Project – Analyzing Amazon Sales data

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Insights:

1. Monthly Sales Trend:

- The analysis revealed consistent patterns in sales performance across different months, with the 2nd month consistently showing higher revenue and profit sales, followed by the 11th month and then the 7th month.
- Unit sales peaked in the 7th month, followed by the 2nd month and then the 5th month.
- Notably, high-priced units were predominantly sold in the 11th month, while low-priced units dominated sales in the 5th month.

2. Yearly Sales Trend:

- Revenue and profit were highest in the year 2012, followed by 2013 and then 2010. However, years 2011 and 2015 experienced comparatively lower revenue and profit.
- There is a slight decrease in overall revenue and profit over the years, suggesting potential shifts in market dynamics or business strategies.

3. Monthly-Year Sales Trend:

- Focusing on specific months within years revealed interesting variations in sales performance. For instance, July 2013 had high revenue and profit but relatively lower unit sales compared to October 2014 and July 2012.
- These insights highlight the importance of aligning promotional activities and inventory management with specific months to maximize sales opportunities.

4. Region-wise Analysis:

- Certain regions such as Australia, Oceania, Central America, the Caribbean, and North America exhibited lower total profit relative to other regions, considering the number of units sold.

- Order priorities varied geographically, with regions like Australia having more high and medium priority orders, while Asia and the Middle East leaned toward low priority orders.
- Different regions also experienced varied high sales days, suggesting potential cultural or economic influences on consumer behavior.

5. Order Priority and Shipping:

- Analysis of order priority and shipping revealed insights into customer preferences and shipping efficiency. High priority orders tended to be shipped faster on average, indicating efficient handling of urgent orders

6. Model Performance

- without Total Revenue and Total Cost Features:
  - The model utilizing GradientBoostingRegressor achieved a high R2 score of 0.982, indicating a strong correlation between predicted and actual values.
  - However, the RMSE value of 54887.20 suggests that the model's predictions have a relatively large error, indicating room for improvement.

- with Total Revenue and Total Cost Features:
  - The inclusion of Total Revenue and Total Cost features resulted in a significant improvement in model performance.
  - The Lasso Least Angle Regression model achieved a remarkable RMSE value of 0.0813 and a perfect R2 score of 1.000, indicating highly accurate predictions and explaining all the variability in the response data around its mean.

Suggestions:

1. Targeted Promotions:

   - Implement targeted promotions and marketing strategies during peak sales months and years to capitalize on high revenue and profit periods.

2. Resource Allocation:

   - Allocate resources towards peak years and regions to maximize profitability. Consider shifting focus and investment towards underperforming regions to stimulate sales.

3. Promotional Activities Alignment:

   - Tailor promotional activities based on specific months within each year to align with consumer behavior and maximize sales potential.

4. Region-specific Strategies:

   - Offer region-specific discounts or incentives to stimulate sales in underperforming regions and capitalize on emerging market opportunities.

5. Shipping Optimization:

   - Optimize shipping processes to enhance efficiency and reduce shipping times, particularly for high-priority orders. Consider introducing additional charges for expedited shipping options to offset costs.