



Analyzing Amazon Sales data

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 enterprise.

Objectives

- ▶ The objective of this project is to perform a thorough analysis of Amazon sales data in order to offer practical recommendations for improving sales techniques and optimizing profitability.
- ▶ Using an exploratory data analysis approach, the project aims to identify trends and patterns concerning revenue, sales performance, items sold, and sales channel.
- ▶ To enable strategic business growth and promote informed decision-making, sales management has to be provided with comprehensive information.

Dataset

- ▶ The dataset appears to contain Amazon sales data with 100 entries and 14 attributes. Below is a summary of the dataset's attributes:
- ▶ **Attributes:**
 1. **Region:** The geographical region where the sales occurred .
 2. **Country:** The specific country within the region where the sale was made .
 3. **Item Type:** The type of item sold .
 4. **Sales Channel:** Indicates whether the sale was made online or offline.
 5. **Order Priority:** The priority level assigned to the order.
 6. **Order Date:** The date when the order was placed.
 7. **Order ID:** A unique identifier for each order.
 8. **Ship Date:** The date when the order was shipped.
 9. **Units Sold:** The number of units sold in the order.
 10. **Unit Price:** The price per unit of the item sold.
 11. **Unit Cost:** The cost per unit of the item sold.
 12. **Total Revenue:** The total revenue generated from the sale.
 13. **Total Cost:** The total cost associated with the sale.
 14. **Total Profit:** The total profit earned from the sale.

Data Cleaning

- ▶ To clean the data, python is used in this analysis to find out missing values, duplicates, outliers and further analysis.
- ▶ Though the data is cleaned i.e. it does not contain any missing values , no duplicates is found, etc. but, there were some outliers found in it.
- ▶ By performing IQR technique, I removed 7 rows identified as outliers from the dataset. The cleaned dataset now contains 93 rows and 14 columns.

Dashboard and insights



Insights (overview)

- ▶ This dashboard provides a comprehensive overview of sales, costs, profits, and distribution data across various countries and regions for Amazon. Here are some key insights:
- ▶ Overall Performance:
 - ▶ Total Sales: \$107.83M
 - ▶ Total Cost: \$70.26M
 - ▶ Total Profit: \$37.57M
 - ▶ Total Quantity Sold: 468K units
 - ▶ Total Items: 12 different items sold
 - ▶ Countries Involved: 74 countries
- ▶ **Top 5 Countries by Units Sold:**

Sao Tome and Principe sold 25k units, leading the list followed by Djibouti(23k), The Gambia(14k),Australia(13k) and Norway(12k).
- ▶ **Total Sales by Region:**

Sub-Saharan Africa leads with \$36.08M in total sales, indicating a significant market presence while, **Asia** was \$11.47M, which is slightly lower compared to the other regions.
- ▶ **Summary Table Insights:**

Beverages and cereals are strong performers, with notable spikes in sales and profits during specific periods.



\$107.83M
Total Sales

\$37.57M
Total Profit

\$70.26M
Total Cost

Sales Channel

- ☒ Offline
- ☒ Online

Order Priority

(All)

Year of Order Date

(All)

Month of Order Date

(All)

