

# **PROJECT FINAL REPORT**

## **1. INTRODUCTION**

### **1.1 PROJECT OVERVIEW**

**Cosmetic Insights: Navigating Cosmetics Trends and Consumer Insights with Tableau** is a data analytics and visualization project focused on uncovering patterns in consumer behavior and market dynamics within the cosmetics industry. The cosmetics market is growing rapidly, driven by changing consumer preferences, product innovations, and increased competition. As a result, there is a growing need for brands to leverage data to stay relevant and responsive.

This project utilizes Tableau to design interactive dashboards that help analyze various dimensions of cosmetics data, including product rankings, price ranges, skin-type suitability, brand performance, and label distribution. These visualizations enable users—such as marketing professionals, product developers, and business analysts—to identify emerging trends, understand consumer needs, and make strategic decisions.

By transforming raw datasets into meaningful visual stories, **Cosmetic Insights** supports evidence-based decision-making. It bridges the gap between data and action, allowing stakeholders to adapt quickly to market changes, enhance customer satisfaction, and drive business growth.

The project also demonstrates the practical application of data visualization tools in real-world scenarios, showcasing how clear visual insights can simplify complex datasets and offer a competitive edge in industries driven by consumer perception.

### **1.2 PURPOSE**

The primary purpose of this project is to analyze cosmetics-related data and transform it into interactive, visual insights using Tableau. With the cosmetics industry becoming more consumer-driven and competitive, understanding market trends and consumer behavior is critical for brands aiming to improve their product strategies, marketing efforts, and customer engagement.

This project is intended to serve as a decision-support system that empowers stakeholders—including brand managers, marketers, and analysts—to explore and interpret data across various dimensions such as brand popularity, skin-type compatibility, price range, product labels, and customer rankings. These insights help stakeholders make informed decisions based on patterns, trends, and correlations found in the data.

Beyond decision-making, the project also aims to:

- Improve accessibility to complex datasets through simple, interactive visual dashboards.
- Support product innovation by identifying gaps in consumer needs and market trends.
- Enable faster responses to shifts in consumer preferences and feedback.
- Demonstrate the effective use of data visualization tools (Tableau) in solving real-world business challenges.

In summary, the project aims to bridge the gap between raw data and actionable insights, helping cosmetic brands remain agile, customer-focused, and data-driven.

## 2. IDEATION PHASE

### 2.1 PROBLEM STATEMENT

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love. A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

<b>I am</b>	Describe customer with 3-4 key characteristics - <i>who are they?</i>	Describe the customer and their attributes here
<b>I'm trying to</b>	List their outcome or "job" the care about - <i>what are they trying to achieve?</i>	List the thing they are trying to achieve here
<b>but</b>	Describe what problems or barriers stand in the way – <i>what bothers them most?</i>	Describe the problems or barriers that get in the way here
<b>because</b>	Enter the "root cause" of why the problem or barrier exists – <i>what needs to be solved?</i>	Describe the reason the problems or barriers exist
<b>which makes me feel</b>	Describe the emotions from the customer's point of view – <i>how does it impact them emotionally?</i>	Describe the emotions the result from experiencing the problems or barriers

EXAMPLE:

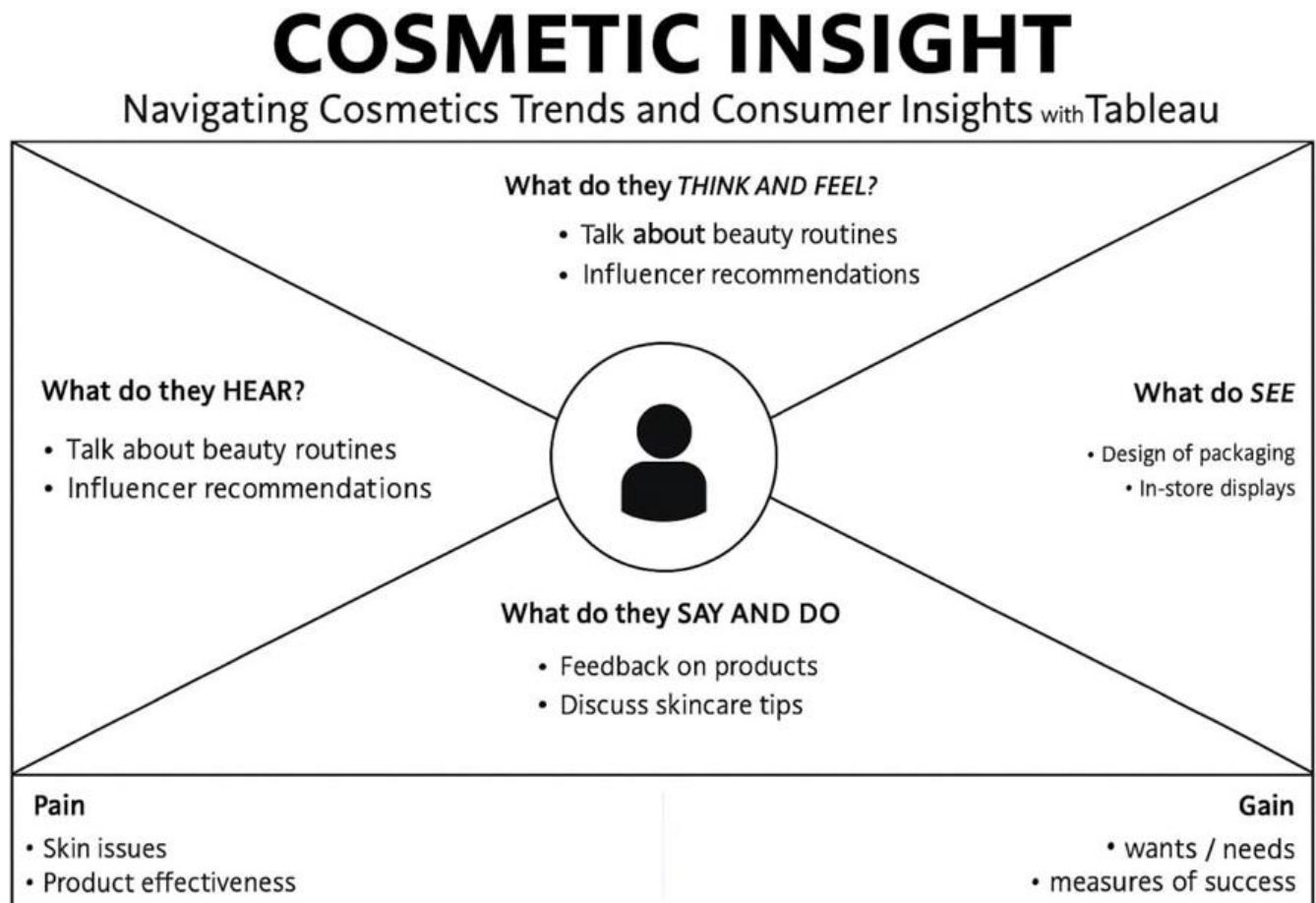
Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	A skincare focused student	Find acne safe cosmetics	Can't tell which products suit my skin	Product info is unclear	confused
PS-2	Working woman with sensitive skin	Buy cruelty free makeup	Can't compare brands easily	Ethical is not shown visually	frustrated

