

# Analyzing Amazon Sales data



**Presented by  
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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 performance
- Product performance and order priorities



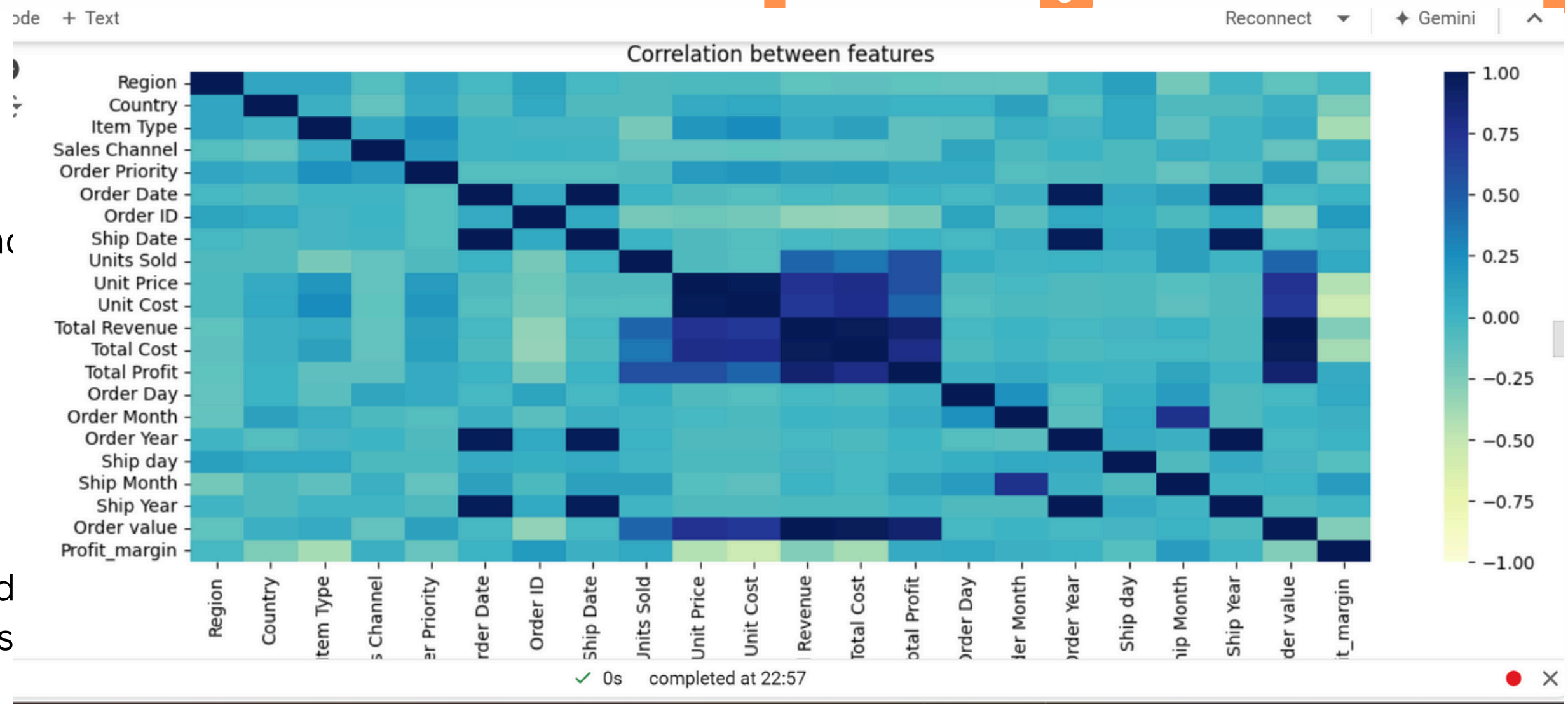
# Details of Data

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 Heat map

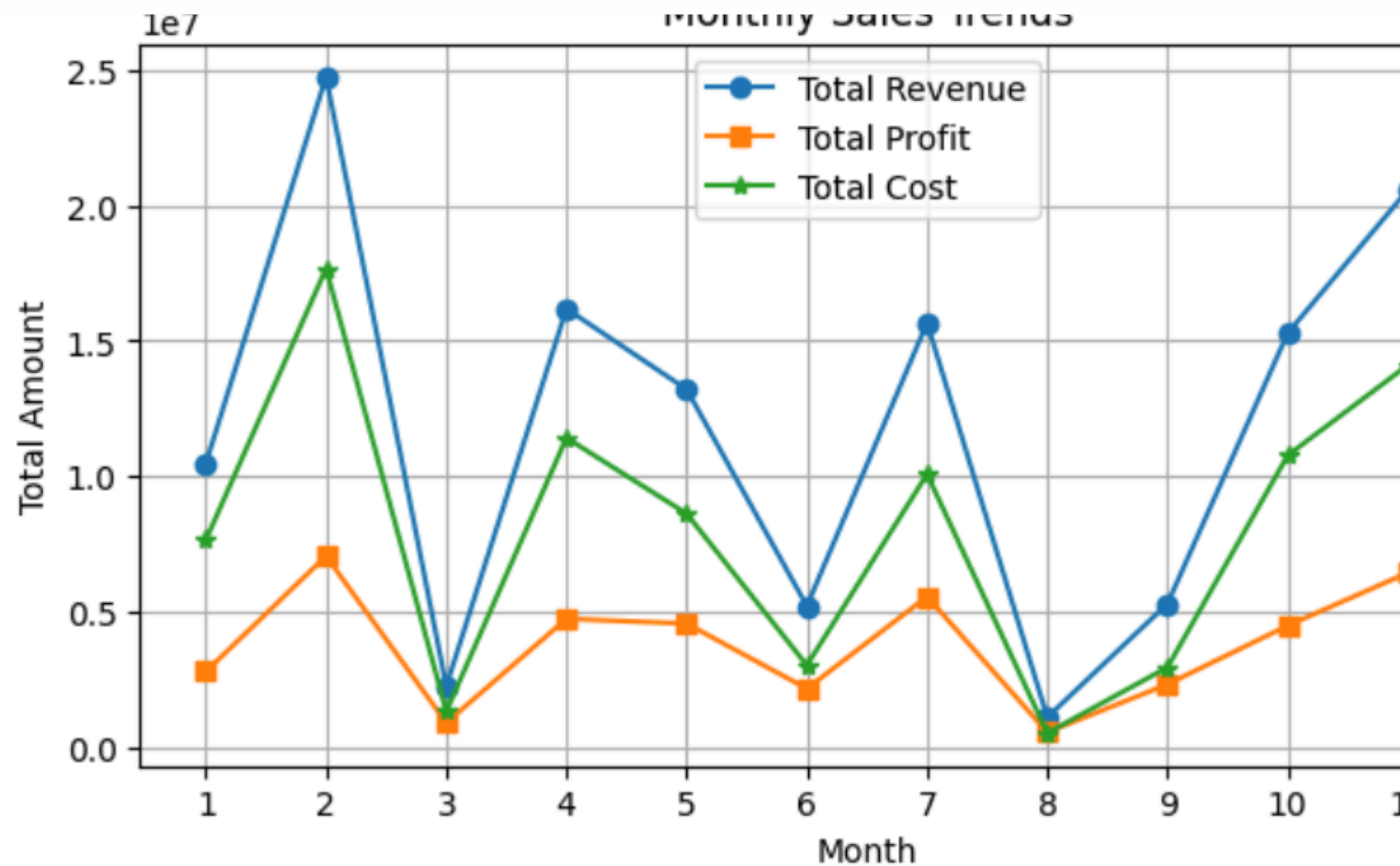


- Orders are shipped shortly after they are placed, as indicated by the nearly perfect positive correlation between 'Order Date' and 'Ship Date'.
- 'Order Year' and 'Ship Year' show a strong positive correlation, indicating annual alignment of orders and shipments.
- 'Total Revenue' has a very high positive 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.



