

# Exploratory Data-Analysis:

Total Number of Rows and Columns: (576, 11)

## Columns and their datatype:

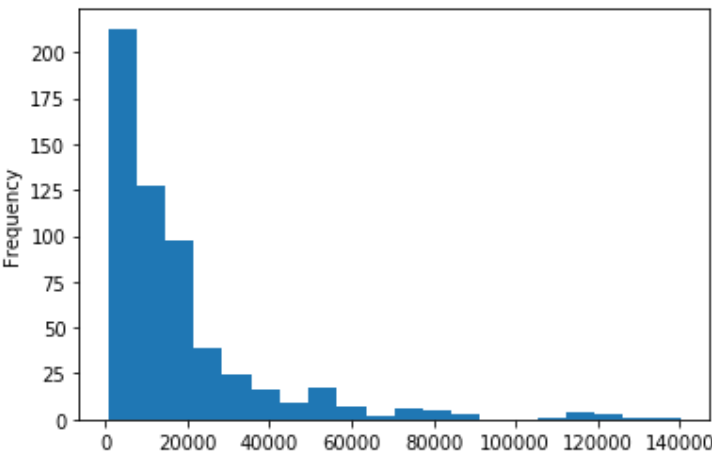
```
product_brand      string
Product_model      string
Colour             string
price              float64
rating             float64
Product_dimention in cm float64
Battery in mAh     float64
Ram in GB          float64
Rom in GB          float64
Back_Camera in MP  float64
Front_Camera in MP float64
```

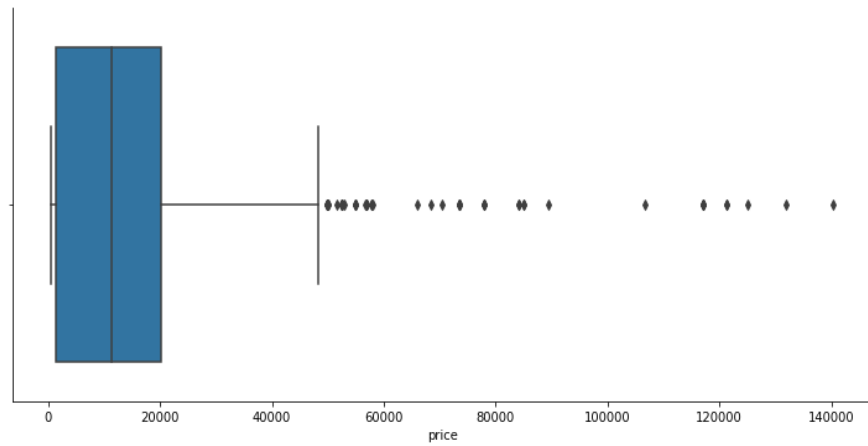
## Data Summary:

|       | price         | rating     | Product_dimention in cm | Battery in mAh | Ram in GB  | Rom in GB  | Back_Camera in MP | Front_Camera in MP |
|-------|---------------|------------|-------------------------|----------------|------------|------------|-------------------|--------------------|
| count | 576.000000    | 576.000000 | 576.000000              | 540.000000     | 536.000000 | 576.000000 | 576.000000        | 576.000000         |
| mean  | 17321.333333  | 4.187847   | 12.028073               | 2965.183333    | 3.177381   | 61.110460  | 18.343767         | 9.483507           |
| std   | 22070.074798  | 0.404314   | 5.121294                | 1473.073449    | 2.918038   | 71.763953  | 20.697385         | 10.106201          |
| min   | 559.000000    | 2.000000   | 1.680000                | 400.000000     | 0.001000   | 0.000000   | 0.000000          | 0.000000           |
| 25%   | 1299.000000   | 4.000000   | 6.100000                | 1050.000000    | 0.032000   | 0.032000   | 0.300000          | 0.000000           |
| 50%   | 11244.500000  | 4.300000   | 15.060000               | 3300.000000    | 3.000000   | 32.000000  | 12.000000         | 8.000000           |
| 75%   | 20246.750000  | 4.500000   | 16.260000               | 4026.250000    | 6.000000   | 128.000000 | 16.000000         | 16.000000          |
| max   | 140300.000000 | 5.000000   | 17.270000               | 6000.000000    | 12.000000  | 512.000000 | 108.000000        | 48.000000          |

## Univariate Analysis:

### 1. Price distribution:

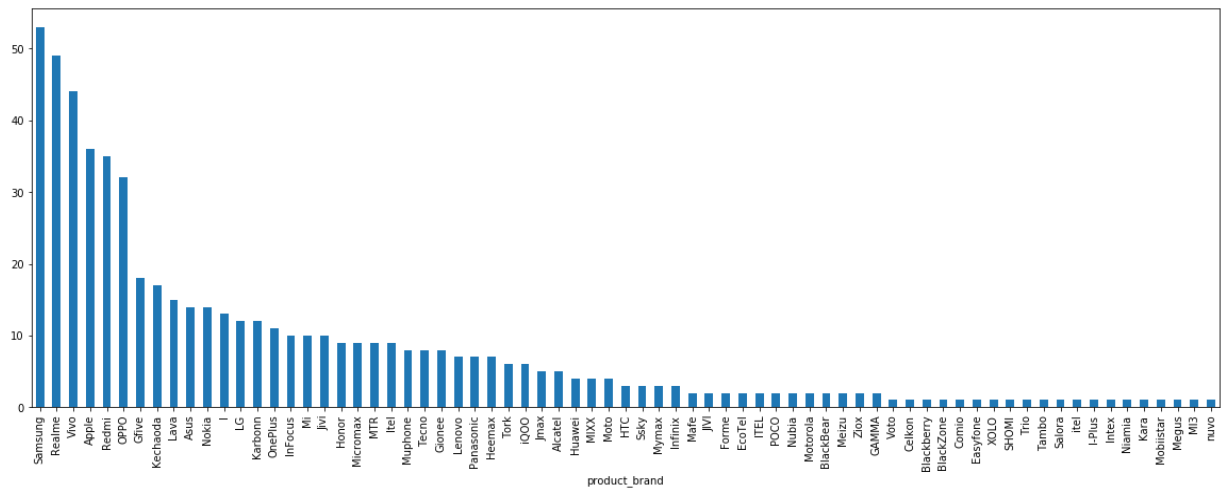




Inferences:

- Most number of cell-phones lies in the range of 500-20,000 price.
- There are very few phones in the range of 1,00,00-1,40,000.
- After approx 50,000 all others are acting as an outliers.

