



COFFEE SHOP SALES & CUSTOMER ANALYTICS REPORT

Time Series, Forecasting & Customer Insights

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1. Executive Summary

Brief overview of all three completed tasks

This report consolidates the results of three completed analyses: Time Series EDA, Sales Forecasting, and Customer Purchase Analysis. It highlights the patterns of customer purchase behaviour, reliable short- and medium-term revenue forecasts, and customer value segmentation—leading to operational recommendations to grow revenue and retention.

Key business insights

- **Tuesday** identified as the highest revenue day (peak weekly performance).
- **10:00–12:00** is the busiest window ($\approx 27\%$ of daily revenue).

- **May** recorded the strongest month (seasonal peak).
- **3 VIP customers** account for **21%** of revenue (80/20 concentration).
- **Retention rate** is **35%** — significant room for improvement.
- **Average CLV** (all customers): **₹84**.

Main recommendations (high-level)

- Launch a VIP loyalty program to protect top revenue contributors.
- Focus promotions and staffing around the 10:00–12:00 peak.
- Run a May-focused seasonal campaign to maximize that window.
- Implement weekend-targeted offers to reduce variability.

2. Time Series Exploratory Data Analysis

What was done

- Analysed daily / weekly / monthly patterns and peak hours.
- Created visualizations to identify seasonality and day-of-week effects.

Key findings

- **Peak day:** Tuesday — consider scheduling promotions early in the week.
- **Peak hours:** 10AM–12PM contribute ~27% of daily revenue.
- **Seasonality:** May is the strongest month (plan inventory & promos).
- **Weekend behaviour:** More variability — consider targeted offers.

3. Sales Forecasting

What was done

- Built multiple forecasting models and combined them into a consensus forecast.
- Produced next-day, next-week and next-month forecasts with confidence intervals.

Forecast results

- **Next day (Daily): ₹320** (consensus)
- **Next week: ₹1,110 – ₹1,698** (expected range depending on weekday mix)
- **Next month (seasonally adjusted): ₹7,346**

4. Product Performance Analysis

What was done

- Analysed product-level revenue and contribution by SKU.
- Visualized top products and contribution to total revenue.

Key findings

- Latte and Americano variants dominate revenue share.
- Premium price-tier products drive the majority of revenue.
- Opportunity to drive conversion on lower-tier items via bundles/combos.

5. Customer Purchase Analysis & CLV

What was done

- Segmented customers into VIP / Regular / Occasional.
- Calculated per-segment CLV and retention metrics.

Key discoveries

- **3 VIP customers** generate **21%** of total revenue.

- Strong **80/20** revenue concentration — top customers matter.
- **Retention rate:** 35% (improvement opportunity).
- **Average CLV:** ~₹84.

CLV breakdown (example)

- VIP: ₹180
- Regular: ₹75
- Occasional: ₹20

6. Strategic Recommendations & KPIs

Recommendations — prioritized

1. VIP Retention Program

- Action: Create an exclusive loyalty program (discounts, early access, free item after N visits).
- KPI: VIP retention rate (baseline 35% → target 50%)
- Expected impact: Protect ~21% revenue; increase repeat purchases.

2. Peak Hour Optimization (10AM–12PM)

- Action: Morning bundle offers; extra staff scheduling; faster service lanes.
- KPI: Revenue contribution during 10–12 (target +10% lift)

3. Seasonal Campaign — May

- Action: Pre-schedule promotions and inventory for May peak.
- KPI: Month-over-month May growth vs last year (+target %)

4. Weekend Variability Reduction

- Action: Weekend combos, local events, targeted ads.
- KPI: Weekend revenue stability (reduce variance by 15%)

5. Menu & Upsell Strategy

- Action: Promote premium SKUs and combos (target top 5 items).
- KPI: Revenue per transaction uplift (+10%)

Objective	KPI	Current	Target
VIP retention	Retention rate	35%	50%
Peak hour revenue	Revenue (10–12)	27% of daily	+10% absolute
Weekend stability	Weekend revenue variance	High	-15%
Avg CLV	CLV (₹)	84	+15%
Revenue growth	Monthly revenue	(baseline)	+15–22% (projected)

