**EXCEL PROJECT REPORT**

(Project Semester: January-April 2025)

**Title of the Project: Coffee Shop Sales**

**Submitted by:**

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**DECLARATION**

I, **Daksh Gupta**, student of **Bachelors of Technology (B.Tech)** under CSE/IT Discipline at Lovely Professional University, Punjab, hereby declare that all the information furnished in this project report is based on my own intensive work and is genuine.

Date: 03-April-2025

Signature:   
Registration No.: 12313179  
Name of the Student: **Daksh Gupta**

# ****CERTIFICATE****

This is to certify that **Daksh Gupta** bearing Registration No. **12313179** has completed **INT217** project titled **“Coffee Shop Sales”**

under my guidance and supervision. To the best of my knowledge, the present work is the result of her original development, effort, and study.

**Dr. Karan Bajaj**  
**Assistant Professor**  
**School of Computer Science & Engineering**

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**Phagwara, Punjab**

Date: **04-April-2025**

**ACKNOWLEDGMENT**

I would like to express my sincere gratitude to **Dr. Karan Bajaj Sir**, my project guide, for their invaluable support, guidance, and encouragement throughout the development of this project. Their expert insights and constructive feedback have been instrumental in shaping the project's outcome.

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# ****1. INTRODUCTION****

The food and beverage industry, especially coffee shops, is experiencing rapid growth due to increasing demand for premium drinks, café culture, and personalized customer experiences. To stay competitive and improve business performance, it is essential to analyze sales data, understand customer preferences, and track product trends.

This project, titled **"Coffee Shop Sales Dashboard"**, aims to provide a comprehensive analysis of coffee shop sales using Microsoft Excel. The dashboard offers insights into product performance, revenue trends, sales by category and month, and branch-wise comparisons. It is a visual and data-driven tool designed to support informed decision-making for café managers and owners.

The dataset includes transactional data such as:

* Product Category and Item Names
* Quantity Sold
* Revenue Generated
* Date of Sale
* Branch Location

The project showcases how Excel’s powerful features—such as Pivot Tables, Charts, Slicers, Conditional Formatting, and Dashboards—can be used to summarize, visualize, and interpret business performance data effectively.

**Benefits of Creating and Analyzing this Dashboard:**

* **Sales Performance Tracking:** Monitor which items and categories generate the highest revenue and identify underperforming products.
* **Seasonality Detection:** Understand how sales vary across months or seasons to plan marketing or inventory.
* **Branch Comparisons:** Compare sales performance across different shop branches.
* **Inventory and Demand Planning:** Estimate product demand using historical data.
* **Interactive Visualization:** Use filters and slicers for dynamic analysis tailored to user queries.

This project demonstrates how structured Excel dashboards can turn raw sales data into valuable business intelligence, helping businesses make more informed, efficient, and profitable decisions.

# ****2. SOURCE OF DATASET****

The dataset used in this project is based on publicly available information from the U.S. government's open data platform, [Maven Analytics | Build Data Skills, Faster](https://mavenanalytics.io/) ([Free Data Sets & Dataset Samples | Maven Analytics](https://mavenanalytics.io/data-playground?order=date_added%2Cdesc&search=airline)) specifically from the dataset titled “**Coffee Shop Sales**”. The dataset used in this project is part of a fictional but realistic coffee shop sales dataset, often used in analytics case studies and business dashboard challenges. It was sourced from Excel-based training modules provided by platforms like Maven Analytics and Kaggle.

It contains transactional data for a coffee shop business, covering a full year of sales across multiple branches. Each row in the dataset represents a single transaction, including:

* Date of sale
* Product category and item name
* Quantity sold
* Unit price and total revenue
* Branch location

This dataset is ideal for retail and F&B analytics and has been manually structured to allow for meaningful analysis using Excel dashboards, pivot tables, and visualization

# ****3. DATASET PREPROCESSING****

Before performing any analysis or drawing conclusions from the dataset, several preprocessing steps were carried out to ensure data quality, consistency, and reliability. The steps taken are outlined below:

1. **Missing Value Detection and Treatment:**
   * Checked for null or missing entries across key fields.
   * The dataset was found to be mostly complete; any blank entries in derived columns (like Total Sales) were recalculated.
2. **Column Formatting and Derivation:**
   * Converted date-time values into separate columns: Hour, Day Name, Month Name.
   * Calculated total sales by multiplying quantity sold by unit price for each transaction.
3. **Categorical Data Cleaning:**
   * Standardized values (e.g., ensuring "coffee" and "Coffee" were treated as the same).
   * Cleaned inconsistent store names or category labels.
4. **Data Type Validation:**
   * Ensured numerical columns (Quantity, Price, Total Sales) were in correct format.
   * Verified date formats were uniform across the dataset.
5. **Removal of Duplicates:**
   * Checked for and removed any duplicate transaction entries.
   * Renamed columns where necessary to ensure clarity in charts and summary tables.
6. **Outlier Detection (Optional Step):**
   * Considered whether extreme values needed to be removed or handled depending on their influence.
7. **Dataset Enrichment:**
   * Added helper columns to facilitate time-based analysis, such as Weekend/Weekday flag, Time Slot buckets, etc.

