iRevolution: A Data-driven Exploration of Apple's iPhone Impact in India using Tableau

Created by

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INDEX

iRevolution: A Data-driven Exploration of Apple's iPhone

iRevolution: A Data-driven Exploration of Apple's iPhone Impact in India using Tableau" is a project that aims to investigate and visualize the influence and effects of Apple's iPhone on the Indian market. Utilizing Tableau's powerful data visualization capabilities, the project explores various aspects such as market penetration, sales trends, user demographics, and the cultural impact of iPhone adoption in India. By examining data from sources like sales records, social media sentiment, and market research, the project provides valuable insights for industry stakeholders, including Apple, local competitors, and market analysts.

Scenario 1: Market Penetration and Sales Trends

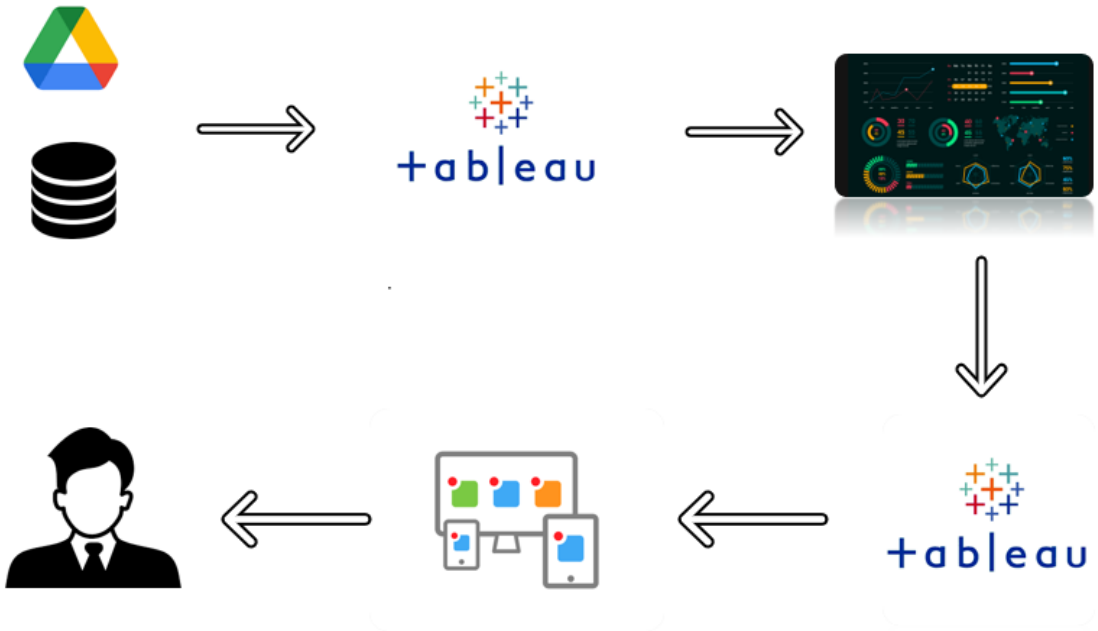
The visualization tool allows users to analyze iPhone sales data over time, across different regions in India. This includes examining trends in market penetration and identifying periods of high sales. Such insights help stakeholders understand how iPhone adoption has grown and where it has been most successful.

Scenario 2: User Demographics and Preferences

The project uses Tableau to explore the demographics of iPhone users in India, including age groups, income levels, and geographic distribution. This analysis can reveal which segments of the population are adopting iPhones and how user preferences vary across different regions, informing targeted marketing and product development strategies.

Scenario 3: Cultural and Social Media Impact

Through data visualization, the project assesses the cultural and social media impact of iPhone adoption in India. By analyzing sentiment and conversations on platforms like Twitter and Instagram, users can understand how the iPhone influences trends, lifestyles, and aspirations within Indian society. This insight helps stakeholders gauge brand perception and its role in shaping cultural narratives.



Collect the dataset

Please use the link to download the dataset:

https://docs.google.com/spreadsheets/d/1p1ZWaYcEuFl5UNFcmNvpkXi3JnoHamut/edit?usp=sharing&ouid=113247709954189786236&rtpof=true&sd=true

Data contains all the meta information regarding the columns described in the CSV files. We have provided the XLSX file:

Column Description for BigML_Dataset.csv:

The file apple_products.xlsx contains a total of 7 sheets. Each sheet corresponds to a different parameter related to iPhones/Smartphones.

The sheets are:

- apple_products.csv
- Flipkart_smartphone
- Annual revenue

- Market penetration (iPhone)
- Country wise share
- Quarterly-share
- Model-wise share

Data Preparation

This Mile stone explains about Data Preparation. Clean, transform, and organize the connected data to ensure consistency and accuracy. Create calculated fields, handle null values, and structure the data appropriately for effective visualization and insightful analysis in Tableau.

Prepare the Data for Visualization

In this step, we focus on preparing the dataset for visualization in Tableau. Fortunately, the dataset we're working with has already been pre-cleaned, meaning major cleaning steps such as handling missing

values, removing duplicates, and correcting inconsistencies have already been taken care of. However, even with a clean dataset, it's still essential to go through a brief review process to ensure it's truly ready for analysis:

- Data Review & Exploration
  While the dataset is clean, it's good practice to explore it briefly—checking data types, value ranges, and distributions.

This helps us understand the structure, identify any potential outliers, and gain familiarity with the data we'll be visualizing.

- Filtering and Structuring for Purpose
  Depending on the business question, we may still need to filter the data to focus on specific subsets—such as certain time periods, regions, or product categories. Structuring the data to match the visualization goal helps ensure relevance and clarity.

- Field Renaming & Final Formatting
  To enhance clarity in Tableau, we ensure field names are intuitive and consistent. We also check for proper data types (e.g., date fields, numeric values) and relationships if the dataset spans multiple tables.

- Optional Calculated Fields
  If needed, we can create calculated fields (e.g., profit margin, growth rate) to support deeper analysis. Even with a clean dataset, these additions can make our visualizations more insightful.

- Validation for Accuracy
  Lastly, a quick validation against the source or summary metrics ensures everything is accurate. This final step helps maintain trust in the insights generated.

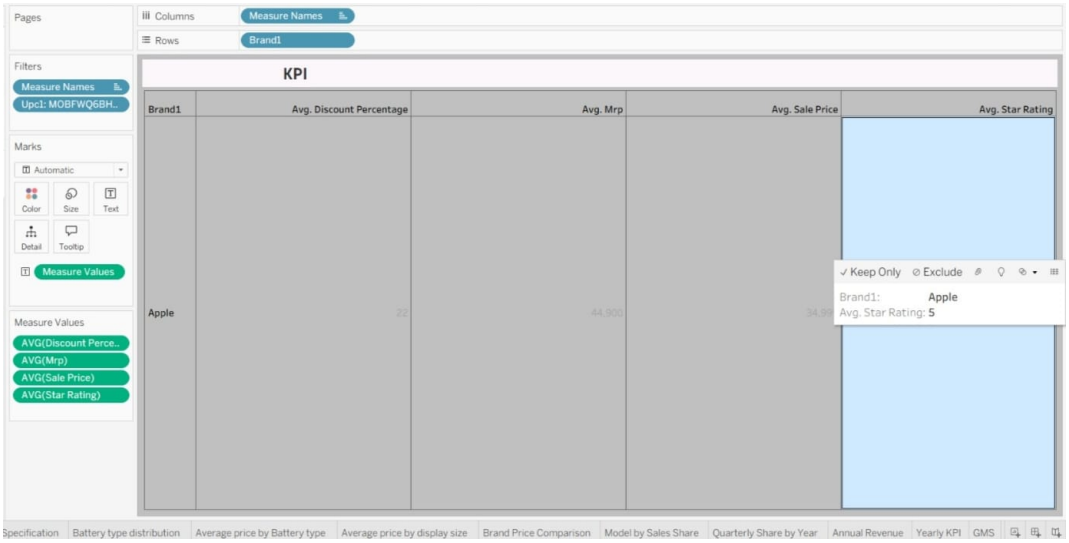
Data Visualization

Data visualization is the process of creating graphical representations of data in order to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data

No of Unique Visualizations

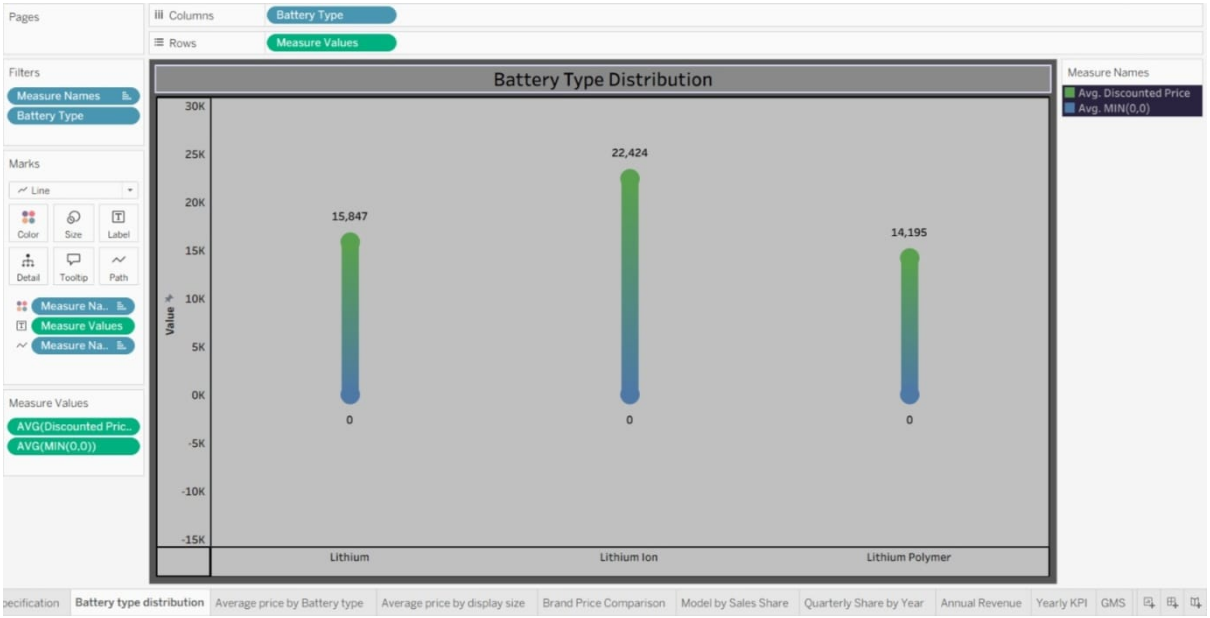
The number of unique visualizations that can be created with a given dataset. Some common types of visualizations that can be used to analyze the performance and efficiency of a project include bar charts, line charts, heat maps, scatter plots, pie charts, Maps, etc. These visualizations can be used to compare performance, track changes over time, and show distribution, and relationships between variables.

