E-Commerce (Big Basket) Data Analysis Portfolio

Objective:

To perform a detailed analysis and create insightful visualizations of BigBasket's product data to understand sales performance, customer preferences, and market trends, leveraging SQL queries for data extraction and Power BI for visualization.

Dataset Description:

The dataset comprises information about products listed on BigBasket, with the following attributes:

index: Index of the record.
product: Title of the product.
category: Category of the product.
sub_category: Subcategory of the product.
brand: Brand of the product.
sale_price: Price at which the product is sold on the site.
market_price: Market price of the product.
type: Type of product.
rating: Consumer rating of the product.
description: Detailed description of the product.

Additional Feature:

Discount: Calculated as (market_price - sale_price) / market_price * 100, representing the percentage discount offered on the product.

SQL Query Problem Statements:

1. **Sales Analysis:**
   Query: Retrieve the total number of products sold, total revenue, and average discount offered for each category.
   Objective: Understand the sales performance and discount trends across different product categories.

```
Big Basket Retail.sql - not connected*  ⊠ ✕
        --SANYASI NAIDU LALAM
        --Sales Analysis:
    SELECT
        category,
        COUNT(*) AS total_products_sold,
        -- Total number of products sold in each category
        SUM(sale_price) AS total_revenue,
        -- Total revenue for each category
        AVG((market_price - sale_price) / market_price * 100)
        AS average_discount
        -- Average discount percentage
    FROM
        bigbasket_produ
    GROUP BY
        category;
```

100 %   ▼ ◁

Results Messages

	category	total_products_sold	total_revenue	average_discount
1	Foodgrains, Oil & Masala	2676	516916.230049133	11.8388216957963
2	Gourmet & World Food	4690	1500115.31028175	7.86397230473495
3	Beauty & Hygiene	7867	3293749.23921013	12.3444587862121
4	Beverages	885	212186.669801712	9.56741453226525
5	Cleaning & Household	2675	605013.089749336	10.7885845881525
6	Bakery, Cakes & Dairy	851	121525.139989853	7.66412546670525
7	Fruits & Vegetables	557	28345.3599674702	21.2497445716465
8	Snacks & Branded Foods	2814	364675.08014679	6.64295029677923
9	Kitchen, Garden & Pets	3580	1816938.12017822	22.175687889236
10	Baby Care	610	326317.170833588	5.85268345339764
11	Eggs, Meat & Fish	350	101114.120018005	8.05770857588651

2. Product Price Analysis:

Query: Determine the average, minimum, and maximum sale prices for products in each category.

Use Case: Understand the pricing strategy and range for different product categories to better position products in the market.

```
    --SANYASI NAIDU LALAM
    --Product Price Analysis:
SELECT
    category,
    ROUND(AVG(sale_price), 2) AS average_sale_price,
    -- Average sale price for each category rounded to 2 decimal places
    MIN(sale_price) AS minimum_sale_price,
    -- Minimum sale price for each category
    MAX(sale_price) AS maximum_sale_price
    -- Maximum sale price for each category
FROM
    bigbasket_produ
GROUP BY
    category;
```

00 %   ▾ ◀

⊞ Results 📄 Messages

	category	average_sale_price	minimum_sale_price	maximum_sale_price
1	Foodgrains, Oil & Masala	193.17	9.5	4099
2	Gourmet & World Food	319.85	5	7299
3	Beauty & Hygiene	418.68	3	8184.43994140625
4	Beverages	239.76	9	3480
5	Cleaning & Household	226.17	5	3600
6	Bakery, Cakes & Dairy	142.8	5	1108
7	Fruits & Vegetables	50.89	2.45000004768372	527
8	Snacks & Branded Foods	129.59	5	1950
9	Kitchen, Garden & Pets	507.52	17	12500
10	Baby Care	534.95	15	3299
11	Eggs, Meat & Fish	288.9	42.5	2249.10009765625

3. **Top Rated Products:**
   Query: List the top 10 highest-rated products across all categories.
   Use Case: Identify which products are receiving the highest customer satisfaction and consider promoting these products.

```
-- List the top 10 highest-rated products across all categories.
SELECT TOP 5 product, category
FROM bigbasket_produ
ORDER BY rating DESC;
```