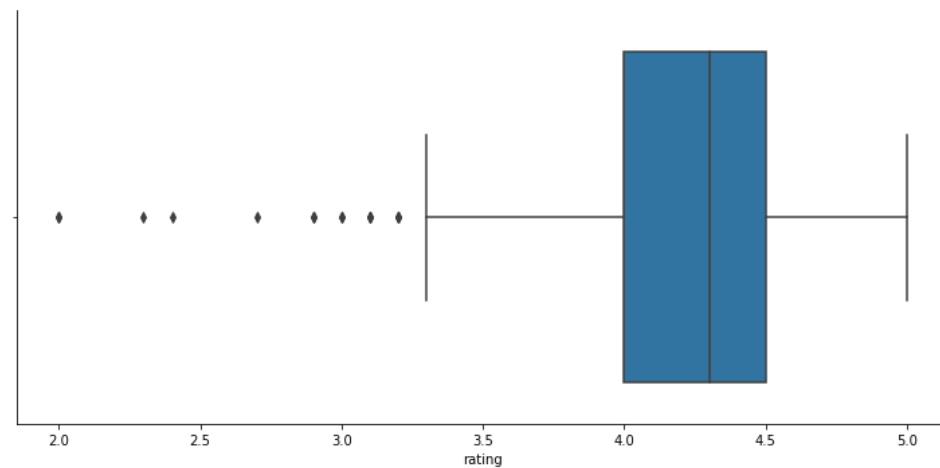
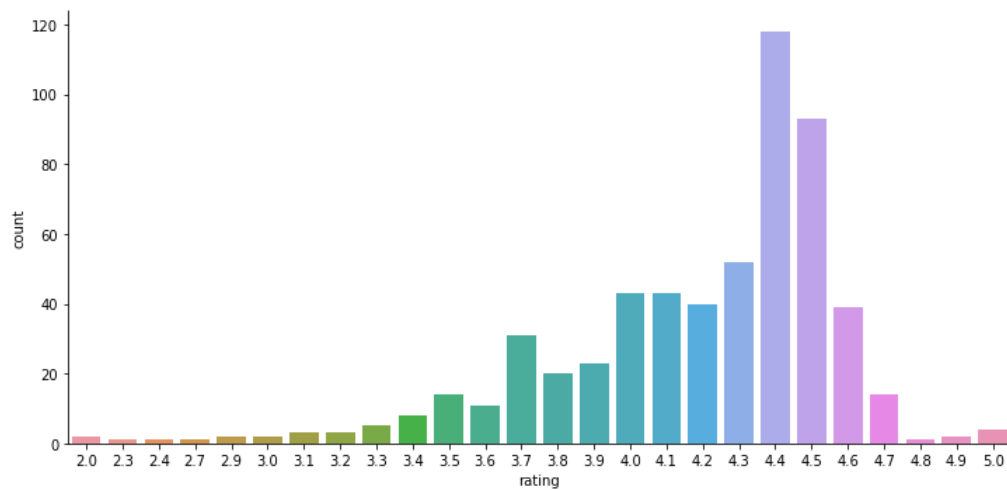
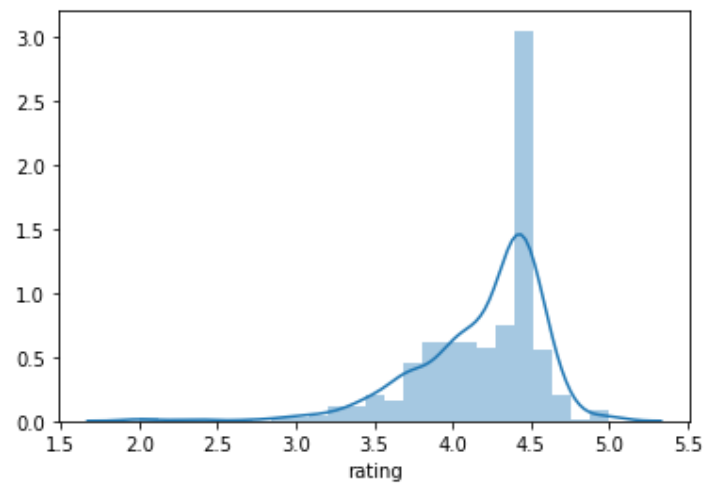
## 2. Phone brands



Inferences:

- Samsung and Realme have the most number of products in the market, with Apple, Realme and Oppo having moderate number of products.
- There are many brands which have only few of their products in the market.

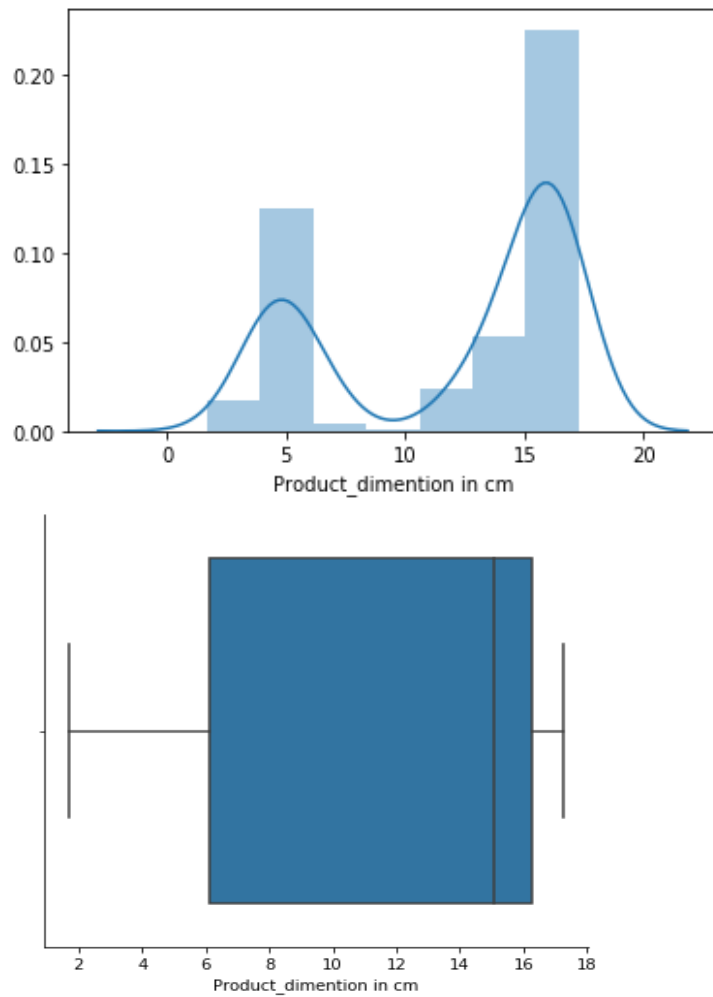
### 3. Rating Distribution:



Inferences:

- Most number of rating lies between 3.5-4.7, with most in 4.4-4.5.
- Very few ratings are before 3.0 and beyond 4.8.
- There are few outliers before 3.4.

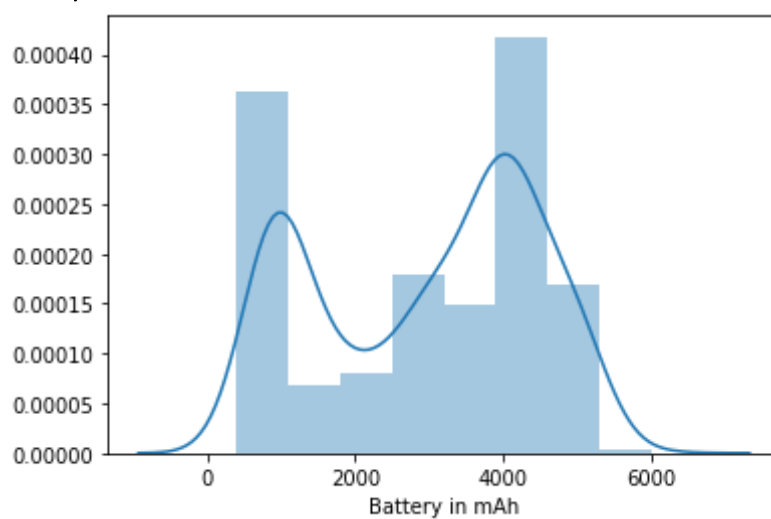
#### 4. Dimension of display:

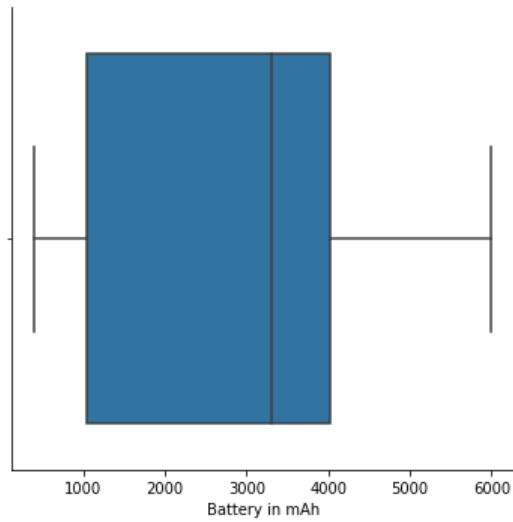


Inferences:

- Most number of mobiles have display-dimension between 12-18cm range, with second most between 3-8cm which are either old models or keypad mobiles.
- There are no such outliers in this case.

#### 5. Battery:

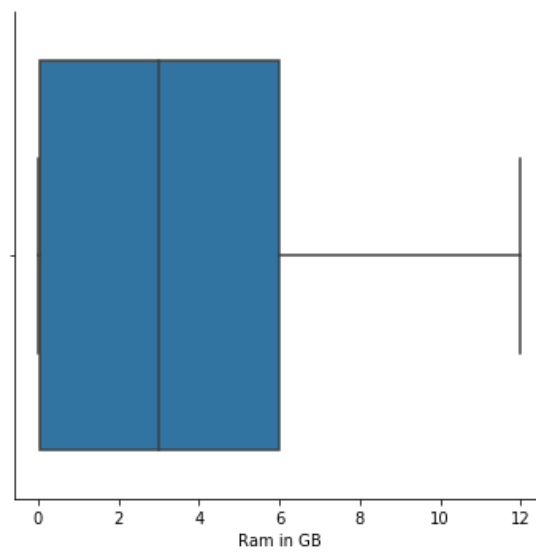
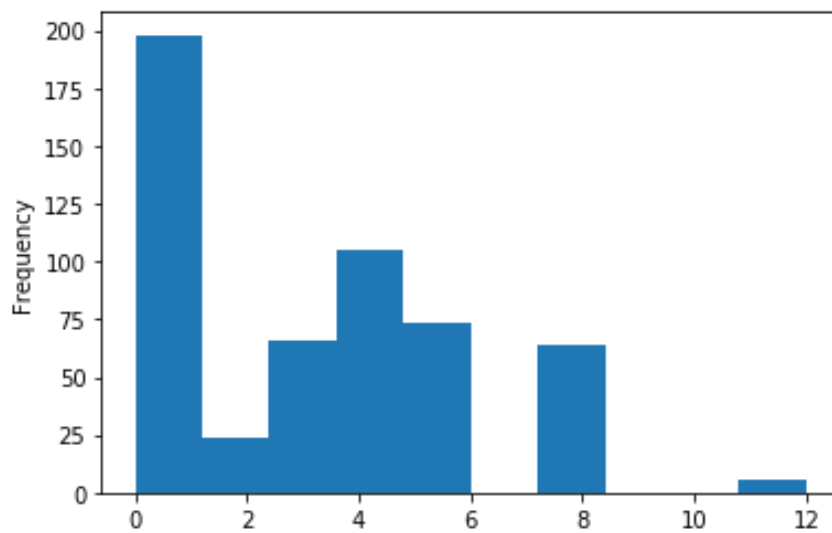




Inferences:

- Most Number of mobiles have battery between 1000-4000 mAh.
- There are no such outliers.