KPI

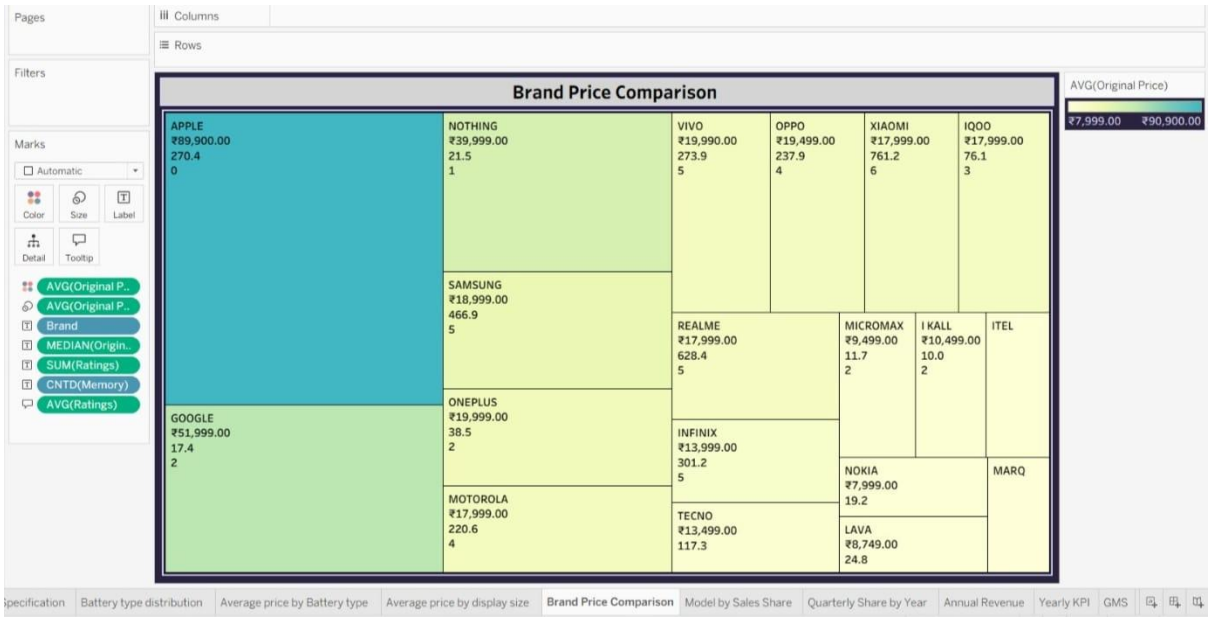


Model Specification

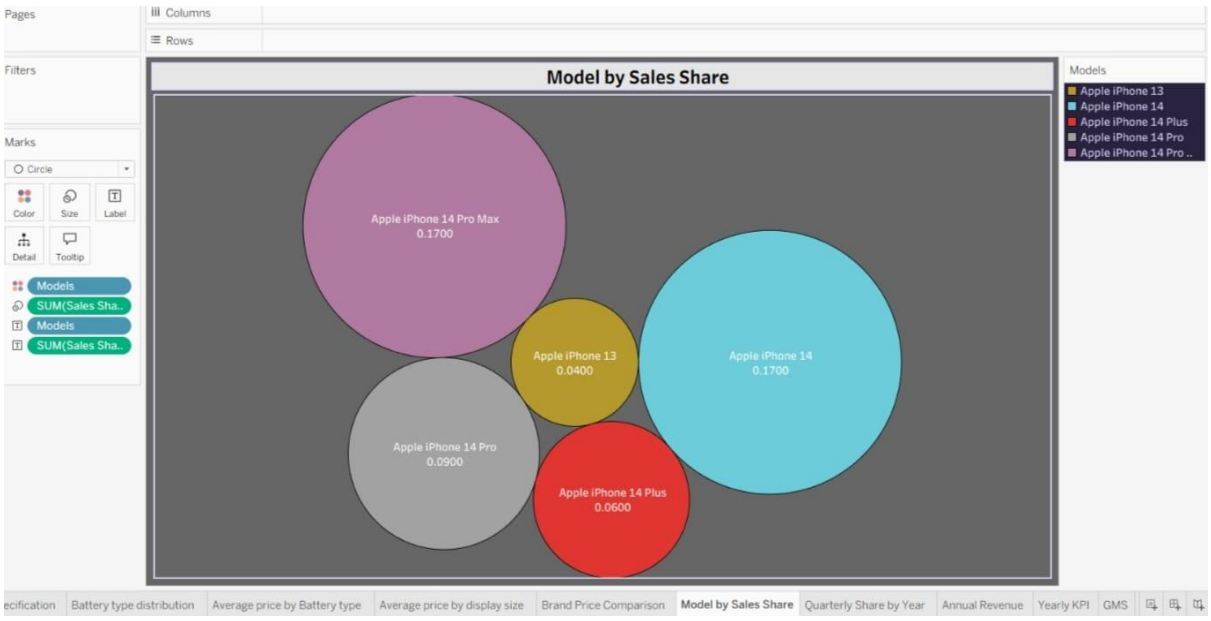
Bar Chart showing Battery-Type



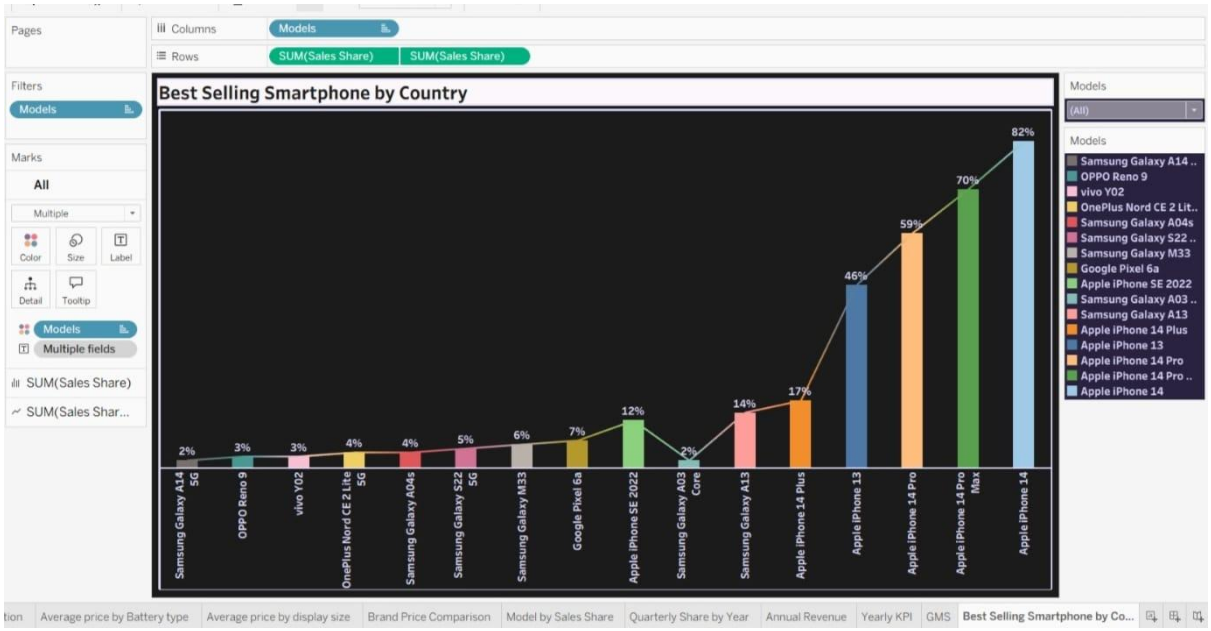
Treemap showing Brand- Price Comparison



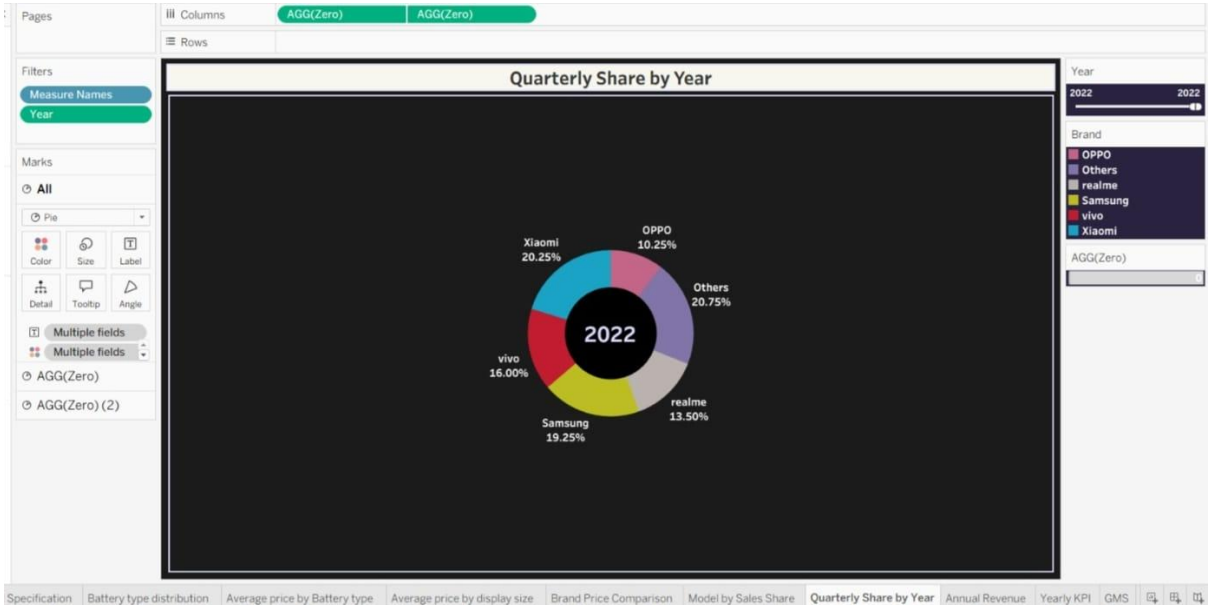
Bubble Chart showing Model- Wise Share of iPhone



