

# Cosmetic Ecommerce Shop User Events Analysis

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## 1. Introduction

A monthly event history data analysis can provide business an overview of the company performance and identify any abnormal event by comparing to previous data. This report analyses an online cosmetic shops' users event history data in October 2019, using different indicators to understand the user's behavior and business performance. Several remarkable data will be explained with some suggestions for future marketing activities.

## 2. Customer behavior overview

Understand the customer behavior trend is important for the company to better plan the marketing events. The analysis of customer behavior focuses on the indicator of daily and hourly page view (PV) and unique visitor (UV) in total and for different event types.

### A. Daily PV and UV

The daily page view and unique visitor in October 2019 is shown in the figure 1 and figure 2.

The daily PV in this month is between 104,292 views and 201,068 views with the average of 132,324 views. More than three fourth days in this month has PV less than 136,202 views.

The daily UV in this month is between 14,532 visitors and 33,859 visitors. Also, more than three fourth days has UV less than 17,432 visitors.

Both Peak of daily PV and UV is on the 02/10/2019. The daily PV and UV in the first week in October is significantly higher than the rest of days.

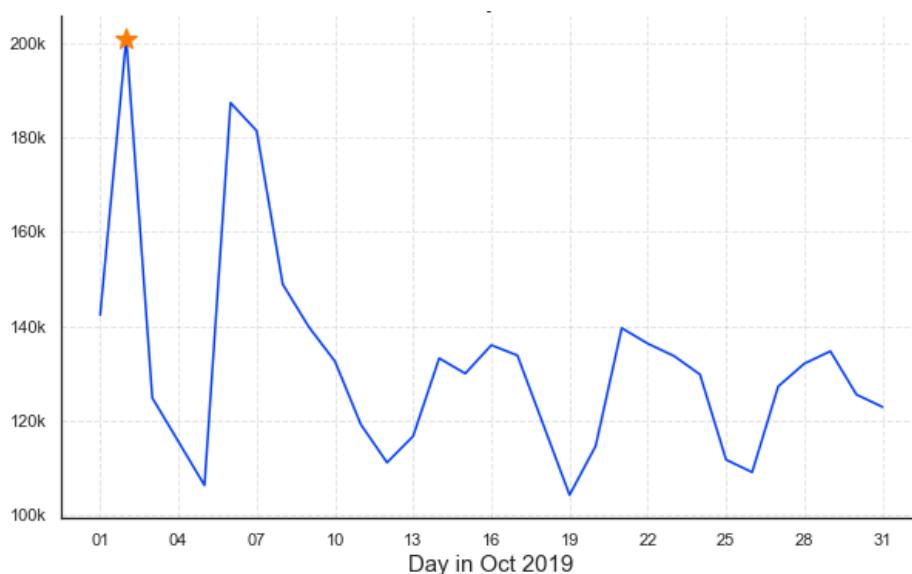


Figure 1 Daily PV

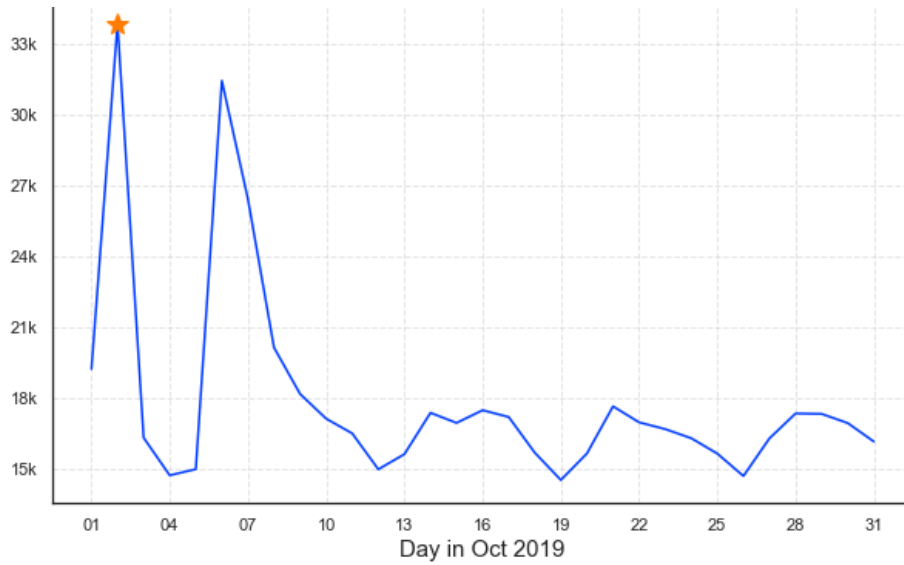


Figure 2 Daily UV

### B. Hourly PV and UV

The total PV and UV for each hour in a day in October 2019 are demonstrated in figure 3 and 4.

The total hourly PV in a day is higher than 200k from 7 am to 9 pm. Two peaks can be founded around 11 am and 7 pm. The highest total daily PV is at 7 pm.

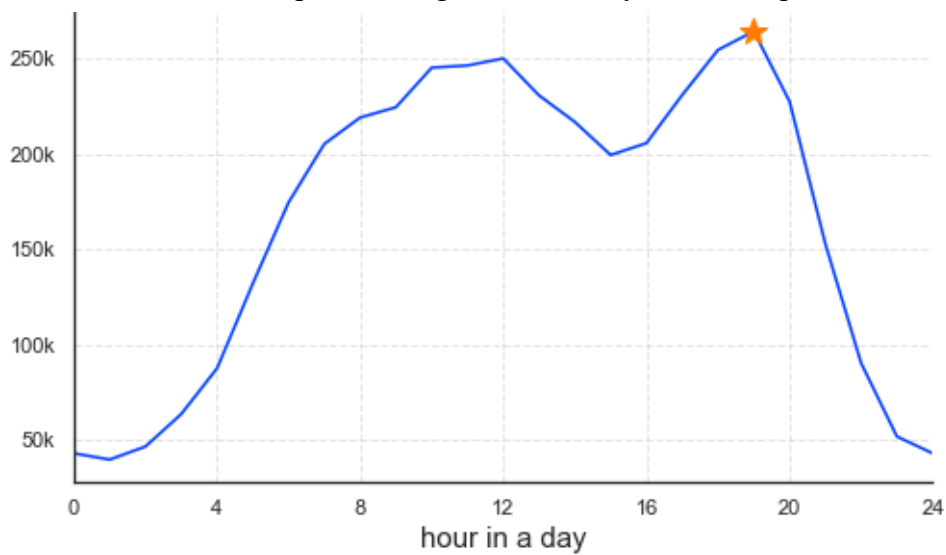


Figure 3 Hourly PV

The total hourly UV data distribution is similar with hourly PV distribution and has two peak time as well, while the UV at the noon is slightly higher than the UV at night and the highest UV is at 12 pm.

