SALES DATA ANALYSIS IN EXCEL

A Project Report for Industrial Training and Internship

submitted by

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In the partial fulfillment of the award of the degree of

B.Tech

in

Computer Science and Engineering

Of

WOMEN INSTITUTE OF TECHNOLOGY

(UTTARAKHAND TECHNICAL UNIVERSITY)

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ABSTRACT

The “Coffee Sales Analysis Using Excel” project focuses on analyzing sales data to identify key performance trends and improve decision-making. The dataset includes information on product categories, sales amounts, and regional distribution. Using Microsoft Excel, data was cleaned, processed, and visualized through an interactive dashboard. Various charts and slicers were implemented to showcase total sales, monthly trends, and top-performing products. The analysis provides valuable insights into sales patterns, customer preferences, and business growth opportunities. This project highlights how Excel can be used effectively for business data analysis and visualization, enabling organizations to make data-driven strategic decisions.

ACKNOWLEDGEMNT

I would like to express my deepest gratitude to my project guide, Satish Dhawla , for their valuable guidance, support, and constant encouragement throughout the completion of this project. Their insights and constructive suggestions have been instrumental in shaping this work into its present form.

I would also like to thank all the faculty members of the Department of Computer Science and Engineering for providing the necessary resources and academic environment to carry out this project successfully.

Finally, I extend my sincere appreciation to my friends and family members for their motivation, patience, and continuous moral support, which inspired me to complete this project with dedication and confidence.

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INTRODUCTION

In today's data-driven world, analyzing business information has become essential for strategic decision-making. The "Coffee Sales Analysis Using Excel" project aims to study sales data to identify key patterns, customer preferences, and growth opportunities.

This project uses Microsoft Excel as a primary tool for data cleaning, processing, and visualization. Through dashboards and charts, it highlights sales performance across months, regions, and product categories. The purpose is to transform raw data into meaningful insights that can help in forecasting future trends and improving overall sales strategy.

The project demonstrates how spreadsheet-based analytical tools can effectively simplify complex datasets and support business analysis without advanced programming.

DATASET DESCRIPTION

The dataset used for this project, titled “Coffee Sales Dataset”, contains detailed information about coffee shop transactions. It provides valuable insights into product sales, customer preferences, and business performance across different time periods and locations. The data was analyzed to identify sales trends, high-performing products, and customer purchasing behavior.

6.1 Dataset Overview

The dataset includes transactional data of coffee sales collected from multiple branches of a coffee shop. Each record represents an individual transaction containing information such as:

- Date and Time of sale
- Product Name and Category
- Quantity Sold
- Unit Price
- Total Bill Amount
- Store Location
- Product Size (Small, Regular, Large)
- Transaction ID

6.2 Dataset Size

- Total Records (Transactions): 149,116
- Total Quantity Sold: 214,470 units
- Total Revenue Generated: $698,812.33
- Number of Locations: 3 (Astoria, Hell’s Kitchen, Lower Manhattan)

6.3 Key Features

Feature Name	Description
Transaction ID	Unique identifier for each transaction
Date	Date on which the sale occurred
Time	Time of sale (used for hourly analysis)
Product Name	Name of the product sold (e.g., Latte, Earl Grey Tea)
Product Category	Category of product (Coffee, Tea, Bakery, etc.)
Product Type	Specific type or brewing method
Quantity	Number of units sold
Unit Price	Price per item
Total Amount	Total revenue from the transaction
Location	Branch or store where the sale occurred
Size	Product size (Small, Regular, Large)

6.4 Data Source

The dataset was compiled from the coffee shop's point-of-sale (POS) system, which automatically records sales data.
It was exported in Excel (.xlsx) format for analysis.

6.5 Data Cleaning and Preparation

Before analysis, the dataset underwent the following steps:

- Removal of duplicate or missing entries.
- Standardization of column names and formats.
- Conversion of date and time fields into usable formats.
- Categorization of products into appropriate groups.
- Verification of numerical accuracy in price and quantity fields.

TOOLS AND TECHNOLOGIES

This project utilized a variety of software tools and technologies to clean, analyze, and visualize the coffee sales data effectively. Each tool played a specific role in the process, from data preparation to dashboard creation and interpretation.

7.1 Microsoft Excel

- Purpose: Data cleaning, processing, and visualization.
- Functions Used:
    - Data sorting and filtering
    - Pivot Tables and Pivot Charts
    - Conditional formatting
    - Formulas (SUMIFS, VLOOKUP, AVERAGEIFS, etc.)
    - Chart creation (bar, pie, line charts)
- Reason for Use: Excel is user-friendly and ideal for medium-sized datasets. It allows quick visualization and interactive dashboards.

