Sephora Skincare Products Data Analysis in Ms Excel

1. Project Objective

Objective:
To analyze customer engagement patterns across skincare products and identify:

- Which products attract the most attention
- Which products perform well or poorly on quality (ratings)
- How engagement varies by **category** and **price tier**
- Actionable opportunities such as **problem products** and **hidden gems**

This analysis helps support **product strategy, pricing decisions, and portfolio optimization**.

2. Dataset Overview

Source: Sephora skincare product dataset
Total Products: 2,420

Key Fields Used:

- Product ID, Product Name
- Brand ID, Brand Name
- Category (skincare sub-categories)
- Loves Count (customer interest indicator)
- Ratings & Reviews
- Price (USD)
- New / Out-of-stock flags

Note: All products belong to skincare; categories represent skincare sub-types (cleansers, moisturizers, treatments, etc.).

3. Exploratory Data Analysis (EDA)

Exploratory analysis was conducted to understand overall data distribution and patterns before segmentation, including:

- Distribution of products across engagement levels (loves count)
- Rating availability and rating distribution
- Category-wise product volume and engagement spread
- Price distribution across budget, mid-range, and premium tiers
- Identification of skewness and concentration in engagement metrics

Key EDA Observations:

- Engagement data is highly right-skewed, with a small number of products driving very high engagement
- Majority of products cluster in mid engagement ranges (10K–50K loves)
- Ratings are missing for a small subset of products, requiring explicit handling
- Product volume is concentrated in a few core categories (Moisturizers, Treatments, Cleansers)

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4. Key Data Transformations

The following transformations were applied to make the data analysis-ready:

4.1 Engagement Metrics

- Created **Engagement Range** using Loves Count:
    - 0–1K, 1K–5K, 5K–10K, 10K–50K, 50K–1L, 1L–5L, 5L+
- Mapped ranges into **Engagement Tiers**:
    - Very Low, Low, Medium, High, Very High, Viral, Extremely Viral

4.2 Rating Metrics

- Created **Has Rating** flag (Yes/No)
- Categorized ratings into **Rating Bands**:
    - Low ($\leq$3), Medium (3–4), High ($\geq$4), Not Rated

4.3 Pricing Metrics

- Created **Price Tier**:
    - Budget (<$20)
    - Mid-range ($20–$50)
    - Premium (>$50)

These transformations enabled meaningful segmentation and comparison.

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5. Key Insights

Insight 1: Engagement is Concentrated in the "High" Tier

- Majority of products fall in the **High engagement** tier (10K–50K likes)
- Extremely Viral products are rare (only 5 products)

Implication:
Customer attention is heavily concentrated in a small engagement band, not evenly distributed.

Insight 2: Engagement ≠ Quality

- Several products have **high engagement but low ratings**
- These products attract attention but fail on user satisfaction

Actionable Outcome:
These are **problem products** that need:

- Reformulation
- Quality improvement
- Clearer customer expectation setting

Insight 3: Hidden Gems Exist at Low Engagement

- 384 products have **low engagement but high ratings**
- 84 products have **very low engagement but high ratings**

Implication:
These are **under-marketed high-quality products** with strong potential if visibility improves.

Insight 4: Category-Level Engagement Patterns

- **Moisturizers, Treatments, Cleansers** dominate high engagement
- Niche categories (Wellness, High-Tech Tools) show smaller but focused engagement

Implication:
Core skincare drives volume; niche categories drive differentiation.

Insight 5: Price Tier Does Not Limit Engagement

- High engagement exists across **budget, mid-range, and premium**
- Mid-range products dominate volume, but premium products still achieve high engagement

Implication:
Customers are willing to engage across price points if value is perceived.

6. Dashboard & Visuals (Excel)

The following visuals were created in Excel:

6.1 Product Distribution by Engagement Tier
→ Shows where most products sit in the engagement funnel

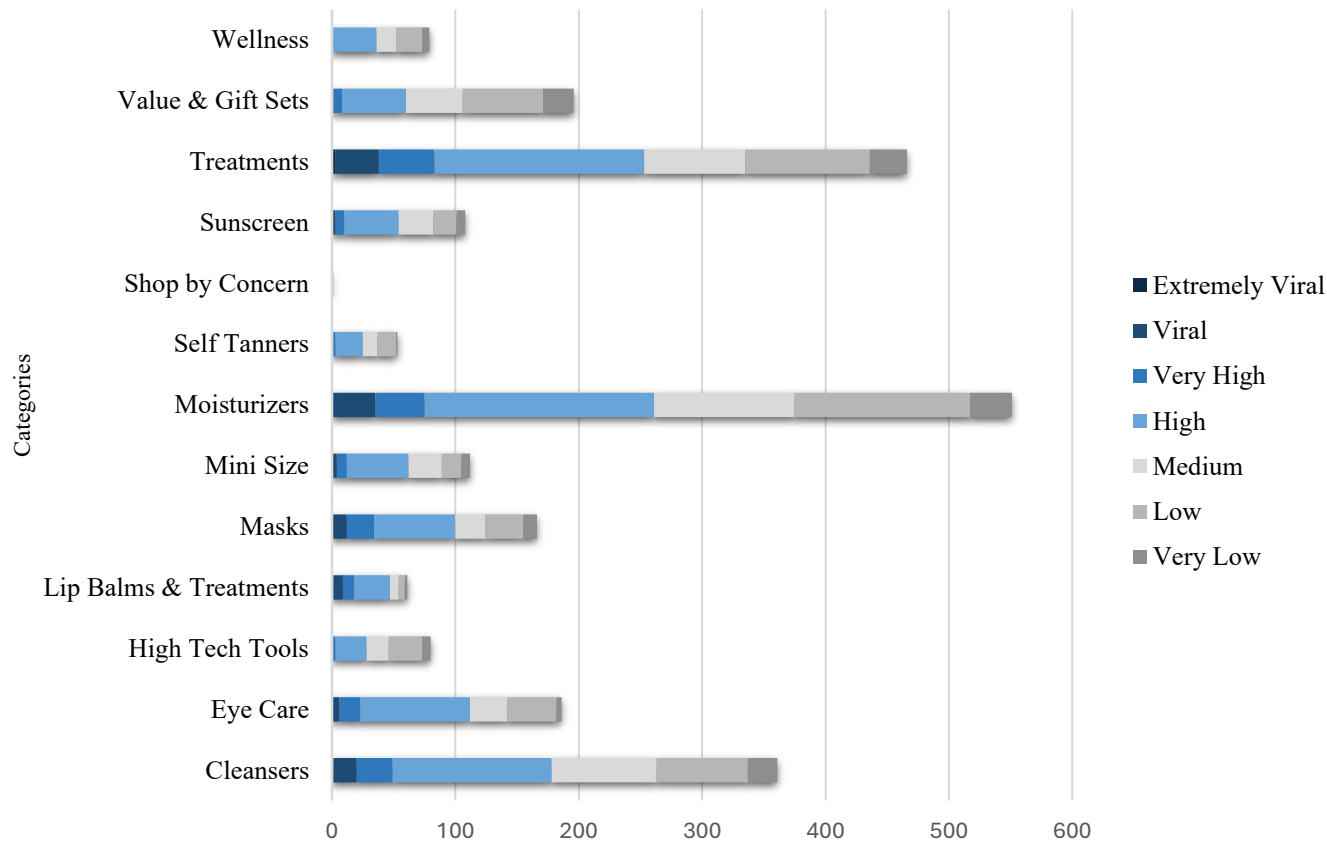| Engagement Tier	Count of Product Id
Extremely Viral	5
Viral	125
Very High	189
High	897
Medium	489
Low	556
Very Low	159
Grand Total	**2420**