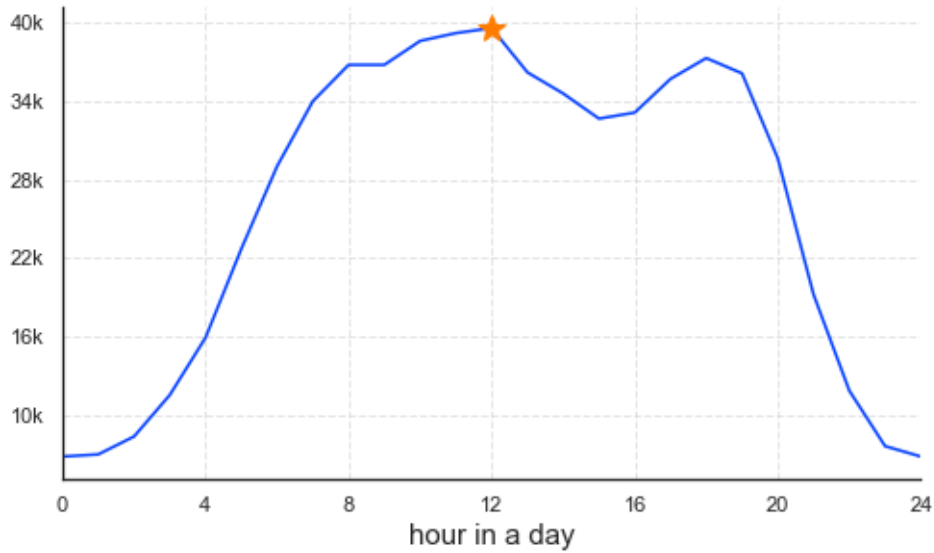


Figure 4 Hourly UV

### C. PV based on event type

The figure 5 shows the daily PV for four different event types which are view a product, add the product to cart, remove the product from cart and purchase the product.

For most of days, the daily view owns the highest PV, which is reasonable. 2<sup>nd</sup> and 6<sup>th</sup> are two days that add to cart is higher than view numbers. Moreover, though the total PV has distinct peak data, the daily PV for purchase is kept at the similar level through the month, which is slightly less than 10k.

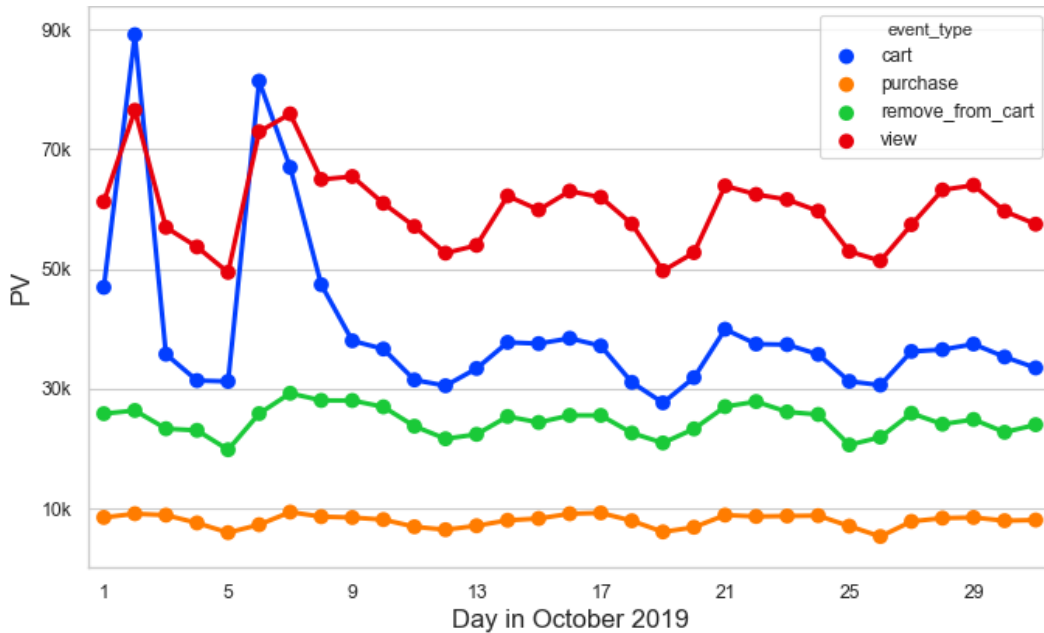


Figure 5 Daily PV for each event type

As shown in figure 6, the hourly PV for different event type also shows that the two peak data distribution for view, add to cart and remove from cart, while the peak PV for purchase event is relevantly unclear.

