problems of Wuhan Pharmacy Operation

At present, more than 5000 pharmacies exist in Wuhan, with a permanent resident population of 8.592 million, and an average of 1700 people served by a pharmacy. The drugstores in Wuhan are mainly chain stores, with a market share of more than 95%. The chain drugstores compete with each other and frequent price wars occur. In addition to attracting customers at low prices, there are few other ways of marketing in drug stores, resulting in the increasing intensity of the activities, but the effect of the activities is getting worse and worse, resulting in a smaller and smaller profit space for enterprises. Therefore, breaking through the traditional single marketing model, adopting precision marketing, providing services to target customer groups, and realizing the synchronous growth of passenger flow, sales and profit are the urgent transformation path for Wuhan drugstores.

Through the investigation of 10 representative pharmacies in Wuhan, the following problems are summarized. (1) Lack of effective member management. The main way for these drugstores to obtain new customers is to distribute promotional color pages. After rough statistics of the number of color pages distributed and recycled, the conversion rate of customers who are promoted by color page activities has dropped from 8% to 5%. At the same time, in order to obtain new customers to enter the store, the store has to continuously increase the activity, compress the profit space, increase the number of promotional color pages, and send more store staff to distribute color pages, which increases the staff cost. Therefore, the cost of acquiring new customers for pharmacies is increasing. (2) The marketing means are too single. For the newly established chain drugstores in Wuhan, the marketing methods mainly imitate the practices of the same industry. For example, if you buy a certain amount of medicine as a gift, you will get a discount. In the actual operation, it was found that the effect of the activity could reach the expected goal at the beginning, but gradually decreased. After market research, it was found that the main reason for this problem was the same industry's activities. (3) The display of goods is chaotic. Because many pharmacies in Wuhan are updated relatively quickly, most of them are new employees, who are unfamiliar with drug display, and drug display is arbitrary. Promotional drugs are not placed in the golden position, and related categories are not displayed nearby, resulting in inconvenience for customers to select, and the store staff forget to carry out related and key sales. (4) Inadequate related sales capacity. A large number of new employees recruited by Wuhan drugstores have no pharmaceutical professional background and lack confidence in drug recommendation. However, drugs often need to be sold in a related way. For example, if a customer has a cold, in addition to taking cold medicine, they may also need to take antipyretics, antiviral drugs, antibacterial drugs, respiratory system drugs, etc.

3 Data Basis and Analysis Model of Precision Marketing in Wuhan Pharmacies

3.1 Acquisition of Big Data

Big data comes from every piece of daily business data [5]. Therefore, we should treat the purchase, sales and inventory data with an accurate attitude. For example, when creating new product information, select an accurate product classification; After purchasing the

goods, the customer should immediately settle the account and leave the warehouse to ensure that the quantity, purchase amount and purchase time of the drugs are accurate; Try to recommend customers to apply for membership to obtain membership information; The collection is recorded according to the payment method to analyze the proportion of the payment method. To do this, we need to develop standardized processes and continuously train employees to ensure the accuracy of data acquisition.

Abnormal data are often found in the daily operation of drug stores. For example, a member purchases more than 50 times in less than a month, which is obviously abnormal. After verification, it is found that this is the salesperson who redeems gifts for the points of Jizan members and intentionally concentrates the consumption of non-members into their family members' membership cards. Another example is that during an event, it was found that the customer flow of a store was low and the customer unit price was high, and there were many kinds of drugs purchased in a single transaction. After verification, it was found that the salesperson deliberately combined the small order into a large order in order to obtain the store event gift, so as to achieve the condition of giving high-value gifts. It can be seen that in order to ensure the accuracy of data acquisition, a strict assessment system and effective regulatory measures must be in place, otherwise it is easy to cause inaccurate data, and the enterprise will suffer cash losses in the short term, and will be affected by the results of error analysis in the long term, and the wrong marketing strategy will be formulated. When abnormal data is found, those that can restore the real sales process should be processed in time. For those that cannot restore the real process, removal should be considered in the data analysis to avoid deviation from the analysis results.

