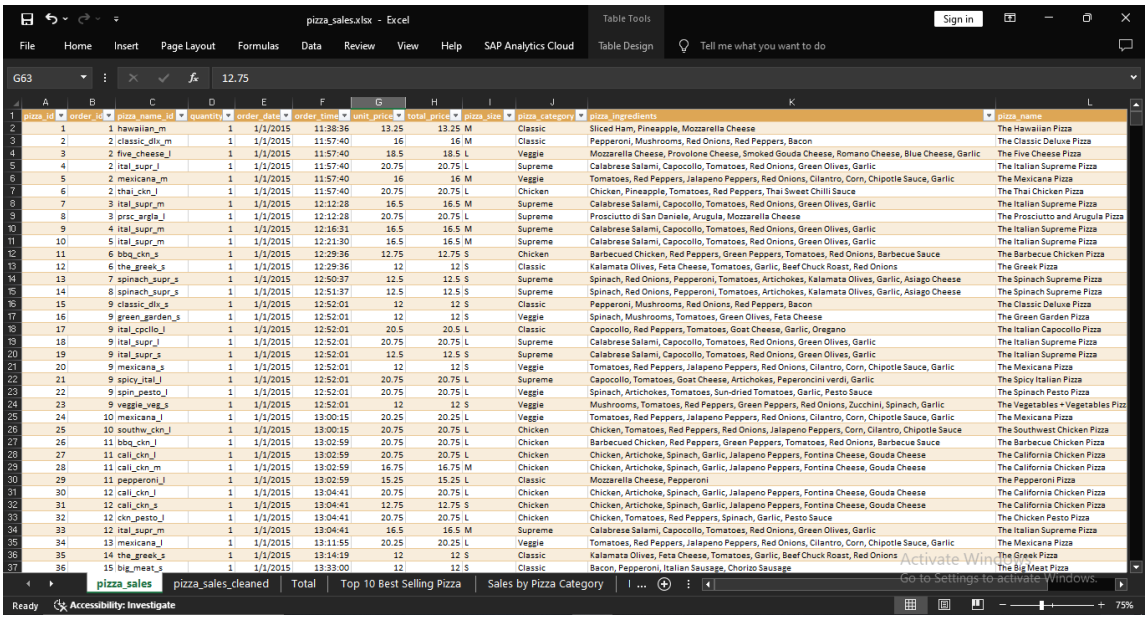
Project Title: Pizza Sales Analysis

1. Project Overview

- **Objective:** The aim of this project is to analyze pizza sales data to identify top-selling pizzas, understand sales trends, and create a dashboard to provide actionable insights for the business.
- **Dataset:** The dataset is from Kaggle and consists of pizza sales transactions in the year 2015, with 48,620 rows and 12 columns, including order dates, order time, quantities, prices, total price, sizes, categories, ingredients, and pizza names.



- **Tools Used:** Microsoft Excel was used for data cleaning, analysis, visualization, and dashboard creation.

2. Data Cleaning

- **Date Formatting:** The order_date column had inconsistent formats. All dates were standardized to the MM-DD-YYYY format to ensure uniformity across the dataset.
    - **Method:** Used Excel's Text to Columns feature and the DATE function to format the dates.
- **Day of the Week:** A new column named "day" was added to the dataset to represent the day of the week for each order.
    - **Method:** Used Excel's TEXT function to extract the day of the week from the order_date column.

- **Missing Data:** The dataset was checked for missing values in critical columns like quantity, unit_price, and pizza_name. No significant missing data was found.
- **Duplicate Entries:** Checked for and confirmed no duplicate rows based on order_id and pizza_id.
- **Data Validation:** The quantity, unit_price, and total_price columns were validated to ensure they contained only positive values.

3. Exploratory Data Analysis (EDA)

- **Pivot Tables:** Created pivot tables to summarize sales by pizza type, size, date, category, and day of the week.
    - **Top 10 Best-Selling Pizzas:** Summarized total sales by the top 10 best-selling pizzas.