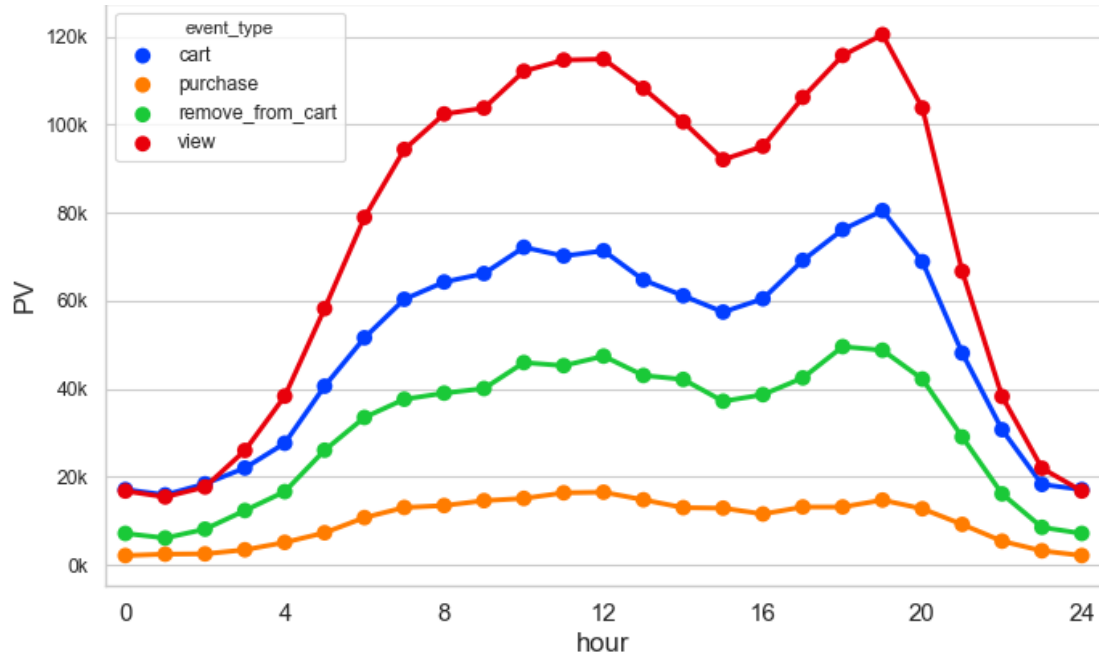


Figure 6 Hourly PV for each event type

### 3. Purchase behavior analysis

Users who have purchase behaviors are actually devote to the company revenue. This section will focus on the data from purchase event type with relevant indicators, in order to understand the how frequent users purchase and how much they paid.

#### A. Customer purchase frequency overview

In October 2019, there are 25,762 unique users purchased in the shop in total. Average purchase time is 9.53. More than half purchased users have purchased less than 6 times this month. The most frequently buyer has purchased 359 times this month.

#### B. Daily ARPPU

The daily average revenue per paying user (ARPPU) is shown in figure 7. The average ARPPU in October is 6.77. The daily ARPPU is between 6.15 and 7.2. Moreover, there are tiny differences of ARPPU among 31 days.

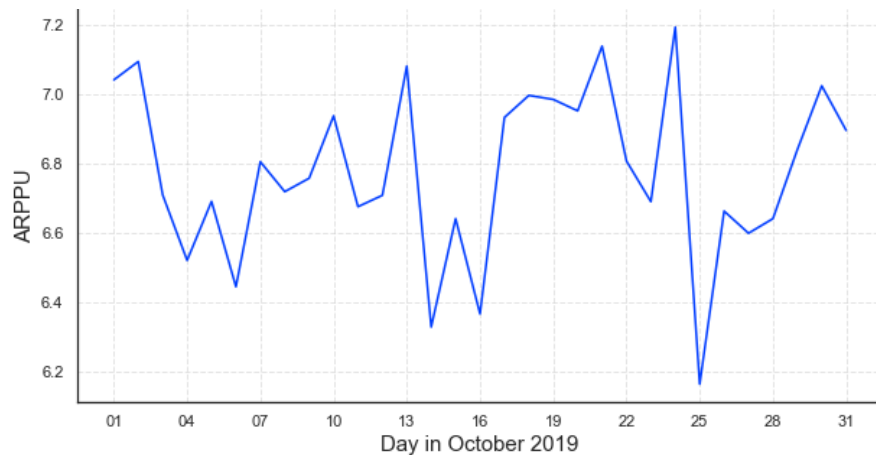


Figure 7 Daily ARPPU

### C. Daily ARPU

The daily average revenue per user (ARPU) is shown in figure 8. The average ARPU in this month is 0.36. Most of days has ARPU greater than 0.3, while the 2<sup>nd</sup> and 6<sup>th</sup> has ARPU that significantly smaller than other days. This is because of the number of visitors are much higher than other days while the purchase event is in the similar level that compare with other days.

