PROJECT REPORT

Project Title: irevolution: a data-driven exploration of apple's iphone impact in india using tableau

Team ID:LTVIP2025TMID49338

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1. INTRODUCTION

1.1 Project Overview : irevolution: a data-driven exploration of apple's iphone impact in india

This project aim for analyzes how Apple's iPhone has influenced the Indian smartphone market over time. The project explores trends in sales, pricing, and product adoption using visual analytics. It provides insights into Apple's market strategy and consumer response through interactive data storytelling.

Objectives:

1. To analyze the growth and market impact of Apple's iPhone in India.
2. To identify trends in pricing, sales, and product adoption over time.
3. To visualize insights that inform strategic decisions for stakeholders.

Key Activities:

1. Collecting and preprocessing data from public sources (CSV files, APIs, reports).
2. Performing exploratory data analysis and deriving key performance indicators (KPIs).
3. Creating interactive dashboards and visualizations using Tableau.
4. Interpreting trends across different time periods, regions, and product models.
5. Preparing reports and narratives that communicate data-driven insights effectively.

1.2 Purpose

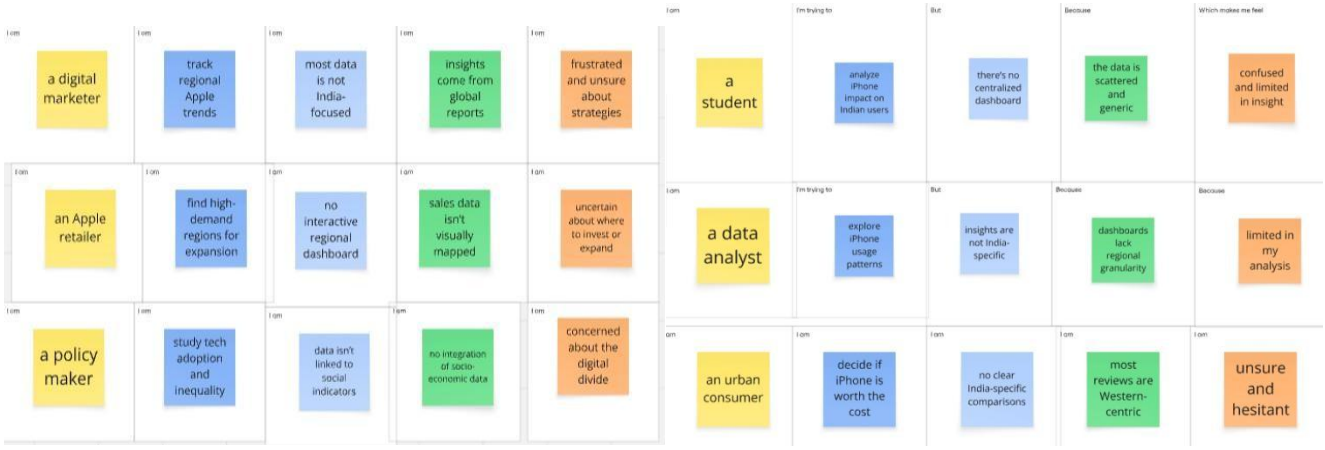
1. The project purpose to evaluate how Apple's iPhone has influenced India's mobile technology landscape by analyzing trends in sales, adoption, and pricing using visual analytics tools.

2. To provide business and academic stakeholders with a comprehensive view of Apple's market penetration and strategic evolution in India through interactive, data-driven storytelling.

3. The purpose is to transform raw data into actionable insights that highlight the iPhone's performance, customer reach, and market positioning in India over time.

