

```
In [1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.graph_objects as go
import plotly.express as ps
```

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

Out [2]:	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews	Upc	Star Rating	Ram
0	APPLE iPhone 8 Plus (Gold, 64 GB)	https://www.flipkart.com/apple-iphone-8-plus-g...	Apple	49900	49900	0	3431	356	MOBEXRGV7EHHTGUH	4.6	2 GB
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431	356	MOBEXRGVAC6TJT4F	4.6	2 GB
2	APPLE iPhone 8 Plus (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431	356	MOBEXRGVGETABXWZ	4.6	2 GB
3	APPLE iPhone 8 (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-silver...	Apple	77000	77000	0	11202	794	MOBEXRGMZWUHCBA	4.5	2 GB
4	APPLE iPhone 8 (Gold, 256 GB)	https://www.flipkart.com/apple-iphone-8-gold-2...	Apple	77000	77000	0	11202	794	MOBEXRGVPK7PFEJZ	4.5	2 GB
...	...	...	...	...	...	...	...	...	...	...	...
57	APPLE iPhone SE (Black, 64 GB)	https://www.flipkart.com/apple-iphone-se-black...	Apple	29999	39900	24	95909	8161	MOBFWQ6BR3MK7AUG	4.5	4 GB
58	APPLE iPhone 11 (Purple, 64 GB)	https://www.flipkart.com/apple-iphone-11-purpl...	Apple	46999	54900	14	43470	3331	MOBFWQ6BTFJJKGKE	4.6	4 GB
59	APPLE iPhone 11 (White, 64 GB)	https://www.flipkart.com/apple-iphone-11-white...	Apple	46999	54900	14	43470	3331	MOBFWQ6BVWWEH3XE	4.6	4 GB
60	APPLE iPhone 11 (Black, 64 GB)	https://www.flipkart.com/apple-iphone-11-black...	Apple	46999	54900	14	43470	3331	MOBFWQ6BGJCEYNY	4.6	4 GB
61	APPLE iPhone 11 (Red, 64 GB)	https://www.flipkart.com/apple-iphone-11-red-6...	Apple	46999	54900	14	43470	3331	MOBFWQ6BYV3FCU7	4.6	4 GB

```
In [3]: print(df.isnull().sum())# used to check null values
```

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
```

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In [4]: df.describe()# used to see statistical values
```

