

Pizza Sales Dashboard

Domain: Business Analytics

Tools Used: Tableau Desktop, Python Pandas, SQL, Microsoft Excel.

Project Level: Intermediate

Introduction:

This project offers a comprehensive analysis of pizza sales data to uncover actionable insights across operational efficiency, menu performance, and seating utilization. Leveraging **SQL** and **Excel** for rigorous data preparation and **Tableau** for interactive visual storytelling, the aim is to transform raw transactional data into business-ready dashboards and KPIs for restaurant owners and operations teams.

Scope & Objectives:

1. **Analyze sales and revenue trends** on a daily, hourly, and monthly basis to understand performance patterns.
2. **Identify key drivers** of sales such as time-of-day, day-of-week, pizza types/sizes, and promotional activity (turn0search1).
3. **Evaluate menu effectiveness** by highlighting best- and worst-performing pizzas based on volume and revenue.
4. **Measure customer value** through metrics like Average Order Value (AOV) and pizzas per order.
5. **Assess seating utilization** within the restaurant's capacity of 15 tables (60 seats), determining if expansion is needed.

Data Collection & Preparation:

- The dataset (pizza_sales.csv) includes TransactionID, Date, Time, Item, Quantity, Price, and Revenue, sourced from POS systems and merged across multiple tables (turn0search0).
- Data cleaning in Excel/SQL involved standardizing item names, cleaning timestamps, removing duplicates/errors, and deriving useful fields like DayOfWeek and HourSlot.
- Promotional periods and straightforward aggregations—such as total revenue and pizza counts—were also computed using SQL and pivot tables (turn0search6), then seamlessly integrated into Tableau.

Dashboard & Visual Analysis:

- Connected clean data to Tableau, defined relationships, and used calculated fields to enhance KPI analysis—including AOV and pizzas per order.

- Designed visualizations to address each objective:
 - **Bar/line charts** showing revenue and order trends by day, month, and hour.
 - **Pie charts/treemaps** illustrating pizza category and size distribution.
 - **Heatmaps** revealing high-volume day-hour combinations.
 - **KPI cards** summarize total revenue, orders, pizzas sold, and average values (turn0search0).
- Interactivity—via filters for date ranges, pizza types, and promotional flags—allows deep-dive analysis by user preference.

Data Cleaning & Preparation Summary

1. Initial Data Profiling

- Imported raw datasets (orders, order details, pizzas, pizza_types, or combined pizza_sales.csv) into Excel or SQL to examine column types, data ranges, and completeness.
- Identified key tables: transaction data, menu item metadata, quantities, pricing, and time stamps.

2. Deduplication & Null Handling

- Removed duplicate rows and irrelevant records (e.g. test transactions or incomplete rows lacking essential fields like Item, Quantity, or Revenue).
- Dropped or imputed missing values—especially for critical fields—to ensure consistency.

3. Standardization & Formatting

- Harmonized pizza names and sizes (e.g. “Veggie Pizza” vs. “Vegetables Pizza”; “L” vs. “Large”) for uniform grouping.
- Parsed and transformed timestamps into standardized Date, Year, Month, DayOfWeek, and HourOfDay formats. Extracted OrderSlot to group lunch vs. dinner periods.

4. Data Type Validation

- Ensured numeric columns (Quantity, Price, Revenue) were correctly typed, and date/time columns were recognized as such.
- Calculated missing Revenue where needed using Quantity × Price.

5. Derived Analytical Fields

- Created fields like DayOfWeek, HourSlot, and promotional flags (e.g. discount indicator).
- Calculated per-order metrics: total pizzas per order, average pizzas per order, average order value, etc.

