

1. INTRODUCTION

1.1 Project Overview

The **Cosmetic Insights** project aims to build an interactive, visually rich Tableaudashboard that enables stakeholders in the beauty and personal care industry to explore and understand evolving cosmetic trends and consumer behavior patterns across regions, product categories, and demographics. This project leverages real-time and historical sales, pricing, and customer preference data to empower data-driven decisions in product development, marketing, and inventory planning.

1.2 Purpose

The dashboard offers **brand-wise performance tracking, brand-wise rankings, price segmentation analysis, and label-specific performance** (e.g., organic, cruelty-free, premium). Additionally, it integrates **voice-activated insights, AR-based product visualization, and AI-driven recommendations** to enhance user interaction and forecast future trends.

2. IDEATION PHASE

2.1 Problem Statement

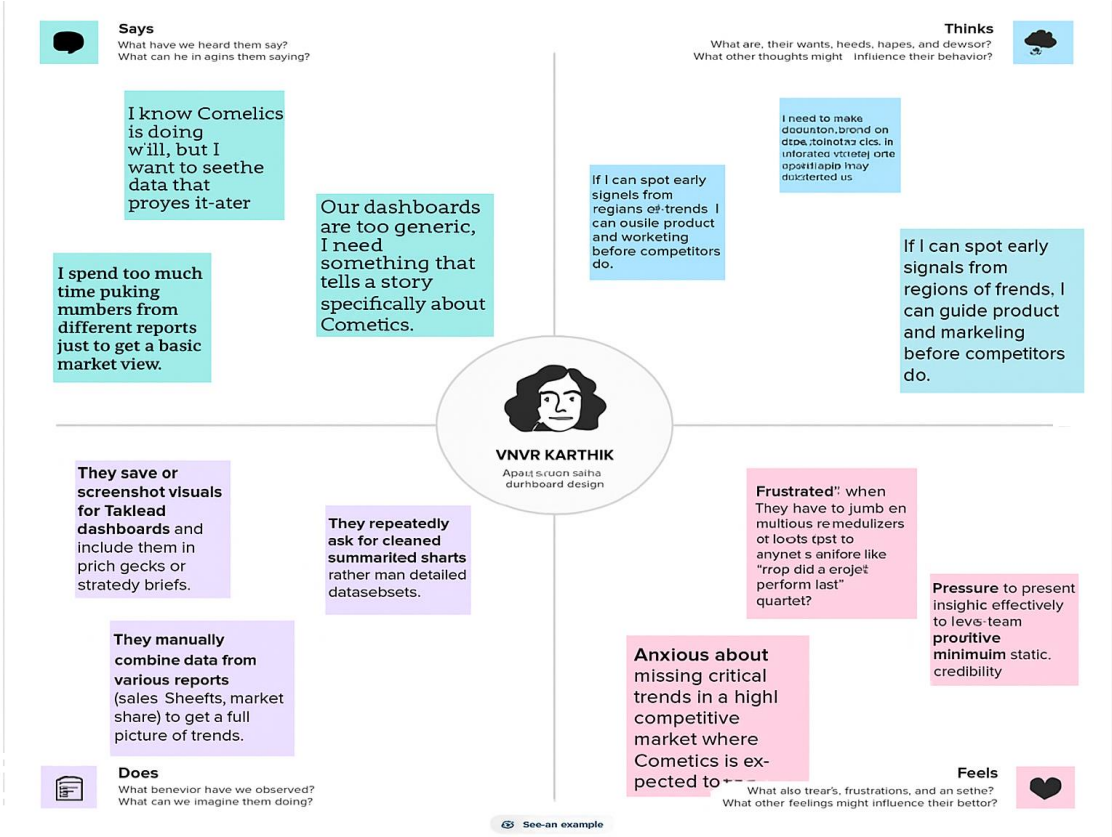
Problem statement	I am	I’m trying to	but	because	Which makes me feel
PS-1	A consumer researcher	understand which cosmetic products are preferred by oily vs dry skin users	I can’t compare brand performance across skin type	the insights are not visualized or segmented properly	overwhelmed by unstructured data
PS-2	A brand manager	assess my brand’s position compared to top competitors	I don’t have real-time comparative insights	market dashboards don’t track cross-brand analytics	uncertain about where we stand in the market
PS-3	A product developer	explore trends in consumer	the data doesn’t highlight skin-type	our reports don’t integrate	disconnected from customer needs