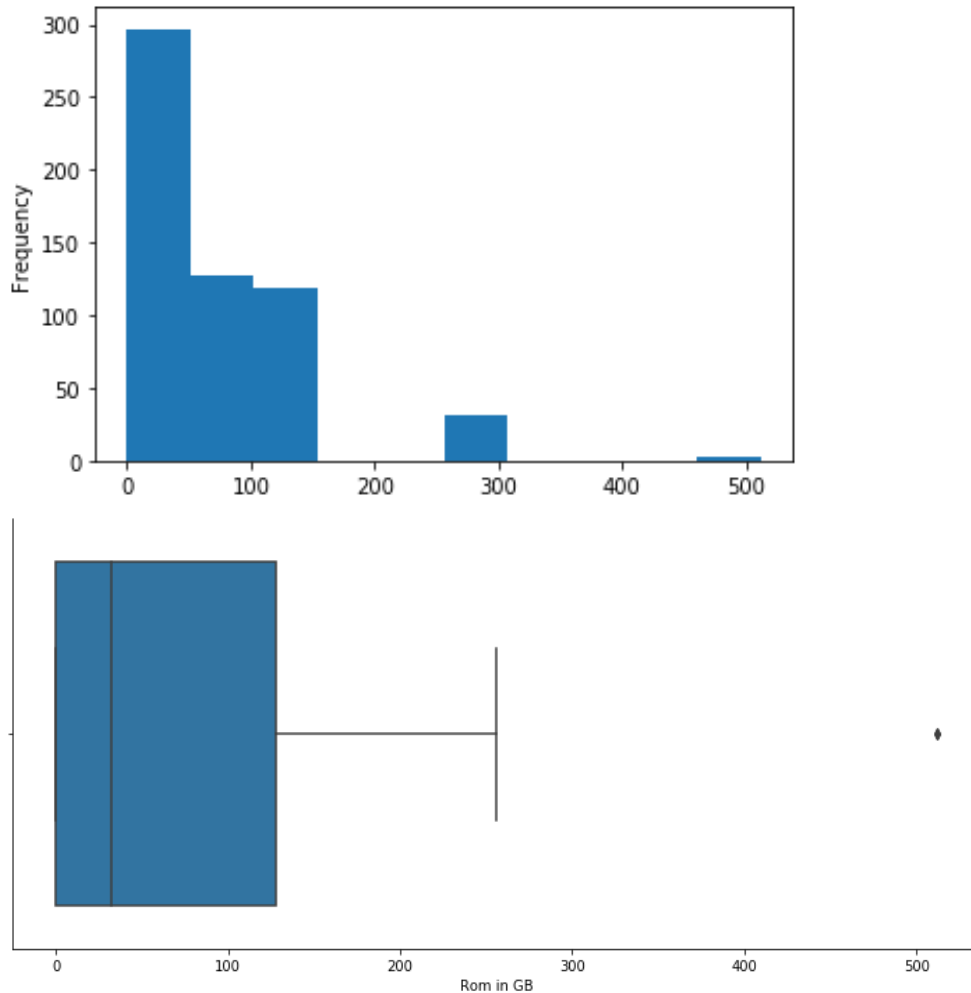
#### 6. Ram distribution:



Inferences:

- Many mobiles have Ram between 0-1 GB, which means they have Ram in MB.
- There are many phones with ram in the range of 2GB-6GB, few with 8GB and beyond.
- No outliers as such.

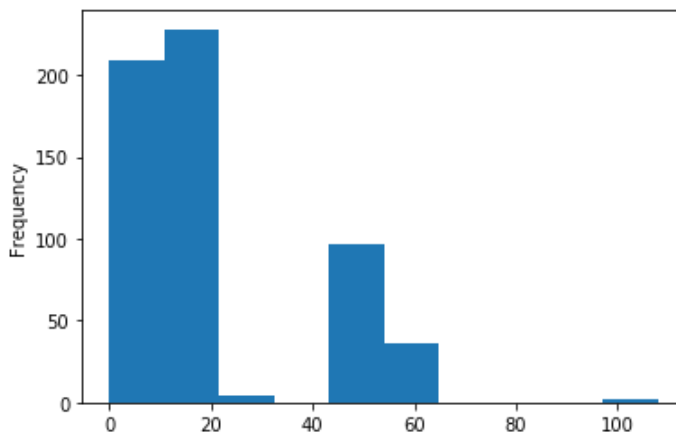
## 7. Rom distribution:

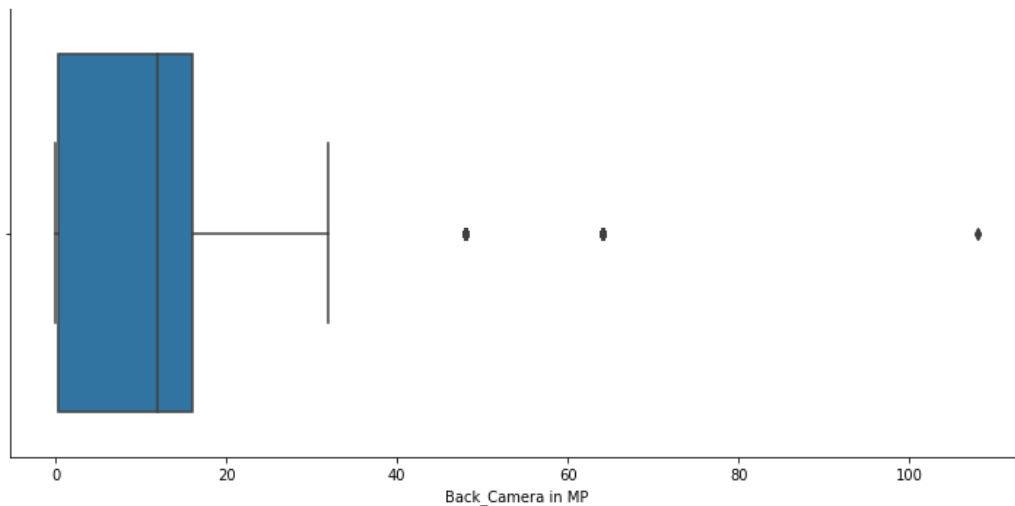


Inferences:

- Most mobiles have ram in 0-160 GB approx.
- Have clearly one outlier with 512GB.

