TECHNICAL REPORT FOR PEETS COFFEE SHOP

Content

Introduction

Objective of the Project

This analysis is to examine sales trends, identify customer preferences, and forecast future revenue patterns for Peet's Coffee Shop. By analyzing key metrics such as product performance, peak sales periods, and customer preferences, the goal is to provide data-driven insights to optimize business strategies and enhance customer satisfaction.

Problem Being Addressed

Peet's Coffee Shop seeks to improve sales performance and customer engagement by understanding which products drive the most revenue, identifying slow-moving items, and determining the best times for promotions. This analysis will address key questions, including:

- How do sales vary across different cities?
- Which product categories generate the highest sales revenue?
- Which products have the highest and lowest quantity sold?
- How do discounts affect sales in different product categories?
- What is the optimal discount amount that increases sales without reducing profit?

Key Datasets and Methodologies

The dataset consists of coffee sales data gathered between 2023 and 2024, covering transaction details, product categories, pricing, discounts, and regional sales distribution. Microsoft Excel will be used for data processing, leveraging tools such as pivot tables for summarization, charts for visualization, and statistical functions for trend analysis.

Story of Data

Data Source

The dataset is sourced from [Kaggle](#), a well-known platform for public datasets and data science projects.

Data Collection Process

The data was gathered through Kaggle's dataset repository, which compiles sales transactions from various sources. The sales data was likely collected from point-of-sale (POS) systems, customer transactions, and online order logs.

Data Structure

The data is organized in an Excel table format with rows and columns representing individual transactions and relevant details. Some key columns in the dataset include:

1. **Date:** The transaction date
2. **Customer ID:** Unique identifier for each customer
3. **City:** Location of the purchase
4. **Category:** The type of product sold (Note: The only category in this dataset is Coffee Beans)
5. **Product:** Specific coffee bean product purchased
6. **Unit Price:** Price per unit of the product
7. **Quantity:** Number of units sold
8. **Sales Amount:** Total sales before discount
9. **Used Discount:** Indicates whether a discount was applied
10. **Discount Amount:** The value of the discount applied
11. **Final Sales:** The total sales after applying the discount

Important Features and Their Significance

1. **Product:** Helps identify top-selling coffee bean products.
2. **Sales Amount & Final Sales:** Measures total revenue before and after discounts.
3. **Quantity Sold:** Determines product demand and inventory needs.
4. **Discount Amount:** Assesses how discounts influence customer purchases.
5. **City:** Helps analyze regional sales performance.

Data Limitations or Biases

1. **Limited Product Categories:** The dataset only contains sales data for Coffee Beans, meaning no analysis can be done on other product types like brewed coffee, accessories, or pastries.
2. **Date Formatting Issues:** The dataset contained improperly formatted dates, which required cleaning. As a result, some records had to be removed, reducing the dataset size.
3. **Missing or Incomplete Data:** Some transactions may lack customer details or discount information.
4. **Sample Bias:** The dataset is limited to recorded sales and may not represent all possible transactions.
5. **External Factors:** Sales trends might be influenced by market conditions, seasonal changes, or competitor pricing.

Data Splitting and Preprocessing

Data Cleaning

The dataset was generally well-structured, but the following steps were taken to improve its quality:

- **Formatted Column Headings:** Ensured consistency in column names to prevent errors during analysis.
- **Fixed Date Formatting Issues:** Some transaction dates were improperly formatted, so they were converted to a standard YYYY-MM-DD format. This cleaning process led to the removal of some records, reducing the dataset size.
- **Standardized Data Entries:** Ensured uniformity in city names, product names, and numerical values.

Handling Missing Values

- **Date Corrections:** Transactions with unfixable date errors were removed.
- **Discount Information:** If a transaction had missing discount data, it was assumed that no discount was applied.
- **Customer IDs:** Since there were some missing Customer ID values, they were retained as they likely represent one-time or guest purchases.

Data Transformations

Created 'Month-Year' Column: Extracted the month and year from the date column for time-based trend analysis.

Data Splitting

The dataset was divided into Independent and Dependent variables.

