

Project Report Format

1. INTRODUCTION

1.1 Project Overview

The project “*iRevolution*” focuses on analyzing the impact of Apple’s iPhone in the Indian smartphone market using data analytics and visualization techniques in Tableau. The study examines sales trends, pricing strategies, market share, customer preferences, and regional growth patterns.

Using Tableau dashboards, the project transforms raw sales and market data into meaningful visual insights that highlight Apple’s growth trajectory and competitive position in India.

1.2 Purpose

The purpose of this project is to:

- Analyze iPhone sales growth in India.
- Understand consumer behavior and pricing impact.
- Identify market trends and regional demand.
- Compare Apple’s performance with competitors.
- Provide data-driven insights for business decision-making.

2. IDEATION PHASE

2.1 Problem Statement

Customer Problem Statement Template:

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love.

A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

I am	I'm trying to	But	Because	Which makes me feel
A premium smartphone buyer in India who values performance, brand reputation, and reliability	Understand if Apple's iPhone is worth purchasing compared to other smartphones	It's difficult to compare iPhone sales, pricing, and market value	No clear, data-driven dashboards highlighting iPhone performance	Confused & hesitant about purchasing decisions
A data analyst in India studying smartphone market trends	Analyze Apple's iPhone impact on sales, revenue, and market share in India	Data on smartphone trends is scattered and unclear	No centralized view of sales & regional trends for analysis	Challenged in making data-driven business strategies

Reference: <https://miro.com/templates/customer-problem-statement/>

Example:

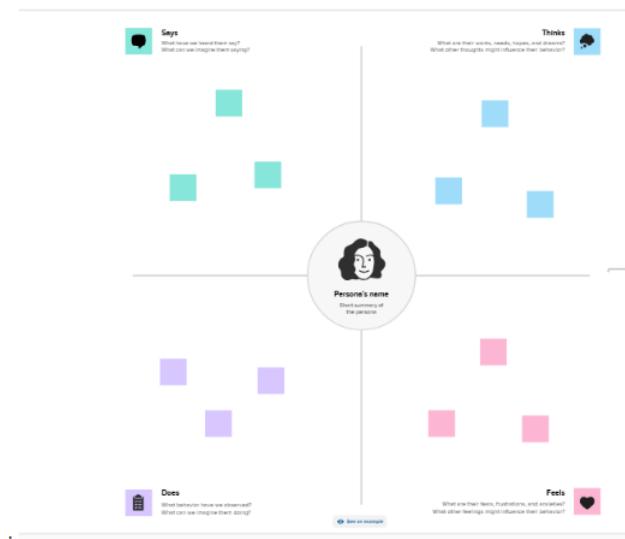
2.2 Empathy Map Canvas

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.



2.3 Brainstorming

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 amount 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.

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

The screenshot shows a user interface for a 'Brainstorm & Idea Prioritization' template. On the left, there's a sidebar with a lightbulb icon and a wavy line, followed by the title 'Brainstorm & idea prioritization'. Below the title, it says: '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.' It also lists preparation time: '10 minutes to prepare', '1 hour to collaborate', and '2-8 people recommended'.

The main content area is divided into two columns. The left column contains three steps: 'Before you collaborate' (with a timer icon and '10 minutes'), 'Team gathering' (with a timer icon and '5 minutes'), and 'Set the goal' (with a timer icon and '5 minutes'). Each step has a brief description and a link to 'Open article'.

The right column starts with 'Define your problem statement' (with a timer icon and '5 minutes'). It includes a text box labeled 'PROBLEM' containing the placeholder 'How might we [your problem statement]?'. Below this is a section titled 'Key rules of brainstorming' with six rules: 'Stay in topic.', 'Encourage wild ideas.', 'Defer judgment.', 'Listen to others.', 'Go for volume.', and '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 tap the pencil [stroke] icon to start drawing!

Sales & Growth Analysis

- Market Share Data
- Revenue Growth
- Product Line Expansion

Consumer Insights

- Age group Demographics
- Urban vs Rural
- Cultural Influence

Pricing & Economic Impact

- Business Model Plan
- Financial Projections
- Competitor Pricing Strategy

Business & Brand Impact

- Brand Image
- Marketing Strategy
- PR Coverage

3 Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

⌚ 20 minutes

Tip: Best communication happens when people are invited to a meeting, discuss insights, and share their ideas. Encourage them to do the same with their group!

The diagram illustrates the process of idea generation and organization. It starts with three individuals (Person 5, Person 6, Person 7) each contributing three yellow sticky notes. These notes are then collected and clustered into larger groups, represented by a grid of 12 yellow sticky notes. Each cluster is labeled with a descriptive title: 'Sales & Growth Analysis' (containing Market Share Data, Revenue Growth, Product Line Expansion), 'Consumer Insights' (containing Age group Demographics, Urban vs Rural, Cultural Influence), 'Pricing & Economic Impact' (containing Business Model Plan, Financial Projections, Competitor Pricing Strategy), and 'Business & Brand Impact' (containing Brand Image, Marketing Strategy, PR Coverage). Finally, these four main clusters are grouped together under the heading 'Group ideas'.