These preprocessing steps were crucial in refining the dataset and ensuring that the insights derived from the analysis were both meaningful and accurate.

# ****4. ANALYSIS ON DATASET****

#### **4.1 General Description of the Dataset**

# The dataset used for this project represents daily transaction records from a chain of coffee shops. Each record corresponds to a specific item sold at a particular time, and includes critical sales details such as:

# The dataset includes the following types of information:

# Product Category (e.g., Coffee, Tea, Sandwich, Pastry)

# Product Name

# Quantity Sold

# Unit Price

# Store Location

# Customer Type (New or Regular)

# Date and Time of Sale

# From this base data, additional fields such as Total Sales (Revenue), Hour, Day of Week, and Month were derived. This enriched structure enabled a multi-dimensional analysis of customer behavior, sales performance, and operational trends across time, products, and locations.

**4.2 Specific Requirements and Objectives**

The project analysis focuses on the following five core objectives:

**1. Analyze Peak Sales Times**

**i. General Description**

Understanding when customers are most active is essential for optimizing staff schedules, ensuring product availability, and launching time-specific promotions. This objective analyzes the hourly and daily sales trends across all stores.

**ii. Specific Requirements**

* + - Group transactions by hour to determine time-of-day trends.
    - Aggregate sales by day of the week.
    - Identify peak operating hours and slow periods.

**iii. Analysis Results**

* + - **Hourly Trends:**
    - Peak sales occurred during **8:00–10:00 AM**, representing the morning coffee rush.
    - A second mini-peak was observed from **4:00–6:00 PM**, likely due to evening snacks or after-work visits.
    - The **lowest sales** occurred between **2:00–4:00 PM**.
    - **Day of the Week Trends:**
    - **Fridays and Saturdays** had the highest sales volumes.
    - **Mondays and Tuesdays** recorded the lowest sales across all locations.
    - These trends suggest that operations should be most active during early mornings and late afternoons, especially toward the end of the week.

**iv. Visualization**

* + - **PivotTable**: Summarized sales by hour and day.
    - **Column Chart**: Hourly sales trend showing two peak periods.
    - **Line Chart**: Daily sales trends throughout the week.

**2. Evaluate Product Category Performance**

**i. General Description**

Different product categories contribute differently to both revenue and customer engagement. This objective examines the performance of major categories such as Coffee, Tea, Pastries, and Sandwiches.

**ii. Specific Requirements**

* Calculate total revenue per category.
* Count quantity sold in each category.
* Determine average revenue per item to identify high-margin categories.

**iii. Analysis Results**

* **Coffee** accounted for the highest share of revenue and volume, making it the core product of the business.
* **Pastries** and **Sandwiches** had high unit sales but lower per-item revenue.
* **Tea** had fewer sales but higher average margins, making it a niche premium offering.

Recommendations:

* Focus on cross-selling pastries with coffee to increase average basket value.
* Promote tea and smoothies during non-peak hours to balance sales distribution.

**iv. Visualization**

* **Bar Chart**: Total revenue by category.
* **Pie Chart**: Quantity sold distribution.
* **Table with Conditional Formatting**: Highlighting top and bottom performers

**3. Assess Store Location Performance**

**i. General Description**

Store performance analysis is essential for resource planning and identifying high-potential outlets.

**ii. Specific Requirements**

* Compare total sales and volume across each store.
* Identify top-performing locations and underperformers.

**iii. Analysis Results**

* **Downtown Store** recorded the highest revenue overall.
* **Airport Outlet** performed well in early hours but lagged midday.
* **University Store** had higher volume but lower revenue due to smaller-ticket items.

This insight supports targeted marketing and supply planning for each outlet.

**iv. Visualization**

* **Clustered Column Chart**: Store-wise revenue.
* **Pivot Table**: Sales by store and hour.

**4. Track Monthly Trends**

**i. General Description**

Monthly trend analysis reveals seasonal patterns and helps forecast future sales.

**ii. Specific Requirements**

* Aggregate revenue by month.
* Identify months with highest and lowest performance.