### 2.2 EMPATHY MAP CANVAS

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes. It is a useful tool to help teams better understand their users.

Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

EXAMPLE:



## 2.3 BRAINSTORMING

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

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



## Step-2: Brainstorm, Idea Listing and Grouping

**2**

**Brainstorm**

Write down any ideas that come to mind that address your problem statement.

10 minutes

**TIP**

You can select a sticky note and hit the pencil (switch to sketch) icon to start drawing!

Madduru Gangothri

Visualize top-rated cosmetic brands over time using ranking heatmaps.

Create interactive dashboards in Tableau showing trends by age, skin type, and region.

Lakshmi Chetty Reddy Eswari

Highlight shifts in consumer preferences using time-series charts

Group products by labels and visualize their popularity.

P Poojitha Sai

Analyze the relationship between product price and consumer rating using scatter plots.

Create a sentiment analysis summary from reviews, visualized in word clouds or bar graphs.

Pennalurupeta Venu Gopal

Use pie and bar charts to compare product suitability across skin types.

Design a filterable map to show location-based buying patterns.

Thesetty Phani Shiva Ram

Develop a funnel chart to show customer journey stages

**3**

**Group ideas**

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

**TIP**

Add customizable tags to sticky notes to make it easier to find, browse, organize and categorize important ideas as themes within your mural.

understand product suitability across different skin types.

track and visualize changing consumer preferences over time.

analyze buying behavior and patterns based on location.

## Step-3: Idea Prioritization

**4**

**Prioritize**

Type your paragraph...

20 minutes

**TIP**

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.

**Importance**

If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

Scatter plots for price vs. rating

Ranking heatmaps for top brands

Pie/bar charts for skin types

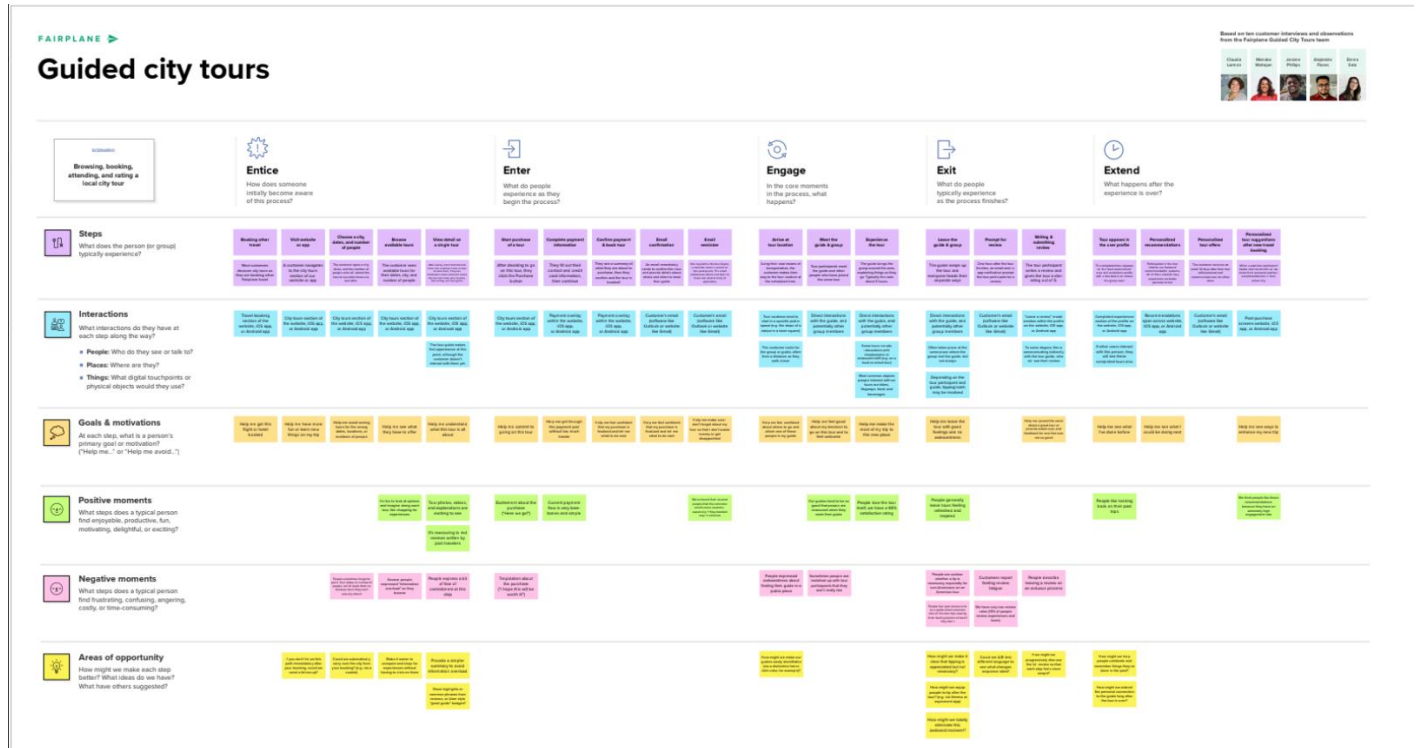
Label-wise product popularity visuals

**Feasibility**

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

## 3. REQUIREMENT ANALYSIS

### 3.1 CUSTOMER JOURNEY MAP



### 3.2 SOLUTION REQUIREMENT

#### Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Dashboard & Insights	View cosmetic trends (charts, graphs) Filter by skin type, brand, price View rankings by label and brand
FR-4	Product Recommendation	Input skin type/preferences Get suggested products based on suitability Show top-rated products for selected criteria

## Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

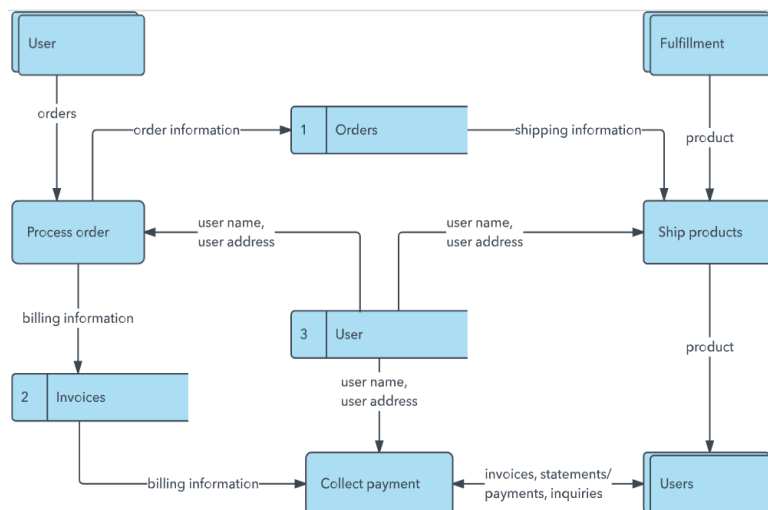
FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	User interface should be simple, intuitive, and accessible to users with minimal technical knowledge.
NFR-2	<b>Security</b>	User data must be protected using encryption, secure login, and access controls.
NFR-3	<b>Reliability</b>	System should function correctly under defined conditions with minimal downtime or failures.
NFR-4	<b>Performance</b>	Application should load insights and charts within 2 3 seconds and handle multiple user requests efficiently.
NFR-5	<b>Availability</b>	Application should be available 24/7 with minimal maintenance-related downtime.

## 3.3 DATA FLOW DIAGRAM

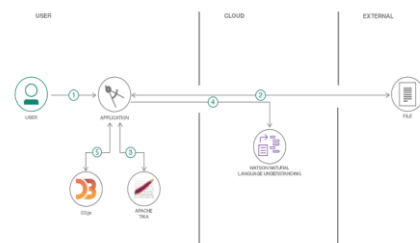
### Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored

### Example: [\(Simplified\)](#)



### Flow



1. User configures credentials for the Watson Natural Language Understanding service and starts the app.
2. User selects data file to process and load.
3. Apache Tika extracts text from the data file.
4. Extracted text is passed to Watson NLU for enrichment.
5. Enriched data is visualized in the UI using the D3.js library.

## User Stories

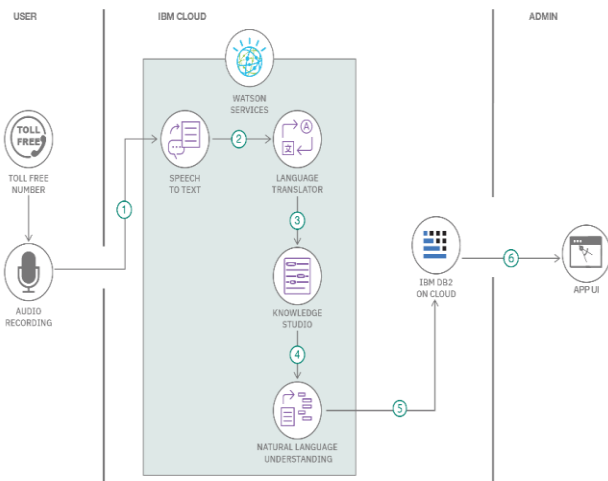
Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can log in with Gmail	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can access dashboard after correct login	High	Sprint-1
	Dashboard	USN-6	As a user, I can view trending products, ingredient safety scores, and personalized suggestions	I can see curated products based on skin profile	High	Sprint-2
Customer (Web user)	Order History	USN-7	As a user, I can view previous orders and reorder products	I see past orders and reorder easily	Medium	Sprint-3

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer Care Executive	Query handling	USN-8	As a customer care exec, I can view and reply to user queries submitted through the contact form.	I can reply to user inquiries and see resolution status	Medium	Sprint-3
Administrator	Product Management	USN-10	As an admin, I can add/edit/delete product listings in the catalog.	Products reflect on user side after changes	high	Sprint-2

### 3.4 TECHNOLOGY STACK

Technical Architecture: The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2 Example: Order processing during pandemics for offline mode.



#### Guidelines:

Include all the processes (As an application logic / Technology Block)  
 Provide infrastructural demarcation (Local / Cloud)  
 Indicate external interfaces (third party API's etc.)  
 Indicate Data Storage components / services  
 Indicate interface to machine learning models (if applicable)

**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g.  Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python



3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud  Local Server Configuration:  Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	3-Tier Architecture (Frontend – Logic – DB)
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Tableau Server / IBM Cloud / Load Balancer (if scaled)
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Redis (if large-scale), Tableau Extracts, CDN

## 4. PROJECT DESIGN

### 4.1 PROBLEM SOLUTION FIT

#### Problem – Solution Fit Template:

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 way that fits the state of your 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.

