SMARTWATCH MARKET IN NEW ZEALAND

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INTRODUCTION

The global fitness tracker market is projected to grow from $36.34 billion in 2020 to $114.36 billion in 2028

Read More at:-
https://www.fortunebusinessinsights.com/fitness-tracker-market-103358

Keeping track of your wellness and fitness activity has never been easier with the aptly named fitness trackers. As their name explains, Fitness and activity trackers are electronic wearable devices that monitor health-related metrics such as walking or running, heart rate, blood oxygen levels, calorie consumption, and sleep quality.

QUESTION

1.Demand for fitness trackers?

2.Which brand has the highest number of products?

3.Number of Players in the mid-priced market?

4.Average Rating by Brand?

5.What are the minimum features expected in a mid-price product?

6.Are fitness trackers (in the mid-price range) rated less? favourably than those in the higher price in the same? range?

PROCESS

- Data Wrangling
- Feature Engineering
- EDA
- Analyse the data in order to gain insights
- Visualize the insights (Graphs)
- Hypothesis testing

DATA

This is a fitness tracker product dataset consisting of different products from various brands with their specifications and ratings available in NZ market. The data has been collected from an e-commerce website using web scraping technique.

Data Columns =

1. Brand Name
2. Model
3. Manufacturer Part Number
4. Dealer Part Number
5. Rating
6. Number of Reviews
7. Value
8. Size
9. Screen Size(mm)
10. Display
11. Heart Rate Monitor
12. Waterproof Rating
13. Compatible OS
14. Colour
15. Case Finish
16. Case Weight
17. Features
18. Connectivity
19. Band size Min
20. Environmental Requirements
21. Battery Capacity
22. Battery Life

FEATURE ENGINEERING

From Columns

[‘Features’,’Connectivity’]

Created

Features_col = ['Accelerometer', 'Gyroscope',"Stress","ECG", 'Compass’,
'Fall Detection',"Calling",'SOS','Magnetometer’,
'Optical heart rate’, 'infrared oxygen saturation
SpO2','GNS',"NFC","Bluetooth",'Ambient Light’,
'Wi-Fi’, 'Altimeter', 'Barometer’, 'Temperature’, 'Microphone’,
'Speaker']

```
df_new["calling features"].iloc[50]
```

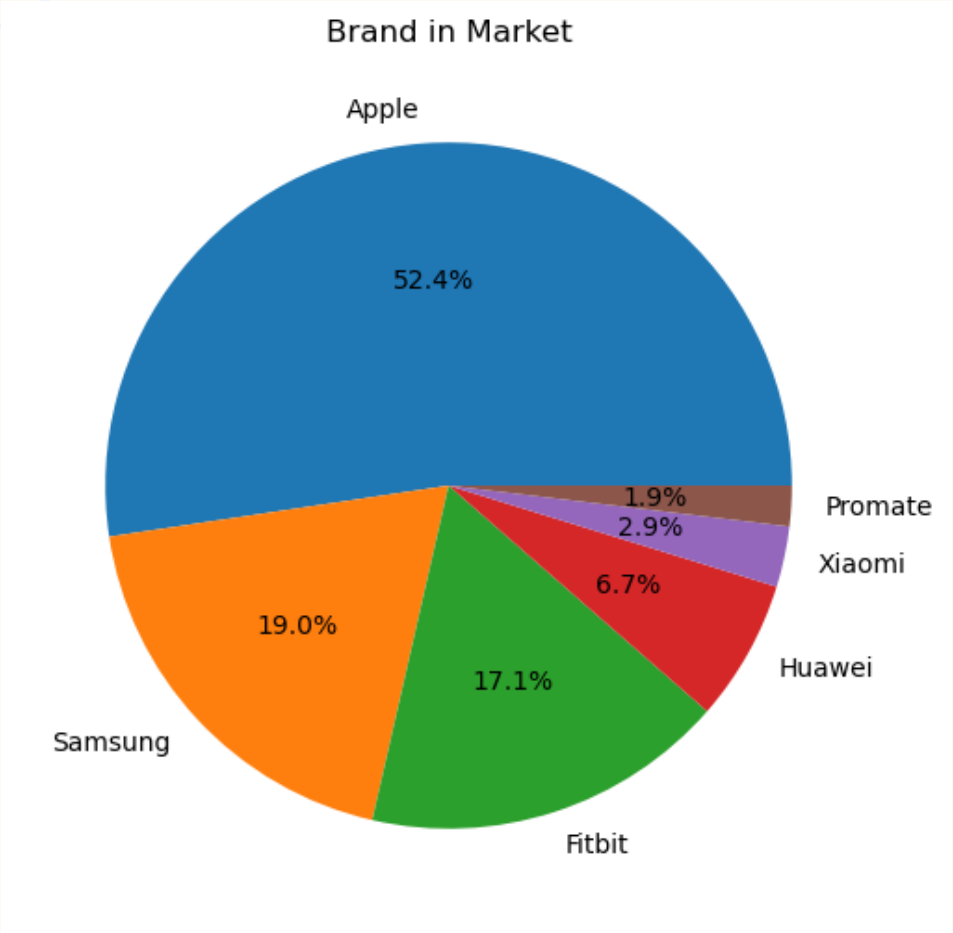
'L1 and L5 GPS, GLONASS, Galileo, QZSS and BeiDouCompassAlways-on AltimeterWater-resistant - 100 metersBlood Oxygen SensorElect rical Heart SensorThird-generation Optical Heart SensorInternation Emergency CallingEmergency SOSHigh-g Accelerometer - Up to 2 56 g-forces with Fall Detection & Crash DetectionHigh-dynamic-range GyroscopeAmbient Light SensorWater Temperature SensorDepth GuageDive REady to 40mDual Speakers (40% louder than Series 8)Three-microphone array with beamforming and wind noise mitigation Apple PayGymKit32GB capacityCeramic and Sapphire Crystal Back 4G LTE and UMTSWi-Fi 802.11b/g/n 2.4GHz and 5GHzBluetooth 5.3'

