

The Construction of Virtual Community in Marketing Scene

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Abstract: [Purpose / Meaning] the virtual community is a special relationship network created by people breaking through geographical restrictions, communicating through the Internet, and sharing information. This article starts from the perspective of the B-end merchant. The virtual community is not the type of spontaneous or passively initiated community discussed in most research institutes, but is built by the merchant itself using background data and analyzed through data mining and other technologies. The user's behavior trajectory, discover his hidden interest preferences, combine the user's own static data, etc., create a user portrait, and then use a clustering algorithm or user similarity calculation to divide users with the same preference performance into a virtual community. In addition, the entire process was realized with materials from open data sets. [Purpose / Significance] This is conducive to the development of small and medium-sized enterprises that do not have strong strength to build a brand virtual community and then bring users together. They can use the virtual marketing community they build to personally recommend users and improve marketing success rates. Reduce marketing costs.

1. Introduction

The information technology represented by the Internet has changed people's lives. The advent of the era of big data has impacted many traditional concepts and models, the most prominent of which is "Virtualization." Under the guidance of virtualization, a series of concepts such as "virtual enterprise", "virtual community", and "virtual organization" have appeared. Although their names are different, the application scope and scenarios are also different, but these concepts refer to the background of the current era of highly informed big data, where individuals or enterprises form various forms of alliances form a value chain, work together and make progress together.

Nowadays, the marketing field has also undergone great changes. Traditional advertising methods can no longer meet the promotion needs of merchants, and it will also easily cause customers' dislike. Establishing a community-based marketing scene can change interests. The same person is placed in the same virtual community, and marketers can recommend a specific user based on the hobbies of other users in the same community. This type of recommendation can capture the user's interest and make the recommendation more accurate and improve the purchase rate and marketing efficiency.

At present, scholars' research on virtual communities is mainly concentrated in virtual communities where individuals participate in interactions. The main research is on the C-end, and there is relatively little attention to the results of participants' participation and the participation of enterprises in the virtual community. [1] However, a recent study shows that more than a quarter of small and medium-sized B2B companies in the UK have already carried out their own marketing work on relevant social media [2] and maintained their own customer base on the virtual community, Looking for new customers and other activities [3], some larger companies such as Alibaba launched the services of the business circle directly on their platforms. Merchants can exchange questions and answers on the platform, and Alibaba has also established itself at the same time. Virtual community, but for some small and medium-sized enterprises, it is difficult to build such a platform, so it is impossible to establish a virtual community in which merchants initiate customer participation. Based on this, this article proposes a method for small and medium-sized enterprises to establish their own virtual community from the perspective of merchants. It does not require merchants to have a large customer group to participate, and can solve the idea that small

and medium-sized enterprises want to use virtual community user data marketing.

2. Literature Review

2.1 User Portrait

User portraits abstract and model the user's reality information, so that the information can be stored regularly and reused. The earliest user portrait concept was A. Copper, known as the father of interaction design, who defined user portraits as “virtual representatives based on user real data.” There are also many studies on user portraits in the back, and the concept has been deepened: Yu Mengjie [4] considers user portraits to be fictitious characters instead of the final user group. It is a method to visualize data, and user portraits. The core is to tag users, in order to make it easier for computers to understand and calculate; Liu Haiou [5] and others believe that user portraits are an analysis tool that can quickly analyze user behavior patterns and business habits for precision marketing., and the foundation is laid and the user experience can be improved;

Many scholars believe that user portraits are a collection of keywords, weighted values, and concept hierarchies, and the construction of user portraits is inseparable from the collection and collation of previous data, and then according to the specific business and application scenarios and features for abstract modeling.

The construction method of user portraits is generally carried out from two aspects, one is to build a conceptual model, and the other is to explore from the algorithm side, to improve the efficiency of algorithm, or apply a new algorithm model to the construction of user portraits, so as to to construct a more complete and effective portrait model. In terms of user portrait dimensions: Li Yingkun [6] researched user portraits from the aspects of user attributes, user churn, user behavior, and built a user recall model with reference to user churn information. Effectively proves the significance of researching user portraits; Chen Zhiming, Hu Zhenyun, etc. [7] model user portraits from four dimensions: natural attributes, interest attributes, social attributes, and ability attributes, and capture the data of “Zhuhu” for an example verification.

