iphone-sales-analysis

August 10, 2024

[1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[2]:
```
df = pd.read_csv("apple_products.csv")
```

[3]:
```
df.head()
```

[3]:
```
                                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
```

[4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 62 entries, 0 to 61
Data columns (total 11 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   Product Name         62 non-null     object
 1   Product URL          62 non-null     object
 2   Brand                62 non-null     object
 3   Sale Price           62 non-null     int64
 4   Mrp                  62 non-null     int64
 5   Discount Percentage  62 non-null     int64
 6   Number Of Ratings    62 non-null     int64
 7   Number Of Reviews    62 non-null     int64
 8   Upc                  62 non-null     object
 9   Star Rating          62 non-null     float64
 10  Ram                  62 non-null     object
dtypes: float64(1), int64(5), object(5)
memory usage: 5.5+ KB
```

[5]:
```
df.shape
```

[5]: (62, 11)

[6]:
```
df.describe()
```

[6]:

	Sale Price	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews	Star Rating
count	62.000000	62.000000	62.000000	62.000000	62.000000	62.000000
mean	80073.887097	88058.064516	9.951613	22420.403226	1861.677419	4.575806
std	34310.446132	34728.825597	7.608079	33768.589550	2855.883830	0.059190
min	29999.000000	39900.000000	0.000000	542.000000	42.000000	4.500000
25%	49900.000000	54900.000000	6.000000	740.000000	64.000000	4.500000
50%	75900.000000	79900.000000	10.000000	2101.000000	180.000000	4.600000
75%	117100.000000	120950.000000	14.000000	43470.000000	3331.000000	4.600000
max	140900.000000	149900.000000	29.000000	95909.000000	8161.000000	4.700000

[7]:
```
df.describe(include= object)
```

[7]:
```
                                                Product Name  \
count                                                     62
unique                                                    62
top     Apple iPhone XR (Black, 64 GB) (Includes EarPo…
freq                                                       1

                                                 Product URL  Brand  \
count                                                     62     62