Sum of total_price	Column Labels				
Row Labels	S	M	L	XL	XXL Grand Total
The Thai Chicken Pizza	$6,120	$8,057	$29,258		$43,434
The Barbecue Chicken Pizza	$6,171	$16,013	$20,584		$42,768
The California Chicken Pizza	$6,362	$15,812	$19,235		$41,410
The Classic Deluxe Pizza	$9,588	$18,896	$9,697		$38,181
The Spicy Italian Pizza	$5,088	$6,732	$23,012		$34,831
The Southwest Chicken Pizza	$4,679	$8,945	$21,082		$34,706
The Italian Supreme Pizza	$2,450	$15,527	$15,500		$33,477
The Hawaiian Pizza	$10,710	$6,400	$15,164		$32,273
The Four Cheese Pizza		$8,644	$23,622		$32,266
The Sicilian Pizza	$9,200	$9,328	$12,413		$30,941
Grand Total	**$60,368**	**$114,352**	**$189,566**		**$364,285**

    - **Sales by Pizza Category:** Grouped sales by pizza category.

Row Labels	Sum of total_price
Chicken	$195,920
Classic	$220,053
Supreme	$208,197
Veggie	$193,690
Grand Total	**$817,860**

    - **Sales Over Time:** Analyzed sales trends by store hours.

Row Labels	Count of total_price
9 AM	4
10 AM	17
11 AM	2,672
12 PM	6,543
1 PM	6,203
2 PM	3,521
3 PM	3,170
4 PM	4,185
5 PM	5,143
6 PM	5,359
7 PM	4,350
8 PM	3,487
9 PM	2,528
10 PM	1,370
11 PM	68
Grand Total	**48,620**

- **Sales by Day of the Week:** Analyzed sales from Sunday to Saturday to identify patterns in daily sales.

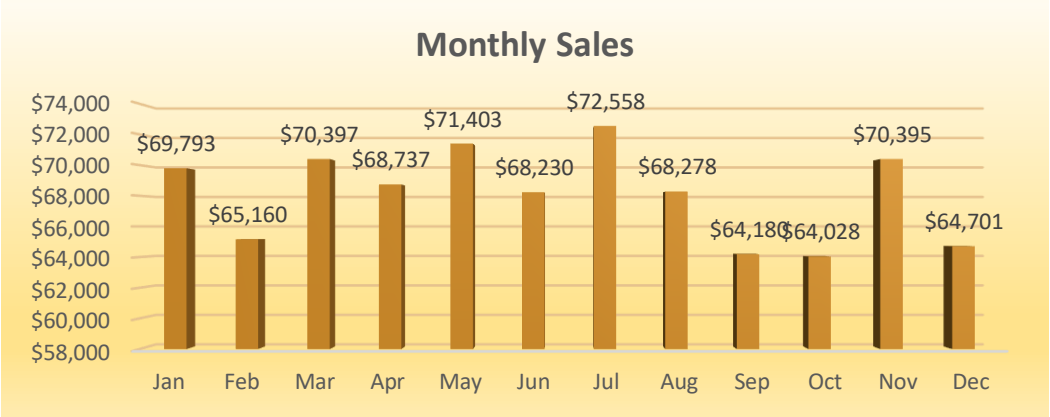
Row Labels	Sum of total_price
Sunday	12.13%
Monday	13.12%
Tuesday	13.96%
Wednesday	13.99%
Thursday	15.10%
Friday	16.64%
Saturday	15.06%
Grand Total	**100.00%**

- **Monthly Sales:** Summarized total sales by month to identify seasonal trends.

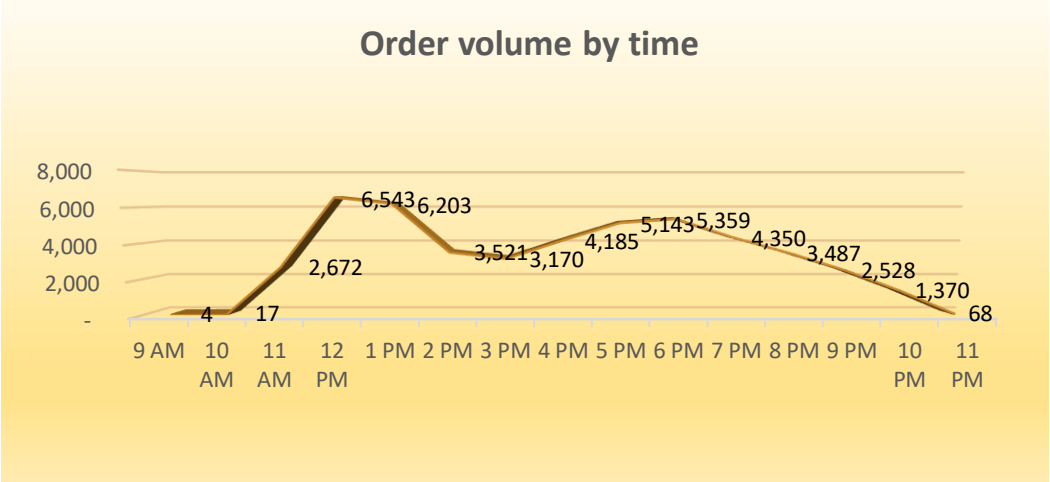
Row Labels	Sum of total_price
Jan	$69,793
Feb	$65,160
Mar	$70,397
Apr	$68,737
May	$71,403
Jun	$68,230
Jul	$72,558
Aug	$68,278
Sep	$64,180
Oct	$64,028
Nov	$70,395
Dec	$64,701
Grand Total	**$817,860**