100 %   ▾ ◀

⊞ Results 📄 Messages

	product	category
1	Face Wash - Oil Control, Active	Beauty & Hygiene
2	Smooth Skin Oil - For Dry Skin	Beauty & Hygiene
3	Veggie Cutter	Kitchen, Garden & Pets
4	Plain Green Olives	Gourmet & World Food
5	Topp Up Milk - Elaichi	Bakery, Cakes & Dairy

4. Discount Analysis:

Query: Calculate the average discount percentage for each category.

Use Case: Evaluate discount strategies across categories to see which categories attract more customers through higher discounts.

```
      --SANYASI NAIDU LALAM
--Discount Analysis:
SELECT category,
    ROUND(AVG((market_price - sale_price) / market_price * 100), 2)
      AS average_discount_percentage
FROM bigbasket_produ
GROUP BY category;
```

.00 %

Results   Messages

	category	average_discount_percentage
1	Foodgrains, Oil & Masala	11.84
2	Gourmet & World Food	7.86
3	Beauty & Hygiene	12.34
4	Beverages	9.57
5	Cleaning & Household	10.79
6	Bakery, Cakes & Dairy	7.66
7	Fruits & Vegetables	21.25
8	Snacks & Branded Foo...	6.64
9	Kitchen, Garden & Pets	22.18
10	Baby Care	5.85
11	Eggs, Meat & Fish	8.06

5. Brand Popularity:

Query: Count the number of products listed under each brand.

Use Case: Identify which brands are most prevalent on the platform and understand brand diversity.

```
        --SANYASI NAIDU LALAM
        --Brand Popularity:
SELECT TOP 10 brand,
        COUNT(*) AS product_count
FROM
        bigbasket_produ
GROUP BY brand
ORDER BY product_count DESC;
```

00 %

Results   Messages

	brand	product_count
1	Fresho	638
2	bb Royal	539
3	BB Home	428
4	DP	250
5	Fresho Signature	171
6	bb Combo	168
7	Amul	153
8	INATUR	146
9	Himalaya	141
10	Dabur	138

6. Price Discrepancy:

Query: Identify products where the market price is significantly higher than the sale price (e.g., by more than 30%).

Use Case: Highlight products with significant discounts to understand pricing strategies and promotional effectiveness.

```sql
--SANYASI NAIDU LALAM
--Price Discrepancy
--Identify products where the market price is significantly
--higher than the sale price (e.g., by more than 30%).
SELECT TOP 5
    product,
    category,
    sale_price,
    market_price,
    ROUND((market_price - sale_price) / market_price * 100, 2)
    AS discount_percentage
FROM bigbasket_produ
WHERE(market_price - sale_price) / market_price * 100 > 30
ORDER BY discount_percentage DESC;
```

	product	category	sale_price	market_price	discount_percentage
1	Curry Leaves	Fruits & Vegetables	2.45000004768372	15	83.67
2	Fruit & Vegetables Hand Juicer	Kitchen, Garden & Pets	349	1995	82.51
3	Small Silicone Spatula With Plastic Handle - Assort...	Kitchen, Garden & Pets	75	399	81.2
4	Decorative Party Light Big Star String LED Light 2 ...	Kitchen, Garden & Pets	209	1099	80.98
5	NHS 860 Temperature Control Professional Hair St...	Beauty & Hygiene	467.029998779297	2395	80.5

7. Sub-category Performance:

Query: Determine the total sales volume for each sub-category.