unique                                                    62      1
top     https://www.flipkart.com/apple-iphone-xr-white…  Apple
freq                                                       1     62

                      Upc   Ram
count                  62    62
unique                 62     4
top     MOBFWBYZTK33MBG9  4 GB
freq                    1    29
```

[8]:
```
df.describe(include= float)
```

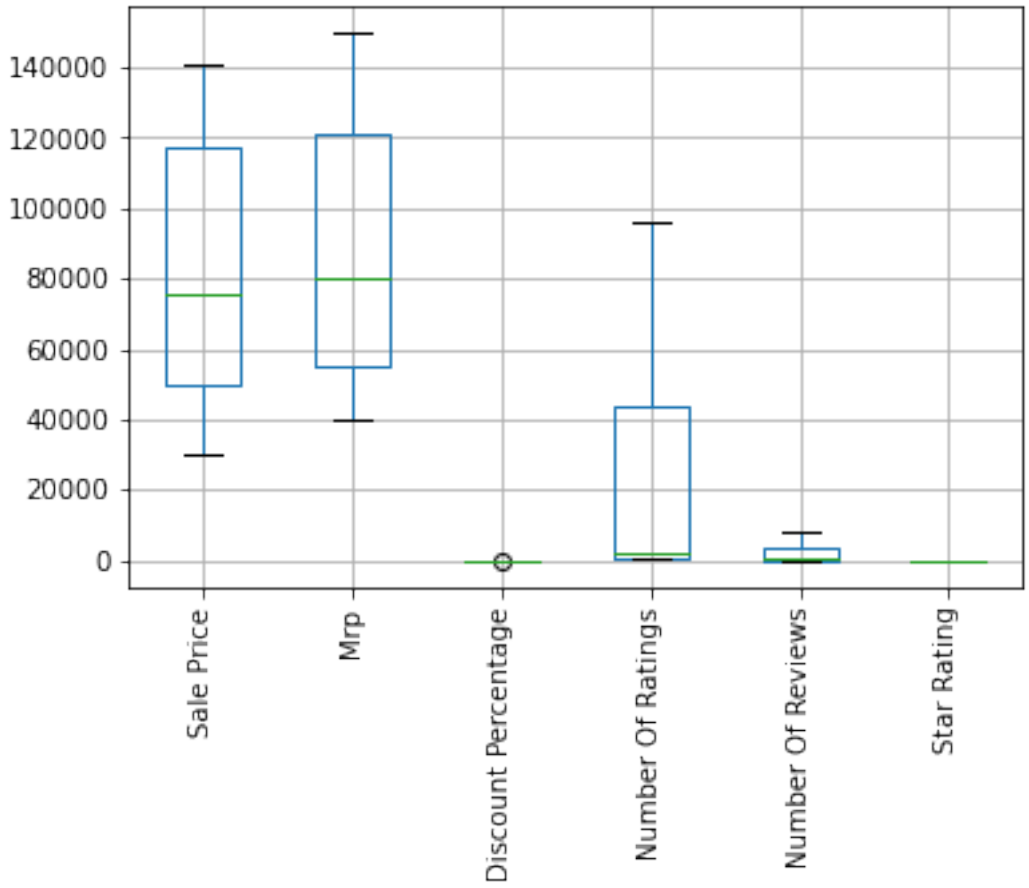
[8]:
```
       Star Rating
count    62.000000
mean      4.575806
std       0.059190
min       4.500000
25%       4.500000
50%       4.600000
75%       4.600000
max       4.700000
```

[9]:
```
df.isnull().sum()
```

[9]:
```
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
```

[11]:
```
df.boxplot()
plt.xticks(rotation=90)
```

[11]:
```
(array([1, 2, 3, 4, 5, 6]),
 [Text(1, 0, 'Sale Price'),
  Text(2, 0, 'Mrp'),
  Text(3, 0, 'Discount Percentage'),
  Text(4, 0, 'Number Of Ratings'),
  Text(5, 0, 'Number Of Reviews'),
  Text(6, 0, 'Star Rating')])
```



