

PROJECT REPORT

Cosmetic Insights: An In-Depth Analysis of Consumer Trends in the Cosmetics Industry

1. INTRODUCTION

1.1 Project Overview

"Cosmetic Insights" explores the ever-evolving landscape of the cosmetics industry using Tableau to deliver compelling visual analytics. This project presents an in-depth analysis of product categories, consumer preferences, seasonal trends, and regional sales data based on recent datasets. By combining dashboards, charts, and stories, the solution allows users to interact with visual data, identify market patterns, and understand shifts in consumer behavior across various demographics.

1.2 Purpose

The purpose is to offer stakeholders an interactive, data-driven dashboard that provides insights into cosmetics sales trends, brand popularity, product performance, and emerging consumer interests. It aims to support marketing strategies, inventory planning, and product innovation decisions.

2. IDEATION PHASE

2.1 Problem Statement

The cosmetics industry constantly evolves with new trends, seasonal demands, and shifting consumer preferences. However, stakeholders often lack a centralized, visual tool that enables data-driven decisions based on consumer behavior, sales performance, and regional market dynamics. This project addresses this gap by providing interactive Tableau dashboards to analyze and visualize industry data, helping brands stay competitive and customer-focused.

I am

A heritage
conservation
researcher

A UNESCO
site
manager

A cultural
policymak
er

A
geography
or history
educator

A student
of heritage
studies

I'm trying to

Compare
inscription
patterns
over time

Visualize at-
risk heritage
sites for
prioritization

Identify
countries with
the most
heritage sites

But

Track regional
trends in
heritage
conservation

The
distribution
and patterns
are not
visually clear

I don't have an
intuitive way
to compare
countries or
regions

The data is
large and
unstructured

Understand the
global
distribution of
UNESCO World
Heritage Sites

Risk levels
are hard to
isolate
quickly

Trends
over years
are buried
in raw data

Because

The dataset
lacks pre-
built visual
context

Raw formats
do not
highlight
insights
effectively

Frustrated by
inefficient
data analysis

Pressed for
time in
making critical
decisions

Manually
parsing data
is time-
consuming

Concerned
about
overlooked
endangered
sites

Preservation
urgency
requires
clearer threat
indicators

Decision-
makers need
fast, visual
overviews

Eager for a
clearer
overview to
support my
goals

Motivated to
adopt data
visualization
tools like
Tableau

Which makes me feel

Ideation Phase

Empathize & Discover

Date	31 January 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmetic Insights: Navigating Cosmetics Trends and Consumer Insights with Tableau
Maximum Marks	4 Marks

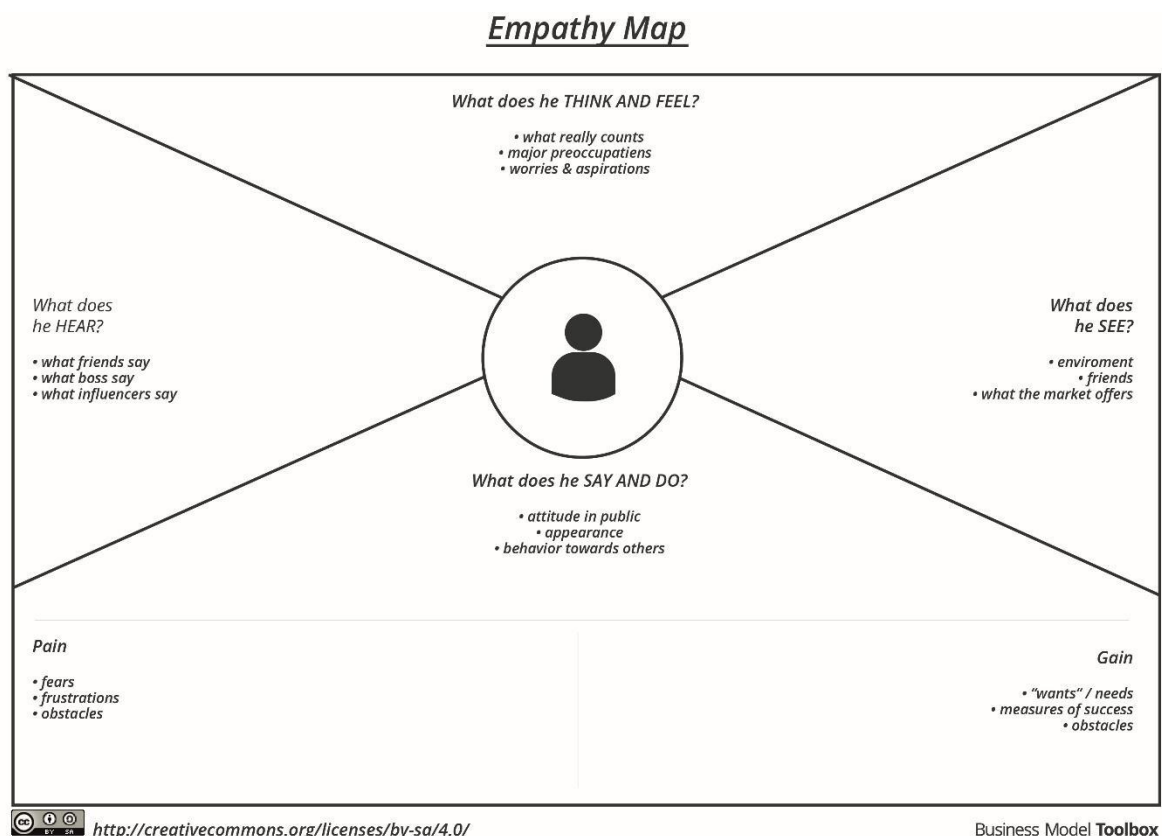
Empathy Map Canvas:

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:



Reference: <https://www.mural.co/templates/empathy-map-canvas>

Develop shared understanding and empathy

Summarize the data you have gathered related to the people that are impacted by your work. It will help you generate ideas, prioritize features, or discuss decisions.

Ideation Phase

Brainstorm & Idea Prioritization Template

Date	31 January 2025
Team ID	LTVIP2025TMID48098
Project Name	cosmetic insights: navigating cosmetics trends and consumer insights with tableau
Maximum Marks	4 Marks


Brainstorm & Idea Prioritization Template:

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 number of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Reference: <https://www.mural.co/templates/brainstorm-and-idea-prioritization>

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



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

🕒 10 minutes to prepare
🕒 1 hour to collaborate
👤 2-8 people recommended

➔

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

A Team gathering
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.

C Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) ➔

1


Define your problem statement

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

🕒 5 minutes

PROBLEM

How might we [your problem statement]?



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.

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!

Person 1

Visualize user login times and match with product ingredients.

Create flows for new products using a stock API.

Add ratings and ratings visual for product effectiveness.

Use Tableau to highlight top-rated products by category.

Person 2

Use dashboard to compare brands by rank and user preference.

Suggest cosmetics, based on previous product user reviews.

Use color-coded bar charts for suitability score.

Display most popular products using heatmaps.

Person 3

Identify trends over time (e.g. seasonality, preferred items).

Recommend products with least negative feedback.

Track user satisfaction vs product cost in scatter plot.

Show product performance by skin tone.