# Monthly Sales Trends

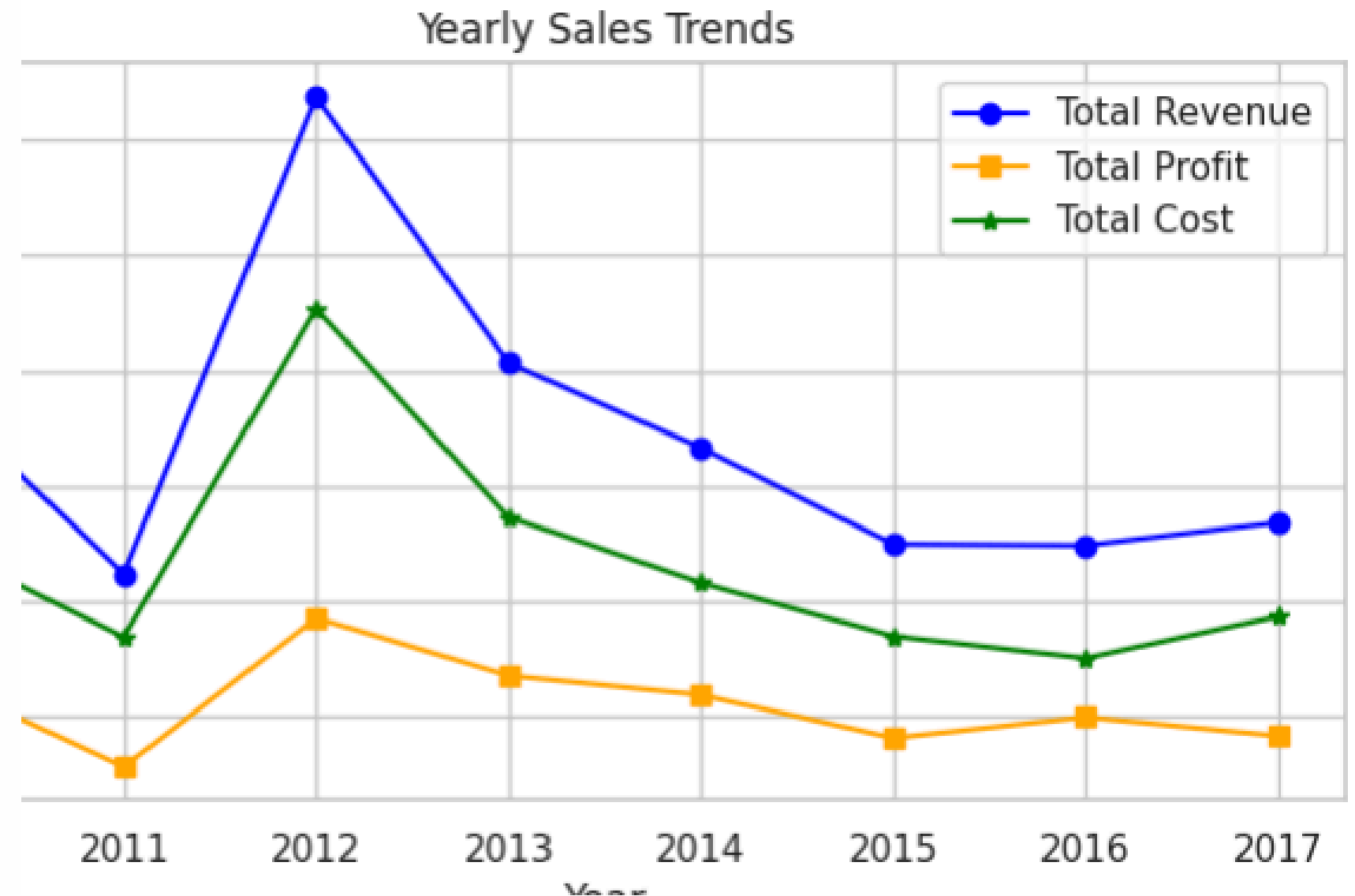


- Sales experience significant increases in February and November. These months could represent peak sales periods, possibly due to seasonal promotions, holidays, or special events.
- Sales see marked decreases in March and August. These months might indicate a slower sales period, potentially due to seasonal factors, lower consumer spending, or fewer promotional 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.



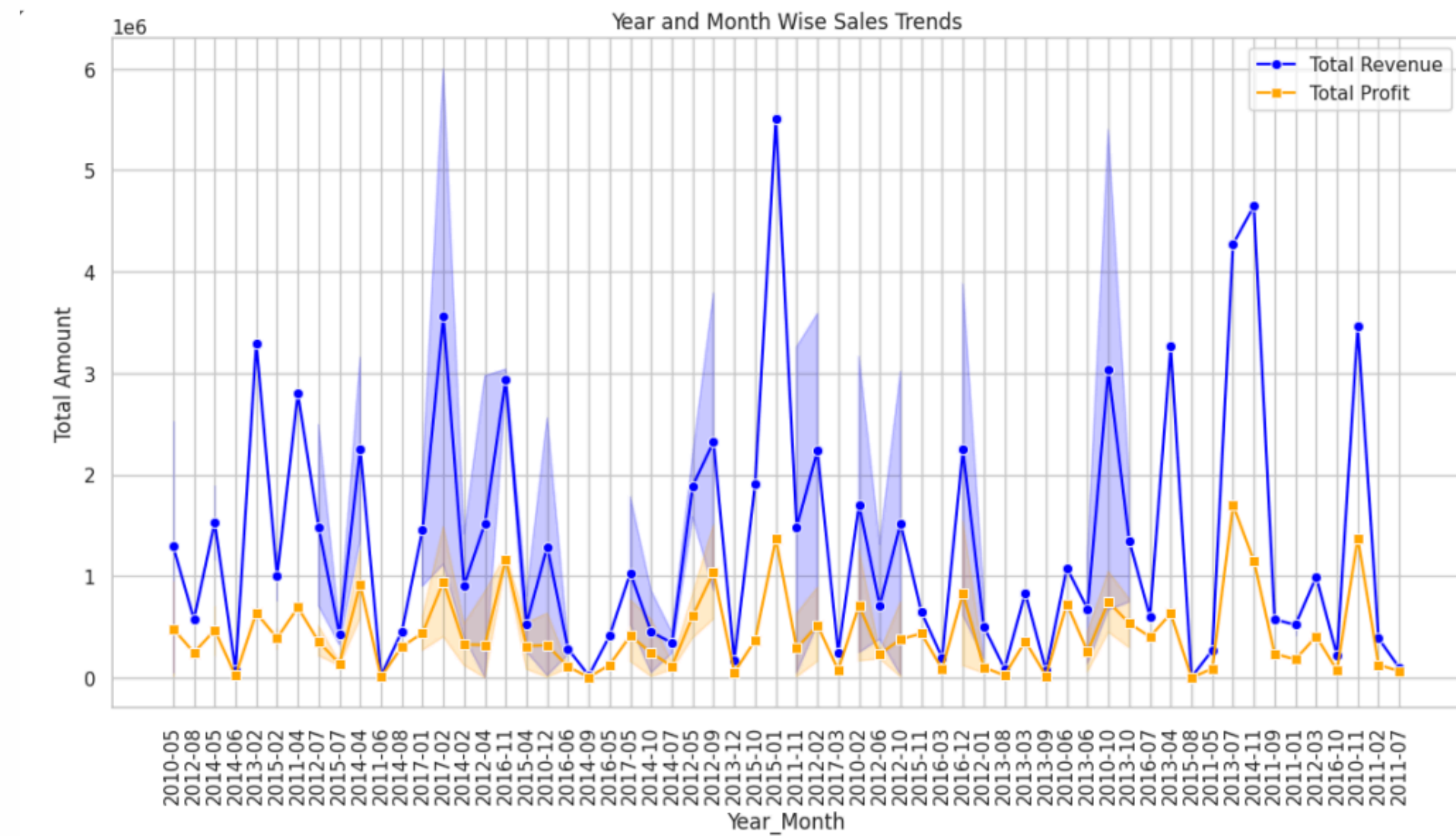
# Yearly Sales Trends

- Sales reached their peak in 2012, indicating this was the most successful year in terms of sales performance during the analyzed period.
- The lowest sales were recorded in 2011, suggesting that this year had the weakest sales performance in the analyzed period.
- There was a significant improvement in sales from 2011 to 2012, demonstrating a strong year-over-year growth. This could be due to effective marketing strategies, introduction of popular products, or other favorable market conditions.
- Understanding the factors that contributed to the peak in 2012 can help in replicating similar success in future periods.
- Analyzing the challenges faced in 2011 can provide insights into avoiding similar pitfalls and improving sales strategies during weaker periods.