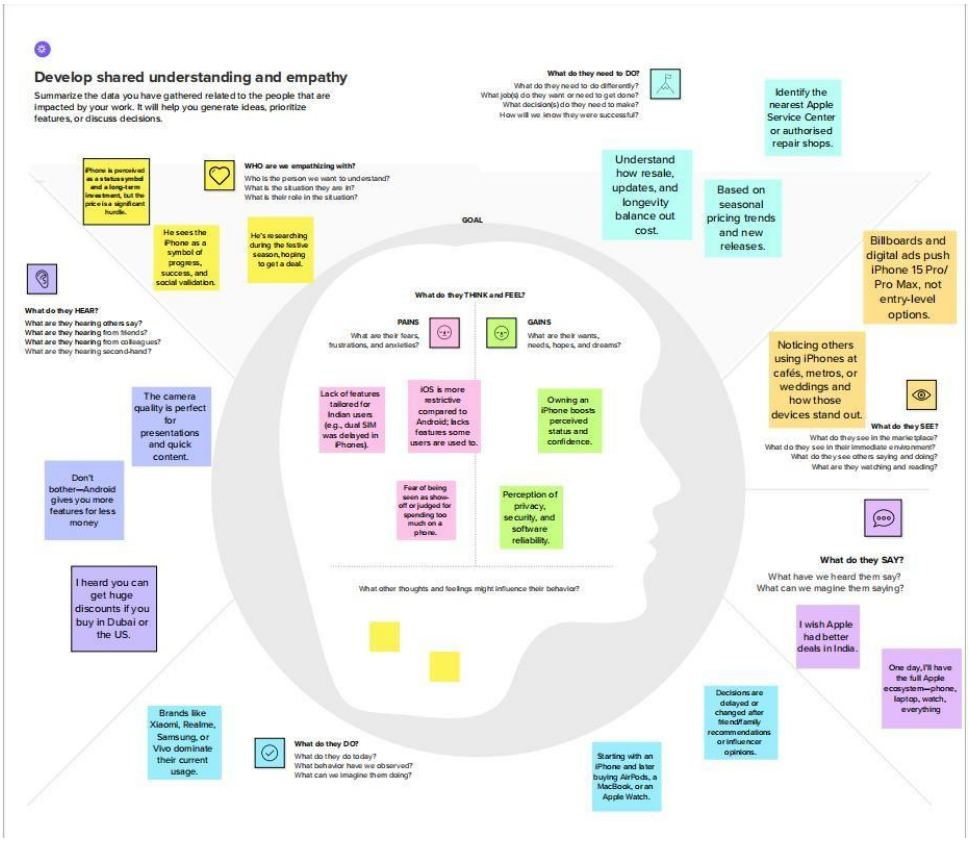
2. IDEATION PHASE

2.1 Problem Statement

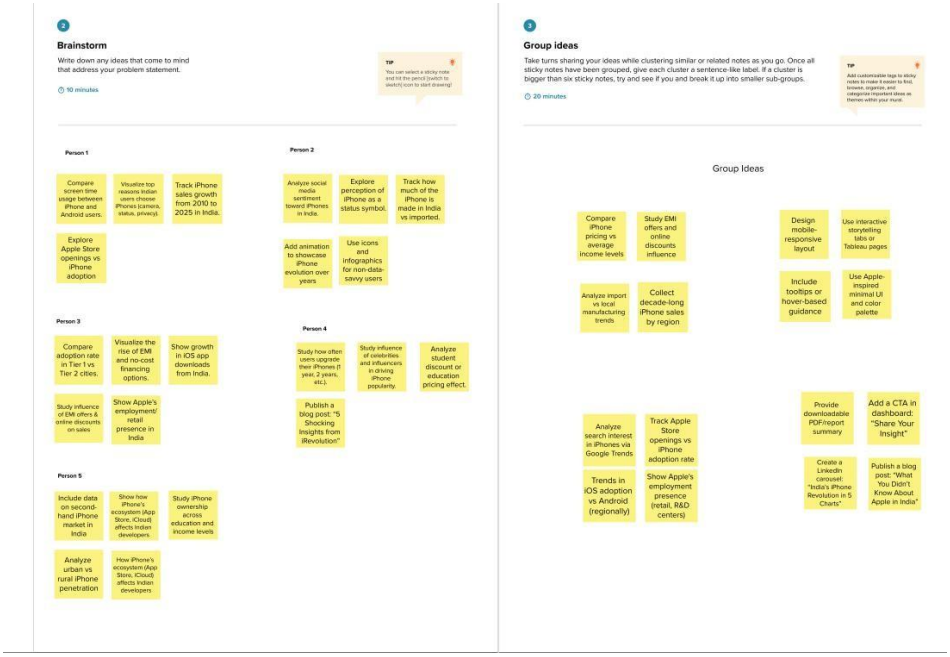


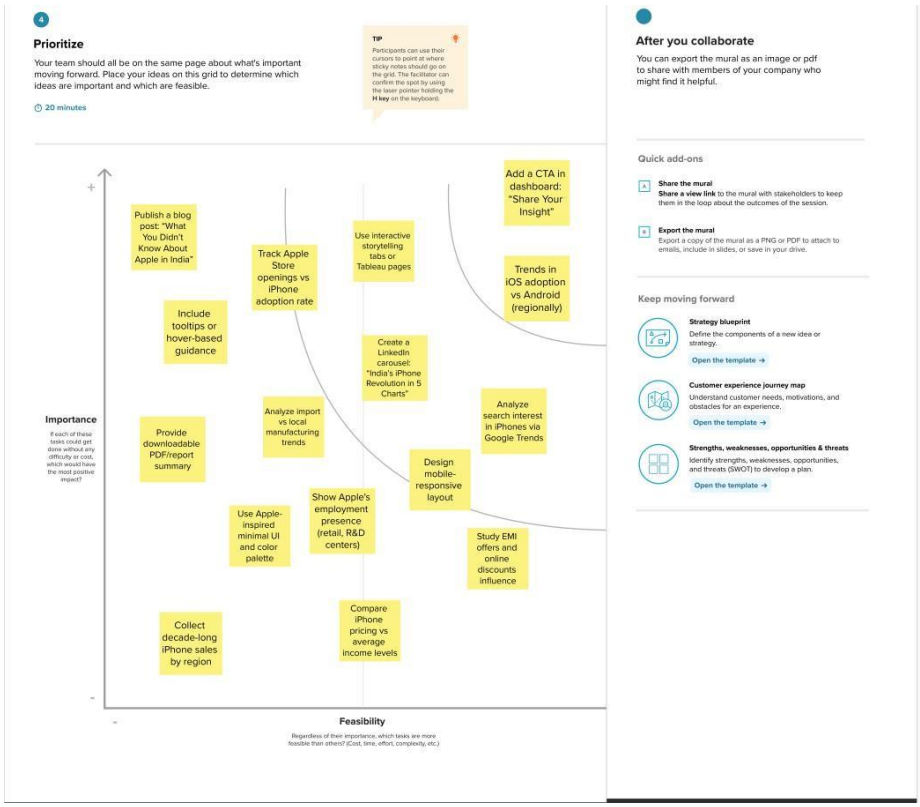
Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	a student	analyze iPhone impact on Indian users	there's no centralized dashboard	the data is scattered and generic	confused and limited in insight
PS-2	a data analyst	explore iPhone usage patterns	insights are not India-specific	dashboards lack regional granularity	limited in my analysis
PS-3	an urban consumer	decide if iPhone is worth the cost	no clear India-specific comparisons	most reviews are Western-centric	unsure and hesitant
PS-4	a digital marketer	track regional Apple trends	most data is not India-focused	insights come from global reports	frustrated and unsure about strategies
PS-5	an Apple retailer	find high-demand regions for expansion	no interactive regional dashboard	sales data isn't visually mapped	uncertain about where to invest or expand
PS-6	a policy maker	study tech adoption and inequality	data isn't linked to social indicators	no integration of socio-economic data	concerned about the digital divide

2.2 Empathy Map Canvas



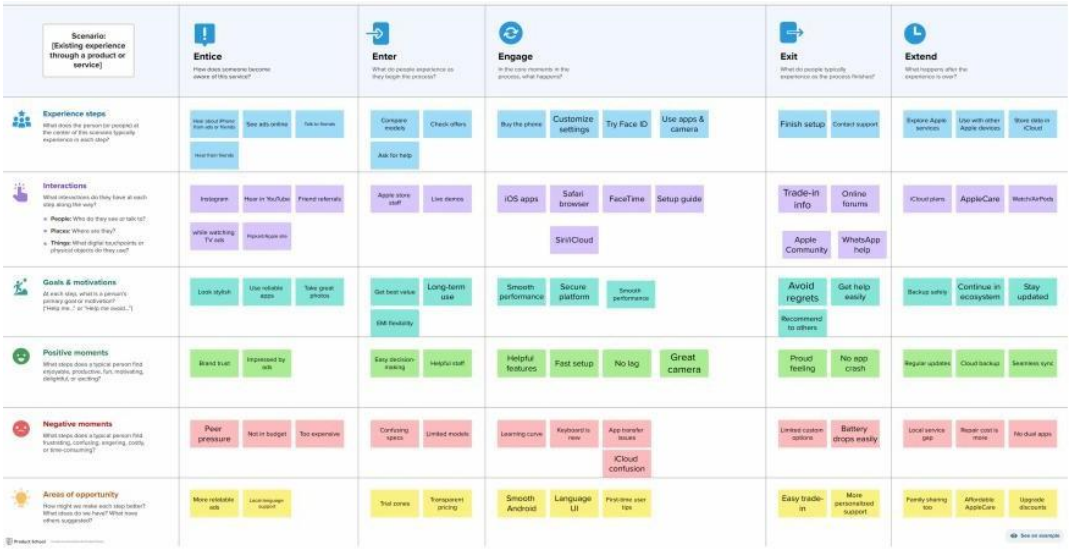
2.3 Brainstorming





3. REQUIREMENT ANALYSIS

3.1 Customer Journey map



3.2 Solution Requirement

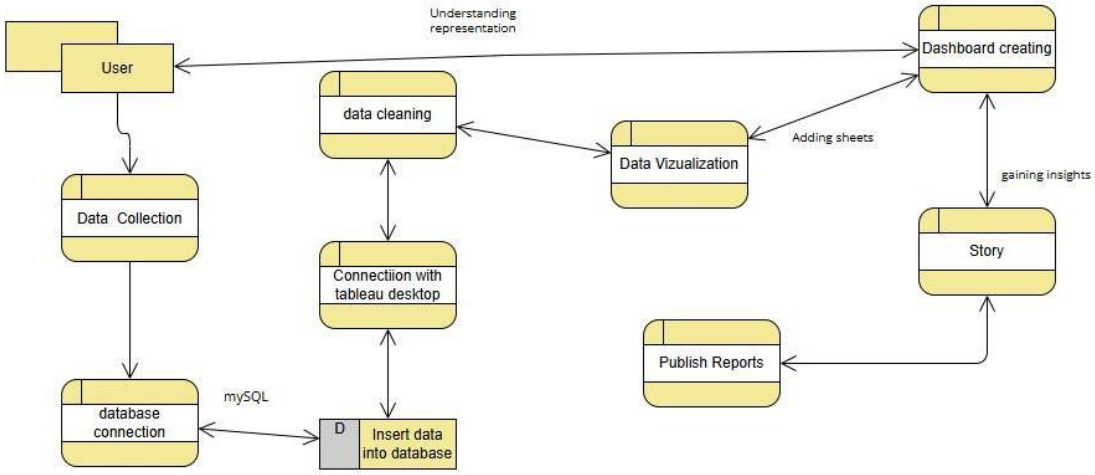
Functional Requirements:
Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Define Objective	Set the goal to explore how Apple's iPhone has influenced the Indian market. Focus on trends, user adoption, and regional insights using data.
FR-2	Data Collection	Gather relevant data from sources like TRAI, Statista, and e-commerce platforms. Collect information on sales, pricing, user demographics, and brand share.
FR-3	Data cleaning	Remove duplicates, fix missing values, and correct inconsistencies. Ensure the dataset is accurate and ready for analysis.
FR-4	Data transformation	Convert raw data into structured formats suitable for Tableau. Create new calculated fields, group data, and format columns.
FR-5	Data visualization and pattern understanding	Use Tableau to build interactive dashboards and charts. Identify patterns in sales, usage, growth areas, and user segments.
FR-6	Analysis and Interpretation	Draw meaningful insights from visual trends and comparisons. Understand key factors driving iPhone adoption in different regions.
FR-7	Dashboard Sharing / Reporting	Publish the final dashboard for stakeholders or on Tableau Public. Create a summary report highlighting insights and recommendations.