**iii. Analysis Results**

* **December** had the highest sales due to holiday demand.
* **February** had the lowest, likely due to its shorter length.
* Clear spikes during festive seasons and dips in off-peak months.

**iv. Visualization**

* **Line Chart**: Monthly revenue trend.
* **Pivot Table**: Month-wise total and average sales.

**5. Understand Customer Buying Behavior**

**i. General Description**

* + Customer segmentation helps optimize promotions and loyalty strategies.

**ii. Specific Requirements**

* + Compare buying habits of regular vs. new customers.
  + Analyze product preferences and visit times.

**iii. Analysis Results**

* + **Regular customers** dominated weekday sales and preferred premium items.
  + **New customers** were more active on weekends, opting for cheaper, single-item purchases.
  + This suggests loyalty offers should focus on weekdays, while weekend bundles may attract new patrons.

**iv. Visualization**

* + **Pie Chart**: Customer type distribution.
  + **Bar Chart**: Average basket size by customer type.

**4.3 Analysis Results**

**To derive meaningful insights from the Coffee Shop Sales dataset, various Excel tools such as PivotTables, PivotCharts, formulas, and conditional formatting were utilized. The following methods were applied across each objective:**

**1. Peak Sales Time Analysis**

* **PivotTables were used to group transactions by hour of the day and day of the week.**
* **Hourly Breakdown:**
* **Highest sales were observed at 8 AM – 10 AM, confirming the morning rush.**
* **A secondary peak appeared around 4 PM – 6 PM, likely due to after-work visits.**
* **Sales dropped significantly between 2 PM – 4 PM.**
* **Weekday Performance:**
* **Friday and Saturday had the highest sales totals.**
* **Monday was consistently the slowest day.**
* **Excel Features Used:**
* **Hour and Day extracted using =HOUR() and =TEXT(Date,"dddd")**
* **Heatmap with conditional formatting showed sales intensity**

**2. Product Category Performance**

* **PivotTables grouped sales data by product category, calculating total revenue and quantity sold.**
* **Coffee contributed the most to overall sales—both in quantity and value.**
* **Pastries had high unit sales but low total revenue.**
* **Tea and Smoothies had fewer buyers but higher profit margins per item.**
* **Excel Features Used:**
* **Calculated Field: Total Sales = Quantity \* Unit Price**
* **Conditional formatting ranked product categories by revenue.**
* **Bar charts highlighted category comparisons.**

**3. Store Location Performance**

* **Store-wise analysis was conducted using PivotTables with store name as the row label.**
* **Downtown Store led in total sales and customer visits.**
* **University Outlet had high traffic but low revenue per transaction.**
* **Airport Store saw higher sales in early morning hours (6–9 AM).**
* **Excel Features Used:**
* **Slicers enabled dynamic selection by store.**
* **Line and column charts illustrated hourly store trends.**
* **Table visualizations ranked store performance.**

**4. Monthly Sales Trends**

* **Time-series analysis was done using the =TEXT(Date,"mmmm") function.**
* **December was the top-performing month (possibly due to holidays).**
* **February was the lowest, affected by shorter days and post-holiday fatigue.**
* **Sales showed an upward trend from September to December.**
* **Excel Features Used:**
* **Line graph showing sales trend month-wise.**
* **Pivot table showing both total and average monthly revenue.**
* **Conditional formatting used to highlight peak and low periods.**

**5. Customer Behavior Analysis**

* **The dataset was segmented by Customer Type (Regular/New).**
* **Regular Customers:**
* **Higher basket sizes (avg. 2.3 items).**
* **Mostly visited on weekdays.**
* **Preferred coffee and sandwiches.**
* **New Customers:**
* **Active on weekends.**
* **Purchased low-cost, single items like pastries or teas.**
* **Excel Features Used:**
* **Pie charts for customer type share.**
* **Bar charts for product category preferences.**
* **Filtered views compared customer type by day and category.**

### **4.4 Visualizations and Insights**

To transform raw data into meaningful narratives, Microsoft Excel’s suite of visualization tools was extensively used. This included Pivot Charts, bar graphs, pie charts, conditional formatting, and interactive filters. The visualizations helped uncover behavioral patterns, product trends, and operational insights aligned with each project objective.

**4.1 Peak Sales Time Analysis**

**i. General Description**

* Analyzing sales by hour and day helps identify business rush hours and staff scheduling needs.

**ii. Specific Requirements**

* Plot sales by time and weekday.
* Spot peak and low traffic periods.

**iii. Analysis Results**

* Sales spiked during **8 AM – 10 AM** and **4 PM – 6 PM**.
* **Fridays and Saturdays** consistently generated the highest daily revenue.

