

**Requirement Analysis**  
**Solution Requirements (Functional & Non-functional)**

Date	15 February 2026
Team ID	LTVIP2026TMIDS74272
Project Name	Cosmetic Insights: Navigating Cosmetics Trends and consumer insights with tableau
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	Data Source Connection & Integration	<ul style="list-style-type: none"> <li>Connect Tableau to Kaggle cosmetics datasets (CSV / Excel format)</li> <li>Configure direct database connection to MySQL for live sales and product data</li> <li>Integrate social media sentiment CSV exports (Twitter, Reddit beauty discussions)</li> <li>Set up Sephora / Ulta product review data pipeline into Tableau</li> <li>Support multiple data source joins within a single Tableau workbook</li> <li>Enable scheduled extract refresh (daily / weekly) for all connected sources</li> </ul>
FR-2	Data Preparation & Transformation	<ul style="list-style-type: none"> <li>Clean null values, duplicate records, and inconsistent formatting in raw cosmetics data</li> <li>Rename and standardize column headers across product, review, and sales datasets</li> <li>Create calculated fields: sentiment score, price-to-rating ratio, trend velocity index</li> <li>Build data joins between product catalog, consumer reviews, and sales transaction tables</li> <li>Apply data type conversions (dates, numeric strings, categorical fields)</li> <li>Use Tableau Prep Builder to build and document reusable data flow pipelines</li> <li>Filter and exclude irrelevant product categories not in project scope</li> </ul>
FR-3	Consumer Preference Monitoring	<p>Display real-time trend line charts showing consumer interest by product category</p> <ul style="list-style-type: none"> <li>Implement automated alert indicators when category interest drops by &gt;15%</li> <li>Show geo-segmented heatmap of consumer preferences by region and demographic</li> <li>Provide drill-down filters: product type, skin type, age group, price range</li> <li>Visualize top 10 trending ingredients vs declining ingredients side by side</li> <li>Include YoY (Year-over-Year) and MoM (Month-over-Month) comparison views</li> <li>Export dashboard snapshot as PDF or image for stakeholder reporting</li> </ul>
FR-4	Product Concern & Crisis Dashboard	<ul style="list-style-type: none"> <li>Aggregate and display negative reviews, complaints, and safety reports in one view</li> </ul>

		<ul style="list-style-type: none"> <li>• Implement severity scoring: classify concerns as Low / Medium / High / Critical</li> <li>• Flag products whose complaint volume exceeds configurable threshold in real time</li> <li>• Display affected product demographics: age group, skin type, region</li> <li>• Cross-reference complaints with ingredient data to identify shared root causes</li> <li>• Track brand trust score trend line before and after concern management actions</li> <li>• Generate concern summary report with one-click export for regulatory teams</li> </ul>
FR-5	Predictive Analytics & Forecasting	<ul style="list-style-type: none"> <li>• Apply Tableau built-in forecast model to predict 90-day product demand trends</li> <li>• Integrate Python (Prophet / Scikit-learn) via TabPy for advanced time-series forecasting</li> <li>• Visualize innovation white-space map: high-demand / low-supply product opportunity gaps</li> <li>• Show trend lifecycle stages (Emerging → Rising → Peak → Declining) for each category</li> <li>• Provide predictive ROI estimator for new product formulation investment scenarios</li> <li>• Alert team when a forecast confidence interval breaches acceptable range</li> <li>• Compare historical trend cycles to current signals for pattern-based prediction</li> </ul>
FR-6	Interactive Dashboards & Visualization	<ul style="list-style-type: none"> <li>• Build multi-view dashboards combining trend, sentiment, product, and sales worksheets</li> <li>• Implement dashboard actions: filter, highlight, URL actions for cross-sheet interactivity</li> <li>• Create parameter controls: date range picker, category selector, region filter</li> <li>• Design mobile-responsive dashboard layout for tablet and phone access</li> <li>• Apply consistent brand color scheme and typography across all dashboards</li> <li>• Enable tooltip-based contextual insights on chart hover interaction</li> <li>• Support simultaneous comparison of up to 4 product categories on a single dashboard</li> </ul>
FR-7	Tableau Story & Narrative Reporting	<ul style="list-style-type: none"> <li>• Create Tableau Story with narrative captions for each of the 3 project scenarios</li> <li>• Build Scenario 1 story: Consumer preference monitoring journey with data evidence</li> <li>• Build Scenario 2 story: Product concern identification to resolution walkthrough</li> <li>• Build Scenario 3 story: Predictive trend analysis to innovation opportunity reveal</li> <li>• Include annotated story points highlighting key insights and recommended actions</li> <li>• Support story export to PowerPoint format for executive presentations</li> <li>• Provide guided tour navigation with back / forward story controls.</li> </ul>

FR-8	Performance Testing & Optimization	<ul style="list-style-type: none"> <li>Optimize extract size by aggregating data to appropriate granularity level</li> <li>Replace live connections with .hyper extracts for high-traffic dashboards</li> <li>Test concurrent user load: minimum 20 simultaneous users without degradation</li> <li>Apply context filters to limit data scope and improve rendering speed</li> <li>Document performance benchmarks before and after optimization for comparison</li> </ul>
FR-9	Web Integration & Publishing	<ul style="list-style-type: none"> <li>Publish final Tableau workbooks to Tableau Public for stakeholder access</li> <li>Embed interactive dashboards in project report HTML page using Tableau JS API</li> <li>Configure permission-based access: public view vs. authenticated edit access</li> <li>Generate shareable dashboard URLs for each of the 3 scenario dashboards</li> <li>Enable email subscription for automated scheduled dashboard snapshot delivery</li> </ul>

#### **Non-functional Requirements:**

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

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	The Cosmetic Insights Tableau platform must be intuitive and accessible to non-technical users including brand managers and marketing strategists. Dashboards must follow clear visual hierarchy, consistent labeling, and interactive tooltips to guide users through complex data without requiring technical training.
NFR-2	<b>Security</b>	All consumer data, product information, and business insights must be protected through layered security controls. Access to sensitive dashboards must be role-restricted, and all data in transit must be encrypted to prevent unauthorized exposure of proprietary cosmetics business intelligence.
NFR-3	<b>Reliability</b>	The Cosmetic Insights platform must deliver consistent, accurate, and trustworthy insights at all times. Data pipelines must be validated to prevent incorrect visualizations, and the system must recover gracefully from data source failures without crashing dashboards or producing misleading outputs.
NFR-4	<b>Performance</b>	All Tableau dashboards must load and respond within defined performance benchmarks to support real-time decision-making by brand managers and analysts. Slow-loading dashboards undermine trust in the platform and impede agile response to consumer trend shifts and product concern alerts.
NFR-5	<b>Availability</b>	The Cosmetic Insights platform must be available to stakeholders whenever needed, including during critical business decision windows such as product launch periods, marketing campaign peaks, and crisis response events. Planned downtime must be scheduled during off-peak hours with advance notification.

NFR-6	<b>Scalability</b>	The architecture must accommodate growth in data volume, user count, and analytical complexity without requiring a full platform rebuild. As the cosmetics dataset grows and more scenarios are added, the system must scale horizontally and vertically to maintain performance and usability standards.
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