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		preferen ces by skin type	compatib ility	sentime nt or suitabili ty data	
PS-4	A retail strategist	identify top- perform ing cosme tics by city tier	I can't filter sales data by region and brand rank	we don't have a location -wise, rank- based view	frustrated with missed market opportun ities

2.2 Empathy Map Canvas



2.3 Brainstorming



Brainstorm, idea listing and grouping

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2 Run the ideas brainstorm

Generate as many ideas as possible related to the problem statement. Combine and group similar ideas as you go.

⌚ 20 minutes

3 Grouped ideas



Brainstorm & idea prioritization

IREVOLUTION

1 Define your problem statement

What problem are you trying to solve? Frame your problem as *How Might We* statement. This will be the focus of your brainstorm.

⌚ 5 minutes

PROBLEM

How might we (your problem statement)?

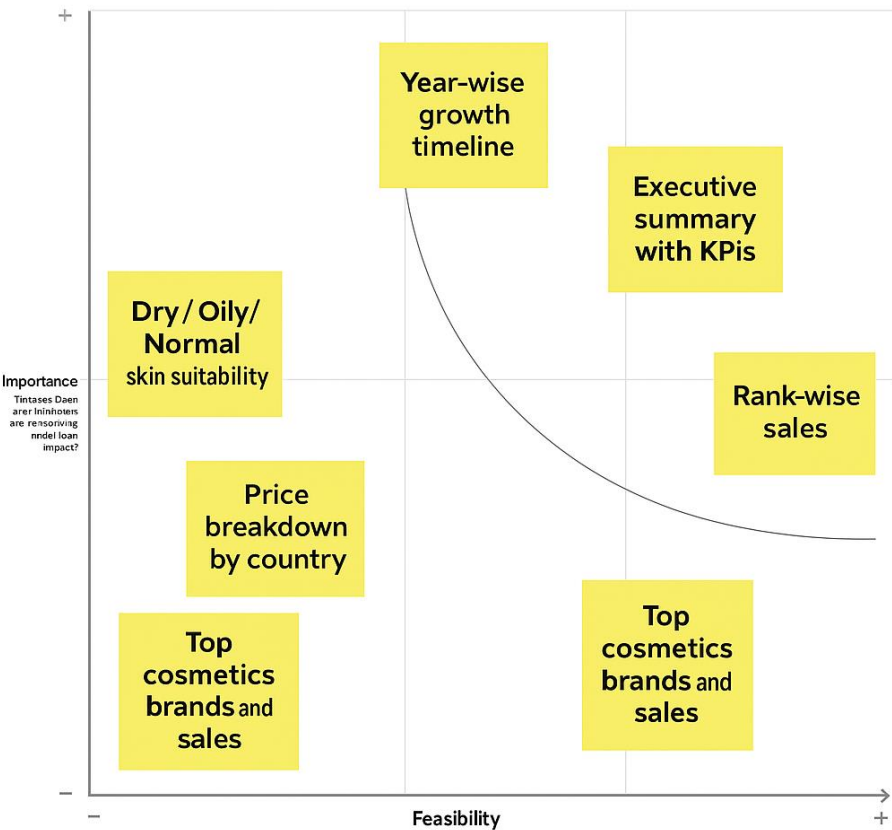
Example:

How might we help cosmetic brands and stakeholders explore consumer behavior, product trends, and market segmentation in India more effectively using interactive dashboards and visual storytelling with Tableau?