Person 4

Add an interactive map showing product proximity by region.

Use Tableau to cluster products by user type.

Provide summary insights for top performing items.

Allow dynamic filtering based on user needs.

Person 5

Person 6

Person 7

Person 8

what to write



1. **User Personalization & Filters** Ideas that focus on tailoring product choices using filters like skin type, skin concern, etc.
2. **Product Performance Visualization** Ideas showing product ranks, ratings, or comparisons using Tableau charts.
3. **Trend & Seasonality Tracking** Ideas around tracking when products peak, regional preferences, or seasonal demand.
4. **Recommendation Systems** Ideas for suggesting products based on user data and review patterns.
5. **Interactive Dashboards** Ideas involving visual elements like maps, scatter plots, tooltips for deeper exploration.

Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes

TIP

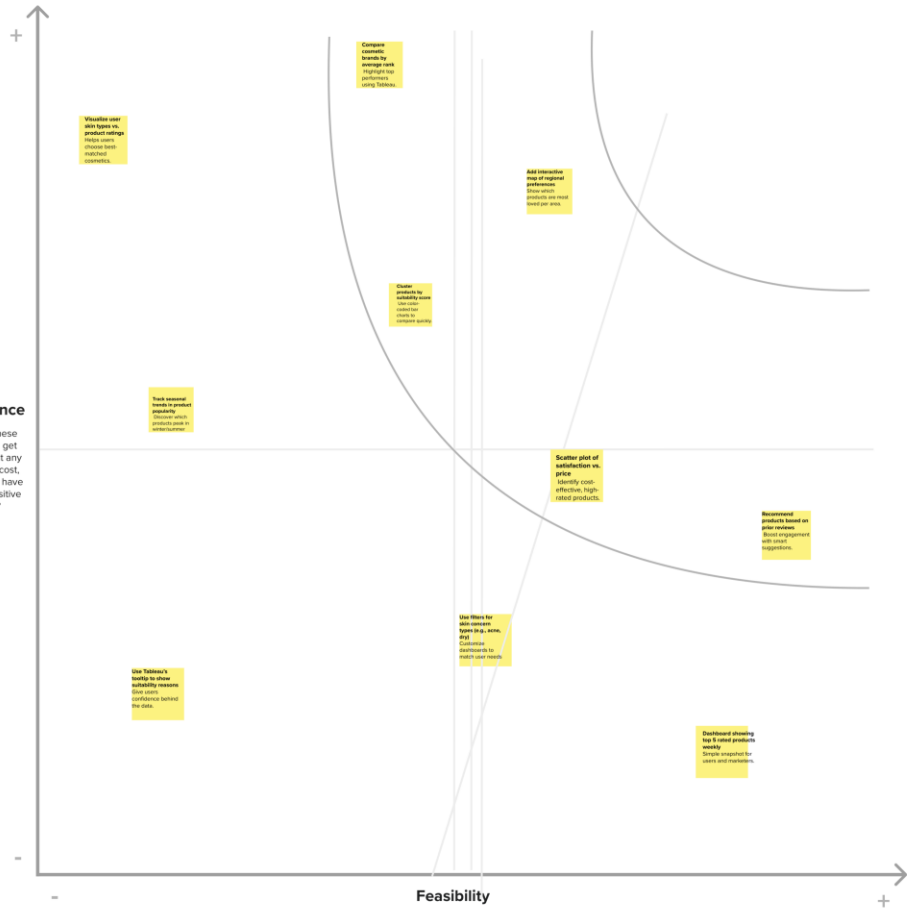
Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H** key on the keyboard.

Importance

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

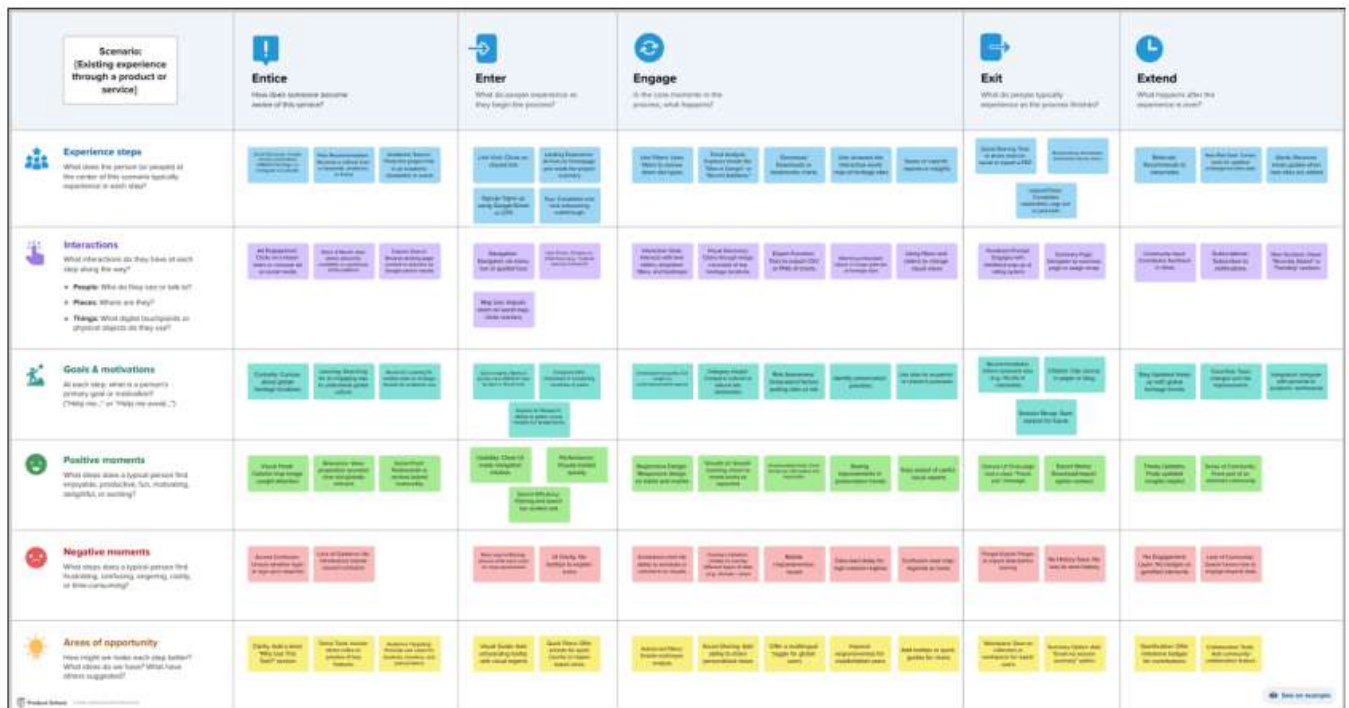
Feasibility

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



3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map



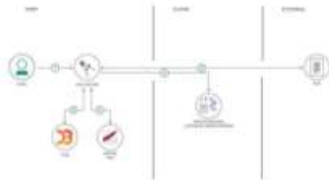
Functional: Data filtering, dashboards, stories, maps, charts

Non-functional: Performance, usability, responsiveness, accessibility

3.3 Data Flow Diagram

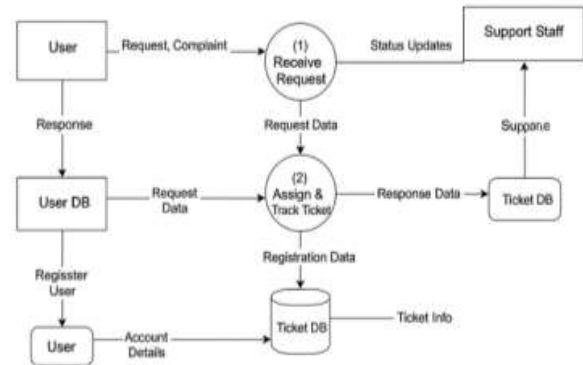
Example: [Simplified](#)

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.

