

# big-basket-mini-project-2

October 26, 2024

## 1 Ayush Sharma Big Basket Mini Project

### 1.1 Loaded Dataset

```
[25]: import pandas as pd
```

```
[3]: df = pd.read_csv("C:/Users/DELL/Downloads/BigBasket Products.csv")
df
```

```
[3]:
```

|       | index | product \   |
|-------|-------|---|
| 0     | 1     | Garlic Oil - Vegetarian Capsule 500 mg            |
| 1     | 2     | Water Bottle - Orange                             |
| 2     | 3     | Brass Angle Deep - Plain, No.2                    |
| 3     | 4     | Cereal Flip Lid Container/Storage Jar - Assort... |
| 4     | 5     | Creme Soft Soap - For Hands & Body                |
| ...   | ...   | ...   |
| 27550 | 27551 | Wottagirl! Perfume Spray - Heaven, Classic        |
| 27551 | 27552 | Rosemary  |
| 27552 | 27553 | Peri-Peri Sweet Potato Chips                      |
| 27553 | 27554 | Green Tea - Pure Original                         |
| 27554 | 27555 | United Dreams Go Far Deodorant                    |

|       | category               | sub_category \           |
|-------|------------------------|--------------------------|
| 0     | Beauty & Hygiene       | Hair Care                |
| 1     | Kitchen, Garden & Pets | Storage & Accessories    |
| 2     | Cleaning & Household   | Pooja Needs              |
| 3     | Cleaning & Household   | Bins & Bathroom Ware     |
| 4     | Beauty & Hygiene       | Bath & Hand Wash         |
| ...   | ...                    | ...                      |
| 27550 | Beauty & Hygiene       | Fragrances & Deos        |
| 27551 | Gourmet & World Food   | Cooking & Baking Needs   |
| 27552 | Gourmet & World Food   | Snacks, Dry Fruits, Nuts |
| 27553 | Beverages              | Tea                      |
| 27554 | Beauty & Hygiene       | Men's Grooming           |

|   | brand            | sale_price | market_price \ |
|---|------------------|------------|----------------|
| 0 | Sri Sri Ayurveda | 220.00     | 220.0          |
| 1 | Mastercook       | 180.00     | 180.0          |

|       |                           |          |        |       |
|-------|---------------------------|----------|--------|-------|
| 2     |                           | Trm      | 119.00 | 250.0 |
| 3     |                           | Nakoda   | 149.00 | 176.0 |
| 4     |                           | Nivea    | 162.00 | 162.0 |
| ...   |                           | ...      | ...    | ...   |
| 27550 |                           | Layerr   | 199.20 | 249.0 |
| 27551 |                           | Puramate | 67.50  | 75.0  |
| 27552 |                           | FabBox   | 200.00 | 200.0 |
| 27553 |                           | Tetley   | 396.00 | 495.0 |
| 27554 | United Colors Of Benetton |          | 214.53 | 390.0 |

|       |                          | type                     | rating | \ |
|-------|--------------------------|--------------------------|--------|---|
| 0     |                          | Hair Oil & Serum         | 4.1    |   |
| 1     |                          | Water & Fridge Bottles   | 2.3    |   |
| 2     |                          | Lamp & Lamp Oil          | 3.4    |   |
| 3     |                          | Laundry, Storage Baskets | 3.7    |   |
| 4     |                          | Bathing Bars & Soaps     | 4.4    |   |
| ...   |                          | ...                      | ...    |   |
| 27550 |                          | Perfume                  | 3.9    |   |
| 27551 | Herbs, Seasonings & Rubs |                          | 4.0    |   |
| 27552 | Nachos & Chips           |                          | 3.8    |   |
| 27553 | Tea Bags                 |                          | 4.2    |   |
| 27554 | Men's Deodorants         |                          | 4.5    |   |

|       |  | description  |
|-------|--|--|
| 0     |  | This Product contains Garlic Oil that is known...  |
| 1     |  | Each product is microwave safe (without lid), ...  |
| 2     |  | A perfect gift for all occasions, be it your m...  |
| 3     |  | Multipurpose container with an attractive desi...  |
| 4     |  | Nivea Creme Soft Soap gives your skin the best...  |
| ...   |  | ...  |
| 27550 |  | Layerr brings you Wottagirl Classic fragrant b...  |
| 27551 |  | Puramate rosemary is enough to transform a dis...  |
| 27552 |  | We have taken the richness of Sweet Potatoes (...) |
| 27553 |  | Tetley Green Tea with its refreshing pure, ori...  |
| 27554 |  | The new mens fragrance from the United Dreams ...  |

