iphone-sales-data-analysis

October 25, 2024

```
[168]: #Data Analysis On Iphone Sales
       import pandas as pd
       import plotly.express as px
       import plotly.graph_objects as go
```

```
[170]: sale=pd.read_csv("apple_products.csv")
       sale.head(10)
```

```
[170]:                                         Product Name  \
       0                 APPLE iPhone 8 Plus (Gold, 64 GB)
       1          APPLE iPhone 8 Plus (Space Grey, 256 GB)
       2             APPLE iPhone 8 Plus (Silver, 256 GB)
       3                  APPLE iPhone 8 (Silver, 256 GB)
       4                    APPLE iPhone 8 (Gold, 256 GB)
       5              APPLE iPhone 8 Plus (Silver, 64 GB)
       6         APPLE iPhone 8 Plus (Space Grey, 64 GB)
       7                APPLE iPhone 8 (Space Grey, 256 GB)
       8                APPLE iPhone XS Max (Silver, 64 GB)
       9  Apple iPhone XR ((PRODUCT)RED, 128 GB) (Includ…


                                          Product URL  Brand  Sale Price  \
       0  https://www.flipkart.com/apple-iphone-8-plus-g…  Apple       49900
       1  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple       84900
       2  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple       84900
       3  https://www.flipkart.com/apple-iphone-8-silver…  Apple       77000
       4  https://www.flipkart.com/apple-iphone-8-gold-2…  Apple       77000
       5  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple       49900
       6  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple       49900
       7  https://www.flipkart.com/apple-iphone-8-space-…  Apple       77000
       8  https://www.flipkart.com/apple-iphone-xs-max-s…  Apple       89900
       9  https://www.flipkart.com/apple-iphone-xr-produ…  Apple       41999


           Mrp  Discount Percentage  Number Of Ratings  Number Of Reviews  \
       0  49900                    0               3431                356
       1  84900                    0               3431                356
       2  84900                    0               3431                356
       3  77000                    0              11202                794
```

```
4  77000                   0               11202            794
5  49900                   0                3431            356
6  49900                   0                3431            356
7  77000                   0               11202            794
8  89900                   0                1454            149
9  52900                  20               79512           6796

                Upc  Star Rating   Ram
0  MOBEXRGV7EHHTGUH          4.6  2 GB
1  MOBEXRGVAC6TJT4F          4.6  2 GB
2  MOBEXRGVGETABXWZ          4.6  2 GB
3  MOBEXRGVMZWUHCBA          4.5  2 GB
4  MOBEXRGVPK7PFEJZ          4.5  2 GB
5  MOBEXRGVQGYYP8FV          4.6  2 GB
6  MOBEXRGVQKBREZP8          4.6  2 GB
7  MOBEXRGVZFZGZEWV          4.5  2 GB
8  MOBF944E2XAHW8V5          4.6  4 GB
9  MOBF9Z7ZHQC23PWQ          4.6  4 GB
```