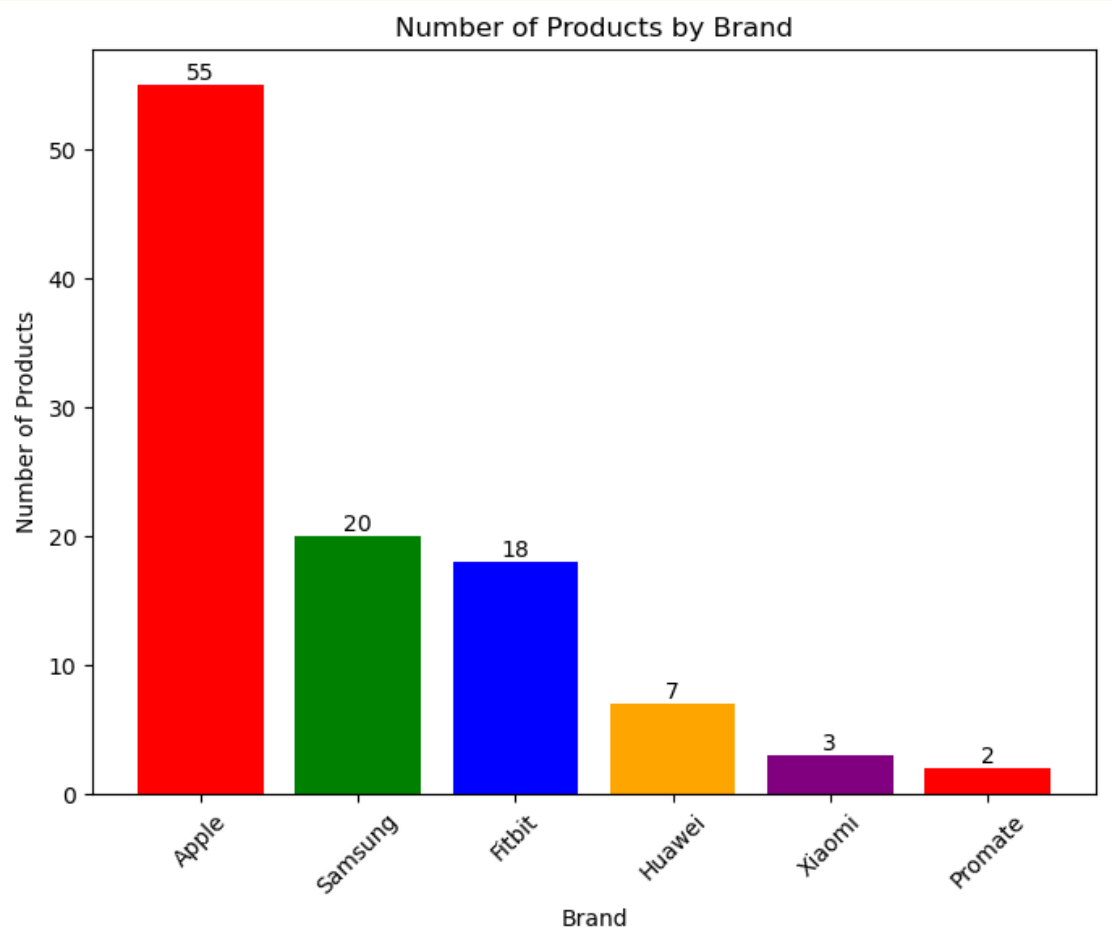
```
calling features                L1 and L5 GPS, GLONASS, Galileo, QZSS and BeiD...
Accelerometer                                                                 Yes
Gyroscope                                                                     Yes
Stress                                                                        Yes
ECG                                                                            No
Compass                                                                       Yes
Fall Detection                                                                Yes
Calling                                                                       Yes
SOS                                                                           Yes
Magnetometer                                                                  Yes
Optical heart rate                                                            Yes
infrared oxygen saturation SpO2                                               Yes
GNS                                                                            No
NFC                                                                            No
Bluetooth                                                                     Yes
Ambient Light                                                                 Yes
Wi-Fi                                                                         Yes
Altimeter                                                                     Yes
Barometer                                                                     Yes
Temperature                                                                   Yes
Microphone                                                                    Yes
Speaker                                                                       Yes
Name: 50, dtype: object
```

```
Data columns (total 36 columns):
 #   Column                              Non-Null Count  Dtype
---  ------                              --------------  -----
 0   Brand Name                          105 non-null    object
 1   Model                               105 non-null    object
 2   Manufacturer Part Number            103 non-null    object
 3   Rating                              54 non-null     float64
 4   Number of Reviews                   53 non-null     float64
 5   Value                               105 non-null    float64
 6   Size                                104 non-null    float64
 7   Screen Size(mm)                     103 non-null    float64
 8   Display                             81 non-null     object
 9   Waterproof Rating                   105 non-null    object
 10  Compatible OS                       105 non-null    object
 11  Colour                              105 non-null    object
 12  Case Finish                         72 non-null     object
 13  Case Weight                         61 non-null     object
 14  Battery Life                        27 non-null     float64
 15  Accelerometer                       67 non-null     object
 16  Gyroscope                           67 non-null     object
 17  Stress                              67 non-null     object
 18  ECG                                 67 non-null     object
 19  Compass                             67 non-null     object
 20  Fall Detection                      67 non-null     object
 21  Calling                             67 non-null     object
 22  SOS                                 67 non-null     object
 23  Magnetometer                        67 non-null     object
 24  Optical heart rate                  67 non-null     object
 25  infrared oxygen saturation SpO2     67 non-null     object
 26  GNS                                 67 non-null     object
 27  NFC                                 67 non-null     object
 28  Bluetooth                           67 non-null     object
 29  Ambient Light                       67 non-null     object
 30  Wi-Fi                               67 non-null     object
 31  Altimeter                           67 non-null     object
 32  Barometer                           67 non-null     object
 33  Temperature                         67 non-null     object
 34  Microphone                          67 non-null     object
 35  Speaker                             67 non-null     object
dtypes: float64(6), object(30)
memory usage: 29.7+ KB
```

