Analyzing Amazon Sales data

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Introduction

In today's data-driven landscape, effective analysis of sales data is crucial for understanding market trends and driving business strategies. This project focuses on analyzing Amazon sales data to uncover insights into customer behavior, revenue patterns, and key performance metrics. By leveraging ETL processes and advanced analytical techniques, we aim to identify trends that inform decision-making and optimize sales strategies. Our analysis will not only enhance our understanding of sales dynamics but also provide actionable recommendations for improving performance and increasing profitability.

Problem Statement

Sales management has gained importance to meet increasing competition and the need for improved methods of distribution to reduce cost and to increase profits. Sales management today is the most important function in a commercial and business.

Main Objectives

- Analyze sales trends
- Geographical analysis
- Evaluate sales channel perfomance
- Product perfomance and order priorities

Details of Data

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Number of variables	14
Number of observations	100
Missing cells	0
Duplicate rows	0
Categorical variable	5
Datetime type variable	2
Numeric data type	7

Key Data Transformations and Profitability Insights in Amazon Sales Analysis

- Extracted various date components from the 'Order Date' and 'Ship Date' columns (day, month, and year), enabling detailed temporal analysis.
- Calculated 'Order Value' by multiplying 'Units Sold' with 'Unit Price' and found the Average Order Value (AOV).
- Computed Profit Margin for each order as the percentage of 'Total Profit' to 'Total Revenue'.
- Determined the Average Profit Margin for the entire dataset to be [insert Average Profit Margin value here]%.
- Provided insights into revenue trends and overall profitability of the sales data.