Non-functional Requirements:
Following are the non-functional requirements of the proposed solution.

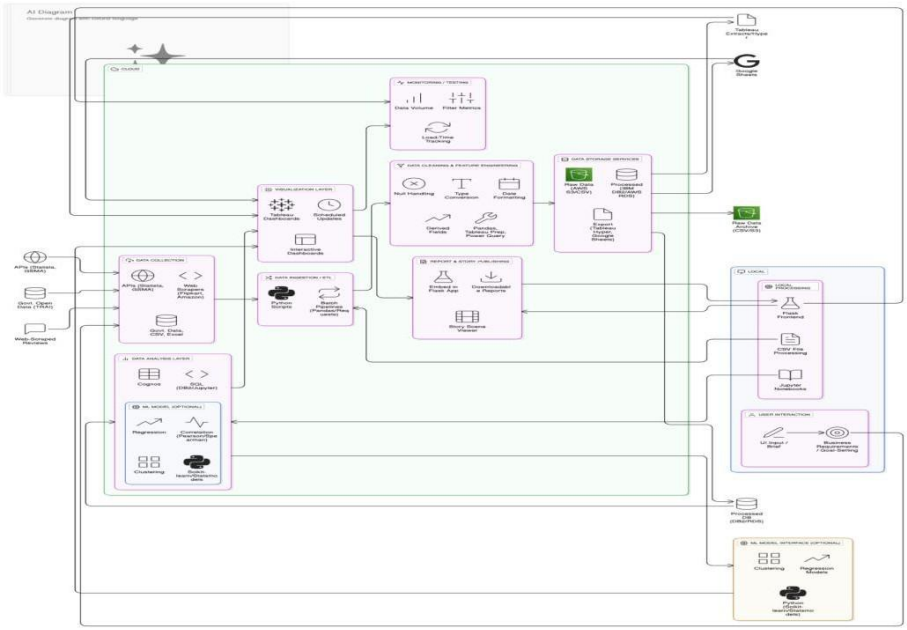
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The Tableau dashboards should be intuitive, user-friendly, and easy to navigate for both technical and non-technical users.
NFR-2	**Security**	Data access should be secure, with user-level permissions to protect sensitive datasets and visualizations.
NFR-3	**Reliability**	The system should ensure consistent availability and accurate data loading every time the dashboard is accessed.
NFR-4	**Performance**	Dashboards must load quickly (under 3 seconds) and run smoothly even with large datasets.
NFR-5	**Availability**	The dashboards and reports should be accessible 24/7 with minimal downtime or disruptions.
NFR-6	**Scalability**	The system should support growing data volumes and allow for adding new data sources or filters in the future.