[27555 rows x 10 columns]

## 1.2 Show first 12 rows

```
[5]: show = df.head(12)
      show
```

```
[5]:      index      product \
0         1  Garlic Oil - Vegetarian Capsule 500 mg
1         2    Water Bottle - Orange
2         3  Brass Angle Deep - Plain, No.2
```

|    |    |   |
|----|----|---|
| 3  | 4  | Cereal Flip Lid Container/Storage Jar - Assort... |
| 4  | 5  | Creme Soft Soap - For Hands & Body                |
| 5  | 6  | Germ - Removal Multipurpose Wipes                 |
| 6  | 7  | Multani Mati                                      |
| 7  | 8  | Hand Sanitizer - 70% Alcohol Base                 |
| 8  | 9  | Biotin & Collagen Volumizing Hair Shampoo + Bi... |
| 9  | 10 | Scrub Pad - Anti- Bacterial, Regular              |
| 10 | 11 | Wheat Grass Powder - Raw                          |
| 11 | 12 | Butter Cookies Gold Collection                    |

|    | category               | sub_category           | brand \          |
|----|------------------------|------------------------|------------------|
| 0  | Beauty & Hygiene       | Hair Care              | Sri Sri Ayurveda |
| 1  | Kitchen, Garden & Pets | Storage & Accessories  | Mastercook       |
| 2  | Cleaning & Household   | Pooja Needs            | Trm              |
| 3  | Cleaning & Household   | Bins & Bathroom Ware   | Nakoda           |
| 4  | Beauty & Hygiene       | Bath & Hand Wash       | Nivea            |
| 5  | Cleaning & Household   | All Purpose Cleaners   | Nature Protect   |
| 6  | Beauty & Hygiene       | Skin Care              | Satinance        |
| 7  | Beauty & Hygiene       | Bath & Hand Wash       | Bionova          |
| 8  | Beauty & Hygiene       | Hair Care              | StBotanica       |
| 9  | Cleaning & Household   | Mops, Brushes & Scrubs | Scotch brite     |
| 10 | Gourmet & World Food   | Cooking & Baking Needs | NUTRASHIL        |
| 11 | Gourmet & World Food   | Chocolates & Biscuits  | Sapphire         |

|    | sale_price | market_price | type                          | rating \ |
|----|------------|--------------|-------------------------------|----------|
| 0  | 220.0      | 220.0        | Hair Oil & Serum              | 4.1      |
| 1  | 180.0      | 180.0        | Water & Fridge Bottles        | 2.3      |
| 2  | 119.0      | 250.0        | Lamp & Lamp Oil               | 3.4      |
| 3  | 149.0      | 176.0        | Laundry, Storage Baskets      | 3.7      |
| 4  | 162.0      | 162.0        | Bathing Bars & Soaps          | 4.4      |
| 5  | 169.0      | 199.0        | Disinfectant Spray & Cleaners | 3.3      |
| 6  | 58.0       | 58.0         | Face Care                     | 3.6      |
| 7  | 250.0      | 250.0        | Hand Wash & Sanitizers        | 4.0      |
| 8  | 1098.0     | 1098.0       | Shampoo & Conditioner         | 3.5      |
| 9  | 20.0       | 20.0         | Utensil Scrub-Pad, Glove      | 4.3      |
| 10 | 261.0      | 290.0        | Flours & Pre-Mixes            | 4.0      |
| 11 | 600.0      | 600.0        | Luxury Chocolates, Gifts      | 2.2      |

|   | description                                       |
|---|---|
| 0 | This Product contains Garlic Oil that is known... |
| 1 | Each product is microwave safe (without lid), ... |
| 2 | A perfect gift for all occasions, be it your m... |
| 3 | Multipurpose container with an attractive desi... |
| 4 | Nivea Creme Soft Soap gives your skin the best... |
| 5 | Stay protected from contamination with Multipu... |
| 6 | Satinance multani matti is an excellent skin t... |
| 7 | 70%Alcohol based is gentle of hand leaves skin... |

```

8   An exclusive blend with Vitamin B7 Biotin, Hyd...
9   Scotch Brite Anti- Bacterial Scrub Pad thoroug...
10  Wheatgrass is a superfood potent health food w...
11  Enjoy a tin full of delicious butter cookies m...

