DEV-01 PROJECT

Report Analysis on Men's Sneakers available on :

AJIO.COM

https://github.com/sumitjoiya/dev1_project-045053

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Section H (PGDM-BDA)

About AJIO:

AJIO.com is an Indian e-commerce platform specializing in fashion and lifestyle products. It is owned and operated by Reliance Retail, a subsidiary of Reliance Industries Limited, one of India's largest conglomerates. AJIO.com was launched in 2016 and has since gained popularity as a one-stop destination for trendy clothing, footwear, accessories, and other fashion-related items.

Project Objectives:

This report provides a comprehensive analysis of the men's sneakers available at Ajio.com, a popular online fashion retailer. The analysis aims to evaluate the range of sneakers offered, their pricing, brand diversity, customer reviews, and overall quality. The findings will assist potential buyers in making informed decisions when purchasing men's sneakers from Ajio.com.

General description of the data

The website provides detailed information about the men's sneakers available for purchase, including product descriptions, pricing, brand information, customer reviews, and ratings. The data was collected by browsing through the website and extracting relevant information for each sneaker.

The data includes the following key elements:

- Sneaker Details: This includes information such as the brand, model, style, and product description. These details help in understanding the specific features and characteristics of each sneaker.

- Pricing: The data includes the price range of the sneakers, including any discounts or promotional offers available at the time of analysis. This information helps in evaluating the affordability and value for money of the sneakers.

- Brand Information: The data includes the brand names of the sneakers available on Ajio.com. It covers both international brands like Nike, Adidas, and Puma, as well as domestic brands like Fila, Red Tape, and Sparx. This information helps in assessing the brand diversity and reputation of the sneakers.

The data was collected by web scraping techniques using BeautifulSoup and the requests library, and then organized and analyzed using pandas for further insights.

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
plt.style.use('dark_background')

df = pd.read_csv('/content/drive/MyDrive/ajio.csv')
df.head()
```

	rilrtl-products-list__link href	brand	nameCls	price	orginal-price	discount	Unnamed: 6	offer price
0	https://www.ajio.com/nike-downshifter-12-runni...	NIKE	Downshifter 12 Running Shoes	₹2,797	₹3,995	(30% off)	NaN	2,597
1	https://www.ajio.com/nike-revolution-6-nn-runn...	NIKE	Revolution 6 NN Running Shoes	₹2,919	₹3,695	(21% off)	NaN	2,771
2	https://www.ajio.com/nike-revolution-6-flyease...	NIKE	Revolution 6 Flyease Running Shoes	₹2,587	₹3,695	(30% off)	NaN	2,508
3	https://www.ajio.com/nike-court-vision-lace-up...	NIKE	COURT VISION Lace-Up Sneakers	₹4,496	₹4,995	(10% off)	NaN	4,417
4	https://www.ajio.com/nike-revolution-6-nn-runn...	NIKE	Revolution 6 NN Running Shoes	₹2,513	₹3,695	(32% off)	NaN	2,402

Creating table for the dataset to represent clearly:

1 to 5 of 5 entries Filter

index	rilrtl-products-list__link href	brand	nameCls	price	orginal-price	discount	Unnamed: 6	offer price
0	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469180121_black	NIKE	Downshifter 12 Running Shoes	₹2,797	₹3,995	(30% off)	NaN	2,597
1	https://www.ajio.com/nike-revolution-6-nn-running-shoes/p/469034008_black	NIKE	Revolution 6 NN Running Shoes	₹2,919	₹3,695	(21% off)	NaN	2,771
2	https://www.ajio.com/nike-revolution-6-flyease-running-shoes/p/469034029_black	NIKE	Revolution 6 Flyease Running Shoes	₹2,587	₹3,695	(30% off)	NaN	2,508
3	https://www.ajio.com/nike-court-vision-lace-up-sneakers/p/460941938_white	NIKE	COURT VISION Lace-Up Sneakers	₹4,496	₹4,995	(10% off)	NaN	4,417
4	https://www.ajio.com/nike-revolution-6-nn-running-shoes/p/469034011_blue	NIKE	Revolution 6 NN Running Shoes	₹2,513	₹3,695	(32% off)	NaN	2,402

Show 25 per page

Analysis:

Basic data summary:-

- Display top 10 entries of the dataset:

```
[ ]  df.head(10)
```

1 to 10 of 10 entries Filter

index	rilrtl-products-list__link href	brand	nameCls	price	orginal-price	discount	Unnamed: 6	offer price
0	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469180121_black	NIKE	Downshifter 12 Running Shoes	₹2,797	₹3,995	(30% off)	NaN	2,597
1	https://www.ajio.com/nike-revolution-6-nn-running-shoes/p/469034008_black	NIKE	Revolution 6 NN Running Shoes	₹2,919	₹3,695	(21% off)	NaN	2,771
2	https://www.ajio.com/nike-revolution-6-flyease-running-shoes/p/469034029_black	NIKE	Revolution 6 Flyease Running Shoes	₹2,587	₹3,695	(30% off)	NaN	2,508
3	https://www.ajio.com/nike-court-vision-lace-up-sneakers/p/460941938_white	NIKE	COURT VISION Lace-Up Sneakers	₹4,496	₹4,995	(10% off)	NaN	4,417
4	https://www.ajio.com/nike-revolution-6-nn-running-shoes/p/469034011_blue	NIKE	Revolution 6 NN Running Shoes	₹2,513	₹3,695	(32% off)	NaN	2,402
5	https://www.ajio.com/7-10-round-neck-stacked-sneakers/p/464969428_black	07-Oct	Round-Neck Stacked Sneakers	₹5,799	NaN	NaN	NaN	4,929
6	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469331561_black	NIKE	Downshifter 12 Running Shoes	₹2,477	₹3,995	(38% off)	NaN	2,317
7	https://www.ajio.com/nike-air-max-ap-running-shoes/p/469331665_grey	NIKE	Air Max AP Running Shoes	₹5,526	₹9,695	(43% off)	NaN	5,447
8	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469331559_black	NIKE	Downshifter 12 Running Shoes	₹2,916	₹3,995	(27% off)	NaN	2,717
9	https://www.ajio.com/nike-venture-runner-casual-shoes/p/460681786_blue	NIKE	Venture Runner Casual Shoes	₹3,737	₹5,495	(32% off)	NaN	3,572

- Display bottom 10 entries of the dataset:

```
[ ]  df.tail(10)
```

1 to 10 of 10 entries Filter

index	rilrtl-products-list__link href	brand	nameCls	price	orginal-price	discount	Unnamed: 6	offer price
2518	https://www.ajio.com/puma-rapido-ii-tt-jr-lace-up-sports-shoes/p/460569616_blue	Puma	Rapido II TT Jr Lace-Up Sports Shoes	₹2,249	₹2,499	(10% off)	NaN	1,924
2519	https://www.ajio.com/toms-carlo-blue-casual-shoes/p/464381503_blue	Toms	Carlo Blue Casual Shoes	₹5,499	NaN	NaN	NaN	5,420
2520	https://www.ajio.com/puma-softride-vital-walking-shoes/p/460970791_navyblue	Puma	Softride Vital Walking Shoes	₹2,880	₹5,999	(52% off)	NaN	2,131
2521	https://www.ajio.com/steve-madden-striped-driver-shoes/p/410360293_blk	STEVE MADDEN	Striped Driver Shoes	₹4,500	₹8,999	(50% off)	NaN	3,780
2522	https://www.ajio.com/steve-madden-collapsable-leather-loafer-with-metal-accent/p/410314338_dkb	STEVE MADDEN	Collapsable Leather Loafer with Metal Accent	₹5,500	₹10,999	(50% off)	NaN	4,620
2523	https://www.ajio.com/puma-puma-drive-fusion-disc/p/460485091_white	Puma	Puma Drive Fusion DISC	₹11,999	NaN	NaN	NaN	10,599
2524	https://www.ajio.com/veja-esplar-lace-up-sneakers/p/469096366_white	Veja	Esplar Lace-Up Sneakers	₹9,120	₹11,400	(20% off)	NaN	8,208
2525	https://www.ajio.com/puma-mapf1-a3rocat-lace-up-shoes/p/469249721_black	Puma	MAPF1 A3ROCAT Lace-Up Shoes	₹4,949	₹8,999	(45% off)	NaN	4,769
2526	https://www.ajio.com/skechers-go-run-400-v2--omega-lace-up-running-shoes/p/469108635_navy	Skechers	Go Run 400 V2 - Omega Lace-Up Running Shoes	₹2,249	₹2,999	(25% off)	NaN	2,039
2527	https://www.ajio.com/puma-nrgy-comet-preschool-running-shoes/p/460770942_blue	Puma	NRGY Comet Preschool Running Shoes	₹2,099	₹2,799	(25% off)	NaN	1,791

These gives the first few and last few entries of the dataset useful for finding the kind of sneakers stacked in the list to have an overview about the items listed in the dataset of the ajio website.

- Find shape of the dataset:

```
[ ]  df.shape

     ()

     print("Number of Rows:",df.shape[0])
     print("Number of Columns:",df.shape[1])
```

```
Number of Rows: 2528
Number of Columns: 8
```

It gives the basic structure of the data in the dataset like number of rows and columns.

- Getting information about our dataset like number of rows. Columns,datatypes of each column and money requirement :

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2528 entries, 0 to 2527
Data columns (total 8 columns):
 #   Column                          Non-Null Count  Dtype
---  ------                          --------------  -----
 0   rilrtl-products-list__link href  2528 non-null   object
 1   brand                           2528 non-null   object
 2   nameCls                         2528 non-null   object
 3   price                           2528 non-null   object
 4   orginal-price                   2363 non-null   object
 5   discount                        2363 non-null   object
 6   Unnamed: 6                      0 non-null      float64
 7   offer price                     2491 non-null   object
dtypes: float64(1), object(7)
memory usage: 158.1+ KB
```

```
df.dtypes
```

```
rilrtl-products-list__link href     object
brand                               object
nameCls                             object
price                               object
orginal-price                       object
discount                            object
Unnamed: 6                         float64
offer price                         object
dtype: object
```

Analyzing the output of df.info() provides valuable information about the DataFrame's structure and the data it contains. Let's break down the analysis of the df.info() output:

<class 'pandas.core.frame.DataFrame'>: This line confirms that we're dealing with a Pandas DataFrame.
Data columns (total 8 columns):: The DataFrame has a total of eight columns.

All columns contain object datatype except one column i.e. Unnamed:6

It also gives information about the volume of space required in the memory.

<u>Exploratory and mathematical analysis:-</u>

- Checking missing values in the dataset:

```
[ ] print("Is there any missing value?",df.isnull().values.any())
```

```
Is there any missing value? True
```

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

```
rilrtl-products-list__link href       0
brand                                 0
nameCls                               0
price                                 0
orginal-price                       165
discount                            165
Unnamed: 6                         2528
offer price                          37
dtype: int64
```

```
[ ]  df.isnull().sum().astype(float)
```

```
rilrtl-products-list__link href      0.0
brand                                0.0
nameCls                              0.0
price                                0.0
orginal-price                      165.0
discount                           165.0
Unnamed: 6                        2528.0
offer price                         37.0
dtype: float64
```

Here it has been shown the missing items in each columns of the dataset.

In the output of the code it is mentioned that 165 entries in ‘original price’ column are missing. Similarly ‘discount’,’offer price’ and ‘unnamed:6’ has 165, 37 and 2528 missing items respectively.