[162]: `sale.info`

[162]:
```
<bound method DataFrame.info of                               Product Name  \
0            APPLE iPhone 8 Plus (Gold, 64 GB)
1      APPLE iPhone 8 Plus (Space Grey, 256 GB)
2         APPLE iPhone 8 Plus (Silver, 256 GB)
3              APPLE iPhone 8 (Silver, 256 GB)
4                APPLE iPhone 8 (Gold, 256 GB)
..                                         …
57              APPLE iPhone SE (Black, 64 GB)
58           APPLE iPhone 11 (Purple, 64 GB)
59            APPLE iPhone 11 (White, 64 GB)
60            APPLE iPhone 11 (Black, 64 GB)
61              APPLE iPhone 11 (Red, 64 GB)

                              Product URL   Brand  Sale Price  \
0   https://www.flipkart.com/apple-iphone-8-plus-g…   Apple       49900
1   https://www.flipkart.com/apple-iphone-8-plus-s…   Apple       84900
2   https://www.flipkart.com/apple-iphone-8-plus-s…   Apple       84900
3   https://www.flipkart.com/apple-iphone-8-silver…   Apple       77000
4   https://www.flipkart.com/apple-iphone-8-gold-2…   Apple       77000
..                                         …       …           …
57  https://www.flipkart.com/apple-iphone-se-black…   Apple       29999
58  https://www.flipkart.com/apple-iphone-11-purpl…   Apple       46999
59  https://www.flipkart.com/apple-iphone-11-white…   Apple       46999
60  https://www.flipkart.com/apple-iphone-11-black…   Apple       46999
61  https://www.flipkart.com/apple-iphone-11-red-6…   Apple       46999
```

```
        Mrp  Discount Percentage  Number Of Ratings  Number Of Reviews  \
0     49900                    0               3431                356
1     84900                    0               3431                356
2     84900                    0               3431                356
3     77000                    0              11202                794
4     77000                    0              11202                794
..      ...                  ...                ...                ...
57    39900                   24              95909               8161
58    54900                   14              43470               3331
59    54900                   14              43470               3331
60    54900                   14              43470               3331
61    54900                   14              43470               3331

                Upc  Star Rating   Ram
0   MOBEXRGV7EHHTGUH          4.6  2 GB
1   MOBEXRGVAC6TJT4F          4.6  2 GB
2   MOBEXRGVGETABXWZ          4.6  2 GB
3   MOBEXRGVMZWUHCBA          4.5  2 GB
4   MOBEXRGVPK7PFEJZ          4.5  2 GB
..              ...          ...   ...
57  MOBFWQ6BR3MK7AUG          4.5  4 GB
58  MOBFWQ6BTFFJKGKE          4.6  4 GB
59  MOBFWQ6BVWVEH3XE          4.6  4 GB
60  MOBFWQ6BXGJCEYNY          4.6  4 GB
61  MOBFWQ6BYYV3FCU7          4.6  4 GB

[62 rows x 11 columns]>
```

[23]: ```python
#To Check The Null Values
sale.isnull().sum()
```

[23]: ```
Product Name           0
Product URL            0
Brand                  0
Sale Price             0
Mrp                    0
Discount Percentage    0
Number Of Ratings      0
Number Of Reviews      0
Upc                    0
Star Rating            0
Ram                    0
dtype: int64
```

