

E-Commerce Analytics Power BI Project – Portfolio Case Study

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◇ Project Overview

A complete end-to-end **Power BI analytics solution** built using a 4-year e-commerce sales dataset (~1M rows). The goal was to uncover insights related to: - Sales performance and YoY trends - State-wise and category-wise growth - Customer behaviour and payment patterns - Operational gaps (returns, cancellations) - Revenue drivers and improvement opportunities

This project follows a structured PACE workflow and delivers a business-ready dashboard with actionable insights.

◇ Dataset Summary

Duration: 2021–2024 (4 years)

Volume: ~1,000,000 records

Key Fields: Order ID, Order Date, Customer, State, City, Category, SubCategory, Product, Quantity, Unit Price, Total Amount, Discount%, Order Status, Payment Type.

◇ Project Methodology (PACE Workflow)

1. Plan

- Defined KPIs, reporting goals, and business questions.
- Identified dataset structure, required tools, and stakeholder expectations.
- Outlined PACE workflow for smooth execution.

2. Analyze

- Cleaned and prepared the raw dataset using Power Query.
- Performed EDA to understand trends, correlations, and anomalies.
- Validated data quality to ensure reliability.

3. Construct

- Built a star-schema model (Sales Fact + Date Dimension).
- Created DAX measures (Sales, Profit, AOV, YoY Growth, Status KPIs).
- Designed dashboard visuals, navigation, and dynamic tooltips.

4. Execute

- Optimized dashboard performance.
 - Finalized UI/UX to align with business use.
 - Delivered insights and strategic recommendations.
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◇ Key Dashboard Highlights

- **AI-powered Sales Driver Tree** for drilling into State → Category → Order Status → Payment insights.
 - **Dynamic tooltips** for State, Category, Payment, and Order Status.
 - **YoY Sales Trend** and future trajectory visualization.
 - **Sales Density Tree Map** for geographic insights.
 - **Category, Payment, and State performance panels.**
 - **Operational KPIs** for Total Profit, YoY Growth, and Avg Order Value.
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◇ Major Insights

- Electronics led overall revenue growth across years.
 - Maharashtra and Karnataka emerged as strongest markets.
 - UPI dominated as the preferred payment method.
 - Delivered orders contributed maximum revenue.
 - High cancellations impacted YoY performance in some states.
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◇ Tools & Technologies

- **Power BI Desktop** – Dashboard Development
 - **Power Query** – Data Cleaning & ETL
 - **DAX** – Measures & Time Intelligence
 - **Python** – Synthetic Data Generation
 - **Star Schema** – Data Modelling
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◇ Project Timeline

- Day 1 – Planning
 - Days 2–3 – Data Cleaning & EDA
 - Day 4 – Modelling & KPIs
 - Days 5–6 – Dashboard Design
 - Day 7 – Final Review & Insights
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◇ Final Deliverables

- Fully interactive Power BI Dashboard
 - Data model + DAX measure library
 - Insights summary & recommendations
 - Project documentation
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◇ Outcome

A polished, business-ready analytics solution that provides leadership with crystal-clear visibility into revenue drivers, customer behaviour, and operational efficiencies—and supports data-driven decision-making.

◇ Dashboard Showcase

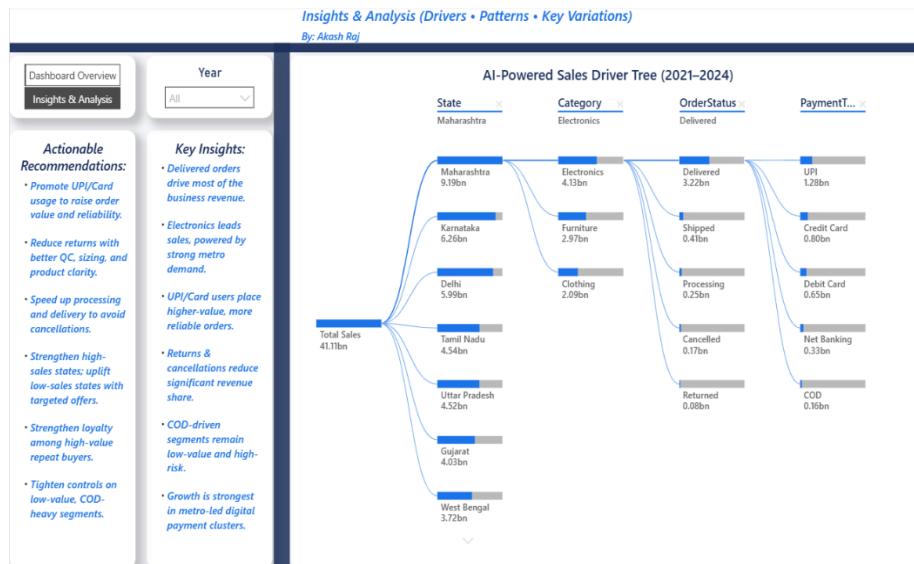
1. Dashboard Overview — Executive Summary Page