iPhone Sales Analysis in India Now I will create a new dataframe by storing all the data about the top 10 highest-rated iPhones in India on Flipkart. It will help in understanding what kind of iPhones are liked the most in India:

1 top 10 highest rating

[14]:
```
highest_rating= df.sort_values(by=["Star Rating"], ascending = False)
```

[15]:
```
highest_rating.head(10)
```

[15]:

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews	Upc	Star Rating	Ram
20	APPLE iPhone 11 Pro Max (Midnight Green, 64 GB)	https://www.flipkart.com/apple-iphone-11-pro-m…	Apple	117100	117100	0	1078	101	MOBFKCTSRYPAQNYT	4.7	4 GB
17	APPLE iPhone 11 Pro Max (Space Grey, 64 GB)	https://www.flipkart.com/apple-iphone-11-pro-m…	Apple	117100	117100	0	1078	101	MOBFKCTSKDMKCGQS	4.7	4 GB
16	APPLE iPhone 11 Pro Max (Midnight Green, 256 GB)	https://www.flipkart.com/apple-iphone-11-pro-m…	Apple	131900	131900	0	1078	101	MOBFKCTSCAAKGQV7	4.7	4 GB
15	APPLE iPhone 11 Pro Max (Gold, 64 GB)	https://www.flipkart.com/apple-iphone-11-pro-m…	Apple	117100	117100	0	1078	101	MOBFKCTSAPAYNSGG	4.7	4 GB
14	APPLE iPhone 11 Pro Max (Gold, 256 GB)	https://www.flipkart.com/apple-iphone-11-pro-m…	Apple	131900	131900	0	1078	101			
