

BUSINESS INTELLIGENCE MINI PROJECT REPORT

On

Mobile Sales Insights Dashboard

By

Ishan Raskar

Sakshi Pawar

Sakshi Dhavale

Under the guidance of

Dr. Sankirti Shiravale



Department of Computer Engineering

Marathwada Mitra Mandal's College of Engineering

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Ishan Raskar
Sakshi Pawar
Sakshi Dhavale

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1. ABSTRACT

This project focuses on developing a comprehensive Business Intelligence dashboard using Power BI to analyze and visualize mobile sales data. The primary objective is to extract meaningful insights from the dataset, enabling better strategic decisions for sales, marketing, and inventory management. The dataset includes detailed records of mobile sales across various brands, models, regions, and time periods. Through data modeling, transformation, and visualization techniques, key performance indicators (KPIs) such as total sales, profit, quantity sold, and regional performance were computed and visually represented. The final dashboard allows users to interactively explore sales trends, compare product performance, identify top-selling models, and detect underperforming segments. This project demonstrates the practical application of BI tools in turning raw sales data into actionable insights for business growth.

2. INTRODUCTION

In today's fast-paced and data-driven business environment, organizations rely heavily on data analytics and business intelligence tools to make informed decisions. This project aims to demonstrate the application of Business Intelligence (BI) using Power BI to analyze and visualize mobile sales data effectively. The dataset used in this project contains detailed information about mobile phone sales, including brand, model, sales quantity, profit, and regional distribution. By transforming this raw data into interactive visualizations and insightful dashboards, the project highlights how businesses can uncover trends, monitor key performance indicators (KPIs), and identify areas for improvement. Through this initiative, the focus is on leveraging data storytelling and visual analytics to support better decision-making in the mobile retail sector, showcasing the power of BI tools in turning complex datasets into meaningful insights.

Problem definition: Businesses in the mobile phone industry struggle to derive meaningful insights from large volumes of raw sales data. Without proper analysis, it becomes difficult to track performance, identify top-selling products, and make informed decisions. This project aims to solve that problem by creating an interactive Power BI dashboard that simplifies data interpretation and supports strategic planning.

3. SOFTWARE & HARDWARE REQUIREMENTS

3.1 Software Requirements:

1. **Power BI Desktop** – for data modeling, visualization, and dashboard creation
2. **Microsoft Excel** – for initial data cleaning and preparation
3. **Windows OS** (10 or later) – compatible platform for running Power BI

3.2 Hardware Requirements:

1. **Processor:** Intel Core i5 or higher
2. **RAM:** Minimum 4GB (8GB or more recommended for large image datasets)
3. **Storage:** At least 1GB free space for dataset storage and software installation
4. **Display:** 1366×768 resolution or higher for optimal dashboard viewing

4. TYPES OF REPORTS/CHARTS USED

This project utilizes Power BI to create interactive and insightful reports for analyzing mobile sales data. The reports are structured into multiple pages, each focusing on different aspects of business performance.

Types of Reports Used

1. Sales Overview Report

- Purpose: Provides a high-level summary of key performance indicators such as Total Sales, Total Quantity Sold, Number of Transactions, and Average Price.
- Visuals Included: KPIs, city-wise sales map, brand and model-wise sales charts, rating distribution, and transactions by payment method.
- Insight: Helps stakeholders understand market trends, customer preferences, and overall performance.

2. MTD (Month-to-Date) Report

- Purpose: Tracks daily cumulative sales for the selected month, allowing monitoring of month-to-date performance.

- Visuals Included: Line chart showing daily growth in sales, along with monthly KPIs.
- Insight: Useful for short-term decision-making and real-time sales tracking.

3. Year-over-Year (YoY) Comparison Report

- Purpose: Compares total sales and quantities over two different time periods (current year vs. same period last year).
- Visuals Included: Bar charts by Year, Quarter, and Month showing both current and previous year's figures.
- Insight: Helps in evaluating business growth, seasonal trends, and performance consistency.

Types of Charts Used:

To explore and communicate insights effectively from the mobile sales dataset, various report types and visualizations were used in Power BI. Each visual serves a specific analytical purpose and enhances interactivity for users:

1. KPI Cards

- Purpose: To highlight important metrics such as Total Sales, Quantity Sold, Transactions, and Average Price at a glance.
- Usage: Helps users monitor business performance instantly.