Use Case: Identify which sub-categories are performing best in terms of sales, to focus on high-performing areas.

```sql
--SANYASI NAIDU LALAM
-- Identify which sub-categories are performing the worst
--in terms of sales, to address potential issues or opportunities for improvement.
SELECT TOP 10 sub_category,
    SUM(sale_price) AS total_sales_volume
FROM bigbasket_produ
GROUP BY sub_category
ORDER BY total_sales_volume ASC;
```

	sub_category	total_sales_volume
1	Marinades	225
2	Flower Bouquets, Bunches	666
3	Herbs & Seasonings	745.929995775223
4	Pork & Other Meats	1315
5	Organic Fruits & Vegetables	2356.49999809265
6	Water	2604.25
7	Cuts & Sprouts	3558.04999923706
8	Breads & Buns	3647.74000549316
9	Gourmet Breads	3760.95000076294
10	Exotic Fruits & Veggies	4217.52999687195

8. **Category-wise Revenue:**
   Query: Calculate the total revenue generated by each category.
   Use Case: Understand revenue contribution by category to prioritize high-revenue areas.

```
      --SANYASI NAIDU LALAM
   --Category-wise Revenue
   --Calculate the total revenue generated by each category.
 SELECT category,
      SUM(sale_price) AS total_revenue
   FROM bigbasket_produ
   GROUP BY category
   ORDER BY total_revenue DESC;
```

100 %

Results | Messages

	category	total_revenue
1	Beauty & Hygiene	3293749.23921013
2	Kitchen, Garden & Pets	1816938.12017822
3	Gourmet & World Food	1500115.31028175
4	Cleaning & Household	605013.089749336
5	Foodgrains, Oil & Masala	516916.230049133
6	Snacks & Branded Foods	364675.08014679
7	Baby Care	326317.170833588
8	Beverages	212186.669801712
9	Bakery, Cakes & Dairy	121525.139989853
10	Eggs, Meat & Fish	101114.120018005
11	Fruits & Vegetables	28345.3599674702

9. **High Discount Products:**
   Query: List the products with a discount percentage greater than 50%.
   Use Case: Highlight heavily discounted products to analyze their impact on sales and consumer interest.

```
--SANYASI NAIDU LALAM
--High Discount Products:
--List the products with a discount percentage greater than 50%.
SELECT TOP 10
    product,
    category,
    sub_category,
    brand,
    ROUND((market_price - sale_price) / market_price * 100, 2)
    AS discount_percentage
FROM bigbasket_produ
ORDER BY discount_percentage DESC;
```

100 %

Results | **Messages**

	product	category	sub_category	brand	discount_percentage
1	Curry Leaves	Fruits & Vegetables	Herbs & Seasonings	Fresho	83.67
2	Fruit & Vegetables Hand Juicer	Kitchen, Garden & Pets	Kitchen Accessories	Triones	82.51
3	Small Silicone Spatula With Plastic Handle - Assort...	Kitchen, Garden & Pets	Bakeware	HAZEL	81.2
4	Decorative Party Light Big Star String LED Light 2 ...	Kitchen, Garden & Pets	Appliances & Electricals	Lexton	80.98
5	NHS 860 Temperature Control Professional Hair Str...	Beauty & Hygiene	Hair Care	Nova	80.5
6	Concealer Brush 930	Beauty & Hygiene	Makeup	Mud	80
7	Decorative Party Light Golden Bell String LED Light...	Kitchen, Garden & Pets	Appliances & Electricals	Lexton	79.24
8	Decorative Party Light Golden Bell String LED Light...	Kitchen, Garden & Pets	Appliances & Electricals	Lexton	79.24
9	USB String Fairy Lights 3M 30 LED For Decoration ...	Kitchen, Garden & Pets	Appliances & Electricals	Mansaa	78.7
10	Steel Belly Shape Storage Dabba/ Container Set ...	Kitchen, Garden & Pets	Steel Utensils	Jensons	77.99

10. **Customer Favorite Brands:**
    Query: Determine the average rating for each brand.
    Use Case: Identify which brands are most favored by customers based on average ratings.

```
--SANYASI NAIDU LALAM
--Customer Favorite Brands:
--Determine the average rating for each brand.
SELECT TOP 10 brand,
    ROUND(AVG(rating), 2)
    AS average_rating
FROM bigbasket_produ
WHERE rating IS NOT NULL
GROUP BY brand
ORDER BY average_rating DESC;
```