	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

## iPhone Sales analysis in India

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In [5]: highest_rating=df.sort_values(by=["Star Rating"],ascending=False)
highest_rating=highest_rating.head(10)
highest_rating["Product Name"]
```

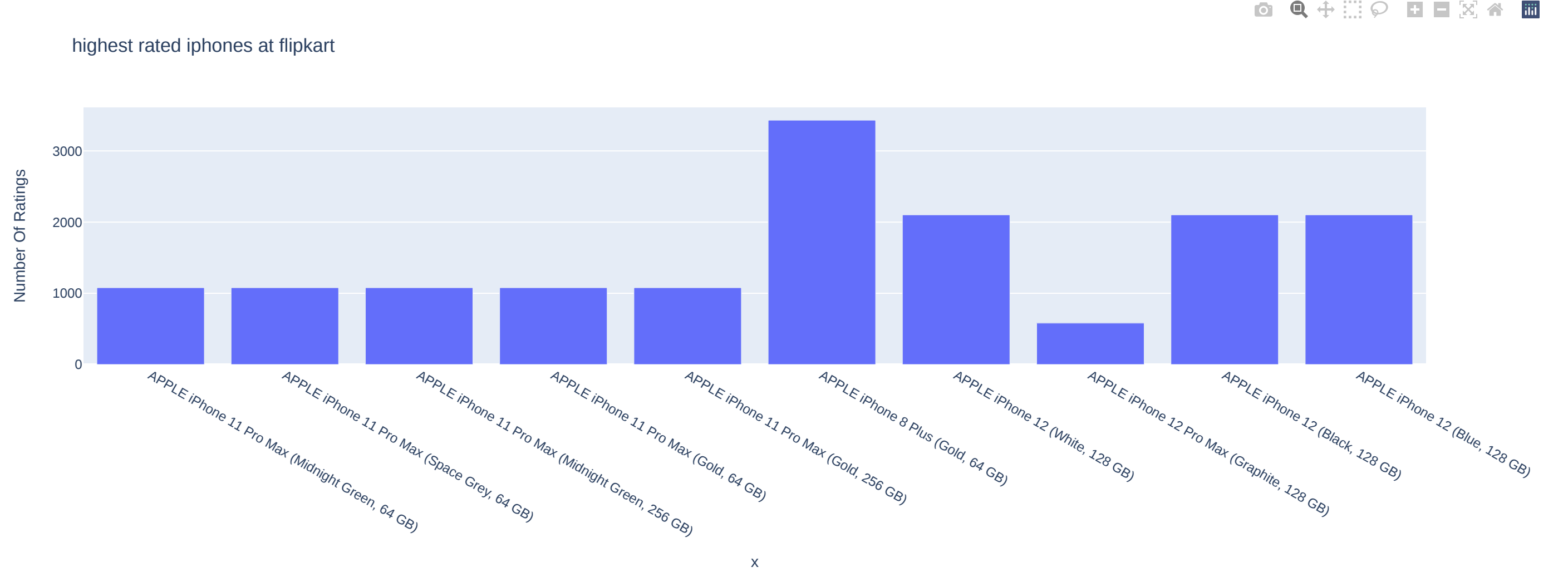
```
Out[5]: 20    APPLE iPhone 11 Pro Max (Midnight Green, 64 GB)
17    APPLE iPhone 11 Pro Max (Space Grey, 64 GB)
16    APPLE iPhone 11 Pro Max (Midnight Green, 256 GB)
15    APPLE iPhone 11 Pro Max (Gold, 64 GB)
14    APPLE iPhone 11 Pro Max (Gold, 256 GB)
0     APPLE iPhone 8 Plus (Gold, 64 GB)
29    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
```

Lets have a look at no of ratings of highest rating iphone at flipkart

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In [6]: iphone=highest_rating["Product Name"].value_counts()
        labels=iphone.index
        count=highest_rating["Number Of Ratings"]
        figure=ps.bar(highest_rating,x=labels,y=count,title="highest rated iphones at flipkart")
        figure.show()

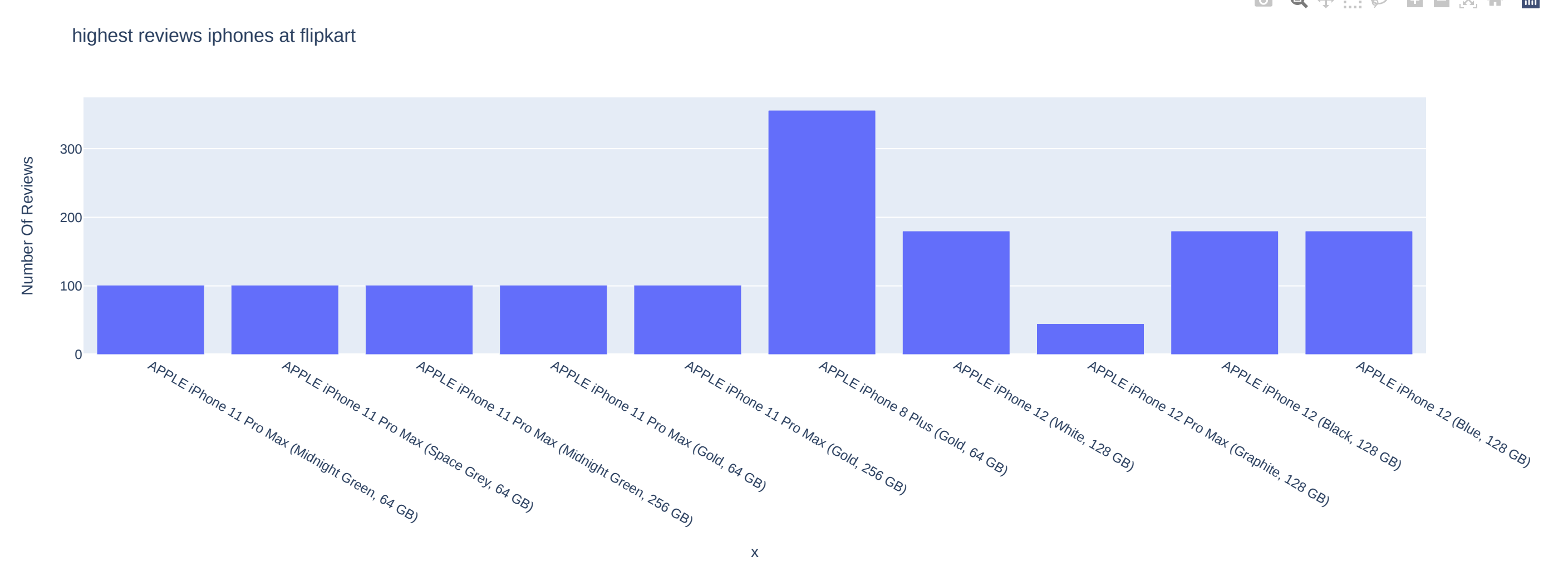
```