Product Distribution by Engagement Tier
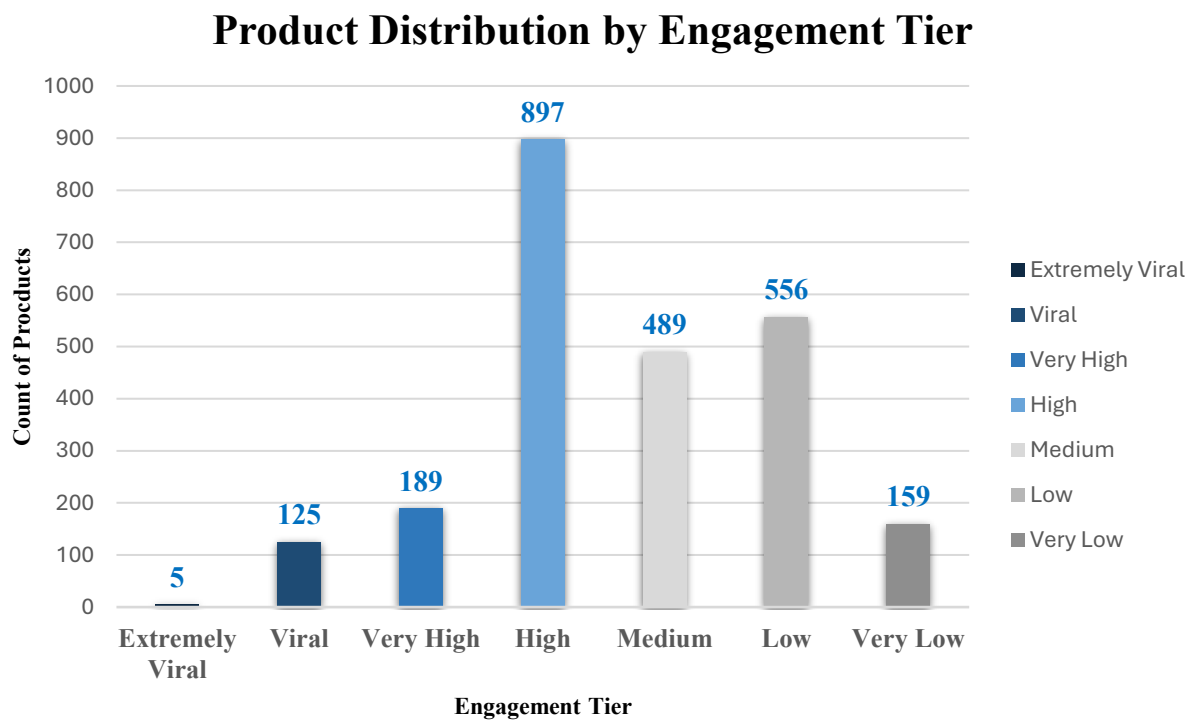
6.2 Engagement Distribution Across Skincare Categories
→ Highlights category-level engagement concentration

Count of Product Id	Engagement Tier							
Category	Extremely Viral	Viral	Very High	High	Medium	Low	Very Low	Grand Total
Cleansers	1	19	29	129	85	74	24	361
Eye Care		6	17	89	30	40	4	186
High Tech Tools			3	25	18	27	7	80
Lip Balms & Treatments	1	8	9	29	7	5	2	61
Masks		12	22	66	24	31	11	166
Mini Size		4	8	50	27	16	7	112
Moisturizers		35	40	186	114	142	34	551
Self-Tanners		1	2	22	12	15	1	53
Shop by Concern							1	1
Sunscreen		3	7	44	28	19	7	108
Treatments	3	35	45	170	82	101	30	466
Value & Gift Sets		1	7	52	46	65	25	196
Wellness		1		35	16	21	6	79
Grand Total	5	125	189	897	489	556	159	2420

## Engagement Distribution Across Skincare Categories

6.3 Engagement Performance Across Price Tiers
→ Compares engagement across budget, mid-range, and premium products

Count of Product Id	Engagement Tier							
Price Tier	Extremely Viral	Viral	Very High	High	Medium	Low	Very Low	Grand Total
Budget	4	36	40	144	58	47	14	343
Mid-range	1	53	93	456	218	202	66	1089
Premium		36	56	297	213	307	79	988
Grand Total	5	125	189	897	489	556	159	2420