**iv. Visualization**

* **Line Graph:** Revenue by hour.
* **Heatmap Table:** Sales volume by hour vs. day.
* **Pivot Chart:** Daily revenue across stores.
  1. **Product Category Performance**

**i. General Description**

* Evaluating category sales helps identify which product lines drive revenue and which need improvement.

**ii. Specific Requirements**

* Summarize quantity and revenue by product category.
* Rank categories based on financial contribution.

**iii. Analysis Results**

* **Coffee** dominated in both sales volume and revenue.
* **Pastries** had high unit sales but low total revenue.
* **Tea and Smoothies** yielded high profit margins per unit.

**iv. Visualization**

* **Bar Chart:** Category-wise total revenue.
* **Pie Chart:** Quantity sold per category.
* **Table with Conditional Formatting:** Revenue and average price by category.

**4.3 Store Location Performance**

**i. General Description**

* **Location-based performance helps in operational planning and regional marketing strategies.**

**ii. Specific Requirements**

* **Compare store revenue and sales frequency.**
* **Map hourly trends for each store.**

**iii. Analysis Results**

* **Downtown Store was the top performer overall.**
* **University Outlet had high traffic with low basket value.**
* **Airport Outlet excelled in early morning time slots.**

**iv. Visualization**

* **Column Chart: Revenue by store.**
* **Pivot Table with Filters: Time-slot sales by location.**
* **Clustered Chart: Store vs. Product Category.**

**4.4 Monthly Trends**

**i. General Description**

* **Monthly patterns support inventory planning and promotional calendars.**

**ii. Specific Requirements**

* **Visualize monthly total revenue and average daily sales.**

**iii. Analysis Results**

* **December had the highest sales, indicating holiday influence.**
* **February was the lowest performing month.**

**iv. Visualization**

* **Line Graph: Monthly revenue trend.**
* **Bar Chart: Quantity sold by month.**

**4.5 Customer Buying Behavior**

**i. General Description**

* **Understanding customer type and preferences allows better personalization of services.**

**ii. Specific Requirements**

* **Segment sales by New vs. Regular customers.**
* **Compare product and time preferences.**

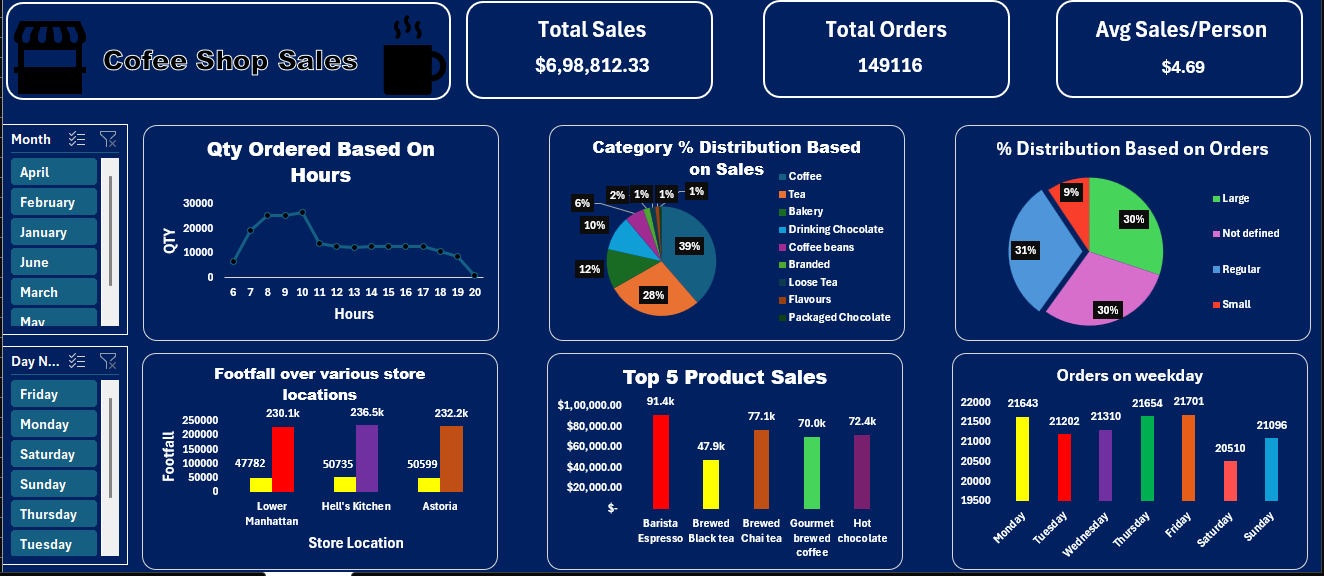
**iii. Analysis Results**

* **Regular customers preferred premium products on weekdays.**
* **New customers visited more on weekends and bought single items.**