0	APPLE iPhone 8 Plus (Gold, 64 GB)	https://www.flipkart.com/apple-iphone-8-plus-g…	Apple	49900	49900	0	3431	356			
29	APPLE iPhone 12 (White, 128 GB)	https://www.flipkart.com/apple-iphone-12-white…	Apple	75900	84900	10	2101	180			
32	APPLE iPhone 12 Pro Max (Graphite, 128 GB)	https://www.flipkart.com/apple-iphone-12-pro-m…	Apple	120900	129900	6	580	45			
35	APPLE iPhone 12 (Black, 128 GB)	https://www.flipkart.com/apple-iphone-12-black…	Apple	75900	84900	10	2101	180			
36	APPLE iPhone 12 (Blue, 128 GB)	https://www.flipkart.com/apple-iphone-12-blue-…	Apple	75900	84900	10	2101	180			

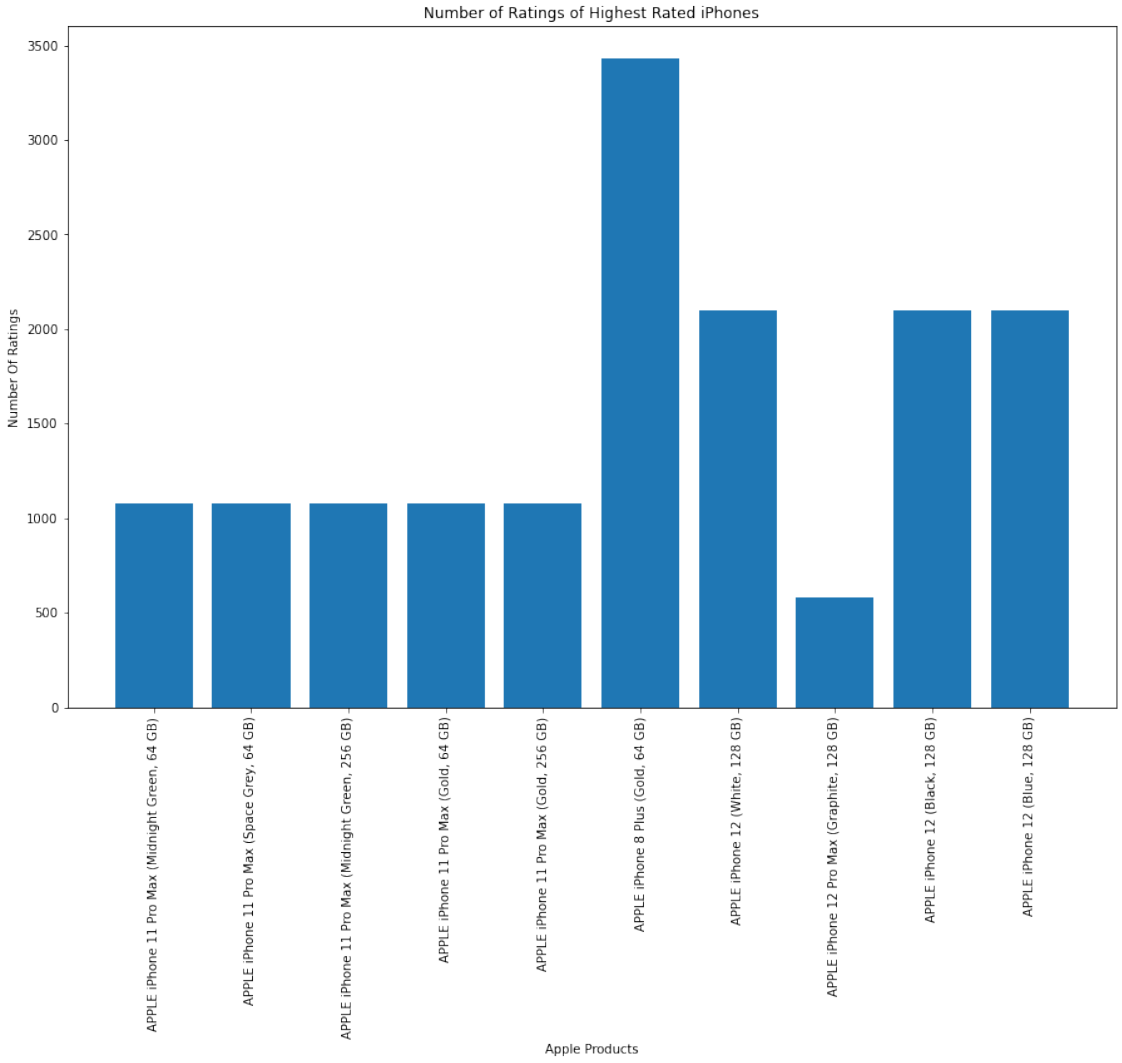
```
14  MOBFKCTS7HCHSPFH          4.7  4 GB
0   MOBEXRGV7EHHTGUH          4.6  2 GB
29  MOBFWBYZBTZFGJF9          4.6  6 GB
32  MOBFWBYZFDGQSDWS          4.6  6 GB
35  MOBFWBYZK3HACR72          4.6  6 GB
36  MOBFWBYZKPTZF9VG          4.6  6 GB
```

[17]:
```
highest_rating['Product Name'].head(10)
```

[17]:
```
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
```

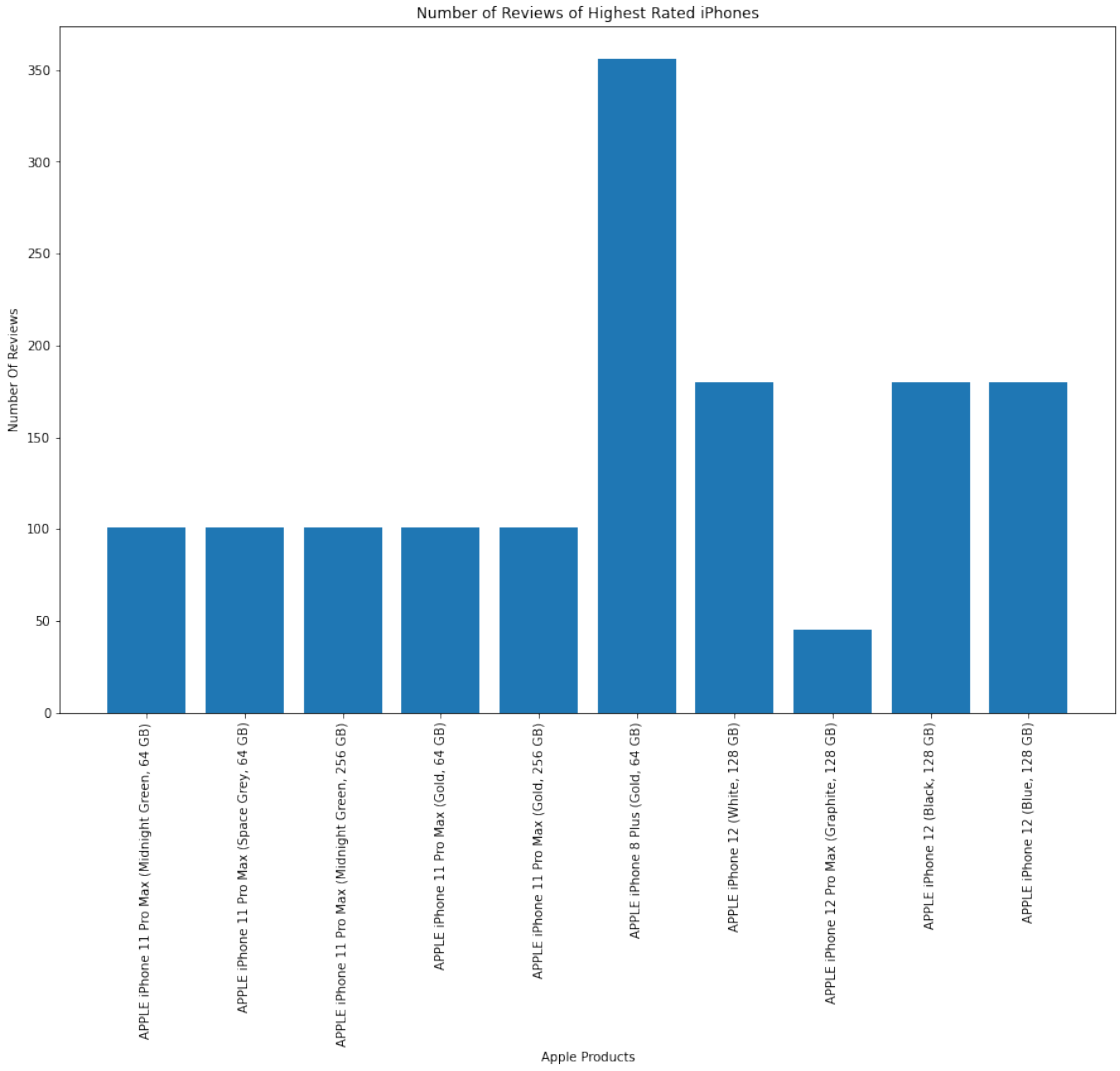
2 Now let's have a look at the number of ratings of the highest-rated iPhones on Flipkart:

[31]:
```