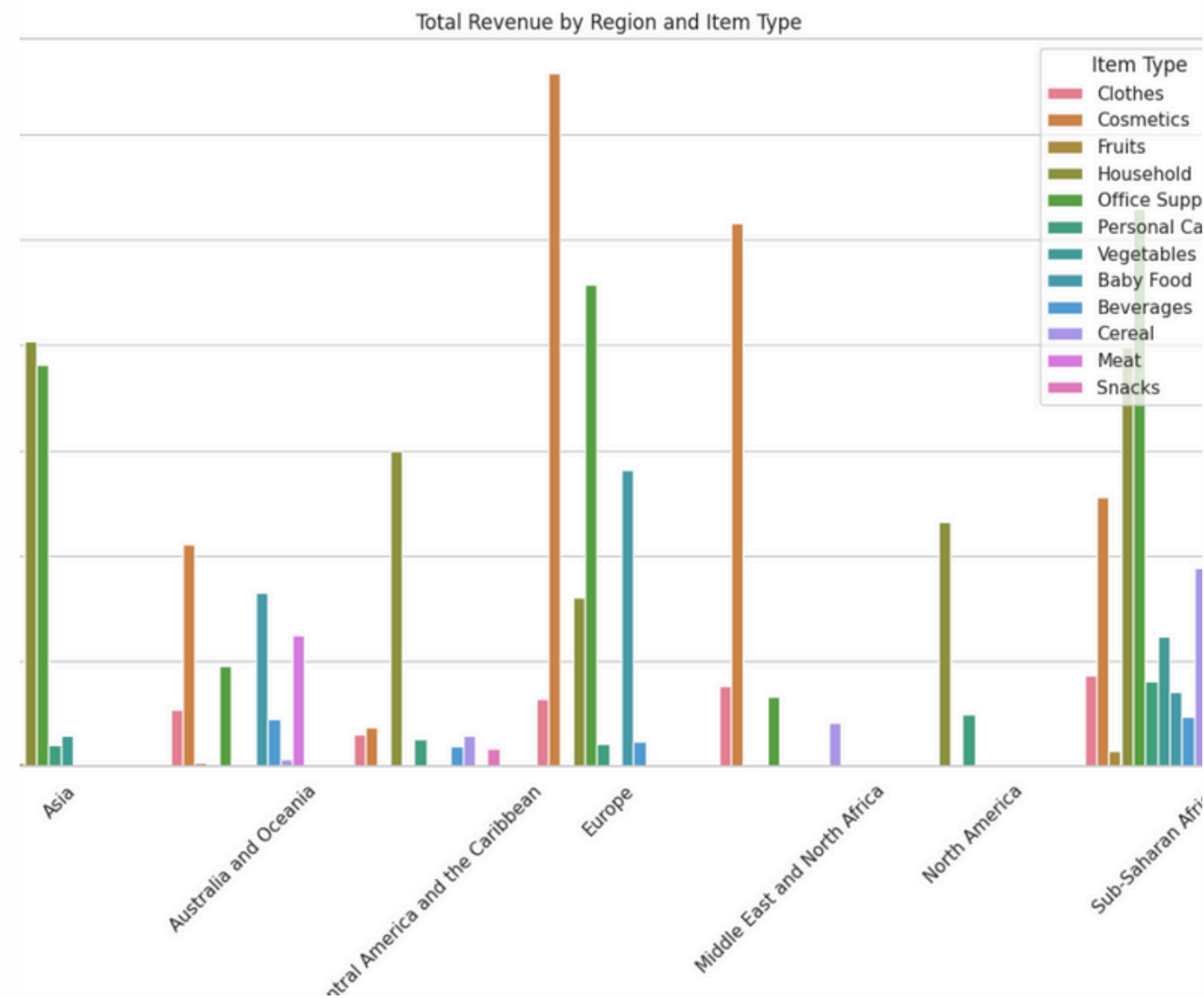


# Year and Month Wise Sales Trends

Sales reached their peaks in November 2015, July 2013, and November 2014



# Total Revenue by Region and Item Type



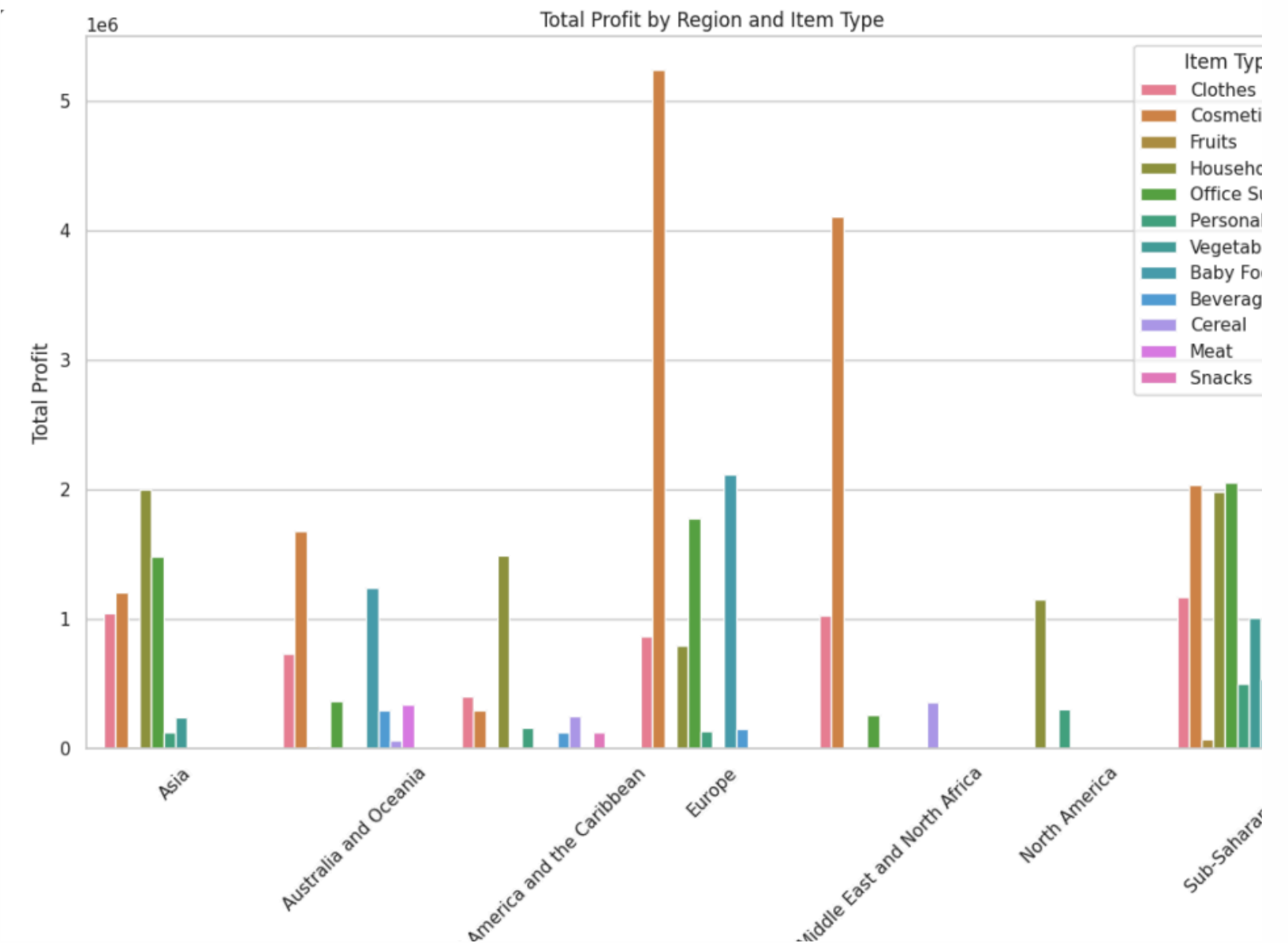
- Asia: Household items and office supplies are major revenue contributors, indicating strong demand for these categories.
- Australia and Oceania: Cosmetics, snacks, and beverages dominate revenue, highlighting a preference for personal care and consumable products.
- Central America and the Caribbean: Fruits are the significant revenue contributor, suggesting a strong market for fresh produce.
- Europe: Cosmetics are the top revenue contributors, followed by office supplies, showing a high demand for personal care and workplace essentials.
- Middle East and North Africa: Cosmetics are the primary revenue contributors, indicating a strong market for beauty and personal care products.
- North America: Household items contribute the most to revenue, reflecting a demand for home-related products.
- Sub-Saharan Africa: Household items and office supplies are major revenue contributors, similar to Asia, indicating a market for home and workplace essentials.

# Total Profit by Region and Item Type

- 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.