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

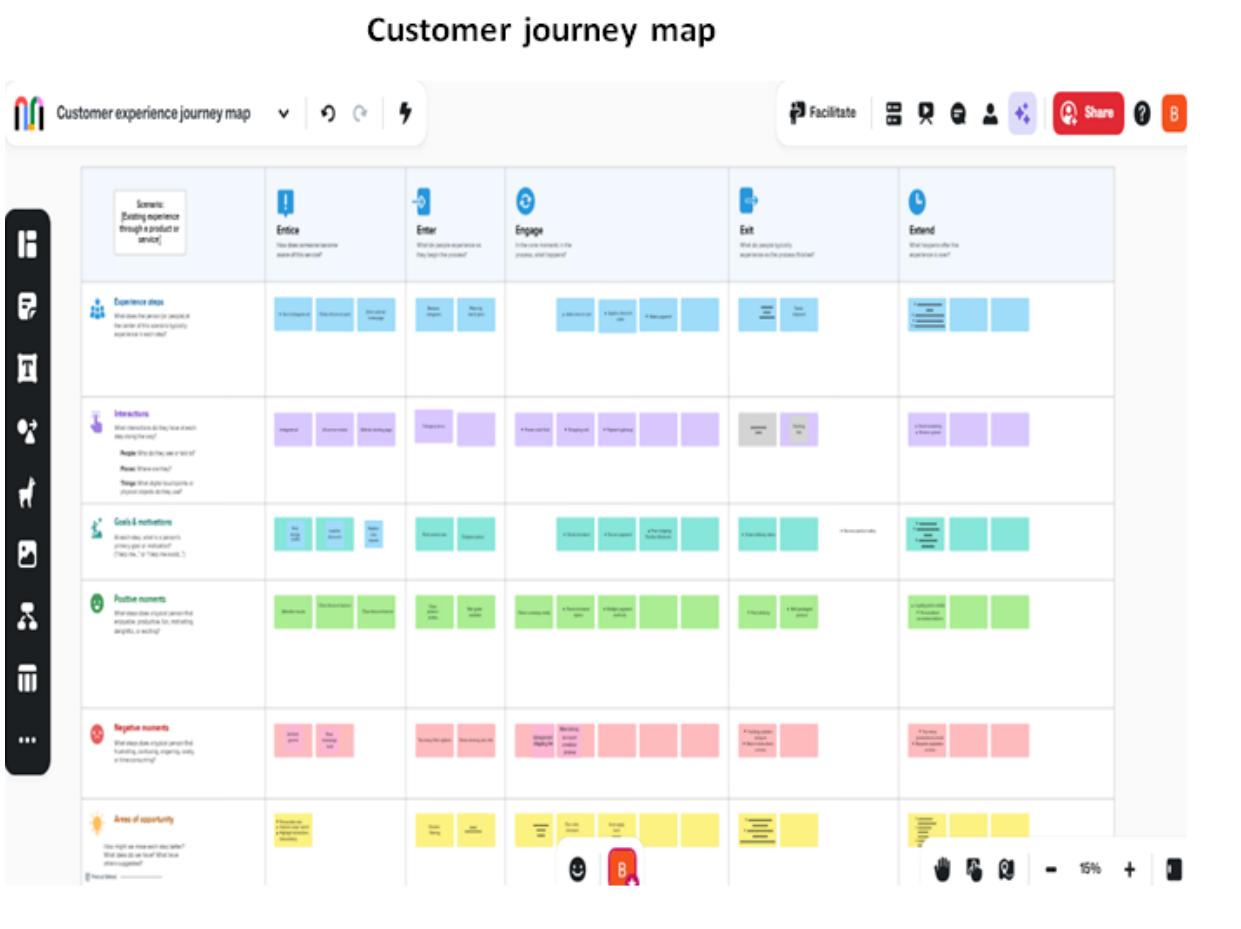
Tip: Participants can use their fingers to point at where they think an idea belongs on the grid. The facilitator can confirm this by using the color palette below the strategy on the right-hand side.

The prioritization matrix is a 2x2 grid where the vertical axis is labeled 'Importance' and the horizontal axis is labeled 'Feasibility'. The top-left quadrant is labeled '+, +' (High Importance, High Feasibility). The top-right quadrant is labeled '+, -' (High Importance, Low Feasibility). The bottom-left quadrant is labeled '- , +' (Low Importance, High Feasibility). The bottom-right quadrant is labeled '- , -' (Low Importance, Low Feasibility). The matrix contains the following ideas:

- +, +: Revenue Contribution Analysis, Consumer Demographics (Age, Urban/Rural)
- +, -: iPhone Sales Growth (Year-over-Year), Market Share Comparison, Popular iPhone Models
- , +: Apple Store Expansion Data, Apple Store Expansion Data (repeated)
- , -: Supply Chain Analysis, Job Creation Impact, Supply Chain Disruption, Job Creation Impact (repeated)
- , -: Ad Creation Impact (repeated)