- Check for duplicate data:

```
[16]  df.duplicated().sum()
```

```
330
```

```
print("Are there any duplicate values?",df.duplicated().values.any())

df
```

```
Are there any duplicate values? True
```

index	rilrtl-products-list__link href	brand	nameCls	price	orginal-price	discount	Unnamed: 6	offer price
0	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469180121_black	NIKE	Downshifter 12 Running Shoes	₹2,797	₹3,995	(30% off)	NaN	2,597
1	https://www.ajio.com/nike-revolution-6-nn-running-shoes/p/469034008_black	NIKE	Revolution 6 NN Running Shoes	₹2,919	₹3,695	(21% off)	NaN	2,771
2	https://www.ajio.com/nike-revolution-6-flyease-running-shoes/p/469034029_black	NIKE	Revolution 6 Flyease Running Shoes	₹2,587	₹3,695	(30% off)	NaN	2,508
3	https://www.ajio.com/nike-court-vision-lace-up-sneakers/p/460941938_white	NIKE	COURT VISION Lace-Up Sneakers	₹4,496	₹4,995	(10% off)	NaN	4,417
4	https://www.ajio.com/nike-revolution-6-nn-running-shoes/p/469034011_blue	NIKE	Revolution 6 NN Running Shoes	₹2,513	₹3,695	(32% off)	NaN	2,402
5	https://www.ajio.com/7-10-round-neck-stacked-sneakers/p/464969428_black	07-Oct	Round-Neck Stacked Sneakers	₹5,799	NaN	NaN	NaN	4,929
6	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469331561_black	NIKE	Downshifter 12 Running Shoes	₹2,477	₹3,995	(38% off)	NaN	2,317
7	https://www.ajio.com/nike-air-max-ap-running-shoes/p/469331665_grey	NIKE	Air Max AP Running Shoes	₹5,526	₹9,695	(43% off)	NaN	5,447
8	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469331559_black	NIKE	Downshifter 12 Running Shoes	₹2,916	₹3,995	(27% off)	NaN	2,717
9	https://www.ajio.com/nike-venture-runner-casual-shoes/p/460681786_blue	NIKE	Venture Runner Casual Shoes	₹3,737	₹5,495	(32% off)	NaN	3,572
10	https://www.ajio.com/nike-legend-essential-lace-up-traning-shoes/p/469331625_black	NIKE	Legend Essential Lace-Up Traning Shoes	₹2,697	₹4,995	(46% off)	NaN	2,618
11	https://www.ajio.com/nike-court-legacy-nn-sneakers/p/469180132_black	NIKE	Court Legacy NN Sneakers	₹4,271	₹5,695	(25% off)	NaN	3,873

12	https://www.ajio.com/aldo-slip-ons-casual-shoes-/p/465183085_brown	ALDO	Slip-Ons Casual Shoes	₹5,100	₹16,999	(70% off)	NaN	5,021
13	https://www.ajio.com/skechers-ultra-flex-2-0--kelmer-lace-up-sports-shoes/p/460559648_olive	Skechers	Ultra Flex 2.0 - Kelmer Lace-Up Sports Shoes	₹3,574	₹5,499	(35% off)	NaN	3,189
14	https://www.ajio.com/nike-air-max-excee-lace-up-shoes/p/469331477_black	NIKE	Air Max Excee Lace-Up Shoes	₹5,197	₹7,995	(35% off)	NaN	4,637
15	https://www.ajio.com/nike-precision-vi-basketball-shoes/p/469258154_black	NIKE	Precision VI Basketball Shoes	₹4,214	₹5,695	(26% off)	NaN	3,873
16	https://www.ajio.com/nike-run-swift-2-running-shoes/p/469331491_black	NIKE	Run Swift 2 Running Shoes	₹2,418	₹5,495	(56% off)	NaN	2,339
17	https://www.ajio.com/tommy-hilfiger-genuine-leather-low-top-lace-up-sneakers/p/469246933_beige	TOMMY HILFIGER	Genuine Leather Low-Top Lace-Up Sneakers	₹3,906	₹9,299	(58% off)	NaN	3,827
18	https://www.ajio.com/nike-defyallday-training-shoes/p/460941944_black	NIKE	Defyallday Training Shoes	₹3,646	₹4,995	(27% off)	NaN	3,397
19	https://www.ajio.com/nike-venture-runner-running-shoes/p/460846204_black	NIKE	Venture Runner Running Shoes	₹4,286	₹5,495	(22% off)	NaN	4,121
20	https://www.ajio.com/nike-flex-experience-lace-up-running-shoes/p/469331557_blue	NIKE	Flex Experience Lace-Up Running Shoes	₹2,797	₹4,995	(44% off)	NaN	2,718
21	https://www.ajio.com/asics-tarther-rp-3-running-shoes/p/469243273_blue	ASICS	Tarther RP 3 Running Shoes	₹5,060	₹10,999	(54% off)	NaN	4,981
22	https://www.ajio.com/nike-air-zoom-vomero-running-shoes/p/460941898_black	NIKE	Air Zoom Vomero Running Shoes	₹10,796	₹13,495	(20% off)	NaN	10,121
23	https://www.ajio.com/puma-dwane-idp-running-shoes/p/460422321_navyblue	Puma	Dwane IDP Running Shoes	₹1,240	₹3,999	(69% off)	NaN	1,161
24	https://www.ajio.com/nike-downshifter-12-running-shoes/p/469258150_white	NIKE	Downshifter 12 Running Shoes	₹3,715	₹3,995	(7% off)	NaN	3,596