2.2 Virtual Communities

Most of the current research on virtual communities focuses on comparing them with traditional organizational models, interpersonal relationships, communication modes, and trust and loyalty among members, etc. [8] from the perspective of an operator, this community is considered as a whole, and marketers use the characteristics of virtual communities to formulate marketing strategies and seize marketing opportunities. The establishment of a virtual community can increase the purchasing power of members of the community, and will attract people with the same interests and same consumption habits to enter this community, thereby increasing the purchase volume. Tickle et al [9] proposed four key factors for the success of the B2B community through cross-case studies: culture, technology, resources, and community stability. In the virtual community, different participants will have different durations of participation, and for B2B enterprises, a good and lasting inter-enterprise relationship is conducive to reducing the business risk of the enterprise [10].

The purpose of building a virtual community in marketing is to break through the limitation of single individual research and achieve agile response to marketing opportunities [9], and integrate information of similar users in a dynamic alliance manner to cope with complex and changing markets. And this kind of virtualization also has its own characteristics [10]:

Opportunity-oriented. Constructing your own virtual community in marketing can quickly respond to the market and seize marketing opportunities. The establishment and demise of this community are market-oriented, improving the flexibility of enterprises to respond to market changes. Borderless.

Because it is not a real community organization, there is no clear boundary, and it also changes with the changes in user interests or behaviors. It is dynamically updated in real time, and a member can belong to multiple virtual communities.

Improved marketing agility. growing up very fast. The advantage of establishing a virtual

community is that for the integration of personal information, you can understand your users on a larger scale and achieve marketing goals.

3. Construction of User Portrait Model

Existing researches on user portrait models are mostly flat. Taking users as the core, and they are labeled from different attribute dimensions, and then a label system is formed to complete the construction of user portraits. However, there is such a problem that our understanding of the user is not achieved overnight, but gradually deepens with the change of time, and the data learned at the initial stage and the data learned at the later stage are definitely different.

Real-time dynamic updates, it is impossible to grasp the latest information about users, which will also affect the formulation of later marketing strategies; in addition, according to the types of user data we collect, the portraits we can build. The model levels are also different; based on the analysis described above, this paper builds a three-dimensional concept model of user portraits, and considers user portraits from bottom to top into fact portraits and model portraits and forecast portraits from three aspects: time, data, and goals.

Fact portraits are not very much about user data in the early stages of contacting users. They are based on fixed static data (name, age, gender, education, ethnicity, marriage, etc.) filled in for user registration. For such users, the purpose of the merchant is to obtain more information and understand the user.

As time increases and the user behavior data accumulates, the merchant can obtain more information. At this time, based on the factual picture based on the analysis and modeling of the user's behavior, in the marketing scenario, according to the collection, like, browse, search, comment, consumption history and other data, you can analyze the user's historical preferences, and the user preferences over time changes. The data collected at this stage are dynamic data that changes in real time. These data are not filled in by the user. They are obtained by accumulating the behavior characteristics of the user, and then building a model and selecting relevant algorithms for analysis to achieve a better understanding of the user.

The last stage is to build user prediction portraits, that is, based on the portraits of the first two stages, and analysis of historical data, to establish its interest preference model to predict and analyze user behavior, to achieve personality in marketing, the purpose of the recommendation.

4. Establishment of Virtual Community

A virtual community is a network-like relationship that exists between people. In the real world, people who do not know each other can make connections in the Internet world. It is a virtual group of people with the same interests, backgrounds, and ideologies. In the marketing scenario, a virtual community refers to a group of people with common purchasing preferences, similar consumption trajectories, and common interests. This group of people is not a voluntary organization to set up this virtual community, but rather a business for the better Marketing and internal classification of users. This classification is the basis for merchants to make accurate recommendations. Recommending specific individuals through interest preferences in the same community can greatly improve the efficiency of recommendations and reduce marketing costs. Each user has multiple preferences and interests, so they can belong to multiple virtual communities at the same time.

According to the Collaborative Network Organization (CNO) theory, the vast user group is the resource pool in marketing scenarios, and the users who have left data in our platform or system are VBE (Virtual Breeding Environment). In this article, VBE is clustered after analysis, we can get the VO (Virtual Organization) that we need for marketing. After the VO is established, we can make targeted recommendations. After the recommendation, the new data we obtain from the VO can guide the next round of VO formation.