[ ]: ```python
#No Null Values Present
```

[27]: ```python
sale.describe()
```

```
[27]:              Sale Price            Mrp  Discount Percentage  Number Of Ratings  \
       count       62.000000      62.000000            62.000000          62.000000
       mean     80073.887097   88058.064516             9.951613       22420.403226
       std      34310.446132   34728.825597             7.608079       33768.589550
       min      29999.000000   39900.000000             0.000000         542.000000
       25%      49900.000000   54900.000000             6.000000         740.000000
       50%      75900.000000   79900.000000            10.000000        2101.000000
       75%     117100.000000  120950.000000            14.000000       43470.000000
       max     140900.000000  149900.000000            29.000000       95909.000000

              Number Of Reviews  Star Rating
       count          62.000000    62.000000
       mean         1861.677419     4.575806
       std          2855.883830     0.059190
       min            42.000000     4.500000
       25%            64.000000     4.500000
       50%           180.000000     4.600000
       75%          3331.000000     4.600000
       max          8161.000000     4.700000
```

```
[ ]: #Q1 Top 10 Highest Rated Iphones On Flipkart In India
```

```
[51]: #we basically used two columns Star Rating And Product Name
      #lets sort Star rating column descending to ascending

      top=sale.sort_values(by=["Star Rating"],ascending=False)
      top=top.head(10)
```
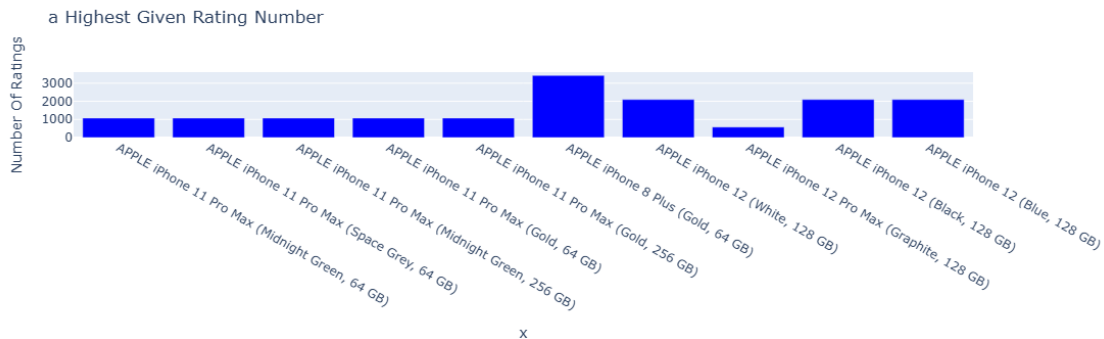
```
[53]: #printing the top 10 highest rated iphones
      print(top["Product Name"])
```

```
20      APPLE iPhone 11 Pro Max (Midnight Green, 64 GB)
17          APPLE iPhone 11 Pro Max (Space Grey, 64 GB)
16     APPLE iPhone 11 Pro Max (Midnight Green, 256 GB)
15              APPLE iPhone 11 Pro Max (Gold, 64 GB)
14             APPLE iPhone 11 Pro Max (Gold, 256 GB)
0                   APPLE iPhone 8 Plus (Gold, 64 GB)
29                    APPLE iPhone 12 (White, 128 GB)
32          APPLE iPhone 12 Pro Max (Graphite, 128 GB)
35                    APPLE iPhone 12 (Black, 128 GB)
36                     APPLE iPhone 12 (Blue, 128 GB)
Name: Product Name, dtype: object
```

```
[55]: #So Here Is The Top 10 Highest Rated Iphones
```

```
[65]: #Q2 how many ratings do the highest rated iphones on flipkart have?
```
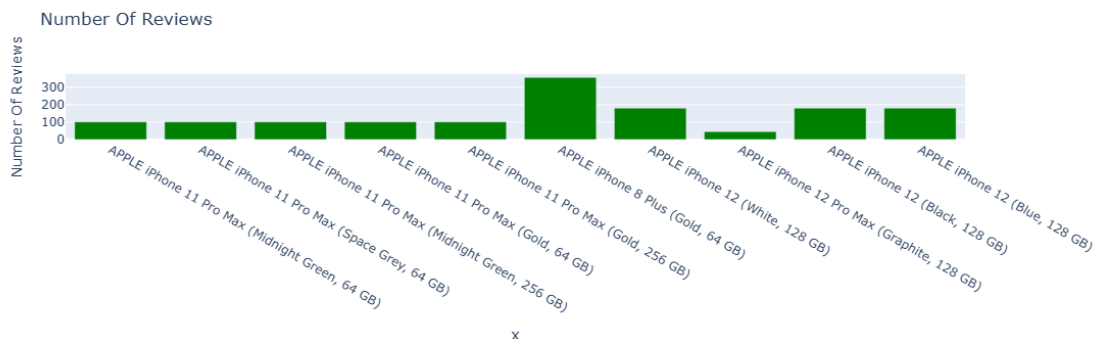
```
[172]: highest=top["Product Name"].value_counts()
       Product_Name=highest.index
       no_of_rating=top["Number Of Ratings"]
       fig=px.
        ↪bar(top,x=Product_Name,y=no_of_rating,color_discrete_sequence=["blue"],title="a␣
        ↪Highest Given Rating Number")
       fig.show()
```


a Highest Given Rating Number

```
[106]: #So We Can See Here That Apple iPhone 8 Plus (Gold,64 GB) Has a Highest Given␣
        ↪Rating Numbers
```

```
[ ]: #Q3 How Many Number Of Reviews do the iphones on flipkart have?
```

```
[174]: highest=top["Product Name"].value_counts()
       Product_Name=highest.index
       no_of_reviews=top["Number Of Reviews"]
       fig=px.
        ↪bar(top,x=Product_Name,y=no_of_reviews,color_discrete_sequence=["green"],title="Number␣
        ↪Of Reviews")
       fig.show()
```