Key rules of brainstorming

To run a smooth and productive session:

- 🗨️ Stay in topic
- ★ Encourage wild ideas
- ✕ Defer judgment
- 👂 Listen to others
- 📋 Go for volume
- 👁️ If possible, be visual



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

Stage	Need	Action	Touchpoint	Pain Point	Opportunity
disco	Wants cosmetic market trends (e.g., top brands, category growth)	Searches reports, Excel sheets, or third-party data	Emails, Market PDFs, Excel files	Data is scattered across sources	Provide a single entry-point dashboard with live cosmetics KPIs
Explore	Needs regional & feature-level	Browses multiple charts manually	Excel, internal BI tools	Time-consuming exploration	Use filter-enabled Tableau dashboard with

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	insights (e.g., skincare in South India, ingredie nt trends)				geo- map and category filters
Enga g)	Wants to compar e product specs vs pricing (e.g., SPF vs price, natural vs syntheti c ingredie nts	Builds custom visualizati ons or manual comparis ons	Excel formulas, charts	Lacks interacti vity & real- time compari son	Offer a pre- built price/sp ec compari son dashboa rd with visual toggles
Decid e	Preparing a campai gn or pitch for product launche s or discoun ts	Captures screensh ots, builds slides manually	PowerPoint,screen shots	Weak storytell ing and static visuals	Use Tableau Story Points with narrativ e captions , brand highligh ts, and trend paths

3.2 Solution Requirement

Functional Requirements:

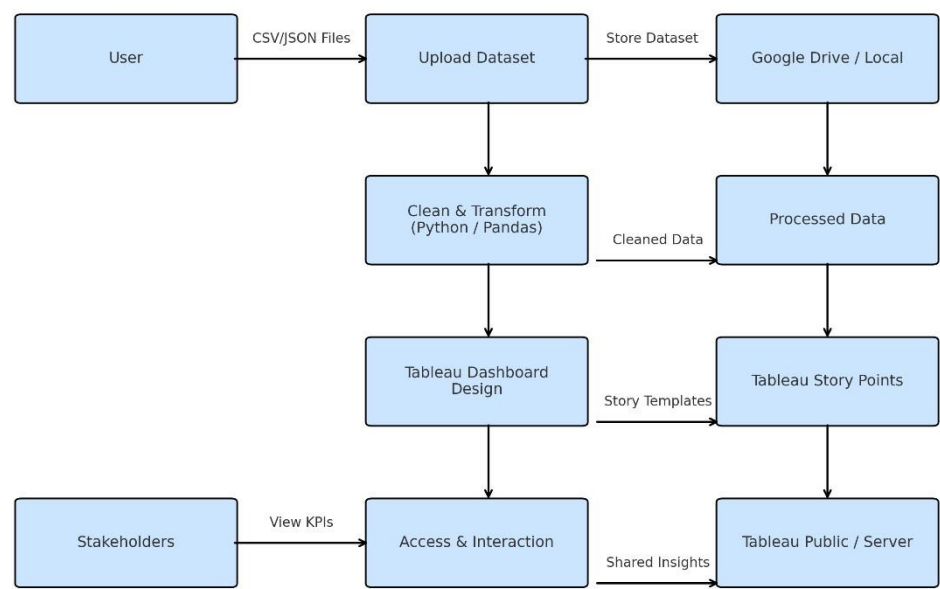
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Interactive KPI Dashboard	Displays total sales, top-selling cosmetic brands , and category-wise performance (e.g., skincare, makeup) by region.
FR-2	Model & Spec Analytics	Allows users to compare cosmetic products (e.g., foundations, moisturizers) based on key attributes like SPF level, ingredients, skin type compatibility, and formulation (cream, gel, powder) ..
FR-3	Quarterly Market Share Visualization	Visualizes brand-wise market share across India’s cosmetics sector , segmented into four quarters using donut and bar charts
FR-4	Pricing Pattern Insights	Displays average price distribution and discount trends based on product category, ingredient type, and skin concern (e.g., acne, aging) .
FR-5	Geo-Map Representation	Highlights state-wise sales performance of cosmetic brands/products in India, including top categories by region ,price.
FR-6	Story-Based Dashboard Navigation	Presents a step-by-step narrative view of how cosmetic product sales and brand performance evolved across regions, categories, and time, using captioned storytelling and dynamic visuals.