3. REQUIREMENT ANALYSIS

3.1 Customer Journey map



3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

FRNo.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through <u>LinkedIN</u>
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login & Authentication	- Login using Email & Password - Login via Gmail - Login via LinkedIn - Forgot Password - Reset Password
FR-4	User Profile Management	- View Profile - Edit Profile Information - Upload Profile Picture - Change Password
FR-5	Dashboard / Home Page	Personalized Dashboard View - View Notifications - Search Functionality
FR-6	Logout & Session Management	- Secure Logout - Auto Session Timeout - Multi-device Session Handling

Non Functional Requirements:

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

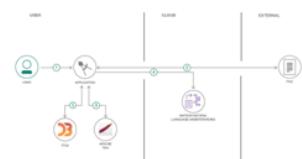
FRNo.	Non-Functional Requirement	Description
NFR-1	Usability	The system must have an intuitive UI, responsive (mobile, tablet, desktop).
NFR-2	Security	Data must be encrypted (HTTPS/SSL). Passwords must be hashed. Support for OTP and secure authentication mechanisms. Protection against SQL injection, XSS, and CSRF attacks.
NFR-3	Reliability	The system should handle errors gracefully and maintain data integrity with minimal system failures.
NFR-4	Performance	Pages should load within 2–3 seconds under normal load. System should handle concurrent users efficiently.
NFR-5	Availability	The system should have at least 99% uptime with proper backup and disaster recovery mechanisms.
NFR-6	Scalability	The system should support increasing numbers of users without performance degradation and allow horizontal/vertical scaling.

3.3 Data Flow Diagram

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

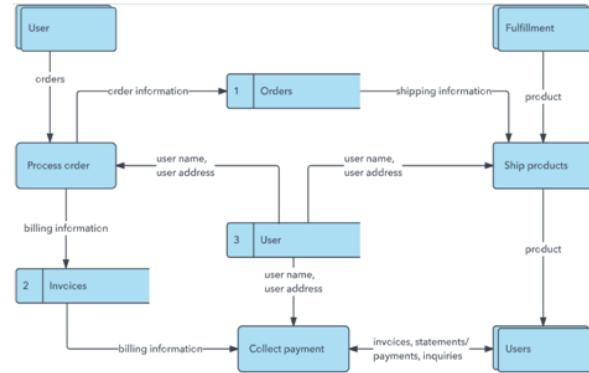
Flow



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.

Example:

(Simplified)



User Stories

Use the below template to list all the user stories for the product.

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 for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	application using Gmail. I can register and access t	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can log in with valid credentials and see the dashboard.	High	Sprint-1
	Dashboard	USN-6	As a user, I can view my personalized dashboard after login.	Dashboard displays user name, profile info, and relevant data.	High	Sprint-2
Customer (Web user)	Registration	USN-7	As a web user, I can register through the website.	Account is created and verification email is sent.	High	Sprint-1

Customer Care Executive	User Management	USN-8	As a customer care executive, I can view registered users.	I can search, filter, and view user details.	Medium	Sprint-2
Administrator	System Management	USN-9	As an administrator, I can manage user roles.	Role changes update system access rights accordingly.	High	Sprint-2
Administrator	Reporting	USN-10	As an administrator, I can monitor login activity and suspicious attempts.	Reports can be viewed, filtered, and downloaded.	Medium	Sprint-3

3.4 Technology Stack

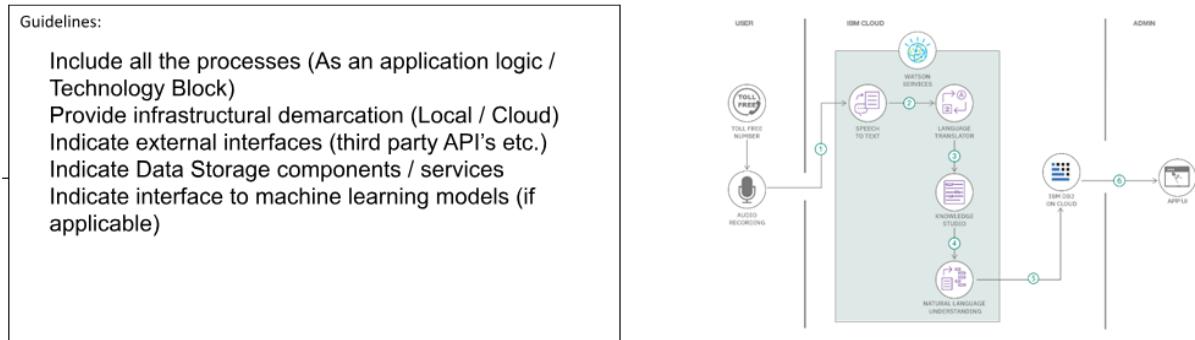


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Python
3.	Application Logic-2	Logic for a process in the application	-
4.	Application Logic-3	Logic for a process in the application	-
5.	Database	Data Type, Configurations etc.	-
6.	Cloud Database	Database Service on Cloud	-
7.	File Storage	File storage requirements	Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Tableau
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Flask, vscode, tableau desktop, publication
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	-
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	-
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Deployment of dashboards on Tableau Server / Tableau Public to ensure 24/7 accessibility.
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's etc.)	Optimized datasets by cleaning and reducing unnecessary fields before importing into Tableau. Use of filters, context filters, and calculated fields efficiently to reduce processing time.

