# **PROJECT REPORT**

	LTVIP2025TMID50344
Team ID	
	Cosmetic Insights : Navigating Cosmetics
Project Name	Trends and Consumer Insights with
•	Tableau

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#### 1. 1. INTRODUCTION

#### 1.1 Project Overview

The project titled "Cosmetic Insights: Navigating Cosmetics Trends and Consumer Insights with Tableau" focuses on analyzing cosmetic product data using Tableau to discover brand performance and skin suitability trends.

The project explores:

- Product pricing patterns
- Brand rankings
- Ingredient labels
- Suitability for different skin types

Using Tableau's visualization and story features, we deliver interactive dashboards for cosmetic industrial stakeholders.

#### 1.2 Purpose

- Identify popular cosmetic brands based on rank and label
- Analyze price variations across brands
- Determine product suitability for various skin types (Sensitive, Dry, Normal, Oily)
- Enable consumers and analysts to make informed decisions through interactive visual dashboards

#### 2. IDEATION PHASE

#### 2.1 Problem Statement

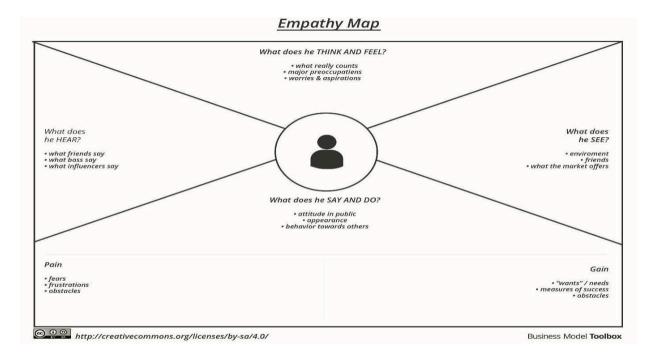
Cosmetic buyers often struggle to find products best suited for their skin type. Marketers lack insights into what ingredient labels and brand features customers prefer. There's a need for a solution that provides clear visual insights into product performance.



Problem	l am	I'm trying to	But	Because	Which makes me feel
Statement (PS)	(Customer)				
PS-1	A brand analyst at a cosmetics company.	Understand how customer preferences vary across product categories and demographic	the data is large and difficult to interpret manually	I don't have an intuitive or visual way to analyze customer behavior and trends	frustrated and unable to provide useful marketing insights
PS-2	marketing strategist at a beauty brand.	identify which cosmetic products are trending in different regions	I don't have a visual tool that consolidates consumer preferences and sales data.	The data is scattered in raw spreadsheet s and lacks visual patterns	lost and unsure how to plan marketing campaigns effectively

## 2.2 Empathy Map Canvas

(Primary user = Real-estate analyst/ marketing executive)



Says We need visual insights on which cosmetic products are trending.

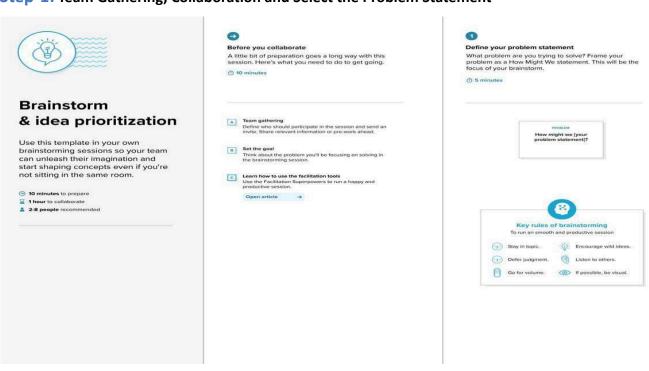
I want to compare consumer preferences across age groups and regions.

I'm not sure if our campaigns match what consumers **Thinks** actually want. There might be demand trends we're not tracking properly. Uses Excel reports or sales logs to track Does performance manually. Spends hours reviewing product sales and feedback in raw format. Frustrated with data overload and lack of visual **Feels** tools. Wants confidence when recommending marketing plans to leadership. Messy sales reports, CSV files, and static charts. Sees Disjointed insights without clear consumer trends. Leadership asking for trend-based campaigns. Hears Marketing heads pushing for data-backed decisions. Manual effort with low visibility into preferences **Pains** Hard to present compelling reports with plain data. Interactive Tableau dashboards that highlight Gains preferences and performance.