```

### 1.2.1 Get description of data in data frame

```
[7]: data = df.describe()
data
```

```
[7]:
```

|       | index       | sale_price    | market_price | rating       |
|-------|-------------|---------------|--------------|--------------|
| count | 27555.00000 | 27549.000000  | 27555.000000 | 18919.000000 |
| mean  | 13778.00000 | 334.648391    | 382.056664   | 3.943295     |
| std   | 7954.58767  | 1202.102113   | 581.730717   | 0.739217     |
| min   | 1.00000     | 2.450000      | 3.000000     | 1.000000     |
| 25%   | 6889.50000  | 95.000000     | 100.000000   | 3.700000     |
| 50%   | 13778.00000 | 190.320000    | 220.000000   | 4.100000     |
| 75%   | 20666.50000 | 359.000000    | 425.000000   | 4.300000     |
| max   | 27555.00000 | 112475.000000 | 12500.000000 | 5.000000     |

### 1.2.2 Get dataset information

```
[9]: dataset = df.info()
dataset
```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 27555 entries, 0 to 27554
Data columns (total 10 columns):
#   Column          Non-Null Count  Dtype
---  -
0   index           27555 non-null  int64
1   product         27554 non-null  object
2   category        27555 non-null  object
3   sub_category    27555 non-null  object
4   brand           27554 non-null  object
5   sale_price      27549 non-null  float64
6   market_price    27555 non-null  float64
7   type            27555 non-null  object
8   rating          18919 non-null  float64
9   description     27440 non-null  object
dtypes: float64(3), int64(1), object(6)
memory usage: 2.1+ MB

```

### 1.2.3 Top and least sold products

```
[11]: top_products = df.sort_values(by='sale_price', ascending=False).head(10)
top_products
```

```
[11]:
```

|       | index | product \   |
|-------|-------|---|
| 1249  | 1250  | Beard Kit   |
| 248   | 249   | 4mm Aluminium Induction Base Chapati Roti Tawa... |
| 436   | 437   | Balloon - Polka Dot, 12 Inch                      |
| 288   | 289   | Arrabbiata Tomato Pasta Sauce With Chilli         |
| 25301 | 25302 | Bravura Clipper                                   |
| 21761 | 21762 | Pet Food - N&D Team Breeder Puppy Top Farmina     |
| 12669 | 12670 | Epilator SE9-9961 Legs-Body-Face                  |
| 23082 | 23083 | Gas Stove-4 Burner Royale Plus Schott Glass, B... |
| 2781  | 2782  | Extra Virgin Olive Oil                            |
| 25797 | 25798 | 4 Burner Gas Stove - Marvel Plus Glass Tables,... |

|       | category               | sub_category           | brand      | sale_price \ |
|-------|------------------------|------------------------|------------|--------------|
| 1249  | Beauty & Hygiene       | Men's Grooming         | Uncle Tony | 112475.00    |
| 248   | Kitchen, Garden & Pets | Cookware & Non Stick   | HAZEL      | 111649.00    |
| 436   | Cleaning & Household   | Party & Festive Needs  | B Vishal   | 88899.00     |
| 288   | Gourmet & World Food   | Sauces, Spreads & Dips | Montanini  | 22325.00     |
| 25301 | Kitchen, Garden & Pets | Pet Food & Accessories | Wahl       | 12500.00     |
| 21761 | Kitchen, Garden & Pets | Pet Food & Accessories | Farmina    | 10090.00     |
| 12669 | Beauty & Hygiene       | Feminine Hygiene       | Braun      | 8184.44      |
| 23082 | Kitchen, Garden & Pets | Cookware & Non Stick   | Prestige   | 7999.00      |
| 2781  | Gourmet & World Food   | Oils & Vinegar         | Abbies     | 7299.00      |
| 25797 | Kitchen, Garden & Pets | Cookware & Non Stick   | Prestige   | 7270.00      |

|       | market_price | type                     | rating \ |
|-------|--------------|--------------------------|----------|
| 1249  | 3300.0       | Combos & Gift Sets       | NaN      |
| 248   | 1289.0       | Tawa & Sauce Pan         | NaN      |
| 436   | 129.0        | Caps, Balloons & Candles | 3.9      |
| 288   | 325.0        | Mustard & Cheese Sauces  | 5.0      |
| 25301 | 12500.0      | Pet Cleaning & Grooming  | NaN      |
| 21761 | 10090.0      | Pet Meals & Treats       | NaN      |
| 12669 | 10769.0      | Hair Removal             | NaN      |
| 23082 | 12245.0      | Gas Stove                | NaN      |
| 2781  | 7299.0       | Extra Virgin Olive Oil   | NaN      |
| 25797 | 9695.0       | Gas Stove                | NaN      |

|       | description                                       |
|-------|---|
| 1249  | The combination of a beard oil, a beard wash, ... |
| 248   | Hazel Aluminium Tawa has an ergonomic design f... |
| 436   | Whether it is a party in the office, a Christm... |
| 288   | NaN   |
| 25301 | The bravura clipper is a must-have clipper for... |