- **Charts:** Visualized data using various chart types:
  - **Clustered Column Chart:** For visualizing the top 10 best-selling pizzas.

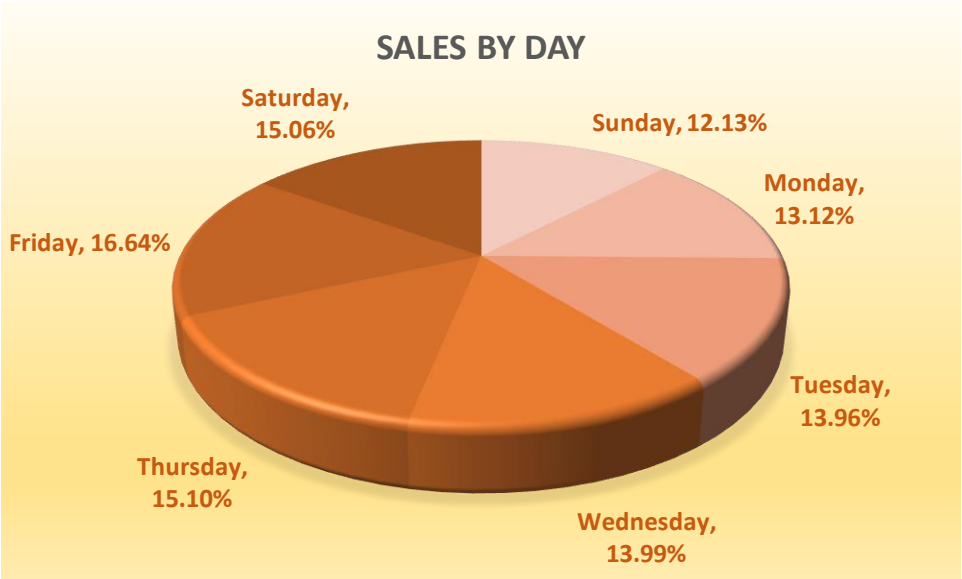
- **Column Chart:** For showing monthly sales trends.



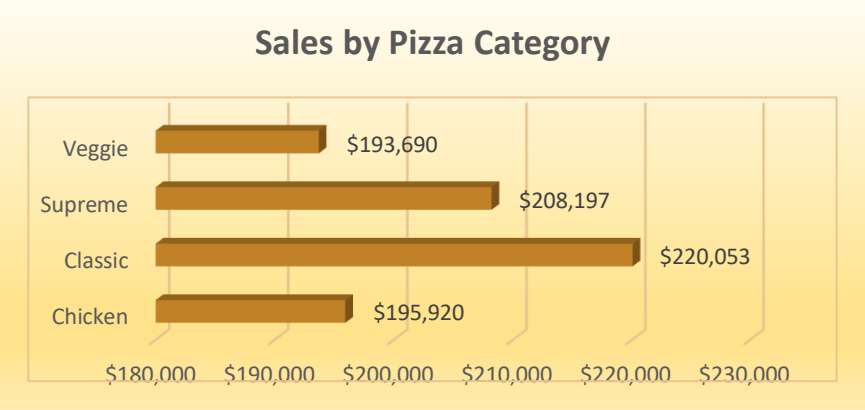
- **Line Chart:** For showing hourly sales trends.



- **Pie Chart:** For showing sales by days of the week.