Number Of Reviews

```
[108]: #So We Can See Here That Apple iPhone 8 Plus (Gold,64 GB) Has Got a Highest
        ↪Number Of Reviews Are Written
```

```
[112]: #Q4 What Is The Relationship between the sale price of iphones and the number
        ↪of ratings on flipkart?
```
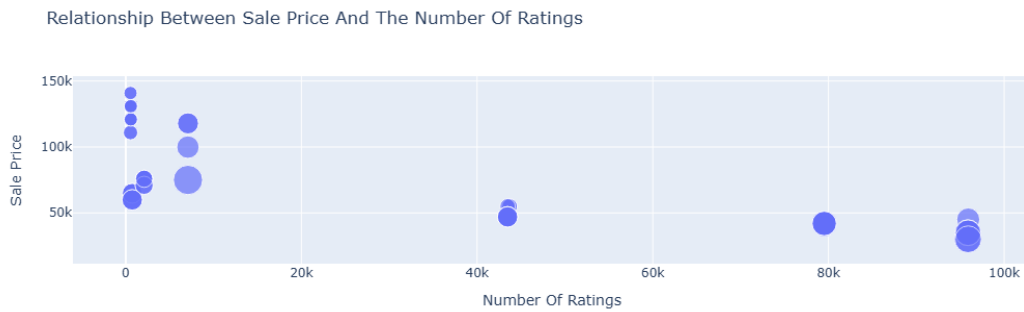
```
[114]: sale.head()
```

```
[114]:                             Product Name  \
       0         APPLE iPhone 8 Plus (Gold, 64 GB)
       1  APPLE iPhone 8 Plus (Space Grey, 256 GB)
       2     APPLE iPhone 8 Plus (Silver, 256 GB)
       3           APPLE iPhone 8 (Silver, 256 GB)
       4             APPLE iPhone 8 (Gold, 256 GB)


                                        Product URL  Brand  Sale Price  \
       0  https://www.flipkart.com/apple-iphone-8-plus-g…  Apple        49900
       1  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple        84900
       2  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple        84900
       3  https://www.flipkart.com/apple-iphone-8-silver…  Apple        77000
       4  https://www.flipkart.com/apple-iphone-8-gold-2…  Apple        77000

          Mrp  Discount Percentage  Number Of Ratings  Number Of Reviews  \
       0  49900                    0               3431                356
       1  84900                    0               3431                356
       2  84900                    0               3431                356
       3  77000                    0              11202                794
       4  77000                    0              11202                794

                     Upc  Star Rating   Ram
       0  MOBEXRGV7EHHTGUH          4.6  2 GB
       1  MOBEXRGVAC6TJT4F          4.6  2 GB
       2  MOBEXRGVGETABXWZ          4.6  2 GB
       3  MOBEXRGVMZWUHCBA          4.5  2 GB
       4  MOBEXRGVPK7PFEJZ          4.5  2 GB
```

```
[176]: relation=px.scatter(data_frame=sale,x="Number Of Ratings",y="Sale
       ↪Price",size="Discount Percentage",title="Relationship Between Sale Price And
       ↪The Number Of Ratings")
       relation.show()
```

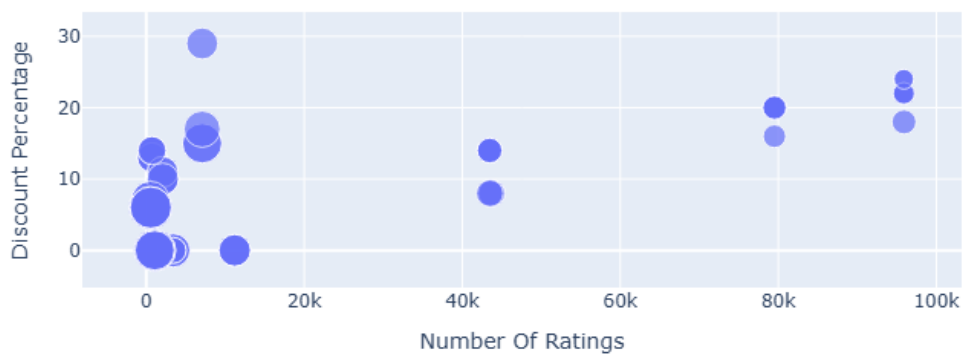Relationship Between Sale Price And The Number Of Ratings

[126]: #Here It Tells The Relationship Between The Sale Price And No. Of Ratings
#Small Bubble Means Less Discount Big Bubble Discount Increases

[128]: #Q5 What Is The Relationship between the discount percentage and the number of
↪ratings on flipkart?