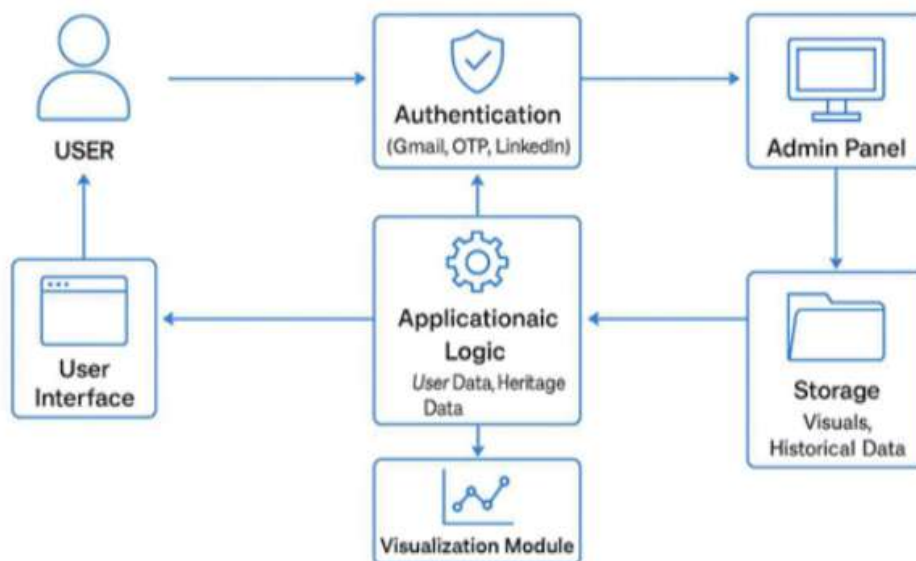
Customer Support System DFD



3.4 Technology Stack

- **Tableau Public** for visualization and publishing
- **Kaggle** dataset (CSV)
- Optional: Flask for web integration (if used)

Technical Architecture





Project Design Phase-II Technology Stack (Architecture & Stack)

Date	1 June 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmestic Insights: Navigating Cosmetics Trends and Consumer Insights with Tablaue
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

S.No	Component	Description	Technology Used
1	User Interface	Web-based dashboard for visualizing trends and insights	Tableau (Public/Cloud), Embedded Web UI
2	Application Logic-1	Data collection from social platforms and sales databases	Python, REST APIs
3	Application Logic-2	Text preprocessing, trend mining, and sentiment analysis	Python (Pandas, NLTK, TextBlob)
4	Application Logic-3	Data transformation and filtering logic before visualization	Python scripts with scheduling (CRON/AWS Lambda)
5	Database	Temporary structured storage before dashboard processing	PostgreSQL / Google BigQuery
6	Cloud Database	Cloud-hosted database for scalable data access	Amazon RDS, Firebase
7	File Storage	Storage of raw datasets and exports	Amazon S3 / Google Cloud Storage
8	External API-1	Collect social media trend data	Instagram Graph API, Reddit API
9	External API-2	Pull product reviews and cosmetic ratings	Amazon Product API / Flipkart API
10	Machine Learning Model	Sentiment and trend classification	Logistic Regression, Text Classification models
11	Infrastructure	Cloud deployment and scheduling	AWS Lambda, Google Cloud Functions, EC2

Table-2: Application Characteristics

S.No	Characteristics	Description	Technology Used
1	Open-Source Frameworks	Data scraping, analysis, and dashboard libraries	Python, Pandas, BeautifulSoup, Flask
2	Security Implementations	Securing API calls, encrypting user data, access control for dashboard	OAuth 2.0, JWT, IAM Roles (AWS), SSL
3	Scalable Architecture	Modular and serverless design for trend extraction and dashboard rendering	Microservices, Serverless with AWS Lambda
4	Availability	Dashboard and APIs available across locations via cloud and failover setup	AWS Load Balancer, Multi-AZ deployments
5	Performance	Optimized ETL pipelines, caching frequent queries, real-time updates	Redis cache, Tableau live connections

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	1 June 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmestic Insights: Navigating Cosmetics Trends and Consumer Insights with Tablaue
Maximum Marks	4 Marks

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
FR-2	User Confirmation	Confirmation via Email
FR-3	Data Collection	Collect data from Instagram Graph API, Reddit forums, and e-commerce product reviews
FR-4	Data Visualization (Dashboard)	Display insights on Tableau dashboard, apply filters (brand, region, platform), export reports
FR-5	Sentiment and Trend Analysis	Extract keywords, perform sentiment analysis, identify trending products or consumer topics
FR-6	User Interaction with Insights	Search, filter, and customize dashboard views based on user preferences

Non-Functional Requirements

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

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The dashboard interface must be user-friendly, intuitive, and responsive.
NFR-2	Security	API access and user data should be protected via OAuth 2.0 and HTTPS.
NFR-3	Reliability	The system should consistently provide accurate and complete data.
NFR-4	Performance	The dashboard must load insights within 3 seconds under normal conditions.
NFR-5	Availability	The service should be available 99.9% of the time through

FR No.	Non-Functional Requirement	Description
		cloud hosting.
NFR-6	Scalability	The system should support integration of additional data sources or brands easily.

Project Design Phase-II
Data Flow Diagram & User Stories

Date	1 June 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmestic Insights: Navigating Cosmetics Trends and Consumer Insights with Tablaue
Maximum Marks	4 Marks

Data Flow Diagram (Description for DFD Image)