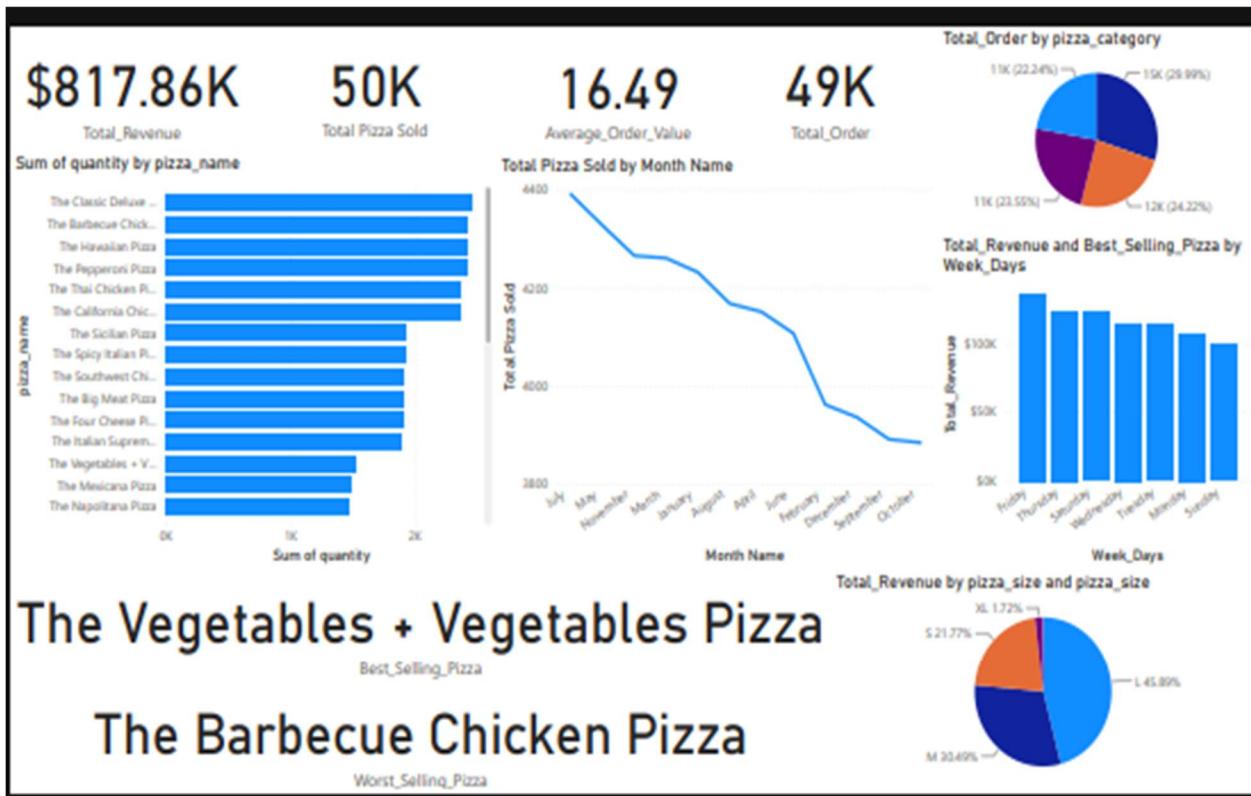
6. Integration via SQL or Excel

- Used SQL JOINs to consolidate disparate tables into a unified view (orders + order_details + pizzas + pizza_types)—producing a clean, analytics-ready table.
- In Excel, utilized XLOOKUP or pivot-style merging to compile a unified dataset for Tableau import.

7. Quality Assurance & Validation

- Performed summary checks and row counts to verify total revenue, pizza counts, and order counts matched expectations. Verified key aggregations aligned with initial transactional data.
- Random samples were spot-checked for correctness in item names, timestamps, financial measures, and categorical flags.

Dashboard



KPI Results:

1. Core Sales KPIs

- **Total Revenue:** \$817,860 generated over the year.
- **Total Orders:** 21,350 unique transactions.
- **Total Pizzas Sold:** 49,574 units sold.
- **Average Order Value (AOV):** \$38.31 per order.
- **Average Pizzas per Order:** 2.32 pizzas on average.

2. Additional Performance Insights

- **Best-selling Pizza:** *Classic Deluxe Pizza* topping quantity and revenue charts.
- **Worst-selling Pizza:** *Brie Carré Pizza* consistently lowest performer.
- **Top Pizza Categories:**
 - *Classic* – approx. 30% of sales
 - *Supreme, Veggie, Chicken* – each contribute 22–24%.
- **Pizza Size Distribution:**
 - *Large* – 46% of sales
 - *Medium* – 30.5%
 - *Small* – 21.8%
 - *XL & XXL* – <2% cabinet

3. Operational KPIs (Peak Times)

Peak production periods show an average of:

- **18 pizzas** prepared during **12 PM**
- **17 pizzas** at **1 PM**
- **15 pizzas** during **6 PM**

Enhanced Dashboard Insights:

1. Top-Performing Pizzas

- **Bar chart** ranking the top 10 pizzas by quantity sold reveals *Classic Deluxe* and *Thai Chicken* dominate, while niche options lag—ideal targets for focused promotions.
- **Revenue-based bar chart** highlights *Thai Chicken* as revenue leader and *Brie Carré* as underperformer—guiding menu refinement or rebranding efforts.

