User Behavior Analysis of an E-commerce Platform

Background

Taobao is an online shopping website of China's Alibaba Group, founded by Jack Ma on May 10, 2003, and is a C2C shopping website for consumers in mainland China, Hong Kong, Macau, Taiwan, Malaysia, Singapore, Australia, New Zealand, Canada, the United States, and Japan, where individuals or businesses can open their own online shops. Taobao's main income channels: 1. APP entrance advertising; 2. bidding ranking income from various product searches; 3. shop rentals; 4. income from technical services and software tools for merchants; 5. profitability from channeling other APPs developed by itself. Taobao can be understood as a virtual "real estate" business, or as a gold digger selling shovels and teaching them how to use the shovels to make better gold-digging profits.

The e-commerce market is becoming increasingly active, and since its inception in 2015, Jindo has quickly become the dark horse of e-commerce, overtaking Jingdong to become the second-largest e-commerce company in the country. As a result, the top-ranking e-commerce company, Taobao as known as Tmall, should also protect its own base and defend its position as the "number one e-commerce company". In the 2C sector, user behaviour analysis is a topic that cannot be avoided, to improve the conversion rate of each link and improve user retention, in order to bring greater GMV and higher revenue. When users are willing to buy on an e-commerce platform, they will first browse the product interface, and after comparing quality and price, they will first collect and then add to the shopping cart, and then complete the payment afterward. And at any of these points, users may lose, and thus the transaction is terminated.

Goal

As every transaction completed by a consumer generates a record in Taobao's database system, this massive amount of data forms a 'data goldmine'. This data can be used to further discover consumer behaviour, improve conversion rates and unlock growth opportunities for businesses. Specifically, it uses common e-commerce business indicators such as user visits (PV), unique visitors (UV), product collections, product add-ons, product purchases, and other information to understand the conversion of different products, i.e. using a funnel model to analyse user conversions and provide targeted advice for business operations.

Content

Link: https://tianchi.aliyun.com/dataset/dataDetail?dataId=649&userId=1

Questions

- ***Analysis of user conversions in various parts of the transaction***: further discover the reasons for low conversion rates and make suggestions on how to improve conversion rates.
- ***Analysis of user behavioral habits***: based on indicators such as PV/UV, find out the most active days of users and determine the time of day when users are active.
- ***User value analysis***: Based on information such as transaction amount and

transaction frequency, use RFM analysis model to stratify users and find core value users.

- ***Platform days of use and conversion rate***: the higher the number of days of use of the platform is the higher the conversion rate will be?

Data Analysis

Please click here to check the code

If the link above cannot work, you can copy the link and paste into the google: https://github.com/Ryan-FanZhang/PythonSQLTableau/blob/master/user%20bahavior%20analysis.sql

Conclusion

In the study of the conversion rate of users' shopping process, this paper found that the conversion rate from browsing to collecting/adding is low, less than 10%. Further exploring the possible reasons for this, through hypothesis testing, it was found that a large number of products on the platform had low sales and were not effective in attracting users; at the same time, it was also found that the platform did not have a precise grasp of users' needs, resulting in a low match between push and user needs, which prevented effective conversion. In this regard, this paper puts forward the following suggestions: the platform should further explore customer needs and complete the portrait of users, so as to push products more accurately; on the other hand, boutique shops can be cultivated, and by channeling traffic to certain high-quality shops, the conversion rate can be improved, and a good image can be established for further platforms, which can also promote healthy competition.

In the analysis of users' behavioral habits, the analysis focused on the frequency of users' browsing and shopping behaviour at different times of the day, which led to the discovery of a very regular behaviour of users throughout the day, i.e. the frequency of users' behaviour increased after 7 am and reached a peak at around 21 am. Therefore, when marketing or pushing, the platform can divide the day into 3 time periods, with 9-12 am warming up, 13-17 pm heating up and 19-23 pm as the main time period, and when investing resources, it can be roughly in the ratio of 2:3:5 to bring about a higher shopping conversion rate.

In the study of the number of days logged in and conversion rate, this paper found that the longer the number of days logged in, the higher the probability of users making purchases, i.e. the higher the conversion rate of purchases. Therefore, the platform can attract users to log in continuously through activities such as giving points, small red packets, and coupons for logging in, thus leading to sales conversion. (These behaviours are also consistent with Taobao's "Double 11" campaign, where users are given points and discounts in groups, which supports the findings of this paper).

In the process of using the RFM model to analyse the value of users, this paper has divided the users who have completed the purchase behaviour, so as to determine the type of customer each belongs to, laying the foundation for subsequent precision marketing. The analysis also captures the hierarchical structure of the customer base, which also provides a clear understanding of the platform's customer base structure and can also support and

back up the platform's business strategy. In this example, for high-value important customers, they should be properly maintained, these customers are sticky to the platform and will not be easily lost; for important recall customers, they are mainly recently inactive, they can be recalled by pushing small red packets, promoting their friends to share and other activities; for important deep-drilled customers, they should try to increase their purchase frequency and form stickiness to the platform; and for important recall customers, reasonable For important retrieved customers, a reasonable investment of resources, a more scientific plan, and a gradual exploration to improve their conversion to other types of customer groups is a practical way to improve the effectiveness of the platform.