Lined Bar-Chart showing Country-Wise Best Selling Smartphone

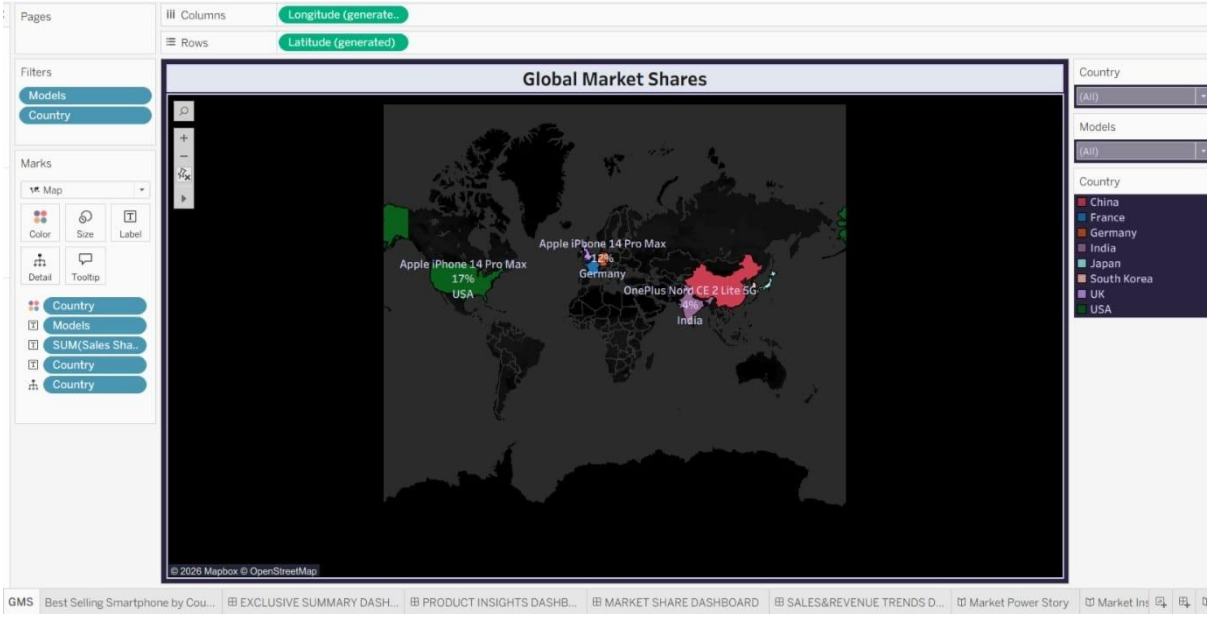


Donut Chart for Quarterly Share



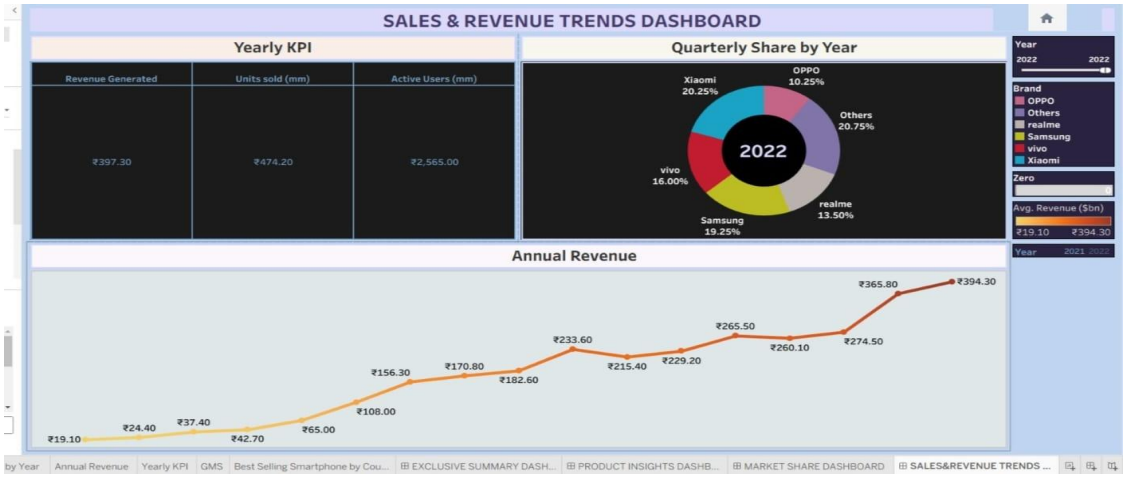
Line Chart for Annual Revenue Year-Wise

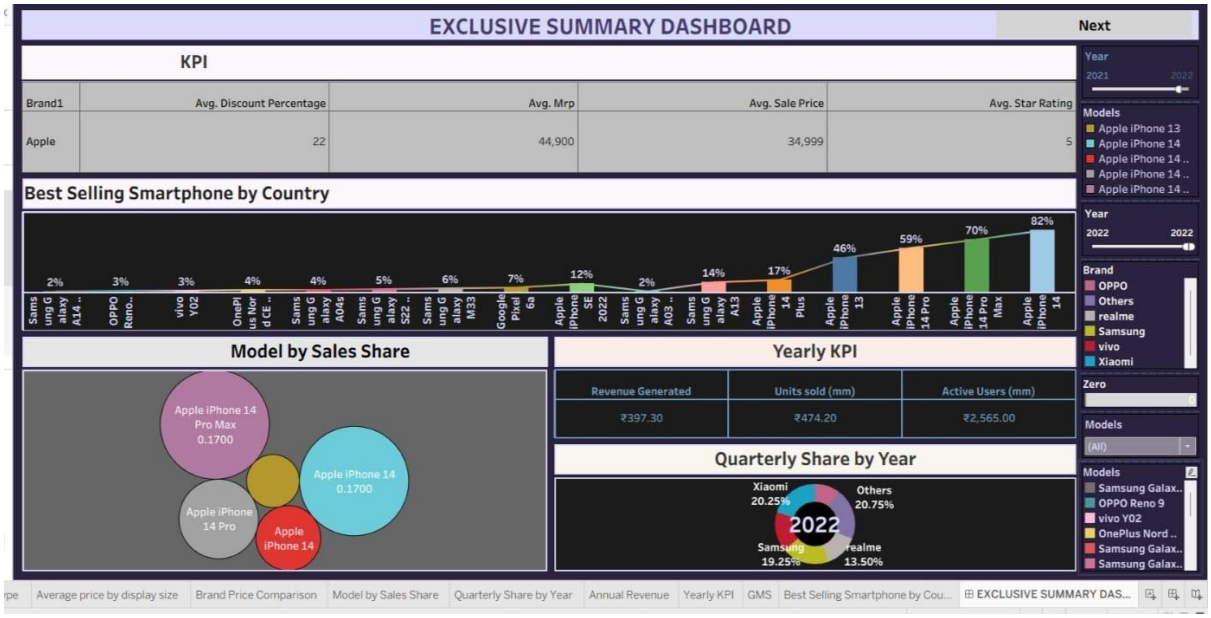
Map Showing Global Market Share

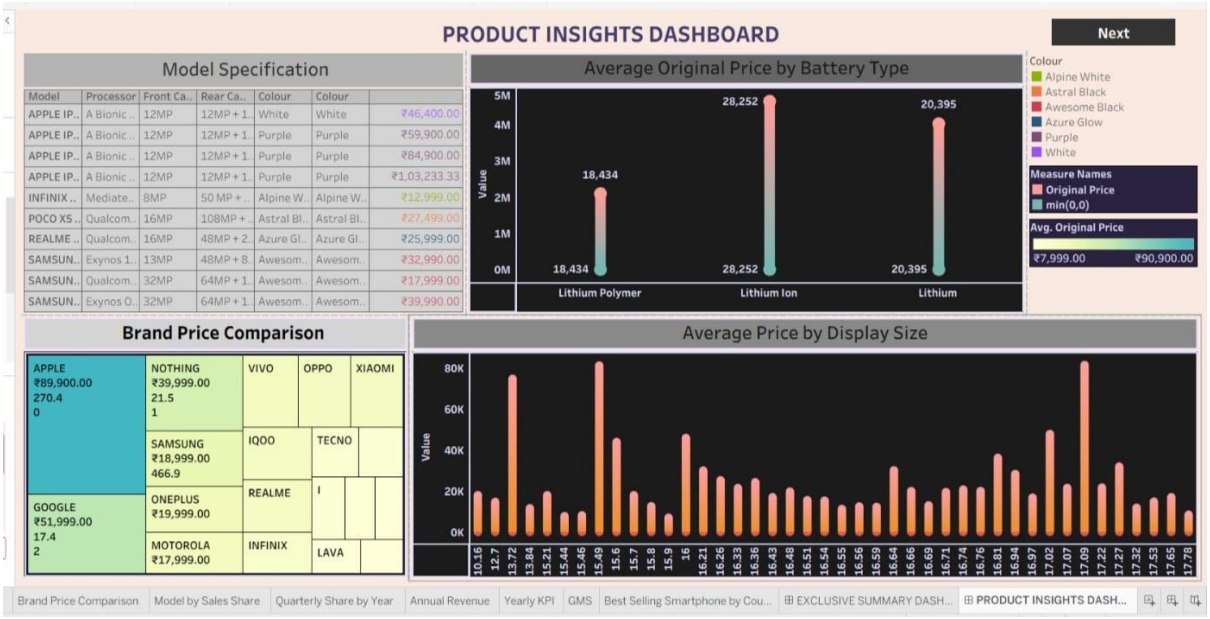


Responsive and Design of Dashboard

The responsiveness and design of a dashboard for Data-Driven insights on iRevolution: A Data-driven Exploration of Apple's iPhone Impact in India is crucial to ensure that the information is easily understandable and actionable. Key considerations for designing a responsive and effective dashboard include user-centered design, clear and concise information, interactivity, a data-driven approach, accessibility, customization, and security. The goal is to create a dashboard that is user-friendly, interactive, and data-driven, providing actionable insights.