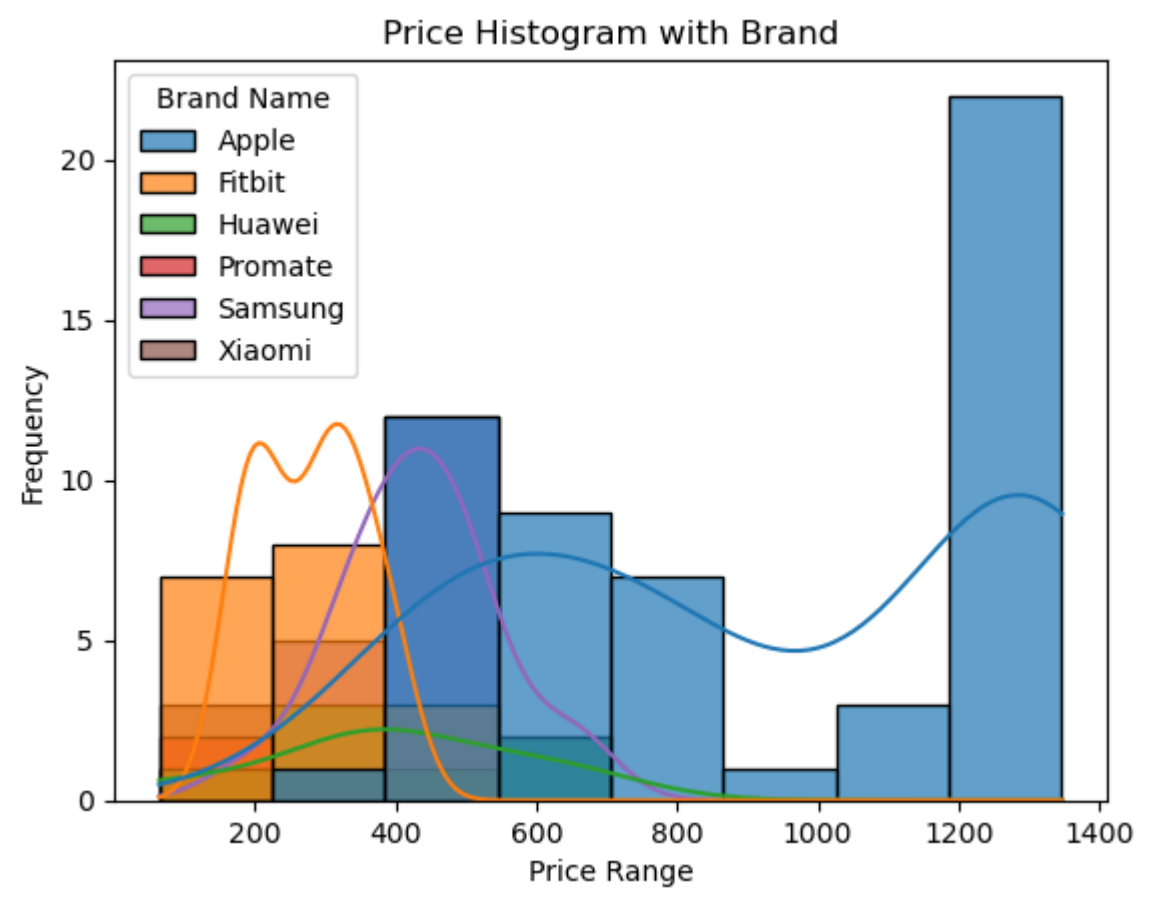
1.What is the demand for fitness trackers in NZ?
2.Which brand has the highest number of products?