2. Line Charts

- Charts Used:
 - Total Quantity by Month
 - MTD by Day in August
 - Sales Comparison Year-over-Year (YoY)
- Purpose: To track sales trends over time and visualize growth patterns, seasonal changes, and month-to-date performance.

3. Bar Charts

- Charts Used:
 - Total Sales by Mobile Model
 - Total Sales & Same Period Last Year by Quarter/Month
 - Ratings by Rating Status

- Purpose: Ideal for comparing categories such as models, brands, and customer ratings side by side.

4. Pie/Donut Charts

- Chart Used: Transactions by Payment Method
- Purpose: To show percentage distribution across different payment modes (UPI, Debit Card, Credit Card, Cash).

5. Map Visualization

- Chart Used: Total Sales by City (India)
- Purpose: Displays geographical sales performance, helping identify strong and weak regional markets.

6. Tables

- Chart Used: Brand-wise Sales & Transactions Table
- Purpose: Provides a detailed breakdown of numerical data for brands, supporting further drill-down analysis.

7. Filters & Slicers

- Options Used:
 - Month & Year slicers
 - Mobile Model, Brand, and Payment Method filters
- Purpose: Adds interactivity to the dashboard by allowing users to customize views and focus on specific segments.

5. DASHBOARD LAYOUT

The dashboard in this project is designed to provide a clean, interactive, and user-friendly layout that supports decision-making at multiple levels. It consists of multiple report pages, each focusing on a different analysis objective, supported by visual elements like KPIs, charts, and filters.

1. Mining Tasks Used

In this project, the following data mining tasks were applied:

- **Summarization:**
Condenses large volumes of mobile sales data into aggregated metrics (e.g., total sales, quantity sold, average price), allowing users to view overall performance at a glance.

- **Classification:**
Customer ratings and payment methods are categorized (e.g., Cash, UPI, Credit Card), helping identify usage patterns.
- **Comparison:**
Used to compare sales across different time periods (Year-over-Year), brands, regions, and models.
- **Trend Analysis:**
Visualizations like line and bar charts help identify trends over months and quarters in terms of sales and quantity sold.
- **Geographic Mapping:**
Maps are used to analyze sales distribution by city, supporting regional performance evaluation.

2. Summarization of Each Report Page

A. Sales Overview Report

- Purpose: To present a high-level summary of key business metrics.
- Highlights:
 - Total Sales, Quantity, Average Price, Transactions (KPI Cards)
 - Sales by Mobile Brand and Model
 - Sales distribution by city (Map)
 - Customer ratings distribution
 - Payment method breakdown (Pie chart)
- Use Case: Ideal for executives and managers to get a quick overview of sales performance and customer behavior.

B. MTD (Month-to-Date) Performance Report

- Purpose: To track daily sales progress within the current month.
- Highlights:
 - Daily sales tracking (Line chart)
 - MTD KPIs for August
- Use Case: Useful for monitoring ongoing sales campaigns or performance during a live month.

C. Year-over-Year (YoY) Comparison Report

- Purpose: To compare current sales data with the same period in the previous year.
- Highlights:
 - Sales and quantity by year, quarter, and month
 - Same period last year (SPLY) metrics for better comparison
- Use Case: Supports long-term strategy evaluation and seasonal performance tracking.

6. DATASET USED

The dataset used for this project is titled "Mobile Sales Data", and it was sourced from a structured Excel file. It contains comprehensive records of mobile phone sales transactions, covering a wide range of attributes that are essential for business analysis and reporting.

Source of Dataset:

- File Name: Mobile Sales Data.xlsx
- Format: Microsoft Excel (.xlsx)
- Source Type: Manually compiled / simulated business dataset for academic and analytical use
- Imported Into: Power BI Desktop for modeling, visualization, and dashboard creation

Number of Data Elements in the Dataset:

- Total Rows (Transactions): 3,000+
- Total Columns (Fields/Attributes): 13

Key Data Fields Include:

- Date
- Product Name
- Brand
- Model
- City
- Quantity Sold
- Price
- Total Sales

- Rating
- Rating Status
- Payment Method
- Year
- Month

This dataset forms the backbone of the Power BI project, enabling dynamic visualizations and insights into customer behavior, regional performance, brand popularity, and more.