```

21761      Dog Food Adult Health Nutritional Dog Food.
12669 This cordless epilator has a sonic exfoliation...
23082 Prestige Royale Plus Gas Stove. Add a Touch of...
2781   Suitable to cook Indian meals due to its neutr...
25797 Prestige Marvel Plus Gas Stove . A Smart and C...

```

```

[13]: least_products = df.sort_values(by='sale_price', ascending=True).head(10)
least_products

```

```

[13]:      index      product      category \
26976 26977      Curry Leaves  Fruits & Vegetables
21312 21313          Serum    Beauty & Hygiene
27490 27491  50-50 Timepass Salted Biscuits  Snacks & Branded Foods
27413 27414      Layer Cake - Orange  Bakery, Cakes & Dairy
14603 14604      50-50 Timepass Biscuits  Snacks & Branded Foods
22178 22179  Tiger Elaichi Cream Biscuits  Snacks & Branded Foods
14538 14539  Cadbury Perk - Chocolate Bar  Snacks & Branded Foods
22655 22656      Chewing Gum - Peppermint  Snacks & Branded Foods
2978   2979  Sugar Free Chewing Gum - Mixed Fruit  Snacks & Branded Foods
17943 17944      Fulltoss Tangy Tomato    Gourmet & World Food

```

```

      sub_category      brand  sale_price  market_price \
26976  Herbs & Seasonings  Fresho         2.45         15.0
21312   Hair Care      Livon         3.00          3.0
27490  Biscuits & Cookies  Britannia        5.00          5.0
27413  Cakes & Pastries   Winkies         5.00          5.0
14603  Biscuits & Cookies  Britannia        5.00          5.0
22178  Biscuits & Cookies  Britannia        5.00          5.0
14538  Chocolates & Candies  Cadbury        5.00          5.0
22655  Chocolates & Candies  Doublemint        5.00          5.0
2978   Chocolates & Candies   Orbit        5.00          5.0
17943  Snacks, Dry Fruits, Nuts  Parle        5.00          5.0

```

```

      type  rating \
26976  Indian & Exotic Herbs  NaN
21312   Hair Oil & Serum     2.5
27490   Salted Biscuits     4.2
27413  Tea Cakes & Slice Cakes  4.1
14603   Salted Biscuits     3.9
22178  Glucose & Milk Biscuits  4.2
14538   Chocolates         4.2
22655  Mints & Chewing Gum     4.2
2978   Mints & Chewing Gum     4.2
17943  Nachos & Chips         4.2

```

```

      description
26976  With dark green and glossy appearance, curry l...

```

```

21312 Instantly Softens and Smoothens Dry, Rough, Ta...
27490 Britannia 50-50 Timepass Salted Biscuits are a...
27413 A generous spread of orange cream between two ...
14603 Britannia 50-50 biscuits are very sugary and s...
22178 Britannia Tiger Elaichi Cream Biscuits are a t...
14538 Perk is a combination of crisp wafer and delic...
22655 Opportunities to connect with someone new happ...
2978 There are occasions in everyone's day when the...
17943 A snacking sensation which brings a little fla...

```

### 1.2.4 Missing values from dataset