Correlation between features by using Barplot

Year-wise Sales

- Orders are shipped shortly after they are placed, as indicated by the nearly perfect positive correlation between 'Order Date' and 'Ship Date'.
- 'Order Year' and 'Ship Year' show a strong positive correlation, indicating annual alignment of orders and shipments.
- 'Total Revenue' has a very high positive correlation with both 'Total Cost' and 'Total Profit', suggesting that increases in costs and revenues are proportional to profit increases.
- 'Order Value' also shows strong positive correlations with 'Total Revenue' and 'Total Profit', reinforcing the link between sales value and overall financial performance.
- 'Units Sold' shows a moderate positive correlation with 'Total Revenue', 'Total Cost', and 'Total Profit', indicating higher sales volume generally leads to higher financial performance.
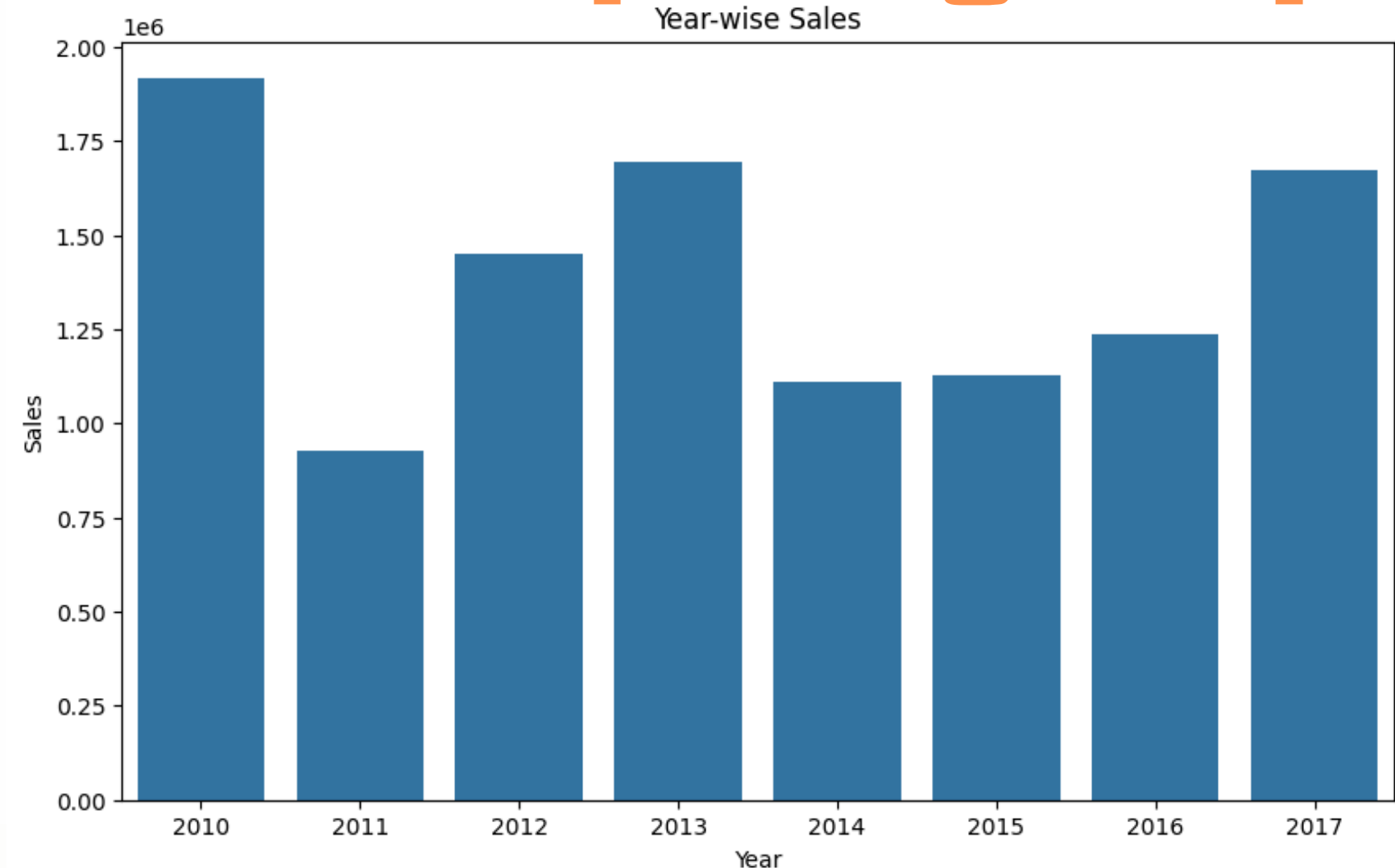
- There is a strong positive correlation between 'Unit Price' and 'Unit Cost', indicating that higher-priced items generally have higher associated costs.
- 'Item Type' and 'Order Priority' have a moderate positive correlation, suggesting that certain product types might be prioritized differently in the order process.
- 'Region' and 'Country' show low correlations with most other variables, indicating that geographical factors do not have a strong linear relationship with sales and financial metrics.
- 'Sales Channel' has low or negligible correlations with most other variables, suggesting it does not significantly impact key metrics.
- 'Profit Margin' does not show strong correlations with many variables, indicating it is influenced by a more complex set of factors.