4. PROJECT DESIGN

4.1 Problem Solution Fit

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

1. CUSTOMER SEGMENT(S) Data analysts, market researchers, and business professionals interested in understanding the impact of Apple's iPhone on the Indian smartphone market.	C5	6. CUSTOMER CONSTRAINTS Data analysis market research needs are being suggested by the Indian smartphone market. Lack of centralized visualization, and user-friendly data representations.	CC	5. AVAILABLE SOLUTIONS Traditional market research reports, that solve all the problems. Advanced user interface, and user-friendly data representations, and implement analytics or tools.	AS
Define CS; Attract CC		Define CS; Attract CS		Define CS; Attract CS	Define CS; Attract CS
2. JOBS-TO-BE-DONE / PROBLEMS Understand how Apple's iPhone adoption has changed the Indian smartphone market. Analyze market trends and iPhone sales data in India. Identify user demographics of iPhone adopters in India. Assess the impact of new iPhone models on the market.	J&P	9. PROBLEM ROOT CAUSE Lack of dedicated, researcher visualization tools to analyze iPhone market trends in India. Inefficient, outdated data sources make it hard to gain actionable insights.	RC	7. BEHAVIOUR They conduct basic analysis, by on-site gain first-hand market intelligence. Time constraints for in-depth market intelligence.	BE
Focus on JTD; Attract; HP; Solve RC		Focus on Job-To-Be-Done; Understand RC		Focus on Job-To-Be-Done; Understand RC	Focus on Job-To-Be-Done; Understand RC
3. TRIGGERS What drives these customers to act? (e.g. seeing rapid iPhone adoption, market growth in India). Why would they take action? (e.g. opportunity to understand emerging trends, inform strategy).	TR	9. PROBLEM ROOT CAUSE Lack of dedicated, researcher visualization tools to analyze iPhone market trends in India. Inefficient, outdated data sources make it hard to gain actionable insights.	RG	7. BEHAVIOUR They conduct basic analysis, by on-site gain first-hand market intelligence. Time constraints for in-depth market intelligence.	BE
Identify trigger TR; EAM		Identify trigger TR; EAM		Identify trigger TR; EAM	Identify trigger TR; EAM
4. EMOTIONS: BEFORE / AFTER Before: Confused by lack of clear data, unsure of the iPhone's true impact. After: Informed, confident, able to make data-driven decisions about how to increase E (confidence). How to increase E (confidence).	EM	10. YOUR SOLUTION Innovation idea: Create interactive dashboards that visualize impact of iPhone trends in India. Create, visualize dashboards, track iPhone sales-trends, user demographics, and market share trends in India. Easy to use, visually appealing features allows for in-depth analysis, including event to open-tracks, and growth, growth.	SL	8. CHANNELS OF BEHAVIOUR Use market research results from Satyam, Google Trends, or market research agencies. Attend webinars, follow Indian tech news sites (e.g. NDTV Gadgets360).	CH
Identify emotion EAM		Identify emotion EAM		Identify emotion EAM	Identify emotion EAM
4. EMOTIONS: BEFORE / AFTER How to confuse customer, data consumer of the iPhone's true impact. How to increase E (confidence): How to inform, are clear system document. How to increase E (confidence): How to include E (M, B) (product design).	EM	10. YOUR SOLUTION Innovation idea: Create interactive dashboards that visualize impact of iPhone trends in India. Create, visualize dashboards, track iPhone sales-trends, user demographics, and market share trends in India. Easy to use, visually appealing features allows for in-depth analysis, including event to open-tracks, and growth, growth.	SL	8. CHANNELS OF BEHAVIOUR Use market research results from Satyam, Google Trends, or market research agencies. Attend webinars, follow Indian tech news sites (e.g. NDTV Gadgets360).	CH
Identify emotion EAM		Identify emotion EAM		Identify emotion EAM	Identify emotion EAM

4.2 Proposed Solution

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Lack of clear insights on iPhone's impact in the Indian smartphone market.
2.	Idea / Solution description	Create interactive Tableau dashboards to analyze sales, market share, and trends
3.	Novelty / Uniqueness	Integrated multi-data analysis with dynamic visualizations in one dashboard.
4.	Social Impact / Customer Satisfaction	Supports data-driven decisions and better market understanding.
5.	Business Model (Revenue Model)	Revenue through dashboard licensing, consulting, and analytics reports.
6.	Scalability of the Solution	Can expand to other brands, markets, and real-time data integration.