7.2 Power Query (Excel Add-in)

- Purpose: Data transformation and automation of cleaning processes.
- Functions Used: Removing duplicates, merging tables, splitting columns, and reshaping data.
- Reason for Use: Simplifies repetitive data cleaning tasks without manual effort.

7.3 Power Pivot

- Purpose: Advanced data modeling and relationship management between tables.
- Reason for Use: Enables faster performance for large data and supports complex DAX calculations.

7.4 Data Visualization Tools

- Purpose: To design interactive dashboards and graphical representations of sales trends.
- Techniques Used:
    - Pie charts for category and location-wise sales
    - Bar charts for top products by quantity
    - Line charts for hourly trends

7.5 Supporting Tools

Tool/Technology	Purpose
MS Office Suite	Documentation and report preparation
Canva / PowerPoint	Creating visual reports and presentation slides
Google Sheets (optional)	Data sharing and collaboration

7.6 System Requirements

- Operating System: Windows 10 or later
- Software: Microsoft Excel 2016 or newer
- Processor: Minimum Intel i3 / equivalent
- RAM: 4GB or more for smooth performance

DATA ANALYSIS AND METHODOLOGY

This section explains how the coffee sales dataset was analyzed and what methods were used to derive meaningful insights. The goal was to identify sales trends, popular products, and performance differences across store locations.

8.1 Objective of the Analysis

The main objectives of the data analysis were to:

- Understand the overall sales performance across different locations.
- Identify top-selling products and most profitable categories.
- Examine sales trends by date, time, and size.
- Discover patterns in customer purchasing behavior.
- Generate data-driven insights to support business decisions.

8.2 Methodology Overview

- The analysis followed a structured, step-by-step approach as outlined below:

Step	Process	Description
1	Data Collection	Imported the coffee sales dataset in Excel format from the company's POS system.
2	Data Cleaning	Removed duplicates, handled missing values, and standardized date, time, and text fields.
3	Data Preparation	Created new calculated fields such as *Total Revenue*, *Day of Week*, and *Time Slot*.
4	Exploratory Data Analysis (EDA)	Used Pivot Tables, charts, and filters to identify patterns and correlations.
5	Data Visualization	Built an interactive Excel Dashboard with bar charts, pie charts, and line graphs.
6	Interpretation & Insights	Analyzed visual outputs to extract actionable findings and business recommendations.

8.3 Analytical Techniques Used

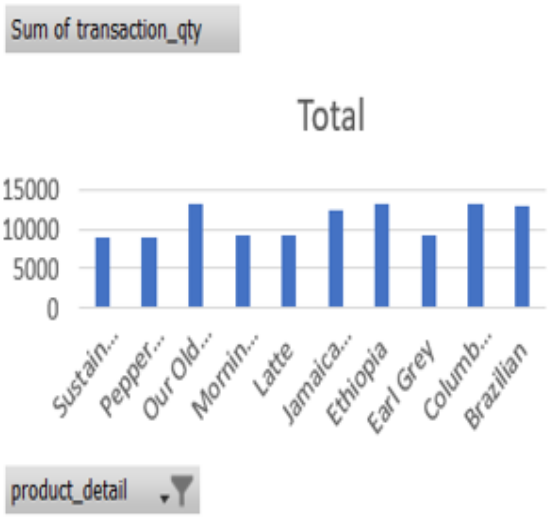
- Descriptive Analysis: Summarized total sales, average revenue, and quantity sold.
- Comparative Analysis: Compared performance across branches and product categories.
- Trend Analysis: Studied sales by date and time to identify peak hours and best-performing days.
- Correlation Analysis: Checked relationships between price, quantity, and revenue.
- Visualization: Represented data through pivot charts and dashboards for easy understanding.

8.4 Analysis of Problem

1. Pivot Table Analysis – Top 10 Products by Quantity Sold

Using a Pivot Table, the top 10 coffee products were compared by quantity sold, revealing Ethiopia, Our Old Time Diner Blend, and Columbian Medium Roast as the best-selling items. Total sales: 110,277 units.