```
[15]: missing_value = df.isnull().sum()
missing_value
```

```
[15]: index          0
product          1
category         0
sub_category     0
brand            1
sale_price       6
market_price     0
type            0
rating          8636
description      115
dtype: int64
```

### 1.3 Measuring Discount on items

```
[23]: df['discount'] = ((df['market_price'] - df['sale_price']) / df['market_price']).
      ↪ fillna(0) * 100

print(df[['product', 'market_price', 'sale_price', 'discount']].head())
```

|   | product   | market_price \ |
|---|---|----------------|
| 0 | Garlic Oil - Vegetarian Capsule 500 mg            | 220.0          |
| 1 | Water Bottle - Orange                             | 180.0          |
| 2 | Brass Angle Deep - Plain, No.2                    | 250.0          |
| 3 | Cereal Flip Lid Container/Storage Jar - Assort... | 176.0          |
| 4 | Creame Soft Soap - For Hands & Body               | 162.0          |

|   | sale_price | discount  |
|---|------------|-----------|
| 0 | 220.0      | 0.000000  |
| 1 | 180.0      | 0.000000  |
| 2 | 119.0      | 52.400000 |
| 3 | 149.0      | 15.340909 |
| 4 | 162.0      | 0.000000  |

### 1.3.1 Find the outliers from dataset according to the columns and fill them with mean

```
[31]: import numpy as np
```

```
[19]: def handle_outliers(column_name):
    Q1 = df[column_name].quantile(0.25)
    Q3 = df[column_name].quantile(0.75)
    IQR = Q3 - Q1
    lower_bound = Q1 - 1.5*IQR
    upper_bound = Q3 + 1.5*IQR
    outliers = df[(df[column_name]<lower_bound) | (df[column_name]>upper_bound)]
    df[column_name] = df[column_name].clip(lower_bound , upper_bound)
    print(f"Outliers in {column_name}:\n", outliers)
    handle_outliers('rating')
```

Outliers in rating:

|       | index | product \                                       |
|-------|-------|---|
| 1     | 2     | Water Bottle - Orange                           |
| 11    | 12    | Butter Cookies Gold Collection                  |
| 29    | 30    | Lip Butter - Rose                               |
| 43    | 44    | Storage/Lunch Steel Container with PP Lid - Red |
| 64    | 65    | Aqua Halo Rejuvenating Conditioner              |
| ...   | ...   | ...   |
| 27415 | 27416 | Shafair   |
| 27493 | 27494 | De-Tan Peel Off Mask                            |
| 27498 | 27499 | Juicer - Fruit & Vegetable, Light Green         |
| 27503 | 27504 | Pedal Plastic Dustbin / Garbage Bin - Assorted  |
| 27518 | 27519 | Gluten-Free Vegetable Millet Khichdi Mix        |

|       | category               | sub_category           | brand \            |
|-------|------------------------|------------------------|--------------------|
| 1     | Kitchen, Garden & Pets | Storage & Accessories  | Mastercook         |
| 11    | Gourmet & World Food   | Chocolates & Biscuits  | Sapphire           |
| 29    | Beauty & Hygiene       | Skin Care              | Organic Harvest    |
| 43    | Kitchen, Garden & Pets | Steel Utensils         | Classic Essentials |
| 64    | Beauty & Hygiene       | Hair Care              | Azafran            |
| ...   | ...                    | ...                    | ...                |
| 27415 | Beauty & Hygiene       | Skin Care              | Shahnaz Husain     |
| 27493 | Beauty & Hygiene       | Men's Grooming         | Beardo             |
| 27498 | Kitchen, Garden & Pets | Kitchen Accessories    | Ganesh             |
| 27503 | Cleaning & Household   | Bins & Bathroom Ware   | JOYO               |
| 27518 | Gourmet & World Food   | Cooking & Baking Needs | Graminway          |

|    | sale_price | market_price | type                     | rating \ |
|----|------------|--------------|--------------------------|----------|
| 1  | 180.00     | 180.0        | Water & Fridge Bottles   | 2.3      |
| 11 | 600.00     | 600.0        | Luxury Chocolates, Gifts | 2.2      |
| 29 | 169.15     | 199.0        | Lip Care                 | 1.5      |
| 43 | 109.00     | 299.0        | Steel Lunch Boxes        | 2.6      |
| 64 | 168.75     | 225.0        | Shampoo & Conditioner    | 1.0      |



|       |         |        |                                   |     |
|-------|---------|--------|-----------------------------------|-----|
| ...   | ...     | ...    | ...                               | ... |
| 27415 | 700.00  | 700.0  | Face Care                         | 2.0 |
| 27493 | 359.10  | 399.0  | Face & Body                       | 2.8 |
| 27498 | 1071.00 | 1071.0 | Kitchen Tools & Other Accessories | 2.0 |
| 27503 | 169.00  | 246.0  | Dustbins                          | 2.7 |
| 27518 | 350.00  | 350.0  | Flours & Pre-Mixes                | 1.0 |

|       |  | description                                       | discount  |
|-------|--|---|-----------|
| 1     |  | Each product is microwave safe (without lid), ... | 0.000000  |
| 11    |  | Enjoy a tin full of delicious butter cookies m... | 0.000000  |
| 29    |  | Reload the dry and chapped lips with Organic L... | 15.000000 |
| 43    |  | Add a dash of colour to your kitchen with thes... | 63.545151 |
| 64    |  | This Aqua Halo Rejuvenating Conditioner is an ... | 25.000000 |
| ...   |  | ...   | ...       |
| 27415 |  | Shahnaz Husains Shafair plus is a highly exclu... | 0.000000  |
| 27493 |  | We fight pollution and sun daily, while our re... | 10.000000 |
| 27498 |  | This juicer comes in various attractive colour... | 0.000000  |
| 27503 |  | This pedal dustbin is versatile and has a styl... | 31.300813 |
| 27518 |  | Graminway Little Millet Khichdi Mix makes your... | 0.000000  |

[1312 rows x 11 columns]