100 %

Results | **Messages**

	brand	average_rating
1	1mg	5
2	AMADO	5
3	Amulya	5
4	Annai	5
5	Auravedic	5
6	B2B	5
7	BA KABRA	5
8	Beelicious	5
9	Berger BreatheEasy	5
10	Bergner	5

11. **Customer Least Favorite Brands:**
    Query: Determine the average rating for each brand.
    Use Case: Identify which brands are least favored by customers based on average ratings.

```sql
--SANYASI NAIDU LALAM
--Customer Favorite Brands:
--Determine the average rating for each brand.
SELECT TOP 10 brand,
    ROUND(AVG(rating), 2)
    AS average_rating
FROM bigbasket_products
WHERE rating IS NOT NULL
GROUP BY brand
ORDER BY average_rating ASC;
```

100 %

Results | Messages

	brand	average_rating
1	Cleox	1
2	Diamond	1
3	EL PASO	1
4	Everteen	1
5	General Mills	1
6	Gift Basket	1
7	GoYNG	1
8	Healthy Gut	1
9	Jayanthi Coffee	1
10	Morpheme	1

Power BI Visualization Project Problem Statement

1. **Product Pricing Insights:**
   Visualize the average, minimum, and maximum sale prices across different categories and sub-categories.
   Display the range of discounts offered across various categories to understand pricing strategies.

2. **Consumer Rating Analysis:**
   Show the distribution of product ratings to gauge customer satisfaction levels.
   Highlight the top-rated products and categories based on customer feedback.

3. **Brand Analysis:**
   Analyze the distribution of products across different brands.
   Visualize the top brands based on the number of products listed, customer ratings, and sales volume.

4. **Revenue and Sales Performance:**
   Display total sales volumes and revenue for various categories and sub-categories.
   Highlight high-performing categories and sub-categories based on sales volume and revenue.

5. **Market vs. Sale Price Discrepancy:**
   Visualize discrepancies between market prices and sale prices to identify effective pricing strategies.
   Highlight products with significant discounts to understand their appeal to consumers.
6. **Customer Preference and Behavior Analysis:**
   Visualize the distribution of product ratings and identify favorite brands.
   Analyze the impact of discounts on customer purchases and overall sales performance.
7. **Category and Subcategory Performance**:
   Display total sales volumes for different categories and sub-categories.
   Highlight high-performing categories and sub-categories based on sales volume and average customer ratings.
8. **Sub-category Specific Analysis:**
   Display the price range (minimum and maximum sale prices) for each sub-category.
   Calculate and visualize the revenue contribution of each sub-category within its category.

E-Commerce (Big Basket) Data

bigbasket

Rating
1.00   5.00

Category Wise

Most sold products from **Beauty & Hygiene**

Least Sold products from **Baby Care**
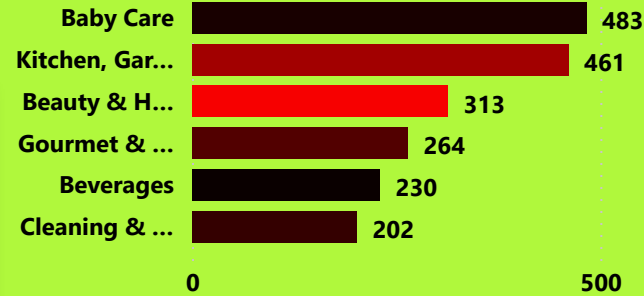
Beauty & Hygiene leads in revenue

Bakery, Cakes & Dairy lags in revenue.
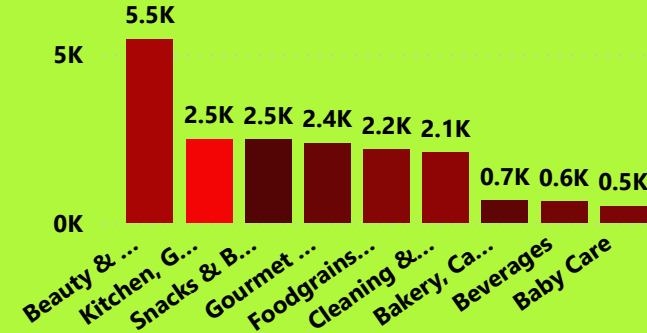
Snacks & Branded Foods have the lowest average price.