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	Performance	Dashboards must load within 3–5 seconds even with filters applied.
NFR-2	Scalability	The framework should support future data addition (e.g., new models or regions).
NFR-3	Responsiveness	Dashboard layout should be usable on laptops and projectors during presentations.
NFR-4	Performance	The interface must be simple, readable, and require no technical background to explore.
NFR-5	Usability	Use a dark theme with eye-comfort colors and clear legends to reduce user fatigue.
NFR-6	Data Accuracy	Ensure calculations (KPIs, averages, comparisons) are correctly validated against source files.

3.3 Data Flow Diagram

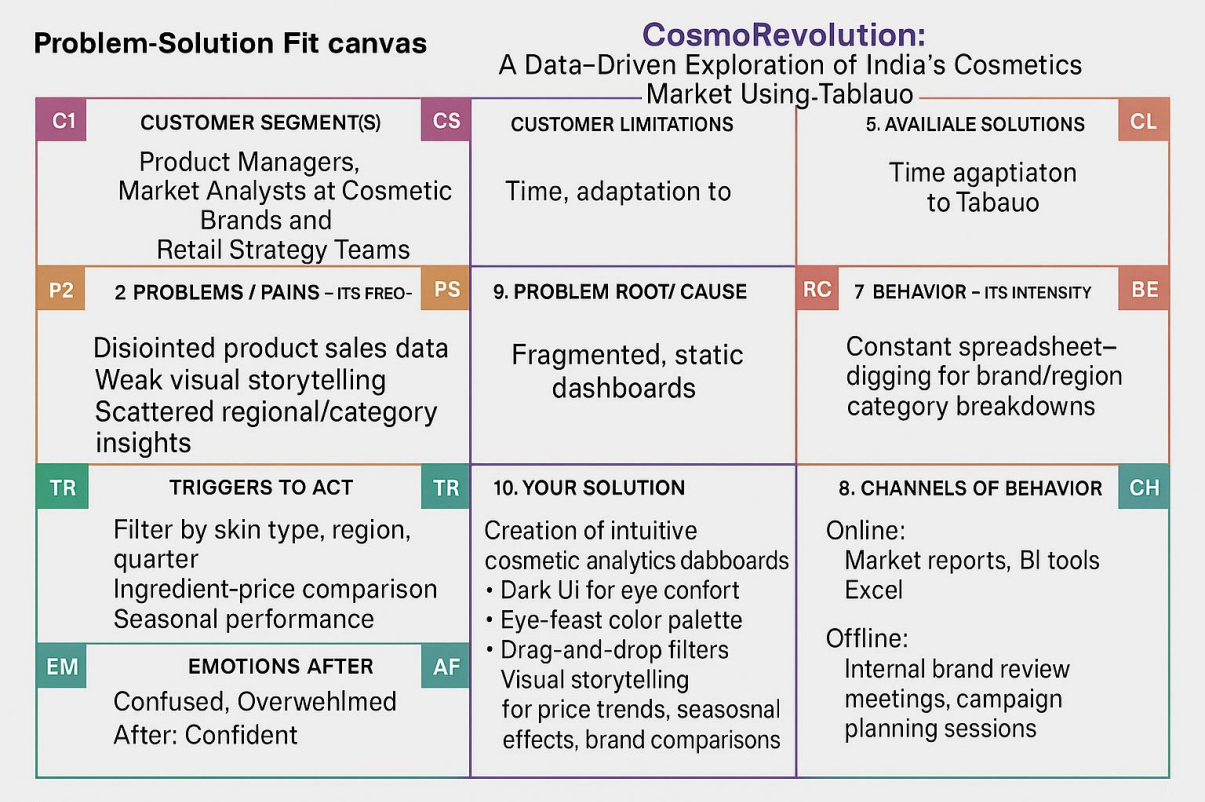


3.4 Technology Stack

component	Tool/technology	Purpose
Data Source	CSV, JSON files	Raw smartphone sales and specs data
Visualization	Tableau Desktop	Creating interactive dashboards and stories
Storage	Google Drive / Local	Storing raw and processed datasets
Collaboration	Google Docs, Slack	Team communication and report writing
Deployment	Tableau Public / Server	Dashboard sharing and stakeholder access