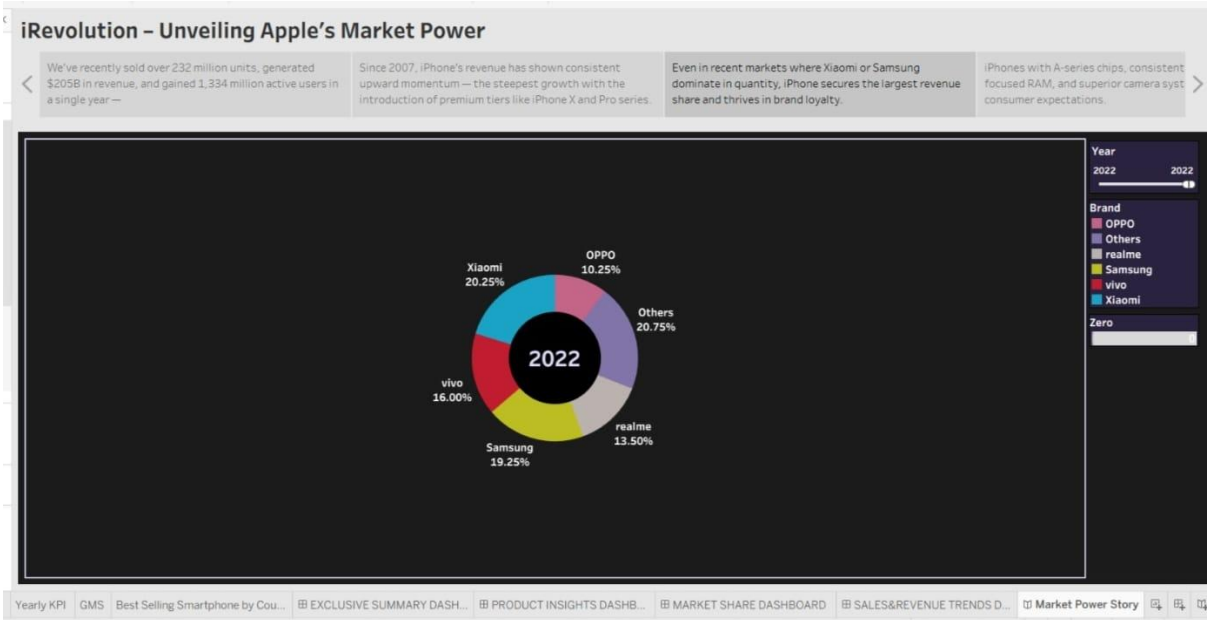






Story

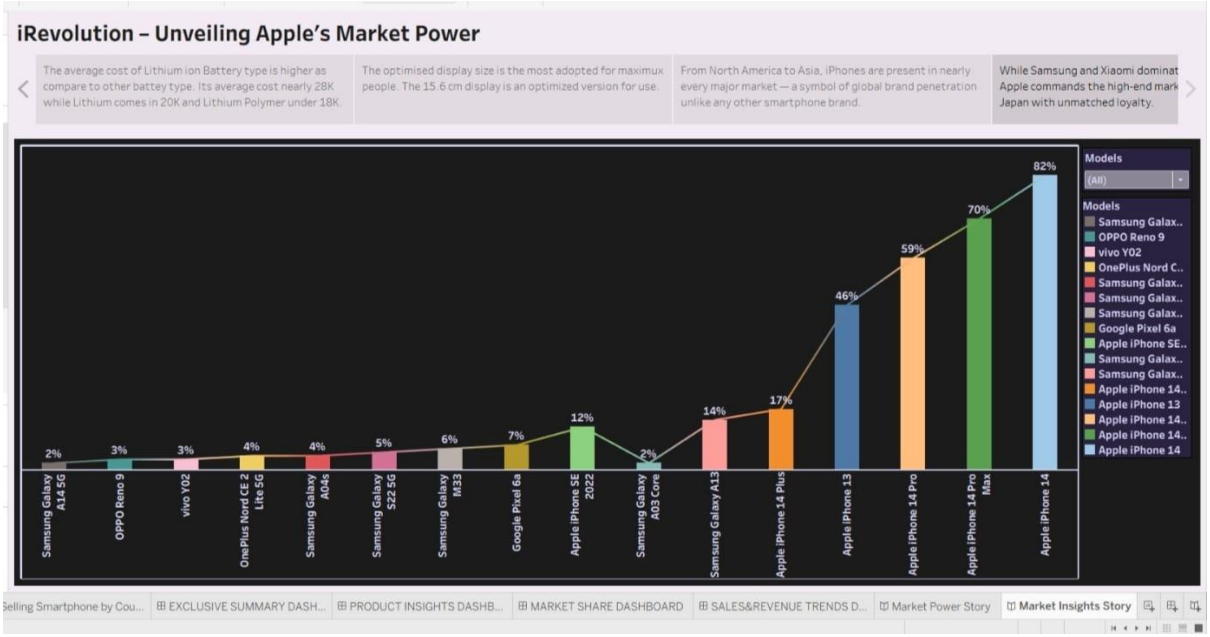
A data story is a way of presenting data and analysis in a narrative format, with the goal of making the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis in a logical and systematic way, and a conclusion that summarizes the key ?ndings and highlights their



implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.

No of Scenes of Story

The number of scenes in a storyboard for iRevolution will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process and it breaks down the analysis into a series of steps or scenes.



Performance Testing

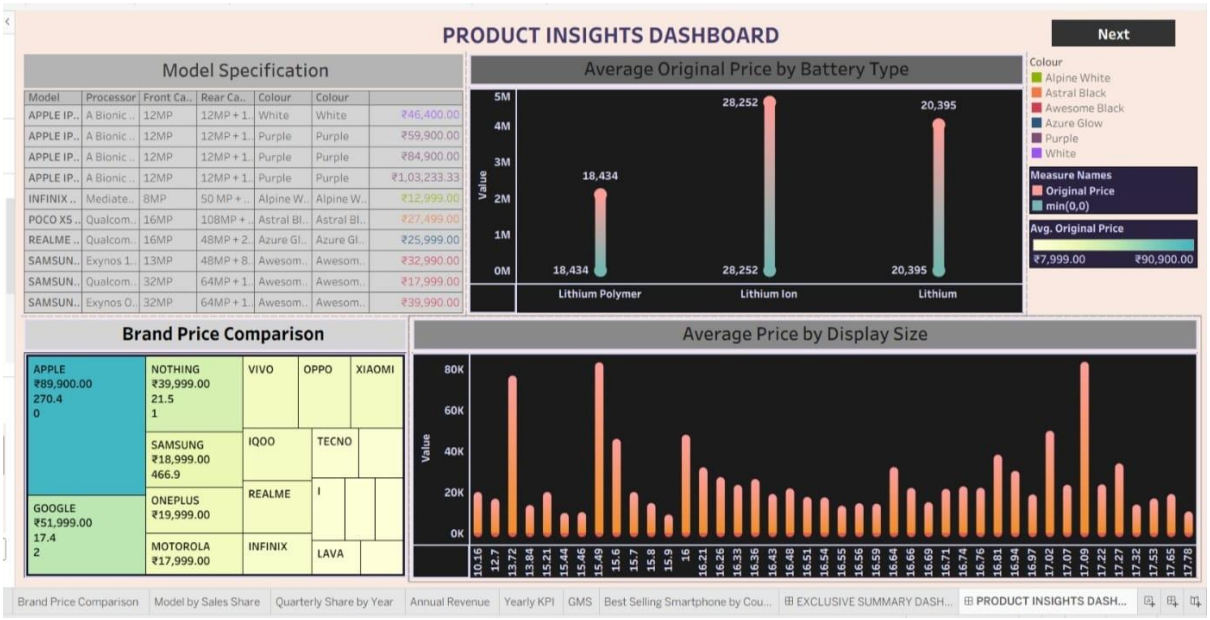
Performance testing involves assessing the volume of data rendered from the database, the impact of data filters on system responsiveness, and the complexity introduced by the number of visualizations. Optimizing these factors ensures the dashboard operates efficiently, providing timely and reliable insights.