## 8. Back camera:

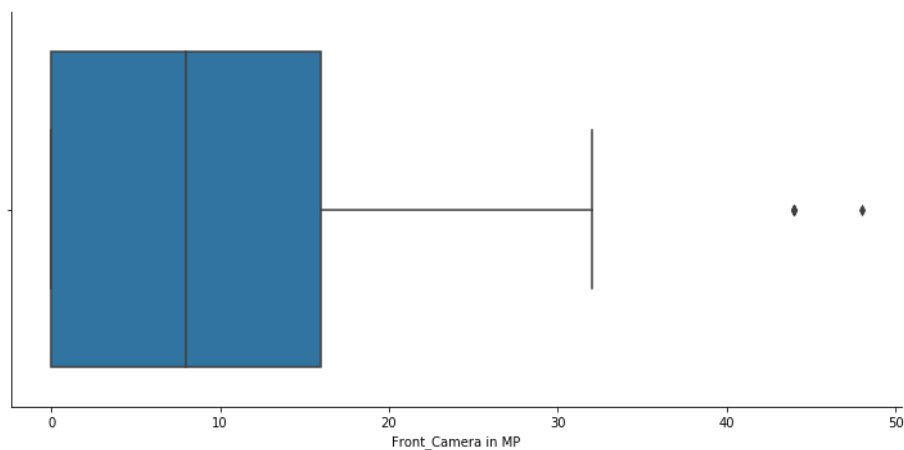
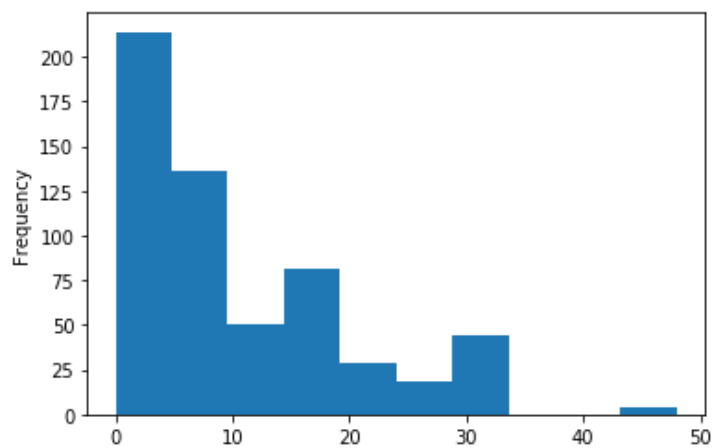




Inferences:

- Many mobiles have back-camera between 0-20 MP, with few in 40-60.
- There are few outliers.

#### 9. Front Camera:

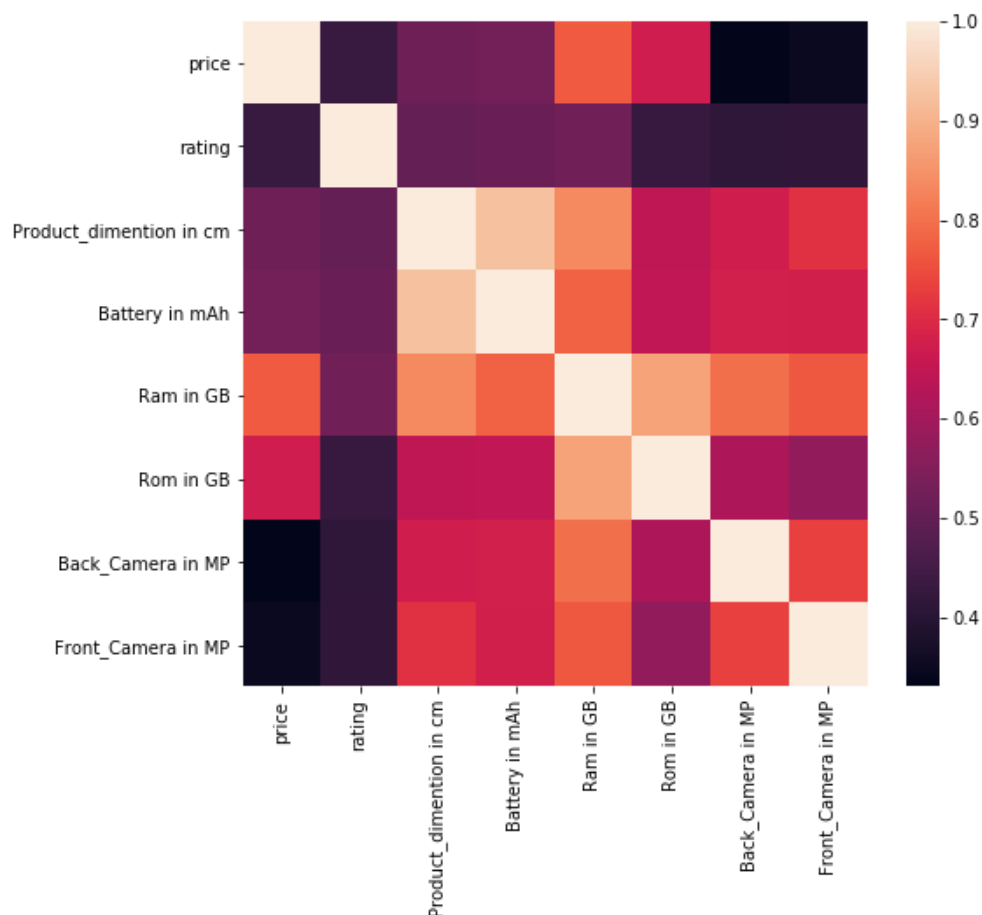


Inferences:

- Most mobiles have Front-camera in the range of 0-20, with few outliers.