4. PROJECT DESIGN

4.1 Problem Solution Fit



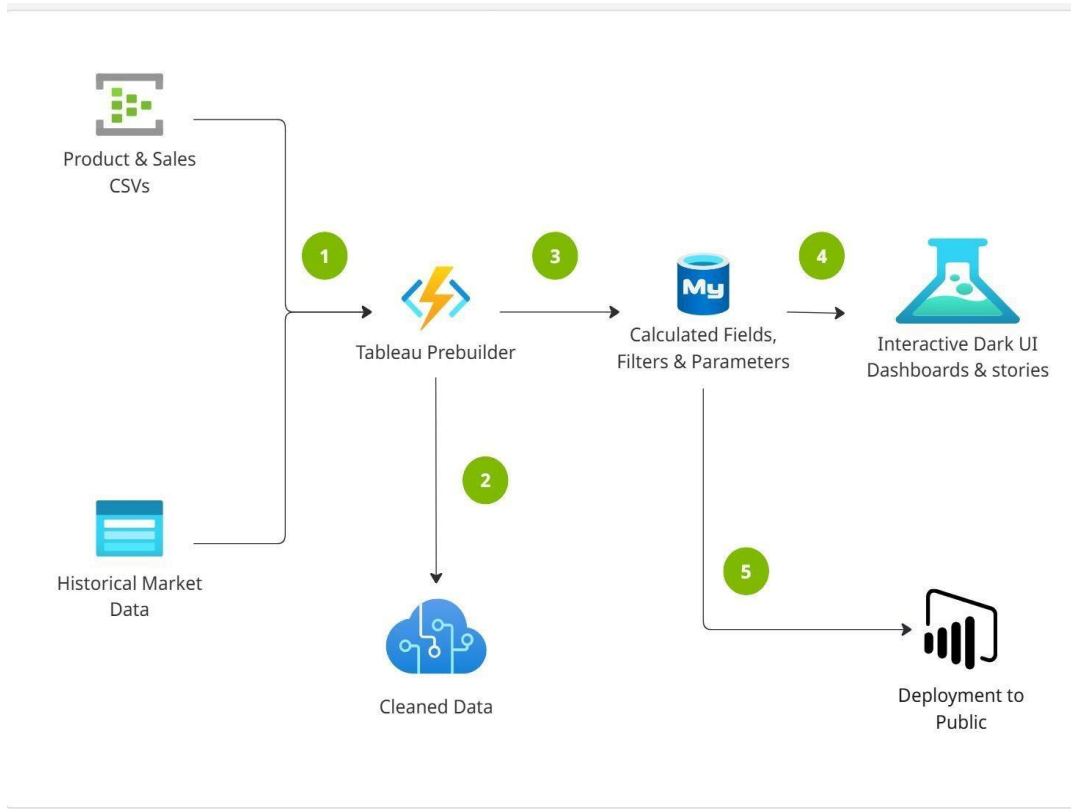
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4.2 Proposed Solution

S.No.	Parameter	Description
1	Problem Statement	Cosmetics brands and stakeholders lack a centralized, interactive, and story-driven way to understand product performance by region, skin type, and price in India. This hinders confident, data-backed decision-making
2	Idea / Solution Description	<ul style="list-style-type: none"> - Creation of intuitive visual analytics dashboards - Dark UI for enhanced user experience - Eye-comfort color palette - Interactive drag-and-drop filters (e.g., region, skin type, price, ingredient type)
3	Novelty / Uniqueness	<ul style="list-style-type: none"> - Moves beyond static reports to interactive, story-based dashboards - KPIs respond dynamically to filters - Designed for reduced eye strain and better user focus
4	Social Impact Customer Satisfaction	<ul style="list-style-type: none"> - Enables cosmetic product and marketing teams to align with diverse consumer needs - Fosters data-first culture - Speeds up insights, improves regional strategy
5	Business Model (Revenue Model)	<ul style="list-style-type: none"> - Subscription-based internal tool - Consultancy-based deployment model for other cosmetic brands and agencies - Can be offered as a branded BI solution
6	Scalability of the Solution	<ul style="list-style-type: none"> - Adaptable to different countries, brands, and product lines (e.g., makeup, skincare, haircare) - Reusable dashboard framework; only data sources and filters need updating