Engagement Performance Across Price Tiers
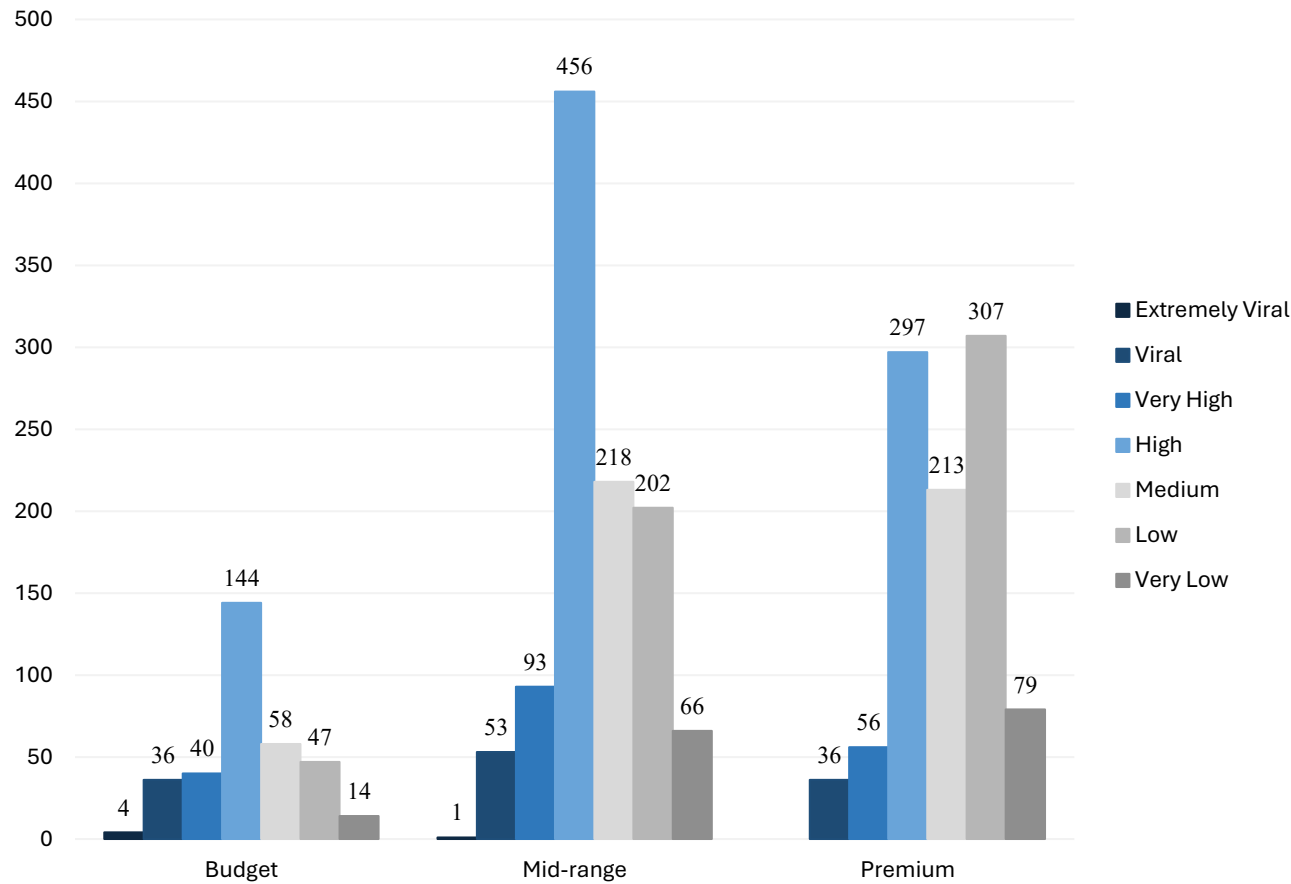
6.4 Problem Products Spotlight (High Engagement, Low Rating)
→ Identifies specific products requiring corrective action

Problem Products (High Engagement, Low Rating)	
Engagement Tier	High
Rating Band	Low

Category	Count of Product Id
Cleansers	1
High Tech Tools	1
Value & Gift Sets	1
Grand Total	**3**

Product Id	Product Name	Brand Id	Brand Name	Category	Loves Count
P460723	Clean Cleansing & Gentle Exfoliating Wipes	3902	SEPHORA COLLECTION	Cleansers	26264
P476842	Cryo-Recovery Lifting Face Mask with Acupressure Technology	6236	Charlotte Tilbury	High Tech Tools	15090
P503294	Day Dream Vitamin C + Hydration Serum Duo 2.0	7083	Drunk Elephant	Value & Gift Sets	39446

Engagement Range	Engagement Tier	Rating	Has Rating	Rating Band	Reviews	Price USD	Price Tier
10K–50K	High	2.5641	Yes	Low	523	6	Budget
10K–50K	High	2.8077	Yes	Low	26	55	Premium
10K–50K	High	2.5	Yes	Low	22	26	Mid-range

6.5 Hidden Gems Spotlight (Low Engagement, High Rating)
→ Highlights growth opportunities

Hidden Gems Spotlight (Low engagement, High rating)	
Engagement Tier	Low
Rating Band	High

Category	Count of Product Id
Cleansers	57
Eye Care	24
High Tech Tools	17
Lip Balms & Treatments	3
Masks	24
Mini Size	8
Moisturizers	108
Self-Tanners	6
Sunscreen	10
Treatments	74
Value & Gift Sets	36
Wellness	17
Grand Total	**384**

7. Business Value of the Analysis

This analysis enables:

- Identification of **high-risk products** (attention but dissatisfaction)
- Discovery of **high-potential products** (quality but low visibility)
- Better **pricing and category strategy**
- Data-driven prioritization for **marketing and product teams**

This project demonstrates how Excel can be used not just for reporting, but for structured exploratory analysis, segmentation, and actionable business insights.