## Correlation matrix:

|                         | price    | rating   | Product_dimention in cm | Battery in mAh | Ram in GB | Rom in GB | Back_Camera in MP | Front_Camera in MP |
|-------------------------|----------|----------|-------------------------|----------------|-----------|-----------|-------------------|--------------------|
| price                   | 1.000000 | 0.431329 | 0.517513                | 0.528100       | 0.768958  | 0.672696  | 0.330265          | 0.348430           |
| rating                  | 0.431329 | 1.000000 | 0.504183                | 0.512973       | 0.526221  | 0.427596  | 0.413043          | 0.414040           |
| Product_dimention in cm | 0.517513 | 0.504183 | 1.000000                | 0.924888       | 0.836833  | 0.645647  | 0.674729          | 0.711159           |
| Battery in mAh          | 0.528100 | 0.512973 | 0.924888                | 1.000000       | 0.778314  | 0.647228  | 0.680705          | 0.676814           |
| Ram in GB               | 0.768958 | 0.526221 | 0.836833                | 0.778314       | 1.000000  | 0.876426  | 0.795970          | 0.766095           |
| Rom in GB               | 0.672696 | 0.427596 | 0.645647                | 0.647228       | 0.876426  | 1.000000  | 0.617885          | 0.575624           |
| Back_Camera in MP       | 0.330265 | 0.413043 | 0.674729                | 0.680705       | 0.795970  | 0.617885  | 1.000000          | 0.734061           |
| Front_Camera in MP      | 0.348430 | 0.414040 | 0.711159                | 0.676814       | 0.766095  | 0.575624  | 0.734061          | 1.000000           |



## Inferences:

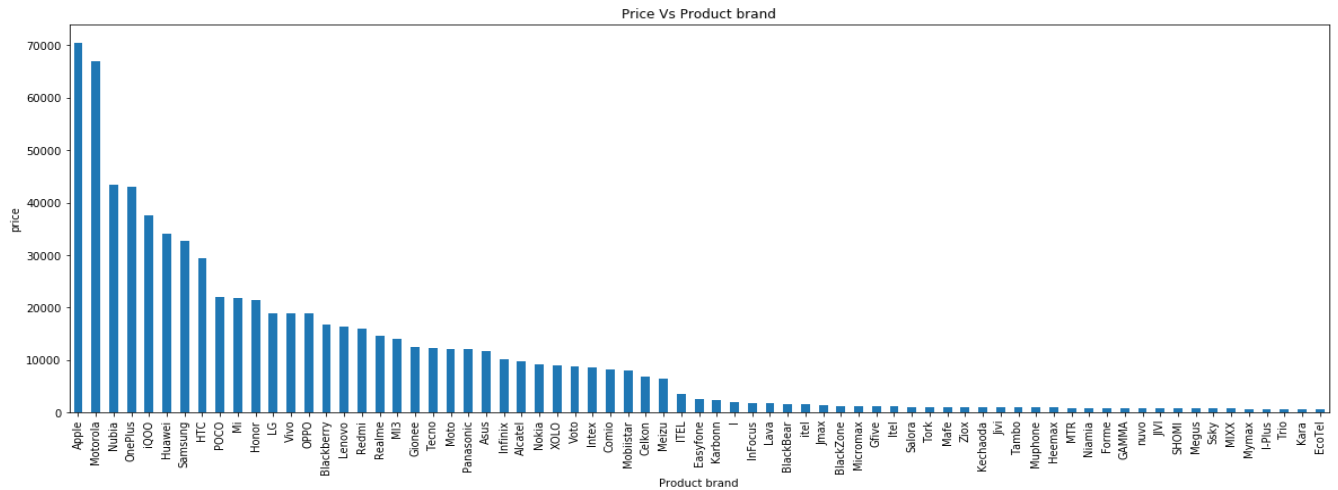
- All the features have positive correlation between them.
- Product-dimension and battery are highly correlated because as dimension increases battery also increases.
- Front and Back-camera are least correlated with price because Megapixel alone can't decide the quality of camera. Instead, the entire camera module, which includes the size and material of the main camera lens, the light sensor, the image processing hardware, and the software that ties it, all plays a major role.
- Also rating are not much correlated with any of the features, as it entirely depends on customers experience.



# Bivariate Analysis

## Product brand Vs Price

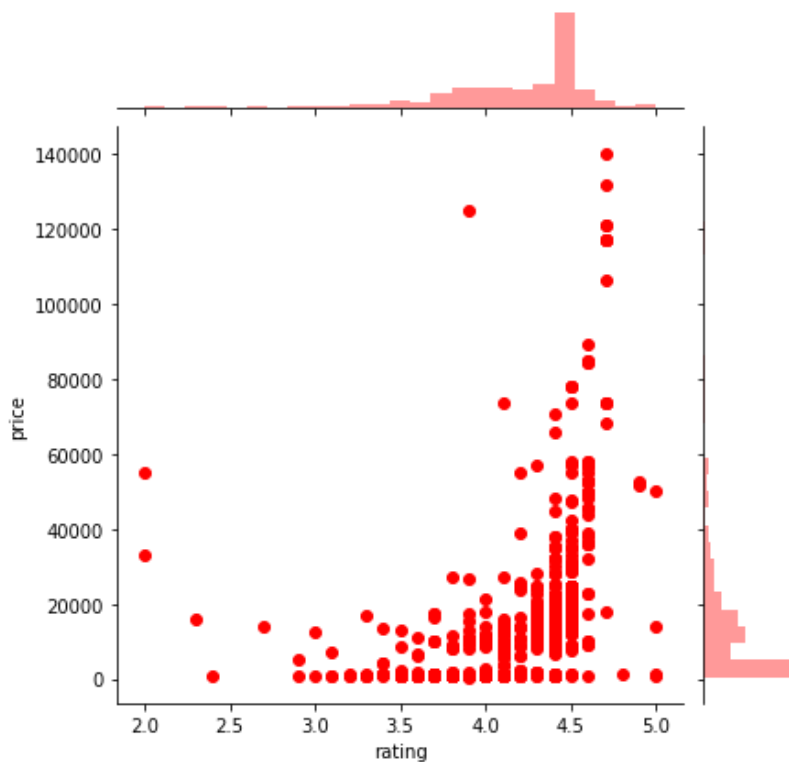
Graph shows the relationship between average price of a particular brand Vs that brand.



Inferences:

- Apple and Motorola have the highest average price of all the products of approx. 70,000.
- Nubia and OnePlus have slightly less i.e, in the range of 40,000-50,000, followed by other brands like Samsung, POCO, Vivo, Oppo.
- There are also some brands which have very less price, they are mostly the old versions.