Category One: Independent Values

- **City:** Helps analyze regional sales differences.
- **Category:** In this dataset, all products fall under "Coffee Beans."
- **Product:** Identifies which specific coffee products perform best.
- **Used Discount:** Determines whether a discount was applied.
- **Discount Amount:** Measures the extent of price reductions.

Category Two: Dependent Values

- **Quantity:** Number of units sold per transaction.
- **Date:** Helps track sales trends over time.
- **Customer ID:** Enables customer behavior analysis.
- **Unit Price:** Price per unit before discounts.
- **Sales Amount:** Total revenue before applying discounts.
- **Final Sales:** Revenue after deducting discounts, representing actual earnings.

Industry Context

The analysis belongs to the retail and food service industry, specifically focusing on coffee sales. Given the competitive nature of the coffee market, understanding sales patterns and discount effectiveness can help Peet's Coffee improve pricing strategies and inventory management.

Stakeholders

- **Owner/Investor:** Interested in profitability, business growth, and return on investment.
- **Customers:** Expect high-quality coffee, good service, and a pleasant experience.
- **Suppliers:** Aim to provide high-quality coffee beans, milk, and equipment for operations.
- **Delivery Services:** Play a role in expanding sales through online ordering and delivery channels.

Value to the Industry

- Optimize pricing and discount strategies to maximize revenue.
- Identify high-demand products and improve inventory management.
- Enhance location-based marketing strategies by understanding city-wise sales trends.
- Improve customer experience by ensuring product availability and competitive pricing

Pre-Analysis

Identified Key Trends

1. **Sales Distribution Across Cities:** Urban areas tend to generate higher sales, suggesting a need for location-specific marketing strategies.
2. **High-Performing Product Categories:** Identifying the category with the highest sales revenue can guide promotions, such as combo deals to boost average customer spend.
3. **Product Sales Volume:** Products with high sales volume should be stocked consistently, while low-selling items could be bundled in promotions to increase turnover.

Potential Correlations

1. **Discounts vs. Sales Volume:** While discounting increases sales, it may also reduce overall revenue. Analyzing discount effectiveness across product categories can help optimize promotions.
2. **Optimal Discount Strategy:** Weekday discounts appear to drive higher sales, whereas weekend discounts have minimal impact. Implementing targeted weekday promotions (e.g., 10% off before 10 AM) could attract commuters while maintaining weekend pricing stability.
3. **Price Sensitivity and Demand:** Higher unit prices might lead to lower quantities sold, but certain cities may have a higher demand for premium-priced products.
4. **Customer Retention and Pricing Preferences:** Loyal customers tend to prefer full-priced specialty drinks, while discounts attract first-time buyers. A strategic loyalty program could be more effective than blanket discounts.

Initial Insights

1. Sales vary across different cities, with urban areas performing better. Focusing marketing efforts on high-traffic urban areas can maximize revenue.

2. Small price adjustments impact sales significantly. A 5% price increase on popular items can test customer response while keeping core items competitively priced.

3. Discounted products attract new customers, making them an effective tool for upselling more expensive menu items.

4. Loyalty programs could be a more sustainable strategy than frequent discounting, encouraging repeat purchases without reducing profit margins.

5. Seasonal sales trends could exist, requiring further exploration of sales patterns across different times of the year to optimize pricing and promotions.

In-Analysis

Unconfirmed Insights

1. Seasonal Sales Fluctuations

Sales saw consistent declines in February, June-August, and November-December across both years. This pattern suggests possible external factors affecting demand, such as seasonal preferences, economic cycles, or weather conditions. Further research is needed to confirm the root causes.

2. Regional Market Strength

Jeddah recorded the highest sales ($38,173), while Abha had the lowest ($15,271). While Jeddah's strong performance indicates high demand, the lower sales in Abha might be due to limited product availability, lower brand awareness, or different consumer preferences. Customer feedback and competitor analysis would help validate these hypotheses.

3. Impact of Discounts on Colombian Coffee Sales

Colombian coffee had the highest discount value ($6,400) and also led in total sales ($57,680). It remains unclear if sales are driven by actual product preference or by the heavy discounts. Monitoring post-purchase behavior and analyzing sales when discounts are reduced could confirm the true demand.