Improved targeting and stronger marketing RO

## 2.3 Brainstorming & Idea prioritization

### Step-1: Team Gathering, Collaboration and Select the Problem Statement

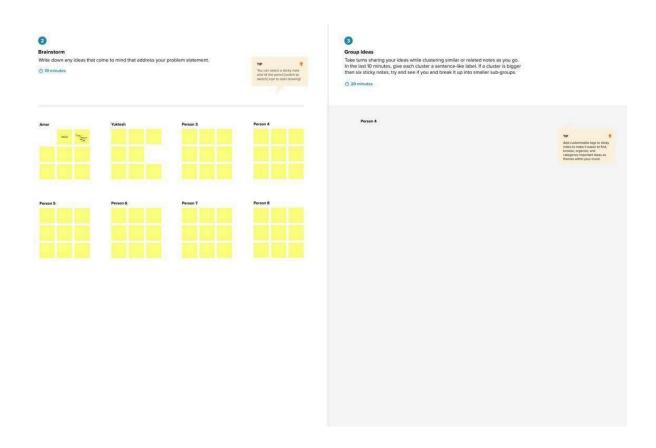


### Raw Ideas:

- Track most trending cosmetic products by category
- Show consumer preferences by age/gender/location
- Visualize product performance over time
- Compare sales by brand or product type
- Use pie charts for market share by brand
- Use bar graphs for ratings by category
- Dashboard with filters for product type and timeframe
- Explore the correlation between reviews and sales

## **Grouped into Categories:**

- 1. Product Characteristics
- Product type (lipstick, foundation, etc.)
- Brand comparison
- Rating and reviews
- Visualization
   Methods: Pie chart for market share
- Line chart for trends over time
- Bar chart for product ratings Dashboard with filters
- 3. Business Insights
- Which product types are most in demand
- Consumer preference trends over time Brand performance comparison



**Step-3:** Idea Prioritization

We used a simple prioritization method based on two criteria:

• Value to stakeholders (marketing team, analysts, product developers)

Feasibility in Tableau

## **Top Prioritized Ideas:**

- 1. Dashboard visualizing product sales by category and brand
- 2. Consumer preference filters (age, gender, location)
- 3. Line chart showing product trends over time
- 4. Market share pie chart by brand

## 5. Ratings vs. sales correlation analysis

These ideas offer high-value business insights through effective and feasible visualizations using Tableau.

- 3. REQUIREMENT ANALYSIS
- 3.1 Customer Journey Map
- 1. User browses dataset of cosmetic products
- 2. Filters products based on brand, price, or skin suitability
- 3. Views dashboards to compare rank, label, and price
- 4. Makes informed product or marketing decisions
- 3.2 Solution Requirements

## **Functional Requirements:**

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Upload	Upload cosmetics dataset in CSV format
FR-2	Data Preprocessing	Clean null/missing values, standardize formats, categorize relevant variables
FR-3	Visualization	Design interactive Tableau dashboards showcasing trends, sales, consumer habits
FR-4	Filtering & Interactivity	Enable filters for year, brand, product type, skin type, etc.
FR-5	Dashboard Sharing	Publish dashboards to Tableau Public, generate and manage shareable links
FR-6	Report Generation	Export visual insights and key summaries as high-quality PDF reports

## **Non-functional Requirements:**

Following are the non-functional requirements of the proposed solution.  $\label{eq:following} % \[ \begin{array}{c} \left( \frac{1}{2} - \frac{1}{2} \right) & \left( \frac{1}{2} - \frac{1}{2} - \frac{1}{2} \right) & \left( \frac{1}{2} - \frac{1}{2} - \frac{1}{2} \right) & \left( \frac{1}{2} - \frac{1}{2} & \left( \frac{1}{2} - \frac{1}{2} -$ 

FR No.	Non-Functional Requirement	Description	
NFR-1	Usability	Dashboards must be easy to navigate and interpret	
		for all stakeholders	
NFR-2	Security	SecuritySecure Tableau links and anonymized	
		dataset to protect user data	
NFR-3	Reliability	Dashboards should load correctly without data loss	
		or rendering issues	
NFR-4	Performance	Dashboards should load in under 5 seconds for	
		optimal user experience	
NFR-5	Availability	Dashboards must be accessible online 24/7 on	
		Tableau Public	