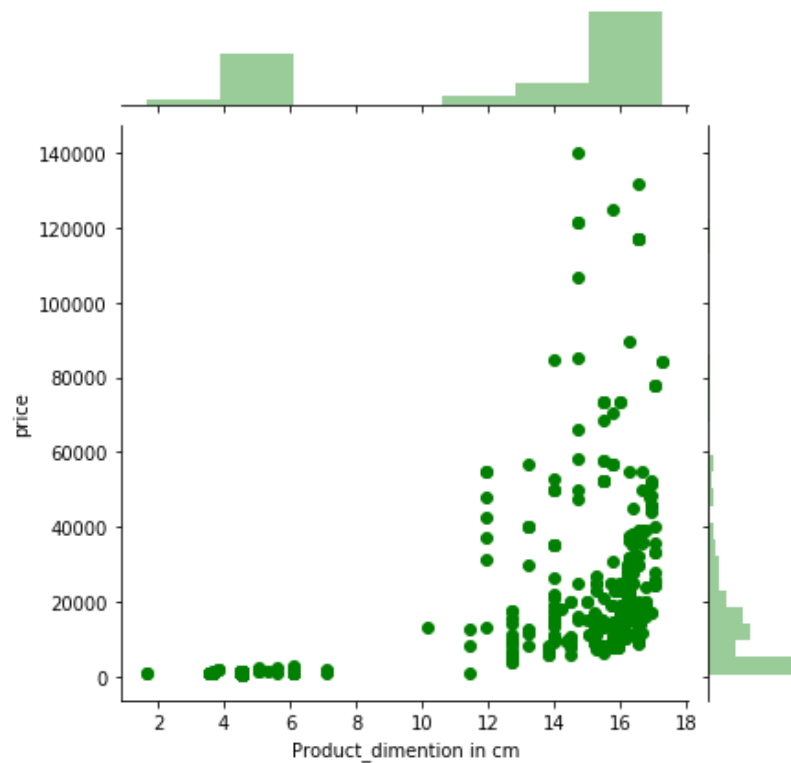
## Rating Vs Price



Inference:

- Most of the ratings i.e, between 3.5-4.7 lies in the price range of 10,000-50,000.
- Although there are some models with very high price and also have good rating whereas there are some with high price and poor rating, and they are acting as an outlier.

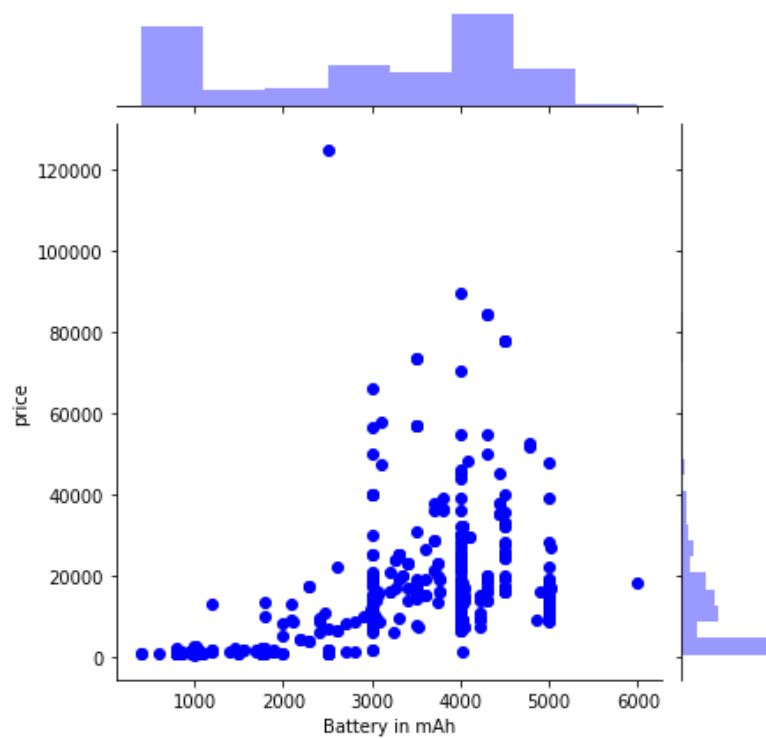
### Product dimension Vs price



Inferences:

- Most of the phones lies in dimension of 12-18cm within price range of 10,000-60,000.
- Although as the dimension is increasing price is also increasing but not linearly.

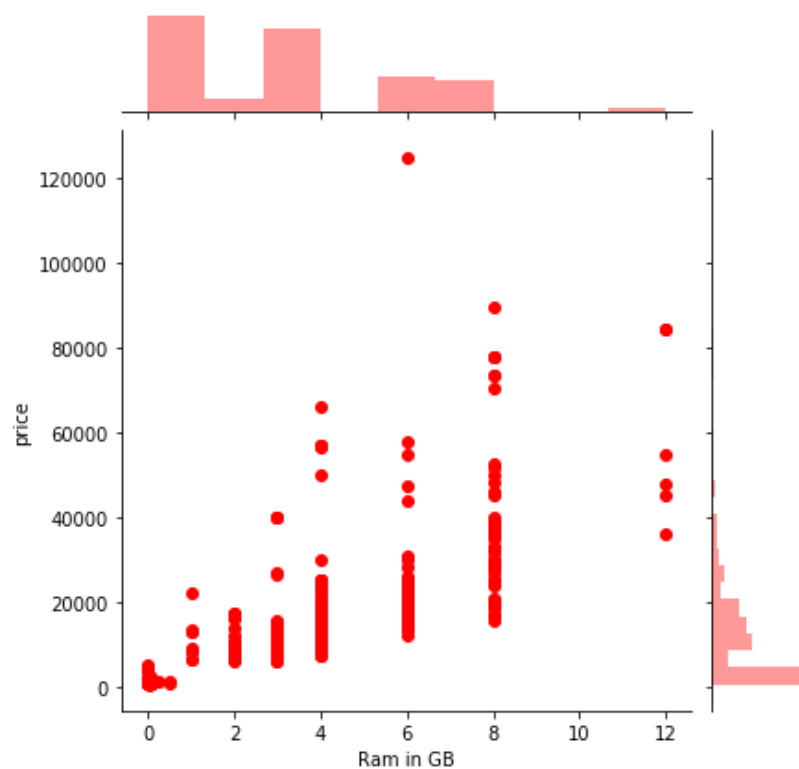
### Battery Vs Price



Inferences:

- Many phones with battery in 3000-5000 range and price in 10,000-50,000 range which is a common price range where most cell-phone lies.
- Battery is somewhat increasing as price increasing but not linearly although there are outliers with high battery of 6000 with lesser price, and with high price and lesser battery.