7. RESULT

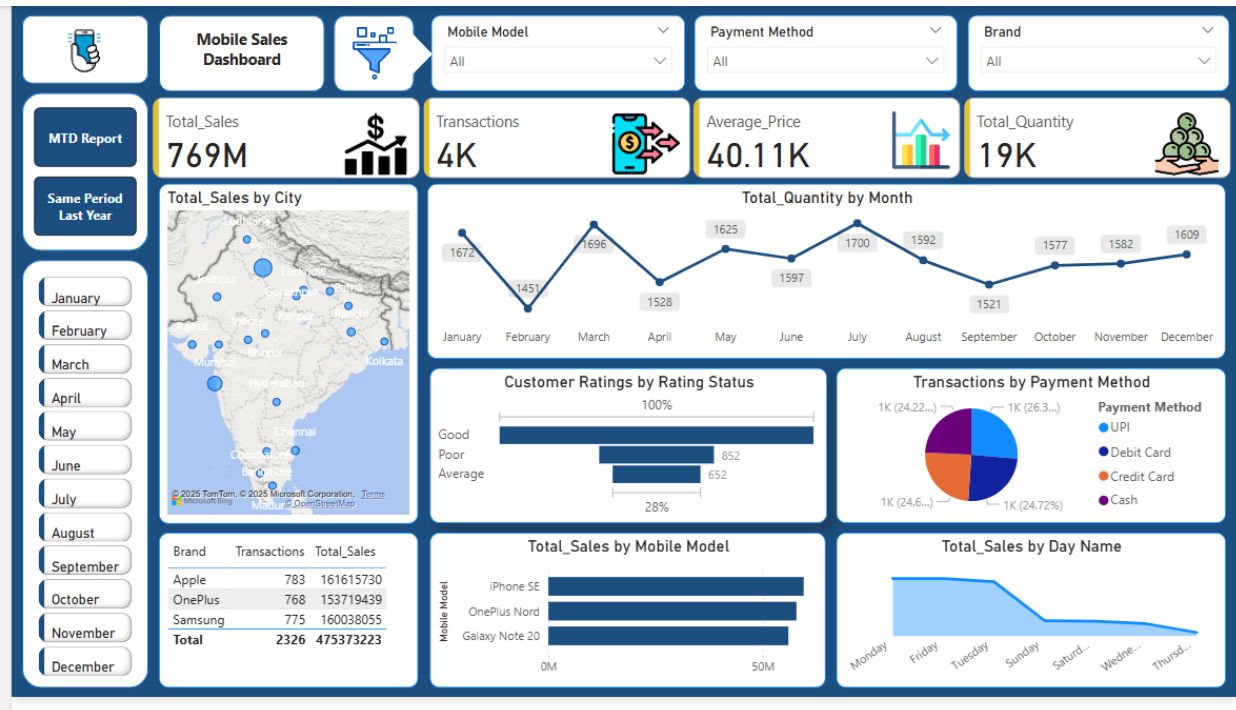


Fig: Dashboard

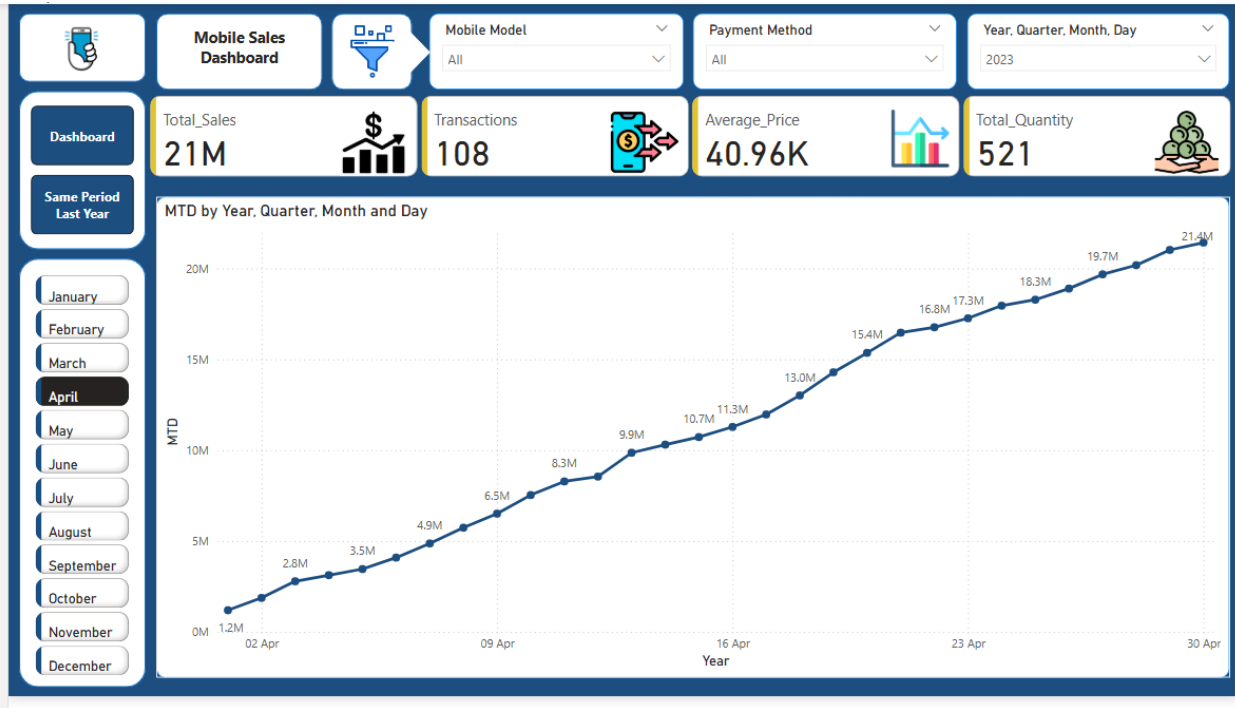


Fig: MTD report



Fig: Same Period Last Year

DAX Queries Results:

1. Evaluate Sales_Data:

Run Update model with changes (0) Share feedback

```
1 EVALUATE
2 TOPN(100, 'Sales_Data')
3
```

Results Result 1 of 1 Copy

	Sales_Data[Transaction I...	Sales_Data[Date]	Sales_Data[Brand]	Sales_Data[Units Sold]	Sales_Data[Price Per Unit]	Sales_Data[Customer N...	Sales_Data[Customer A...	Sales_Data[C
7	278	12/26/2021 12:00:00 AM	Apple	2	25400.84	Anita Bhattacharya	25	Delhi
8	307	1/4/2022 12:00:00 AM	Apple	6	69566.26	Isha Dutta	55	Delhi
9	429	2/5/2022 12:00:00 AM	Apple	4	69023.91	Devendra Mathur	32	Delhi
10	461	2/14/2022 12:00:00 AM	Apple	2	63025.72	Namita Sheth	21	Delhi
11	484	2/21/2022 12:00:00 AM	Apple	7	39630.95	Shruti Pathak	30	Delhi
12	531	3/7/2022 12:00:00 AM	Apple	9	44417.67	Vinod Dutta	44	Delhi