Average Profit By Region Wise

Average Profit by Region wise
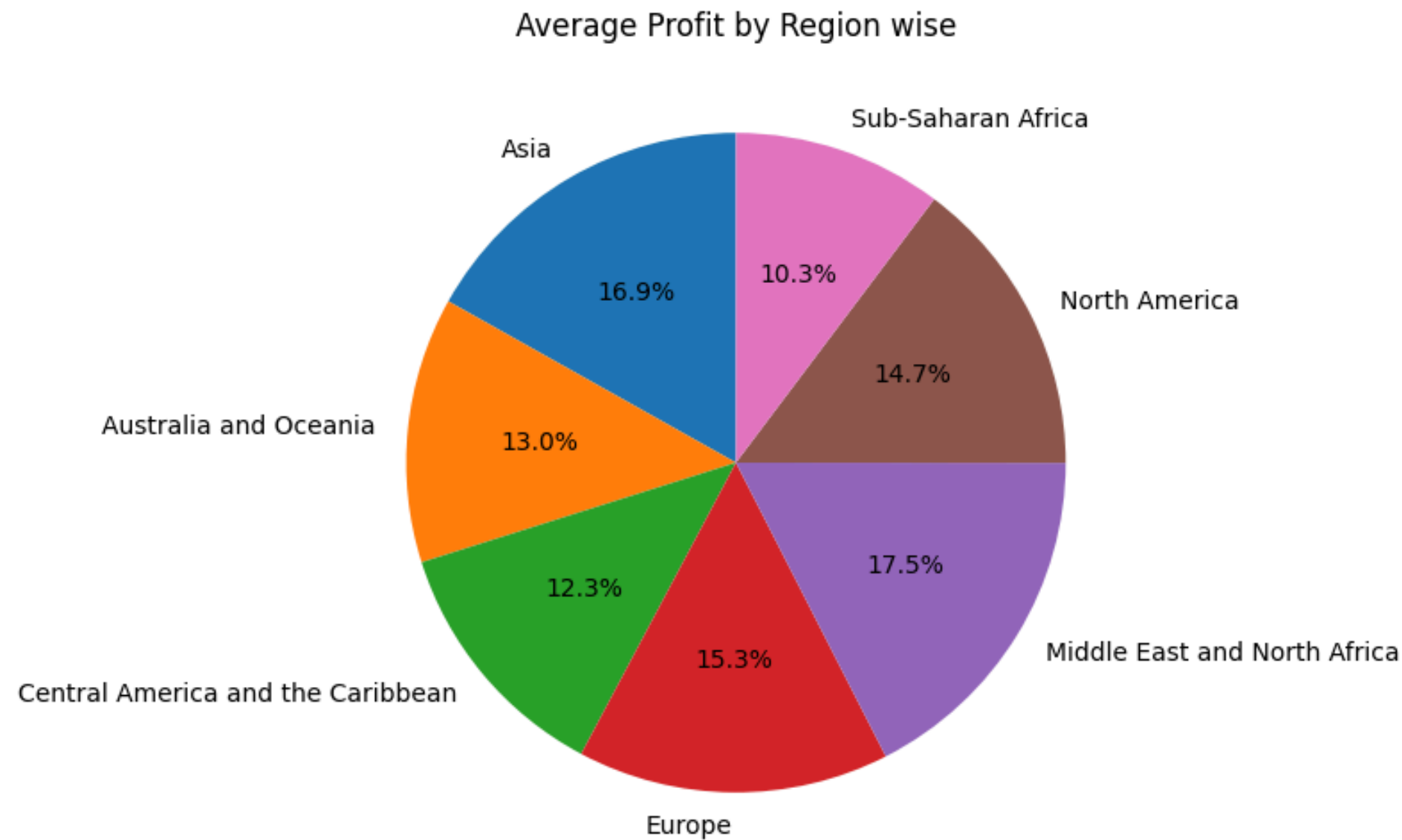
- Sales experience significant increases in February and November. These months could represent peak sales periods, possibly due to seasonal promotions, holidays, or special events. Sales see
- marked decreases in March and August. These months might indicate a slower sales period, potentially due to seasonal factors, lower spending, or fewer promotional consumer activities. To maximize revenue, it may
- be beneficial to focus marketing and promotional efforts around the high-sales periods in February and November. Identifying and addressing the
- factors causing lower sales in March and August could help improve performance during these months.