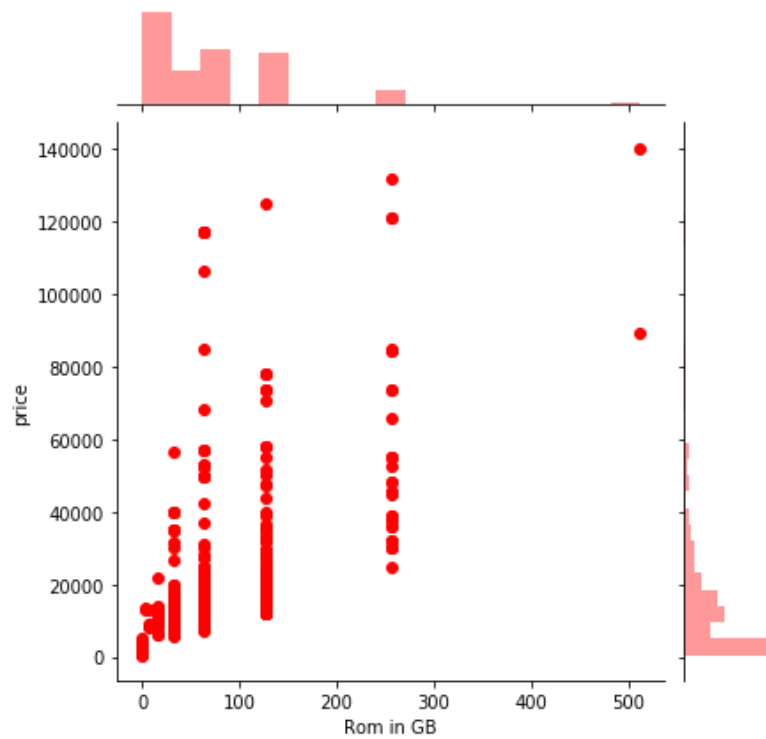
Ram Vs Price:



Inferences:

- Ram is increasing as price increasing though not completely linearly.

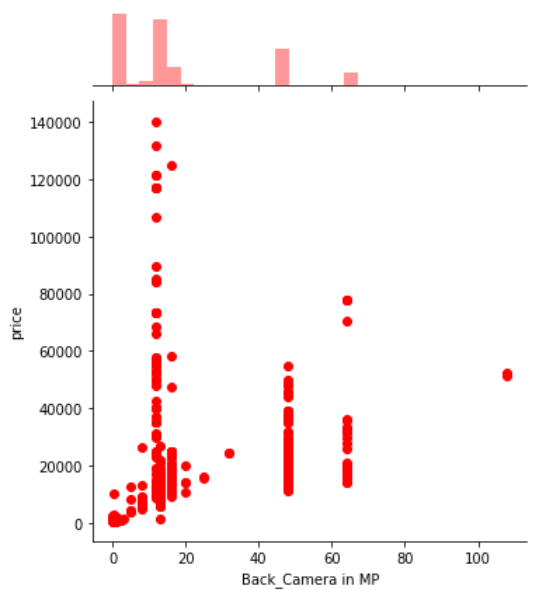
Rom Vs Price:



Inferences:

- Rom is increasing as price increasing though not completely linearly.
- Few outliers are present.

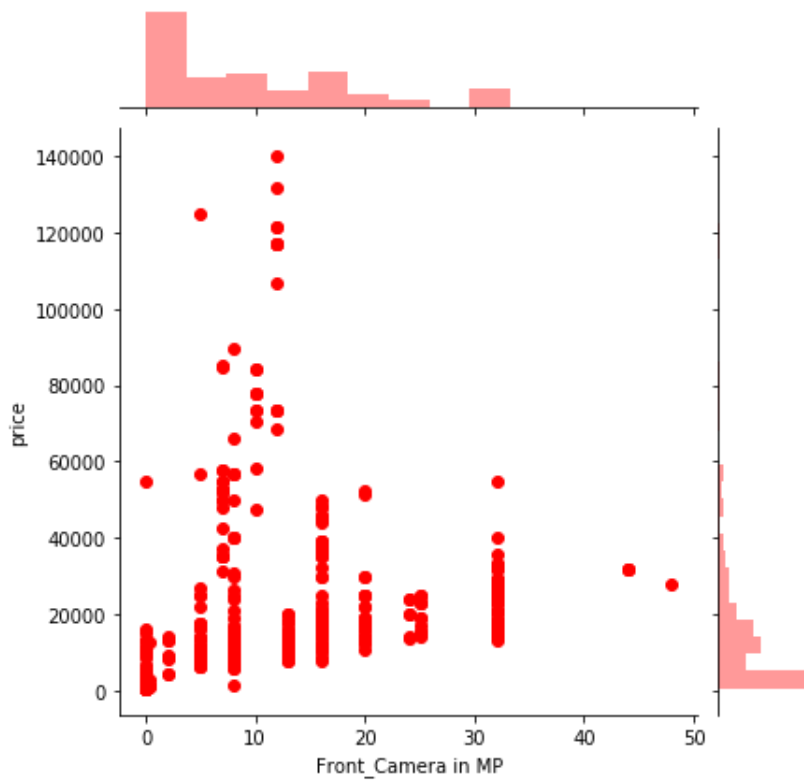
Back-Camera Vs Price:



Inferences:'

- Here seems no such relationship between both
- There are many phones with less megapixel camera but have high price and that's because of the entire camera model.

Front-Camera Vs Price:



Inferences:

- Here also seems no such relationship between both.
- Although there are some outliers.

Pairplot:

