

# Bakery Sales Performance Dashboard – Summary Report

## Project Context:

In the digital era of online retail, even local bakeries are leveraging e-commerce to understand customer behaviour and drive sales. This project analyses the transaction data from “The Bread Basket”, a bakery in Edinburgh using Power BI to uncover meaningful insights into purchasing patterns and time-based trends.

- Data Period: 30 Oct 2016 to 09 April 2017
- Total Records: 20,507
- Total Transactions: Over 9,000
- Tools Used: Python (for EDA), Excel (PivotTables), Power BI (Dashboard)

## Dataset and Analytical Approach:

EDA and cleaning were performed using Pandas and Seaborn/Matplotlib in a Jupyter Notebook. Steps included:

- Data Import & Overview: Used `pd.read_csv()`, `.info()`, `head()`, `describe()`
- Null and Duplicate Check: Verified and removed if any
- Date-Time Conversion: Extracted Date, Time, Hour, Day\_Name, Month, Year
- Feature Enrichment: Added `period_day` (Morning/Afternoon/Evening), `weekday_weekend`
- Univariate & Bivariate Analysis: Top items, time series, heatmaps
- Exported cleaned data to `bakery_cleaned.xlsx`

## Excel Phase – Pivot Tables for Initial Exploration:

Explored using PivotTables:

- Sales by Item, Day, Time Period
- Slicers for Month and Day filtering
- Sorted data to identify high performers

## Power BI-Dashboard design and Storytelling:

Created a fully interactive dashboard with:

- KPIs: Total Transactions, Top Item, Peak Day/Time, Unique Items Sold
- Charts: Top Items, Day-wise, Donut (Weekday vs Weekend), Hourly Trend, Treemap
- Slicers: Month, Day Name, Time Period, Item

## Key Business Questions and Insights:

### 1. Which item is most popular?

- **Top-selling item:** Coffee
- Coffee consistently outperforms all other products, indicating it's a customer favourite and a footfall driver.
- **Action:** Consider cross-promotions like "Buy Coffee + Muffin" bundles.

### 2. Are weekends more profitable?

- **Weekend traffic is significantly higher**, especially on Saturdays and Sundays.
- This suggests customers prefer relaxing bakery visits or online orders during weekends.
- **Action:** Increase staff, inventory, and promotional offers during weekends.

### 3. What time of day sees most traffic?

- **Peak period:** Morning (8 AM to 11 AM)
- A strong spike is seen in early hours, aligning with breakfast routines.
- **Action:** Stock freshly baked items early; promote "Morning Combos" for commuters.

### 4. Is there a seasonal pattern or peak period?

- **High volume during December and early January**, hinting at holiday-driven buying behaviour.
- This can be used to target festive offers, gift boxes, and limited-edition items.

### 5. Should more stock be allocated to mornings/evenings?

- **"Midday (12–1 PM) shows the highest peak, followed closely by morning hours."**, while evenings remain comparatively low.
- **Action:** Maintain high stock from morning through lunch period, especially for bestsellers.

### 6. Hourly Sales Trend

- There's a noticeable transaction dip post-lunch, followed by a mini-peak at tea-time (3 to 4 PM).
- **Action:** Introduce targeted "Tea-Time Specials" to convert casual browsers into buyers.

## 7. Breadth of Offerings

- Over 90+ unique items sold, but only 5–6 items dominate total transactions.
- **Action:** Rationalize SKUs by focusing on high performers while testing new items as seasonal specials.

## 8. Customer Buying Behaviour

- “Items like coffee show consistent popularity across similar time windows, indicating habitual buying patterns.”
- **Action:** Consider launching a loyalty program or digital punch card for frequent buyers.

## Final Recommendations:

- Double down on **top items like Coffee**, especially in morning menus
- Use **weekend-specific promotions** and expand staffing on Saturdays/Sundays
- Prepare for **holiday spikes** with special inventory and gifting options
- Launch **hour-based deals** (e.g., morning breakfast boxes, tea-time combos)
- Introduce a simple **loyalty program** to drive repeat business