It checks whether tha dataset has dublicate entries or not and if having duplicate entries condition is true then it prints the dublicate entries as mention above.

- Dropping duplicates:

```
[17] df.drop_duplicates(inplace = True)
     df.shape
```

```
(2198, 8)
```

This helps in eradicating all those dublicate entries and maintain our dataset by consisting only unique data making it more relevant to use for the customer to make decision about the sneaker to be purchase.

- Rename coulumn:

```
[ ] df.rename(columns= {'brand':'company'})
```

No entries Filter

index	rilrtl-products-list__link href	company	nameCls	price	orginal-price	discount	Unnamed: 6	offer price

Show 25 per page

Initially the columns were:

1 to 25 of 2528 entries Filter

index	rilrtl-products-list__link href	brand	nameCls	price	orginal-price	discount	Unnamed: 6	offer price

- How many sneakers are of NIKE:

```
[ ] df.columns
```

```
Index(['rilrtl-products-list__link href', 'brand', 'nameCls', 'price',
       'orginal-price', 'discount', 'Unnamed: 6', 'offer price'],
      dtype='object')
```

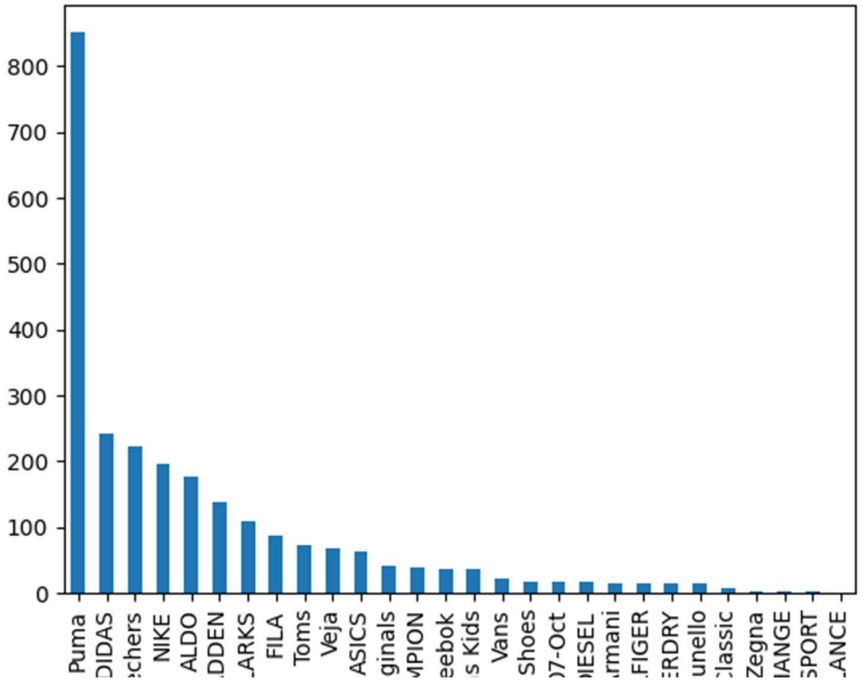
```
df['brand'].astype(str)
len(df[df['brand']=="NIKE"])
df[df['brand']=="NIKE"].count()
```

```
rilrtl-products-list__link href    196
brand                              196
nameCls                            196
price                              196
orginal-price                      194
discount                           194
Unnamed: 6                           0
offer price                        196
dtype: int64
```

To plot the histogram for the frequency of the shoes in the dataset of the men’s sneakers:

```
#Histogram Discount
# Set the bin edges for the histogram
bins = [0, 10, 20, 30, 40, 50, 60,70]

# Createion of histogram
plt.figure(figsize=(10, 6))
plt.hist(df["discount"], bins=bins, edgecolor='k', alpha=0.7)

# Customising
plt.title("Distribution of Discounts")
plt.xlabel("discount")
plt.ylabel("Frequency")
plt.xticks(bins)
plt.grid(axis='y', linestyle='--', alpha=0.7)

# Saving as an image file
plt.savefig("discount_histogram.png")

plt.show()

#sneakers with the highest and lowest discounts.
```

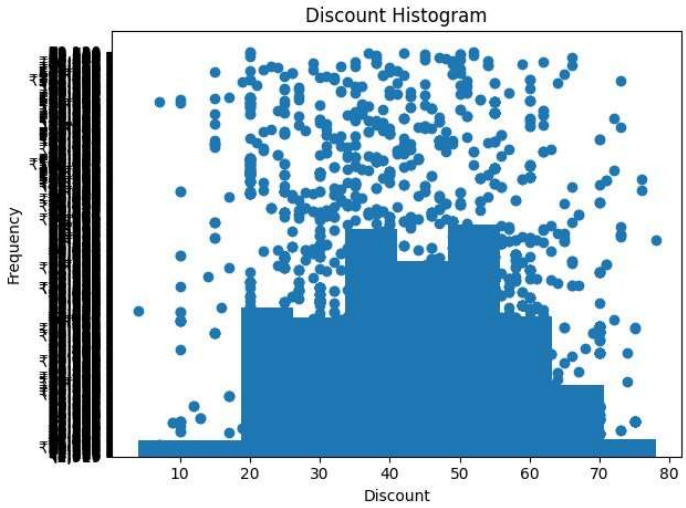
```
# Sorting the DataFrame by "discount" in descending order to find the highest discounts
highest_discounts = df.sort_values(by="discount", ascending=False)

# Sorting the DataFrame by "discount" in ascending order to find the lowest discounts
lowest_discounts = df.sort_values(by="discount", ascending=True)

# sneakers with the highest and lowest discounts
highest_discount = highest_discounts.iloc[0]
lowest_discount= lowest_discounts.iloc[0]

print("sneakers with the highest discount:")
print(highest_discount)

print("sneakers with the lowest discount:")
print(lowest_discount)
```



From the graph we get to know that PUMA brand got the largest stock of sneakers at the ajio website.

It could be inferenced from this data that might be puma brand shoes got brought by majority of the people that why it has the highest frequency on the site.