3.2 RFM Analysis Model

RFM model is an important tool used to measure customer value and customer profitability [6]. It classifies customers according to R (time of the last transaction), F (consumption frequency) and M (consumption amount). In short, it is to use RFM model to measure customer value, create a customer hierarchy system, achieve the purpose of hierarchical management of members, and focus enterprise resources on important and valuable customers to avoid wasting enterprise resources. This paper selects the historical sales data of 10 typical pharmacies in Wuhan as samples, and uses SPSS software to process the RFM model data. The most important purpose of RFM model is to group customers so as to achieve the goal of precision marketing. Now the three indicators of R, F and M are marked as "high" and "low" respectively. Those above the mean value are "high" and those below the mean value are "low".

3.3 Correlation Analysis Model

Association analysis is one of the most important research methods of big data analysis. It is to excavate valuable association relationships from a large number of consumption records and represent some association rules within a group of objects. Retail shopping basket analysis is a typical application scenario of relevance analysis. In the shopping basket analysis, it can be considered that each purchase record represents a customer's purchase behavior, that is, what goods the customer purchases at one time. By exploring

the relationship between customers' purchase of goods, we can study the patterns of customers' purchase behavior, so as to help stores scientifically recommend goods, design shelves, and purchase goods. This paper uses the Apriori algorithm in SPSSModeler software for correlation analysis.

Through the establishment of a visual network diagram, we can observe the relationship between various types of commodities. For example, the strength of the relationship between members' simultaneous purchase of cold drugs and antipyretic drugs is a strong link. Due to the strong correlation between cold drugs and other categories, members may purchase anti-infective drugs, antipyretic and antidote drugs, respiratory system drugs, gastrointestinal diseases drugs, ear, nose and throat diseases drugs, antipyretic, analgesic and anti-inflammatory drugs, etc. when purchasing cold drugs.

Through correlation analysis, we can calculate the support and confidence of commodity combination. For example, customers who use drugs for hepatobiliary and pancreatic diseases are likely to buy drugs for gastrointestinal diseases. According to the data analysis shown in Table 1, 254 customers bought drugs for hepatobiliary and pancreatic diseases, accounting for 2.2% of the total number; Among them, 52.6% of customers (134 people) bought drugs for gastrointestinal diseases. If this combination method is used to recommend the purchase of drugs for gastrointestinal diseases to customers, the efficiency will be 3.12 times higher than that of randomly recommending such drugs.

Table 1. Commodity association analysis

consequent	antecedent	Number of customers	Support	Confidence	Lift
Medication for gastrointestinal diseases	Drugs for hepatobiliary and pancreatic diseases	254	2.2%	52.6%	3.12
Cold medication	Drugs for otorhinolaryngologic diseases and respiratory system	247	2.1%	48.9%	3.37
Cold medication	Drugs for respiratory system and gastrointestinal diseases	225	2.1%	50.6%	3.65
Anti-infective drugs	Drugs for respiratory system and gastrointestinal diseases	221	2.0%	55.3%	3.71
Anti-infective drugs	Pediatric medicine and cold medicine	208	1.9%	51.8%	3.19

4 Precision Marketing Strategy Based on Data Analysis

4.1 Using RFM Model for Result Marketing

After screening the member consumption details of different commodity types, you can get the purchase records of the commodity type with demand. At this time, you can apply the RFM model to more accurately get the member classification under this kind of disease. Therefore, the accuracy can be improved and good expected results can be achieved in such scenarios as member invitation, formulation of combined sales package, formulation of exclusive activity plan, and issuance of exclusive coupons. For example, the drugstore has introduced a new health care drug for diabetes, which is relatively expensive. The store plans to promote it in advance by means of conference presentations. In the past, when making invitations in stores, only customers who have purchased hypoglycemic drugs will be randomly invited by telephone, or by telephone according to their daily sales feelings. Often, invited members will refuse the invitation due to less consumption in the store, or they will not be able to reach the transaction because of poor purchasing power after being invited. After adopting the precise marketing method, the drugstore can conduct RFM analysis by screening the purchase records of the members who have purchased hypoglycemic drugs. Those who belong to "important value customers" and "important maintenance customers" are the first members to be invited to the store. The invitation and final transaction rates are often high.

