# Bulkpro analysis

- **Business Problem:**

Bulkpro is a company that specializes in procuring products (multiple categories) from local manufacturers in bulk and selling them via their website to other local purchasers (dealing in bulk quantity) throughout India. Your dataset includes Product Data and Order Data for Bulkpro. Product Data - This data file includes details of each product that is listed on the website including the product category, the website listing date, and the source channel through which the manufacturer has connected with Bulkpro to list the products on the website. Order Data - This data file includes individual order details of different products that are listed on the website including order quantities, order date-time, etc. Each order is placed by an individual purchaser.

- **Understanding the problem statement:**

  The Bulkpro management suggested the Data Analyst team figure out the reason for the decline of overall orders in the Platinum category placed (both in terms of the number of orders and in terms of daily product quantities ordered). Use this data to analyze the performance of each channel/segment that can bring insights on the root cause of the problem and suggestions on key focus areas.

- **Know your Data:**

  Dealing with a huge data set is a time-consuming part. In this dataset, we are provided with 8 features and around 67k data instances. To understand the dataset we are working on, initially, we find the important columns and the data using "head()" and "info()". To minimize the workload and efforts we must have to distribute data and analyze the content first.

- **Exploratory Data Analysis:**

1. Based on the monthly distribution of various products we have found that most of the products of platinum category are in demand however, the demand for platinum category has decreased alarmingly which is an area of concern for bulkpro.

| month_of_date | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Product-category | | | | |
| bronze | 55553 | 526506 | 672158 | 568259 |
| gold | 3337623 | 3552610 | 2490969 | 1187834 |
| platinum | 39876786 | 49519423 | 34846253 | 27659839 |
| sliver | 1347039 | 2503738 | 3478547 | 3839315 |
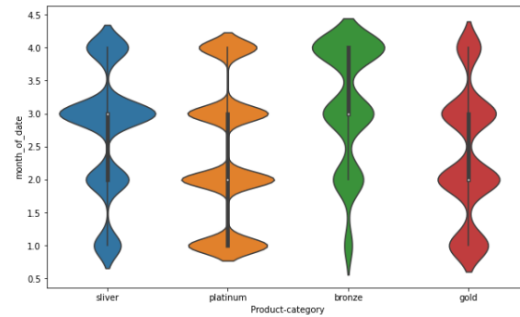


2. The average demand for the products has also increased over the period of time which can be described by the figure as follows.
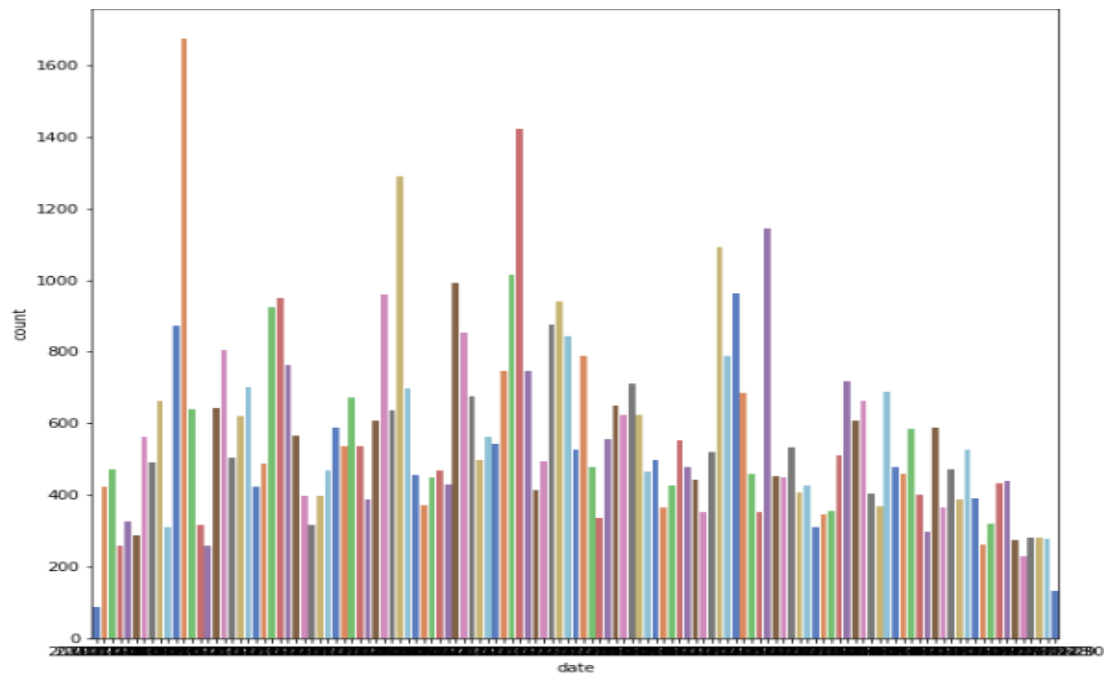