4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection Data Preprocessing Data Preprocessing Making Graphs/Visualizations Dashboard &	USN-2	As a user, I can load data into the processing environment	1	High Medium Medium	ALL
Sprint-2		USN-3		3		ALL
		USN-4		2		
		USN-5		5		
Sprint-2		USN - 6	As a user, I can handle missing	6	High HIGH	ALL

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Sprint-3	STORIES		values in the dataset			ALL
SPRINT-4			As a user, I can encode or map categorical variables appropriately As a user, I can build the initial model based on processed data Dark ui with eye feasted color palette			ALL
SPRINT-5	Report & documentation	USN - 7	The step by step guide documentat ion	7	MEDIUM	ALL

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

S.No.	Parameter	Screenshot / Values
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1.	data Rendered	Rendered from cleaned CSV files with cosmetics sales of different brands ,price,rank etc. Loaded ~1,000+ rows
2.	Data Preprocessing	Null values handled; The new fields are created for different suitability for different skins like oily,normal,dry etc
3.	Utilization of Filters	Applied Tableau filters for getting top 5 brands,price vs rank ,sales in different reions.
4.	Calculation fields Used	<ul style="list-style-type: none"> - Brand vs sales - Labelvs sales - Price vs brand - Rank vs brand - Skin suitability
5.	Dashboard design	No of Visualizations / Graphs - 2 Dashboards
6	Story Design	No of Visualizations / Graphs - 1 Stories with 9 story points each