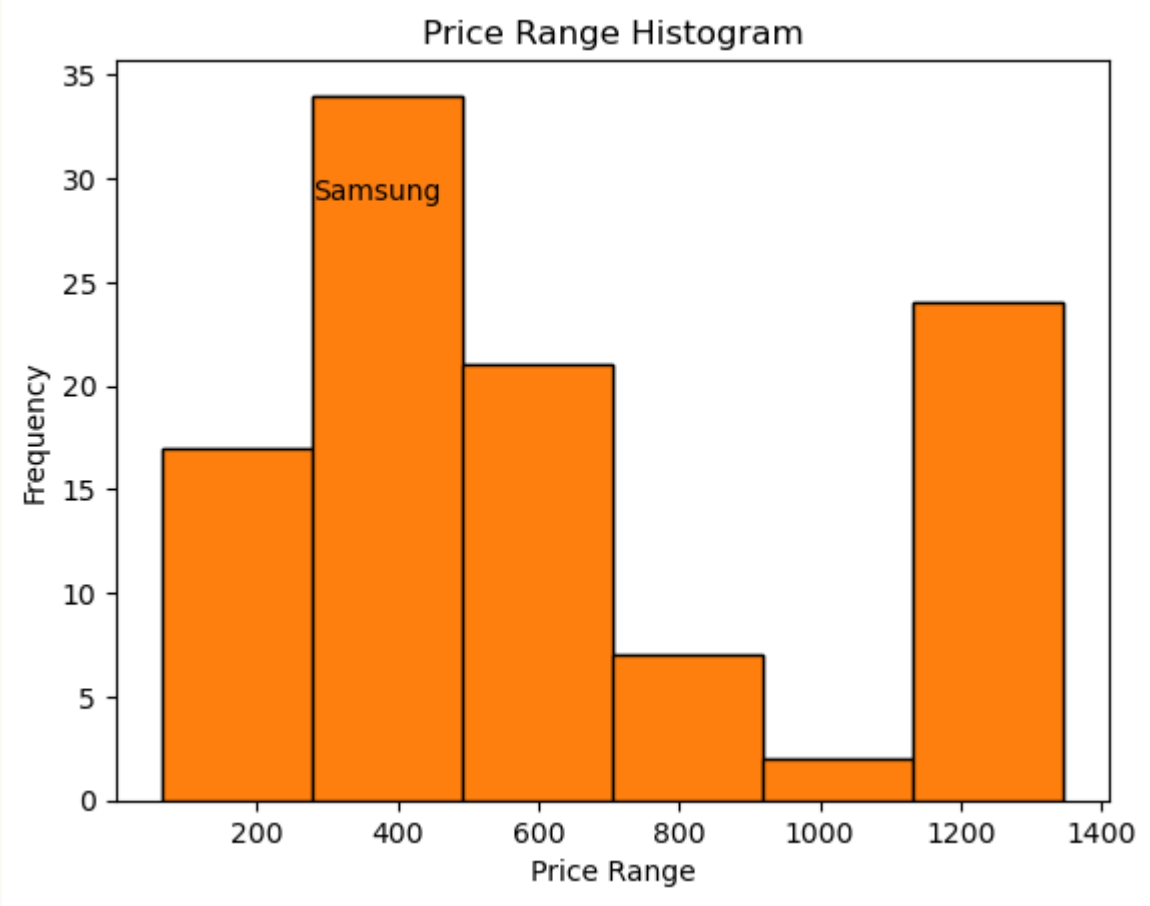
107 smartwatches in Market with 6 leading brands



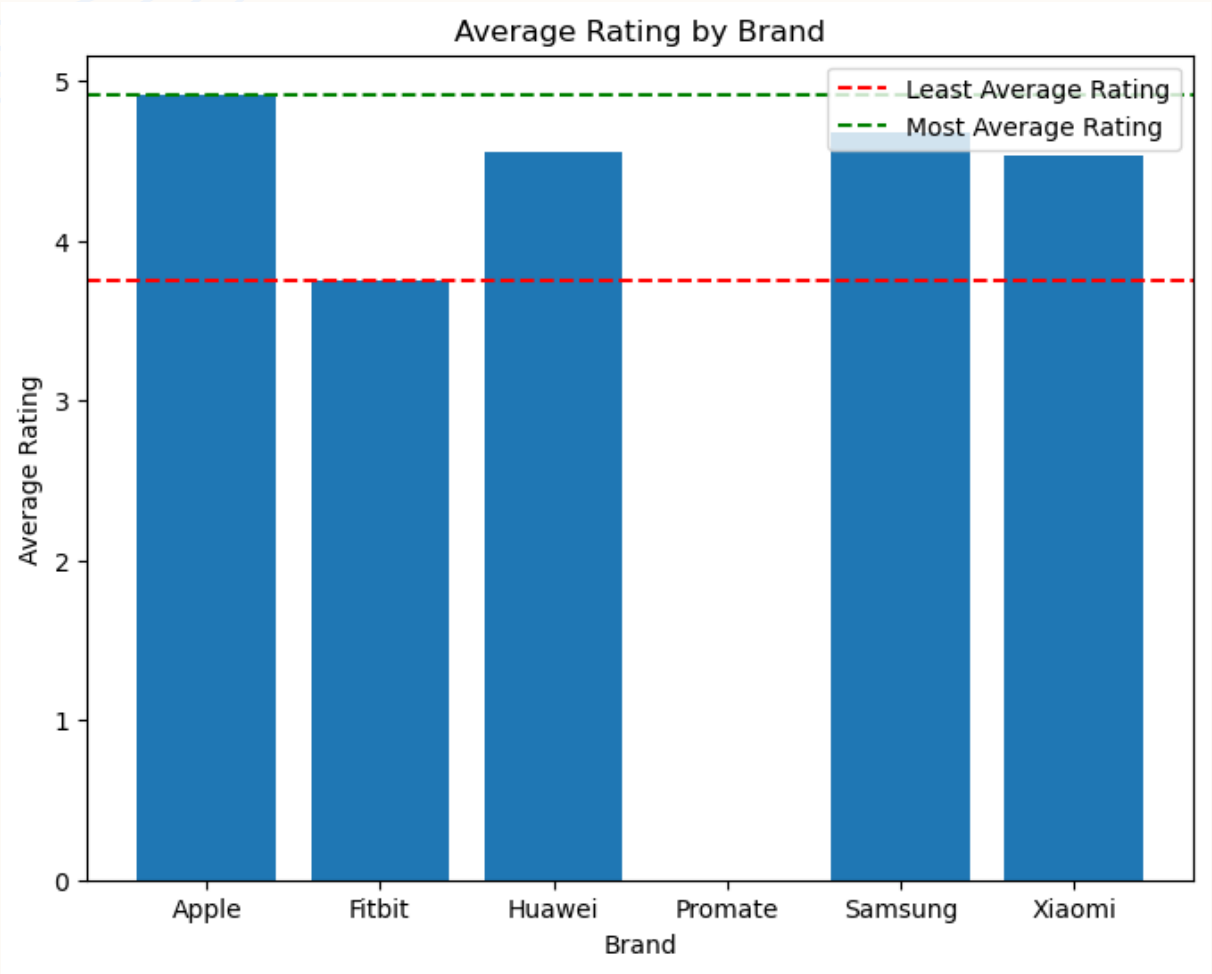


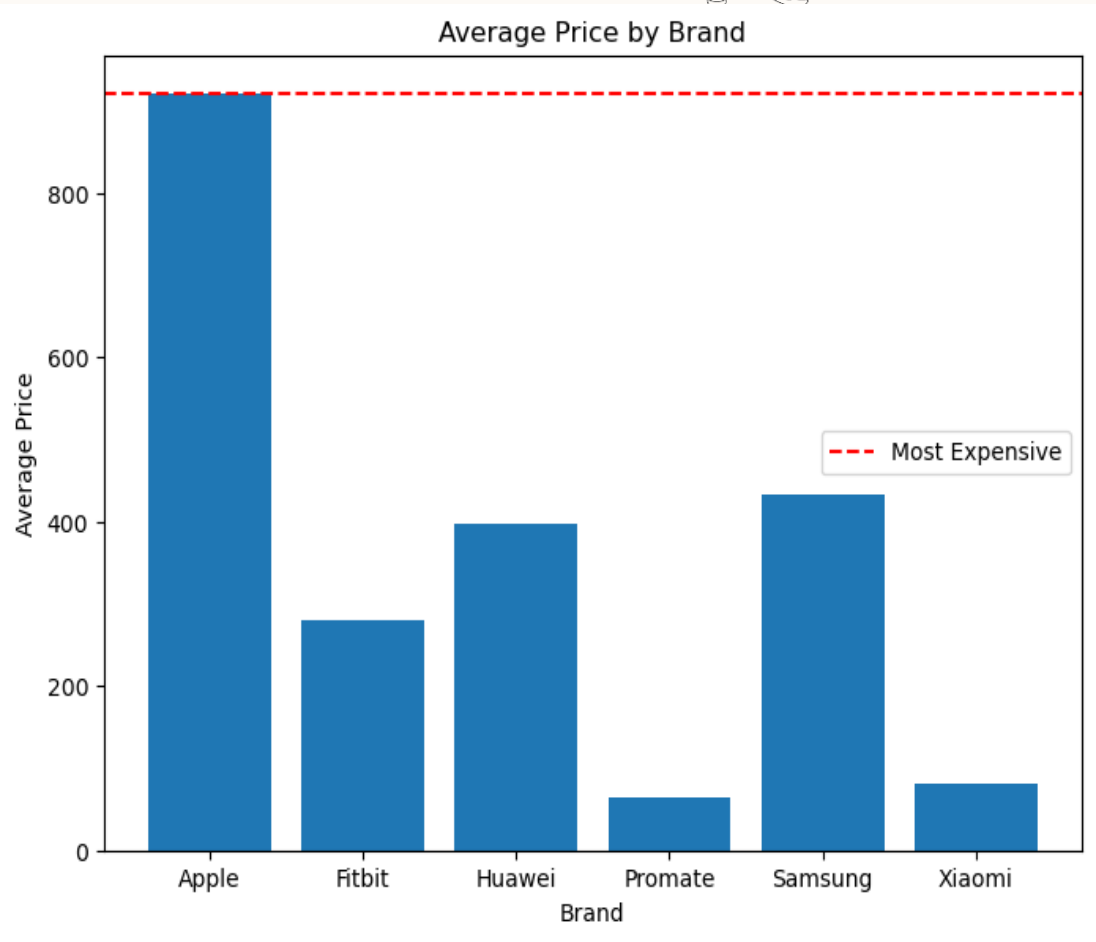
3. Number of Players in the mid-priced market