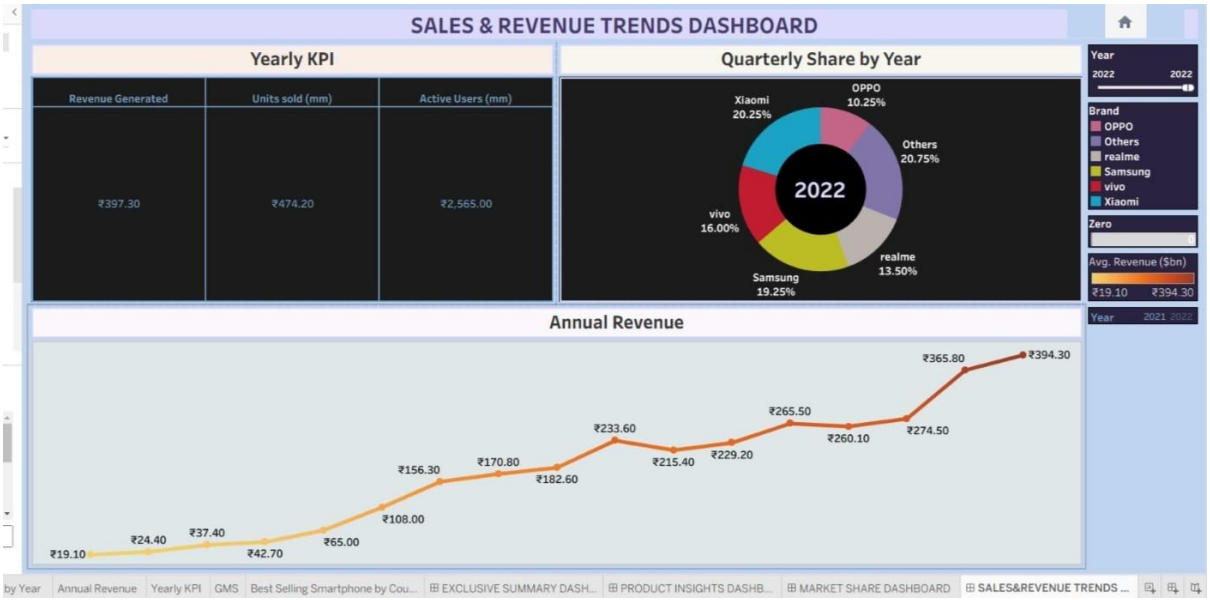
Amount of Data Rendered to Tableau

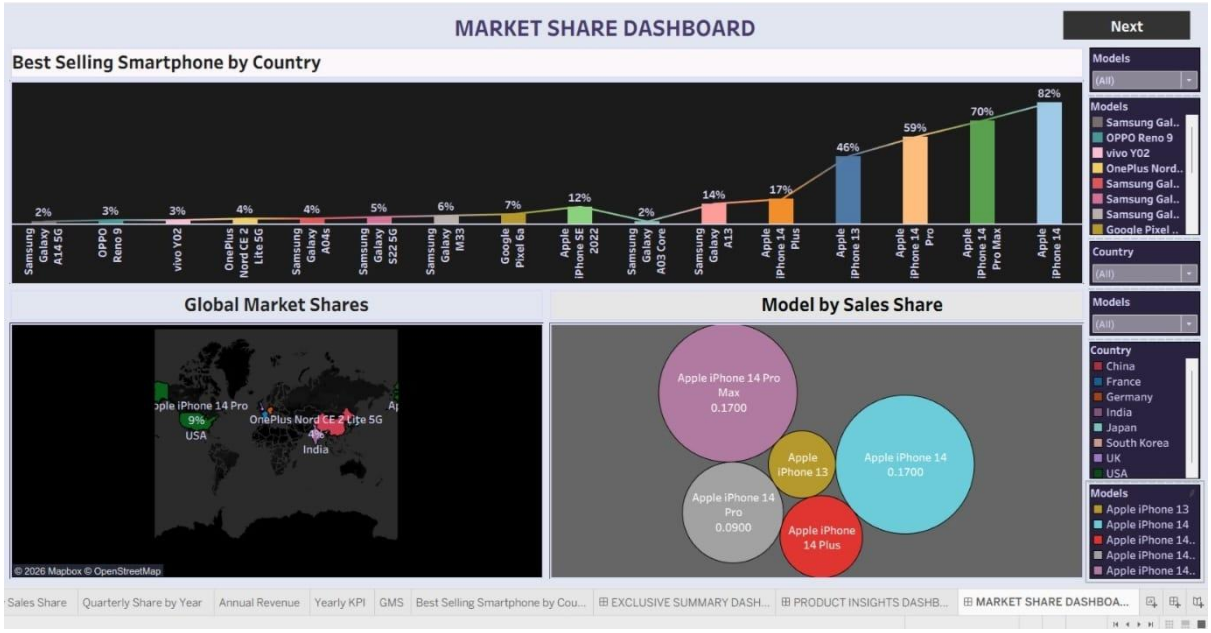
Monitor the volume of data being pulled and rendered from the database to ensure queries are optimized and not overloading the system.The amount of data that is rendered to a database depends on

the size of the dataset and the capacity of the database to store and retrieve data.

Utilization of Filters







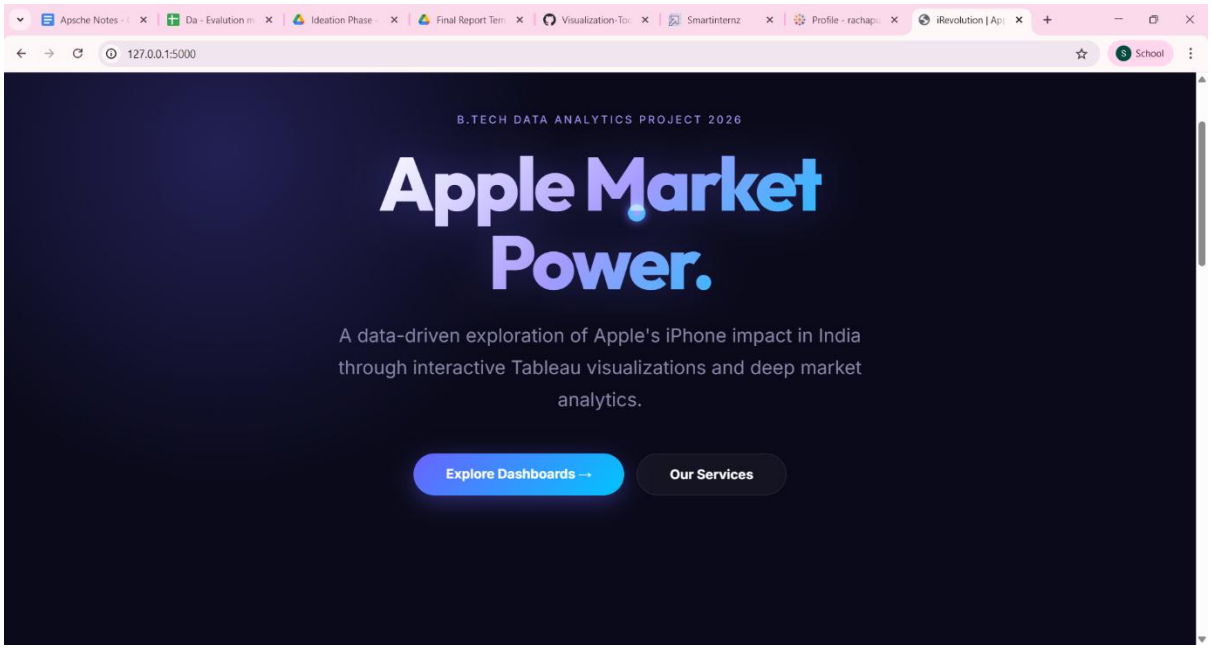
No of Visualizations/ Graphs

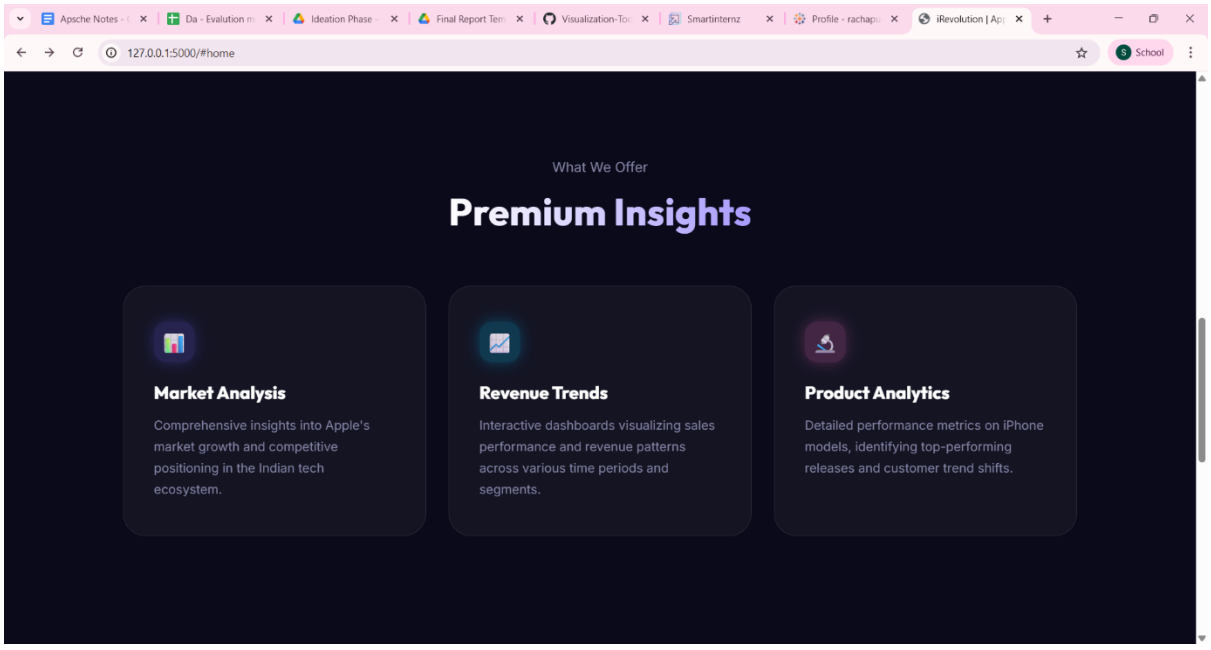
- KPI
- Model Speci?cation
- Model- Wise share
- Battery-Type distribution
- Brand- Price Comparison
- Model- Wise Share of iPhone
- Country-Wise Best-Selling Smartphone
- Annual Revenue Year-Wise
- Global Market Share