```
[21]: df[df.isna().any(axis=1)]
```

```
[21]:
```

|       | index | product \   |
|-------|-------|---|
| 55    | 56    | Soothing Cucumber Facial Scrub With Apricot Seeds |
| 59    | 60    | Corporate Planner Diary With Premium PU Leathe... |
| 65    | 66    | Ayurvedic Anti-Tan Face Pack                      |
| 68    | 69    | Organic Carom Seeds/Ajwain/Om Kalu                |
| 69    | 70    | Padded Harness - 3/4 inch, Grey Colour            |
| ...   | ...   | ...   |
| 27509 | 27510 | Deluxe Crackers - Veg                             |
| 27511 | 27512 | Specialist Stain Remover Pen & Marker             |
| 27514 | 27515 | Verge & Sheer Perfume For Pair                    |
| 27530 | 27531 | Tick'et to Fleadom Dry Shampoo For Dogs           |
| 27531 | 27532 | Vanilla Ice Cream                                 |

|       | category                 | sub_category           | brand \        |
|-------|--------------------------|------------------------|----------------|
| 55    | Beauty & Hygiene         | Skin Care              | TJORI          |
| 59    | Cleaning & Household     | Stationery             | Prozo Plus     |
| 65    | Beauty & Hygiene         | Skin Care              | TJORI          |
| 68    | Foodgrains, Oil & Masala | Masalas & Spices       | Earthon        |
| 69    | Kitchen, Garden & Pets   | Pet Food & Accessories | Glenand        |
| ...   | ...                      | ...                    | ...            |
| 27509 | Gourmet & World Food     | Chocolates & Biscuits  | Kerk           |
| 27511 | Cleaning & Household     | All Purpose Cleaners   | 365            |
| 27514 | Beauty & Hygiene         | Fragrances & Deos      | Skinn by Titan |

|       |                        |                        |              |
|-------|------------------------|------------------------|--------------|
| 27530 | Kitchen, Garden & Pets | Pet Food & Accessories | Captain Zack |
| 27531 | Gourmet & World Food   | Dairy & Cheese         | Haagen-Dazs  |

|       | sale_price | market_price |                           | type         | rating \ |
|-------|------------|--------------|---------------------------|--------------|----------|
| 55    | 299.4      | 499.0        |                           | Face Care    | NaN      |