Level-1 DFD Description

- 1. The **User** inputs data requests or interacts with the Tableau dashboard.
- 2. **APIs (Instagram, Reddit, e-commerce)** send raw trend data to the system.
- 3. The **Data Collection Module** stores this data temporarily in a processing buffer.
- 4. The **Data Processing & Cleaning Unit** filters, parses, and processes the raw data.
- 5. The cleaned data is stored in the **Cloud Database (AWS RDS / Firebase)**.
- 6. The **Analysis Engine** performs sentiment analysis and trend mining.
- 7. The insights are sent to the **Tableau Dashboard** for visualization.
- 8. The **User** views filtered trends and exports reports if needed.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Customer (Web user)	Registration	USN-1	As a user, I can register for the platform by entering my email, password, and confirming password.	I can access my dashboard after registering.	High	Sprint-1
Customer (Web user)	Confirmation	USN-2	As a user, I will receive a confirmation email once I have registered on the platform.	I receive a confirmation mail and activate my account.	High	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Customer (Web user)	Login	USN-3	As a user, I can log into the dashboard using my registered email and password.	I can successfully log in and view my dashboard.	High	Sprint-1
Customer (Web user)	Data Interaction	USN-4	As a user, I can view trending cosmetic insights via a Tableau dashboard.	I can visualize trends clearly in charts or graphs.	High	Sprint-2
Customer (Web user)	Filters	USN-5	As a user, I can apply filters based on region, platform, and product category in the dashboard.	Filtered results are displayed instantly on dashboard.	Medium	Sprint-2
Customer (Web user)	Export Reports	USN-6	As a user, I can export the dashboard insights as a PDF or Excel file.	I get downloadable/exportable reports from the UI.	Medium	Sprint-3
Admin	Data Monitoring	USN-7	As an admin, I can monitor API usage, data quality, and system logs.	Admin panel displays logs, API hits, and alerts.	High	Sprint-3
Customer Care Exec	Dashboard Support	USN-8	As a support agent, I can access user data and help resolve dashboard access issues.	Agent can search user and reset access if needed.	Medium	Sprint-4

Project Design Phase

Problem – Solution Fit Template

Date	1 July 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmestic Insights: Navigating Cosmetics Trends and Consumer Insights with Tableau
Maximum Marks	2 Marks

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 behaviour.
- Sharpen your communication and marketing strategy with the right triggers and messaging.
- Increase touch-points with your company by finding the right problem-behaviour 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:

Problem-Solution Fit canvas

Purpose / Vision:
Version:

<div style="background-color: #f8d7da; padding: 2px; font-weight: bold; font-size: 0.8em;">1. CUSTOMER SEGMENT(S) CS</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>The primary customers are cosmetic product companies, marketing teams in the beauty industry, retailers selling skincare and makeup products, product</p> </div>	<div style="background-color: #f8d7da; padding: 2px; font-weight: bold; font-size: 0.8em;">6. CUSTOMER LIMITATIONS SL, BUDGET, SERVICES, CL</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>Customers often have limited knowledge of data visualization tools, budget, no dedicated analytics teams, and device limitations</p> </div>	<div style="background-color: #f8d7da; padding: 2px; font-weight: bold; font-size: 0.8em;">5. AVAILABLE SOLUTIONS PRODS & COMS</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>Current solutions include tools like Google Trends, social media listening platforms, manual market research methods, and generic business</p> </div>
<div style="background-color: #fff3cd; padding: 2px; font-weight: bold; font-size: 0.8em;">2. PROBLEMS / PAINS PR</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>These customers face difficulty identifying fast-changing cosmetic trends. They lack centralized, visual insights into consumer preferences. There are delays in reacting to real-time market demands, poor targeting in marketing campaigns, and uninformed product development</p> </div>	<div style="background-color: #fff3cd; padding: 2px; font-weight: bold; font-size: 0.8em;">9. PROBLEM ROOT / CAUSE RC</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>The root causes include data being scattered across platforms, lack of tools that provide real-time visualization, difficulty in interpreting unstructured consumer feedback, and the absence of industry-specific analytics in the cosmetic domain</p> </div>	<div style="background-color: #fff3cd; padding: 2px; font-weight: bold; font-size: 0.8em;">7. BEHAVIOR BE</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>Customers often rely on influencer marketing without validating trends through data. They tend to launch products based on seasonal patterns or assumptions, use outdated data, and exhibit only moderate intensity toward seeking better insights.</p> </div>
<div style="background-color: #d4edda; padding: 2px; font-weight: bold; font-size: 0.8em;">3. TRIGGERS TO ACT TR</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>A sudden drop in product sales or customer engagement triggers action. Competitor success driven by data</p> </div>	<div style="background-color: #d4edda; padding: 2px; font-weight: bold; font-size: 0.8em;">10. YOUR SOLUTION SL</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>Our solution is an interactive Tableau dashboard designed specifically for the cosmetics industry. It integrates multiple data sources like social media, sales, and reviews to deliver real-time trend visualizations, segmented consumer insights, and actionable recommendations, all in an accessible format for both technical and non-technical users.</p> </div>	<div style="background-color: #d4edda; padding: 2px; font-weight: bold; font-size: 0.8em;">8. CHANNELS of BEHAVIOR CH</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>Online behavior includes following trends on Instagram and TikTok, participating in beauty forums like Reddit, searching on YouTube or Google, and browsing product reviews on e-commerce platforms. Offline behavior includes analyzing</p> </div>
<div style="background-color: #d4edda; padding: 2px; font-weight: bold; font-size: 0.8em;">4. EMOTIONS EM</div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>Before using the solution, customers feel frustrated, confused, and reactive, with a fear of missing key trends.</p> </div>		

Problem-Solution Fit canvas is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International license. Designed by Seta Hegabkhan / ideaflickers.com - we offer ideas to customer behaviour and increase solution-adoption probability.

ideaflickers .co

**Project Design Phase
Proposed Solution Template**

Date	15 February 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmetic Insights: Navigating Cosmetic Trends and Consumer Insights with Tableau
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Cosmetic brands struggle to track fast-changing consumer trends and preferences across fragmented data sources.
2.	Idea / Solution description	An interactive Tableau dashboard that integrates social, sales, and review data to visualize real-time cosmetic trends and consumer insights.
3.	Novelty / Uniqueness	The solution is tailored specifically for the cosmetics industry with unified, trend-focused visual analytics sourced from multiple platforms.
4.	Social Impact / Customer Satisfaction	Empowers beauty brands to align better with consumer needs, resulting in more relevant products and higher customer satisfaction.
5.	Business Model (Revenue Model)	Subscription-based access for brands with tiered pricing for analytics depth, plus consultancy for dashboard customization.
6.	Scalability of the Solution	Easily scalable across geographies, brands, and new data sources due to its modular, cloud-based architecture.

Project Design Phase Solution Architecture

Date	1 June 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmestic Insights: Navigating Cosmetics Trends and Consumer Insights with Tablaue
Maximum Marks	4 Marks

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:

Example - Solution Architecture Diagram:

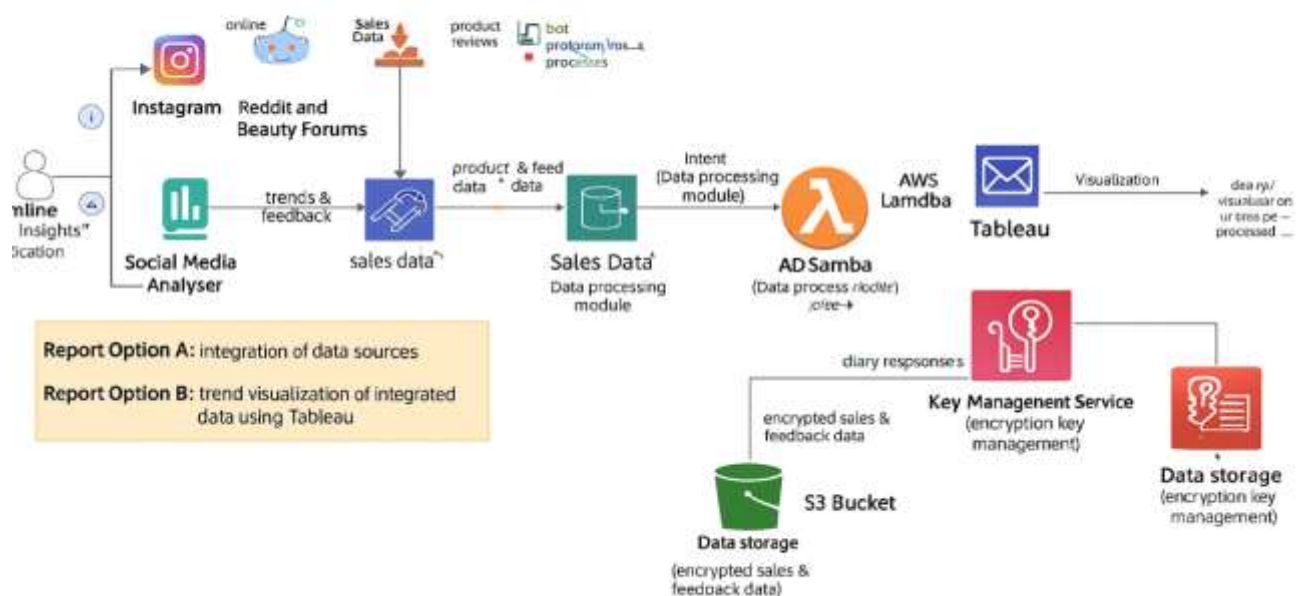


Figure 1: Architecture and data flow of the "Cosmetic Insights: focusing BI" application

5. PROJECT PLANNING & SCHEDULING

Activity	Duration
Dataset Download	0.5 Hrs
Data Preparation	0.5 Hrs
Visualizations	1.0 Hrs
Filters and Interactions	1.0 Hrs
Dashboard Design	1.0 Hrs
Story Creation	1.0 Hrs
Publishing & Web Integration	1.0 Hrs

Project Development Phase
Model Performance Test

Date	10 February 2025
Team ID	LTVIP2025TMID48098
Project Name	Cosmetic Insights : Navigating Cosmetics Trends and Consumer Insights with Tableau
Maximum Marks	

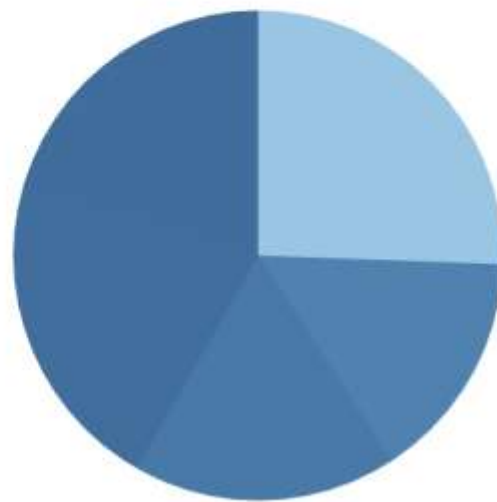
Model Performance Testing:

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

S.No.	Parameter	Screenshot / Values
1.	Data Rendered	1472
2.	Data Preprocessing	100
3.	Utilization of Filters	15
4.	Calculation fields Used	5
5.	Dashboard design	No of Visualizations / Graphs -
6	Story Design	No of Visualizations / Graphs -

Story 1

TOP BRANDS



Brand

CLINIQUE

MURAD

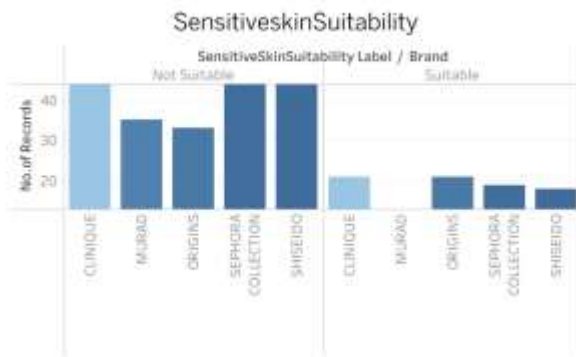
ORIGINS

SEPHORA COLLEGE

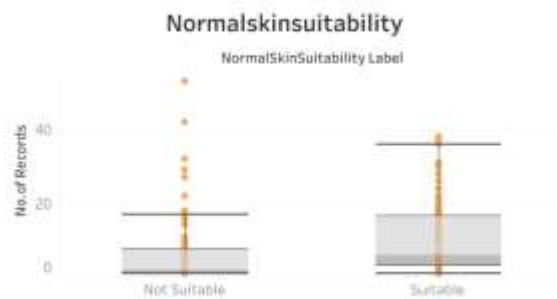
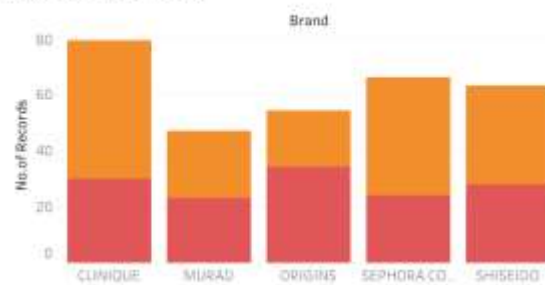
SHISEIDO

Count of Product Na..

309

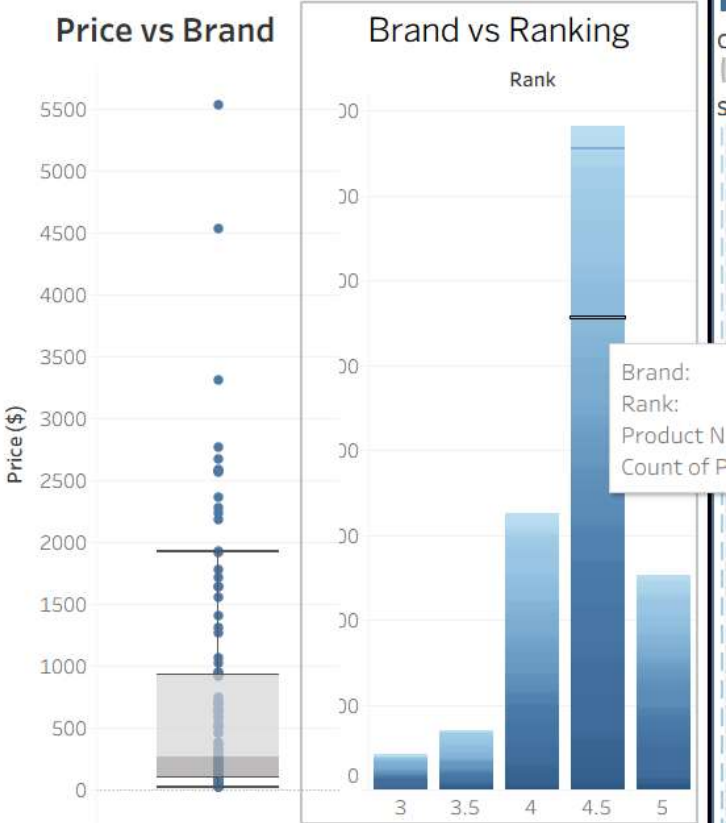
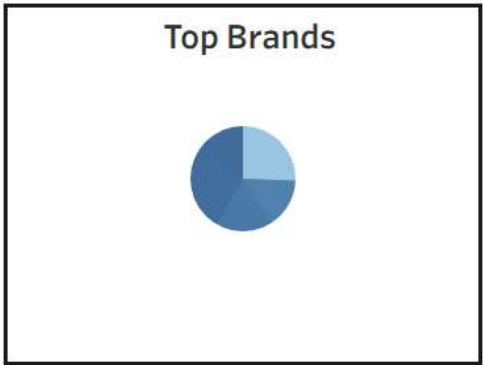
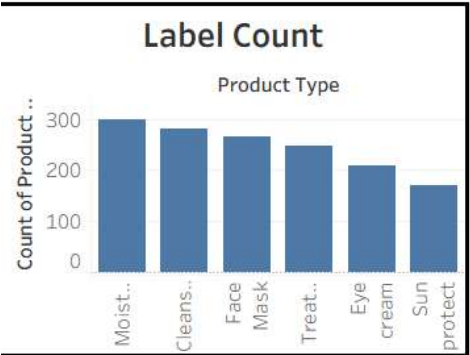