3. Analysis for weekly sales was carried out and least demand was on week no 18.
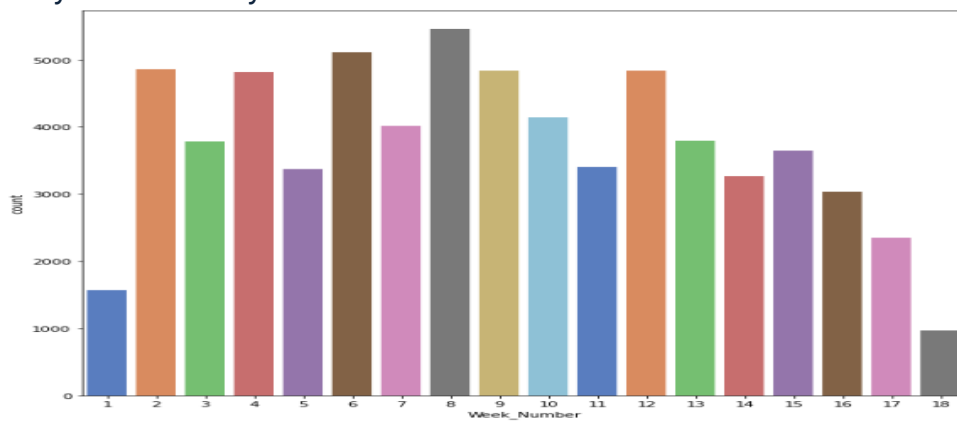
4. We tried to analyze the product wise demand and found that there are some products which were ordered very few times but were ordered in a huge quantity during 2nd and 3rd month that cased the avg sales along with the quantity to increase drastically.

| | product-id | count | average | | | product-id | average | count |
|---|---|---|---|---|---|---|---|---|
| 0 | KC436776SR | 2122 | 1806.880302 | | 0 | NZ324899WZ | 300000.0 | 7 |
| 1 | JS705494JI | 1857 | 6797.952612 | | 1 | EI162034CU | 250500.0 | 2 |
| 2 | FO304915IU | 1518 | 4030.237154 | | 2 | AV452896DQ | 104550.0 | 2 |
| 3 | NR528159TO | 1124 | 2085.040036 | | 3 | WN443620OY | 22750.5 | 10 |
| 4 | PE305394XZ | 1064 | 1045.859023 | | 4 | LJ509114EJ | 20000.0 | 1 |
| ... | ... | ... | ... | | ... | ... | ... | ... |
| 1447 | NY877954VA | 1 | 200.000000 | | 1447 | EK817914SV | 100.0 | 2 |
| 1448 | BY239891DG | 1 | 100.000000 | | 1448 | VV443910ZA | 100.0 | 2 |
| 1449 | OA701390LY | 1 | 1000.000000 | | 1449 | FC618063KG | 100.0 | 1 |
| 1450 | OA921425SN | 1 | 100.000000 | | 1450 | BU952815MT | 100.0 | 1 |
| 1451 | PK682839BF | 1 | 1000.000000 | | 1451 | VV268587ON | 100.0 | 1 |