NFR-6	Scalability	System should support future datasets with more
		years or cosmetic categories

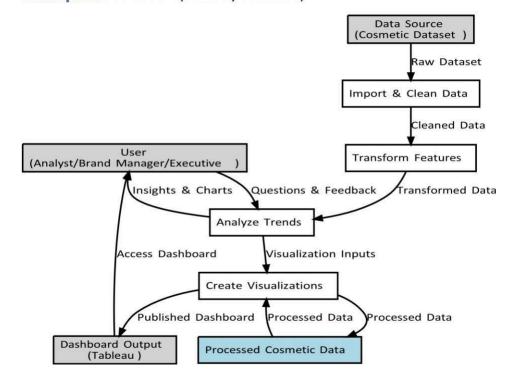
## 3.3 Data Flow Diagram

- 1. Dataset input (CSV format)
- 2. Preprocessing: Cleaning, calculated fields, binning
- 3. Visualizations: Price vs Brand, Suitability charts, Rank analysis
- 4. Dashboards created and published via Tableau Public
- 5. Users interact with visuals via filters and story views

## Flow Summary:

- 1. Raw cosmetic dataset is imported into Tableau.
- 2. Columns like product sales, consumer demographics, ingredient lists, and review sentiment are processed.
- 3. Multiple visualizations (bar charts, line graphs for trends, pie charts for market share, treemaps for product categories) are created.
- 4. Dashboards are compiled and published to Tableau Public.
- 5. Users access dashboards for strategic decisions regarding product launches, marketing campaigns, and inventory management.

## Example: DFD Level O(Industry Standard)



#### **Example:** Flow



Cosmetic Data Tableau Dashboards End Users

&Consum (option) Visualizatio

Brand

## **User Stories**

User stories Table (For Tableau Dashboard Project):

User Type	Functional	Use	er Story Number	User Story / Task	Acceptance criteria
User Type	Requirement				

(Epic)

		_		
Analyst	View Sales &	USN-1	As an analyst, I want to view overall sales by	I can see KPIs like tot
(Dashboard	Product		product category and region so I can	sales, average pri
User)	Performance		understand top performers.	unit, and sales by pro category in a sing overview dashboard.
Analyst	Analyze	USN-2	As an analyst, I want to compare sales based	I can view bar charts
(Dashboard	Consumer		on consumer demographics (age, gender) to	showing sales distrib
User)	Behavior		understand target audiences.	across different ag g and genders.
Marketing	Understand Trend	USN-3	As a marketing manager, I want to visualize	I can use a trend line
Manager	Impact		emerging beauty trends (e.g., clean beauty,	to see the growth or
			specific ingredients) to tailor campaigns.	decline of specific co trends over time.
Product	Explore Product	USN-4	As a product developer, I want to explore	I can view a grouped
Development	Features &		product sales grouped by key ingredients or	chart showing sal
(Dashboard User)	Ingredients		benefits (e.g., hydrating, anti-aging).	ingredient type an product benefit.
Sales Executive	Identify Regional	USN-5	As a sales executive, I want to visualize sales	I can see a map
	Opportunities		distribution by geographic region to identify	visualization showing
			high-growth areas.	performance per region/city.
Admin	Public Dashboard	USN-6	As an admin, I want to upload dashboards to	I can publish the wor
(Dashboard			Tableau Public for stakeholder access.	and share the Tablea
Publisher) User Type	Functional	User Story	User Story / Task	Public link.  Acceptance
Oser Type	Requirement	Number	User Story / Task	criteria
Analyst	<b>(Epic)</b> Filter Data	USN-7	As an analyst, I want to filter dashboards by	I can use filter contro
(Dashboard			time period (e.g., quarter, year) or specific	dynamically adjus
User)			product lines.	••
Executive	Export Visual	USN-8	As an executive, I want to download and share	I can export visua a
	Reports		charts with my team for presentations.	images or PDFs from Tableau.

