

# Coffee Sales Analysis

Exploring Purchasing Patterns, Sales Trends, and Customer Preferences

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# Overview

- ❖ Dataset Summary: The dataset contains detailed records of coffee sales from a vending machine.
- ❖ Data Collection Period: From March 2024 to the present, capturing daily transactions.
- ❖ Purpose: To analyze purchasing patterns, sales trends, and customer preferences related to different coffee types.

# Project Objectives

- ❖ Understanding customer purchasing behavior through different metrics.
- ❖ Sales trend analysis over time to uncover patterns.
- ❖ Customer preferences by coffee type and payment method.
- ❖ Developing visual insights using Power BI for forecasting future sales and identifying key opportunities.

# Data Understanding

- ❖ Columns: date, datetime, cash\_type, card, money, coffee\_name.
- ❖ Coffee Varieties: Latte, Americano, Cappuccino, Hot Chocolate, Cocoa, Cortado, Espresso.
- ❖ Payment Methods: Cash and Card.
- ❖ Total Records: 1133 sales records.

# Data Transformation (ETL)

- ❖ Tools Used: Python (pandas, numpy).
- ❖ Steps Involved:
- ❖ Data Cleaning: Handled null values, date formatting.
- ❖ Feature Engineering: Extracted day names, hours from datetime.
- ❖ Aggregation: Grouped data by coffee type, payment method, and time to derive insights.

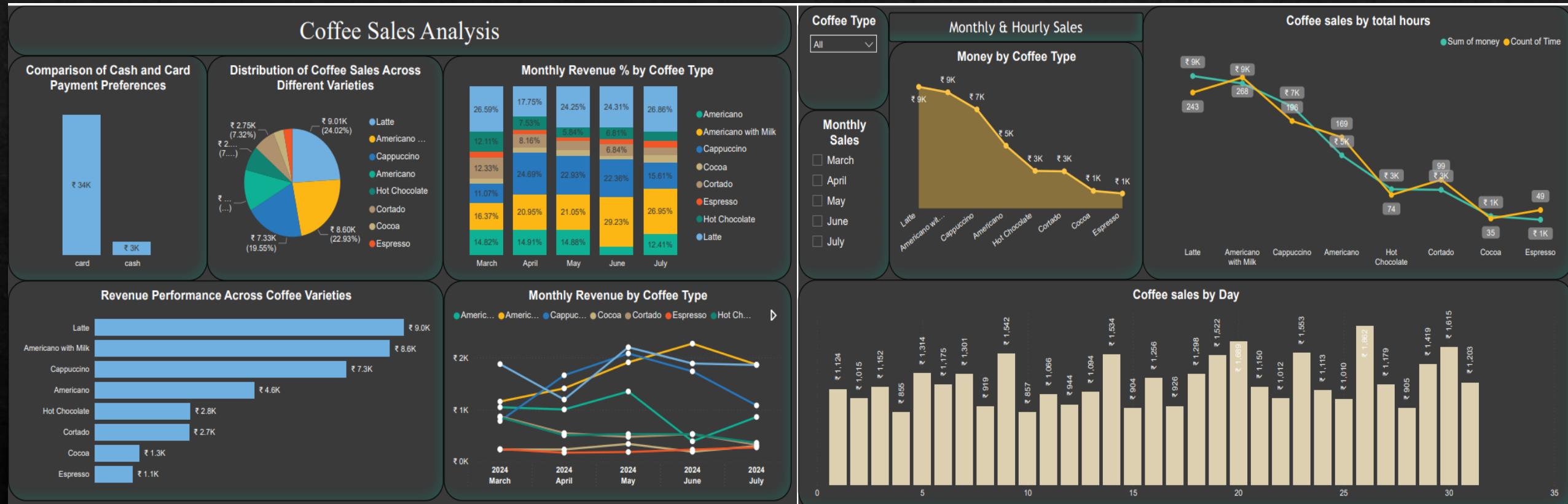
# Exploratory Data Analysis (EDA)

- ❖ Key Metrics Explored:
- ❖ Overall Sales: Latte, Americano with Milk, and Cappuccino are the top-selling coffee types, contributing to 66.4% of total sales.
- ❖ Payment Preferences: Card payments significantly outweigh cash, highlighting a shift toward cashless transactions.
- ❖ Seasonality & Trends: Month 5 (May) showed a significant sales spike likely due to seasonal demand.