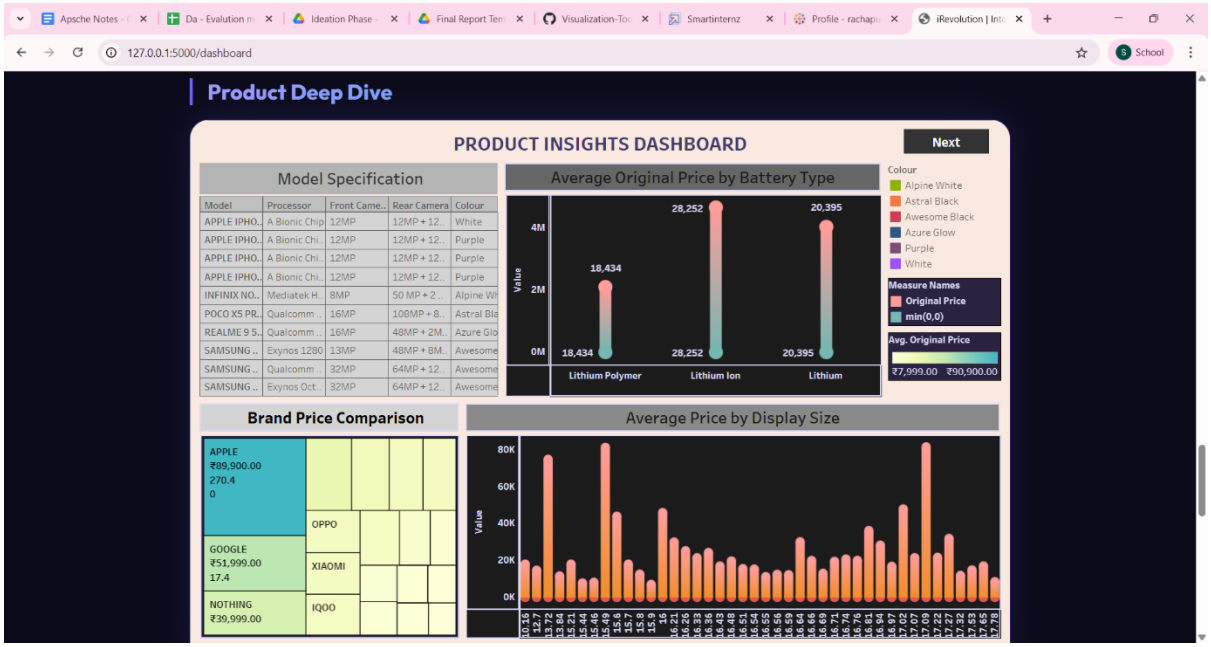
Web integration

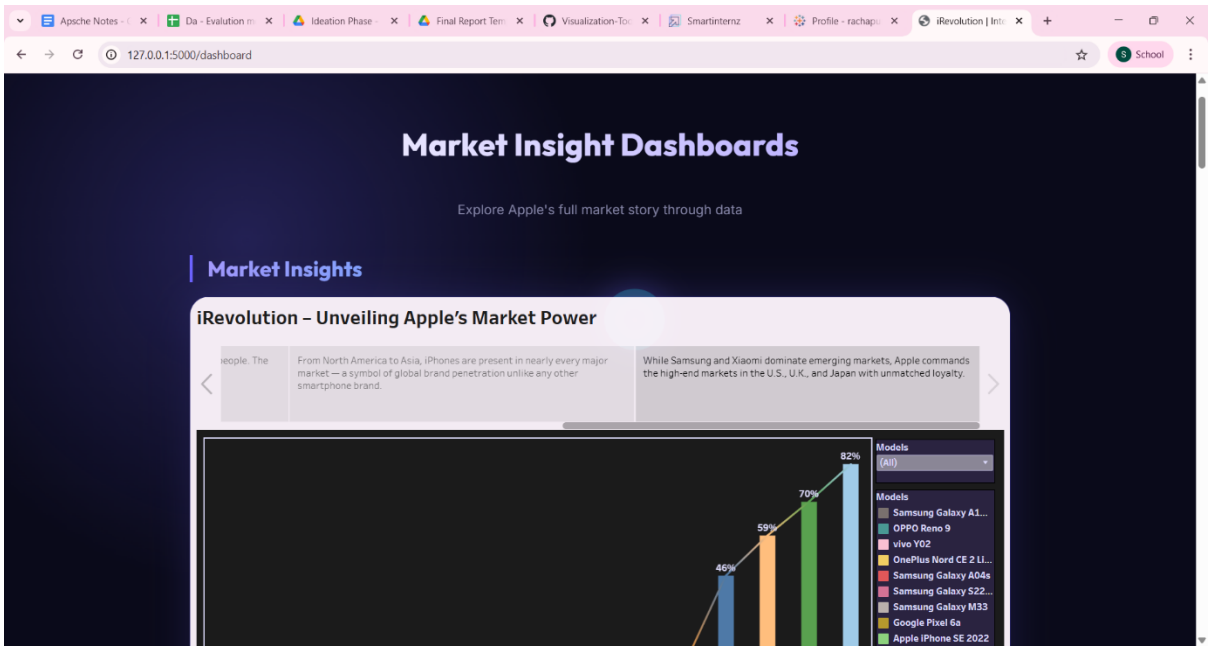
Web integration of a Tableau Dashboard Story involves embedding interactive visualizations into a website or web application. This allows users to explore data insights directly within a web interface, enhancing accessibility and engagement. It supports real-time updates, user filtering, and seamless navigation for a dynamic data

storytelling experience.






127.0.0.1:5000/dashboard
Product Deep Dive
PRODUCT INSIGHTS DASHBOARD
Next
Model Specification
Model
Processor
Front Came..
Rear Camera
Colour
APPLE IPHO.. A Bionic Chip 12MP 12MP + 12.. White
APPLE IPHO.. A Bionic Chi.. 12MP 12MP + 12.. Purple
APPLE IPHO.. A Bionic Chi.. 12MP 12MP + 12.. Purple
APPLE IPHO.. A Bionic Chi.. 12MP 12MP + 12.. Purple
INFINIX NO.. Mediatek H.. 8MP 50 MP + 2.. Alpine Wh
POCO X5 PR.. Qualcomm .. 16MP 108MP + 8.. Astral Bla
REALME 9 5.. Qualcomm .. 16MP 48MP + 2M.. Azure Glo
SAMSUNG .. Exynos 1280 13MP 48MP + 8M.. Awesome
SAMSUNG .. Qualcomm .. 32MP 64MP + 12.. Awesome
SAMSUNG .. Exynos Oct.. 32MP 64MP + 12.. Awesome
Average Original Price by Battery Type
Value
4M
2M
0M
18,434
28,252
20,395
Lithium Polymer
Lithium Ion
Lithium
Colour
Alpine White
Astral Black
Awesome Black
Azure Glow
Purple
White
Measure Names
Original Price
min(0,0)
Avg. Original Price
₹7,999.00 ₹90,900.00
Brand Price Comparison
APPLE
₹89,900.00
270.4
0
GOOGLE
₹51,999.00
17.4
NOTHING
₹39,999.00
OPPO
XIAOMI
IQOO
Average Price by Display Size
Value
80K
60K
40K
20K
0K


127.0.0.1:5000/dashboard
Market Insight Dashboards
Explore Apple's full market story through data
Market Insights
iRevolution – Unveiling Apple's Market Power
From North America to Asia, iPhones are present in nearly every major market — a symbol of global brand penetration unlike any other smartphone brand.
While Samsung and Xiaomi dominate emerging markets, Apple commands the high-end markets in the U.S., U.K., and Japan with unmatched loyalty.
46%
59%
70%
82%
Models
(All)
Models
Samsung Galaxy A1...
OPPO Reno 9
vivo Y02
OnePlus Nord CE 2 Li...
Samsung Galaxy A04s
Samsung Galaxy S22...
Samsung Galaxy M33
Google Pixel 6a
Apple iPhone SE 2022

Templates:

Ideation Phase
Define the Problem Statements

Ideation Phase
Define the Problem Statements

Date	31 January 2026
Team ID	LTVIP2026TMIDS90481
Project Name	IRevolution: A Data-Driven Exploration of Apple's iPhone Impact in India
Maximum Marks	2 Marks

Example:

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	Premium phone aspirant	Create highquality content	Limited customization compared to Android	Limited local component manufacturing	Proud when owning an iPhone
PS-2	Social media content creator	Ensure longterm device value	Import duties increase prices	Service centers concentrated in cities	Anxious about making the right investment