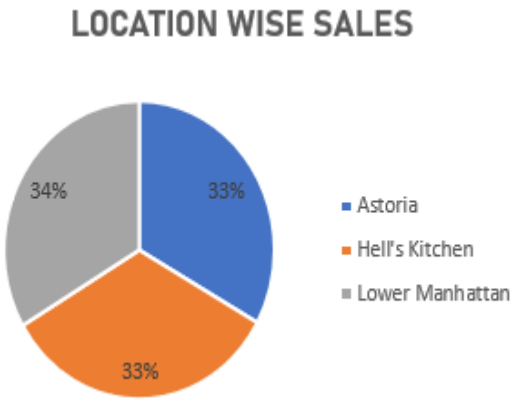
Row Labels	Sum of transaction_qty
Sustainably Grown Organic	9003
Peppermint	9067
Our Old Time Diner Blend	13074
Morning Sunrise Chai	9157
Latte	9099
Jamaican Coffee River	12431
Ethiopia	13271
Earl Grey	9095
Columbian Medium Roast	13068
Brazilian	13012
Grand Total	**110277**



2. LOCATION WISE SALES ANALYSIS

This analysis compares total sales across three locations — Astoria, Hell's Kitchen, and Lower Manhattan. All locations show nearly equal contribution, with Lower Manhattan slightly leading in overall transaction quantity.

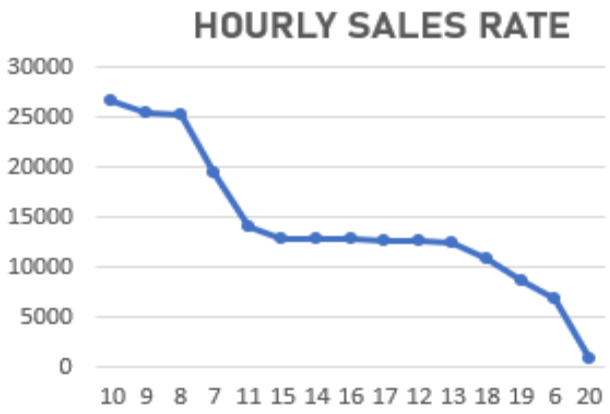
Row Labels	Sum of transaction_qty
Astoria	70991
Hell's Kitchen	71737
Lower Manhattan	71742
Grand Total	**214470**



3. HOURLY SALES ANALYSIS

This analysis shows daily transaction quantities, with the highest activity on days 8 to 10. The gradual decline afterward highlights changing customer engagement and helps identify peak transaction periods.

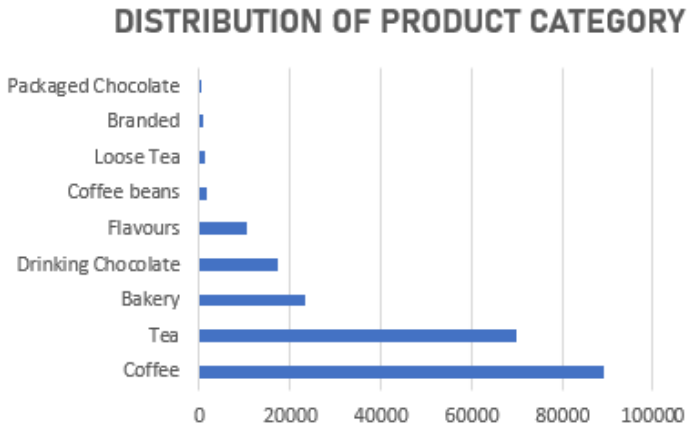
Row Labels	Sum of transaction_qty
10	26713
9	25370
8	25197
7	19449
11	14035
15	12923
14	12907
16	12881
17	12700
12	12690
13	12439
18	10826
19	8595
6	6865
20	880
Grand Total	**214470**



4. DISTRIBUTION OF PRODUCT CATEGORY

This analysis highlights the sales distribution across different product categories. It shows which categories contribute most to total sales, helping identify top-performing items and areas needing improvement in product performance.

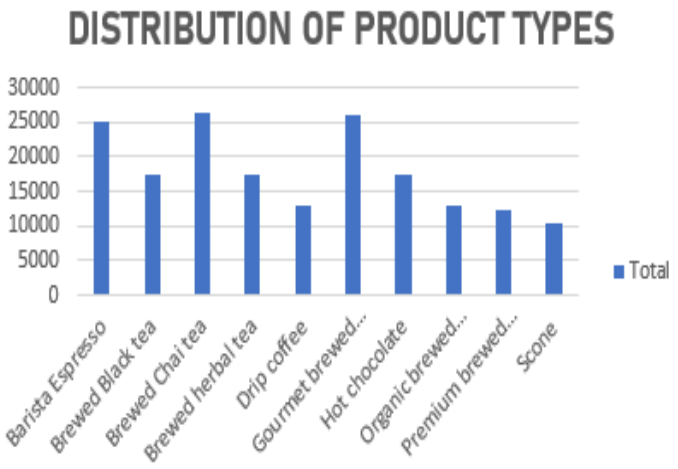
Row Labels	Sum of transaction_qty
Coffee	89250
Tea	69737
Bakery	23214
Drinking Chocolate	17457
Flavours	10511
Coffee beans	1828
Loose Tea	1210
Branded	776
Packaged Chocolate	487
Grand Total	**214470**



5. DISTRIBUTION OF PRODUCT TYPE ANALYSIS

This analysis represents the proportion of sales across different product types. It helps identify which product types are most popular among customers and supports better inventory and marketing decisions.