| 59    | 399.0      | 399.0        | Notebooks, Files, Folders |              | NaN      |
| 65    | 269.4      | 449.0        |                           | Face Care    | NaN      |
| 68    | 72.0       | 72.0         |                           | Whole Spices | NaN      |
| 69    | 840.0      | 840.0        | Pet Collars & Leashes     |              | NaN      |
| ...   | ...        | ...          | ...                       | ...          |          |
| 27509 | 150.0      | 150.0        | Cookies, Biscotti, Wafer  |              | NaN      |
| 27511 | 449.0      | 449.0        | Imported Cleaners         |              | NaN      |
| 27514 | 1615.5     | 1795.0       | Perfume                   |              | NaN      |
| 27530 | 99.0       | 99.0         | Pet Cleaning & Grooming   |              | NaN      |
| 27531 | 225.0      | 225.0        | Gourmet Ice Cream         |              | NaN      |

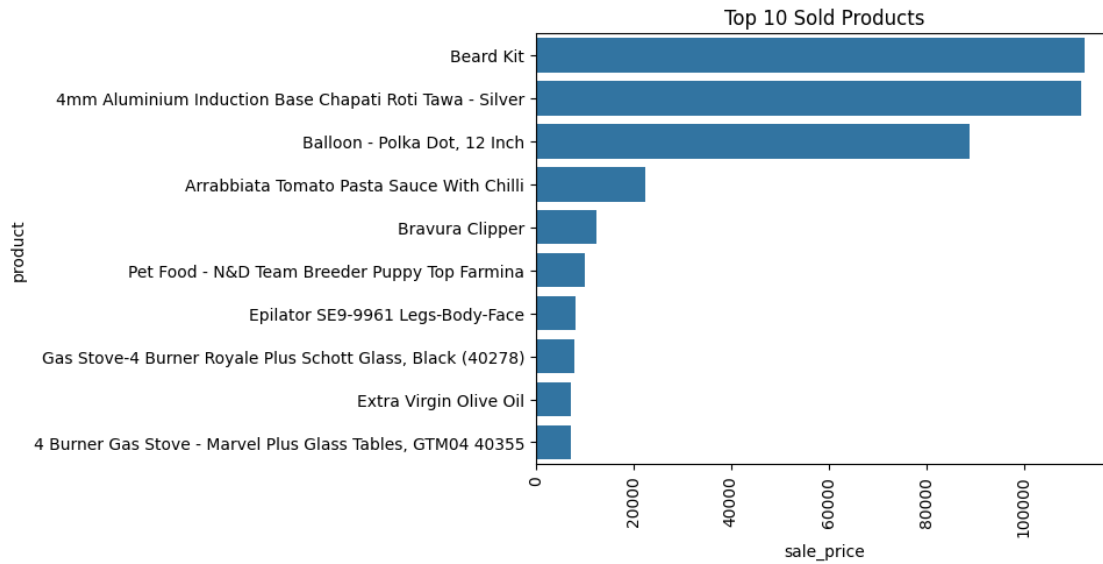
|       |   | description                                       | discount |
|-------|---|---|----------|
| 55    |   | The soothing feel of cucumber meets the gentle... | 40.0     |
| 59    |   | A5 Size (210x150mm) \n192 Pages Premium Natura... | 0.0      |
| 65    |   | A nourishing face pack that removes tan and br... | 40.0     |
| 68    |   | Earthon's Ajwain is Best quality, organically ... | 0.0      |
| 69    |   | These are soft padded harness for your active ... | 0.0      |
| ...   |   | ...   | ...      |
| 27509 | Kerk Biscuits-has been a household name synony... |   | 0.0      |
| 27511 | Mightier than the pen. The pen may be mightier... |   | 0.0      |
| 27514 | VERGE for men paints a picture of a classy out... |   | 10.0     |
| 27530 | 1) No Rinse Defence Against Ticks and Fleas: C... |   | 0.0      |
| 27531 | Some things are so good in their simplest form... |   | 0.0      |

[8728 rows x 11 columns]

## 1.4 Create plots of Visualization

```
[33]: import matplotlib.pyplot as plt
import seaborn as sns
```

```
[39]: sns.barplot(x='sale_price', y='product', data=top_products)
plt.xticks(rotation=90)
plt.title("Top 10 Sold Products")
plt.show()
```



```
[48]: sns.barplot(x='sale_price', y='product', data=least_products)
plt.xticks(rotation=90)
plt.title("Top 10 Least Sold Products")
plt.show()
```