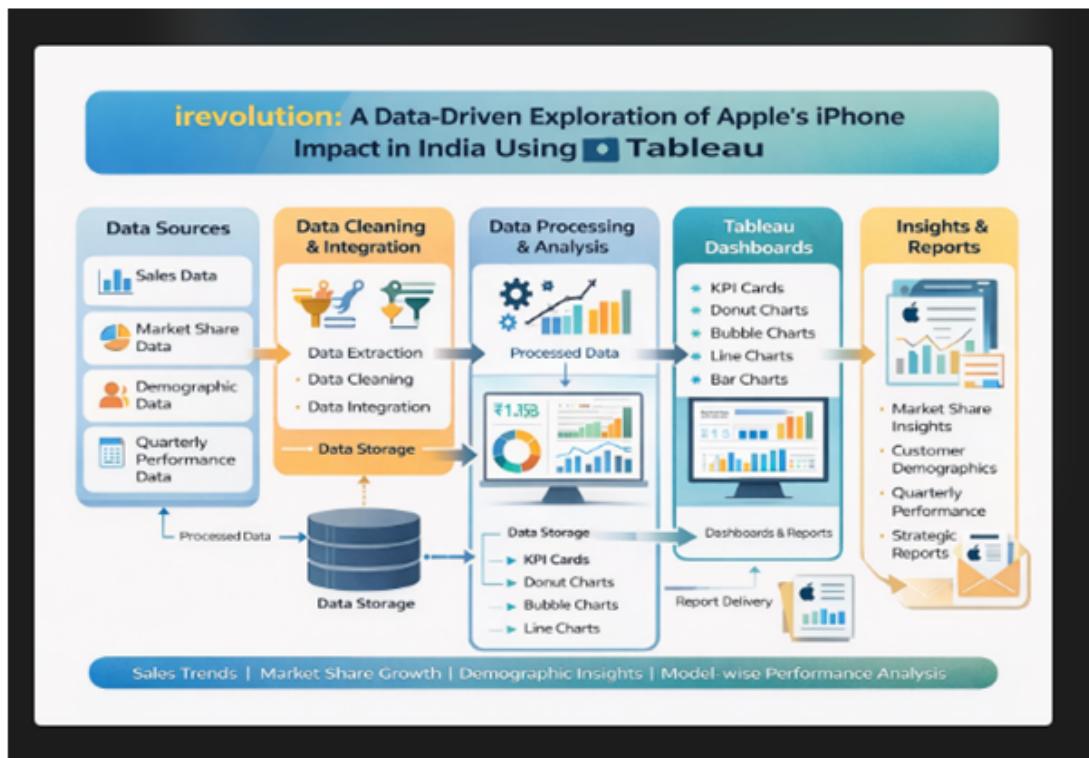
4.3 Solution Architecture

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:



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Bindu
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	hema
Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	balaji
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	bunny
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Bindu

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Dashboard	USN-5	As a user, I want to integrate all visualizations into an interactive Tableau dashboard.	4	High	hema
Sprint-1	Trend Analysis	USN-6	As a user, I want to create line and bar charts for quarterly performance analysis.	2	Medium	balaji
Sprint-1	Report Generation	USN-7	As a user, I want to generate insights and summary reports from the dashboard.	2	Medium	bunny

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	20	8 Days	16 Dec 2025	23 Dec 2025	20	23 Dec 2025
Sprint-2	20	8 Days	24 Dec 2025	31 Dec 2025	18	31 Dec 2025
Sprint-3	20	8 Days	01 Jan 2026	08 Jan 2026	20	08 Jan 2026
Sprint-4	20	8 Days	09 Jan 2026	16 Jan 2026	19	16 Jan 2026
Sprint-5	20	8 Days	17 Jan 2026	24 Jan 2026	20	24 Jan 2026
Sprint-6	20	8 Days	25 Jan 2026	01 Feb 2026	20	01 Feb 2026

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-7	20	8 Days	02 Feb 2026	09 Feb 2026	18	09 Feb 2026
Sprint-8	20	8 Days	10 Feb 2026	17 Feb 2026	20	17 Feb 2026