Total Revenue by sales channel

- Asia: Household items and office supplies are major profit contributors, indicating high profitability for these categories in the region. Australia and Oceania: Cosmetics and
- beverages dominate profits, highlighting the lucrative nature of these products in the market. Central America and the Caribbean: Household items are the significant profit
- contributors, suggesting these products are essential for profitability. Europe: Cosmetics contribute the most to profits, showing a high demand and profitability for personal care
- products. Middle East and North Africa: Cosmetics are the primary profit contributors, indicating a strong market for
- beauty and personal care products. North America: Household items contribute the most to profits, reflecting high profitability in the home goods market. Sub-Saharan Africa:
- Cosmetics, household items, and office supplies are major profit contributors, suggesting a diverse market with high profitability in these categories.
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Total Revenue by Sales Channel

Online 42.4%

Offline 57.6%

Total Revenue
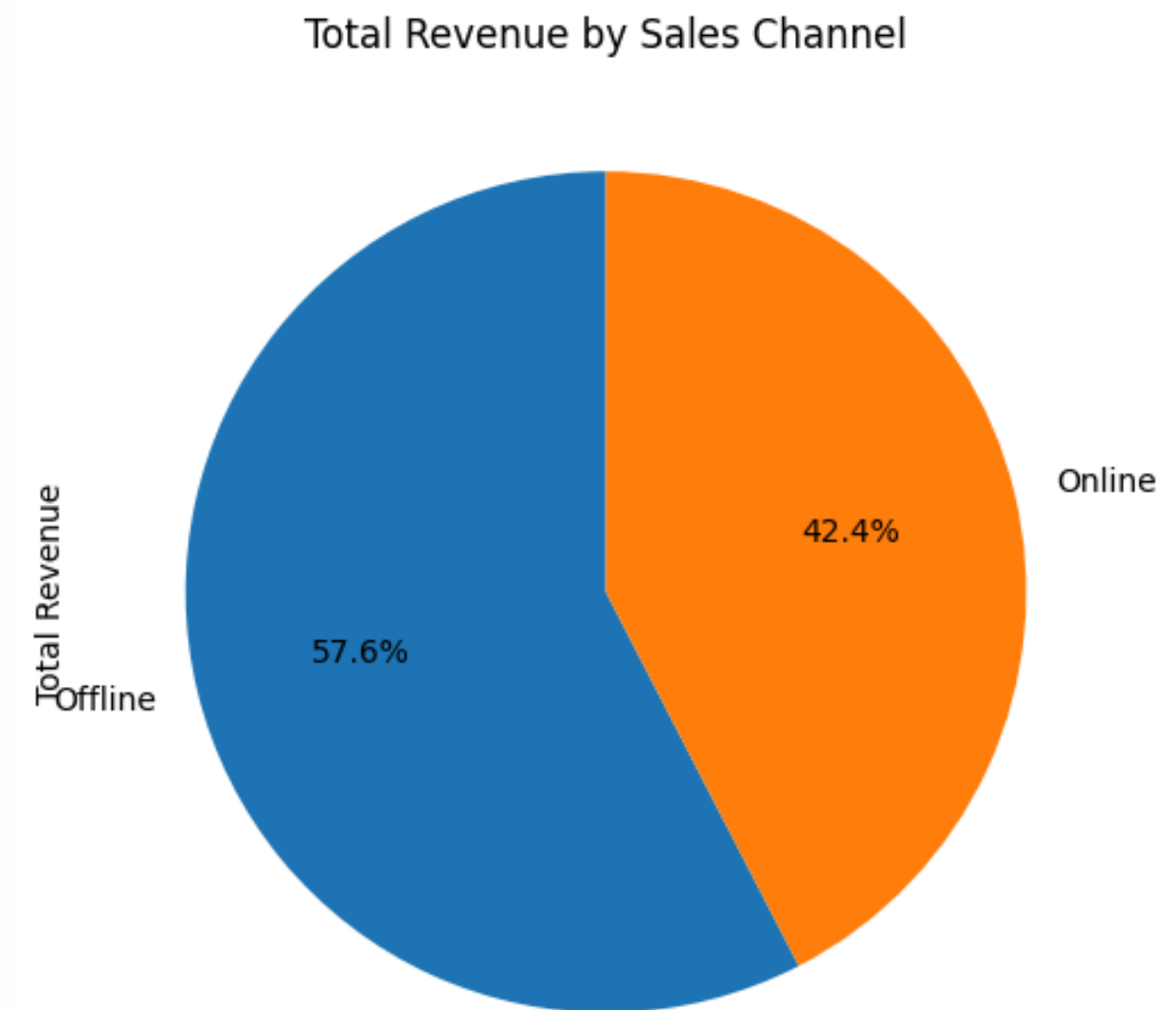
Units Sold by Region and Item Type

