

Project Design Phase-II

I-Revolution: A Data-Driven Exploration of Apple's iPhone Impact in India

Technology Stack (Architecture & Stack)

Date: 31 January 2025

Team ID: **LTVIP2026TMIDS47508**

Maximum Marks: 4 Marks

1. Technical Architecture

The system follows a 3-Tier Architecture consisting of Presentation Layer, Application Layer, and Data Layer. The system collects iPhone sales and market data in India, processes it, performs analysis, and displays interactive dashboards.

Architecture Layers:

- Presentation Layer (Web/Mobile Dashboard – Tableau / React)
- Application Layer (Python Backend – Data Processing & APIs)
- Data Layer (MySQL / Cloud Database for storing datasets)
- Cloud Infrastructure (AWS / Azure for deployment)
- External APIs (Market research APIs, Government open data APIs)

Table-1: Components & Technologies

S.No	Component	Description	Technology
1	User Interface	Interactive dashboards for visualizing iPhone sales trends and insights.	HTML, CSS, JavaScript, React JS, Tableau
2	Application Logic-1	Data collection and preprocessing logic.	Python (Pandas, NumPy)
3	Application Logic-2	Data analysis and trend forecasting.	Python (Matplotlib, Seaborn, Scikit-learn)
4	Application Logic-3	API integration and	Flask / FastAPI

		report generation.	
5	Database	Stores raw and processed datasets.	MySQL
6	Cloud Database	Cloud-based database for scalable storage.	AWS RDS / Azure SQL
7	File Storage	Storage for datasets and generated reports.	AWS S3 / Local File System
8	External API-1	Market and economic data integration.	Government Open Data API
9	External API-2	Competitor market share data.	Market Research API
10	Machine Learning Model	Sales prediction and trend forecasting model.	Scikit-learn Regression Model
11	Infrastructure (Server / Cloud)	Deployment of application on cloud platform.	AWS EC2 / Azure Cloud / Docker

Table-2: Application Characteristics

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Use of open-source libraries for backend and visualization.	Python, Flask, React JS, Pandas
2	Security Implementations	User authentication, encrypted passwords, secure API communication.	JWT Authentication, SHA-256, HTTPS
3	Scalable Architecture	3-tier architecture supporting horizontal scaling.	Docker, Kubernetes, AWS Auto Scaling

4	Availability	High availability with backup and load balancing.	AWS Load Balancer, Cloud Monitoring
5	Performance	Optimized queries, caching and fast dashboard rendering.	Redis Cache, Optimized SQL Queries