4.2 Utilize WeChat Marketing Strategy

WeChat was born in the Internet era. Its communication and sharing are convenient and easy to learn. It is popular with the public and has a huge user group. Therefore, WeChat platform is a good marketing tool to connect customers and enterprises. By gathering customers with the same disease into one group, each pharmacy has established different communication groups, such as diabetes communication group, hypertension communication group, rheumatism communication group, etc. Send health tips in the group regularly every day to establish contact with members and exchange feelings. Members can also communicate with licensed pharmacists in the group at any time to obtain professional pharmaceutical services. In the early stage of the activity, the theme content of the activity suitable for the group will be published in the group, which can enable the members in need to receive effective information and help the drugstore achieve accurate marketing.

Today, sharing through the circle of friends is one of the best display platforms. Every time before the promotion activities is carried out, the drugstore will preheat in the circle of friends in advance, speed up the dissemination of information, expand the scope of influence of the activities, and distribute color pages than before, which not only saves manpower and material resources, but also increases the popularity. At the same time, the drugstore will also launch the activity of forwarding likes from the circle of friends, encouraging members to share the content of the activity to their circle of friends, so as to further enhance the publicity effect through the way of likes collection.

4.3 Precision Marketing Based on Correlation Analysis Results

Through correlation analysis, most drugstores in Wuhan found that some kinds of drugs are often purchased by customers. For example, cold drugs often have strong correlation with antipyretics and anti-infective drugs. So cold drugs and these two kinds of drugs should be displayed adjacent to each other, which is convenient for customers to choose and purchase, and convenient for salespersons to recommend. In addition, we can also determine which brand or specification of the drug has the best sales volume through sales volume analysis, so that the drug can be adjusted in the display cabinet and placed in the golden storage space that is level with the human eye, so that customers can see the drug at the first sight, so as to improve their purchasing desire [7].

Formulate a combination promotion plan for the developed associated sales plan, that is, purchase certain categories at the same time, and enjoy preferential treatment, reduce the total price of a single transaction, so as to stimulate customers' desire to buy. For example, "cold medicine + antipyretic and detoxifying medicine + throat medicine + vitamins" can enjoy a 15% discount on the whole order. Or purchase the varieties with lower prices, so that customers can meet the category combination within the related sales without excessive costs. For example, purchase vitamin C tablets less than 10 yuan and put them at the cashier's desk. Remind customers that vitamin C is beneficial to improve immunity and shorten the cold cure cycle when they pay for it. Because it does not require too much expense, transactions are often concluded.

5 Conclusion

In the competition with the same industry, the traditional Chinese medicine retail industry is facing the problem of homogenization of marketing strategies. This problem is increasingly prominent with the increasingly diversified needs of customers. At present, the traditional marketing strategies alone in the pharmaceutical retail industry have become increasingly difficult to adapt to the development of the market. Pharmaceutical retail enterprises must keep up with the development of the times, arm themselves with information technology, innovate and develop new business and marketing strategies, so as to continuously improve their market competitiveness. Big data analysis is an important part of information technology. It can help enterprises identify effective information, explore potential value, and establish accurate marketing strategies suitable for drug retail enterprises.

Acknowledgements. The authors, H. J. Xiao, Y. X. Tian and W. H. Hao, acknowledge the financial support from National College Student Innovation and Entrepreneurship Training Program (202210524010).

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