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

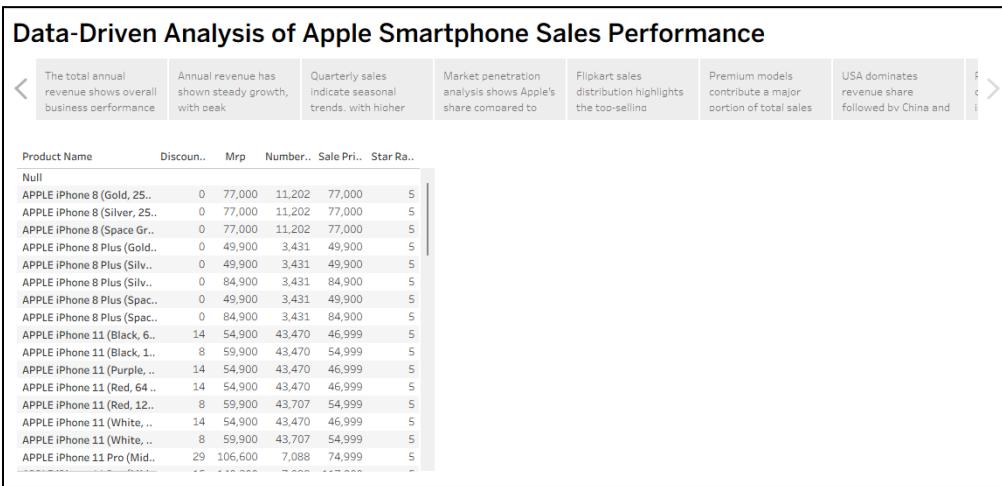
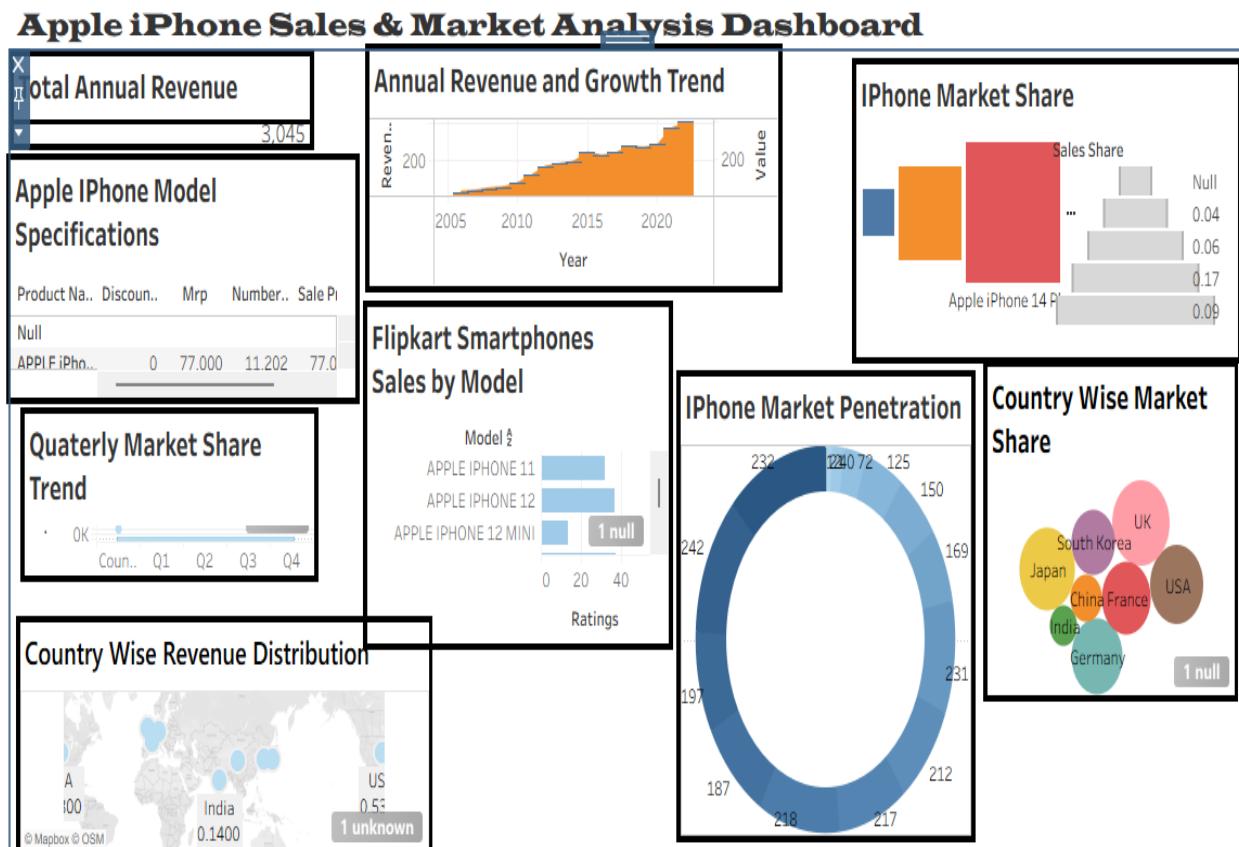
Model Performance Testing:

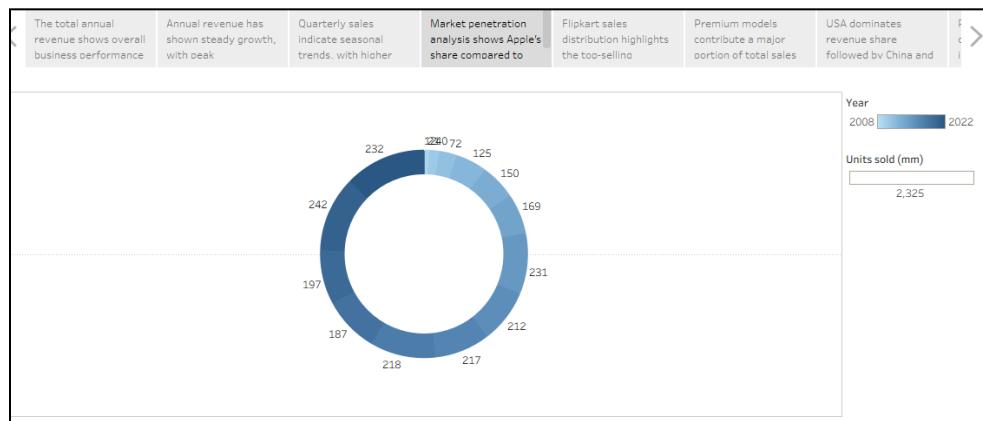
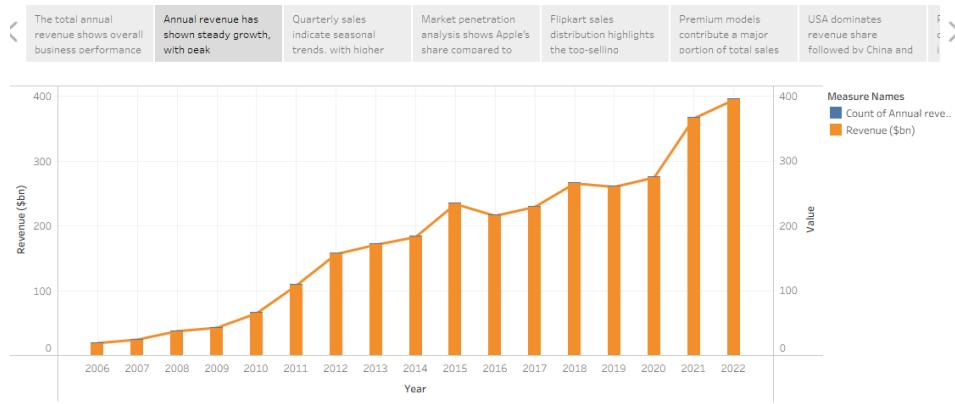
Project team shall fill the following information in model performance testing template.

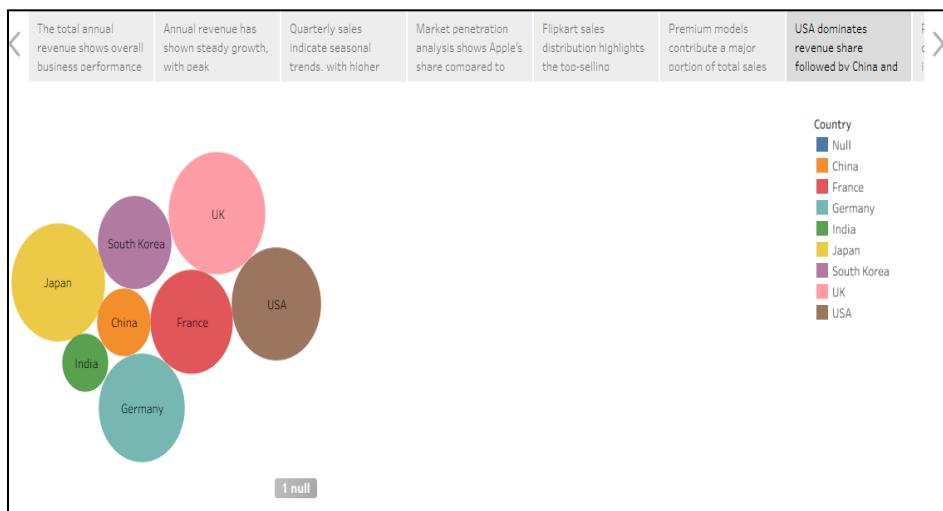
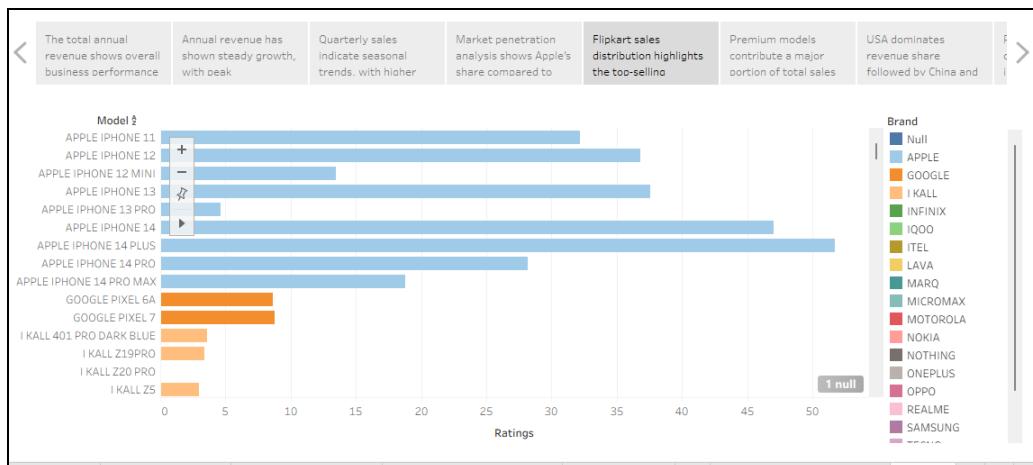
S.No.	Parameter	Screenshot / Values
1.	Data Rendered	Sales Data, Market Share Data, Quarterly Performance Data loaded into Tableau (Excel/CSV source). Total Records: 1000+.
2.	Data Preprocessing	Removed null values, corrected data types (Date, Currency, Percentage), created calculated fields, removed duplicates, standardized region names (India states).
3.	Utilization of Filters	Filters used: Year, Quarter, Model Name, Region/State, filters enabled for dynamic analysis.
4.	Calculation fields Used	Revenue Growth %, Market Penetration %, YoY Growth, Average Selling Price (ASP), Total Sales = $\text{SUM}(\text{Sales})$, Profit Margin %.
5.	Dashboard design	No. of Visualizations / Graphs – 6 (KPI Cards, Donut Chart, Map Visualization).
6	Story Design	No. of Visualizations / Graphs – 5 Story Points (Sales Trends, Demographic Analysis, Model-wise Performance, Strategic Insights).