plt.figure(figsize=(15,10))
x=highest_rating['Product Name'].head(10)
y=highest_rating['Number Of Ratings'].head(10)
plt.title("Number of Ratings of Highest Rated iPhones")
plt.xlabel("Apple Products")
plt.ylabel("Number Of Ratings")
plt.bar(x,y)
plt.xticks(rotation=90)
plt.show()
```



3 "Number of Reviews of Highest Rated iPhones"

[30]:
```
plt.figure(figsize=(15,10))
x=highest_rating['Product Name'].head(10)
y=highest_rating['Number Of Reviews'].head(10)
plt.title("Number of Reviews of Highest Rated iPhones")
plt.xlabel("Apple Products")
plt.ylabel("Number Of Reviews")
plt.bar(x,y)
plt.xticks(rotation=90)
plt.show()
```

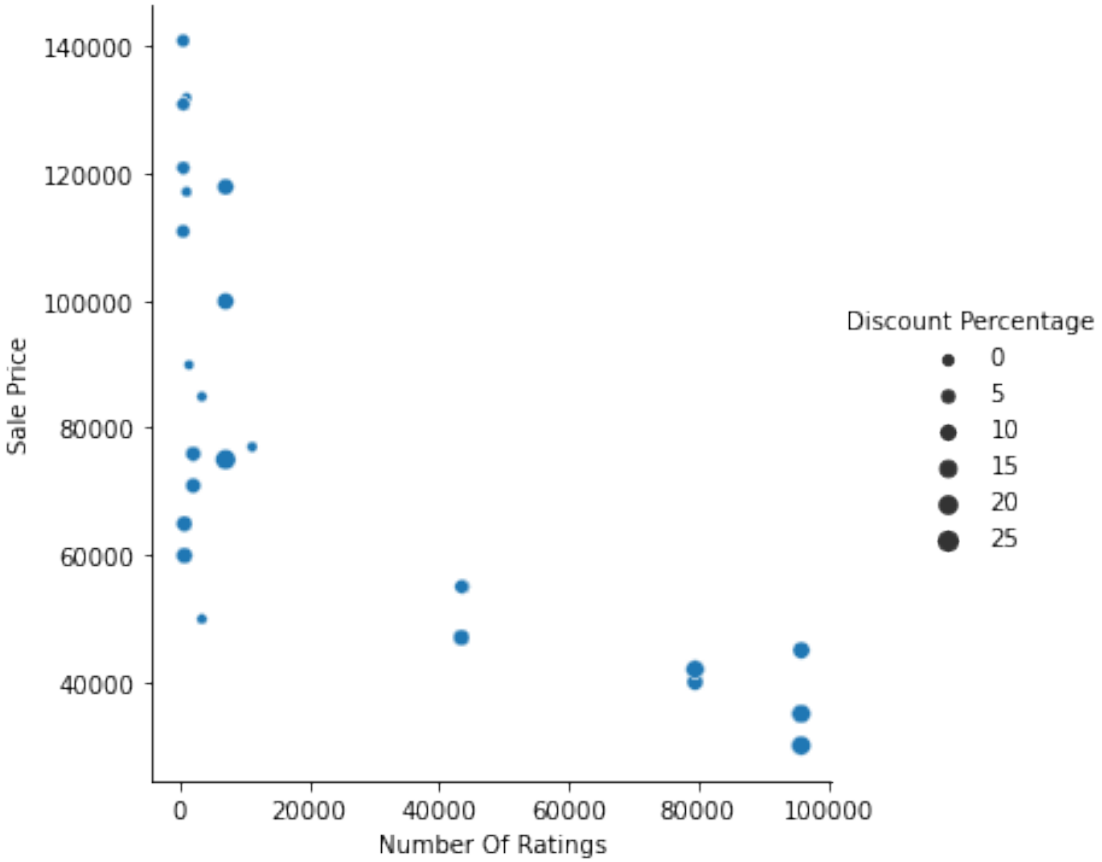


4 have a look at the relationship between the sale price of iPhones and their ratings on Flipkart

[39]:
```
plt.title("relationship between sales price and no. of rating")
sns.relplot(df['Number Of Ratings'], df['Sale Price'], size= "Discount␣
 ↪Percentage", data=df)
```

```
D:\python\lib\site-packages\seaborn\_decorators.py:36: FutureWarning: Pass the
following variables as keyword args: x, y. From version 0.12, the only valid