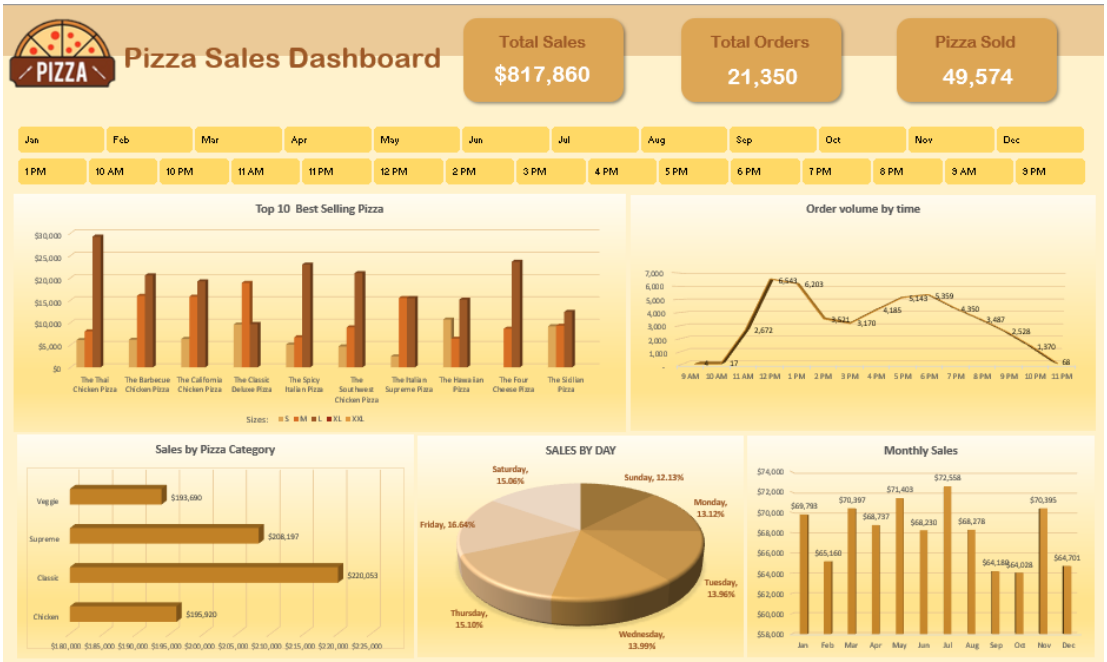


- **Bar Chart:** For visualizing sales by pizza category.



4. Dashboard Creation

- **Purpose:** The dashboard provides an interactive and visual summary of the key findings from the analysis.
- **Key Metrics and Visuals:**



- **Total Sales:** A summary of total sales displayed at the top.
- **Total Orders:** A summary of total pizza orders at the top.
- **Pizzas Sold:** A summary of total pizzas sold at the top.
- **Top 10 Best-Selling Pizzas:** A column chart of the top 10-selling pizzas.
- **Order Volume by Time:** A column chart showing order volumes by time.

    - **Sales by Pizza Category:** A bar chart showing sales distribution by pizza category.
    - **Sales by days:** A pie chart showing sales distribution from Sunday to Saturday.
    - **Monthly Sales:** A line chart showing sales trends over time, grouped by month.
- **Slicers and Interactivity:** Added slicers to enable filtering by month, and time.
    - **Method:** Used Excel's slicers and linked them to multiple pivot tables for interactivity.
- **Design and Layout:**
    - Created a dashboard layout on a new sheet in Excel, with a clear and logical arrangement of charts and tables.
    - Used consistent formatting and added titles and labels for clarity.

5. Key Findings

- **Top-Selling Pizza:** Identified ***The Thai Chicken Pizza*** as the top-selling pizza.
- **Popular Categories:** The ***Classic*** category was the most popular in terms of sales.
- **Seasonal Trends:** Sales peaked during ***July, May, and March*** indicating a seasonal pattern in pizza sales.
- **Order Patterns:**
    - **Peak Ordering Times:** The busiest ordering times were ***12 PM, 1 PM, and 6 PM***.
    - **Day of the Week Insights:** The analysis showed that sales were highest on Friday and lowest on Sundays, indicating a weekly pattern in customer behavior.

6. Conclusion and Recommendations

- **Product Strategy:** Focus on stocking and promoting The Thai Chicken Pizza during peak periods.
- **Promotions:** Run targeted promotions during July, May, and March, and during busy times like Fridays to capitalize on high demand.
- **Further Analysis:** Explore customer demographics and the impact of seasonal promotions on sales.

7. Appendices

- **Excel Workbook:** The workbook contains sheets for raw data, cleaned data, pivot tables, charts, and the dashboard.

- **Screenshots:** Include screenshots of key charts, pivot tables, and the dashboard for easy reference.