# 3.4 Technology Stack

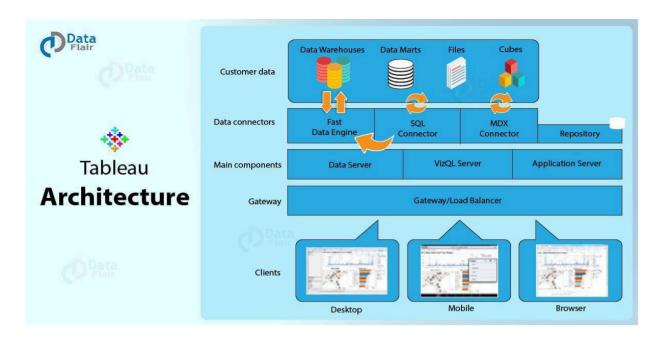
- Tool: Tableau Desktop, Tableau Public

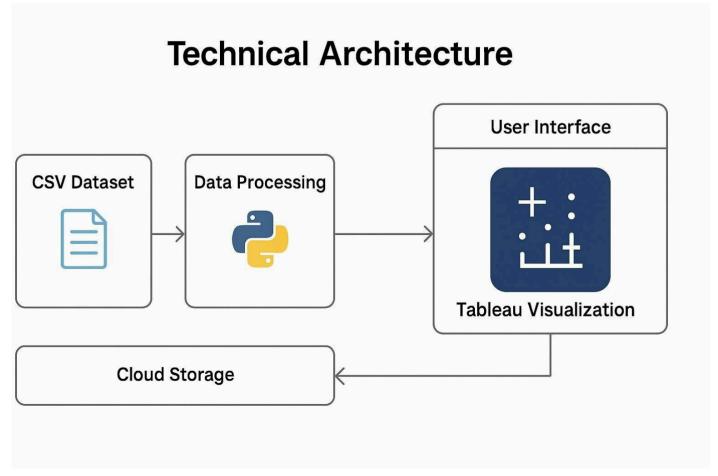
- Data Preprocessing: Excel

- Data Format: CSV

- Reporting: PDF export, screenshots

Technical architecture Overview:





## **Characteristics:**

	S.No	Characteristics	Description	Technolo g
ſ	1.	Open-Source Frameworks	List the open-source frameworks used	Python (Pa

			Public
2.	Security Implementations	List all the security / access controls implemented,	SHA-256fo
			r
		use of firewalls etc.	IAM
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-	3 -Tier
			Arch
		services)	UI)

4.	Availability	Justify the availability of application (e.g. use of	Tableau Pu
		load balancers, distributed servers etc.)	
5.	Performance	Design consideration for the performance of the	Local cachi
		application (number of requests per sec, use of Cache, use of CDN's) etc.	Tableau

#### 4. PROJECT DESIGN

#### 4.1Problem-Solution Fit

Consumers need clear insights on brand suitability. Our Tableau dashboards offer visual comparisons by brand, label, and skin suitability. The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why **Purpose:** 

	☐ Solve complex	problems in a war	y that fits the state of	vour customers.
--	-----------------	-------------------	--------------------------	-----------------

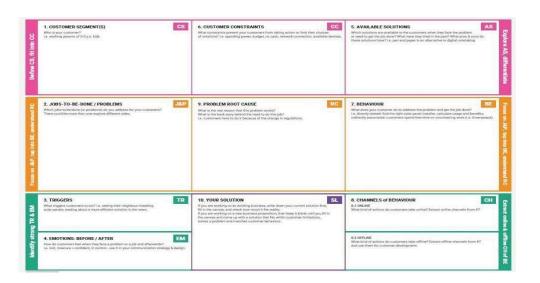
☐ Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.

☐ Sharpen your communication and marketing strategy with the right triggers and messaging.

☐ Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.

☐ Understand the existing situation in order to improve it for your target group.

#### Template:



### **Category Description**

Customer Segment	Cosmetic brand managers, product developers, marketing teams,	
	trend analysts.	
Key Problem(s)	Difficulty understanding fast-changing cosmetic trends, consumer	

preferences, and feedback across categories.