- Asia: Snacks, household items, and office supplies have the highest units sold, indicating these categories are the most popular and in high demand.
- Australia and Oceania: Beverages dominate sales, highlighting a strong market preference for drinks. Central
- America and the Caribbean: Household items and beverages are the top sales categories, suggesting a balanced demand for both consumable and non-consumable goods. Europe: Cosmetics have the highest sales, followed by beverages,
- indicating a strong market for personal care and consumable products. Middle East and North Africa: Cosmetics lead in sales, followed by snacks, showing a high demand for beauty
- products and snacks. North America: Vegetables are the leading sales category, reflecting a strong market for fresh produce. Sub-Saharan Africa: Cosmetics have the highest
- sales, followed by vegetables and beverages, indicating diverse demand with a strong preference for beauty products.
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Total Units Sold by Region
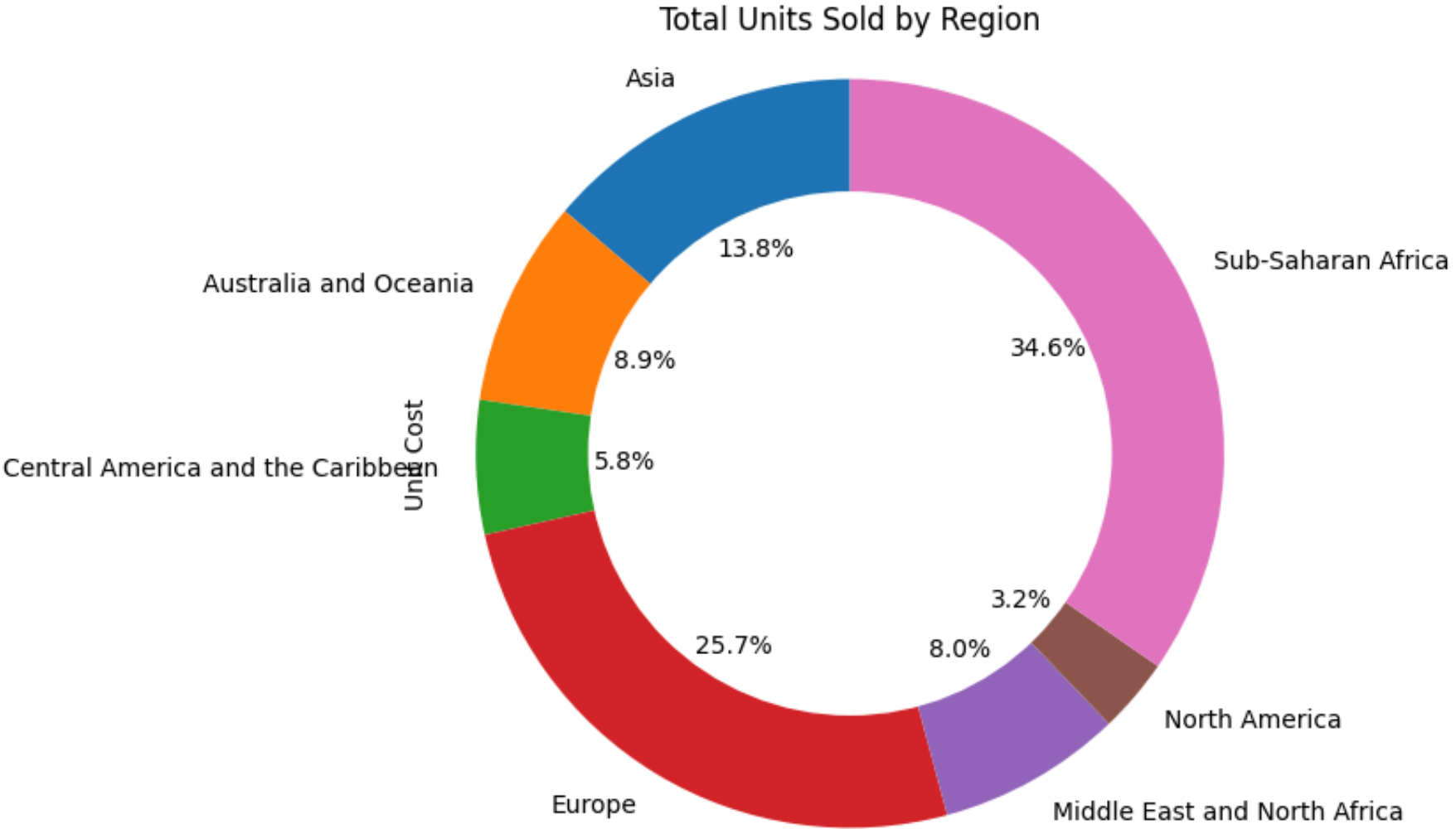
Units Sold by year and month