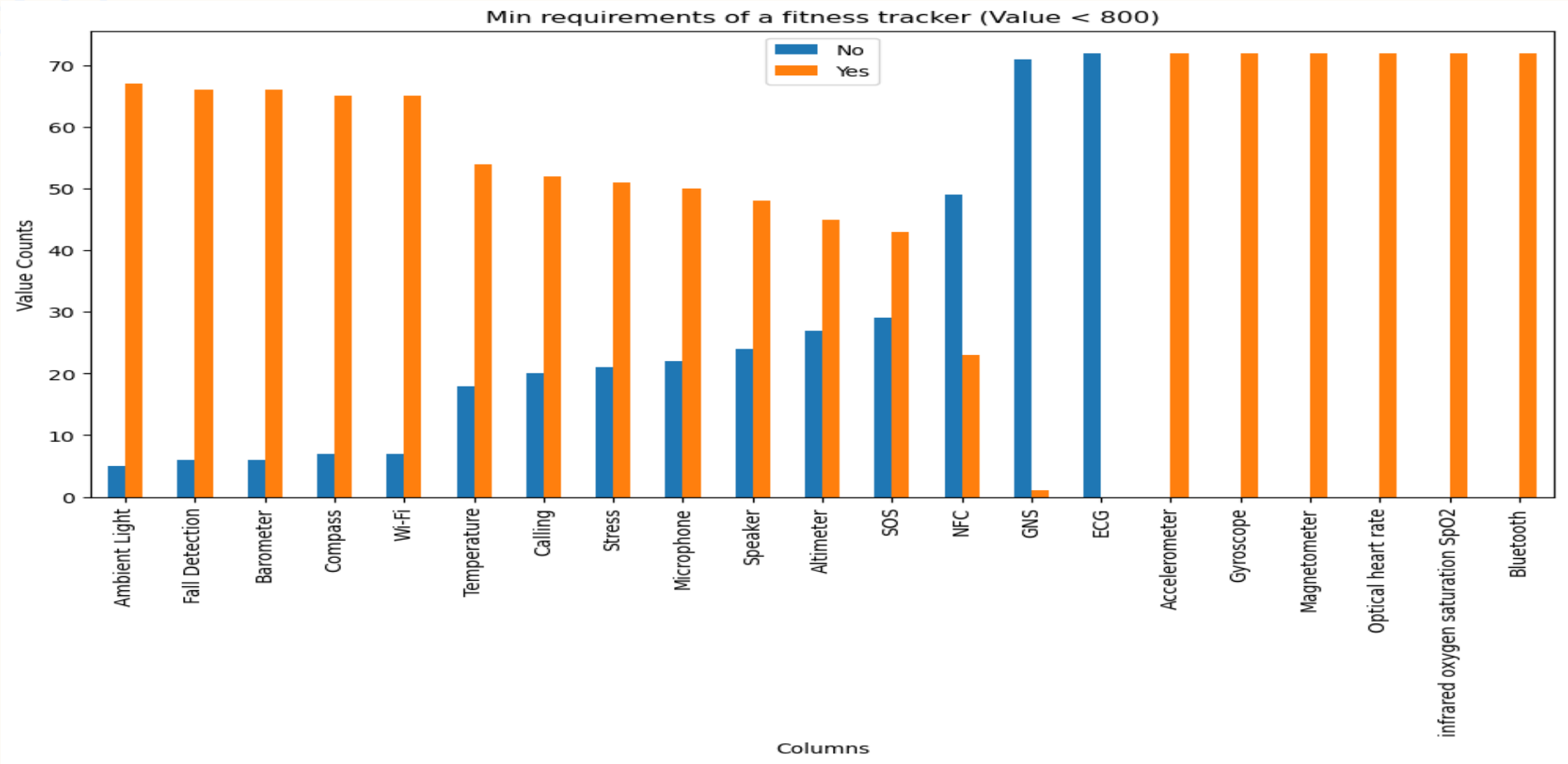


4. Average Rating and Price by Brand?

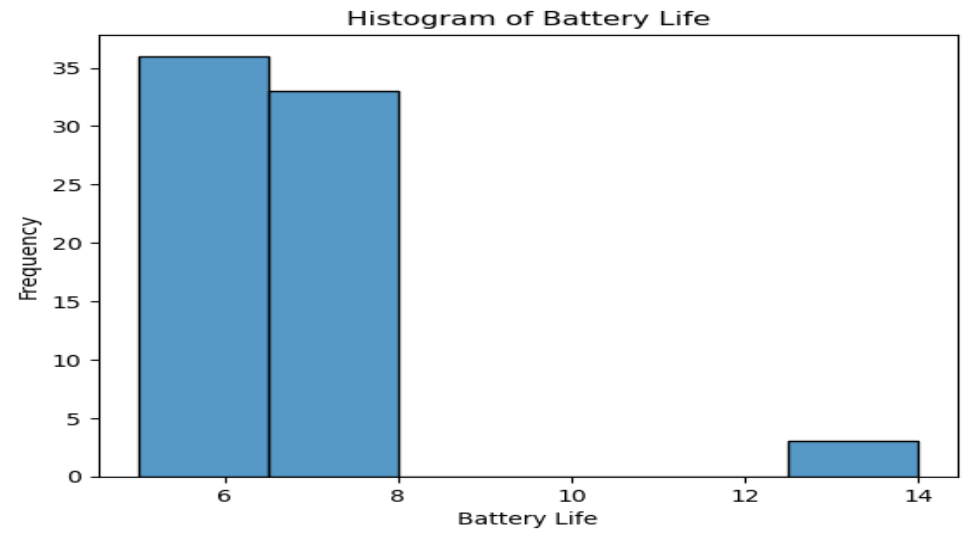