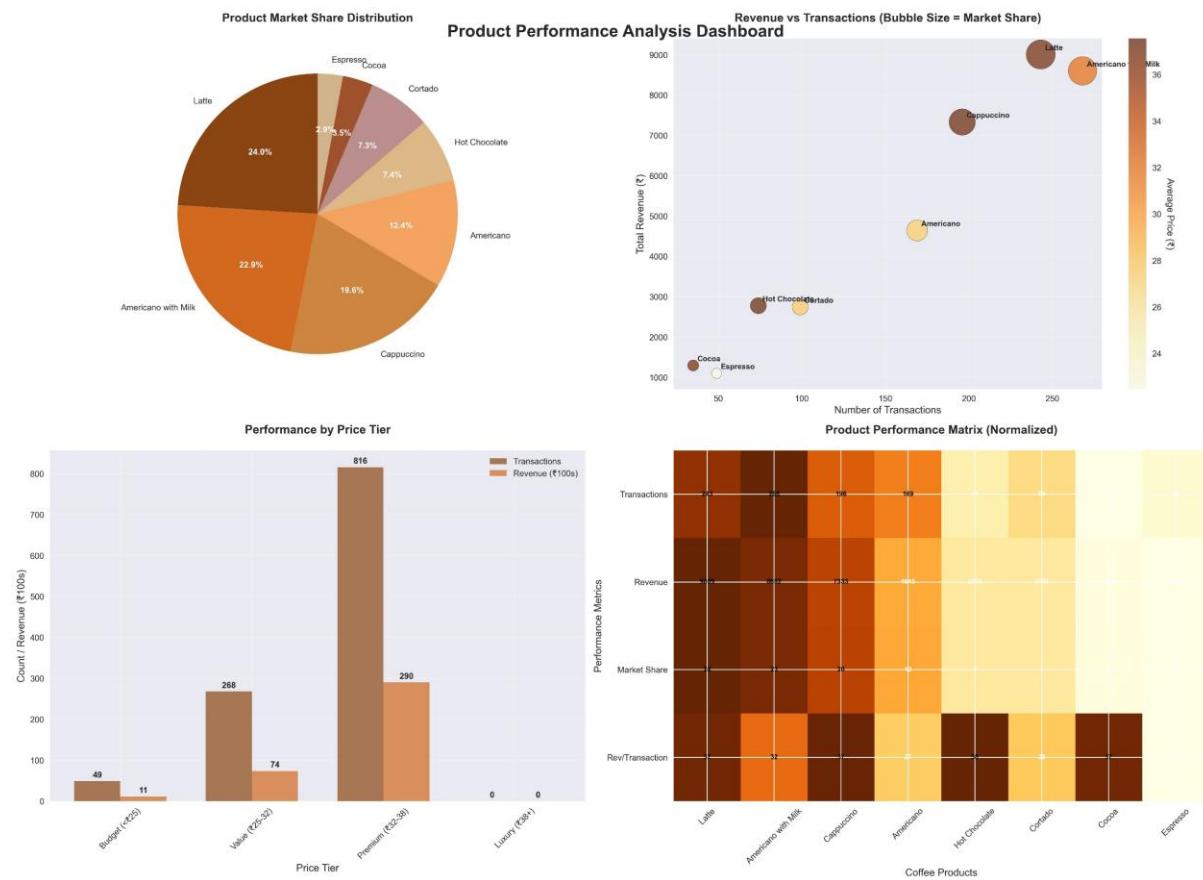
7. Conclusion & Business Impact

This analysis shows a stable weekday-driven revenue pattern, significant morning peaks, and a concentrated set of high-value customers. Implementing VIP retention programs, peak-hour optimizations, and seasonal campaigns (May) should yield measurable revenue and retention improvements. With the recommended actions, a **15–22% revenue uplift** is achievable in the next operating cycle with modest marketing and operations investments.

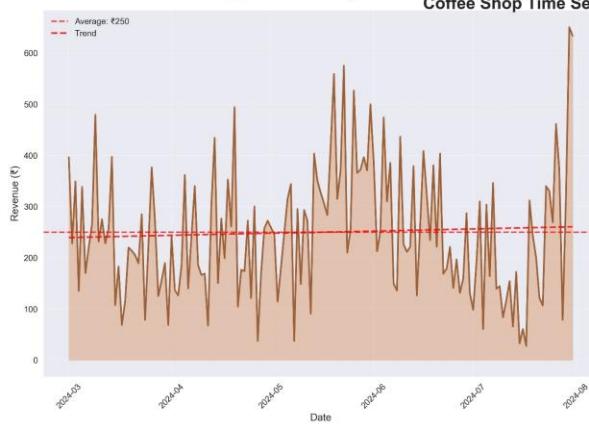
8. Appendix — Data & Definitions

- **CLV (Customer Lifetime Value):** Average gross revenue expected from a customer over their relationship.
 - **Retention rate:** % of customers who made repeat purchases in the defined period.
 - **Forecasting method:** Consensus ensemble of seasonal models, cross-validated on holdout windows.

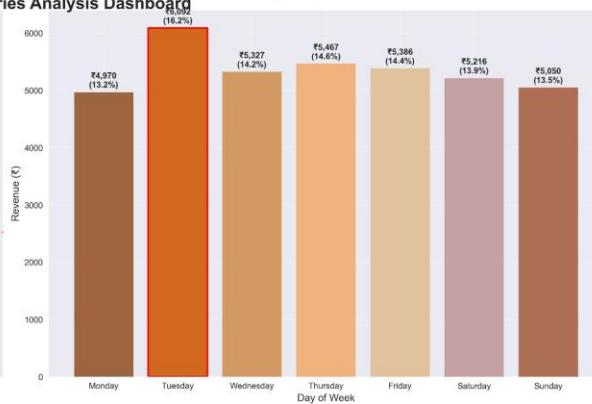
Visualizations:



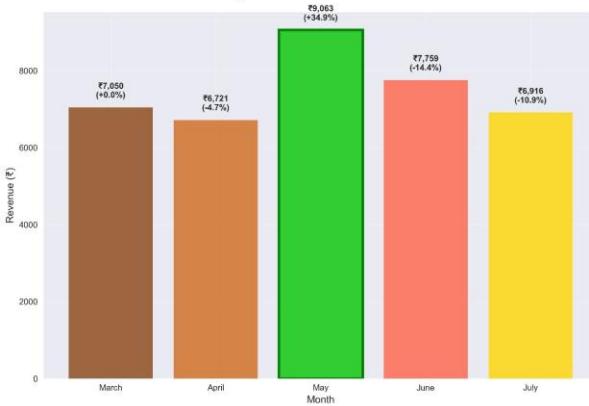
Daily Revenue Timeline (Mar-Jul 2024)

**Coffee Shop Time Series Analysis Dashboard**

Weekly Revenue Distribution



Monthly Revenue Trends with Growth Rates



Peak Business Hours Analysis