4. Customer Sensitivity to Pricing Tiers

Products priced at $35 had the highest sales (128 units), while $45 products had the lowest (46 units). This suggests price sensitivity among customers, but it is uncertain if lowering the price of $45 products would boost sales or if these products need added value to justify their pricing.

Recommendations

1. **Develop Seasonal Promotions**

- Implement seasonal offers or limited-time flavors during historically low-sales months (February, June-August, and November-December).
- Adjust inventory levels to match demand peaks in March-May and September-October to prevent overstocking or shortages.

2. **Enhance Market Presence in Low-Performing Cities**

- Increase visibility in Abha through localized campaigns, loyalty rewards, and strategic partnerships with local businesses.
- Conduct consumer surveys in lower-sales areas to understand potential barriers and tailor marketing accordingly.

3. **Refine Discount Strategy for Colombian Coffee**

- Reduce blanket discounts and instead offer targeted promotions, such as exclusive discounts for repeat buyers.
- Test whether reducing discounts affects Colombian coffee sales to determine if pricing adjustments are needed.

4. **Optimize Pricing for Premium Coffee Varieties**

- Introduce bundled deals for high-priced products to increase perceived value.
- Conduct A/B pricing tests on $45 products to evaluate customer willingness to pay.

Analysis Techniques Used in Excel

Pivot Tables

Used to analyze sales trends by month, city, and product category, providing a clear picture of fluctuations.

Post-Analysis

Key Findings

By City

5. Jeddah led in total sales at $38,173, with Guatemalan coffee generating the highest revenue ($12,425). The best-selling price point was $35, contributing $20,503 in revenue.

6. Riyadh followed with $28,116, where Costa Rican coffee was the top performer ($8,932). Sales peaked in April 2024 and dipped in multiple months.

7. Hail generated $26,150, with Colombian coffee leading at $7,000. Sales peaked in March 2023 and 2024, while late 2024 saw declines.

8. Dammam recorded $25,582, with Colombian coffee performing best ($10,912). Sales fluctuated but ended strong in late 2024.

9. Mecca had $24,821, with Brazilian coffee on top ($7,230), but sales weakened in July 2023 and August 2024.

10. Tabuk earned $23,542, with Costa Rican coffee leading ($6,825). Sales peaked in June both years but were lowest in February 2023, May, and August 2024.

11. Khobar, at $22,847, had Colombian coffee as the top-seller ($6,536). Sales fluctuated, and December 2024 had no sales.

12. Medina earned $21,495, with Costa Rican coffee leading at $7,161. Sales peaked in April but dipped in mid-2023 before stabilizing.

By Product

1. Brazilian coffee performed best in Mecca ($7,230) and worst in Abha ($894), with total revenue of $33,570.

2. Colombian coffee led in Dammam ($10,912) but underperformed in Buraidah ($2,944), totaling $57,680.

3. Costa Rican coffee excelled in Riyadh ($8,932) but was weaker in Mecca ($3,262), generating $56,546 overall.

4. Ethiopian coffee had strong sales in Jeddah ($9,252) but weak performance in Medina ($2,295), totaling $51,606.
5. Guatemalan coffee was strongest in Jeddah ($12,425) and weakest in Abha ($1,120), with $45,409 in total revenue.

Comparison with Initial Findings

1. The expectation was that Jeddah and Riyadh would dominate sales, which held true, but Mecca underperformed compared to projections.
2. Colombian and Costa Rican coffee consistently ranked among the best sellers, aligning with expectations. However, Ethiopian coffee's premium pricing resulted in lower unit sales, indicating an opportunity to optimize pricing and discount strategies.
3. Sales seasonality trends showed peaks in March, April, and June, but December sales were weaker than anticipated, suggesting a need for holiday promotions.
4. Brazilian coffee's strong performance in Mecca was unexpected, as it underperformed in most cities. Expanding its appeal through promotions in weaker markets could boost overall sales.
5. Khobar's complete lack of sales in December was surprising, warranting a closer look at market saturation or consumer behavior changes.