024, 14:48

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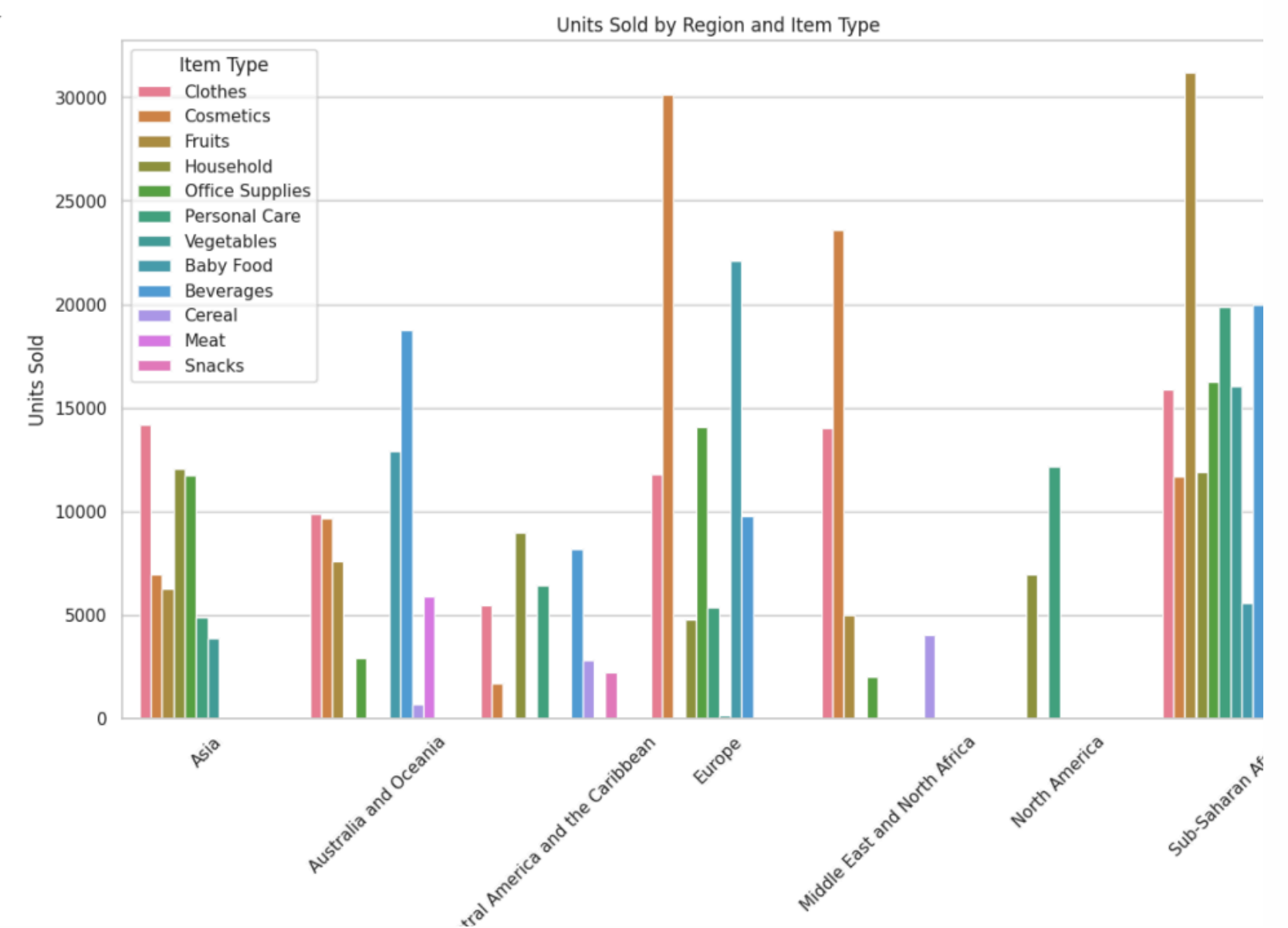


# Units Sold by Region and Item Type

- 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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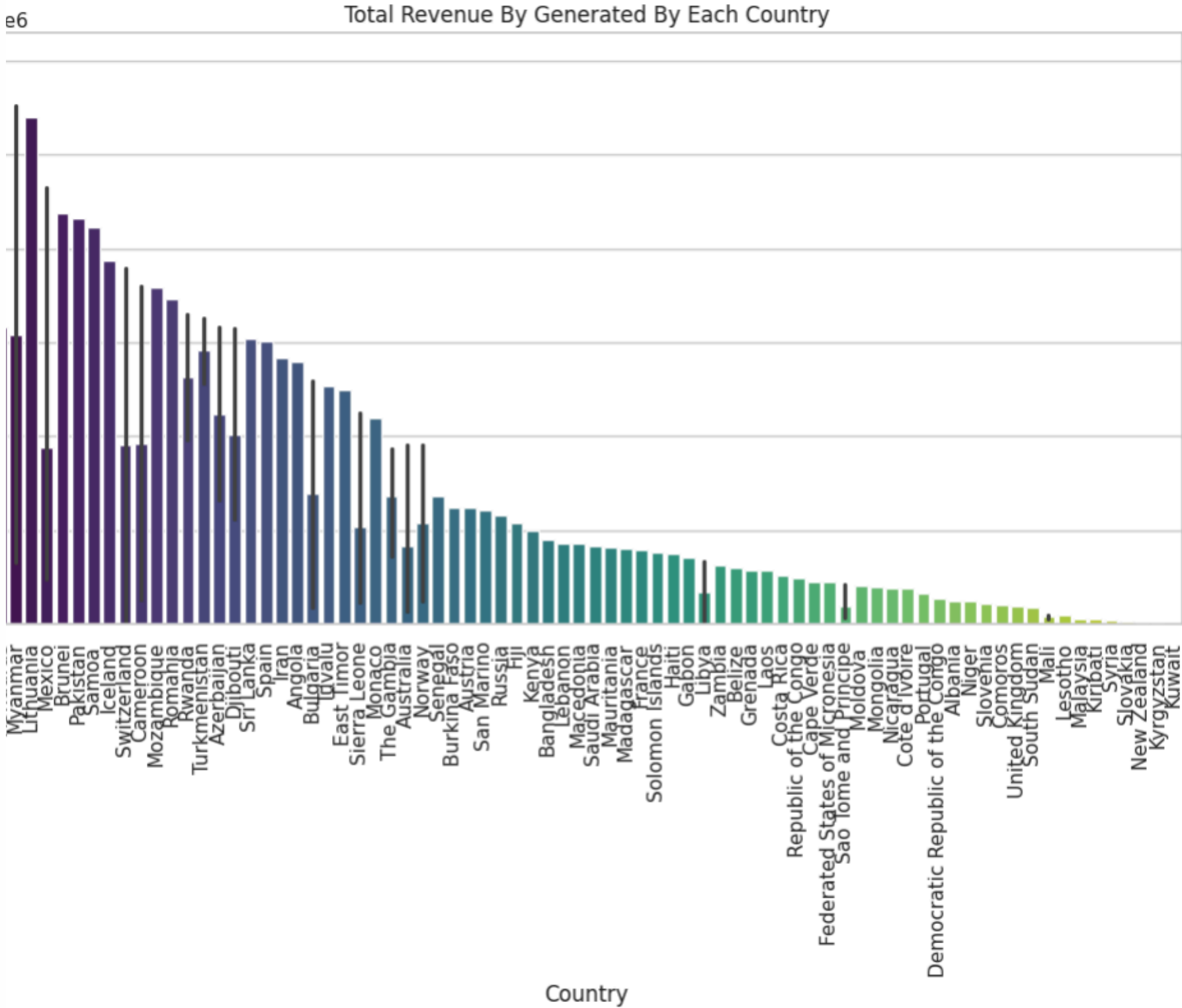
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# Total Revenue By Generated By Each Country