Baby Care Has the Most Avg Sale Price

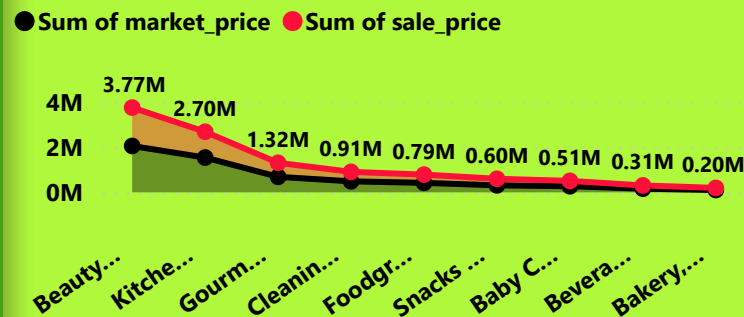The Market price is higher than the selling price for every category

Avg_Sale_Price by category

Category	Value
Baby Care	483
Kitchen, Gar...	461
Beauty & H...	313
Gourmet & ...	264
Beverages	230
Cleaning & ...	202

0   500

Num_Products_Sold by category

- Beauty & ...: 5.5K
- Kitchen, G...: 2.5K
- Snacks & B...: 2.5K
- Gourmet ...: 2.4K
- Foodgrains...: 2.2K
- Cleaning &...: 2.1K
- Bakery, Ca...: 0.7K
- Beverages: 0.6K
- Baby Care: 0.5K

Sum of market_price and Sum of sale_price by category

● Sum of market_price   ● Sum of sale_price

3.77M, 2.70M, 1.32M, 0.91M, 0.79M, 0.60M, 0.51M, 0.31M, 0.20M

Beauty..., Kitche..., Gourm..., Cleanin..., Foodgr..., Snacks..., Baby C..., Bevera..., Bakery,...

Total_Sales_Volume by category

1.7M, 1.1M, 0.6M, 0.4M, 0.4M, 0.3M, 0.2M, 0.1M, 0.1M

Beauty ..., Kitchen, G..., Gourmet ..., Cleaning &..., Foodgrains..., Snacks & B..., Baby Care, Beverages, Bakery, Ca...
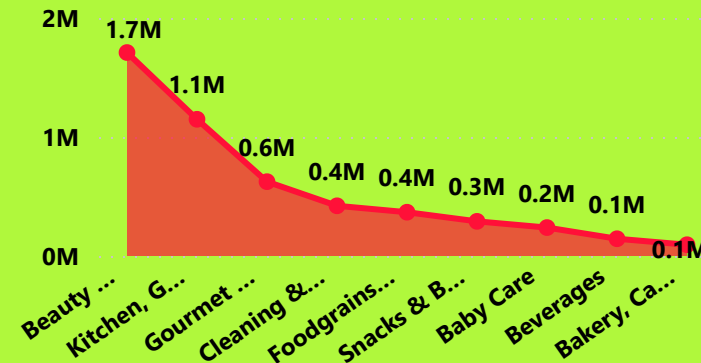
Max_Sale_Price, Min_Sale_Price and Avg_Sale_Price by category

● Max_Sale_Price   ● Min_Sale_Price   ● Avg_Sale_Price

Beauty & ..., Kitchen, G..., Gourmet ..., Foodgrain..., Beverages, Baby Care, Cleaning ..., Bakery, C..., Snacks & ...
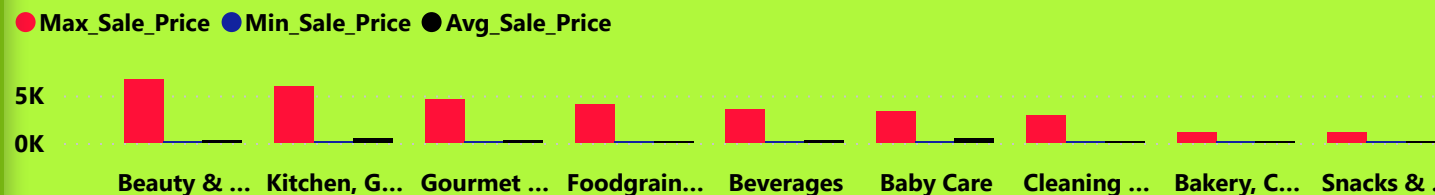
Cattegory_Sub Category