Data Visualizations & Charts

Sales Trend Report
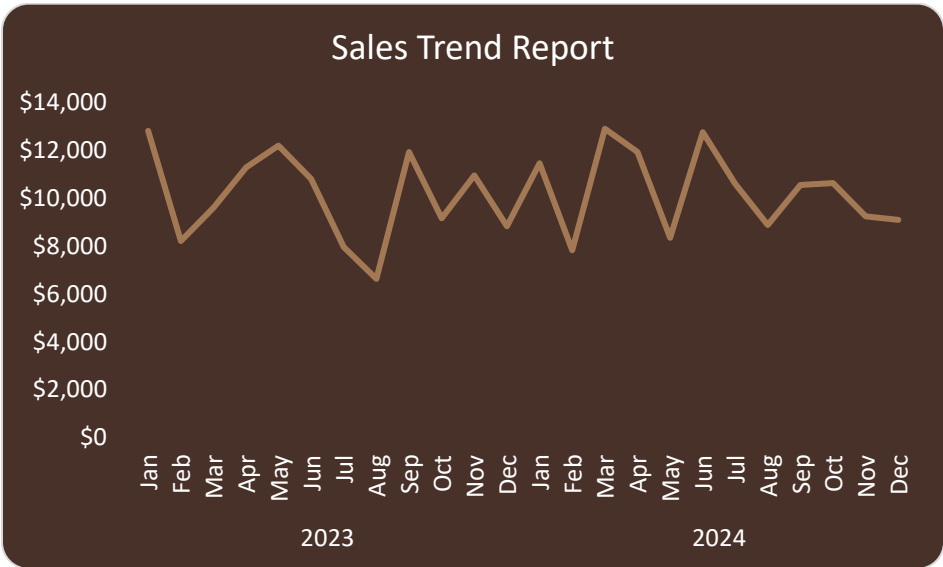
Explanation

2023: Sales started strong in January ($12,819) but declined in February ($8,220). From March to May, sales recovered, only to drop between June and August, with August recording the lowest sales of the year. Sales rebounded in September, declined again in October, improved in November, but ended the year at $8,833 in December. The total sales revenue for 2023 was $120,476.

2024: The year started well with $11,470 in January, but sales fell to $7,831 in February before bouncing back in March ($12,915). From April to August, sales fluctuated between $8,000 and $12,000, with May recording the lowest sales ($8,355). September and October had steady sales, followed by a decline in November, and the year ended with $9,110 in December.

Analysis of Different Cities Against Final Sales

City Vs. Final Sales

City	Final Sales
Jeddah	$38,173
	$28,116
Hail	$26,150
	$25,582
Mecca	$24,821
	$23,542
Khobar	$22,847
	$21,495
Buraidah	$18,814
	$15,271
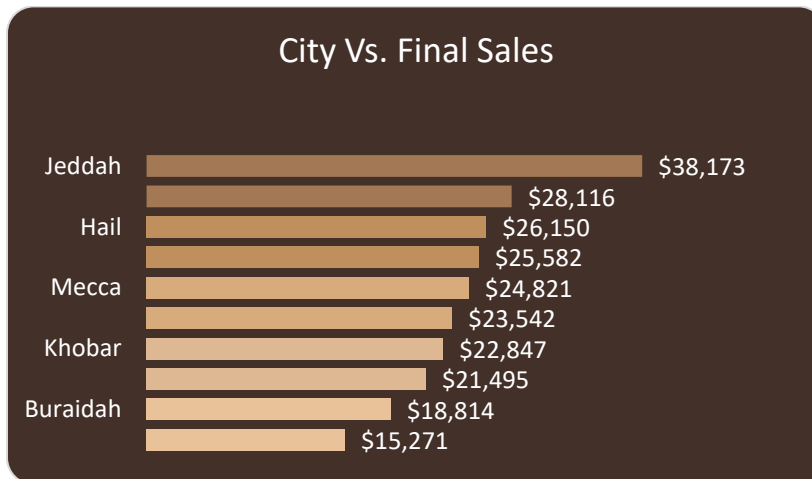
Explanation

Jeddah recorded the highest total sales, bringing in $38,173, while Abha had the lowest sales, totaling $15,271.