3.3 Data Flow Diagram



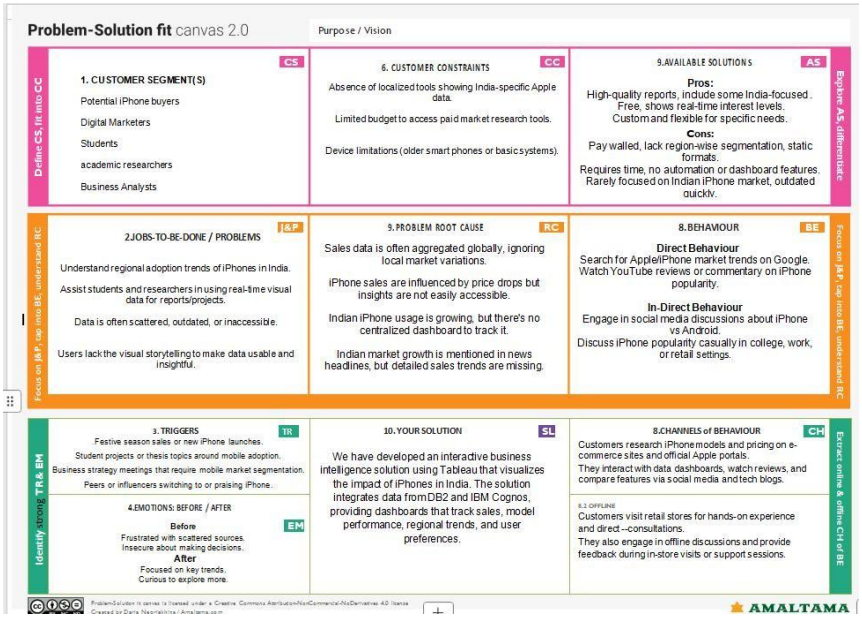
3.4 Technology Stack

Technical Architecture



4. PROJECT DESIGN

4.1 Problem Solution Fit



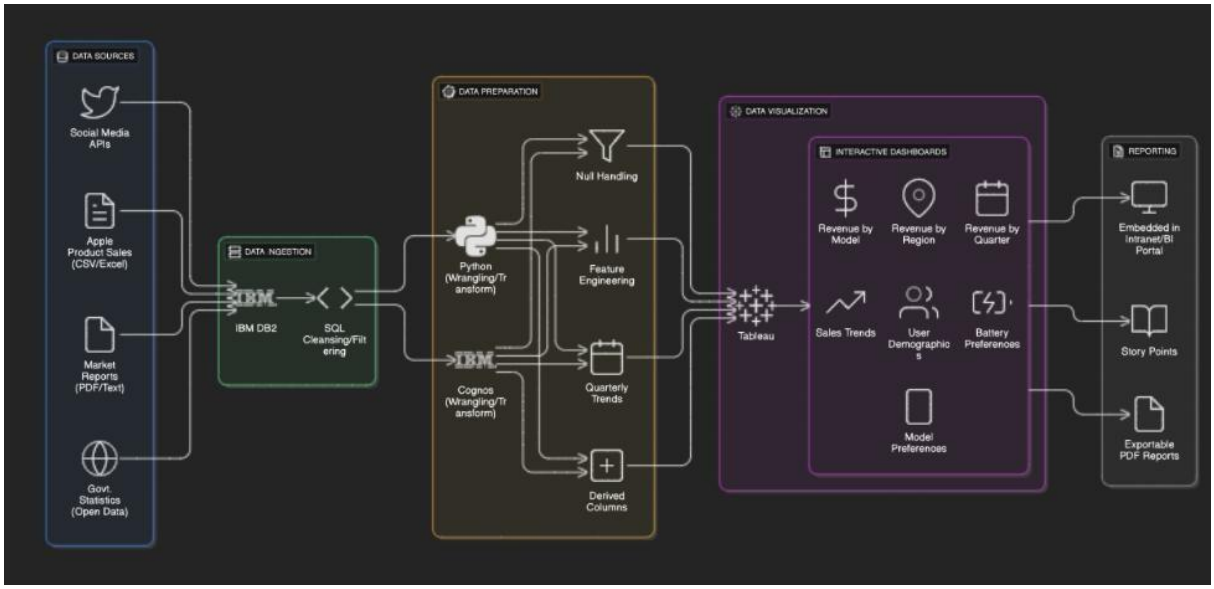
4.2 Proposed Solution

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)	There is a lack of India-specific insights on how Apple's iPhones perform across different quarters, models, and regions.Stakeholders face difficulty making data-backed decisions due to scattered and generalized global data.A focused dashboard can help identify customer behavior, sales trends, and model preferences in India.
2.	Idea / Solution description	We designed an interactive Tableau dashboard using product data like model names, prices, battery types, sales share, and revenue. The dashboard allows users to filter by quarter, region, or model and analyze the evolution of iPhone impact in India. Data is sourced from DB2 and processed via Cognos to ensure accuracy and real-time updates.
3.	Novelty / Uniqueness	1. Our solution connects product-level attributes with customer behavior in an India-specific context. 2. Most existing tools show global or generalized trends, while ours zooms in on regional insights. 3. It uniquely combines visual storytelling with sales and technical specifications of Apple iPhones.
4.	Social Impact / Customer Satisfaction	This project helps users understand which iPhone models suit which customer segments across India.It supports better product positioning and customer engagement strategies.The insights can reduce marketing waste and improve satisfaction by meeting real user needs.
5.	Business Model (Revenue Model)	We can offer the dashboard as a paid subscription service to marketing agencies and tech analysts. Customized reports can be generated for regional smartphone vendors or Apple resellers. Freemium models with basic access and premium features can also be considered.
6.	Scalability of the Solution	he dashboard can scale to include other Apple products like iPads or MacBooks. It can also be expanded to analyze competitor brands or additional countries. Automated data pipelines and filters allow flexible additions without redesigning the core.

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	USN-1	Download iPhone sales data from reliable sources	3	medium	N sandeep
Sprint-1		USN-2	Collect user opinions or reviews about iPhones	3	medium	N sandeep
Sprint-1	Data preprocessing	USN-3	Handle missing values in the dataset	4	High	J snehalatha
Sprint-1		USN-4	Standardize currency and date formats	3	Medium	J snehalatha
Sprint-2	Data vizualization	USN-5	KPI	2	medium	A kalpana
Sprint-2		USN-6	Model Specification	2	medium	A kalpana
Sprint-2		USN-7	Battery type distribution	2	medium	A kalpana
Sprint-2		USN-8	Brand Price Comparsion	1	low	A kalpana
Sprint-2		USN-9	Model Share	1	low	A kalpana
Sprint-3		USN-10	Country wise best selling smartphone	1	low	A kalpana
Sprint-3		USN-11	KPI year wise	1	low	A kalpana
Sprint-3	Dashboard Building	USN-12	Creating Dashboard-1	1	low	A kalpana
Sprint-3		USN-13	Creating Dashboard-2	1	low	A kalpana
Sprint-4	Story	USN-14	Creating Story 1	1	low	A kalpana
Sprint-4		USN-15	Creating Story 2	1	low	A kalpana
Sprint-4	publishing	USN-16	Publish final dashboard to Tableau Public and web integration	7	high	Sk aseer basha

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 (Actual)
Sprint-1	13	3 Days	19 july 2025	21 july 2025	13	21 july 2025
Sprint-2	8	3 Days	21 july 2025	23 july 2025	8	23 july 2025
Sprint-3	4	2 Days	23 july 2025	24 july 2025	4	24 july 2025
Sprint-4	9	2 Days	24 july 2025	26 july 2025	9	26 july 2025

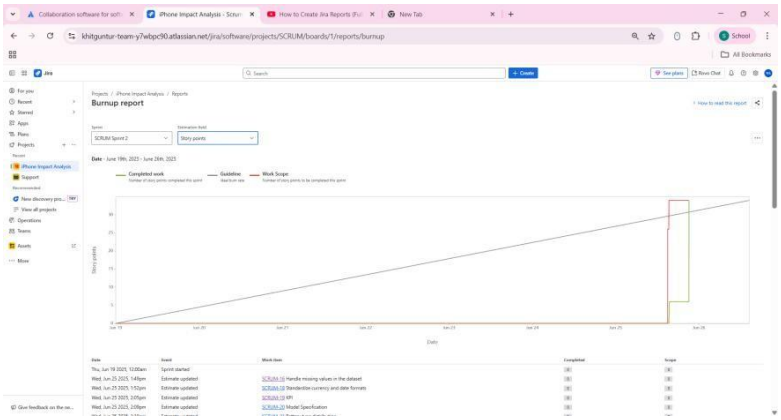
Velocity:

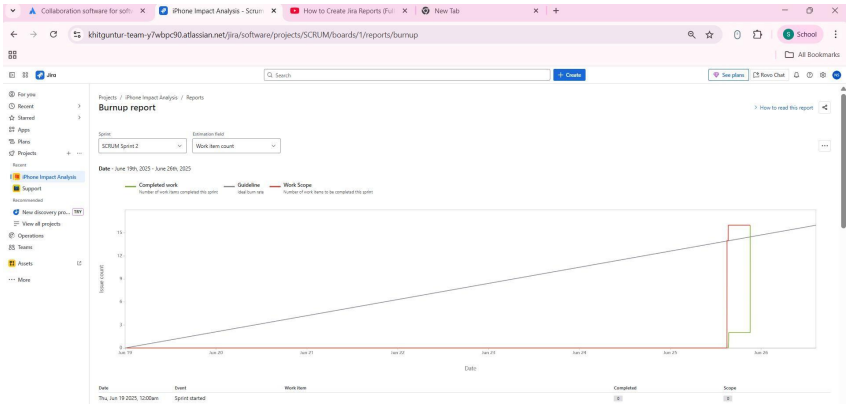
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

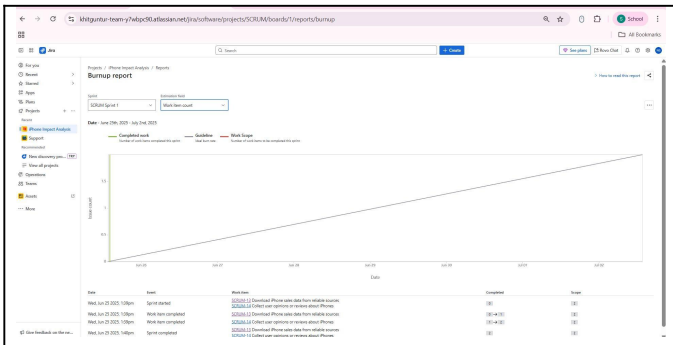
Sprint	Total Story points	Duration(days)	Velocity(AV)
Sprint-1	**3+3+4+3=13**	3 Days	**13%2= 6.5 per/day**
Sprint-2	**2+2+2+1+1=8**	3 Days	**8/3=2.66 per/day**
Sprint-3	**1+1+1+1=4**	2 Days	**4/2=2 per/day**
Sprint-4	**7+1+1=9**	2 Days	**9/2=4.5 per/day**

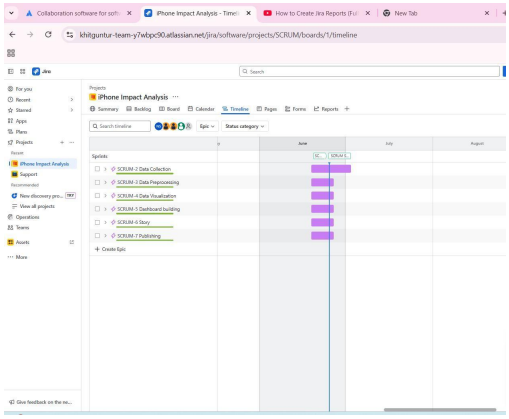
Burndown Chart:

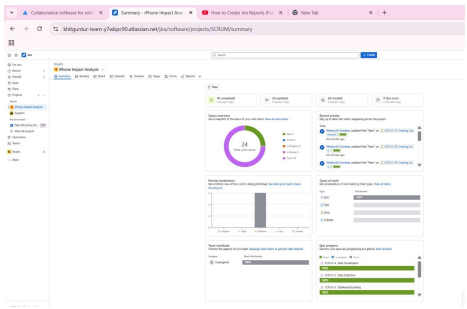
A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.