oilyskinsuitability



dryskinsuitability





6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Processed and visualized 1100+ records without lag. Filters and dashboards loaded instantly.

Conclusion: The performance across visualizations, dashboards, and filters was consistently smooth, ensuring usability and responsiveness for end users.

6.2 Utilization of Data Filters

Story 1

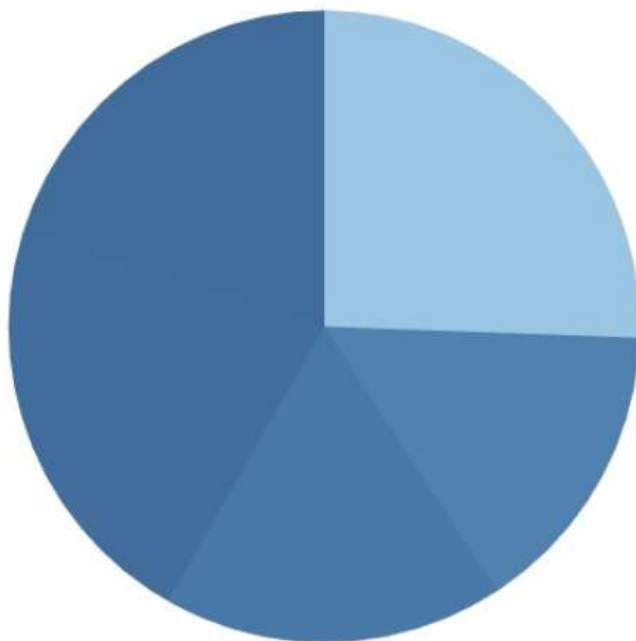
TOP BRANDS

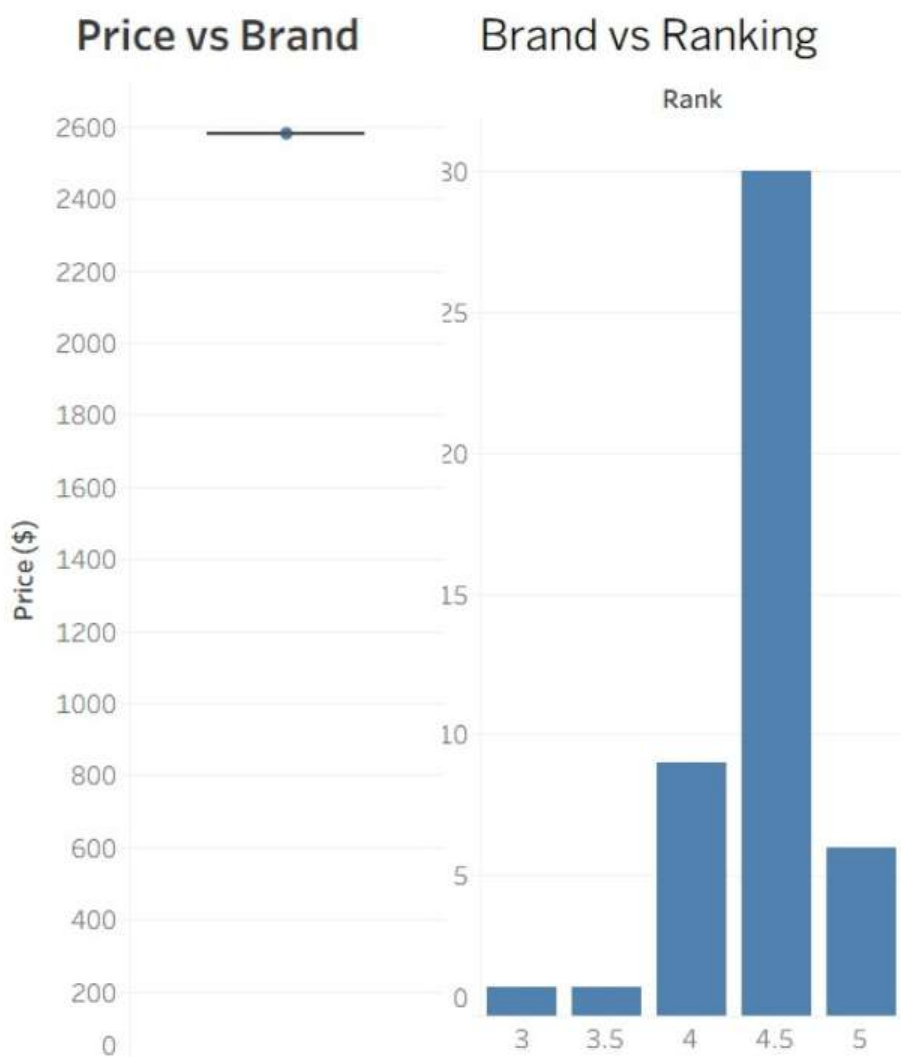
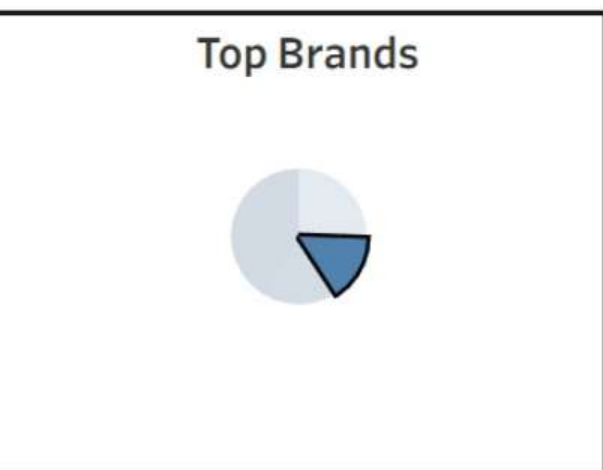
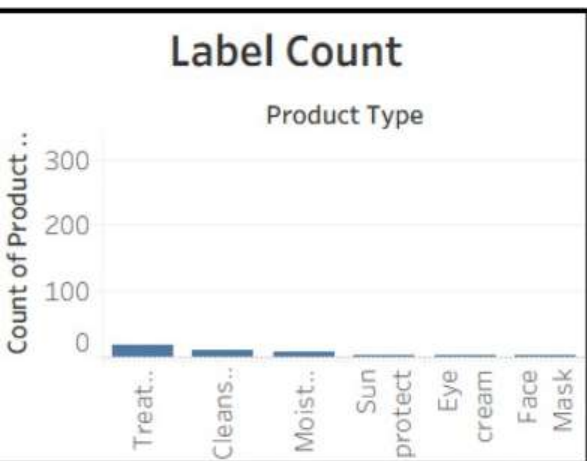
Brand