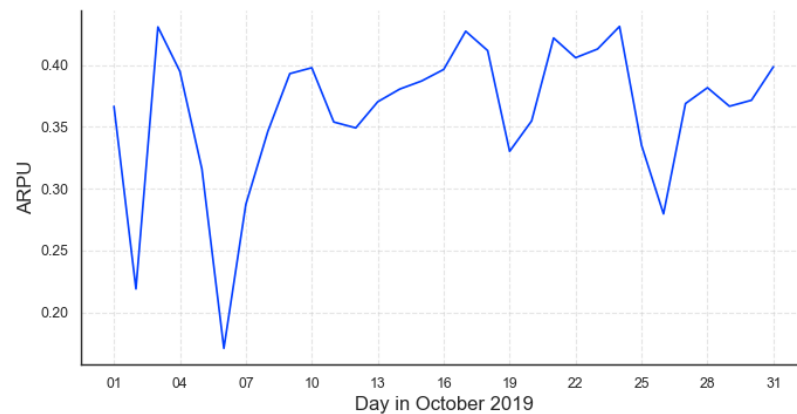


Figure 8 Daily ARPU

### D. Pay user rate

The daily pay user rate, which is shown in figure 9, is mostly between the 5% and 6% this month with the average 5.36%. Due to the high number of viewers on the 2<sup>nd</sup> and 6<sup>th</sup>, the pay user rate on these two days are considerably lower than other days.

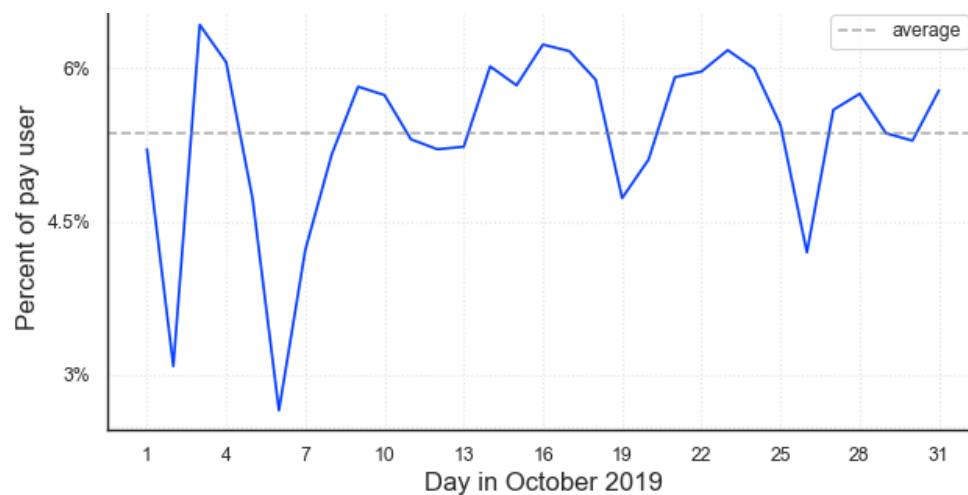


Figure 9 Pay user rate

### E. Repurchase analysis

#### 1) Repurchase times

Repurchase is defined as a user purchase more than once and the purchase event happened at the different days. There are 2492 users repurchased in this month and the repurchase rate is 9.67%. The average repurchase time is 1.29

As shown in figure 10, more than 80% of repurchased users only repurchase once. The max time of repurchase is 20.