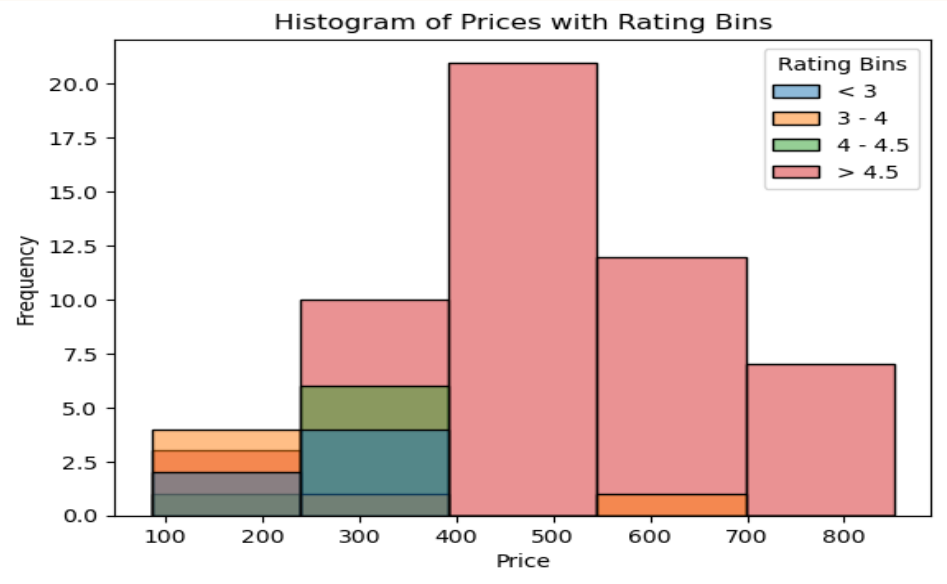


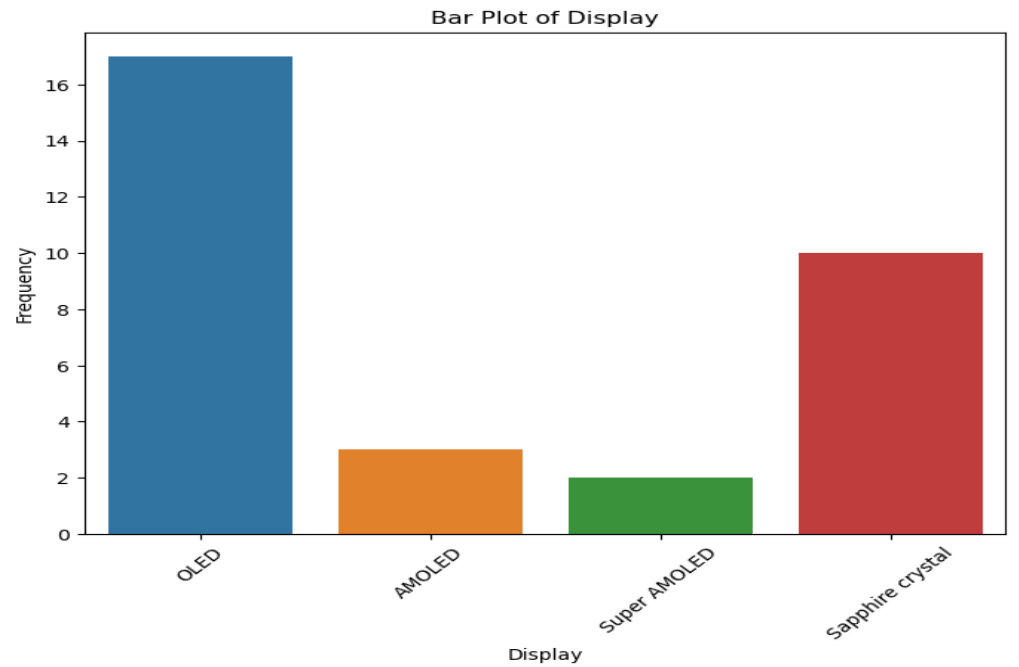
5. What are the minimum features expected in a mid-price product