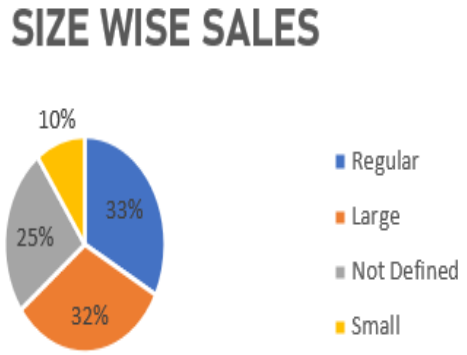
Row Labels	Sum of transaction_qty
Barista Espresso	24943
Brewed Black tea	17462
Brewed Chai tea	26250
Brewed herbal tea	17328
Drip coffee	12891
Gourmet brewed coffee	25973
Hot chocolate	17457
Organic brewed coffee	13012
Premium brewed coffee	12431
Scone	10465
Grand Total	**178212**



6. SIZE WISE SALES ANALYSIS

This analysis compares sales across three product sizes — Small, Regular, and Large. The results highlight which size is most preferred by customers, helping in demand forecasting and stock management

Row Labels	Sum of transaction_qty
Regular	70186
Large	68540
Not Defined	54321
Small	21423
Grand Total	**214470**



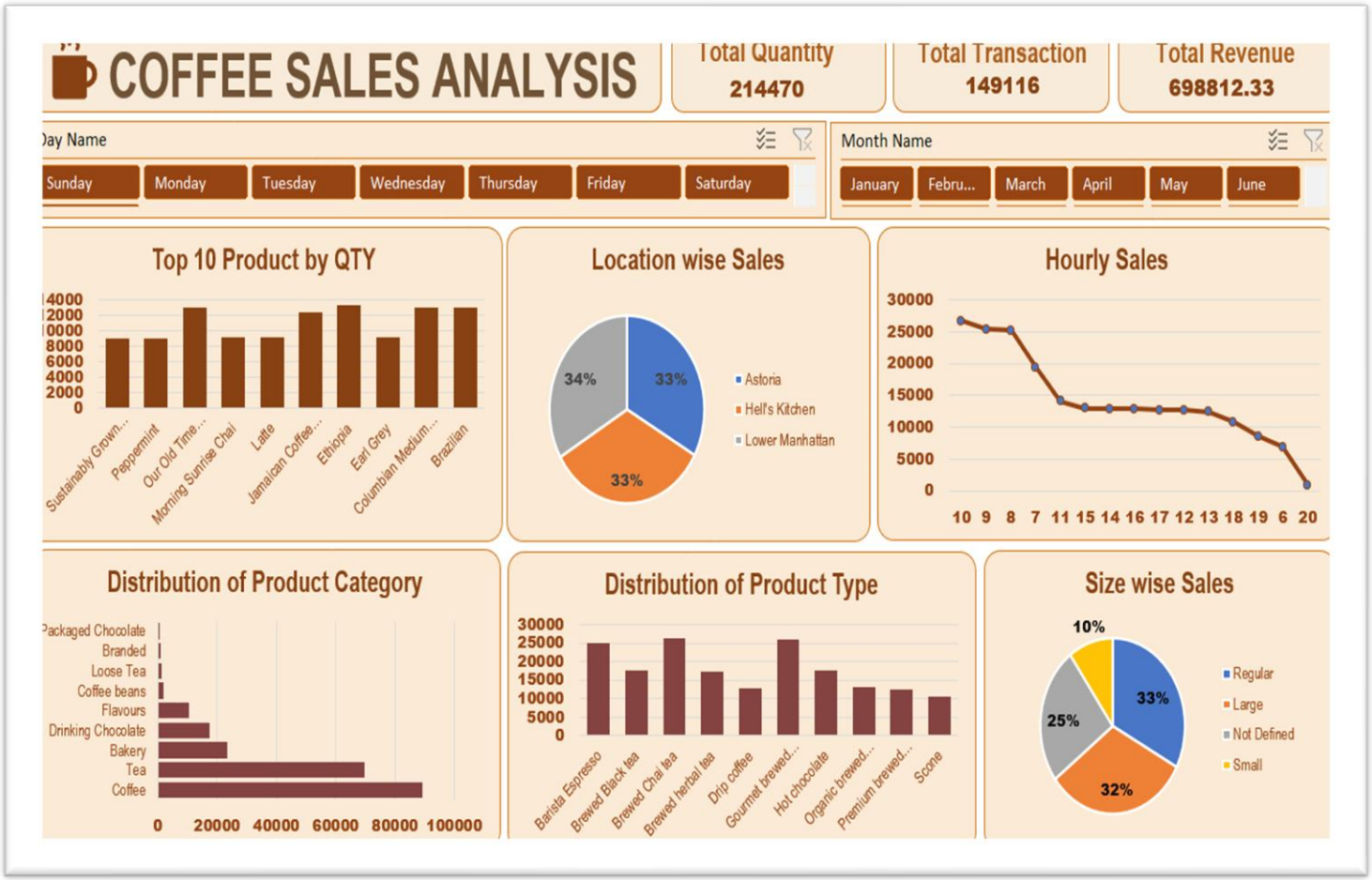
7. MONTH AND DAY NAME SLICER

This slicer allows users to filter sales data based on specific days and months. It helps in quickly analyzing seasonal trends and identifying the best-performing periods for sales.

EXCEL DASHBOARD AND VISUALIZATION

The Coffee Sales Analysis Excel Dashboard offers an interactive and visually appealing representation of sales performance across different time frames and locations. It enables users to monitor key business metrics such as total sales, transactions, and revenue in real time. By using charts and slicers, the dashboard transforms raw sales data into actionable insights — helping identify top-performing products, peak sales hours, and customer purchase patterns.

This visualization not only enhances data understanding but also supports strategic decision-making, sales forecasting, and performance optimization for business growth.



FINDING AND RESULT

Findings:

From the Coffee Sales Analysis Dashboard, several meaningful business insights were observed. The analysis revealed that coffee and tea are the highest-selling product categories, with significant demand for variants like Latte, Ethiopia, and Brazilian coffee. Sales distribution across Astoria, Hell's Kitchen, and Lower Manhattan is nearly uniform, indicating a balanced customer reach.

The hourly sales trend shows maximum transactions during morning hours (8 AM to 10 AM), reflecting the daily coffee consumption pattern. Additionally, most customers prefer regular and large cup sizes, emphasizing consistent demand for medium-volume beverages.

Result

The Coffee Sales Dashboard successfully converts complex sales data into easy-to-understand visuals that support effective decision-making. It provides a clear picture of sales performance, customer preferences, and product demand across locations and time periods.