- ☐ Baby Care
- ☐ Bakery, Cakes & Dairy
- ☐ Beauty & Hygiene
- ☐ Beverages
- ☐ Cleaning & Household
- ☐ Foodgrains, Oil & Masala
- ☐ Gourmet & World Food
- ☐ Kitchen, Garden & Pets
- ☐ Snacks & Branded Foods

Revenue_By_Category by category

100%

Category	Value
Beauty &...	
Kitchen, ...	
Gourmet ...	0.62M
Cleaning ...	0.42M
Foodgrai...	0.37M
Snacks &...	0.29M
Baby Care	0.24M
Beverages	0.14M
Bakery, C...	0.09M

5.5%

bigbasket

E-Commerce (Big Basket) Data Analysis
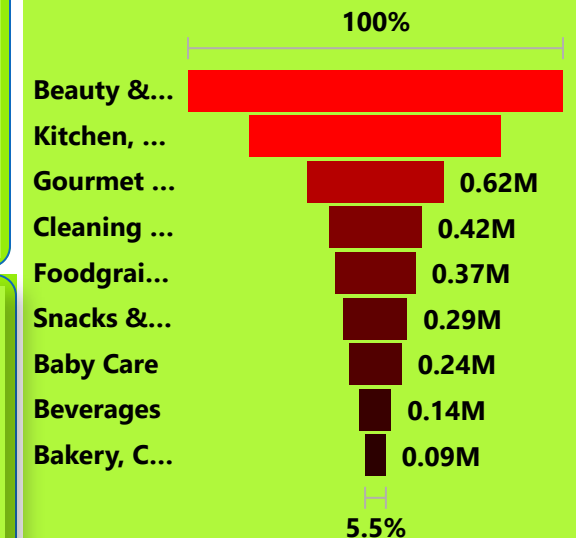
Rating

| 1.00 | 5.00 |

Sub Category Wise

Most sold products from
Skin Care

Least Sold products from
Cuts & Sprouts

Skin Care leads in revenue

Cuts & Sprouts lags in revenue.

Cookware & Nonstick Products have the Most average price.