Ideation Phase
Empathize & Discover

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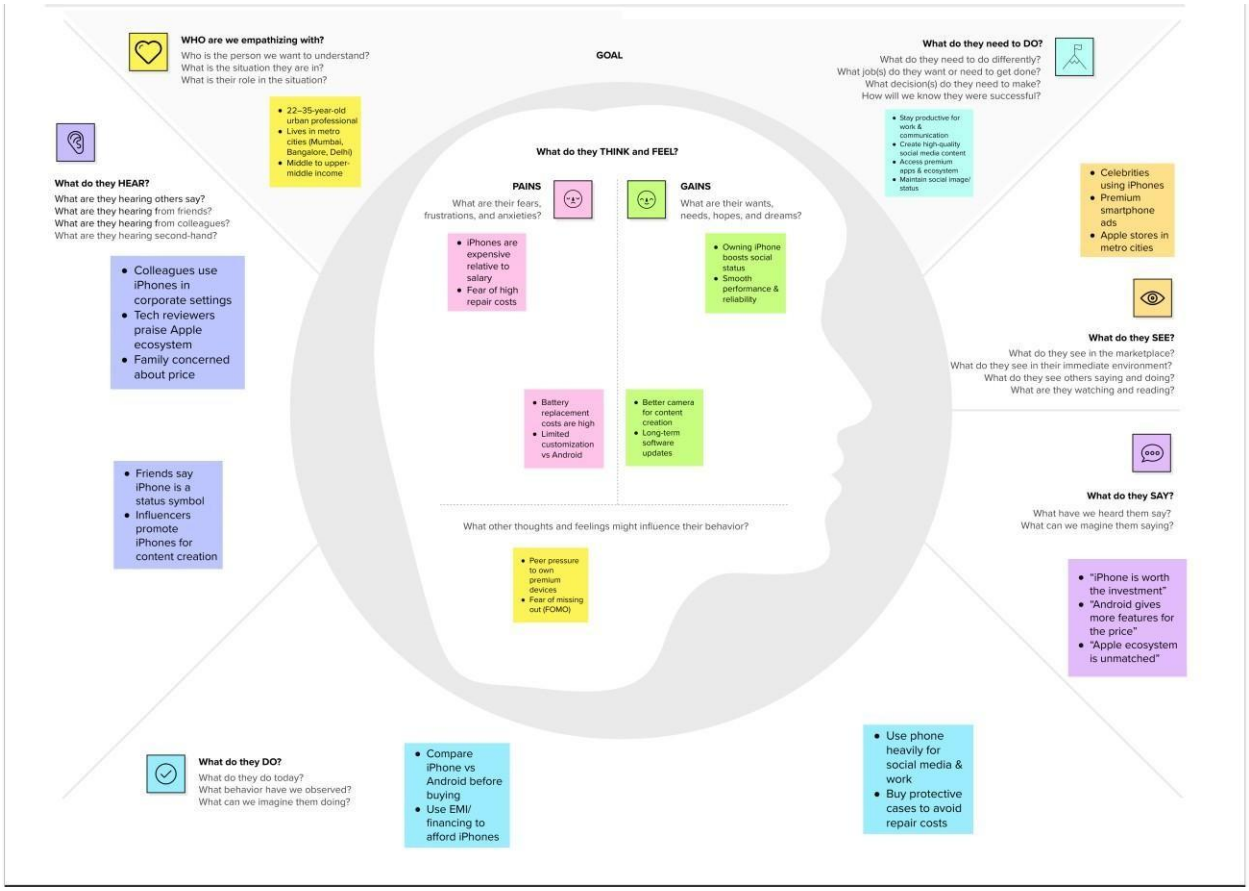
Maximum Marks	4 Marks

Empathy Map Canvas:



Ideation Phase
Brainstorm & Idea Prioritization Template

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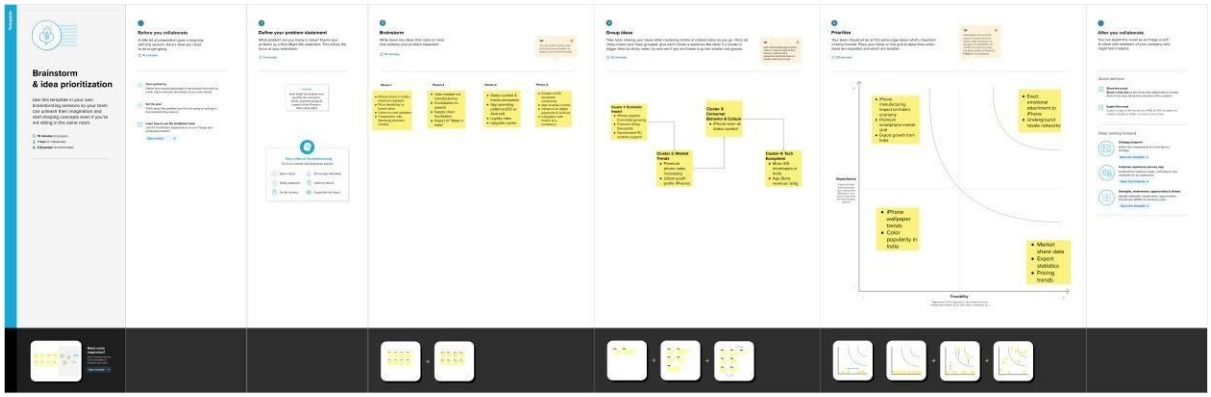
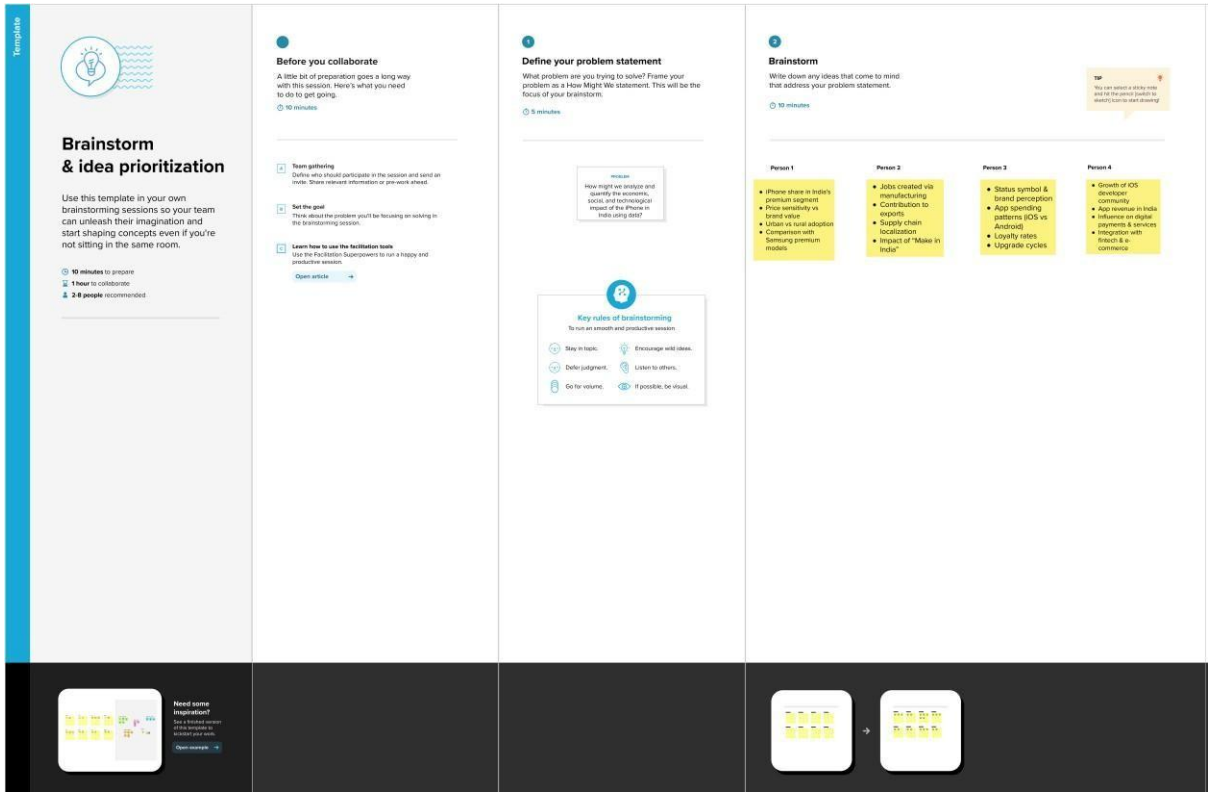
Maximum Marks	4 Marks

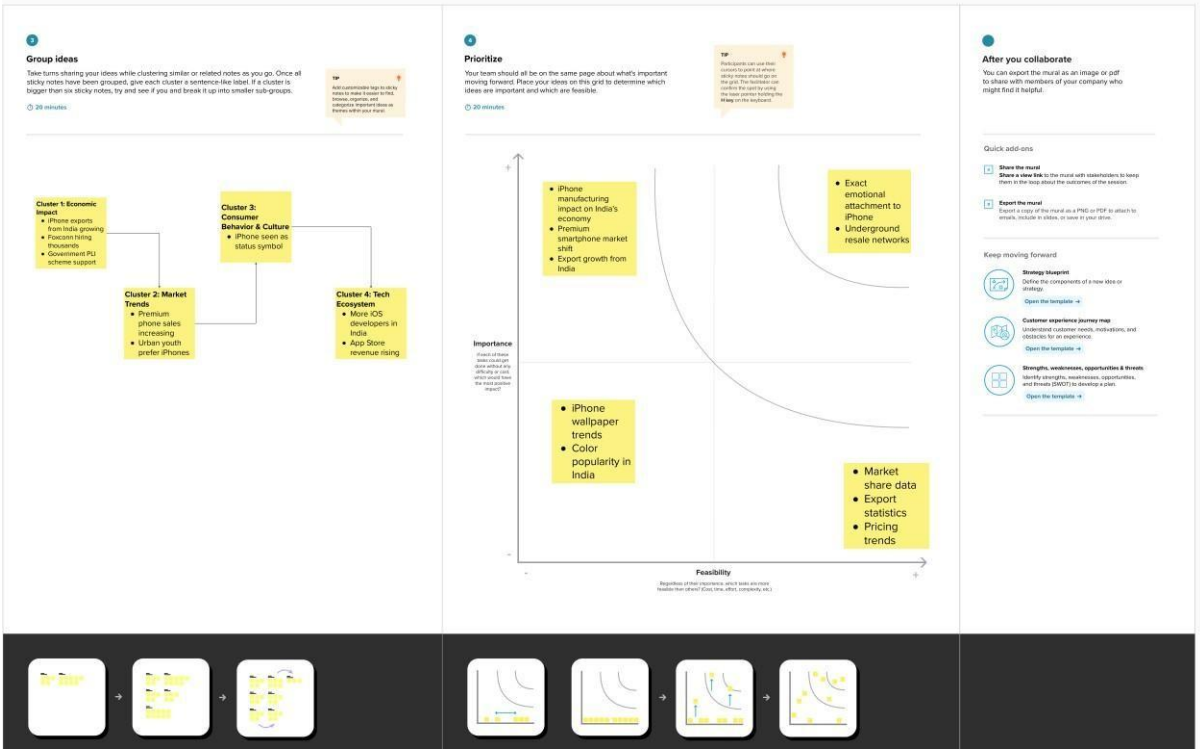
Brainstorm & Idea Prioritization Template:



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



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



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

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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 (Name, Email, Password) Registration through Google account Registration through Apple ID
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login & Authentication	Login using registered email & password Forget Password and reset via email Secure session management(logout option)
FR-4	Dashboard & Visualization	Dashboard & Visualization View adoption rate by year and region View price-segment analysis of iPhone models
FR-5	Data Filtering & Exploration	Filter data by year Filter by city/region/state Filter by income group or price range
FR-6	Market Comparison	Compare iPhone vs Android market share Compare models based on price and popularity

Non-functional Requirements:

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

NFR-5	**Availability**	Application should be accessible 24/7 with minimal downtime.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Interface should be simple and easy to navigate for students and researchers. Dashboards must have clear charts and tooltips.
NFR-2	**Security**	User passwords must be encrypted, authentication required for login, and role-based access control for admin features.
NFR-3	**Reliability**	System should provide accurate analytical results and handle dataset uploads without failure.
NFR-4	**Performance**	Dashboards and charts should load within 3–5 seconds even with large datasets.