Problem-Solution fit canvas 2.0			Purpose / Vision		
Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span> <small>Who is your customer? I.e. working parents of 0-5 y.o. kids</small> <div>Young adults mostly women with skin concerns like acne, dullness or dry skin looking for affordable and effective skincare products</div>	<b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span> <small>What constraints prevent your customers from taking action or limit their choices of solutions? I.e. spending power, budget, no cash, network connection, available devices.</small> <div> <ul style="list-style-type: none"> <li>Budget</li> <li>Skin sensitivity</li> <li>Online Product availability</li> </ul> </div>	<b>5. AVAILABLE SOLUTIONS</b> <span>AS</span> <small>Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros &amp; cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking</small> <div> <ul style="list-style-type: none"> <li>Visiting a dermatologist</li> <li>Using DIY/home remedies</li> <li>Buying popular products from ads</li> </ul> </div>	Explore AS, differentiate	
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span> <small>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</small> <div> <ul style="list-style-type: none"> <li>Finding Product that suit their Specific skin type</li> <li>Avoiding allergens or harsh ingredients</li> <li>Choosing product with a good to effectiveness ratio</li> </ul> </div>	<b>9. PROBLEM ROOT CAUSE</b> <span>RC</span> <small>What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations.</small> <div>Many Customers don't understand which ingredients suit their skin type or concern- leading to poor product choices</div>	<b>7. BEHAVIOUR</b> <span>BE</span> <small>What does your customer do to address the problem and get the job done? I.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (I.e. Greenpeace)</small> <div> <ul style="list-style-type: none"> <li>Researching ingredients</li> <li>Filtering products by skin concern</li> <li>Reading online reviews and ratings</li> </ul> </div>		Focus on J&P, tap into BE, understand RC
<b>3. TRIGGERS</b> <span>TR</span> <small>What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.</small> <div>           Seeing a friend or influencer use a product            Reading reviews or dermatologist advice         </div>	<b>10. YOUR SOLUTION</b> <span>SL</span> <small>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations.</small> <div>A recommendation engine or platform that helps users select cosmetic products tailored to their skin type, concerns.</div>	<b>8. CHANNELS of BEHAVIOUR</b> <span>CH</span> <b>8.1 ONLINE</b> <small>What kind of actions do customers take online? Extract online channels from #7</small> <div>Browsing product listings</div>	Extract online & offline CH of BE		
<b>4. EMOTIONS: BEFORE / AFTER</b> <span>EM</span> <small>How do customers feel when they face a problem or a job and afterwards? I.e. lost, insecure &gt; confident, in control - use it in your communication strategy &amp; design.</small> <div>Before: confused, frustrated After: Confident</div>	<b>8.2 OFFLINE</b> <small>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</small> <div>Visiting cosmetic stores and Asking friends</div>				

Problem-Solution fit canvas is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 license  
Created by Daria Nepriakhina / Amaltama

**AMALTAMA**

## 4.2 PROPOSED SOLUTION

### Proposed Solution :

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The cosmetic industry lacks data-driven approaches to understand evolving consumer preferences, trend patterns, and product effectiveness. Businesses often miss timely insights into customer behavior, leading to ineffective product development and marketing strategies.
2.	Idea / Solution description	This project uses Tableau to analyze and visualize cosmetic product trends and consumer insights. By leveraging real-world datasets, it highlights user preferences, product popularity, and demand patterns. Dashboards and visualizations enable companies to make strategic decisions regarding product launches, marketing, and customer engagement.
3.	Novelty / Uniqueness	Unlike generic dashboards, this project combines trend analytics, user sentiment, and sales performance into a single interactive visualization platform. It integrates multiple KPIs (Key Performance Indicators) to offer a holistic view, empowering both cosmetic brands and consumers with real-time, actionable insights.
4.	Social Impact / Customer Satisfaction	The solution enhances consumer satisfaction by aligning product offerings with actual needs and preferences. It also empowers consumers with transparency. For brands, it reduces wastage, increases personalization, and promotes sustainability by focusing on what customers actually want.
5.	Business Model (Revenue Model)	The solution can be monetized as a B2B SaaS model where cosmetic companies subscribe to access analytics dashboards. Additional revenues can be generated via: Insight reports for product innovation and market expansion Custom dashboard creation Data consulting
6.	Scalability of the Solution	The framework is scalable across geographies, brands, and product categories. It can be extended to include social media analytics, influencer trends, and real-time sales data. The same model can also be applied to other consumer goods industries.