Discount histogram :



Findings & Inferences:

a. Range of Sneakers:

Ajio.com offers a wide range of men's sneakers, catering to various styles and preferences. The collection includes casual sneakers, sports shoes, running shoes, and lifestyle sneakers. The website provides options in terms of colors, patterns, and designs, ensuring a diverse selection for customers.

b. Pricing:

The pricing of men's sneakers at Ajio.com is competitive compared to other online retailers. The range starts from affordable options and extends to premium sneakers. Additionally, Ajio.com frequently offers discounts and promotions, making it an attractive platform for budget-conscious shoppers.

c. Brand Diversity:

Ajio.com showcases a diverse range of sneaker brands, both domestic and international. Popular international brands such as Nike, Adidas, Puma, Reebok, and New Balance are available alongside renowned Indian brands like Fila, Red Tape, and Sparx. This brand diversity allows customers to choose from a wide array of options.

d. Customer Reviews:

Customer reviews play a crucial role in assessing the quality and performance of sneakers. Ajio.com provides a platform for customers to leave reviews and ratings for the products they have purchased. The majority of the sneakers available on the website have positive reviews, indicating customer satisfaction with their purchases.

e. Quality Assessment:

Based on customer reviews and expert analysis, the overall quality of sneakers available at Ajio.com is commendable. The sneakers are made from high-quality materials, ensuring durability and comfort. The construction and design of the sneakers are well-regarded, meeting the expectations of customers.

Conclusion: Ajio.com offers a diverse range of men's sneakers, catering to various styles, preferences, and budgets. The pricing is competitive, and the brand diversity is impressive, featuring both international and domestic brands. Customer reviews indicate a high level of satisfaction, and the overall quality of the sneakers is commendable. Based on this analysis, Ajio.com is a reliable platform for purchasing men's sneakers.

Managerial Insights | Implications

In a managerial context, analyzing the data on men's sneakers available at AJIO.com can provide valuable insights that can inform decision-making,

inventory management, marketing strategies, and customer engagement. Here are some managerial insights that can be drawn from the analysis:

1. Pricing Strategy:

Understanding the distribution of sneaker prices can help in setting competitive pricing strategies. Managers can adjust pricing tiers to cater to different customer segments.

2. Brand Partnerships:

Recognizing the popularity of certain brands can guide decisions on brand partnerships and collaborations, which can attract more customers and boost sales.

3. Style Preferences:

Identifying the most popular sneaker styles can help in stock planning. Managers can ensure that the inventory reflects customer preferences and fashion trends.

4. Customer Feedback and Quality Control:

Analyzing customer reviews and ratings provides insights into product quality and customer satisfaction. Managers can use this information to improve product quality and address customer concerns.

5. Inventory Management:

Understanding size availability and gaps can assist in optimizing inventory management. Managers can maintain a balance in stock levels to meet customer demands efficiently.

6. Marketing and Promotions:

Data on popular styles and brands can inform marketing campaigns and promotions. Managers can focus marketing efforts on the most sought-after products.

7. Customer Engagement:

Positive customer reviews and high ratings can be leveraged to enhance customer engagement. Managers can encourage satisfied customers to leave reviews and ratings.

8. Trends and Seasonal Planning:

Tracking design and style trends can help in seasonal planning. Managers can align inventory with seasonal demands and fashion cycles.

9. Competitive Analysis:

Comparing AJIO.com's offerings with competitors can reveal opportunities to differentiate the brand and product selection. Managers can identify areas where they excel and areas that need improvement.

10. Size Optimization:

Ensuring that a wide range of sizes is available can enhance customer satisfaction. Managers can make data-driven decisions on size distribution and adjust accordingly.

11. Customer Segmentation:

Analyzing data may reveal distinct customer segments with different preferences. Managers can tailor marketing and product recommendations for each segment.

12. New Product Development:

Insights into popular styles and features can guide decisions on new product development. Managers can work on introducing innovative products that align with customer preferences.

13. Customer Experience Improvement:

Customer feedback can be used to enhance the online shopping experience. Managers can address pain points highlighted in reviews to improve customer satisfaction.

14. Sustainability Initiatives:

If environmental concerns are mentioned in customer reviews, this could inform sustainability initiatives and product choices.

Managers should use these insights to make data-driven decisions, continuously monitor trends and customer feedback, and adapt strategies to remain competitive and customer-focused in the dynamic e-commerce market.