- Honduras generates the maximum revenue, indicating it is a strong and profitable market for the business.
- Kuwait generates the minimum revenue,
  suggesting it is an underperforming market with lower sales and minimal contribution to overall
- revenue.
  Focus on maintaining and enhancing market strategies in Honduras to sustain and further
- increase revenue.
  Investigate and address the factors contributing to low revenue in Kuwait to identify opportunities for growth and improve sales performance in the region.

Units Sold by Year and Month
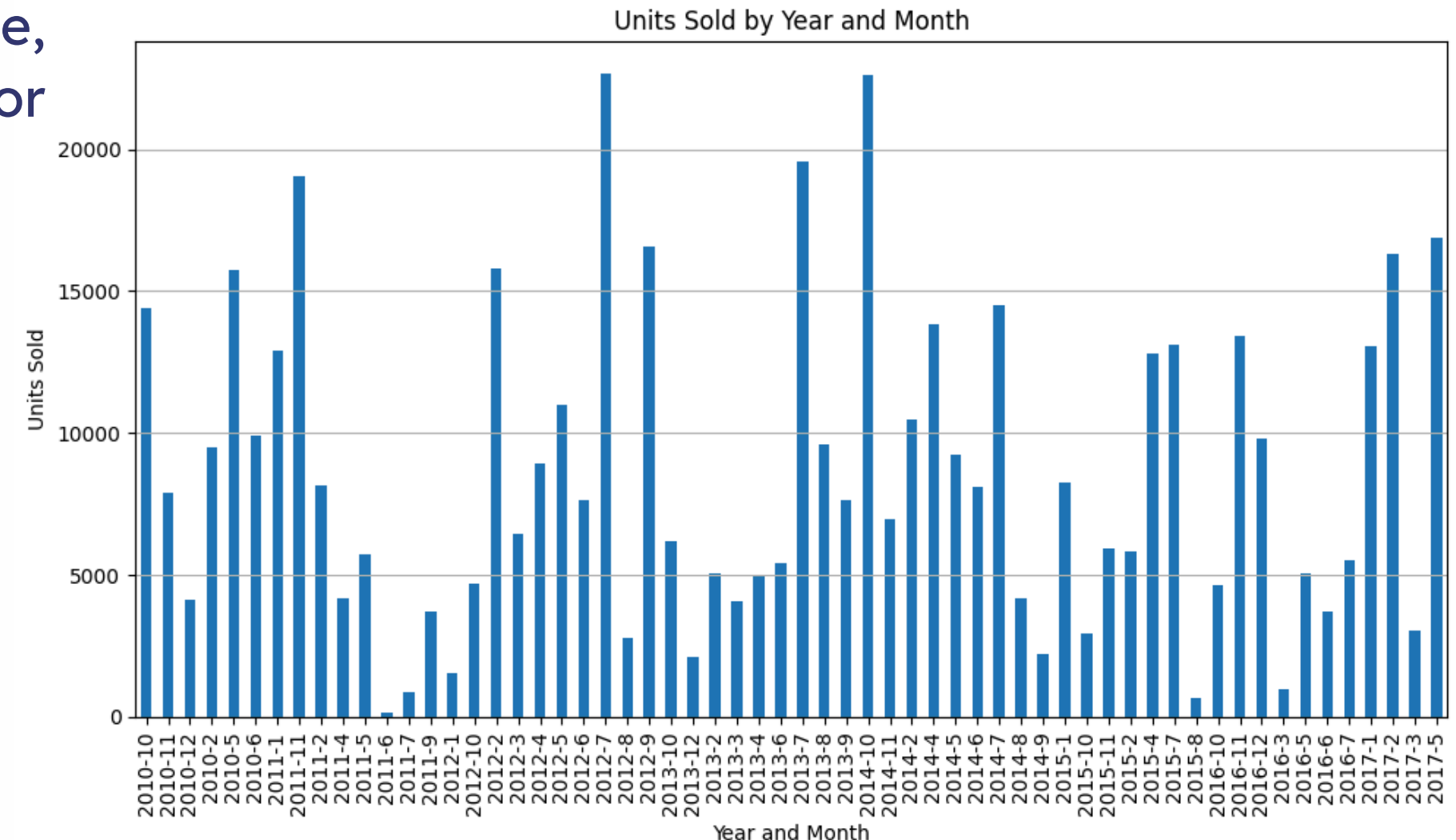
Average Revenue by Product type
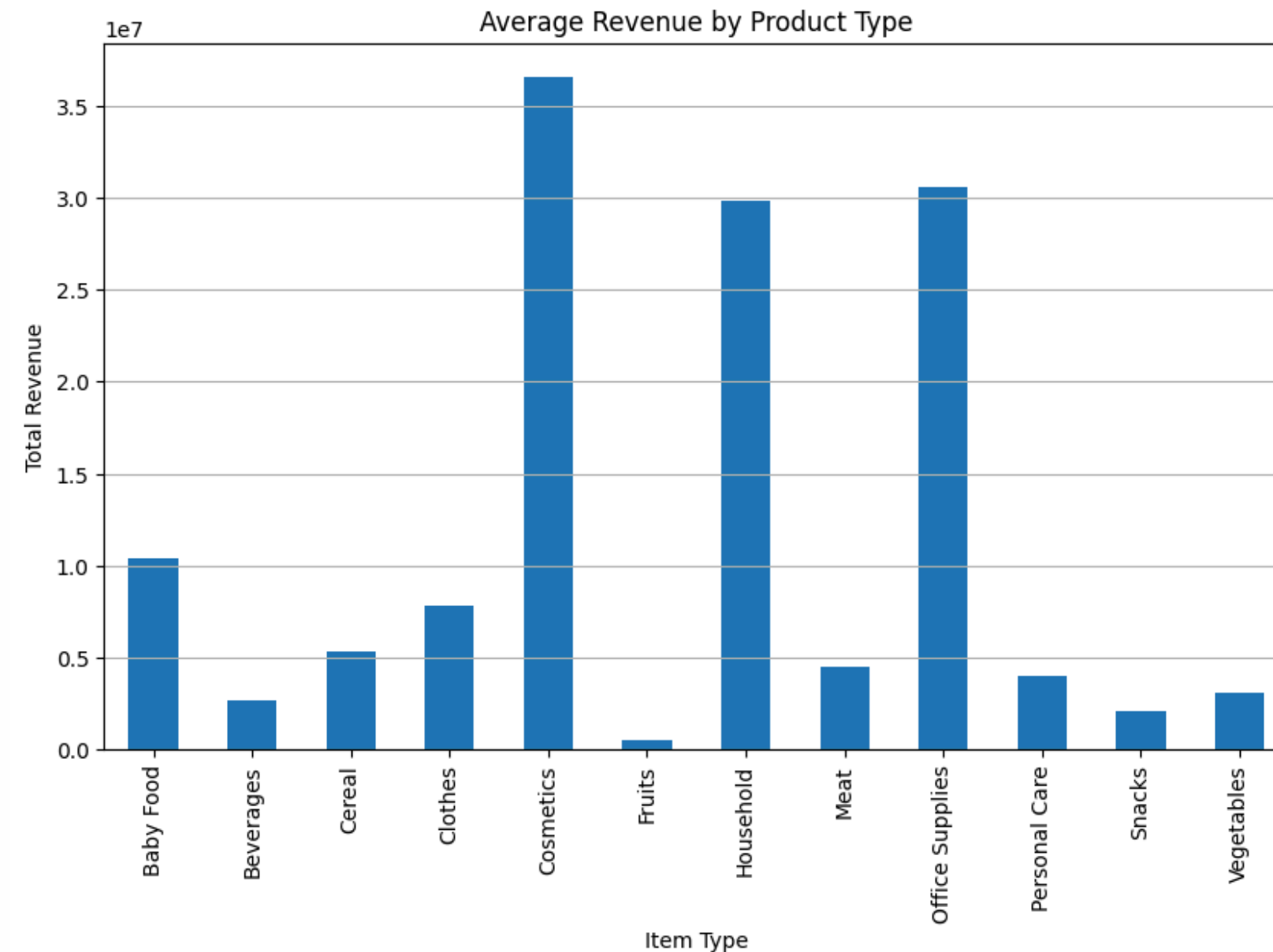
- The data shows that high-priority orders (H) have the shortest average shipping duration.
- This indicates that high-priority orders are processed and shipped more quickly.