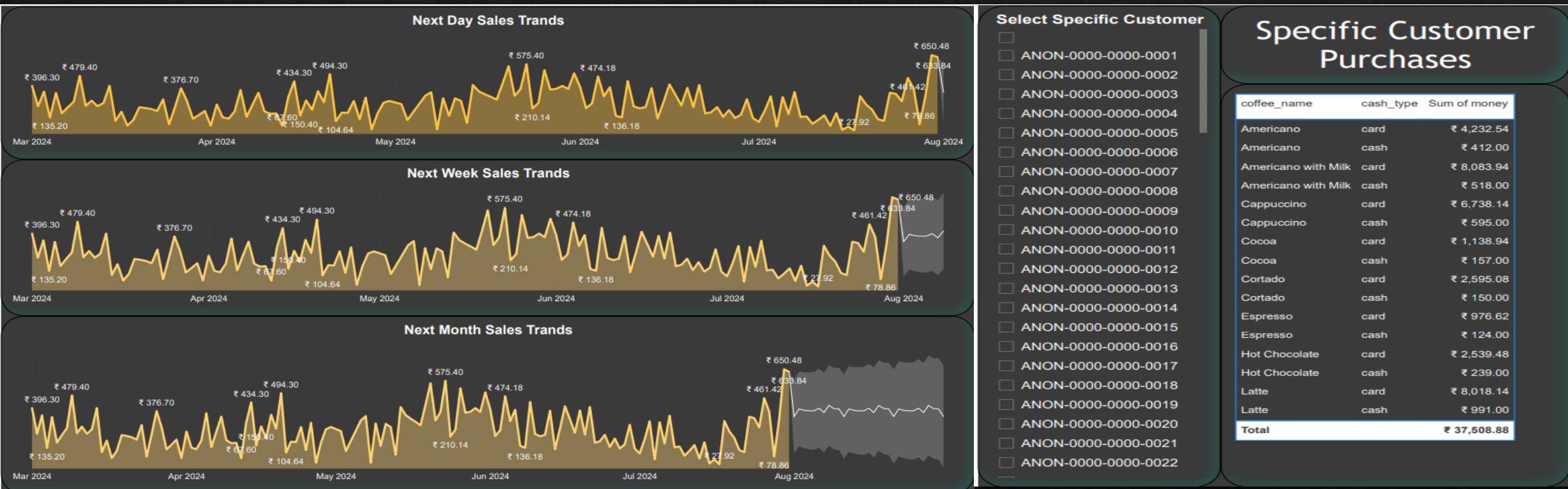
# Power BI Dashboard

- ❖ Dashboard Highlights:
- ❖ Coffee Type Preferences: Visualized through pie charts showing the distribution of revenue and sales.
- ❖ Next Day, Week, and Month Sales Forecasting: Predictive analytics for future trends using time series.
- ❖ Sales Across Days and Hours: Identified peak hours (10 AM and 11 AM) and slower periods to optimize business operations