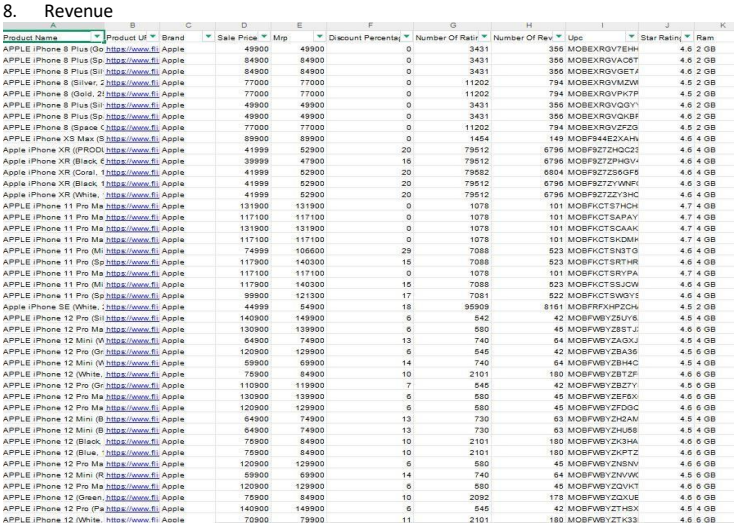


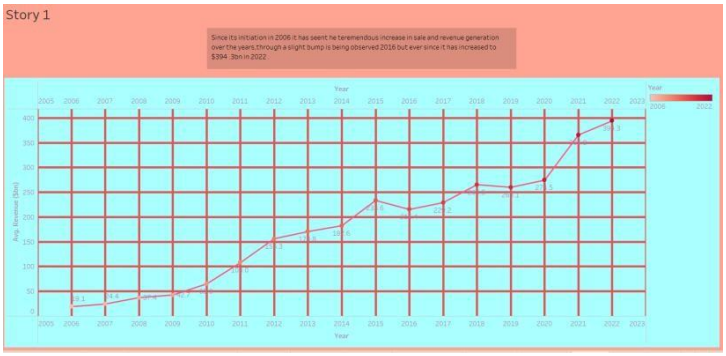




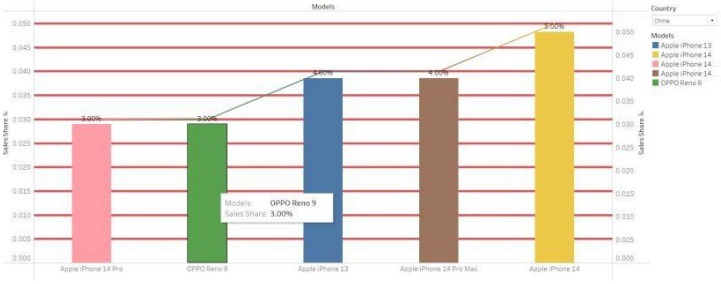
6. FUNCTIONAL AND PERFORMANCE TESTING

S.No.	Parameter	Screenshot / Values
1.	Data Rendered	The Dataset which is used in this project is based on Apple Iphone sales in india was curated from publicly available sources that reflect real-world market data for Apple products in India,It was supplemented with like “iPhone Sales by State,” “Launch Timeline,” “Platform Comparison,” and “Market Share Insights,” to enrich the analysis.The Dataset Contains of Total 836 rows and 16 columns.The following are key attributes which are in dataset **Key attributes:** 1. Product name-The name of the iPhone variant listed (e.g., iPhone 13 Pro Max 128GB Blue). 2. Product price-The listed or discounted price of that specific iPhone on eCommerce platforms. 3. Battery Type 4. Models-Different variants of Apple iphone 5. Sales share 6. Country

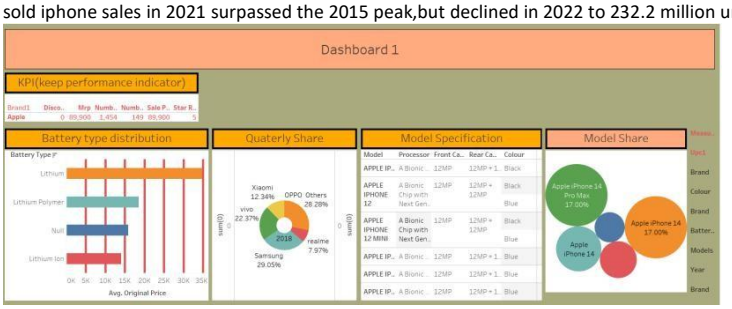
		7. Quarter 8. Revenue 
2.	Data Preprocessing	The following steps are done during the data pre processing **1. Handling Missing Values** We inspected the dataset for null or missing values in key columns such as Sale Price, MRP, Ratings, and Reviews. For numerical fields like Sale Price or MRP, rows with missing values were dropped, as pricing is critical to the analysis. For optional fields like Star Rating or Number of Reviews, missing values were either filled with the median or zero, depending on context. **2. Data Cleaning** Removed duplicate rows to avoid bias in visualizations. Standardized formats: Converted Ram from strings like "2 GB" to integer 2. Ensured all price-related columns (Sale Price, MRP) are in numeric format. Trimmed extra spaces and unified casing for text fields like Product Name or Brand. **3. Feature Engineering** Created new fields to enhance insights: Sales Difference = MRP - Sale Price to measure discount amount. Discount Percentage = ((MRP - Sale Price) / MRP) * 100 to analyze percentage discount. Derived RAM category r grouped analysis. Extracted Storage size from Product Name using text parsing. **4. Data Type Conversion** Converted all numerical features (Ratings, Prices, Reviews) to appropriate numeric types. Date fields (if any) were converted to datetime format for time-based analysis.
3.	Utilization of Filters	Below are the following filters used in the dashboard creating **1. Brand Filter** Type: Categorical filter (single or multiple select) Field Used: Brand Purpose: Restrict the dataset to Apple products only Use Case: Ensure the analysis focuses solely on Apple devices by excluding other brands if present **2. RAM Filter** Type: Categorical or grouped filter (e.g., 2GB, 4GB, 6GB) Field Used: RAM Purpose: Segment iPhones based on memory capacity Use Case: Analyze how performance, price, or user ratings vary by RAM size **3. Sales Difference Filter** Type: Numeric range slider Field Used: Sales Difference (MRP - Sale Price) Purpose: Highlight devices with significant price cuts Use Case: Identify aggressively discounted models to study marketing strategies **4. Star Rating Filter** Type: Numeric range slider Field Used: Star Rating Purpose: Focus on customer-rated products Use Case: Explore how product popularity and sales are influenced by user feedback **5. Price Range Filter** Type: Numeric range slider Fields Used: Sale Price, MRP Purpose: Compare product segments (budget vs premium)

		Use Case: Study pricing strategy and how it relates to features or ratings
4.	Calculation fields Used	The Sales Difference field, calculated as MRP - Sale Price, shows the exact price reduction offered on each iPhone model. It helps identify which products have the highest flat discounts, giving insights into promotional strategies. By analyzing this field, we can detect trends such as which models are heavily discounted or how discounts vary by storage or RAM variant.
5.	Dashboard design	No of Visualizations / Graphs - 1. Battery type distribution 2. Brand Price Comparsion 3. Model Share 4. Country wise best selling smartphone 5. Quaterly share 6. Annual Income 7. KPI year wise 8. Global Market Share 9. KPI 10. Model Specification 
6	Story Design	No of Visualizations / Graphs - 1. Since its initiation in 2006 it has seent he teremendous increase in sale and revenue generation over the years,through a slight bump is being observed 2016 but ever since it has increased to $394 .3bn in 2022 .  2. Apple contunies to strengthen its standing in the smartphone market.The brand has risen to a position of

3. Comparative analysis amogst various other leading brands in the smartphone industry shows that iphone is yet to make its impact in India.ITS 3% market share in the global market is depicted in the line-bar graph.