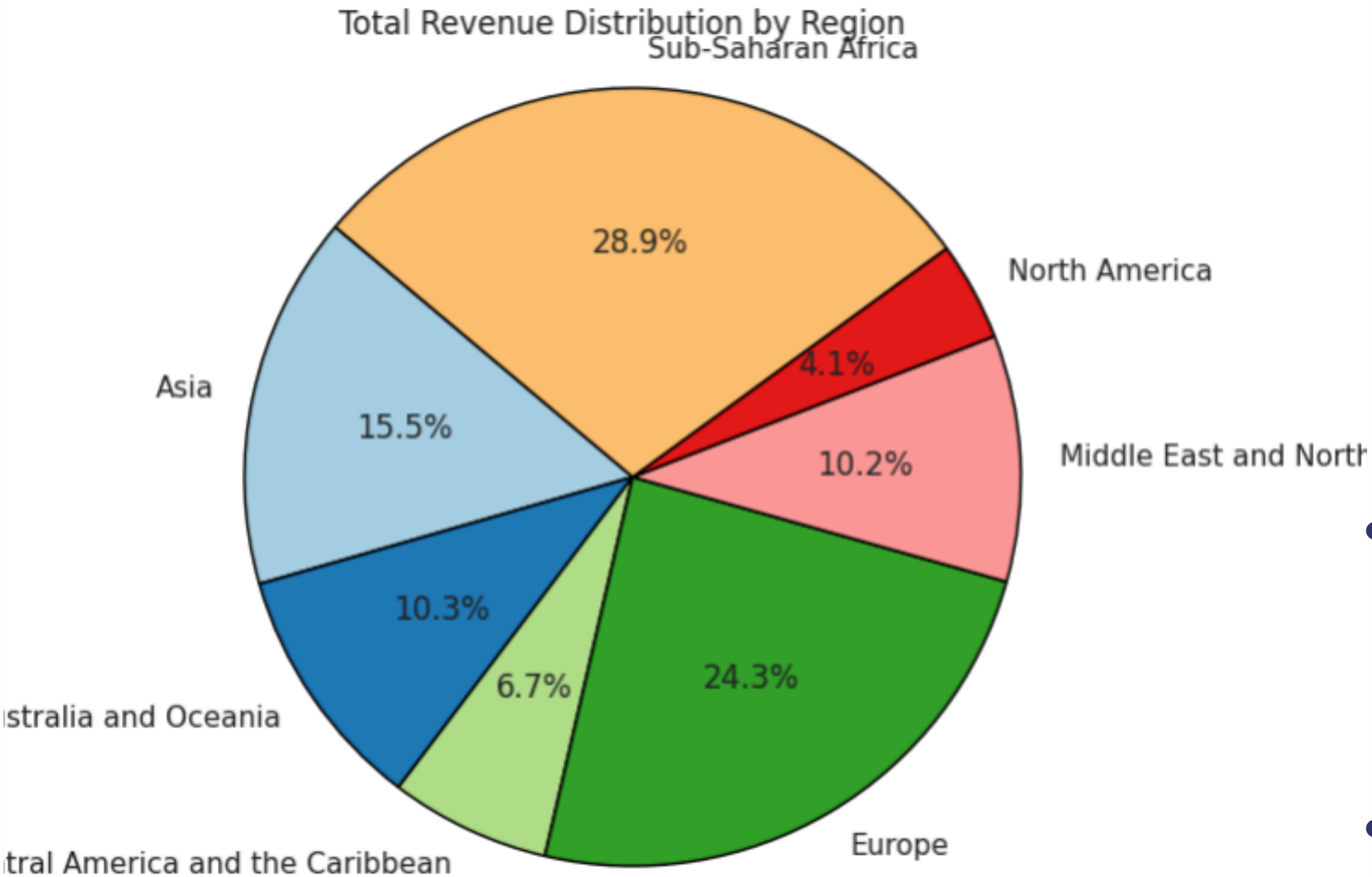
- Honduras generates the maximum revenue, indicating it is a strong and profitable market for the business.
- Kuwait generates the minimum revenue, suggesting it is an underperforming market with lower sales and minimal contribution to overall revenue.
- Focus on maintaining and enhancing market strategies 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.



# Total Revenue Distribution by Region

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- Sub-Saharan Africa generates the maximum revenue, contributing 29.9% of the total revenue, indicating it is the most significant and profitable market for the business.
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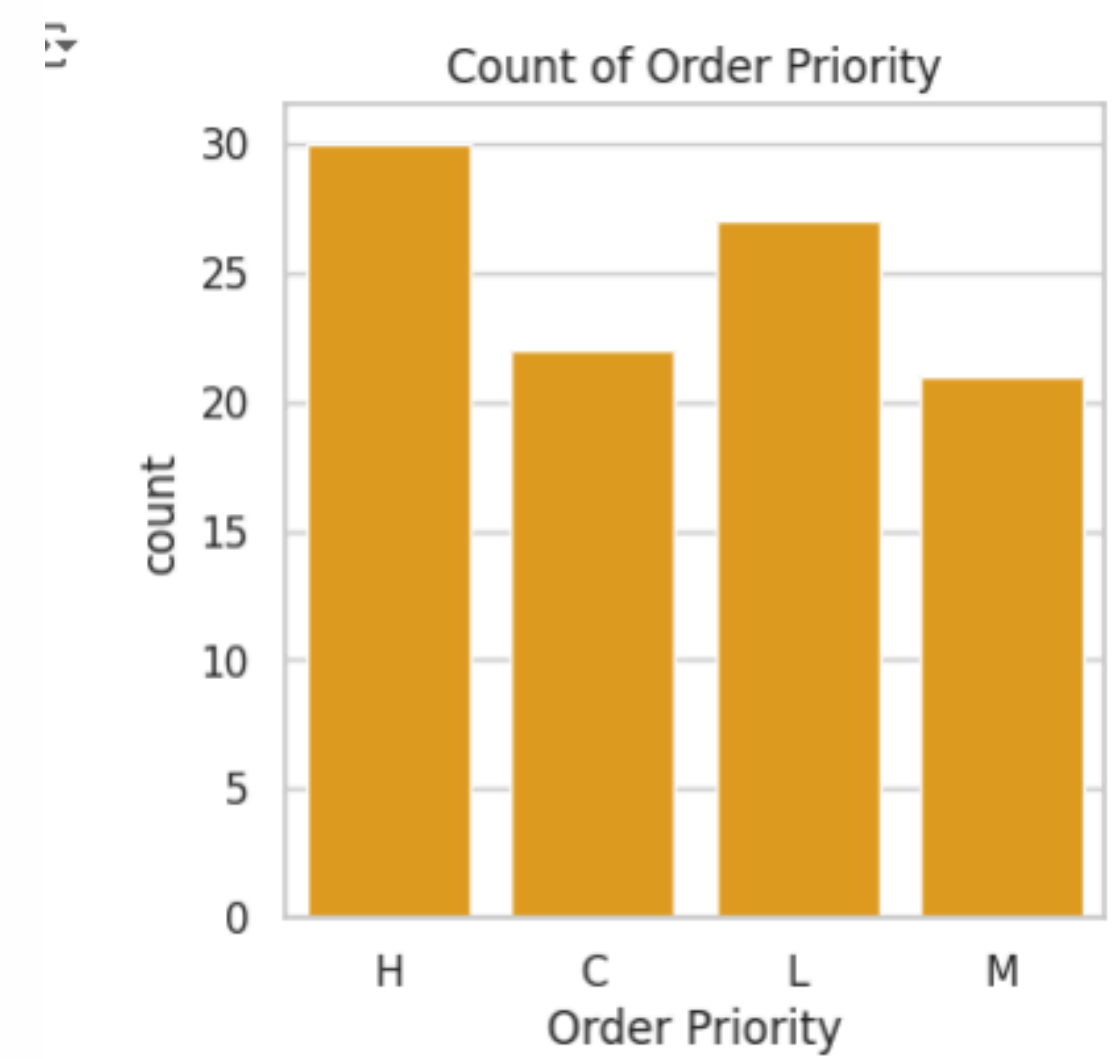
# Total Revenue Distribution by Order Priority

- Orders with priority "H" (High) contribute the most to revenue, indicating that high-priority orders are the most financially significant.
- Orders with priority "C" (Critical) contribute the least to revenue, suggesting that critical-priority orders have the lowest financial impact.