This article uses the open data set Movielens as an example to establish a virtual community. The Movielens data set collects data on the ratings of different users for different types of movies. This article uses 1M size, the data set contains users = {user_id, age, gender, occupation}, movies =

{movie_id, title, genres}, ratings = {user_id, movie_id, rating} three fields.

Due to the particularity of the data set used, we have obtained different virtual communities, in this case different movie types. It can be obtained through data processing that the “Drama” and “Adventure” types of movies have the highest number of ratings in this data set, so the two types of movies are regarded as the two existing virtual communities, and then we perform the two types of movies on them. Users who have scored do cluster analysis and can get the following results. The construction of user portrait is shown in Figure 1.

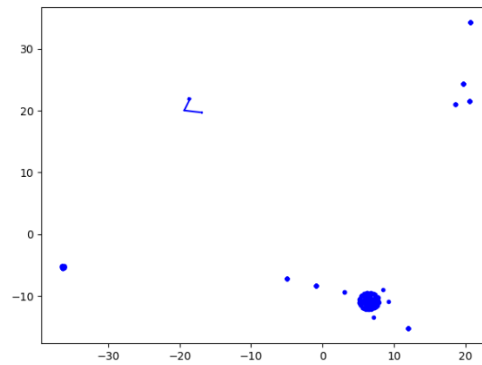


Fig.1 The Construction of User Portrait.

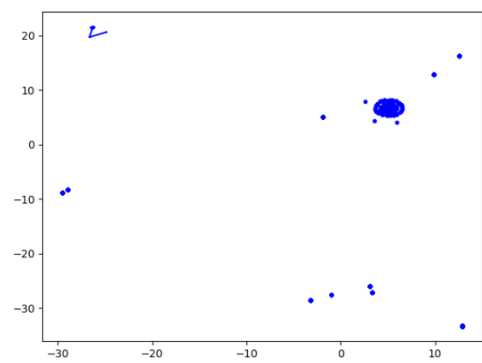


Fig.2 Clustering Results of “Drama” Virtual Community.

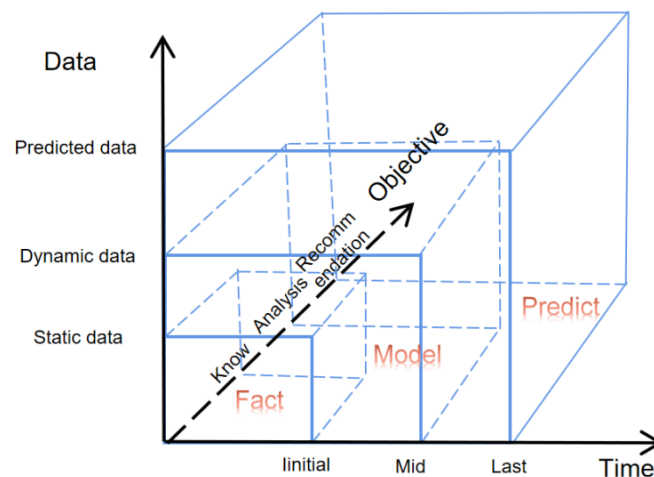


Fig.3 Clustering Results of “Adventure” Virtual Community.

The clustering results are shown in Figure 2 and Figure 3. Based on the results of these two clusters, we can see that different users have rated these movies and the users who have the same rating as them according to the groups with different ratings. On this basis, merchants can formulate corresponding marketing strategies, including who to send coupons to, what types of products to recommend to whom, and what brand of services. After the establishment of a virtual community, the merchants changed the web-based marketing method makes the purpose of marketing more clear. At the same time, the data in the marketing process has also been accumulated. These data are

the most valuable wealth of the enterprise and provide the basis for formulating the next strategy.

5. Conclusion

This paper builds a virtual community in the marketing scenario based on the CNO theory. Firstly, three levels of user portraits: fact portrait, model portrait, and predictive portrait were established from three aspects: time, data, and purpose. Then, based on the open data set, users were clustered to construct a virtual community of users with similar preferences. Laid a solid foundation for later personalized recommendations and precision marketing. Provides a more economical and achievable method for the virtual community marketing of SMEs The virtual community involved in this article is still in its infancy. In subsequent work, we will study in depth how to effectively use the data returned by the virtual community to achieve a gradual use of data.

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