## 4.3 SOLUTION ARCHITECTURE

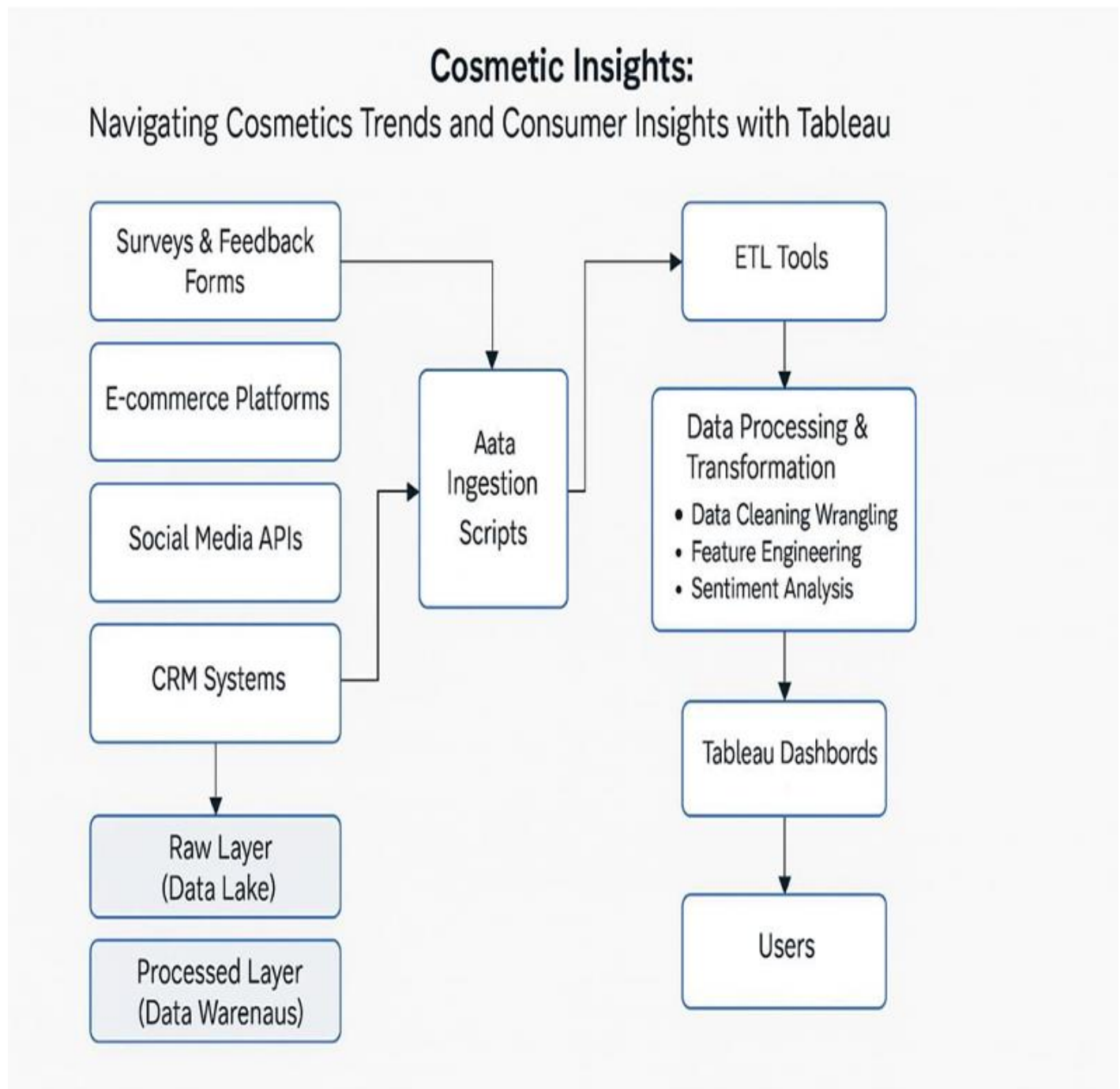
### Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.

- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

**Example - Solution Architecture Diagram:**



## 5. PROJECT PLANNING & SCHEDULING

### 5.1 PROJECT PLANNING

#### Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Dashboard	USN-1	As a user, I can view key cosmetics metrics on the dashboard.	5	High
Sprint-1	Product Filtering	USN-2	As a user, I can filter products by skin type.	6	High
Sprint 1	Data Upload	USN-3	As an admin, I can upload cosmetic product data.	4	Low
Sprint-1	User Profile Setup	USN-4	As a user, I can create and edit my skincare profile.	5	Medium
Sprint 2	Skin Type Recommendation	USN-5	As a user, I receive recommendations based on my skin type.	8	High
Sprint 2	Brand Popularity Insights	USN-6	As a user, I can see trending brands based on user rating.	5	Medium
Sprint 2	Ranking Visualization	USN-7	As a user, I can view product rankings visually.	7	Low
Sprint 3	Ingredient Analysis	USN-8	As a user, I can analyze key ingredients in cosmetics.	6	High
Sprint 3	Search Engine	USN-9	As a user, I can search for a cosmetic product using keywords.	6	Medium
Sprint 3	Comparison Tool	USN-10	As a user, I can compare products across brands and ingredients.	8	Low
Sprint 4	Export Report	USN-11	As a user, I can download personalized reports of cosmetic recommendations.	10	Medium
Sprint 4	Review Analysis	USN-12	As a user, I can view sentiment analysis on product reviews.	10	High

#### 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 Release Date
Sprint-1	20	6 Days	2025-06-01	2025-06-06	18	2025-06-06
Sprint-2	20	6 Days	2025-06-07	2025-06-12	15	2025-06-12
Sprint-3	20	6 Days	2025-06-13	2025-06-18	10	2025-06-18
Sprint-4	20	6 Days	2025-06-19	2025-06-24	20	2025-06-24

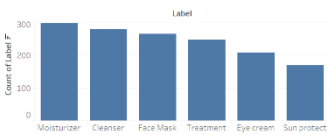

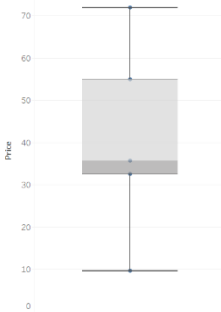
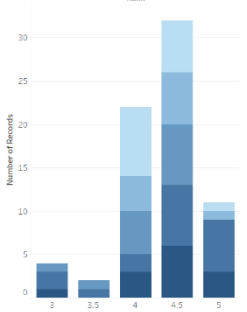

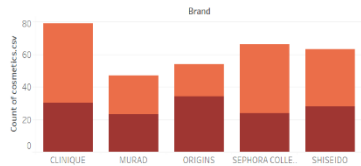
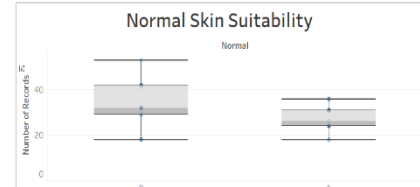
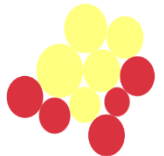
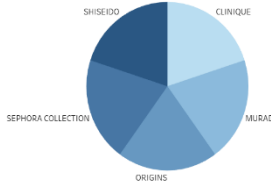
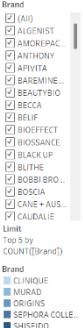
## 6. FUNCTIONAL AND PERFORMANCE TESTING