Biscuits & Cookies Has the Least Avg Sale Price

Most rated products are Beverages

Least Rated Products are Kitchen, Garden & Pets

Revenue_By_Category by sub_category

Sum of sale_price   0.00M ███████ 0.54M

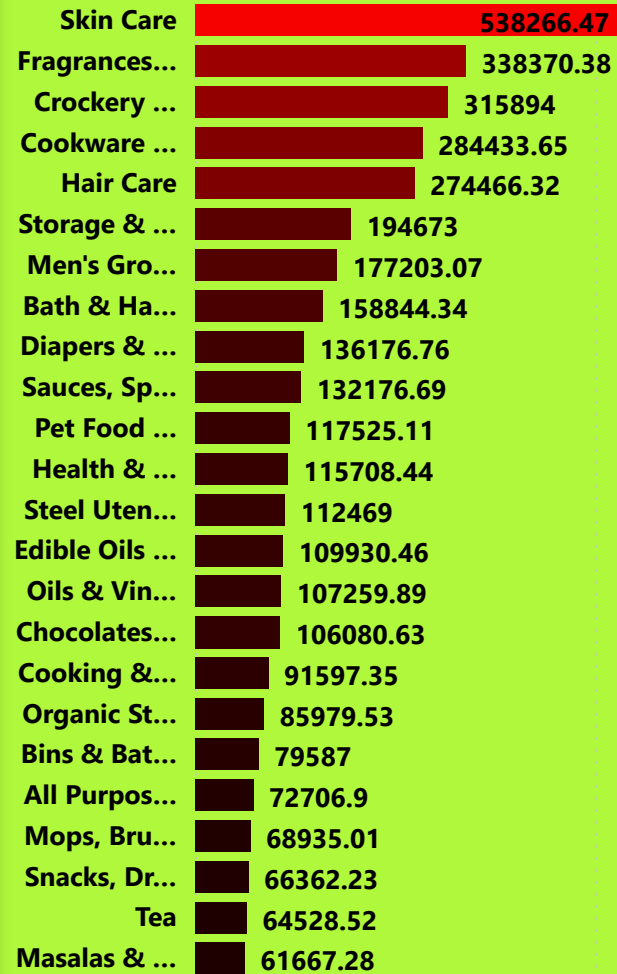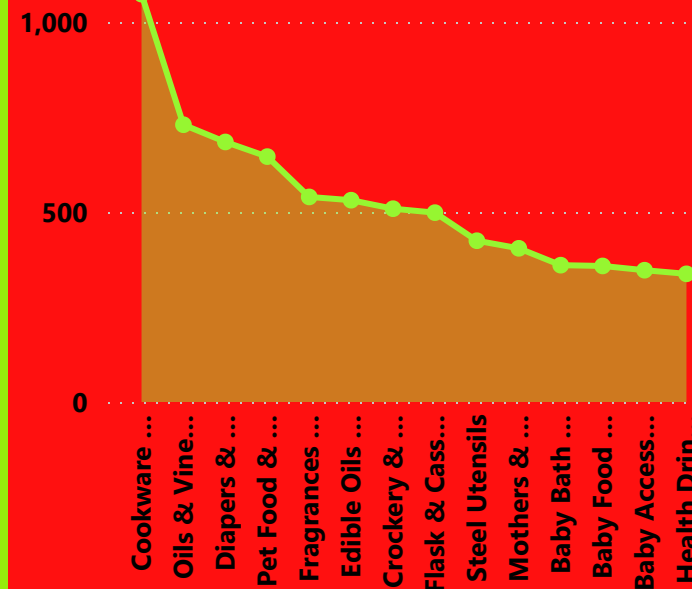| Sub Category	Value
Skin Care	538266.47
Fragrances...	338370.38
Crockery ...	315894
Cookware ...	284433.65
Hair Care	274466.32
Storage & ...	194673
Men's Gro...	177203.07
Bath & Ha...	158844.34
Diapers & ...	136176.76
Sauces, Sp...	132176.69
Pet Food ...	117525.11
Health & ...	115708.44
Steel Uten...	112469
Edible Oils ...	109930.46
Oils & Vin...	107259.89
Chocolates...	106080.63
Cooking &...	91597.35
Organic St...	85979.53
Bins & Bat...	79587
All Purpos...	72706.9
Mops, Bru...	68935.01
Snacks, Dr...	66362.23
Tea	64528.52
Masalas & ...	61667.28

0.0M   0.5M

Avg_Rating by category

Beverages	Foodgrains...	Baby Care	Gourmet...	Snacks & B...	Cleaning &...	Beauty & ...	Bakery, Ca...	Kitchen, G...
4.1	4.1	4.0	4.0	4.0	4.0	3.9	3.9	3.7

Avg_Sale_Price by sub_category

1,000

500

0

Cookware ... · Oils & Vine... · Diapers & ... · Pet Food & ... · Fragrances ... · Edible Oils ... · Crockery &... · Flask & Cass... · Steel Utensils · Mothers &... · Baby Bath · Baby Food ... · Baby Access... · Health Drin...

Total_Products by sub_category

Total_Products   0K ███████ 1.64K

Sub Category	Value
Skin C...	1641
Hair C...	818
Bath &...	808
Masala...	764
Storag...	658
Men's ...	649
Fragra...	627
Crocke...	621
Ready ...	557
Organi...	550
Chocol...	454
Sauces...	454
Snacks...	442
Cookin...	434
Health...	401
Dairy	364
Statio...	333
Snacks...	321
All Pur...	306
Bins &...	306
Biscuit...	277
Tea	269
Cookw...	265
Spread...	265

0K   1K   2K