Analysis of Products Against Final Sales

Product Vs. Final Sales

$33,570
$57,680
$45,409
$51,606
$56,546

- Colombian
- Costa Rica
- Ethiopian
- Guatemala
- Brazilian
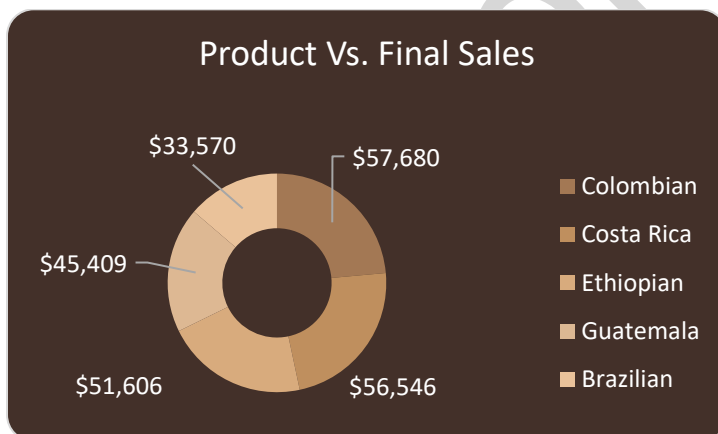
Explanation

Among all products, Colombian coffee led in sales, generating $57,680, while Brazilian coffee had the lowest sales, earning $33,570.

Analysis of Products by Quantity

Product Vs. Quantity
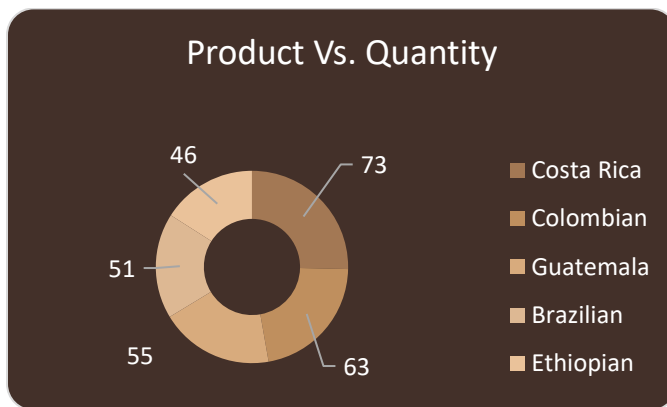
Explanation

Costa Rican coffee was the top-selling product in terms of quantity, with 73 units sold, whereas Ethiopian coffee had the fewest units sold.

Product Vs. Discount Analysis

Product Vs. Discount

Explanation

Colombian coffee had the highest total discount, amounting to $6,400, while Brazilian coffee had a lower discount of $3,300.

Analysis of Unit Price by Final Sales

Unit Price Vs. Final Sales

Unit Price	Final Sales
$35	$101,955
$40	$57,680
$45	$51,606
$30	$33,570
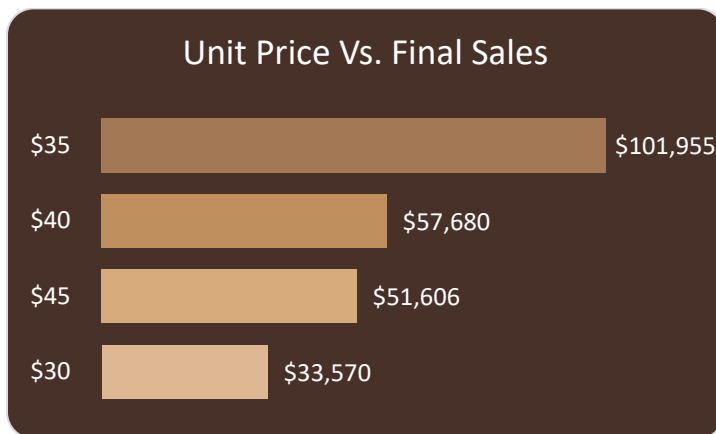
Explanation

Products priced at $35 generated the highest total sales revenue of $101,955, whereas products priced at $30 had the lowest total sales of $33,570.