### 6.1 PERFORMANCE TESTING

#### Model Performance Testing:

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

S.No.	Parameter	Screenshot / Values																																																																																																																																																																					
1.	Data Rendered	<p>The dataset titled "cosmetics.csv" was successfully imported into Tableau. It contains multiple attributes related to cosmetic products, such as labels, brand names, skin suitability, pricing, ratings, and user reviews.</p> <table><tr><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>F</th><th>G</th><th>H</th><th>I</th><th>J</th><th>K</th></tr><tr><th>Label</th><th>Brand</th><th>Name</th><th>Price</th><th>Rank</th><th>Ingredient: Combinati</th><th>Dry</th><th>Normal</th><th>Oily</th><th>Sensitive</th><th></th></tr><tr><td>Moisturize LA MER</td><td>Crème de</td><td></td><td>175</td><td>4.1</td><td>Algae (Sea</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Moisturize SK-II</td><td>Facial Tree</td><td></td><td>179</td><td>4.1</td><td>Galactomy</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Moisturize DRUNK EL</td><td>Protini™ Pi</td><td></td><td>68</td><td>4.4</td><td>Water, Dic</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>Moisturize LA MER</td><td>The Moistu</td><td></td><td>175</td><td>3.8</td><td>Algae (Sea</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Moisturize IT COSME</td><td>Your Skin E</td><td></td><td>38</td><td>4.1</td><td>Water, Sne</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Moisturize TATCHA</td><td>The Water</td><td></td><td>68</td><td>4.2</td><td>Water, Sac</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Moisturize DRUNK EL</td><td>Lala Retro</td><td></td><td>60</td><td>4.2</td><td>Water, Gly</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>Moisturize DRUNK EL</td><td>Virgin Mar</td><td></td><td>72</td><td>4.4</td><td>100% Unre</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr><tr><td>Moisturize KIEHL'S SI</td><td>Ultra Facie</td><td></td><td>29</td><td>4.4</td><td>Water, Gly</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Moisturize LA MER</td><td>Little Miss</td><td></td><td>325</td><td>5</td><td>Algae (Sea</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Moisturize FRESH</td><td>Lotus Yout</td><td></td><td>45</td><td>4.3</td><td>Water, Gly</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Moisturize KIEHL'S SI</td><td>Midnight R</td><td></td><td>47</td><td>4.4</td><td>Caprylic/C</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Moisturize REFINE</td><td>The True C</td><td></td><td>38</td><td>4.5</td><td>Water, Nir</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td></tr></table> <p>&lt; &gt; cosmetics (1) +</p>	A	B	C	D	E	F	G	H	I	J	K	Label	Brand	Name	Price	Rank	Ingredient: Combinati	Dry	Normal	Oily	Sensitive		Moisturize LA MER	Crème de		175	4.1	Algae (Sea	1	1	1	1	1	Moisturize SK-II	Facial Tree		179	4.1	Galactomy	1	1	1	1	1	Moisturize DRUNK EL	Protini™ Pi		68	4.4	Water, Dic	1	1	1	1	0	Moisturize LA MER	The Moistu		175	3.8	Algae (Sea	1	1	1	1	1	Moisturize IT COSME	Your Skin E		38	4.1	Water, Sne	1	1	1	1	1	Moisturize TATCHA	The Water		68	4.2	Water, Sac	1	0	1	1	1	Moisturize DRUNK EL	Lala Retro		60	4.2	Water, Gly	1	1	1	1	0	Moisturize DRUNK EL	Virgin Mar		72	4.4	100% Unre	1	1	1	1	0	Moisturize KIEHL'S SI	Ultra Facie		29	4.4	Water, Gly	1	1	1	1	1	Moisturize LA MER	Little Miss		325	5	Algae (Sea	0	0	0	0	0	Moisturize FRESH	Lotus Yout		45	4.3	Water, Gly	0	0	0	0	0	Moisturize KIEHL'S SI	Midnight R		47	4.4	Caprylic/C	1	1	1	1	1	Moisturize REFINE	The True C		38	4.5	Water, Nir	1	0	1	1	0
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2.	Data Preprocessing	<ul style="list-style-type: none"><li>• The dataset was cleaned and prepared before visualization.</li><li>• Missing values were checked and handled appropriately, such as removing empty rows or filling null values where needed.</li><li>• Unwanted characters and duplicates were removed to ensure accurate analysis in Tableau.</li></ul>																																																																																																																																																																					
3.	Utilization of Filters	<ul style="list-style-type: none"><li>• Brand Filter</li><li>• Label Filter</li><li>• Skin Suitability Filter</li></ul>																																																																																																																																																																					
4.	Calculation fields Used	<ul style="list-style-type: none"><li>• Label Count</li><li>• Count of Names</li><li>• Average of price</li><li>• Skin Suitability Count</li></ul>																																																																																																																																																																					