Why it's a problem	Leads to poor product launches, missed trends, weak marketing campaigns, and low customer satisfaction.
Existing Alternatives	Manual analysis of reviews, Excel-based reports, time-consuming surveys, inconsistent competitor research.
Your Solution	Tableau dashboards that visualize cosmetic product trends, sentiment analysis, category ratings, and price-performance comparisons.
Main Benefit	Clear, visual, and actionable insights to identify emerging trends, understand customer needs, and improve data-driven marketing and development.
Success Criteria	Better product-market fit, faster trend identification, enhanced customer engagement, and informed strategic decisions.

#### References:

- 1. https://www.ideahackers.network/problem-solution-fit-canvas/
- 2. https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4

## 4.2 Proposed Solution

- Import cosmetic dataset
- Clean nulls, create bins and calculated fields
- Create dashboards for brand, label, price, and suitability
- Build a Tableau Story with filters and captions
- Share dashboard via Tableau Public

S.No.	Parameter	Description
1	Problem Statement	Cosmetic brands struggle to understand fastchanging trends, consumer preferences, and sentiments. This leads to missed opportunities, poor marketing, and low customer satisfaction.

2	Idea / Solution Description	We created a Tableau dashboard that visualizes
		product trends, category performance, consumer reviews, and pricing patterns. It helps brands quickly understand what products and features are most appreciated.
3	Novelty / Uniqueness	The dashboard combines product ratings, review
		sentiment, and trend insights in one place. It's simple to use and helps teams make data-driven decisions faster.
4	Social Impact / Customer	Helps cosmetic brands deliver more relevant,
	Satisfaction	consumer-friendly products. Enhances customer satisfaction by responding to real feedback and trends.
5	Business Model	The dashboard can be offered as an internal
		analytics tool for cosmetic companies or as a market research service for external clients.
6	Scalability of the Solution	The solution can be expanded to analyze new
		product categories, competitor data, or global trends by integrating more data sources into Tableau.

## 4.3 Solution Architecture

- Input: Cosmetic CSV file

- Processing: Excel + Tableau Desktop

- Visualization: Dashboards + Story

- Output: Tableau Public link for exploration

## 5. PROJECT PLANNING & SCHEDULING

**Product Backlog, Sprint Schedule, and Estimation** 

Sprint	Functional	User Story	User Story / Task	Story Poi
	Requirement (Epic)	Number		
Sprint-1	Data Preparation	USN-1	Upload cosmetics dataset in CSV format	3
Sprint-1	Data Cleaning	USN-2	Clean and preprocess data (handle nulls, rename columns, filter dates)	4
Sprint-1	Initial Visualizations	USN-3	Create bar, pie, and donut charts for brand and category trends	5
Sprint-2	Filter Integration	USN-4	Add filters (product type, age group, location) in dashboard	4
Sprint-2	Story Creation	USN-5	Build Tableau story with scenes, titles, and captions	5
Sprint-2	Dashboard Publishing	USN-6	Publish dashboard to Tableau Public and generate access link	3
Sprint-3	Performance Testing	USN-7	Test dashboard loading and filter responsiveness	4
Sprint-3	Screenshot and Documentation	USN-8	Capture dashboard screenshots and write final insights report	4
Sprint-3	GitHub Folder Setup	USN-9	Organize files and submit using required folder structure	4
Sprint-4	Final Review	USN-10	Review and validate all content before submission	6
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Poi
Sprint-4	Video Demo	USN-11	Record Walkthrough demo of the dashboard and upload	6

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date
Sprint-1	12 sp	6 Days	24 June 2025	25 June 2025	12 sp
Sprint-2	12 sp	6 Days	26 June 2025	4 July 2025	12 sp
Sprint-3	12 sp	6 Days	02 July 2025	7 July 2025	-
Sprint-4	12 sp	6 Days	8 July 2025	13 July 2025	-

## **Velocity:**

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

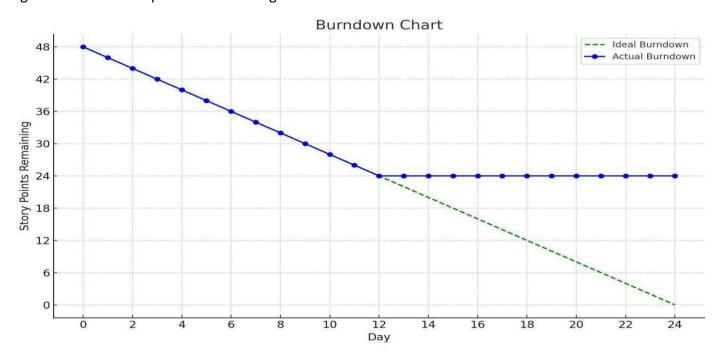
$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

# **Average Velocity Calculation:**

- Av = Total Completed Story points+ Number of Days
- AV=24 sp / 12 days = 2 sp /day

## **Burndown Chart:**

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum.