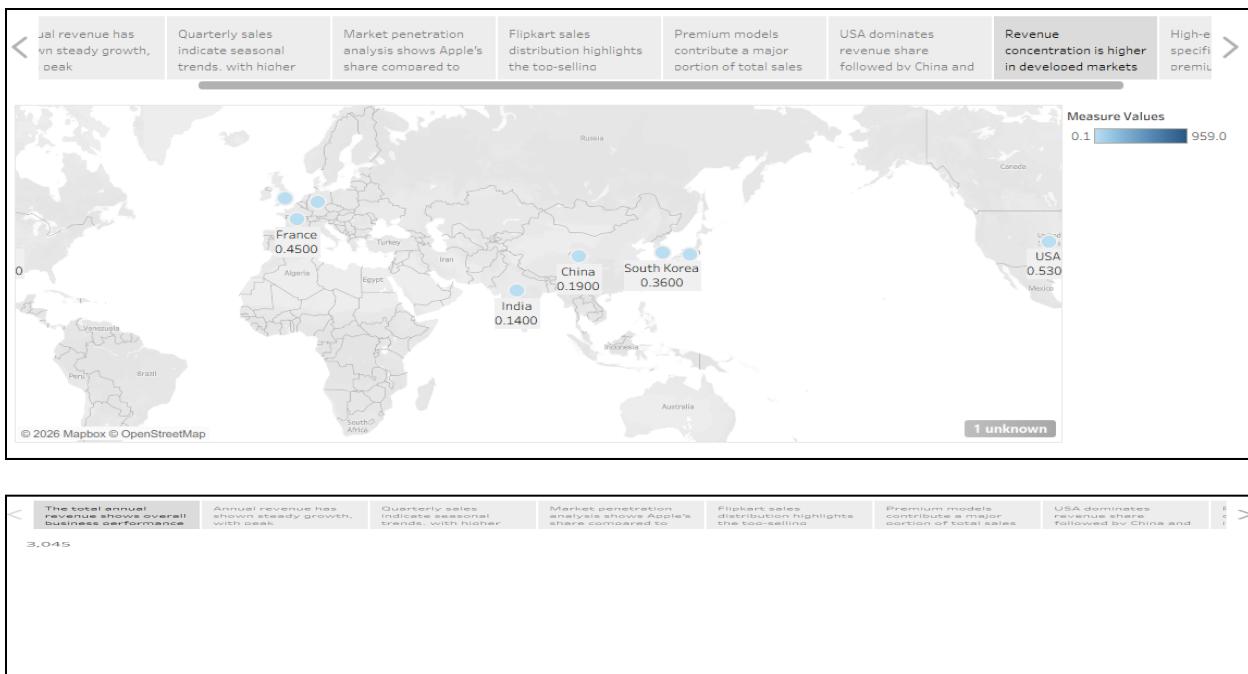
7. RESULTS

7.1 Output Screenshots









8. ADVANTAGES & DISADVANTAGES

Advantages:

- Clear data-driven insights.
- Easy visualization of trends.
- Supports business decision-making.
- Interactive and user-friendly.

Disadvantages:

- Depends on data accuracy.
- Limited to available dataset.
- External market factors not fully included.

9. CONCLUSION

The project successfully demonstrates how Apple's iPhone has impacted the Indian smartphone market using data analytics and Tableau visualization tools. The dashboards reveal key insights into growth trends, regional demand, pricing strategies, and model performance.

This project highlights the importance of data analytics in understanding market dynamics and strategic decision-making.

10. FUTURE SCOPE

- Predictive analysis using machine learning.
- Customer sentiment analysis using social media data.
- Real-time dashboard integration.
- Comparative study with other premium brands.
- Forecasting future sales trends.

11. APPENDIX

Source Code(if any)

[**app py. code**](#)

```
from flask import Flask, render_template
```

```
app= Flask(__name__)
```

```
@app.route('/')
```

```
def home():
```

```
    return render_template("index.html")
```

```
if __name__=='__main__':
```

```
    app.run(debug=True)
```

HTML CODE:

<file:///D:/Nexa/templates/index.html>

Dataset Link

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

GitHub & Project Demo Link

Github link :

<https://github.com/bindu-lahari/irevolution-a-data-driven-exploration-of-apple-s-iphone-impact-in-india-using-tableau>

Project Demo Link:

<https://photos.app.goo.gl/CmTLHVTGo4ZMaqAJ9>