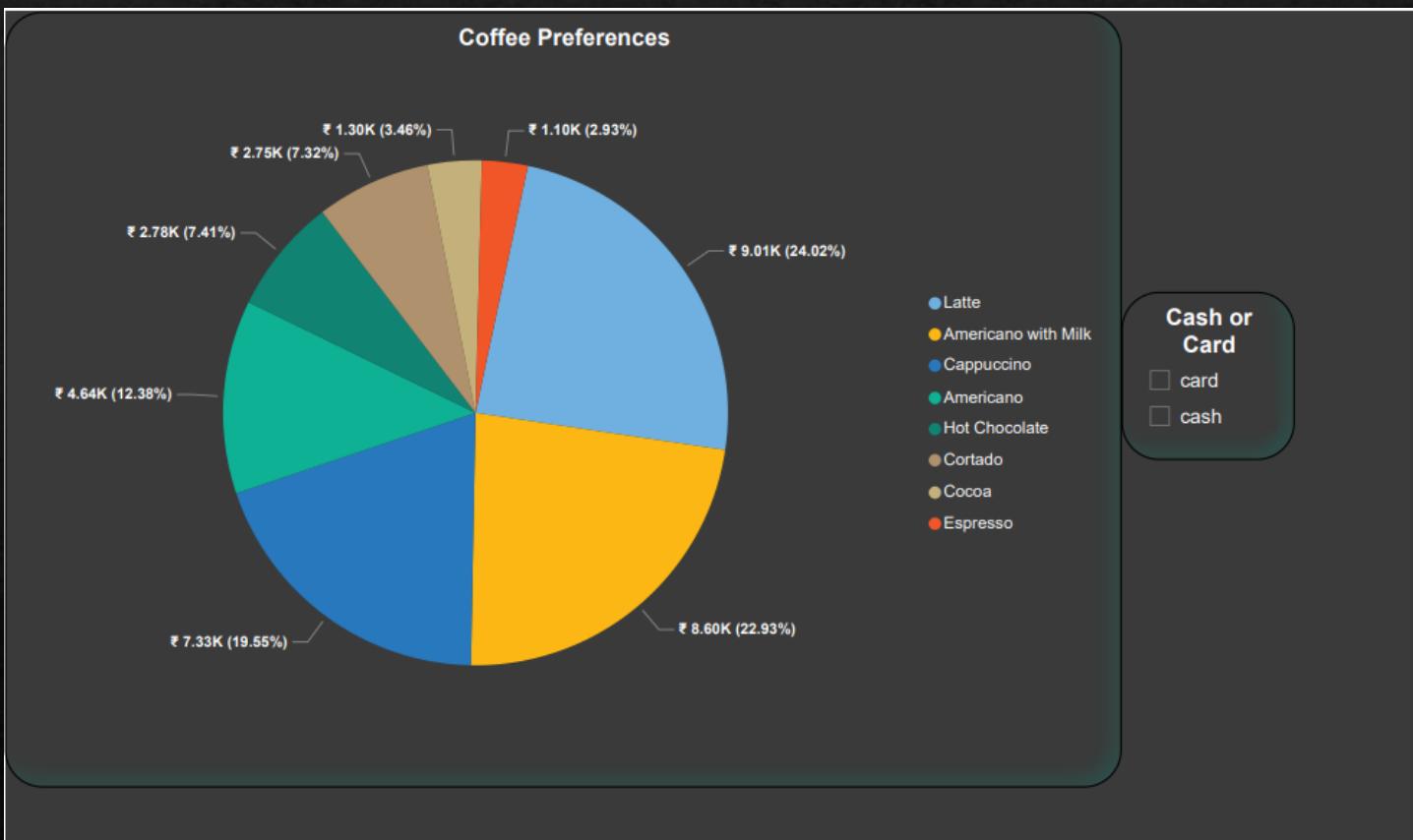
# Power BI Dashboard



# Power BI Dashboard



# Power BI Dashboard



# Key Insights & Recommendations

- ❖ Insights:
- ❖ Top Coffee Choices: Latte and Americano with Milk dominate sales.
- ❖ Payment Trends: Businesses can benefit by enhancing card payment facilities.
- ❖ Customer Loyalty: 37% of customers are returning buyers, mostly favoring Americano and Latte.

# Key Insights & Recommendations

- ❖ Recommendations:
- ❖ Promote lesser-selling coffees like Cortado and Cocoa to balance the menu.
- ❖ Optimize Staff During Peak Hours: Target 10 AM - 12 PM for more staff deployment.
- ❖ Discount Campaigns: During slow periods (afternoons) to boost sales.

# Future Actions

- ❖ Implement Marketing Campaigns: Promote underperforming coffee types through loyalty rewards or promotions.
- ❖ Data-Driven Forecasting: Use Power BI sales trend forecasting to stock inventory and adjust staffing

# Conclusion

- ❖ **Project Achievements:**
- ❖ **Data Understanding, EDA, and Visualization** were performed using Python and Power BI.
- ❖ **Actionable Insights** derived from the data support business decision-making in pricing, customer targeting, and stock management.

# Thank You!

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