[136]:
```
relation=px.scatter(data_frame=sale,x="Number Of Ratings",y="Discount
↪Percentage",size="Sale Price",title="Relationship between the sale price and
↪the number of ratings")
relation.show()
```

Relationship between the sale price and the number of ratings

[138]: #Here It Tells The Relationship Between The Discount Percentage And No. Of
↪Ratings
#Small Bubble Means Less Phone Price Big Bubble Means High Price

```
[140]:  #Q6 Can You Figure Out The Least Expensive And The Most Expensive Iphones in
        ↪The Market With All Their Specifications?
```

```
[142]:  sale.head()
```

```
[142]:                         Product Name  \
        0          APPLE iPhone 8 Plus (Gold, 64 GB)
        1   APPLE iPhone 8 Plus (Space Grey, 256 GB)
        2       APPLE iPhone 8 Plus (Silver, 256 GB)
        3           APPLE iPhone 8 (Silver, 256 GB)
        4             APPLE iPhone 8 (Gold, 256 GB)


                                         Product URL  Brand  Sale Price  \
        0  https://www.flipkart.com/apple-iphone-8-plus-g…  Apple       49900
        1  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple       84900
        2  https://www.flipkart.com/apple-iphone-8-plus-s…  Apple       84900
        3  https://www.flipkart.com/apple-iphone-8-silver…  Apple       77000
        4  https://www.flipkart.com/apple-iphone-8-gold-2…  Apple       77000

             Mrp  Discount Percentage  Number Of Ratings  Number Of Reviews  \
        0  49900                    0               3431                356
        1  84900                    0               3431                356
        2  84900                    0               3431                356
        3  77000                    0              11202                794
        4  77000                    0              11202                794

                     Upc  Star Rating     Ram
        0  MOBEXRGV7EHHTGUH          4.6  2 GB
        1  MOBEXRGVAC6TJT4F          4.6  2 GB
        2  MOBEXRGVGETABXWZ          4.6  2 GB
        3  MOBEXRGVMZWUHCBA          4.5  2 GB
        4  MOBEXRGVPK7PFEJZ          4.5  2 GB
```

```
[160]:  least_expensive=sale.loc[sale["Sale Price"].idxmax()]
        most_expensive=sale.loc[sale["Sale Price"].idxmin()]

        print("most expensive product:")
        print(most_expensive)

        print("\nless expensive product:")
        print(least_expensive)
```

```
most expensive product:
Product Name                        APPLE iPhone SE (White, 64 GB)
Product URL             https://www.flipkart.com/apple-iphone-se-white…
Brand                                                          Apple
Sale Price                                                     29999
```

```
Mrp                                                39900
Discount Percentage                                   24
Number Of Ratings                                  95807
Number Of Reviews                                   8154
Upc                                    MOBFWQ6BGWDVGF3E
Star Rating                                          4.5
Ram                                                 2 GB
Name: 52, dtype: object

less expensive product:
Product Name                 APPLE iPhone 12 Pro (Silver, 512 GB)
Product URL            https://www.flipkart.com/apple-iphone-12-pro-s…
Brand                                              Apple
Sale Price                                        140900
Mrp                                               149900
Discount Percentage                                    6
Number Of Ratings                                    542
Number Of Reviews                                     42
Upc                                    MOBFWBYZ5UY6ZBVA
Star Rating                                          4.5
Ram                                                 4 GB
Name: 24, dtype: object
```

```python
#So This Was The Most Expensive And Least Exprensive Iphone Product With Thier
  ↪Specifications!!!
```