Cafe Sales Analytics Report

Sector: Retail Sector

Project Type: Data Visualization & Analytics Capstone Project

Team Members:

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Executive Summary

Retail cafes generate large volumes of daily transaction data through food and beverage sales. However, this data is often underutilized for business decision-making. The objective of this project was to analyze transaction-level sales data and develop an interactive dashboard to identify key revenue drivers and improve operational efficiency.

The project involved cleaning and transforming raw sales data in Google Sheets, followed by exploratory and advanced analysis using pivot tables and visualization techniques. Key insights revealed that a limited number of products contribute significantly to overall revenue, beverage items dominate category sales, and customer preference is shifting towards takeaway orders and digital payments.

Based on the analysis, recommendations were made to promote high-performing products, optimize low-performing items, increase average order value through upselling, and run targeted promotions during low-sales periods. The dashboard provides management with a centralized, easy-to-understand view of performance, enabling faster and data-driven decision-making.

Sector & Business Context

The retail cafe sector operates in a highly competitive environment where customer preferences, pricing strategies, and operational efficiency directly influence profitability. Cafes generate significant transaction-level data daily, including product sales, payment methods, and ordering patterns. However, many small and medium cafe businesses rely on manual observation rather than structured data analysis.

This project focuses on leveraging transaction-level data to help café owners understand sales trends, customer behavior, and product performance. The primary decision-makers include café owners and operations managers who require actionable insights to improve sales performance and optimize operational processes.

Problem Statement & Objectives

Problem Statement

How can a retail café improve sales performance and operational efficiency by analyzing raw transaction-level sales data and identifying key revenue drivers?

Objectives

- Develop an interactive sales dashboard using Google Sheets.
- Identify high-performing products and categories.
- Analyze customer purchasing behavior and payment preferences.
- Understand monthly sales trends and operational patterns.
- Support data-driven decisions related to product offerings, promotions, and sales strategies.

Project Scope

The project focuses on historical sales analysis using transaction-level data. Profitability analysis and forecasting were outside the current scope due to data limitations.

Success Criteria

- Accurate calculation of KPIs.
- Identification of key revenue drivers.
- Actionable business recommendations supported by data.
- Interactive dashboard enabling easy decision-making.

Data Description

Dataset Source: Cafe Sales Dataset obtained from Kaggle.

Dataset Structure

- Transaction ID
- Items
- Quantity
- Price Per Unit
- Total Spent
- Payment Method
- Transaction Location
- Transaction Date

Data Size

- Total Records: 10,000 transactions
- Columns: 8 primary fields
- Time Period: Multiple months across one year

Derived Columns

- Item Category (Bakery, Drinks, Food)
- Transaction Month

Data Limitations

- No profit or cost information available.
- No customer demographic data.
- External factors such as promotions or seasonal events not included

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Data Cleaning & Preparation

All data cleaning and preparation steps were performed in Google Sheets as per project requirements.

Cleaning Steps

- Missing or inconsistent values in items, payment method, and location were replaced with “Other” for consistent aggregation.
- Missing numerical values in quantity, price per unit, and total spent were calculated using available fields.
- Date fields were standardized for monthly analysis.

Transformations & Feature Engineering

- Item category column derived to classify products into Bakery, Drinks, and Food.
- Transaction month extracted for trend analysis.

Assumptions

- Total Spent = Quantity × Price Per Unit.
- Unknown payment or location entries were grouped under “Other”.

KPI & Metric Framework

KPIs Used

1. **Total Transactions**
    - Formula: COUNT(Transaction ID)
    - Measures customer activity and sales volume.
2. **Total Spent (Revenue)**
    - Formula: SUM(Total Spent)
    - Indicates overall business performance.
3. **Total Quantity Sold**
    - Formula: SUM(Quantity)
    - Represents product demand.
4. **Average Order Value**
    - Formula: Total Revenue / Total Transactions
    - Measures customer spending per visit.

Why These KPIs Matter

These KPIs help identify revenue drivers, measure demand patterns, and support operational decision-making aligned with the project objective.

Exploratory Data Analysis (EDA)

Trend Analysis

Monthly sales show moderate fluctuations with certain periods experiencing noticeable dips, indicating potential seasonal or operational factors.

Comparison Analysis

Sales comparison across products shows that certain items contribute disproportionately higher revenue compared to others.