High-level view of Total Sales (41.1bn), Profit%, YoY Growth, and Avg Order Value. Displays category-wise performance, sales trend (2021–2024), top-state category contribution, order status share, state sales density, and payment contribution.



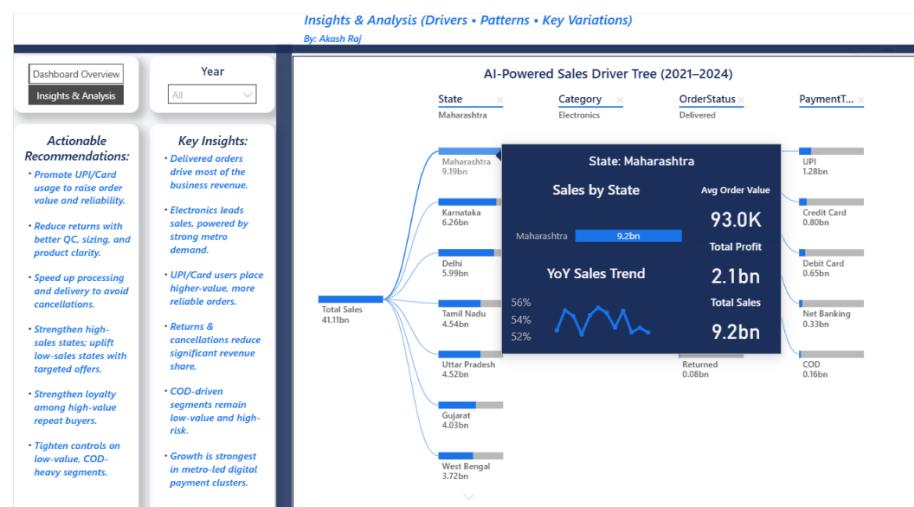
2. Insights & Analysis — AI-Powered Sales Driver Tree

A multi-layer driver tree breaking down Total Sales into State → Category → Order Status → Payment Method. Helps identify where revenue increases or decreases across different combinations.



3. State Tooltip — Regional Deep Dive

Hovering over a state reveals Total Sales, Total Profit, AOV, and YoY trend. Helps compare high-performing vs. low-performing markets instantly.



4. Category Tooltip — Product Insights

Shows category-wise breakdown across states with Sales by State, Total Discount, Total Profit, and Total Sales. Useful for analyzing Electronics, Furniture, and Clothing distribution patterns.



5. Payment Tooltip — Customer Behaviour Patterns

Displays payment method-level insights: Monthly Order Trend, YoY Sales Trend, Total Sales, Total Orders. Helps identify digital-first segments, COD risks, and payment efficiency.



★ Executive Summary:

This project delivers a complete Power BI analytics solution built on four years of e-commerce sales data. It uncovers revenue trends, customer behaviour, operational issues, and state-level performance with clear, actionable insights. Leadership can quickly identify growth opportunities, diagnose performance gaps, and make data-driven decisions backed by deep analysis, AI-style drilldowns, and interactive tooltips.

★ Why This Project Matters:

- Provides leaders with a unified, crystal-clear view of sales performance across 4 years.
 - Identifies high-growth markets and underperforming states requiring strategic focus.
 - Reveals product category drivers—especially Electronics—and uncovers revenue opportunities.
 - Exposes operational issues such as returns, cancellations, and delivery performance.
 - Highlights customer behaviour patterns through payment preference analysis (UPI vs COD).
 - Equips decision-makers with reliable, data-backed insights for improving revenue and efficiency.
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★ Key Outcomes:

- Clear visualization of 4-year revenue growth, from 6.2bn to 14.4bn.
- Strong-performing states (Maharashtra, Karnataka, Delhi) identified for expansion.
- Category insights confirm Electronics as the primary revenue engine.
- Payment trends reveal UPI as the dominant, high-value customer choice.
- Operational challenges quantified—returns and cancellations impacting YoY performance.
- Driver Tree + interactive tooltips enable fast, deep exploration of sales drivers.