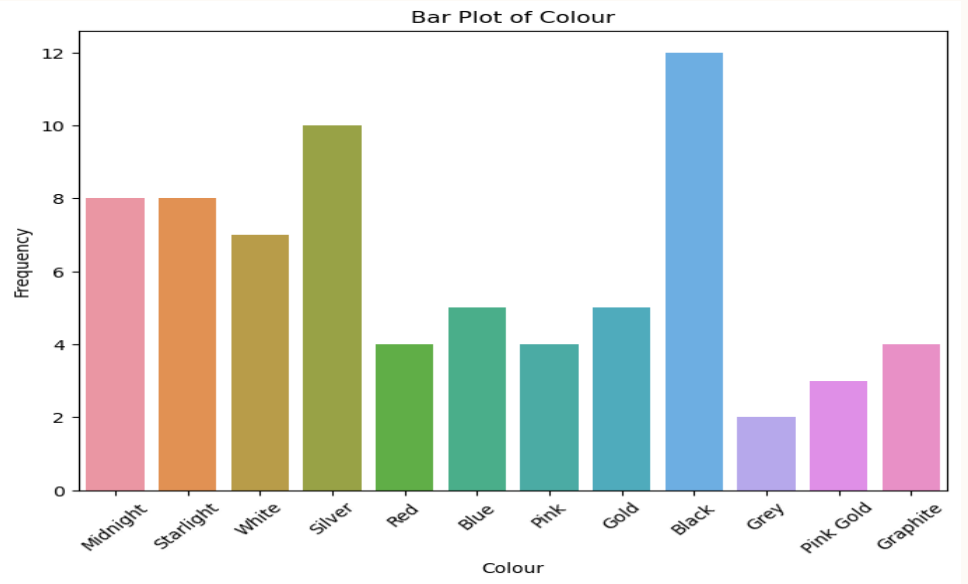


5. What are the minimum features expected in a mid-price product (contd)

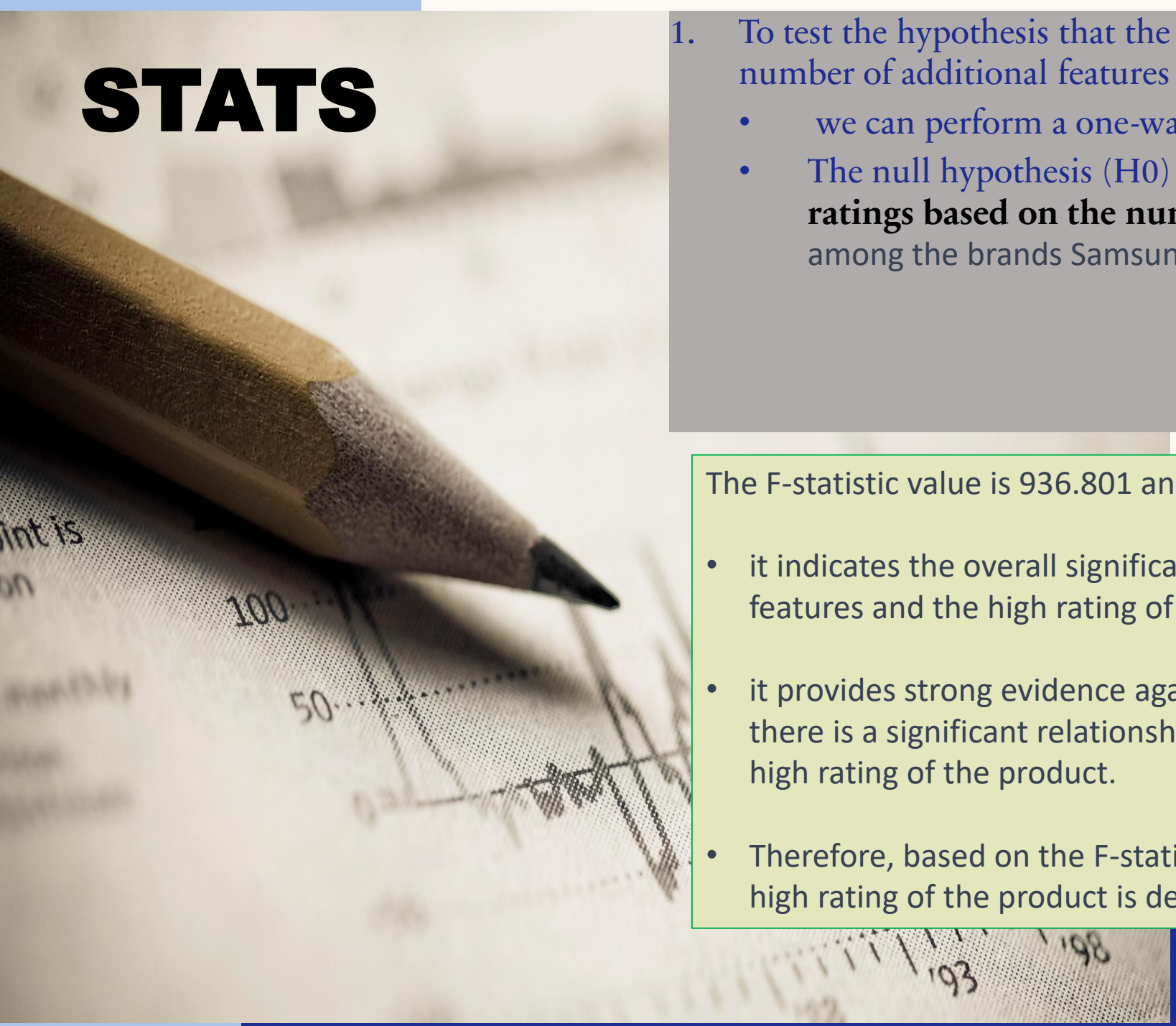








STATS



1. To test the hypothesis that the high rating of the product is based on the number of additional features in mid range product
   - we can perform a one-way analysis of variance (ANOVA) test.
   - The null hypothesis (H0) **would be that there is no difference in ratings based on the number of additional features** (provided among the brands Samsung, Fitbit, and Huawei)

The F-statistic value is 936.801 and the p-value is 2.13e-64.

- it indicates the overall significance of the relationship between the additional features and the high rating of the product.
- it provides strong evidence against the null hypothesis and suggests that there is a significant relationship between the additional features and the high rating of the product.
- Therefore, based on the F-statistic and the p-value, we can conclude that the high rating of the product is dependent on the additional features provided.

STATS

2. To test the hypothesis whether price affects the rating for the subset of brands ['Samsung', 'Fitbit', 'Huawei','Apple] with price < 800 and price > 400

- we can perform t-test.
- The null hypothesis (H0) would be there is no significant difference in the ratings between products with prices less than 800 and prices greater than 400

- The t-statistic is -4.03 and the p-value is 9.51e-05.
- Indicates the significance of the relationship between the price and rating for the subset of mid-price products
- In this case, the p-value is less than the significance level of 0.05, indicating that the results are statistically significant.

- Therefore, we can reject the null hypothesis and conclude that there is a significant relationship between the price and rating for the subset of mid-range products

INFO ACQUIRED

- There are 6 major players in the NZ market for smartwatches.
- Samsung leads the mid-price section.
- At least 17-20 features are expected in a smart watch.
- Increasing the price in the mid-section will negatively affect the acceptance(rating).
- High rating of the product is based on the number of additional features in mid-range product.