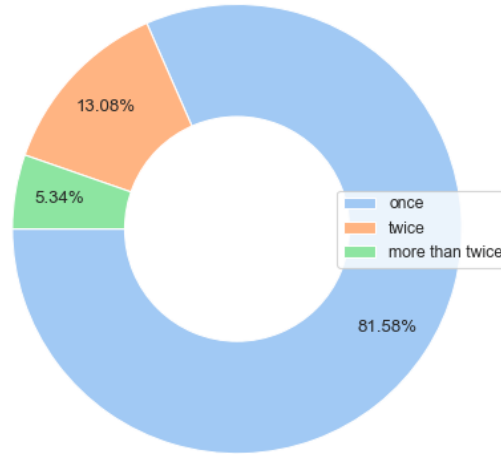


Figure 10 Repurchase times

## 2) Repurchase time gap

The repurchase time gap is defined as the time gap between the day of first time purchase and the last time purchase in this month. The repurchase time gap for repurchased users who has the gap time greater or equal to one day is shown in figure 11.

For totally 2,492 repurchased users, the average of the time gap is 12 days. About 25% of these users have the time gap greater than a half month.

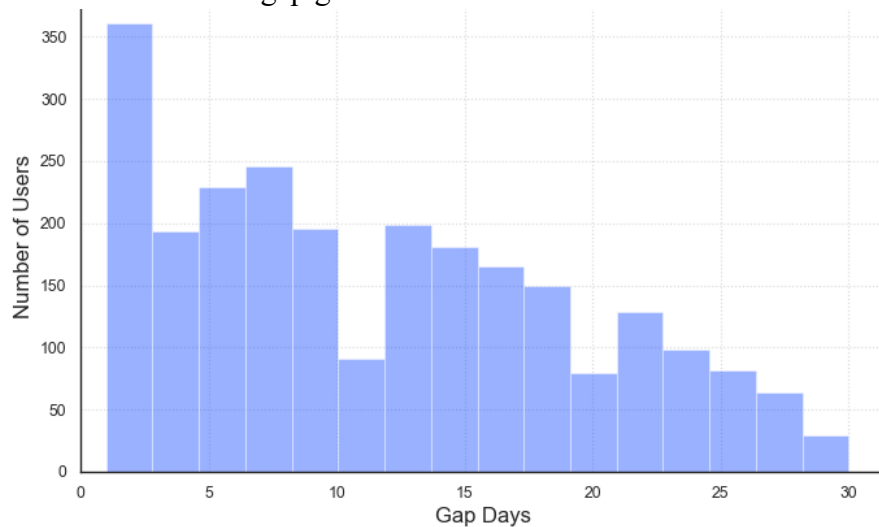


Figure 11 Repurchase time gap

## 4. Conversion rate analysis

The four event types can form two conversion process. The first one includes view, add to cart, purchase and the second one includes view, add to cart and remove from cart. Considering the data is limited on the October and some process may start from the previous months, the following conversion rate only counts the process that starts in October.

The two event process with conversion rate is shown in figure 12. The rate from view to add to cart is 23.26% and the rate from add to cart to purchase is 26.6%. However,

the conversion rate from add to cart to remove from cart is 46.6%, which is almost twice as the conversion rate to purchase.