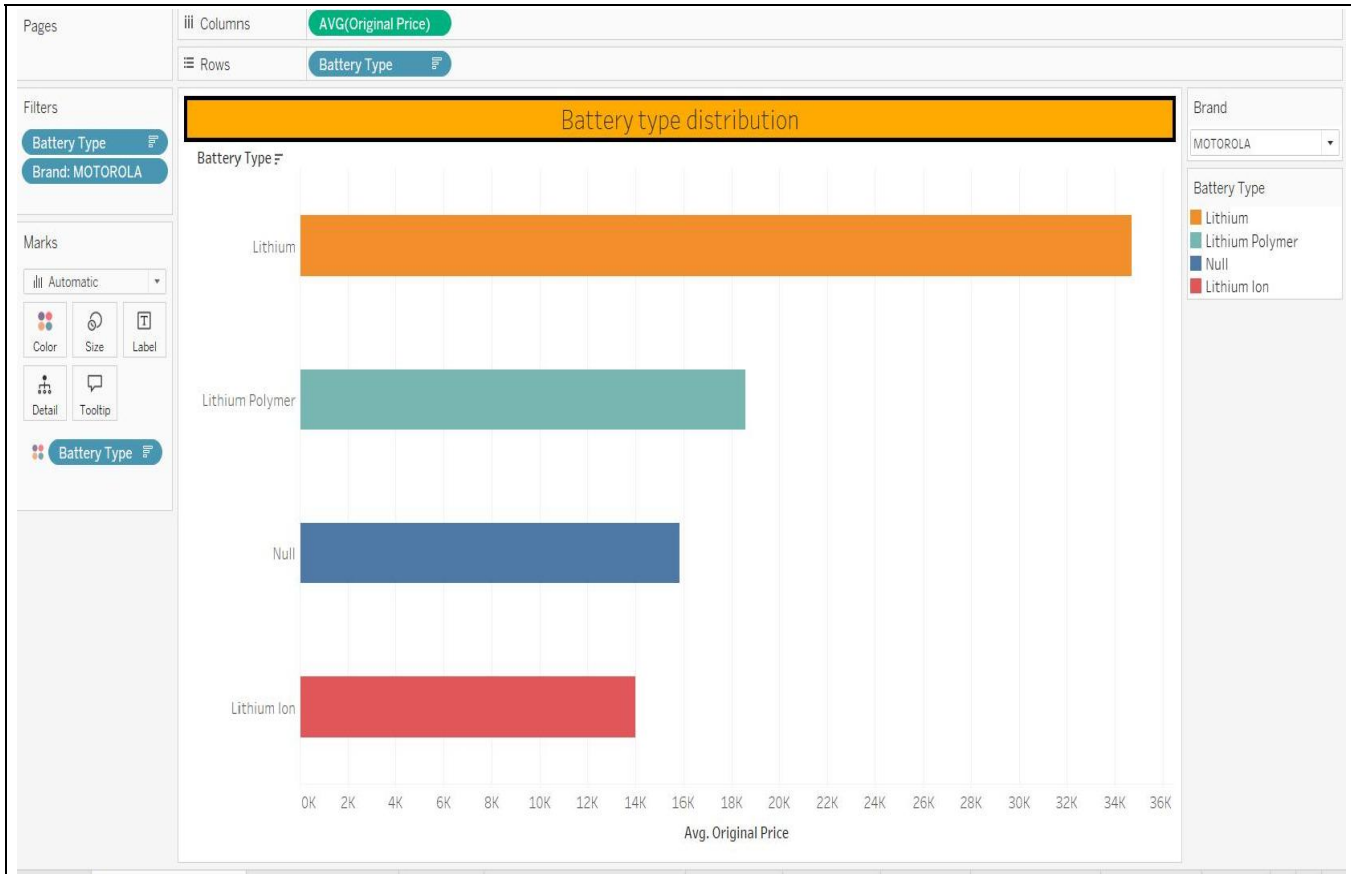
4. More than 1 billon consumers currentlu use iphones .Since its intial launch more than 1.9 billon iphones have been sold iphone sales in 2021 surpassed the 2015 peak,but declined in 2022 to 232.2 million units



5. Although the iphone isnt far behind in the competition,it is yet to scale-up its marketing strategies and policy formulations for Indian audience.

7. RESULTS

7.1 Output Screenshots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Lithium Ion
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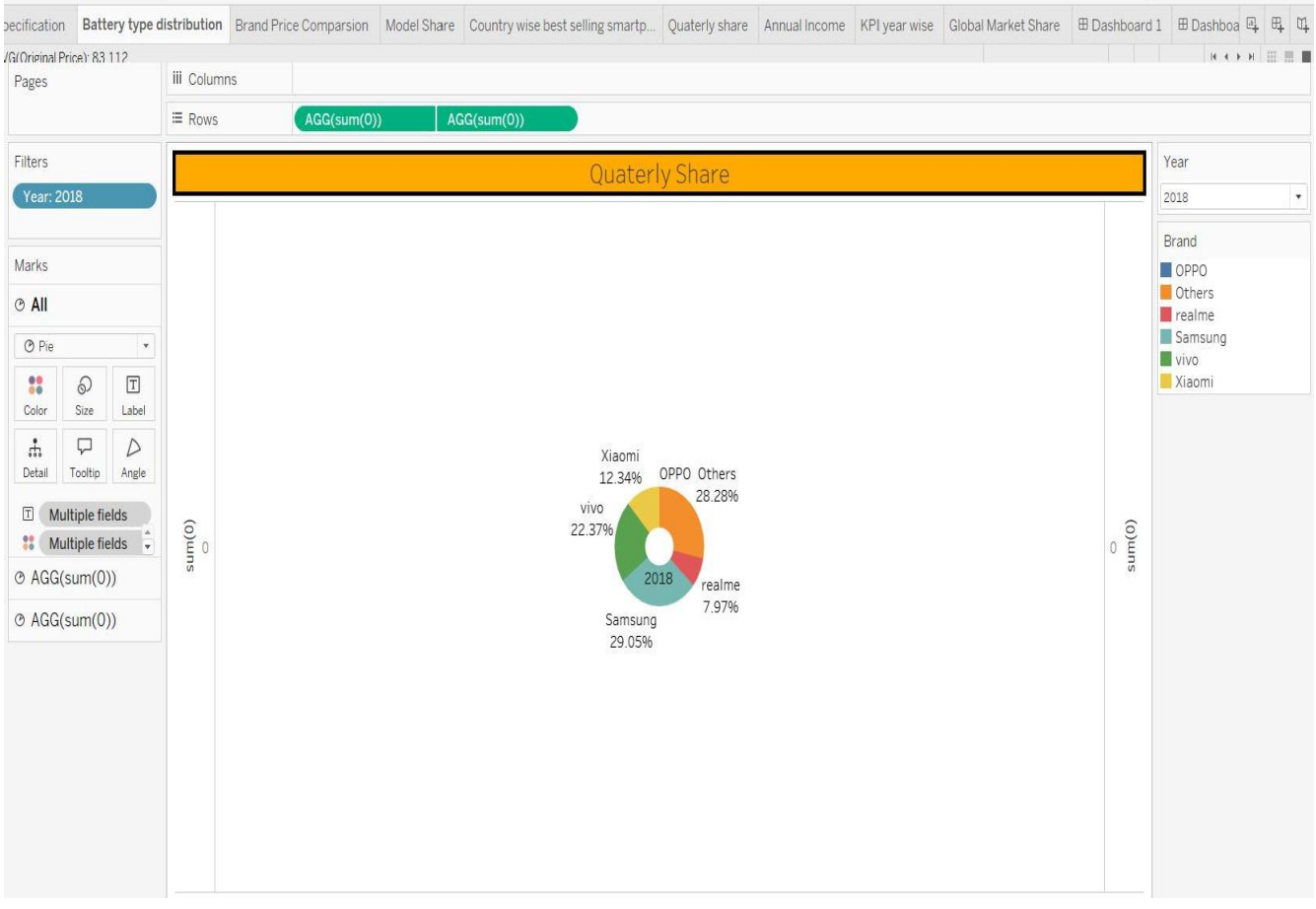
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vivo
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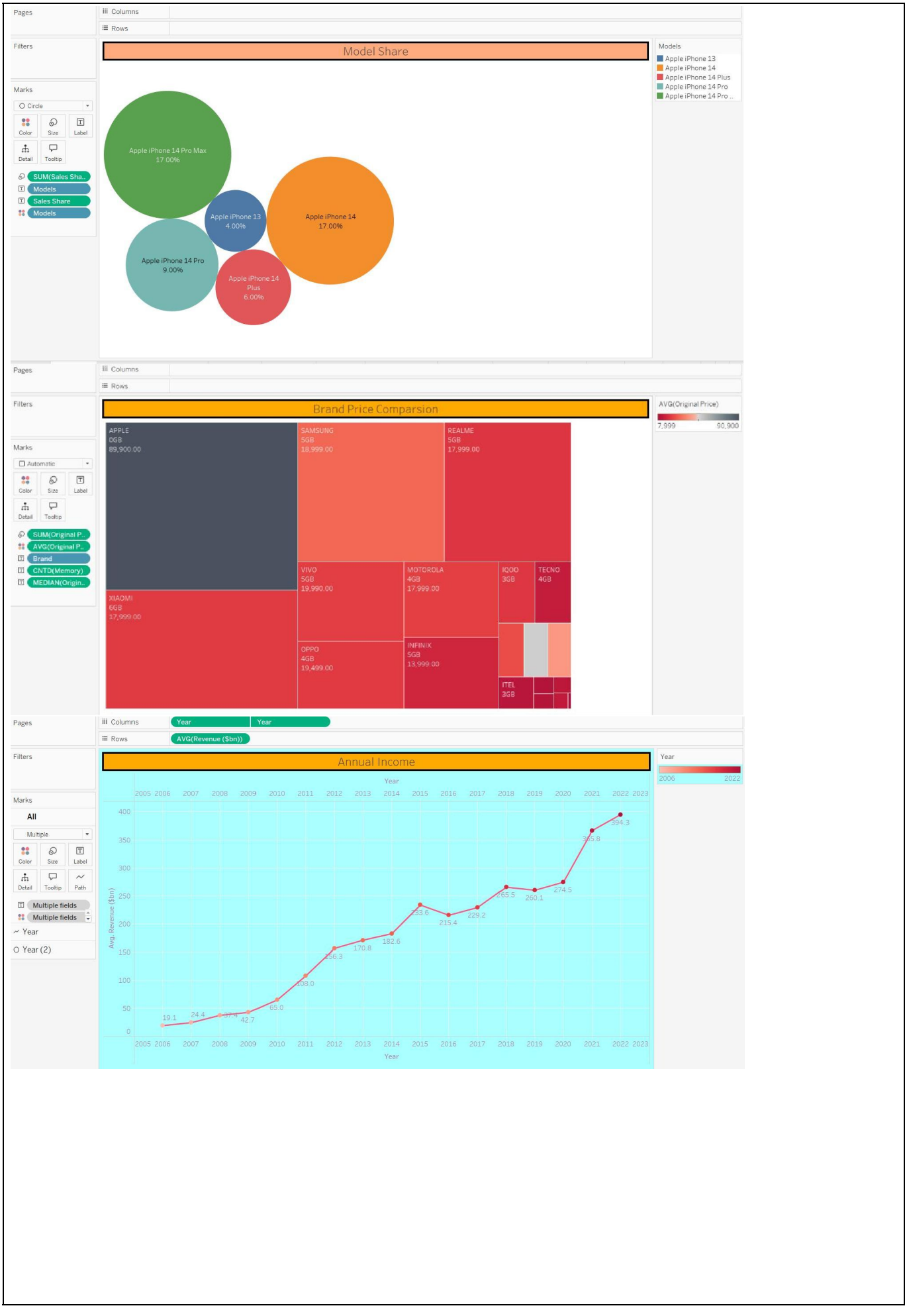
Xiaomi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Apple iPhone 14 Plus
Apple iPhone 14 Pro
Apple iPhone 14 Pro ..
Apple iPhone 14 Pro Max
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Apple iPhone 13
4.00%
Apple iPhone 14
17.00%
Apple iPhone 14 Pro
9.00%
Apple iPhone 14
Plus
6.00%
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SUM(Original P..
AVG(Original P..
Brand
CNTD(Memory)
MEDIAN(Origin..
Brand Price Comparsion
AVG(Original Price)
7,999
90,900
APPLE
0GB
89,900.00
SAMSUNG
5GB
18,999.00
REALME
5GB
17,999.00
XIAOMI
6GB
17,999.00
VIVO
5GB
19,990.00
MOTOROLA
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IQOO
3GB
TECNO
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OPPO
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Multiple fields
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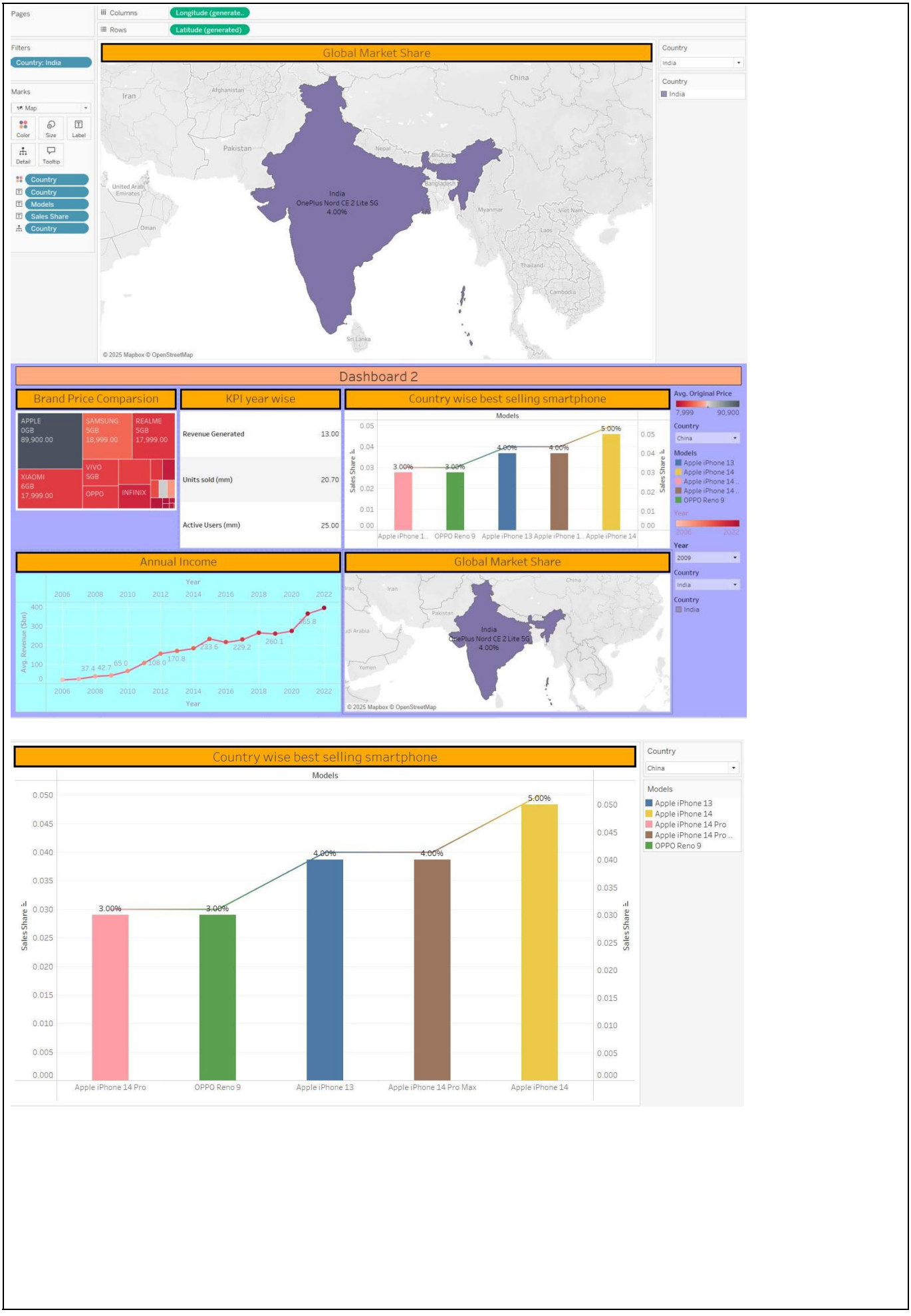
Year (2)
Annual Income
Year
Year
Avg. Revenue ($bn)
19.1
24.4
37.4
42.7
65.0
108.0
156.3
170.8
182.6
233.6
215.4
229.2
265.5
260.1
274.5
325.8
394.3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Country
Models
Sales Share
Country
Global Market Share
India
OnePlus Nord CE 2 Lite 5G
4.00%
© 2025 Mapbox © OpenStreetMap
Country
India
Dashboard 2
Brand Price Comparsion
APPLE
0GB
89,900.00
SAMSUNG
5GB
18,999.00
REALME
5GB
17,999.00
XIAOMI
6GB
17,999.00
VIVO
5GB
OPPO
INFINIX
KPI year wise
Revenue Generated 13.00
Units sold (mm) 20.70
Active Users (mm) 25.00
Country wise best selling smartphone
Models
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3.00%
4.00%
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Apple iPhone 14
Apple iPhone 14 ..
Apple iPhone 14 ..
OPPO Reno 9
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2006
2022
Year
2009
Country
India
Country
India
Annual Income
Year
Avg. Revenue ($bn)
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42.7
65.0
108.6
170.8
233.6
229.2
260.1
265.8
Global Market Share
India
OnePlus Nord CE 2 Lite 5G
4.00%
© 2025 Mapbox © OpenStreetMap
Country wise best selling smartphone
Models
Sales Share
3.00%
3.00%
4.00%
4.00%
5.00%
Apple iPhone 14 Pro
OPPO Reno 9
Apple iPhone 13
Apple iPhone 14 Pro Max
Apple iPhone 14
Country
China
Models
Apple iPhone 13
Apple iPhone 14
Apple iPhone 14 Pro
Apple iPhone 14 Pro ...
OPPO Reno 9