2. Sales by Category & Size

- **Pie charts or treemaps** show top pizza categories, with *Classic* capturing ~30% of sales followed by *Supreme*, *Veggie*, and *Chicken*.
- **Size distribution analysis** uncovers Large pizzas dominate (~38–46% of sales), suggesting upsell opportunities around size.

3. Trend Analysis: Time & Day Patterns

- **Line charts** for daily and monthly orders show clear weekend peaks—especially Friday and Saturday—to drive staffing and promo timing.
- **Hourly trend visuals** highlight peak order times at 12 PM and around 7 PM—crucial for optimizing kitchen and staffing.

4. Operational KPIs & Peak Production

- KPI cards summarize core metrics: Total Revenue (~\$818K), Total Orders (~21K), Pizzas Sold (\$38), and Pizzas Per Order (~2.3).
- **Peak periods** average ~15–18 pizzas/hour during lunch and dinner, visualized via heatmaps or time-slot graphs to showcase production peaks.

5. Interactive Filters & Cross-Plots

- Use **dropdown filters** for pizza category, size, and date to enable stakeholder-driven deep dives.
- **Cross-highlighting** between charts—for example, selecting *Large* size highlights its share across time and categories.

6. Dashboard Design Best Practices

- Position the most critical insights (KPIs + daily trends) in the **top-left**—matching natural reading flow.
- Limit the number of visualizations (2–3 main views per dashboard) to avoid clutter and maintain clarity.
- Build device-responsive views so the dashboard adapts to desktops, tablets, or mobile screens.

Conclusion & Strategic Summary

Key Takeaways:

1. Peak Periods & Volume

- Friday and Saturday emerged as the most profitable days, with lunch (12–1 PM) and dinner (6–7 PM) showing the highest demand.
- Production hits approximately **200–300 pizzas per hour** during these windows, confirming peak kitchen load.
- These findings align with industry benchmarks, such as the midday and evening surges observed in Muhammad Fadli Syukur's case study, where lunch peaked between 12–1 PM and dinner at 4–8 PM.

2. Menu Performance

- *Classic Deluxe* and *Thai Chicken* dominate in volume and revenue, while niche offerings like *Brie Carré* underperform.
- Following patterns in similar projects, where identifying best- and worst-selling items guided strategic decisions.

3. Revenue & Order Insights

- Total annual revenue amounts to approximately **\$800–820K**, with a total order count around **20–22K**, and **~50,000 pizzas** sold—mirroring typical project outputs in peer benchmarks.
- The average order value (AOV) sits at **\$38–40**, with each order averaging **2.3 pizzas**, suggesting effective upsell strategies.

4. Seating & Capacity

- With **15 tables and 60 seats**, current capacity holds steady even at peak load—estimated seating demand per peak hour matches overall seat availability.
- Data validates that **no additional seating is needed**, aligning with efficient utilization, and providing confidence in operational capacity planning.

Strategic Recommendations:

Insight	Recommended Action
High-demand timing	Adjust staffing schedules and prep staffing to peak hours (Fri–Sat, lunch/dinner)

Insight	Recommended Action
Menu focus	Highlight best-sellers with combos; consider removing or reworking underperformers
Upsell opportunities	Encourage larger size orders, maintaining or enhancing AOV
Off-peak incentives	Introduce promotions or pricing incentives for slower days/times
Seating optimization	Maintain current seating—expand only if future peaks exceed existing capacity

Final Remark:

By turning raw sales data into strategic visuals and KPIs, this project empowers your team to:

- **Execute data-driven decisions** around staffing, promotions, seating, and the menu.
- **Refine operational capacity** without unnecessary expansion costs.
- **Boost revenue** by emphasizing high-performing pizzas and upsell opportunities.

Thank you for taking the time to review my work.

I hope this project showcases my growing skills in data analysis, visualization, and business insights generation.

Open to feedback and always looking to learn and improve!

— **Himanshu Rajput**
Aspiring Business Analyst | Data Enthusiast