7. RESULTS

7.1 Output Screenshots DASHBOARDS:

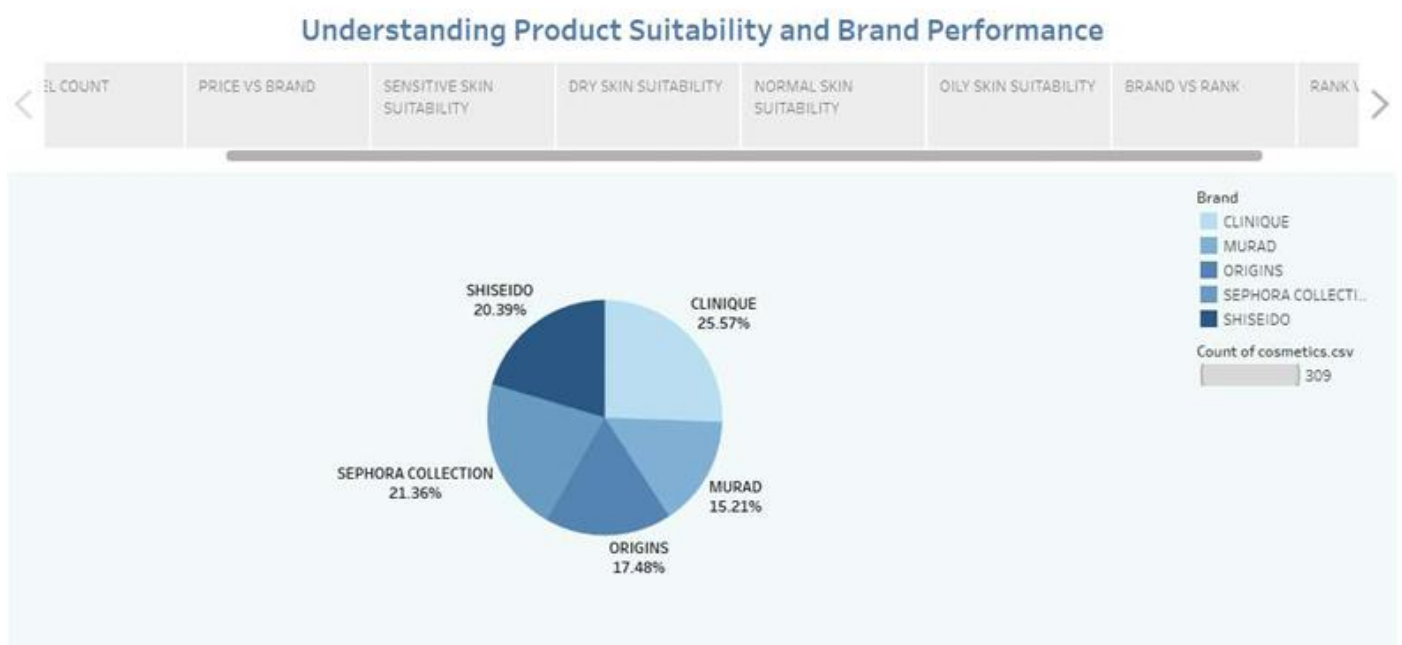


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STORY 1 OUTPUTS:



8. ADVANTAGES & DISADVANTAGES

ADVANTAGES:

→ Better Market Understanding

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Helps brands understand consumer preferences, buying behavior, and emerging trends in skincare, makeup, and personal care.

→Informed Product Development

Enables R&D teams to design products aligned with what consumers want (e.g., natural ingredients, cruelty-free, SPF-enhanced).

→Optimized Inventory and Supply Chain

Sales trends and regional data help forecast demand and reduce overstock or stockouts.

→Brand Perception Monitoring

Social listening and sentiment analysis give real-time insight into how consumers feel about the brand.

→State-wise or Region-wise Performance

Visual insights help identify strong or weak markets for regional expansion or targeted sales pushes.

DISADVANTAGES:

→Data Privacy Issues

Collecting and analyzing personal data (e.g., skin type, age, location) can raise ethical and legal concerns.

→High Implementation Cost

Advanced analytics platforms like Tableau or AI-driven tools may be expensive for small businesses.

→Complexity of Data Integration

Combining data from various sources (e-commerce, retail, social media) requires technical expertise.

9. CONCLUSION

Cosmetics insights are transforming the beauty industry by enabling data-driven decisions that enhance personalization, customer satisfaction, and market responsiveness. With advancements in AI, AR, and predictive analytics, brands can better understand consumer needs, forecast trends, and optimize operations. As technology evolves, cosmetics insights will play a crucial role in delivering smarter, sustainable, and more inclusive beauty experiences.

10. FUTURE SCOPE

1. AI-Driven Personalization

- Customized product recommendations based on skin type, tone, weather, and user behavior using AI.

2. Augmented Reality (AR) Virtual Try-On

- Try cosmetics virtually using smartphones or smart mirrors to improve purchase confidence.

3. State-Wise & Real-Time Sales Insights

- Use tools like Tableau for region-wise analytics on product sales, pricing trends, and customer demand.

4. Skin Genomics Integration

- Personalized skincare using genetic and microbiome data to recommend suitable ingredients.

5. Voice-Activated Beauty Assistants

- Smart voice tools suggest products based on user queries (e.g., "Best sunscreen for oily skin under ₹500").

6. Eco-Sustainability Metrics

- Analytics dashboards will track carbon footprint, cruelty-free status, and recyclable packaging use.

7. Predictive Trend Forecasting

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- Use social media, influencer data, and purchase trends to predict future hot products or shades.
- 8. **Omni-Channel Consumer Behavior Analysis**
 - Track behavior across online, in-store, and mobile to offer seamless, personalized experiences.
- 9. **Sentiment & Review Analytics**
 - AI-powered tools will monitor social media and customer reviews to improve products and service.

10. APPENDIX Dataset:

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

11. VIDEO DEMO LINK:

<https://github.com/saikumar12334/Cosmetic-Insights-Navigating-Cosmetics-Trends-and-Consumer-Insights-with-Tableau>