Amazon Sales Data Analysis Report

Executive Summary:

This report presents an analysis of Amazon sales data, aiming to provide insights into sales trends, key metrics, and relationships between attributes. The analysis was conducted using Python for data extraction and transformation (ETL) and Power BI for data visualization and exploration.

1. Data Extraction and Transformation:

1.1 Data Loading:

The Amazon sales data was loaded into a Pandas DataFrame from the "Amazon Sales data.csv" file.

import pandas as pd file_path = "Amazon Sales data.csv" df = pd.read_csv(file_path)

1.2 Data Transformation:

The 'Order Date' column was converted to datetime format, and time components (Month, Year, and Year-Month) were extracted for time-based analysis.

df['Order Date'] = pd.to_datetime(df['Order Date']) df['Month'] = df['Order Date'].dt.month df['Year'] = df['Order Date'].dt.year df['YearMonth'] = df['Order Date'].dt.to_period('M')

2. Aggregated Sales Data:

2.1 Monthly Sales Trend:

The total revenue was aggregated on a monthly basis.

monthly_sales = df.groupby('YearMonth')['Total Revenue'].sum().reset_index()
monthly_sales.to_csv("monthly_sales_trend.csv", header=True, index=False)

2.2 Yearly Sales Trend:

The total revenue was aggregated on a yearly basis.

yearly_sales = df.groupby('Year')['Total Revenue'].sum().reset_index()
yearly_sales.to_csv("yearly_sales_trend.csv", header=True, index=False)

2.3 Yearly Monthly Sales Trend:

The total revenue was aggregated on a yearly and monthly basis.

yearly_monthly_sales = df.groupby(['Year', 'Month'])['Total Revenue'].sum().reset_index()
yearly_monthly_sales.to_csv("yearly_monthly_sales_trend.csv", header=True, index=False)

3. Power BI Dashboard:

The transformed and aggregated data were visualized using Power BI, creating an interactive dashboard to explore the following insights:

- **Monthly Sales Trend**
- **Yearly Sales Trend**
- **Yearly Monthly Sales Heatmap**
- **Top-Selling Items**
- **Regions with Highest Sales**
- **Sales Channel Impact**
- **Correlation between Unit Price and Total Profit**

4. Key Findings:

- **Monthly Sales Trend:** The line chart revealed fluctuations in monthly revenue, indicating potential seasonality patterns.
- **Yearly Sales Trend:** The bar chart showed steady growth in total revenue over the years.
- **Top-Selling Items:** Identified high-performing items contributing significantly to revenue.
- **Regions with Highest Sales:** Highlighted regions with the most substantial sales contributions.
- **Sales Channel Impact:** The pie chart illustrated the distribution of revenue across different sales channels.
- **Correlation Analysis:** The scatter plot explored the relationship between unit price and total profit.

5. Recommendations:

- Further investigate the factors contributing to monthly fluctuations.
- Explore marketing strategies to enhance sales in regions with lower contributions.
- Consider promotions or optimizations for top-selling items.
- Assess the effectiveness of sales channels and prioritize based on performance.

6. Conclusion:

This analysis provides a comprehensive overview of Amazon sales trends, highlighting key metrics and relationships between attributes. The Power BI dashboard offers an interactive platform for further exploration and data-driven decision-making.