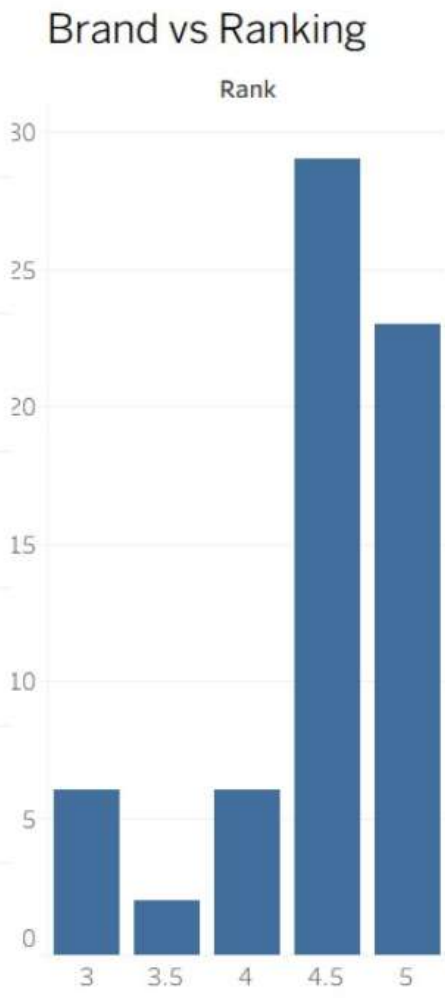
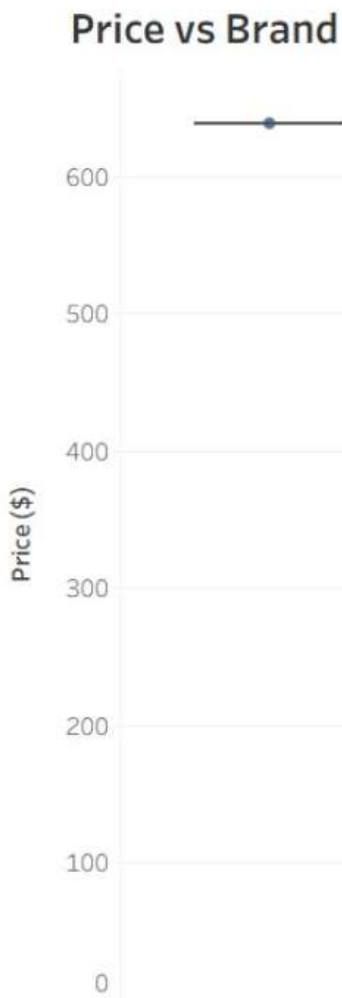
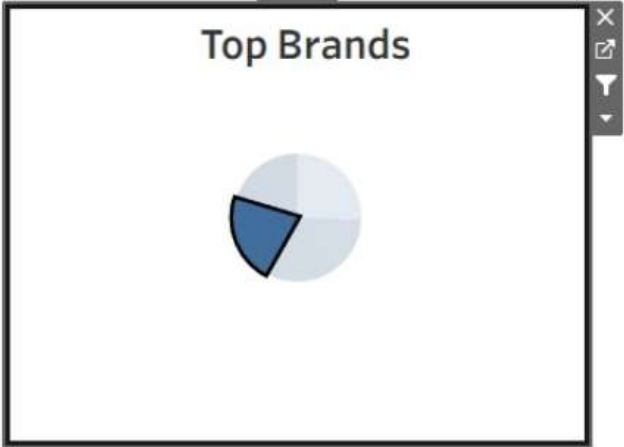
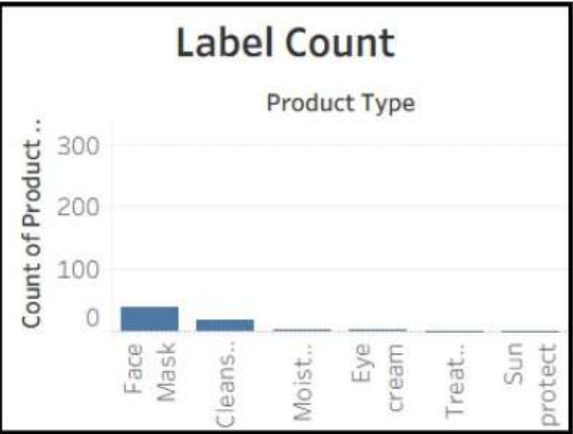
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- ORIGINS
- SEPHORA COLLE..
- SHISEIDO