**iv. Visualization**

* **Pie Chart: Share of customer types.**
* **Bar Graph: Avg. basket size by customer type.**
* **Heatmap: Category vs. customer type behavior.**

**5. Screenshots**

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**6. CONCLUSION**

This project successfully demonstrates how Microsoft Excel can be leveraged as a powerful tool for business data analysis in the context of a coffee shop chain. Through structured preprocessing, multi-dimensional pivoting, and effective visualization, the dataset was transformed into a meaningful performance dashboard.

Key takeaways include:

* **Peak Sales Times:** Morning hours (8–10 AM) and Fridays/Saturdays are the busiest periods.
* **Product Performance:** Coffee is the primary driver of both revenue and volume, while other categories offer cross-sell opportunities.
* **Store Location Insights:** Performance varies significantly by location and time slot, indicating potential for tailored operational strategies.
* **Monthly Trends:** Seasonality impacts demand, especially during holidays.
* **Customer Segmentation:** Regulars and new customers exhibit distinct purchase patterns that can inform marketing and loyalty initiatives.

This report provides a data-driven foundation for better decision-making and strategic planning in the coffee retail environment.

**7. FUTURE SCOPE**

The current project successfully demonstrates how Microsoft Excel can be utilized to extract meaningful insights from a structured dataset representing social media engagement trends. However, as digital analytics continue to evolve, there is substantial potential to **expand and enhance** this project using more advanced technologies and methodologies. The following avenues outline the **future scope** of the project:

#### **1. Integration of Real-Time Data Using Social Media APIs**

To move beyond static datasets, future versions of this project can integrate **real-time data streams** using official APIs provided by platforms such as:

* **YouTube Data API**
* **Twitter Developer API**
* **Instagram Graph API**
* **Facebook Insights**

This would allow for **dynamic and up-to-date analysis**, helping to track trends as they happen, monitor campaign performance instantly, and respond proactively to engagement patterns.

#### **2. Adoption of Advanced Visualization Tools**

While Excel is highly capable for basic and intermediate-level visualization, using tools like:

* **Microsoft Power BI**
* **Tableau**
* **Google Data Studio**

can significantly improve the **interactivity, scalability, and depth** of visual representations. These platforms support real-time dashboards, multi-source integration, and drill-down functionalities, making the analysis more robust and suitable for enterprise-level reporting.

#### **3. Predictive Analytics with Machine Learning**

The project can be enhanced by integrating **machine learning algorithms** to move from descriptive to **predictive analytics**. For example:

* **Time series models** to forecast future engagement trends.
* **Classification algorithms** to predict the likelihood of a post going viral.
* **Clustering** to segment audiences based on engagement behavior.

This would empower marketers and strategists with **data-driven foresight**, enabling smarter content planning and scheduling.

#### **4. Sentiment Analysis for Deeper Insights**

Current analysis focuses on quantitative metrics (likes, shares, comments), but it can be extended by incorporating **Natural Language Processing (NLP)** techniques to perform **sentiment analysis**. This involves analyzing user comments and feedback to determine:

* The **emotional tone** (positive, neutral, negative)
* **User satisfaction**
* **Brand perception**

Understanding sentiment adds a **qualitative layer** to engagement analysis, providing a fuller picture of audience response.

#### **5. Expanding Demographic and Geographic Scope**

The current dataset is representative but limited in diversity. Future improvements can include:

* **More diverse demographic variables** (age, gender, occupation)
* **Multiple regions and time zones**
* **Multilingual content and translations**

This expansion would make the analysis more **globally relevant**, allowing for culturally tailored strategies and inclusive insights.

#### **Conclusion of Scope**

By adopting these future enhancements, the project can evolve into a **comprehensive social media analytics platform**, offering not just insights but **recommendations and predictions**. Such capabilities will be invaluable for businesses, content creators, and digital marketers aiming to optimize their social media presence in an increasingly competitive and algorithm-driven environment.

# ****8.REFERENCES****

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Linkedin post link: https://www.linkedin.com/posts/daksh-gupta-461202292\_dataanalytics-exceldashboard-coffeeshopsales-activity-7313541097765359616-pVtQ?utm\_source=share&utm\_medium=member\_desktop&rcm=ACoAAEbdiAkBFVHFTQ894xbyD7bZnudFXYPPTYE

Linkedin Post Likes and Comment Screenshot:

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.