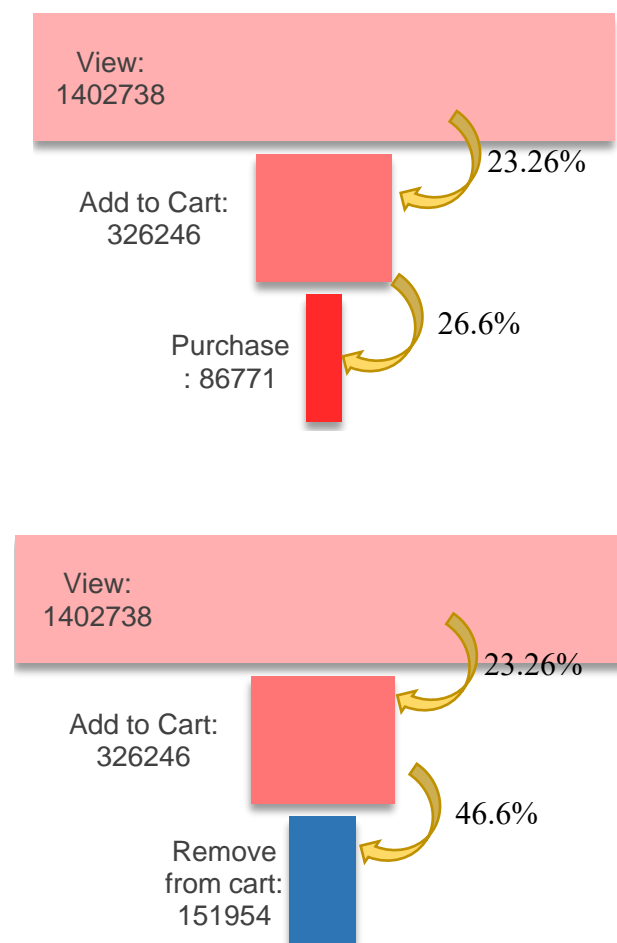


Figure 12 Conversion rate

## F. Product brand analysis

Based on the PV for each brand, the conversion rate for the top ten large brand is shown in figure 13. Although the from view to add to cart conversion rate varies a lot among these brands, the cart to purchase conversion rate of these brands are on the similar level, which around 20% and slightly lower than the total conversion rate.

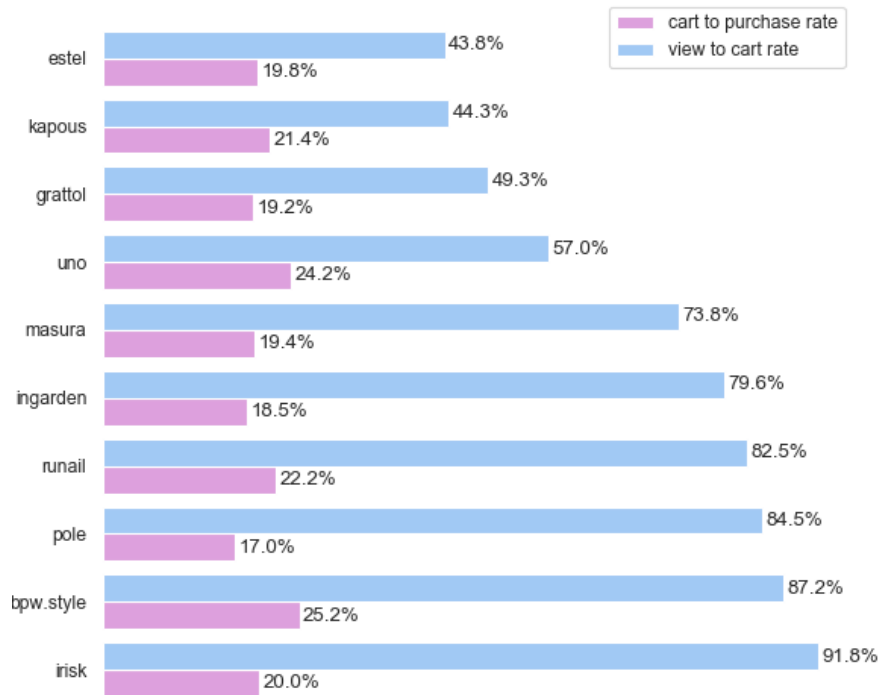


Figure 13 Conversion rate for top 10 brands

## 5. RFM model building and analysis

RFM model is used to define and understand different customer segments based on the recency, frequency and monetary level. This analysis defines the recency as the time gap between the last purchase date and the end of the month, frequency as the total times that purchased in October and monetary as the total price of purchased product. For each purchased users, marks from one to five is given to each indicator. A further FM indicator is user as the average of frequency and monetary score. Then, the customers are separated into 12 different segments. The percent of each segment is shown in figure 14.

The company need to pay more attention to the customers at risk, which is the largest group among all customer segments. The potential loyalist also should be tracked and make effort to transfer them to loyal customers. The loyal customers, which is the second largest segment, need to be keep in touch with and improve them to champions. Moreover, there are only less than 3% new customers, which means the company may need to do more marketing event to acquire new customers.