Recommendations

1. Employ Data-Driven Decision-Making:
   - Utilize data analytics to inform decision-making processes, ensuring strategies are based on accurate and comprehensive data insights.
2. Enhance Logistical Operations:
   - Streamline logistics to improve shipping efficiency, which will enhance customer satisfaction and contribute to better overall performance.
3. Customize Marketing Initiatives:
   - Develop targeted marketing campaigns based on regional preferences and product-specific insights to maximize impact and revenue.
4. Tailored Sales Approaches:
   - Implement distinct strategies for offline and online sales channels to effectively address their unique performance trends and optimize revenue generation.
5. Strategic Resource Allocation:
   - Allocate resources efficiently by focusing on high-performing regions and product categories, while also addressing underperforming areas to drive growth.
6. Continuous Monitoring and Adaptation:
   - Continuously monitor market trends, customer behavior, and competitive dynamics to adapt strategies promptly and maintain a competitive edge.

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Conclusion

Based on the comprehensive data analysis, several key insights emerge:

1. Effective Sales Management:
    - Effective sales management is crucial for navigating competitive markets and optimizing distribution strategies, which enhances profitability and reduces costs.
2. Distinct Performance Trends:
    - The performance trends in offline and online sales channels highlight the need for tailored approaches to maximize revenue across both platforms.
3. Regional and Product-Specific Contributions:
    - Leveraging the strengths of various regions and understanding product-specific contributions enables companies to devise more precise marketing and sales strategies.
4. Order Prioritization and Shipping Efficiency:
    - The correlation between order prioritization and shipping efficiency underscores the importance of streamlined logistics in improving customer satisfaction.
5. Peak Periods of Profitability and Sales:
    - Recognizing peak periods of profitability and sales provides valuable insights for future strategic planning.

THANK YOU!