8. ADVANTAGES & DISADVANTAGES

Advantages:
1. Data-Driven Insights: Provides clear, evidence-based understanding of Apple's iPhone performance in India.
2. Interactive Visualization: Tableau dashboards make complex data easy to interpret for all users.
3. Strategic Value: Helps stakeholders identify trends, opportunities, and potential market gaps.
4. Scalability: The analysis framework can be extended to other brands or regions for comparative studies.

Disadvantages:
1. Data Limitations: Incomplete or outdated data sources may affect the accuracy of insights.
2. Tool Dependency: Heavy reliance on Tableau may limit flexibility for users unfamiliar with the tool.
3. Lack of Real-Time Data: The analysis is static and may not reflect the most current market conditions.
4. Interpretation Bias: Visualizations can sometimes lead to oversimplified or misinterpreted conclusions if not contextualized properly.

9. Conclusion

The iRevolution project successfully highlights the significant role Apple's iPhone has played in shaping India's smartphone market through a comprehensive, data-driven approach. By utilizing Tableau to analyze and visualize key metrics—such as sales trends, pricing strategies, and model popularity—the project offers meaningful insights into Apple's evolving presence in India. These insights can support strategic planning, market understanding, and informed decision-making.

10. Future Scope

1. Real-Time Data Integration: Incorporating APIs or live dashboards for dynamic, up-to-date analysis.
2. Predictive Analytics: Applying machine learning models to forecast future sales trends and market share.
3. Comparative Analysis: Expanding the study to include competitors like Samsung, Xiaomi, and OnePlus for deeper industry insights.

11. APPENDIX

Source code:

```
<!DOCTYPE html>
<html>
<head>
  <script src="https://public.tableau.com/javascripts/api/viz_v1.js"></script>
  <style>
    body {
      font-family: Arial, sans-serif;
      margin: 0;
      padding: 20px;
      background: #f2f2f2;
      text-align: center;
    }

    h1 {
      color: #2c3e50;
    }

    .nav {
      margin-bottom: 20px;
    }

    .nav a {
      display: inline-block;
      background-color: #007acc;
      color: white;
      padding: 10px 20px;
      text-decoration: none;
      border-radius: 5px;
      margin: 5px;
      transition: background 0.2s;
    }

    .nav a:hover {
      background-color: #005f99;
    }

    h2 {
      color: #444;
    }

    .tableauPlaceholder
      { margin-top: 20px;
      width: 100%;
      height: 1000px;
    }
  </style>
</head>
<body>
  <h1>iRevolution: a data-driven exploration of apple's iphone impact in india</h1>

  <div class="nav">
    <a href="?view=dashboard1">Dashboard 1</a>
    <a href="?view=dashboard2">Dashboard 2</a>
    <a href="?view=story1">Story 1</a>
    <a href="?view=story2">Story 2</a>
  </div>

  <div id="content">
    <!-- Dashboard loads here -->
  </div>

  <script>
    const views =
      { dashboard1: {
        name: "iphoneimpactinindia_17508008627440/Dashboard1",
        title: "Dashboard 1"
      },
      dashboard2: {
        name: "Mydashboard-2_17508009522640/Dashboard2",
        title: "Dashboard 2"
      },
      story1: {
        name: "story-1_17508010401380/Story1",
        title: "Story 1"
      },
      story2: {
        name: "story-2_17508011813840/Story2",
        title: "Story 2"
      }
    };
```

```
  const params = new URLSearchParams(window.location.search);
  const view = params.get("view");

  if (views[view]) {
    const viz = views[view];
    document.title = viz.title;
    document.getElementById("content").innerHTML = `
      <h2>${viz.title}</h2>
      <div class="tableauPlaceholder">
        <object class="tableauViz" width="100%" height="1000px">
          <param name="host_url" value="https%3A%2F%2Fpublic.tableau.com%2F">
          <param name="embed_code_version" value="3">
          <param name="site_root" value="">
          <param name="name" value="${viz.name}">
          <param name="tabs" value="no">
          <param name="toolbar" value="yes">
        </object>
      </div>
    `;
  } else {
    document.getElementById("content").innerHTML = "<p>Please select a dashboard or story above.</p>";
  }
 </script>
</body>
</html>
```

Dataset Link:

https://docs.google.com/spreadsheets/d/1p1ZWaYcEuFl5UNFcmNvpkXi3JnoHamut/edit?gid=1877446487#gid=1877446487