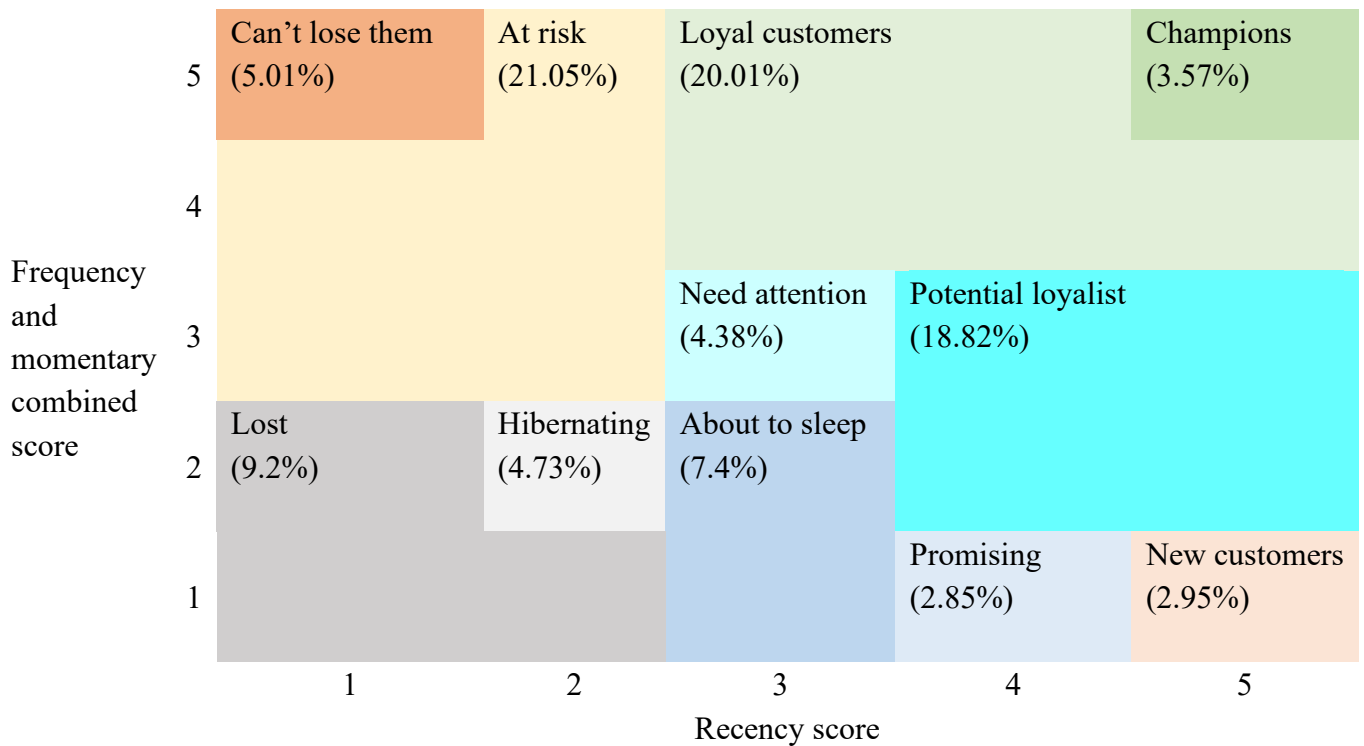


Figure 14 Customer segments

## 6. Conclusion

In general, the cosmetics shop has about 130k page views and 17k unique visitors every day. Most users use the website at the noon and the early night time. The users purchase event is steady through the month. Although at the 2<sup>nd</sup> October and 6<sup>th</sup> October there are significantly larger viewers, the purchase event is keep at the similar level that compare to other days. About 10% users have purchased at more than one days this month. After add product to cart, almost half of users remove the product and only a quarter of users buy the product. The conversion rate from add to cart to purchase is similar among top brands. For the future marketing event, the company need to pay more attention to the customers at risk, which is one fifth of total customers. Potential loyalist, which is one of the largest customer segments, is also important to the company. Further, the business should consider to attract more new customers.