5. We analyzed the trend for the newly launched products and found that eventually there was decrease in the number of new products being launched.
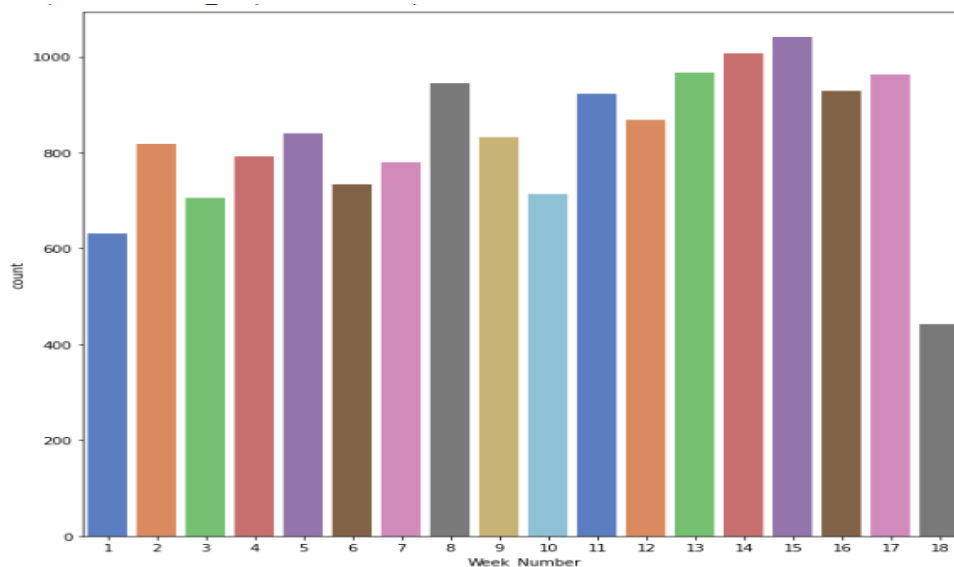


| daydiff | -7 days | -3 days | -2 days | 0 days | 1 days | 2 days | 3 days | 4 days | 5 days | 6 days | ... | 94 days | 96 days | 98 days | 100 days | 101 days | 102 days | 105 days | 107 days | 112 days | 115 days |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| month_of_date | | | | | | | | | | | | | | | | | | | | | |
| 1 | 75500.0 | 1000.0 | 500.0 | 4520652.0 | 9508533.0 | 5940391.0 | 4639952.0 | 3108434.0 | 3297488.0 | 2156348.0 | ... | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN |
| 2 | NaN | NaN | NaN | 5500663.0 | 11659885.0 | 7202228.0 | 3836899.0 | 3532045.0 | 1687562.0 | 1636367.0 | ... | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN |
| 3 | NaN | NaN | NaN | 5741146.0 | 6601988.0 | 4309645.0 | 3048075.0 | 2435289.0 | 1537860.0 | 1176389.0 | ... | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN | NaN |
| 4 | NaN | NaN | NaN | 3514312.0 | 5018939.0 | 5085195.0 | 1849201.0 | 1573025.0 | 931042.0 | 700926.0 | ... | 250.0 | 15000.0 | 6750.0 | 100.0 | 12603.0 | 3500.0 | 2750.0 | 5000.0 | 10000.0 | 5000.0 |

4 rows × 106 columns

The above Table signifies that many products remained in demand as they were properly published in the market and so the quantity of orders remained high for them.

6. The analysis for the google keyword for the products being sold shows that most of the products being sold on website are having bulkpro as google search keyword however most of the sales occur when we have keyword like bulkpro or sell online so the company might change the keywords for the products that are not getting much attention on website so as to get sold quickly.

7. The analysis for the product source shows that the dependence of platinum products relies heavily on the tele sales.

| Product-source | android | facebook | google | tele-sales | website | whatsapp |
|---|---|---|---|---|---|---|
| month_of_date | | | | | | |
| 1 | 267 | 81 | 1661 | 8037 | 6032 | 1106 |
| 2 | 540 | 8 | 3416 | 10537 | 5553 | 57 |
| 3 | 562 | 75 | 3567 | 7403 | 5633 | 211 |
| 4 | 267 | 61 | 2629 | 5643 | 3646 | 281 |