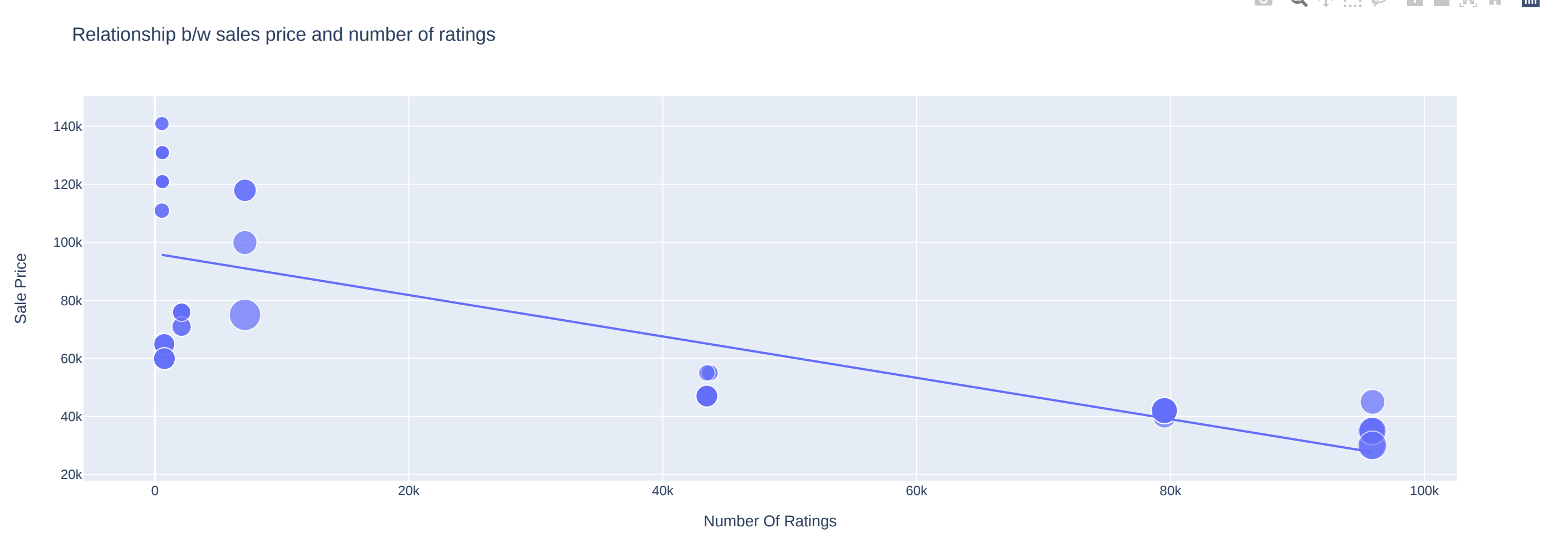
```

In [7]: iphone=highest_rating["Product Name"].value_counts()
        labels=iphone.index
        count=highest_rating["Number Of Reviews"]
        figure=ps.bar(highest_rating,x=labels,y=count,title="highest reviews iphones at flipkart")
        figure.show()

```



```
In [8]: figure=ps.scatter(data_frame=df,x="Number Of Ratings",y="Sale Price",size="Discount Percentage",trendline="ols",
                        title="Relationship b/w sales price and number of ratings")
figure.show()
```



```
In [9]: figure=ps.scatter(data_frame=df,x="Number Of Ratings",y="Discount Percentage",size="Sale Price",trendline="ols",
                        title="Relationship b/w Discount Percentage and number of ratings")
figure.show()
```