13	571	3/19/2022 12:00:00 AM	Apple	5	54091.03	Vivek Ghosh	59	Delhi
14	586	3/23/2022 12:00:00 AM	Apple	4	38372.76	Ramesh Dutta	56	Delhi
15	632	4/6/2022 12:00:00 AM	Apple	4	60996.25	Pooja Dutta	30	Delhi
16	649	4/11/2022 12:00:00 AM	Apple	8	41363.84	Manoj Jain	31	Delhi
17	676	4/19/2022 12:00:00 AM	Apple	9	51689.65	Lata Patel	28	Delhi
18	694	4/24/2022 12:00:00 AM	Apple	9	20644.57	Sneha Arora	34	Delhi
19	708	4/29/2022 12:00:00 AM	Apple	8	43832.02	Bina Siddiqui	58	Delhi

Query 1 Query 2 Query 3 Query 4 Query 5 Query 6 Query 7 +

Process (61.7 ms) Query 1 of 7 Result 1 of 1 12 columns, 100 rows

2. Top 5 mobile models by Units sold:

Run Update model with changes (0) Share feedback

```
1 //Top 5 Mobile Models by Units Sold:
2 EVALUATE
3 TOPN(
4     5,
5     SUMMARIZE(
6         'Sales_Data',
7         'Sales_Data'[Mobile Model],
8         "Units Sold", SUM('Sales_Data'[Units Sold])
9     ),
10    [Units Sold],
11    DESC
12 )
13
14
15
```