Analysis of Unit Price by Quantity Sold

Unit Price Vs. Quantity

Unit Price	Quantity
$35	128
$40	63
$30	51
$45	46
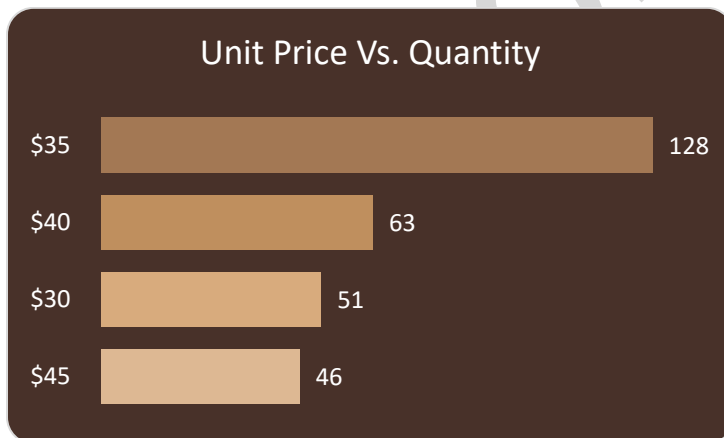
Explanation

Products priced at $35 sold the most, with 128 units, while those priced at $45 had the lowest sales volume, with only 46 units sold.

Dashboard

PEETS COFFEE SALES DASHBOARD FOR THE YEAR 2024

TOTAL SALES
$244,811

QUANTITY SOLD
298

TOP CITY
Jeddah

BEST COFFEE
Colombian Coffee

City Vs. Final Sales

City	Sales
Jeddah	$38,173
Riyadh	$28,116
Hail	$26,150
Dammam	$25,582
Mecca	$24,821
Tabuk	$23,542
Khobar	$22,847
Medina	$21,495
Buraidah	$18,814
Abha	$15,271

Sales Trend Report

Product Vs. Final Sales
- $33,570
- $57,680
- $45,409
- $51,606
- $56,546
  - Colombian
  - Costa Rica
  - Ethiopian
  - Guatemala
  - Brazilian

Unit Price Vs. Quantity

Unit Price	Quantity
$35	128
$40	63
$30	51
$45	46

Product Vs. Quantity
- 46
- 73
- 51
- 55
- 63
  - Costa Rica
  - Colombian
  - Guatemala
  - Brazilian
  - Ethiopian

Unit Price Vs. Final Sales

Unit Price	Final Sales
$35	$101,955
$40	$57,680
$45	$51,606
$30	$33,570

Product Vs. Discount

Product	Discount
Colombian	$6,400
Costa Rica	$5,859
Ethiopian	$5,499
Guatemala	$5,201
Brazilian	$3,300

Product
- Colombian
- Costa Rica
- Ethiopian
- Guatemala

Customer
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

City
- Abha
- Buraidah
- Dammam
- Hail
- Jeddah
- Khobar
- Mecca

Recommendations and Observations

Actionable Insights

1. **Optimize Regional Sales Strategies**

- Focus on boosting sales in lower-performing cities like Abha and Buraidah by introducing localized promotions, in-store sampling, and strategic partnerships.
- Expand high-performing products like Guatemalan and Colombian coffee in cities where they show strong demand, such as Jeddah and Dammam.
- Launch seasonal promotions and flash sales in months with historical dips (e.g., March, May, August, and December) to stabilize revenue.

2. **Adjust Pricing & Discounting Strategy**

- Reduce discount reliance on high-performing products like Colombian and Costa Rican coffee to maximize profitability.
- Implement value-based incentives, such as loyalty rewards and bundled deals, instead of heavy discounts, particularly for premium products like Ethiopian coffee.
- Expand $35-priced products, as they consistently performed well across multiple cities.

3. **Leverage High-Demand Periods**

- Launch targeted campaigns leading up to peak sales months (e.g., April and June) to sustain momentum and drive pre-season engagement.
- Introduce exclusive holiday promotions to prevent weak December sales and ensure year-end revenue stability.

4. **Improve Customer Retention & Engagement**

- Introduce subscription models for best-selling coffee blends to maintain steady demand year-round.

- Strengthen loyalty programs to encourage repeat purchases, particularly in high-performing regions.
- Utilize digital engagement strategies such as personalized offers, mobile app incentives, and geo-targeted promotions.