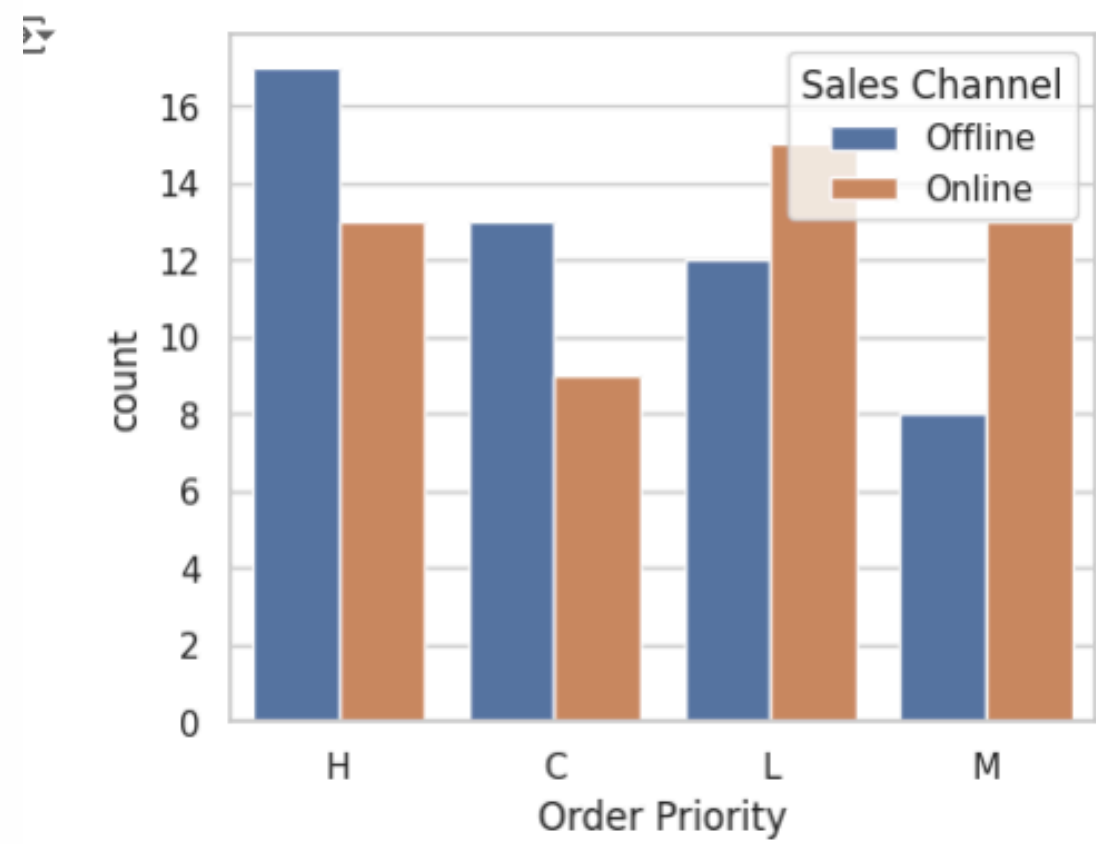


- High priority orders have the highest count, indicating that a significant number of orders are given high priority.
- Low priority orders also have a relatively high count, slightly less than high priority orders.

# Count of Order Priority



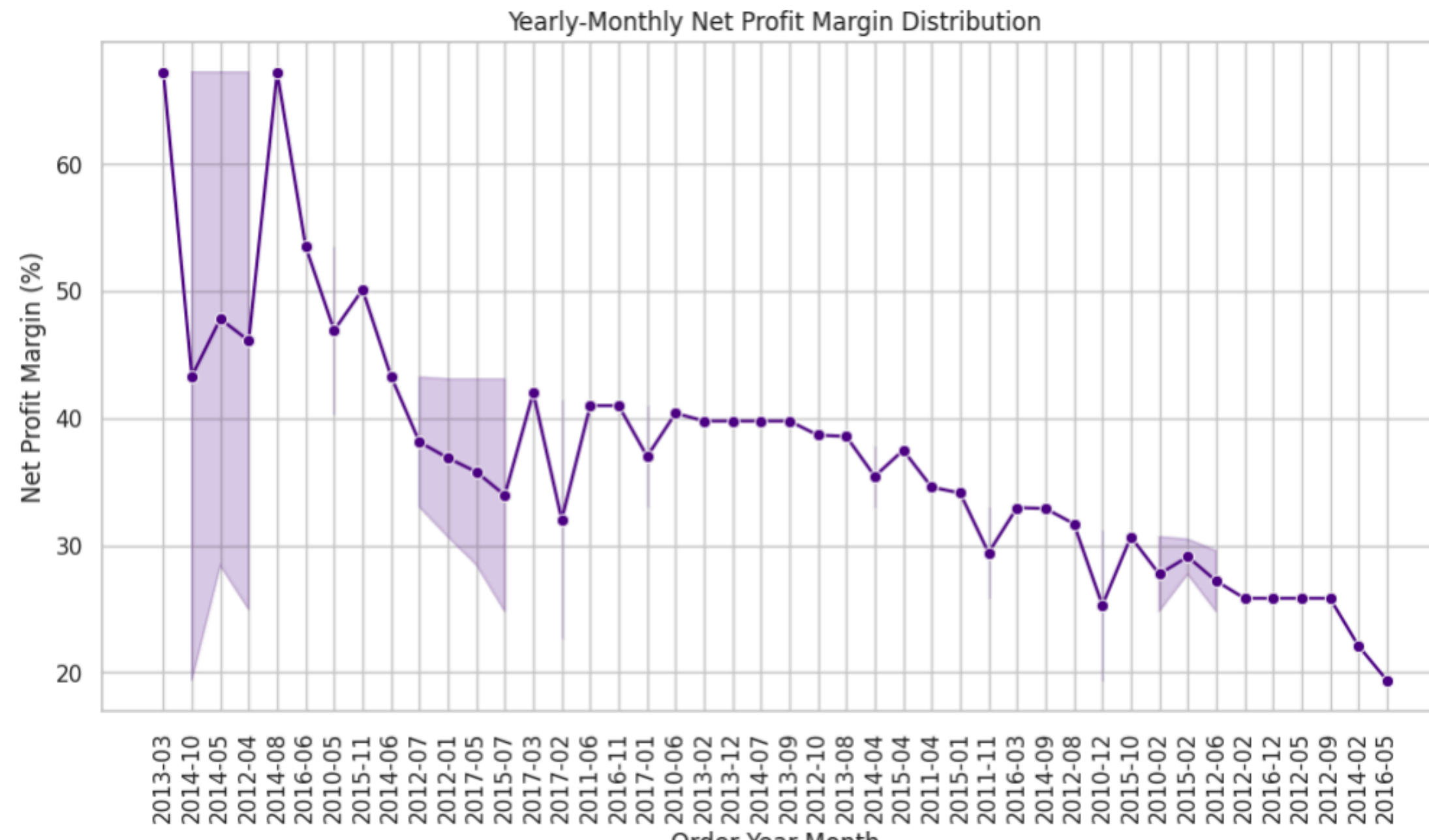
## Distribution of Order Priority by Sales Channel



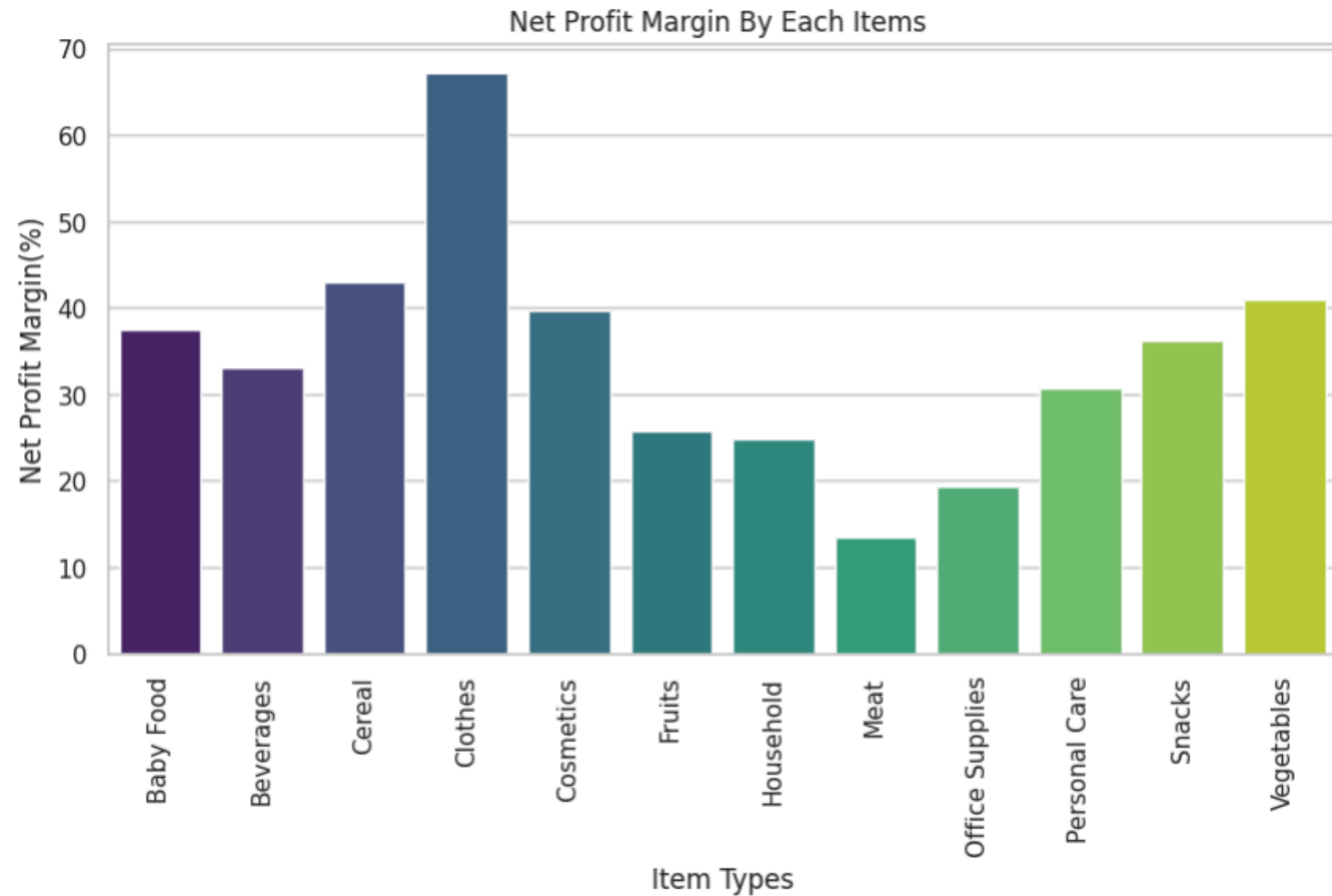
- H has a stronger presence in offline sales.
- L shows a higher contribution in online sales.