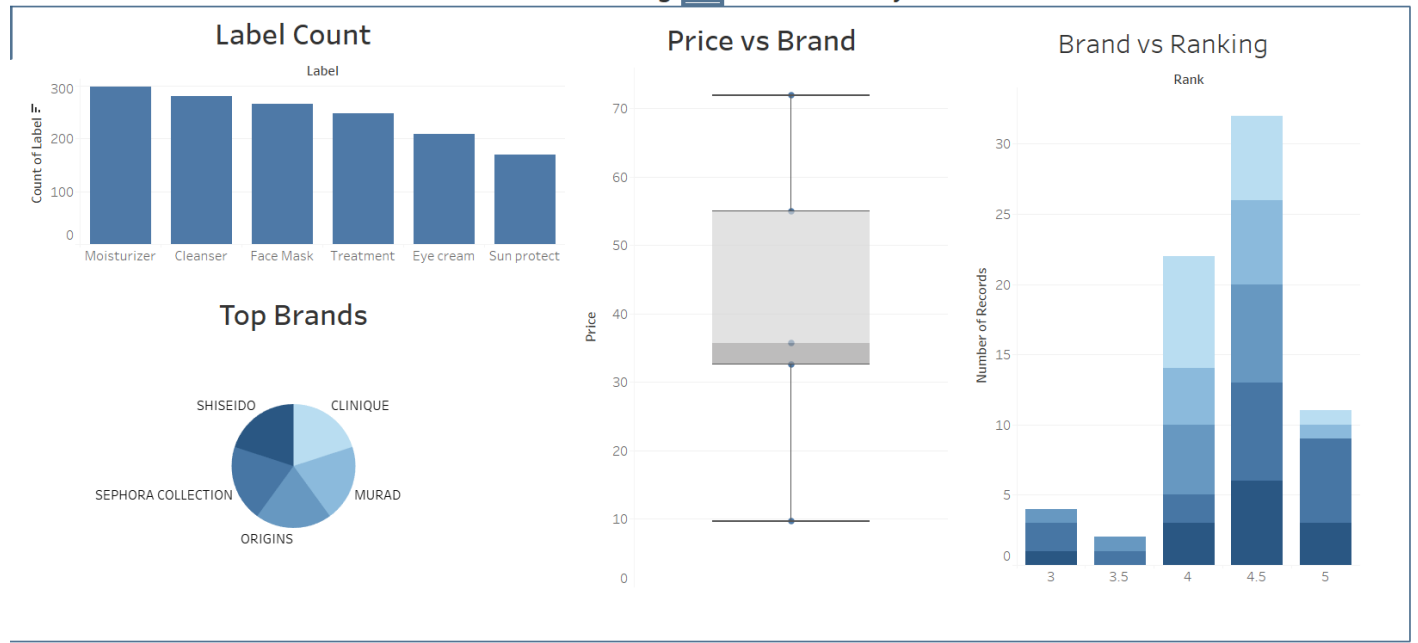
5.	Dashboard design	<div data-bbox="565 96 1398 283"><p>No of Visualizations / Graphs – 9</p><p>1.Top Brands 2.Label Count 3.Price vs Brand 4.Sensitive Skin Suitability</p><p>5.Noraml Skin Suitability 6.Oily Skin Suitability</p><p>7.Dry Skin Suitability 8.Brand vs Ranking 9.Label vs Ranking</p></div> <div data-bbox="565 365 1411 779"><p>Product Ranking and Detailed Analysis</p><div><div><p>Label Count</p></div><div><p>Top Brands</p></div><div><p>Price vs Brand</p></div><div><p>Brand vs Ranking</p></div></div></div> <div data-bbox="565 867 1411 1325"><p>Product Suitability Overview</p><div><div><p>Sensitive Skin Suitability</p></div><div><p>Oil Skin Suitability</p></div><div><p>Normal Skin Suitability</p></div><div><p>Dry skin suitability</p></div></div></div>
6	Story Design	<div data-bbox="565 1358 1398 1491"><p>No of Visualizations / Graphs -6</p><p>1.Top Brands 2.Different Labels of 3.Price of Different 4.Skin Suitability</p><p>5.Brand Ranking 6.Label Ranking</p></div> <div data-bbox="565 1514 1411 1934"><p>Understanding Product Suitability and Brand Performance</p><div><div><p>Top Brands</p></div><div><p>Brand Ranking</p></div></div></div>

## 7. RESULTS

### 7.1 OUTPUT SCREENSHOTS

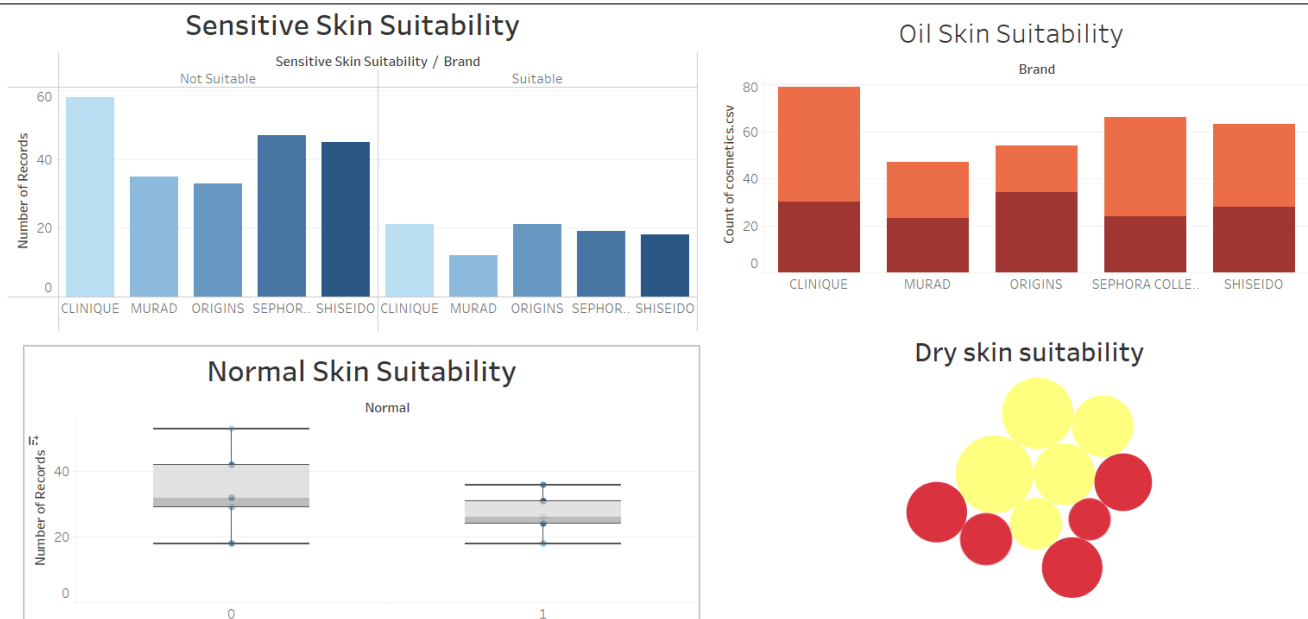
#### Dashboard 1

##### Product Ranking and Detailed Analysis



#### Dashboard 2

##### Product Suitability Overview

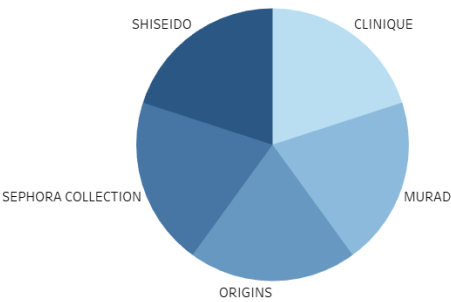




Story

Understanding Product Suitability and Brand Performance

<	Top Brands	Different Labels	Price of different	Skin Suitability	Brand Ranking	Label Ranking	>
---	------------	------------------	--------------------	------------------	---------------	---------------	---