NFR-6	**Scalability**	System should support increasing data volume and multiple concurrent users without performance degradation.

Data Flow Diagram & User Stories

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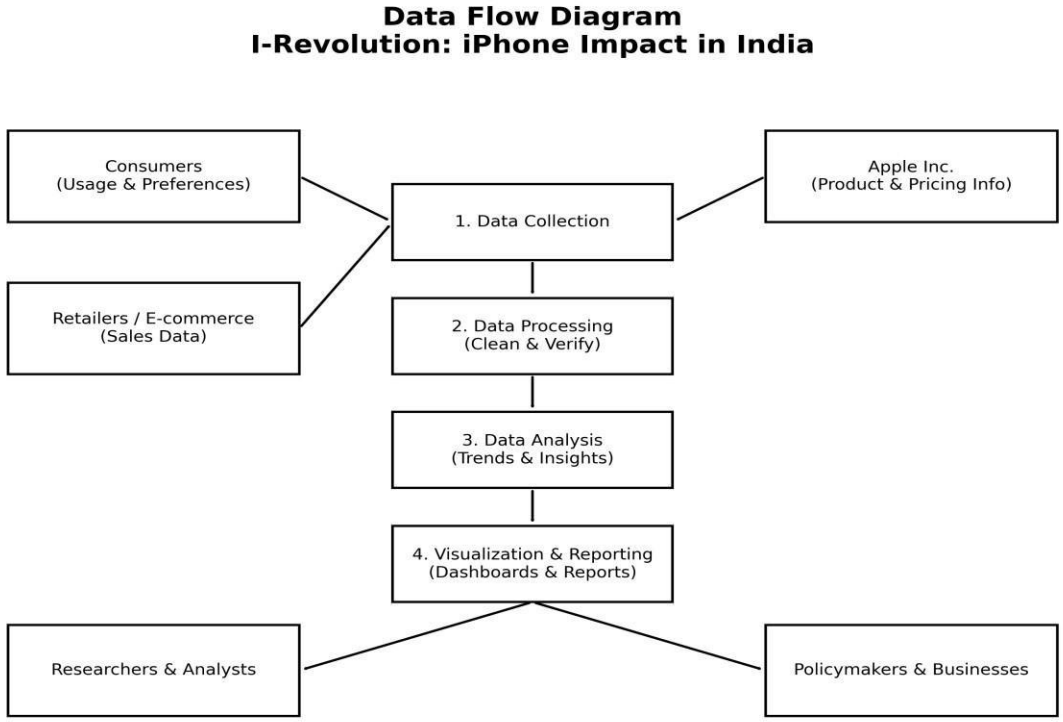
Data Flow Diagrams:



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 using email and password	Account is created and I can access my dashboard	High	Sprint-1
Customer (Mobile user)	Registration	USN-2	As a user, I receive a verification email after signup	Verification link works and login is enabled	High	Sprint-1
Customer (Mobile user)	Login	USN-3	As a user, I can log in using credentials	Successful login redirects to dashboard	High	Sprint-1
Customer (Mobile user)	Dashboard	USN-4	As a user, I can view iPhone adoption trends in India	Graphs display correct sales and usage data	Medium	Sprint-2
Customer (Mobile user)	Dashboard	USN-5	As a user, I can view price segment analysis of iPhone models	Price-range charts load properly	Medium	Sprint-2
Customer (Web user)	Data Exploration	USN-6	As a web user, I can filter data by year	Charts update based on selected year	High	Sprint-2
Customer (Web user)	Data Exploration	USN-7	As a web user, I can filter by city/region	Regional sales data changes correctly	High	Sprint-2
Customer (Web user)	Comparison	USN-8	As a web user, I can compare iPhone vs Android market share	Comparison chart shows correct percentages	High	Sprint-2
Customer (Web user)	Reports	USN-9	As a web user, I can download analytics report	CSV/PDF report downloads successfully	Medium	Sprint-3
Customer Care Executive	Support	USN-10	As a support executive, I can view user feedback	Feedback list with details is visible	Medium	Sprint-3
Customer Care Executive	Support	USN-11	As a support executive, I can respond to user queries	Replies are saved and visible to users	Medium	Sprint-3

Technology Stack (Architecture & Stack)

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Technical Architecture:

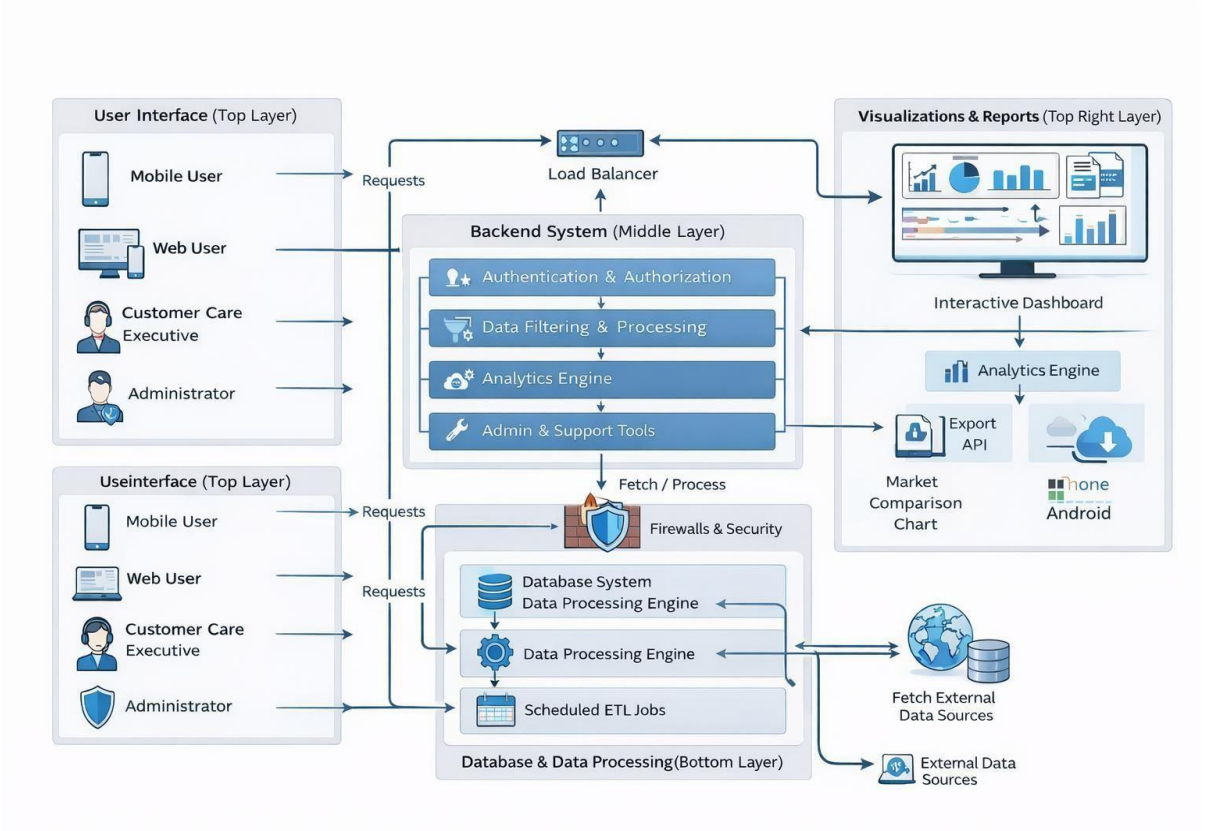

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Users interact with analytics dashboards via Web UI and Mobile responsive interface	HTML5, CSS3, JavaScript, React.js / Bootstrap
2	Application Logic-1	Handles user authentication, login, registration and session management	Python (Flask/Django) or Node.js
3	Application Logic-2	Processes dataset filtering, search queries, and user requests	REST API Services (Flask API / Express.js)
4	Application Logic-3	Performs analytics computation and generates insights	Python (Pandas, NumPy)
5	Database	Stores processed sales data, user details and analytics results	MySQL / PostgreSQL
6	Cloud Database	Cloud-hosted storage for scalable data access	Firebase / AWS RDS
7	File Storage	Stores uploaded CSV datasets and generated reports	AWS S3 / Local File System
8	External API-1	Fetches market statistics and smartphone shipment datasets	Public datasets (Kaggle / Statista APIs)
9	External API-2	Fetches economic or demographic indicators related to adoption	Government Open Data API (data.gov.in)
10	Machine Learning Model	Predicts iPhone adoption trend and sales growth	Python Scikit-learn (Regression/Forecasting)
11	Infrastructure (Server/Cloud)	Deployment of web application and analytics services	AWS EC2 / Google Cloud / Docker

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frameworks used to build frontend and backend analytics platform	React.js, Flask/Django, Bootstrap
2	Security Implementations	Secure login, encrypted passwords, role-based admin access	HTTPS, JWT Authentication, SHA-256 Password Hashing
3	Scalable Architecture	System supports multiple users and increasing datasets with layered architecture	3-Tier Architecture (Presentation, Application, Data Layer), Cloud Hosting
4	Performance Optimization	Fast loading dashboards and efficient processing of large datasets	Caching, Optimized SQL Queries, Pandas Data Processing
5	Data Visualization & Reporting	Interactive charts and downloadable analytics reports for user understanding	Tableau / Power BI / Chart.js