# Yearly-Monthly Net Profit Margin Distribution

- March 2013 and August 2014 marked the company's highest profitability, suggesting effective strategies or favorable market conditions.
- Analyzing these periods can provide valuable insights into the factors that drove success, helping to inform future business strategies.



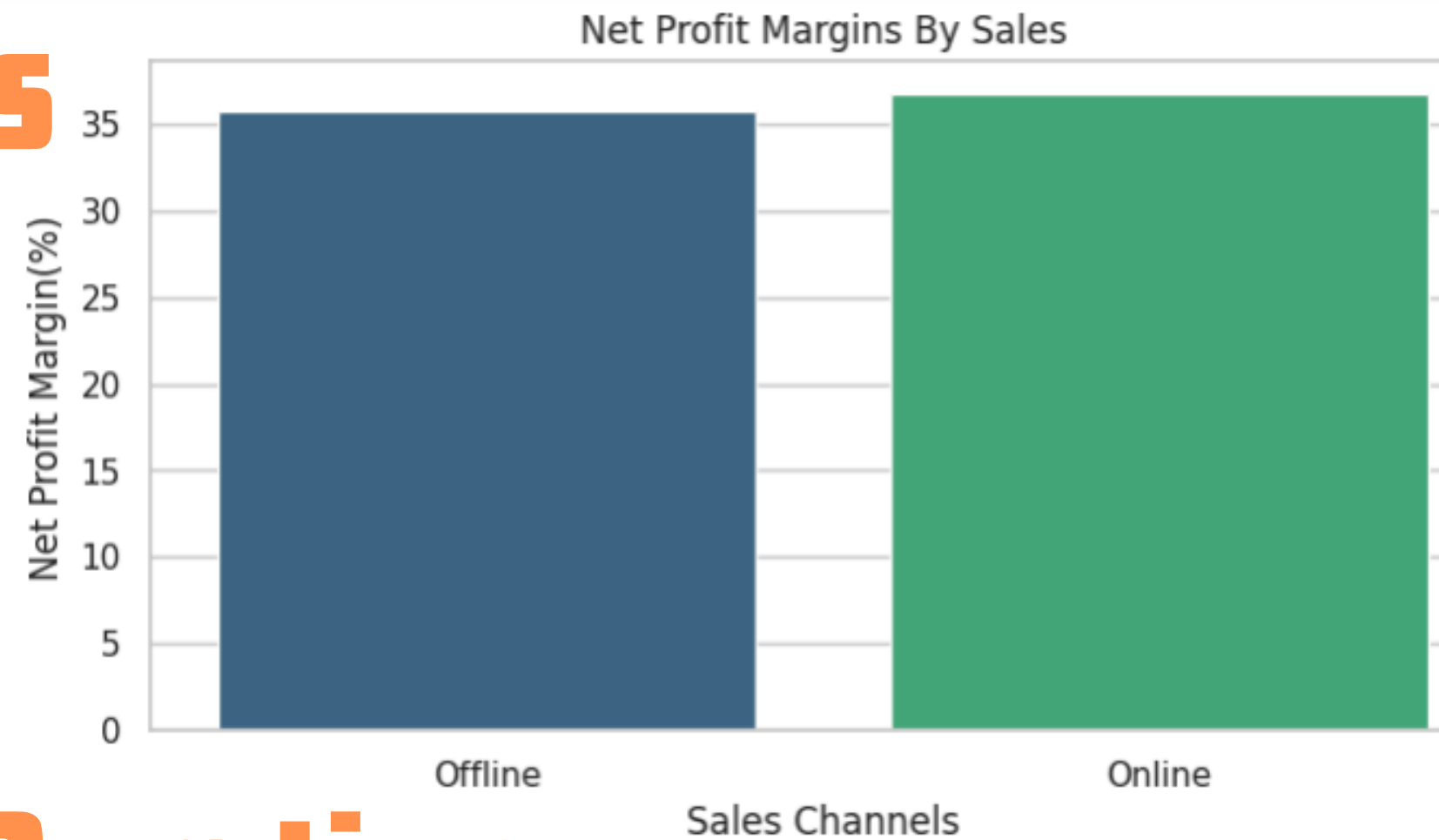
# Net Profit Margin(%)



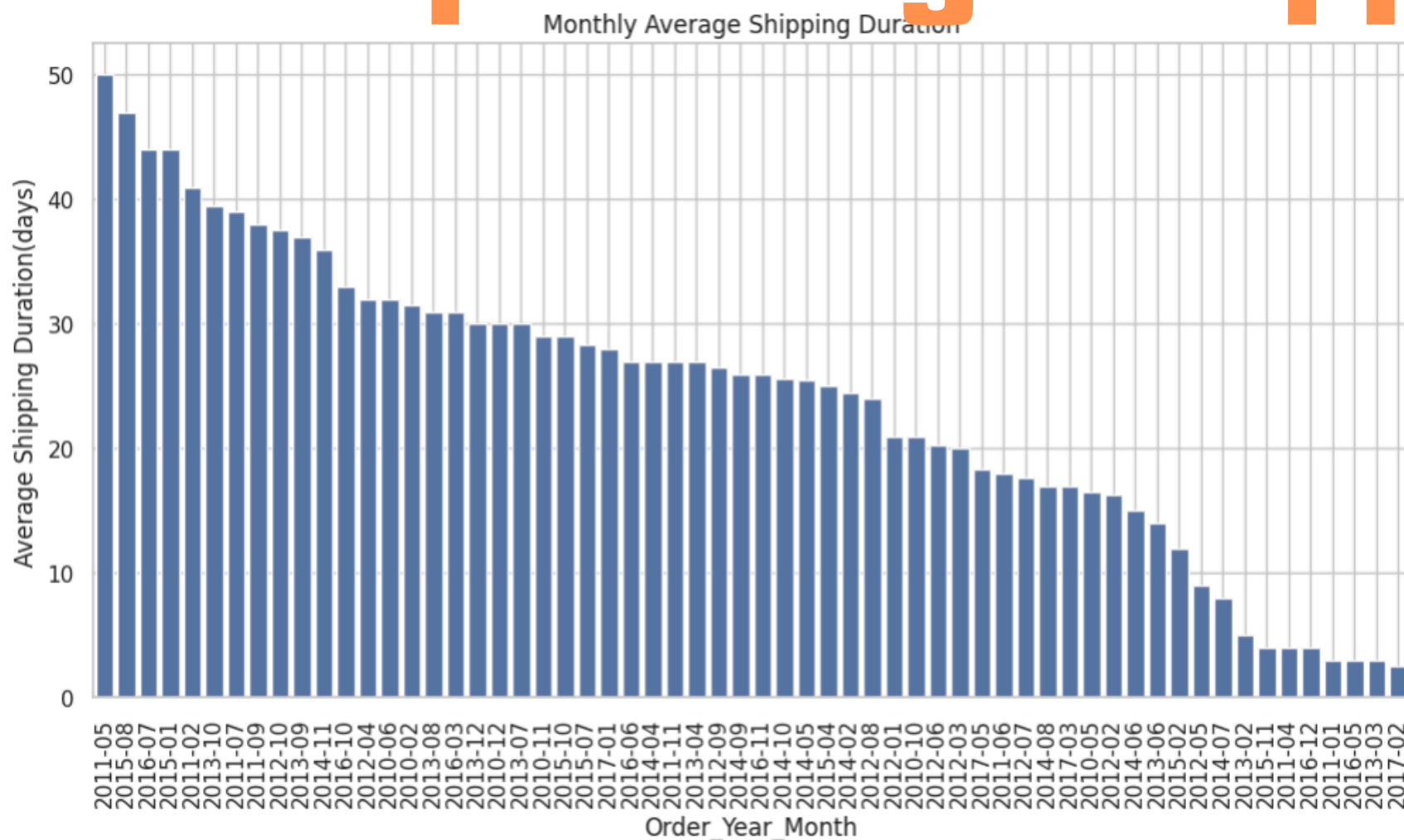
- Between 2010 and 2017, clothes achieved the highest profit margin, indicating that this product category was the most profitable during this period.
- During the same period, meat recorded the lowest profit margin, suggesting that this product category was the least profitable and may require strategic review to improve profitability.