Distribution Analysis

The drinks category contributes the largest share of total sales, followed by food and bakery items.

Key Insights

- A limited number of products drive most of the revenue.
- Quantity sold is relatively balanced, but pricing influences revenue differences.
- Digital payment methods are widely preferred.
- Takeaway and in-store orders dominate transaction types.

Advanced Analysis

A root cause and segmentation analysis was conducted to understand factors affecting sales performance.

Analysis Performed

- Product-level revenue vs quantity analysis.
- Category-based segmentation.
- Time-based trend analysis.
- Payment method and order type analysis.

New Understanding

- Sales growth is driven primarily by high-performing products.
- Product pricing and mix significantly impact revenue.
- Monthly fluctuations highlight opportunities for targeted promotions.
- Customer preference for digital payments and takeaway orders impacts operational efficiency.

Dashboard Design

The dashboard was implemented in Google Sheets using pivot tables, formulas, and interactive filters.

Dashboard Objective

Provide a centralized and interactive view of sales performance and operational metrics.

View Structure

- Executive View: KPI summary section.
- Operational View: Detailed charts for analysis.

Dashboard Components

- Total Sales by Product
- Units Sold per Product
- Sales Distribution by Category
- Sales Trend by Month
- Order Type Distribution
- Transactions by Payment Method

Filters

- Item filter
- Payment method filter
- Month filter

Insights Summary

- Few products contribute significantly to total revenue.
- The drinks category dominates overall sales contribution.
- Revenue differences depend on pricing and product mix.
- Monthly sales fluctuations indicate demand variability.
- Digital payment usage is higher than cash transactions.
- Takeaway orders represent a large share of transactions.
- Balanced quantity sales indicate consistent product demand.
- Increasing average order value presents a revenue opportunity.

Recommendations

- Promote high-performing products through combo offers.
- Improve or replace low-performing items.
- Increase average order value through upselling strategies.
- Run promotions during low-sales periods.
- Improve efficiency in digital payment and takeaway operations

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Impact Estimation

Revenue Impact

Focusing on high-performing products and upselling strategies can increase average order value and overall revenue.

Operational Efficiency

Demand-based product focus reduces operational inefficiencies and improves service flow.

Time Efficiency

Automated dashboards reduce manual reporting time and enable faster decision-making.

Improved Decision Making

Centralized analytics allow better promotional and operational planning.

Limitations

- Dataset limited to transaction-level data.
- Profitability analysis will not be possible without cost data.
- External factors affecting sales not captured.
- No predictive forecasting included.

Future Scope

- Integration of profit and cost data.
- Customer segmentation analysis.
- Sales forecasting models.
- Promotional effectiveness analysis.
- Real-time dashboard automation.

Conclusion

The project successfully demonstrates how transaction-level sales data can be transformed into meaningful business insights through data cleaning, analysis, and visualization. The developed dashboard enables cafe management to identify revenue drivers, understand customer behavior, and make informed decisions to improve sales performance and operational efficiency.

Appendix

Data Dictionary

- Transaction ID – Unique sale identifier
- Item – Product name
- Quantity – Units sold
- Price Per Unit – Item price
- Total Spent – Revenue per transaction
- Payment Method – Mode of payment
- Transaction Location – Order type
- Transaction Date – Date of sale

SQL / Python logic

We have used EDA for some extra charts for:

- Monthly trend for payment methods
- Monthly trend for Items category

Contribution Matrix

Team members	Dataset & Sourcing	Cleaning	KPI & Analysis	Dashboard	Report Writing	PPT	Overall Role
Aditya Shankar	5%	15%	15%	10%	40%	40%	PPT & Report
Himanshu Pal	15%	25%	25%	30%	15%	10%	Cleaning , kpi & dashboard
Shreshtha Gupta	15%	25%	30%	30%	15%	10%	Cleaning , kpi & dashboard
Aryan Kumar	15%	15%	10%	20%	10%	10%	Dashboard
Satya Prakash	20%	10%	10%	10%	10%	10%	Dataset Source
Satwik Mani Tripathi	15%	5%	5%	0%	5%	10%	Support in PPT & research
Lakshay Yadav	15%	5%	5%	0%	5%	10%	Support in PPT & research

Declaration: We confirm that the above contribution details are accurate and verifiable through version history and submitted artifacts.