When we compared the source for platinum and bronze products, we realized that shifting the source to online channels could be a better option for improving the sales. The below are the two figures that show the dependence of platinum and bronze products on product source.
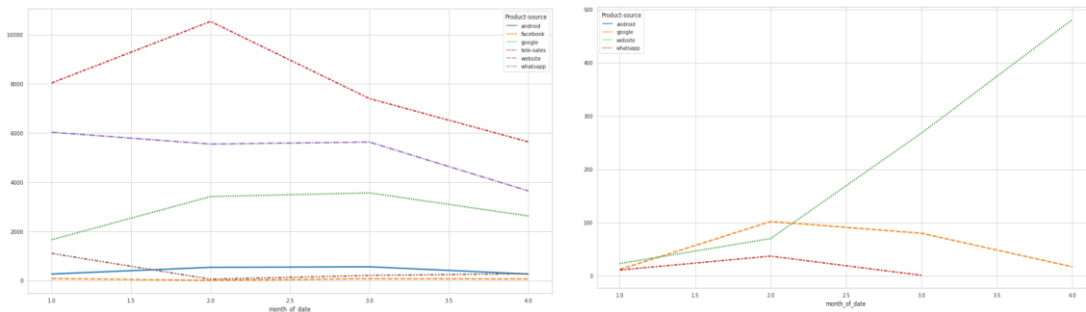


8. We analyzed the google keywords for different products and found that it plays vital role in the digital marketing channel.

9. We tried to forecast the demand based on the previous data for the upcoming month
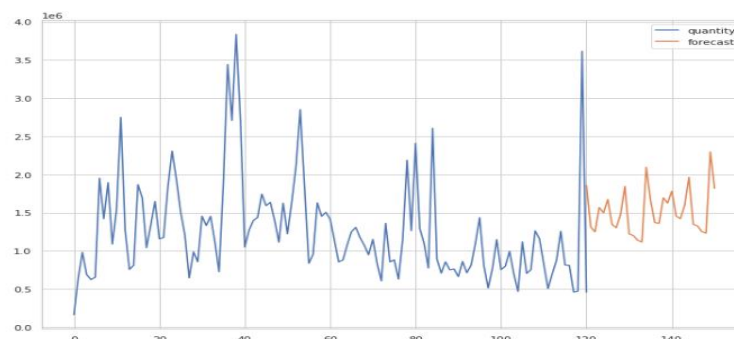
- **Conclusion:**
  - Quantity of demand for platinum catgory has seen increase in the second month. However, it reduced drastically and it even went down below the first month figures in the third and fourth month. Same remained the trend for gold category. But the demand has increased for bronze and silver category products.
  - Mostly in the wholesale business, much business comes from a handful of retail customers that largely contribute to the quantity being sold. So this could be one of the aspect while analyzing the demand reduction for this category. As some of the retailers might have ordered for platinum category products at the begining and might have realized that the demand in the secondary market is more for the other categories and so the other two categories saw increase subsequently.
  - Some of the products that had high average quantity being ordered, the number of times it was ordered is quite less and so many retailers might have ordered them in bulk and stored it before the prices hike in the market. For example, while we have products like KC436776SR which was ordered more than 2000 times, the average quantity was only 1806 while the products like NZ324899WZ and EI162034CU were not even ordered 10 times but the average quantity is huge.
  - Bronze category products are highly dependent on website source and most of the products are being ordered/published through this medium only. There was sharp increase over the period of time and so we can conclude that people have switched to this category from platinum on website. The reasons could be the quality/cost of these products or the recommender channel through which these products are being published to the customers.
  - We can conclude that the demand for platinum products can be enhanced by improving the tele sales channels as most of the sales are through this channel only. For the same products the company might consider some alternative channels like whatsapp/facebook which will improve their contribution in the product sales.
  - For the products launched in the 4th month, the products were not able capture the market in the similar fashion as previous months. We can conclude that the marketing channels might be one of the reason for that. Secondly the Retailers ordered the products in bulk as mentioned earlier and so we can say that the newly launched products were not much different than the previous products and so they remained unseen by the retailers.
  - Most of the products being sold on website are having bulkpro as google search keyword however most of the sales occur when we have keyword like bulkpro or sell online so the company might change the keywords for the products that are not getting much attention on website so as to get sold quickly. Bronze category most of the products were having bulkpro as keyword and that could be one of the reasons for the response these products got on website through the brand name associated with it.
  - We tried to forecast the quantity of platinum products being sold for the

upcoming month and so will help the company to take any further steps in that prospect.

Project submitted by:
Name: Ajinkya Satish Jumde
email id: jumde.ajinkya@gmail.com
github link: https://github.com/ajinkyajumde/bulkpro