### 6. FUNCTIONAL AND PERFORMANCE TESTING

## **6.1 Model Performance Testing:**

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Screenshot / Values			
1.	Data Rendered	State   Date   State   Date   State   Date   State   Date   Dat	Price Rank  125 41  129 42  68 42  1 25 36  1 68 42  1 68 42		



4. Calculation fields Used

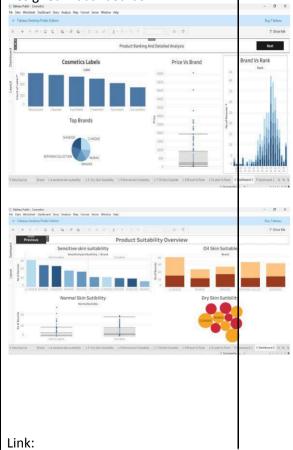
- Created Price Range Bins
- Calculated Average Rank
- Used IF conditions for skin suitability grouping

5. Dashboard design

No of Visualizations:9

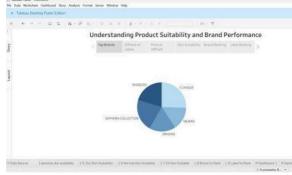
- 1.Top Brands
- 2. Label Count
- 3. Price vs Brand
- 4. Sensitive Skin Suitability
- 5. Dry Skin Suitability
- 6. Normal Skin Suitability
- 7. Oil Skin Suitability
- 8. Brand vs Rank
- 9. Label vs Rank

Designed 2 dashboards:



https://public.tableau.com/views/Cos metics\_17513898243 280/Dashboard1?:language=en-US&:s id=&:redirect=auth&:display\_count=n &:origin=viz\_sh are\_link

Story Title: Story Design 6 Understanding **Product Suitability** and Brand Performance Slides Included: 1. Top Brands - Pie chart showing top 5 brands by product count 2. Different of Labels -Label-wise distribution 3.Price of Different – Price comparison across brands 4.Skin Suitability -Visuals for Sensitive, Dry, Normal, and Oily skin 5.Brand Ranking – Rank comparison by brand 6.Label Ranking – Rank vs Label visualization Features: • Filtered using Brand and Category • Each slide has interactive controls • Captions provided for clarity



#### Link:

https://public.tableau.com/views /Cosmetics\_17513898243 280/Story1?:language=en-

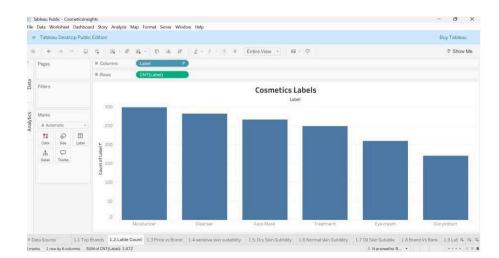
## 7. RESULTS

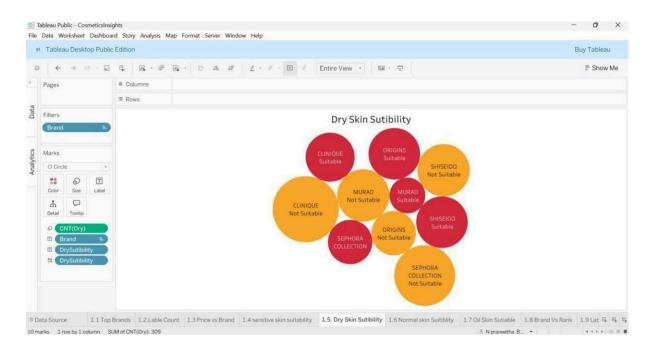
The Tableau story created delivers:

- A clear comparison of top brands by price and rank
- Ingredient label distribution
- Product suitability insights per skin type
- Story-based visual walkthrough with filters

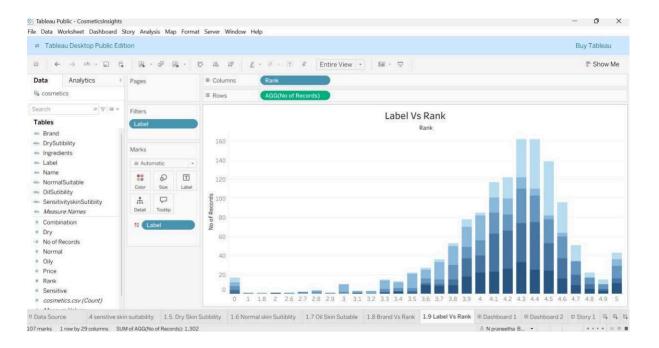
## **Output Visuals:**

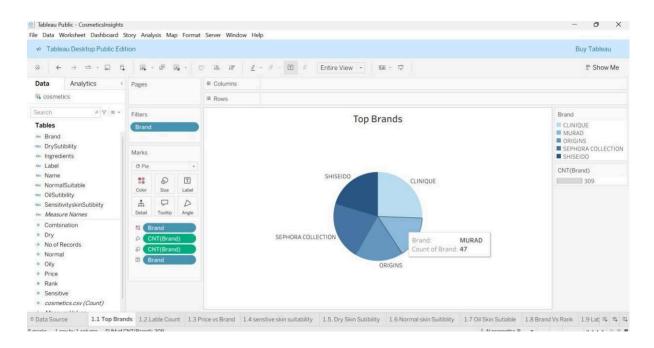
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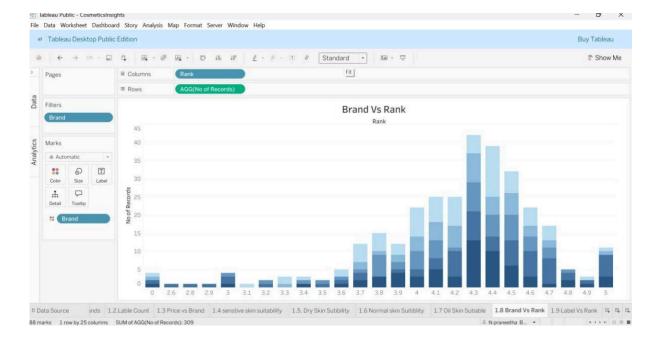


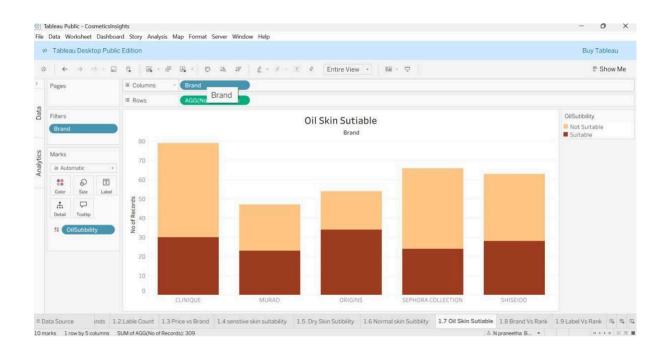


4.