This visualization helps business owners identify top-performing products, optimize stock levels, and plan promotional strategies during peak hours. Overall, the dashboard enhances operational efficiency and enables data-driven business decisions for sustained growth.

FINAL RECOMMENDATIONS

Based on the insights derived from the Coffee Sales Analysis Dashboard, the following recommendations are suggested to improve overall business performance and sales efficiency:

1. Focus on High-Demand Products: Increase inventory and marketing for top-selling items like *Latte*, *Ethiopia*, and *Brazilian Coffee* to boost revenue.
2. Target Peak Hours: Strengthen staff allocation and promotional offers during morning hours (8 AM – 10 AM) when customer traffic is highest.
3. Enhance Product Variety: Introduce new beverage flavors and seasonal drinks to maintain customer interest and expand the customer base.
4. Optimize Size Options: Since most customers prefer regular and large sizes, consider offering combo deals or loyalty discounts for these categories.
5. Location-Based Strategies: Although sales are balanced, conducting localized promotions in each outlet (Astoria, Hell's Kitchen, Lower Manhattan) can further enhance brand visibility.
6. Continuous Dashboard Monitoring: Regularly update the dashboard with recent data to track changing trends and support timely business decisions.

CONCLUSION

The Coffee Sales Analysis Dashboard provides a comprehensive and interactive overview of the company's sales performance. By transforming raw transactional data into visually rich insights, it enables management to quickly identify sales trends, high-performing products, and customer preferences. The dashboard highlights consistent demand across all store locations and emphasizes morning hours as the most profitable period of the day.

Overall, this Excel-based dashboard not only simplifies data interpretation but also strengthens decision-making through data-driven insights. It serves as an effective analytical tool for improving sales strategies, optimizing inventory management, and achieving long-term business growth.

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Semester: 7th Semester, 4th Year

Project Title: *Coffee Sales Analysis – Excel Dashboard*

Project Type: Data Analytics & Visualization Project

Software Used: Microsoft Excel

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Date of Submission: 01-NOV-2025