Optimizations or Business Decisions

1. Product Portfolio Expansion

- Develop premium versions of top-selling coffee blends like Costa Rican and Ethiopian coffee to cater to high-end consumers.
- Introduce more variations of $35-priced products, as they consistently generated high sales and revenue.

2. Regional Inventory Optimization

- Allocate higher stock levels of top-performing coffee types (e.g., Guatemalan in Jeddah, Costa Rican in Riyadh) while reducing inventory in underperforming locations.
- Improve distribution efficiency to ensure stock availability during peak months and mitigate shortages in high-demand regions.

3. Strategic Marketing & Promotions

- Invest in digital marketing campaigns to boost sales in underperforming cities like Medina and Abha.
- Partner with local influencers and coffee enthusiasts to increase brand awareness and engagement in targeted markets.
- Create seasonal coffee experiences (e.g., limited-time flavors, tasting events) to drive customer interest and differentiation.

Unexpected Outcomes

1. **Weaker-than-expected Performance in Mecca & Medina**

- Despite being major commercial hubs, Mecca and Medina had relatively lower coffee sales. This could be due to differences in consumer preferences, lower coffee culture adoption, or competition from alternative beverages.

- **Solution:** Conduct customer preference research and tailor offerings accordingly, including specialized blends or alternative formats (e.g., cold brews, instant coffee options).

2. **Colombian Coffee's High Discounts Didn't Lead to the Highest Sales**

- Despite receiving significant discounts, Colombian coffee didn't consistently dominate sales across all cities. This suggests that factors beyond pricing—such as brand perception or competition—may influence demand.

- **Solution:** Focus on brand storytelling and positioning to highlight Colombian coffee's quality, rather than relying solely on discounts.

3. **December Sales Weakness Across Multiple Cities**

- Many cities saw declining sales in December, despite the holiday season typically being a high-consumption period.

- **Solution:** Introduce festive promotions, holiday-themed coffee blends, and exclusive holiday bundles to capitalize on the season and drive higher engagement.

Conclusion

Key Learnings

4. **Regional Performance Variability:** Certain cities, like Jeddah and Riyadh, consistently outperform others in coffee sales, indicating strong regional demand and potential for further investment. Conversely, cities like Abha and Buraidah underperformed, suggesting a need for localized strategies.

5. **Pricing Strategy Matters:** Mid-range products around $35 performed best across multiple regions, while high discounting on Colombian coffee did not necessarily lead to the highest sales. This suggests that consumers value perceived quality and brand reputation over mere price reductions.

6. **Seasonality Affects Sales:** Sales peaked in April and June but declined in March, May, August, and December, highlighting the importance of strategic promotions and product launches during weaker months.

7. **Customer Retention Opportunities:** Strong sales in specific blends suggest an opportunity to introduce subscription models, loyalty programs, and personalized marketing to maintain demand year-round.

Limitations

1. **Data Granularity:** The analysis may be limited by the level of detail available in sales data (e.g., lack of customer demographics, purchase frequency, or competitor influence).

2. **External Factors:** Unaccounted variables such as economic conditions, local events, or competitor promotions could impact sales trends and should be considered in future analyses.

3. **Limited Product Segmentation:** While coffee types were analyzed, deeper segmentation based on flavor preferences, packaging size, or purchase channels (online vs. in-store) could provide more actionable insights.

Future Research

1. **Customer Behavior Analysis:** Incorporate customer demographics, preferences, and purchase frequency data to understand key buyer personas and tailor marketing efforts accordingly.

2. **Competitor Benchmarking:** Compare sales performance against competitors in key regions to identify market positioning opportunities and competitive advantages.

3. **Impact of Promotions:** Conduct A/B testing on different pricing strategies, discount structures, and bundling offers to determine the most effective approach for driving both revenue and profitability.

4. **Forecasting Sales Trends:** Utilize machine learning models to predict demand fluctuations, optimize inventory management, and refine marketing strategies for maximum impact.

References

Alotaibi, H. (2023). Coffee Bean Sales Dataset. Kaggle.com. [online] doi:https://doi.org/10924094/fc76012ec47d3e777a45e133e506930d.