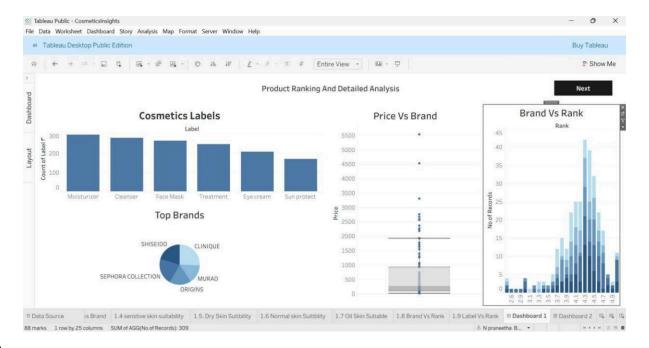


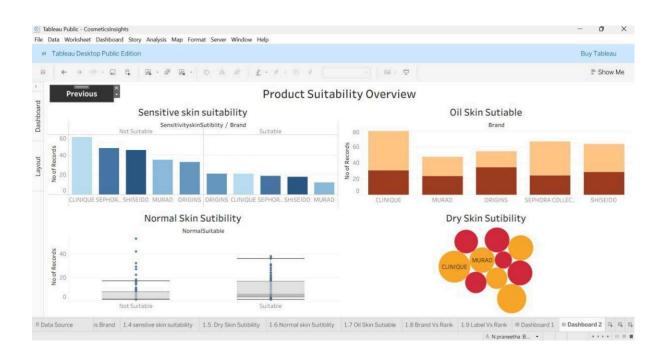
9.

#### 10. Final Dashboard Views:

Filename: Dashboard.png

Caption: This interactive Tableau dashboard compiles all the above visualizations, complete with filters tooltips for user interaction.



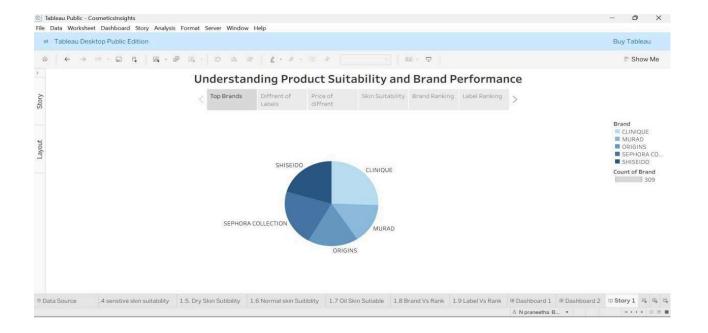


2.

## 11. Tableau Story Screen:

Filename: Story.png

Caption: The Story view walks users through each visualization in a narrative format with titles and captions, ideal for stackholder presentation.	



Note: Screenshots are stored in the folders:

- 6.Project Executable files/Dashboard.png
- 6. Project Executable files/Story.png

#### Link:

https://public.tableau.com/views/Cosmetics 17513898243280/Dashboard1?:language=en-US&:sid=&:redirect=auth&:display count=n&:origin=viz share link

#### Link:

https://public.tableau.com/views/Cosmetics 17513898243280/Story1?:language=en-US &publish=yes&:sid=&:redirect=auth&:display\_count=n&:origin=viz\_share\_link

#### 8. ADVANTAGES & DISADVANTAGES

## Advantages:

- Interactive dashboard with multiple filters
- Skin-type based product recommendations
- Useful for both customers and marketers

#### Disadvantages:

- Dataset is static, doesn't auto-refresh
- No predictive analytics

#### 9. CONCLUSION

The Cosmetic Insights project uses Tableau to reveal product trends and customer preferences. Visualizations help users explore top-performing brands and product suitability based on their skin type. It offers a reliable, interactive visual experience for consumers and businesses alike.

## 10. FUTURE SCOPE

- Integrate real-time product review data
- Add predictive insights (e.g., sentiment or pricing trend)
- Extend dataset with more brand categories
- Enable dynamic dataset uploads for future users
  - 11. APPENDIX



Dataset Link:

Source: Cosmetics Dataset

- https://www.kaggle.com/datasets/kingabzpro/cosmetics-datasets



Tableau Dashboard Link:

Dashboard (interactive)

https://public.tableau.com/views/CosmeticsDashboard\_17515743857790/Dashboard1?:language=en-GB&:sid=&:redirect=auth&:display\_count=n&:origin=viz\_share\_link\_



Tableau Story Link:

Story View with Scenes and Captions

https://public.tableau.com/views/CosmeticsDashboard\_17515743857790/Story1?:language=en-GB&:sid=&:redirect=auth&:display\_count=n&:origin=viz\_share\_link



Project Demo

Link: Original Link

https://drive.google.com/drive/folders/1\_46JtfDAB9-3zCSyyIyy136WzQ
 sfkEjd?usp=sharing

✓ GitHub : [
 https://github.com/praneetha2506/Cosmetic-Insights-Navigating-Cosmetics-Trends-and-Consumer-Insights-with-Tableau.git ]