Brand

☒ (All)  
☒ ALGENIST  
☒ AMOREPAC...  
☒ ANTHONY  
☒ APIVITA  
☒ BAREMINE...  
☒ BEAUTYBIO  
☒ BECCA  
☒ BELIF  
☒ BIOEFFECT  
☒ BIOSSANCE  
☒ BLACK UP  
☒ BLITHE  
☒ BOBBI BRO...  
☒ BOSCIA  
☒ CANE + AUS...  
☒ CAUDALIE

Limit

Top 5 by

COUNT([Brand])

Brand

CLINIQUE

MURAD

ORIGINS

SEPHORA COLLE..

SHISEIDO

## 8. ADVANTAGES & DISADVANTAGES

### 8.1 Advantages

- 1. Data-Driven Decision Making**  
Enables stakeholders to make informed decisions based on real-time data insights.
- 2. Interactive Dashboards**  
Tableau dashboards provide dynamic visualizations that allow users to explore data in a user-friendly manner.
- 3. Improved Market Understanding**  
Helps identify consumer preferences, top-performing brands, and product suitability across different skin types.
- 4. Supports Product Innovation**  
Insights can guide product development and formulation strategies by highlighting gaps and trends.
- 5. Time Efficiency**  
Reduces the time needed to interpret large datasets by converting them into intuitive visuals.
- 6. Scalability**  
Dashboards can be updated with new data to reflect current trends without reworking the entire project.

### 8.2 Disadvantages

- 1. Data Dependency**  
The quality of insights is limited by the quality and completeness of the dataset used.
- 2. Tool Limitations**  
Tableau Public has certain feature limitations compared to the paid version (e.g., data refresh, privacy controls).
- 3. Learning Curve**  
New users may require time to understand and navigate Tableau's interface effectively.
- 4. Limited Predictive Capabilities**  
Basic Tableau dashboards focus on descriptive analytics; advanced predictive modeling requires integration with other tools.
- 5. Internet Requirement**  
If hosted on Tableau Public or cloud services, access requires a stable internet connection.

## 9. CONCLUSION

The project "*Cosmetic Insights: Navigating Cosmetics Trends and Consumer Insights with Tableau*" demonstrates the powerful role of data visualization in understanding and responding to consumer behavior within the cosmetics industry. As the industry continues to expand and become more consumer-driven, brands are under increasing pressure to adapt quickly to changing preferences, maintain product quality, and stay ahead of competition. This project addresses these challenges by transforming raw, complex data into visually appealing and interactive dashboards using Tableau.

By analyzing various dimensions such as brand popularity, product pricing, skin-type suitability, and label distribution, the project provides a comprehensive view of market dynamics. These insights help stakeholders make informed decisions related to marketing, product development, and customer targeting. The visualizations created allow users to identify trends, spot patterns, and extract valuable information without needing advanced technical skills.

Additionally, the project emphasizes the importance of real-time analytics and interactive tools in supporting agile business decisions. Whether it is monitoring declining interest in specific products, addressing customer concerns, or identifying emerging trends, the dashboards serve as a reliable tool for both strategic planning and operational improvement.

In conclusion, this project successfully showcases how tools like Tableau can bridge the gap between data and decision-making. It lays a strong foundation for future enhancements, such as incorporating predictive analytics, expanding datasets, or integrating with customer feedback platforms. With continuous updates and scalability, *Cosmetic Insights* has the potential to be a valuable asset for businesses seeking to thrive in a data-driven and consumer-centric market.

## 10. FUTURE SCOPE

The *Cosmetic Insights* project provides a solid foundation for visualizing cosmetics industry data, but there is significant potential to expand and enhance the platform in the future. As the industry and data sources evolve, the project can grow in the following ways:

- 1. Integration with Real-Time Data Sources**

Incorporating live data feeds from social media, e-commerce platforms, or customer review sites can enable real-time trend analysis and faster response to market shifts.

- 2. Predictive Analytics and Machine Learning**

Adding machine learning models can help forecast future trends, predict consumer preferences, and support product recommendations based on historical behavior.

- 3. Personalized Consumer Dashboards**

Creating user-specific dashboards where consumers can input their skin type or preferences to receive tailored product suggestions and trend updates.

#### 4. **Mobile-Friendly Dashboards**

Optimizing Tableau dashboards for mobile and tablet views can improve accessibility and usability for brand managers and marketers on the go.

#### 5. **Integration with External APIs**

Connecting the platform with APIs such as ingredient analysis tools, product safety databases, or competitor analytics can enrich the insight depth.

#### 6. **Enhanced Security and Data Privacy**

As more personal or sensitive data is integrated, implementing stronger security measures and access controls will become essential.

#### 7. **Expansion to Other Beauty Segments**

The model can be extended to other domains such as skincare, haircare, and fragrance to create a broader beauty insights platform.

## 11. APPENDIX

### DATASET LINK

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

### GITHUB & PROJECT DEMO LINK

Github - <https://github.com/gangothri-3/Cosmetic-Insights-Navigating-Cosmetics-Trends-and-Consumer-Insights-with-Tableau/tree/main>

Project Demo -

[https://drive.google.com/file/d/1T5ewayluZd7kPGcvn4xHFmSs\\_GrAvmMV/view?usp=sharing](https://drive.google.com/file/d/1T5ewayluZd7kPGcvn4xHFmSs_GrAvmMV/view?usp=sharing)