Results Result 1 of 1 Copy

	Sales_Data[Mobile Mod...	[Units Sold]
1	Galaxy S21	1305
2	Galaxy Note 20	1382
3	OnePlus Nord	1409
4	Vivo Y51	1429
5	iPhone SE	1430

3. Column Summarization:

Run

Update model with changes (0)

Share feedback

```

1  DEFINE
2      MEASURE 'Sales_Data'[Total_Quantity] = SUM(Sales_Data[Units Sold])
3      MEASURE 'Sales_Data'[Total_Sales] = SUMX(Sales_Data,Sales_Data[Units Sold]*Sales_Data[Price Per Unit])
4      MEASURE 'Sales_Data'[Transactions] = COUNTROWS(Sales_Data)
5      MEASURE 'Sales_Data'[Average_Price] = AVERAGE(Sales_Data[Price Per Unit])
6      MEASURE 'Sales_Data'[MTD] = TOTALMTD([Total_Sales],Custom_Calendar[Date].[Date])
7      MEASURE 'Sales_Data'[Same Period Last Year] = CALCULATE([Total_Sales],
8      SAMEPERIODLASTYEAR(Custom_Calendar[Date].[Date]))
9
10  EVALUATE
11      SUMMARIZECOLUMNS(
12          "Total_Quantity", [Total_Quantity],
13          "Total_Sales", [Total_Sales],
14          "Transactions", [Transactions],
15          "Average_Price", [Average_Price],
16          "MTD", [MTD],
17          "Same Period Last Year", [Same Period Last Year]
18      )

```

Results

Result 1 of 1

Copy

	[Total_Quantity]	[Total_Sales]	[Transactions]	[Average_Price]	[MTD]	[Same Period Last Year]
1	19150	769204987.97	3835	40114.04		574119579.67

4. Average Price per Unit by Brand:

Run

Update model with changes (0)

Share feedback

```

1  //Average Price per Unit by Brand
2  EVALUATE
3  SUMMARIZECOLUMNS(
4      'Sales_Data'[Brand],
5      "Avg Price", AVERAGE('Sales_Data'[Price Per Unit])
6  )
7
8

```

Results

Result 1 of 1

Copy

	Sales_Data[Brand]	[Avg Price]
1	Xiaomi	39717.76
2	Vivo	39435.85
3	OnePlus	40041.72
4	Samsung	40343.89
5	Apple	40996.96

5. Customer ratings by City:

Run

Update model with changes (0)

Share feedback

```

1 //Customer Ratings by City
2 EVALUATE
3 SUMMARIZECOLUMNS(
4     'Sales_Data'[City],
5     "Avg Rating", AVERAGE('Sales_Data'[Customer Ratings])
6 )
7

```

Results

Result 1 of 1

Copy

	Sales_Data[City]	[Avg Rating]
1	Ludhiana	3.77
2	Delhi	3.75
3	Mumbai	3.62
4	Gorakhpur	3.62
5	Jodhpur	3.71
6	Vadodara	3.8
7	Madurai	3.72
8	Hyderabad	3.57
9	Chennai	3.62
10	Coimbatore	3.59
11	Kolkata	3.6
12	Rajkot	3.75

Query 1

Query 2

Query 3

Query 4

Query 5

Query 6

Query 7

+

8. CONCLUSION

This Business Intelligence project successfully demonstrates how mobile sales data can be transformed into meaningful insights using Power BI. Through interactive dashboards and visually rich reports, key business metrics such as total sales, quantity sold, customer ratings, and regional performance were effectively analyzed. The use of data mining tasks like summarization, comparison, and trend analysis allowed for clear identification of top-performing brands, popular models, and buying patterns across different regions and time periods. Month-to-date and year-over-year analyses provided both short-term and long-term business perspectives.

Overall, the project highlights the value of BI tools in enabling data-driven decision-making, improving business visibility, and offering a dynamic way to explore sales trends and customer behavior in the mobile market.