positional argument will be `data`, and passing other arguments without an
explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

[39]: <seaborn.axisgrid.FacetGrid at 0x154a96999a0>



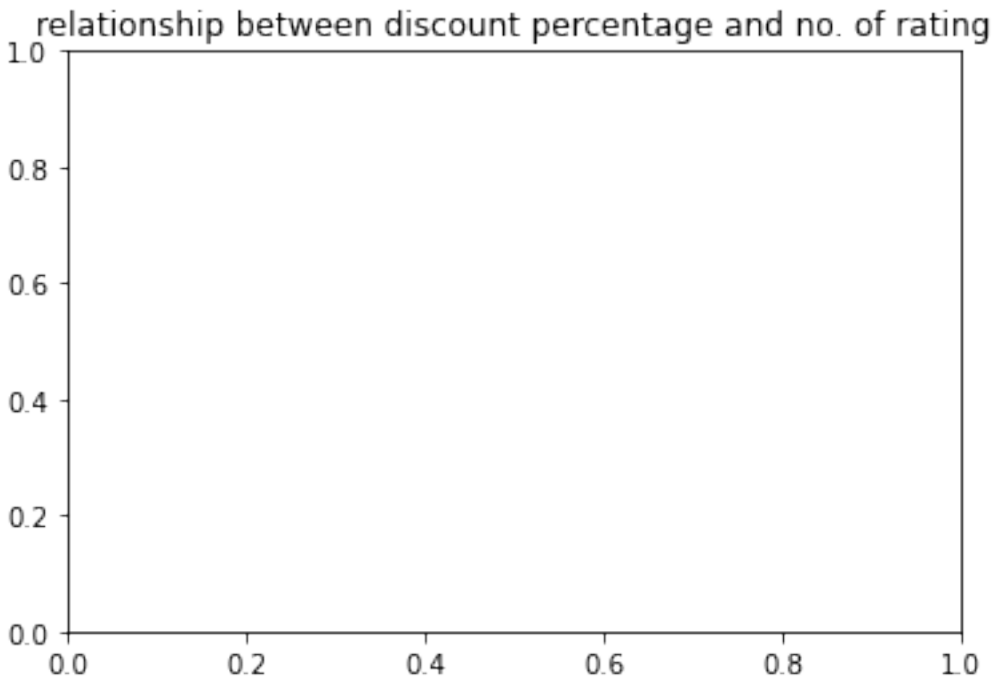
[40]:
```
# jiska price kmm h vo jada sale hua h
```

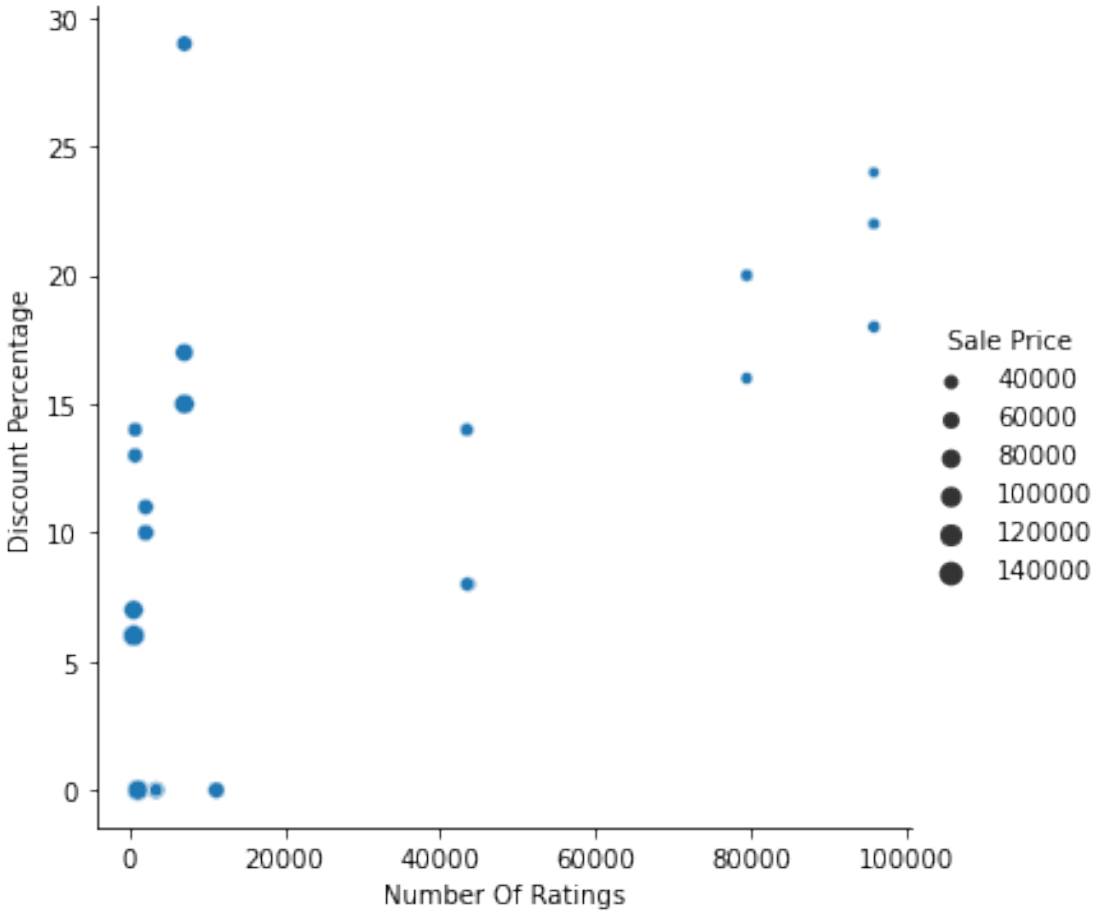
5 the relationship between the discount percentage on iPhones on Flipkart and the number of ratings

[41]:
```
plt.title("relationship between discount percentage and no. of rating")
sns.relplot(df['Number Of Ratings'], df['Discount Percentage'], size= "Sale␣
↪Price", data=df)
```

```
D:\python\lib\site-packages\seaborn\_decorators.py:36: FutureWarning: Pass the
following variables as keyword args: x, y. From version 0.12, the only valid
positional argument will be `data`, and passing other arguments without an
explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

[41]: `<seaborn.axisgrid.FacetGrid at 0x154a9687fd0>`


relationship between discount percentage and no. of rating
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0



[43]:
```
# It means iPhones with high discounts are sold more in India.
```