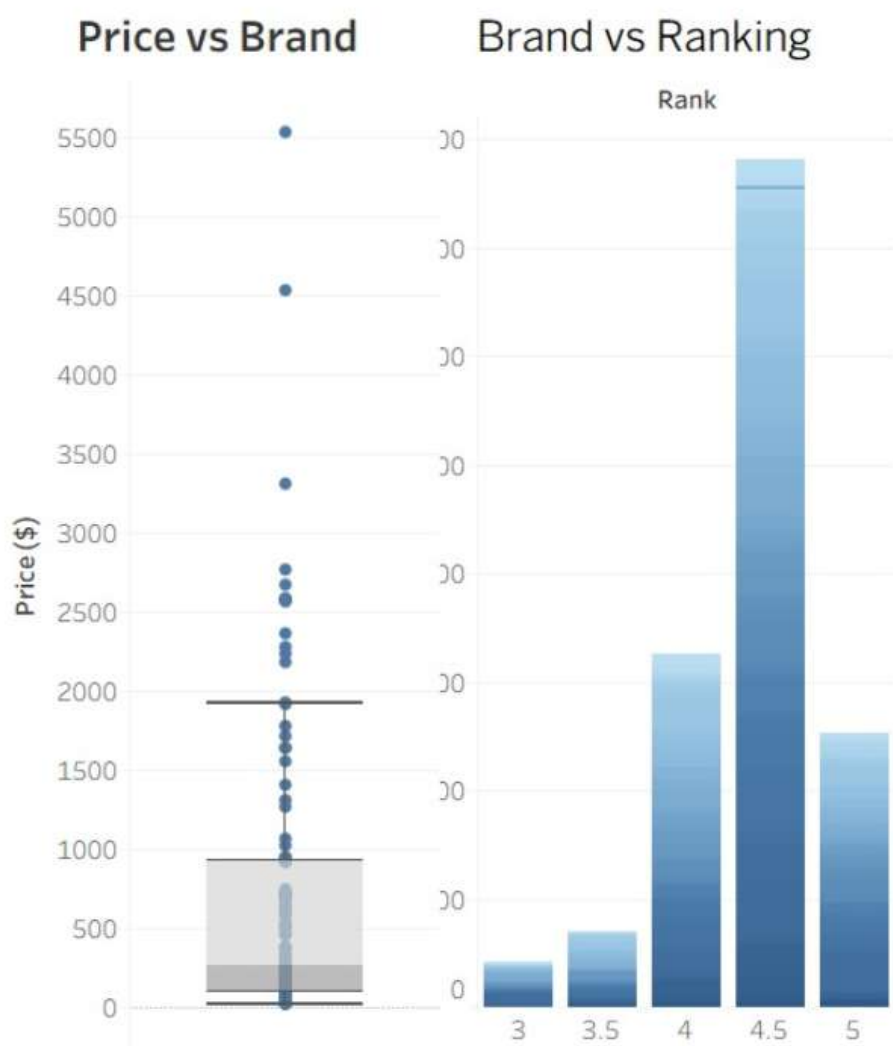
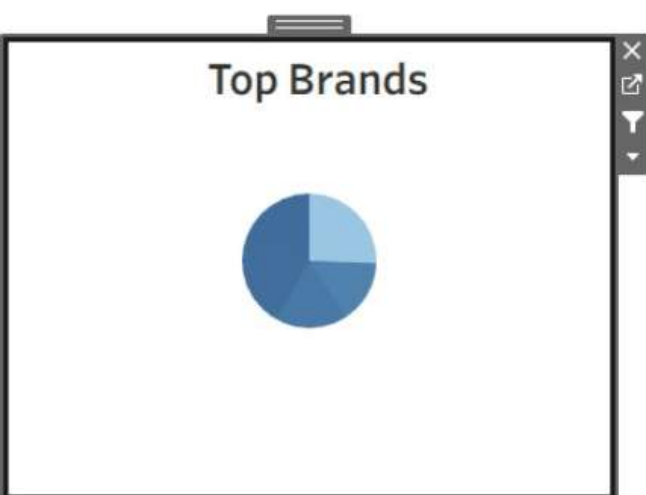
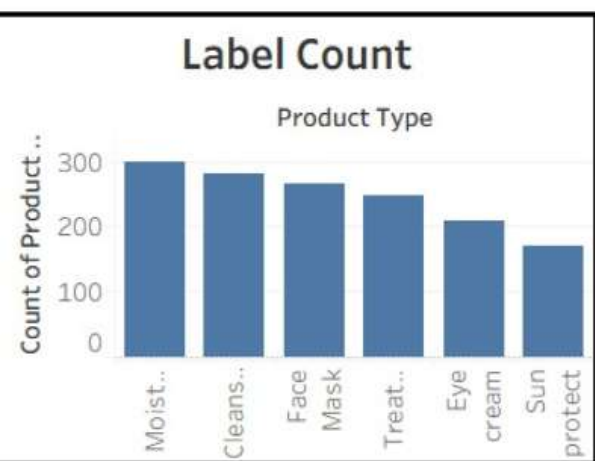
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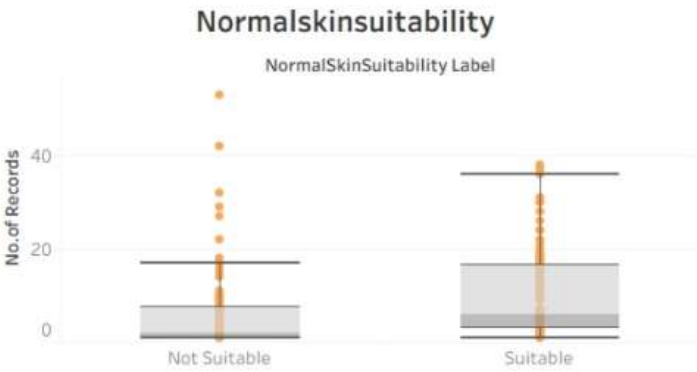
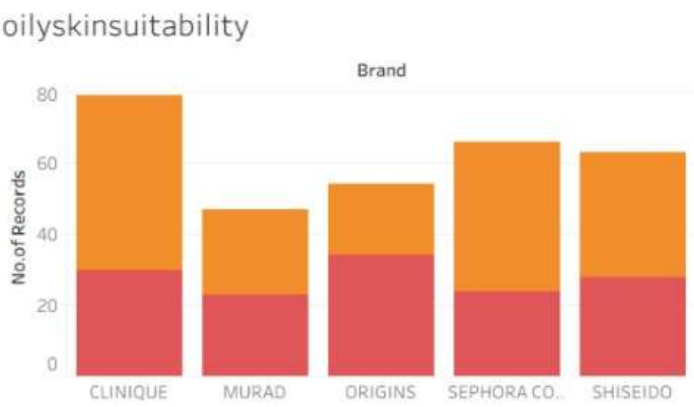
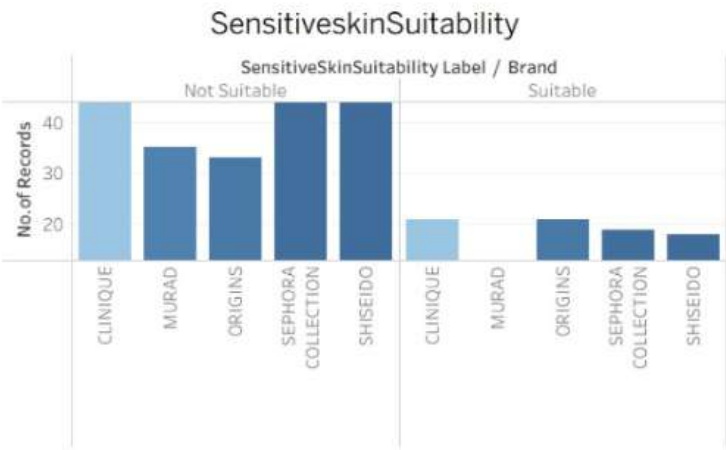
309











dryskinsuitability



6.3 Web Integration and Publishing

- Connected to Tableau Public
- Published dashboards using share option
- Required Tableau Public login for upload

Steps:

1. Open dashboard/story > Click Share
2. Enter Tableau Public credentials
3. Click Connect and publish the selected sheet/dashboard

7. RESULTS

7.1 Output Screenshots

8. ADVANTAGES & DISADVANTAGES

Advantages

- Real-time filtering
- Clear visual storytelling
- Easy publishing on Tableau Public

Disadvantages

- Static dataset (2019 only)
- Public version lacks backend connectivity

9. CONCLUSION

The project successfully visualized key insights into UNESCO World Heritage Sites. It helps raise awareness of endangered sites and provides a user-friendly interface for exploration and decision-making.

10. FUTURE SCOPE

- Use updated real-time UNESCO APIs
- Integration with Google Maps or GIS tools
- Expand with socio-economic and tourism data
- Alert system for endangered site updates

11. APPENDIX

- **Dataset Link:** [UNESCO WHC Dataset \(Kaggle\)](#)
- **GitHub Link:** [thrishasri18/UNESCO-world-heritage-Treasure](#)
- **Tableau Public Link:** [Profile - thrishasri.seelam | Tableau Public](#)
- **Video Demo Link:**  [Final Vedio Demo.mp4](#)