# Net Profit Margins By Sales

As per observation total profit margin recursively increasing from offline sales channel to online sales channel between the year 2010 -2017



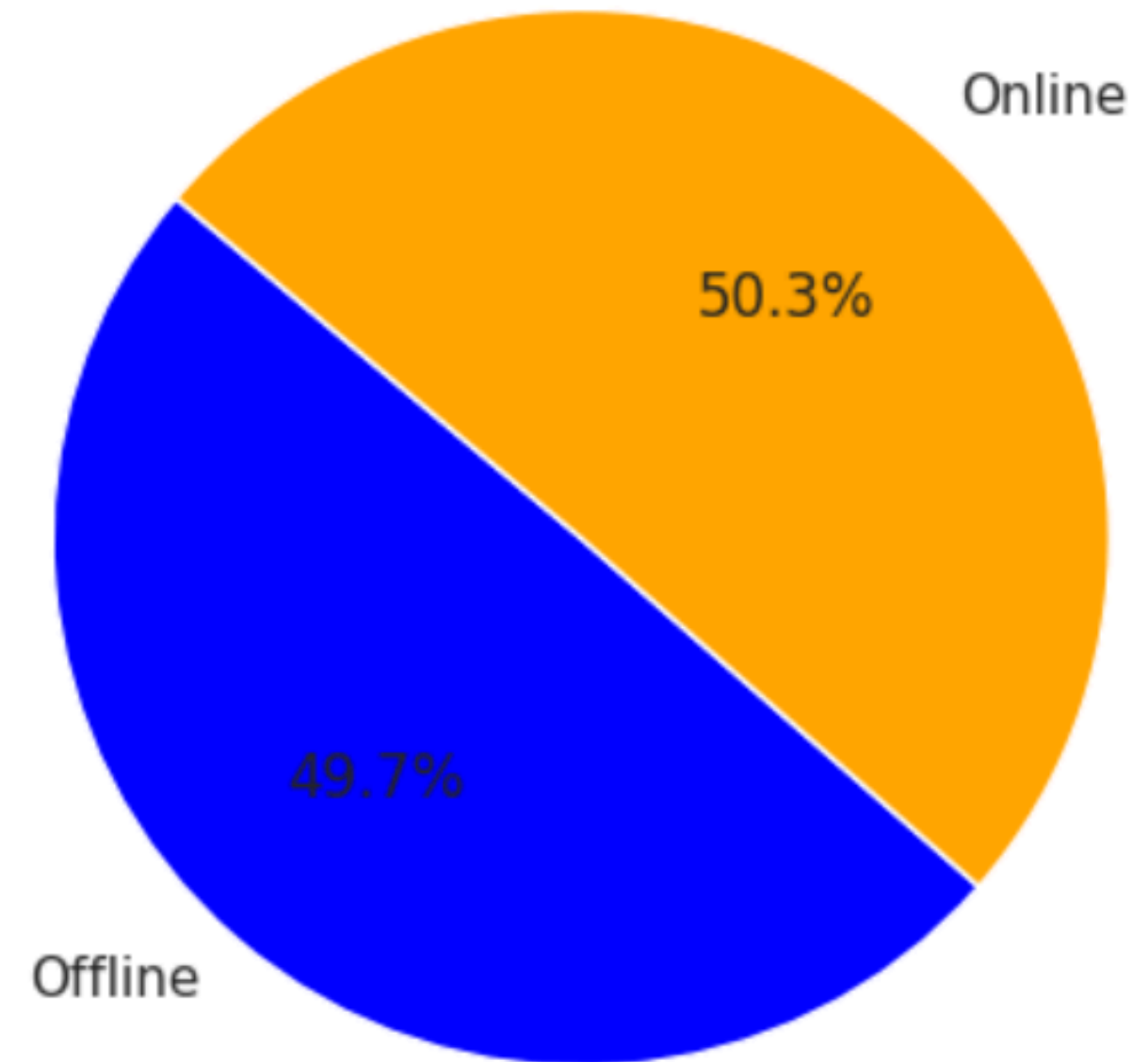
# Monthly Average Shipping Duration



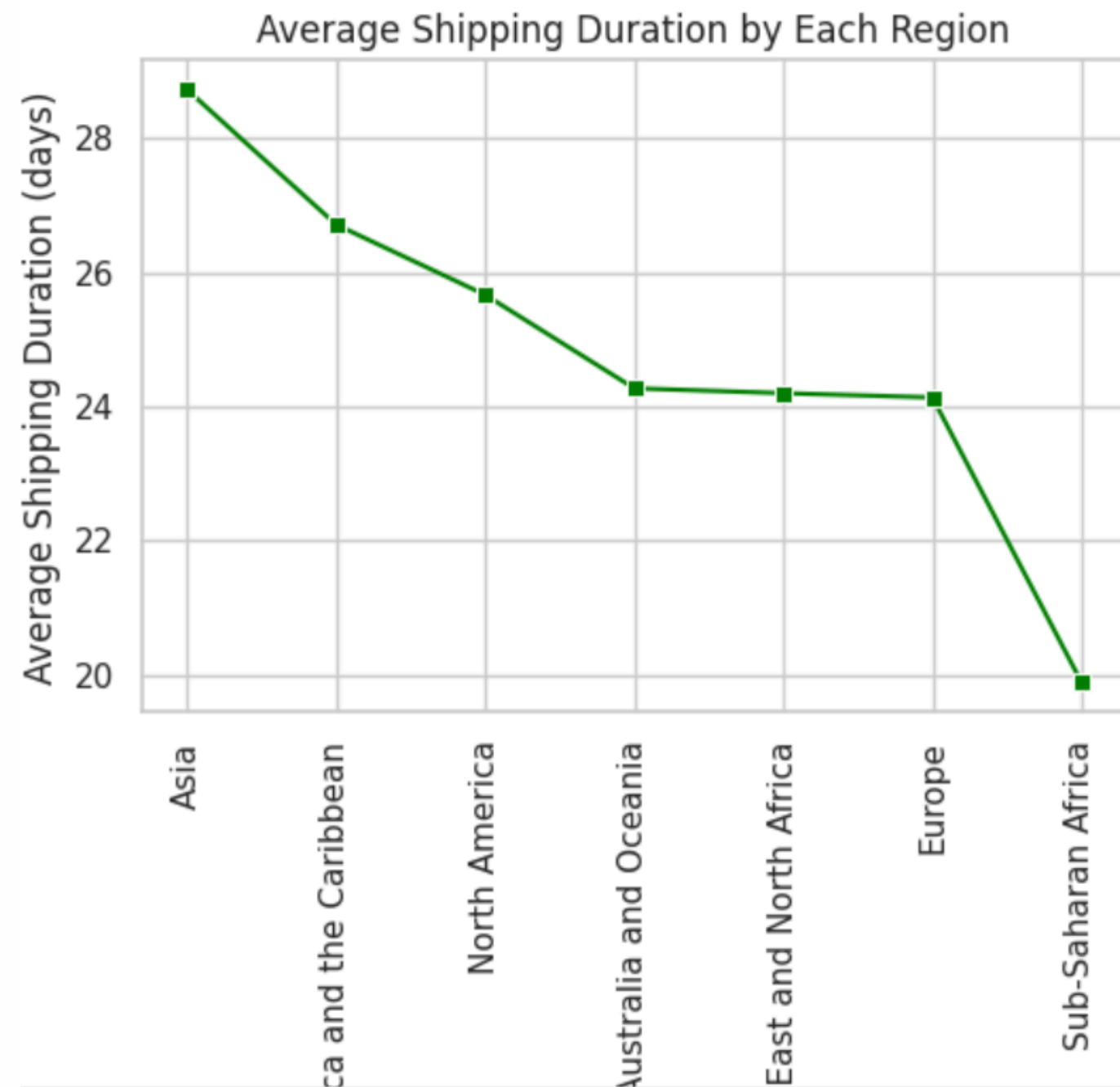
- The average shipping duration tends to be higher during certain months, likely correlating with peak shopping periods such as May, July, and August.
- Months like January, February, and March often show shorter average shipping durations.

# Average % Shipping Duration by Each Sales Channel

- The average shipping duration is slightly longer for online orders compared to offline orders.
- This suggests that online orders may involve more steps or additional processing time.



# Average Shipping Duration by Each Region



- The graph indicates significant variations in shipping durations across different regions.
- For instance, Sub-Saharan Africa exhibits the shortest shipping durations, suggesting an efficient logistics and distribution network within this region.



# Average Shipping Duration by Order Priority



- 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.

# 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!**