Profit Dashboard

Overview

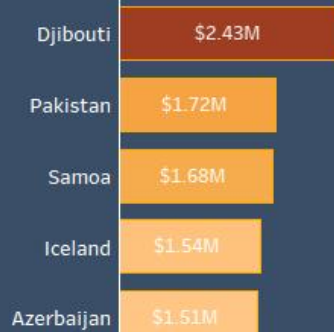
Sales Report

Profit Report

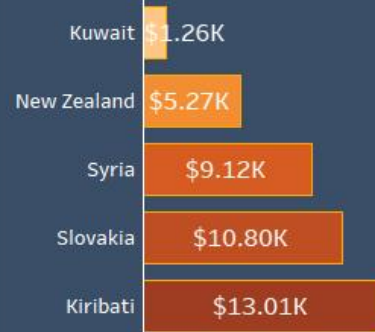
Other Report

Shipping Report

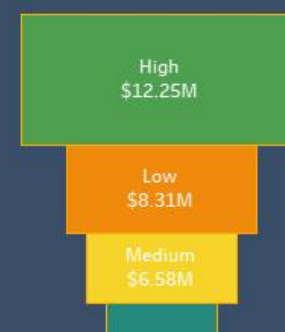
Top 5 Country



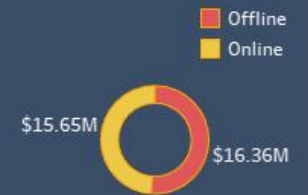
Bottom 5 Country



Total Profit Wise Order Priority



Profit earn by each Sales Channel



Mon..	2010	2011	2012	2013	2014	2015	2016	2017
Jan		\$364K	\$207K					\$880K
Feb	\$1,424K	\$128K	\$1,554K	\$639K	\$656K	\$780K		\$404K
Mar			\$408K	\$360K			\$85K	\$76K
Apr		\$694K	\$124K	\$633K	\$1,839K	\$624K		
May	\$965K	\$90K	\$1,219K		\$939K		\$127K	\$1,243K
Jun	\$727K	\$8K	\$698K	\$516K	\$20K		\$216K	
Jul		\$65K	\$1,065K	\$3,398K	\$227K	\$419K	\$404K	
Aug			\$248K	\$23K	\$306K	\$2K		
Sept		\$236K	\$2,085K	\$18K	\$5K			
Oct	\$449K		\$759K	\$1,075K	\$736K	\$369K	\$73K	
Nov	\$1,375K	\$461K				\$435K	\$2,337K	
Dec	\$642K			\$53K			\$1,661K	



Insights(Profit Dashboard)

- ▶ The Profit Dashboard provides a detailed view of profit distribution across various countries, order priorities, and sales channels, as well as profit trends over the years.
- ▶ **Top 5 country by profit:**
Djibouti leads as the top profit-generating country with \$2.43M, followed by Pakistan (\$1.72M), Samoa (\$1.68M), Iceland (\$1.54M), and Azerbaijan (\$1.51M).
- ▶ **Bottom 5 country by profit:**
Kuwait, New Zealand, Syria, Slovakia, and Kiribati represent the bottom five countries, with profits ranging from \$1.26K in Kuwait to \$13.01K in Kiribati.
- ▶ **Total profit wise order priority:**
High-priority orders contributing \$12.25M, medium-priority orders generating \$6.58M, and low-priority orders accounting for \$8.31M.
- ▶ **Profit earned by each sales channel:**
Sales channels is almost **evenly** split, with online sales slightly leading at \$16.36M compared to \$15.65M from offline sales.
- ▶ **global map highlighting the geographical distribution of profits**, indicating strong performance in countries like Djibouti, Pakistan, and various European nations.
- ▶ **The heat map :**
The country list shows a detailed month-wise profit trend from 2010 to 2017, with noticeable profit peaks in specific years such as February 2014 and April 2015, reflecting the effectiveness of seasonal or event-driven sales strategies during these periods.



\$107.83M
Total Sales

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Total Profit

\$70.26M
Total Cost

Region

(All)

Country

(All)

YEAR

(All)

Item Type

(All)

Sales Channel

- ☒ Offline
☒ Online

Overview

Sales Report

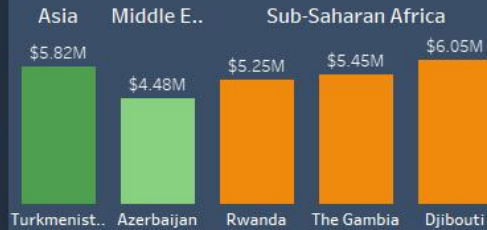
Profit Report

Other Report

Shipping Report

Sales Dashboard

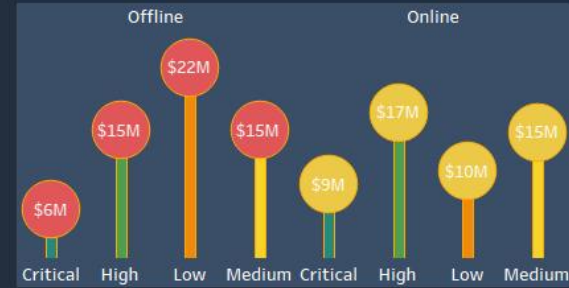
Top 5 Countries Sales



Total Sales by Sales Channel



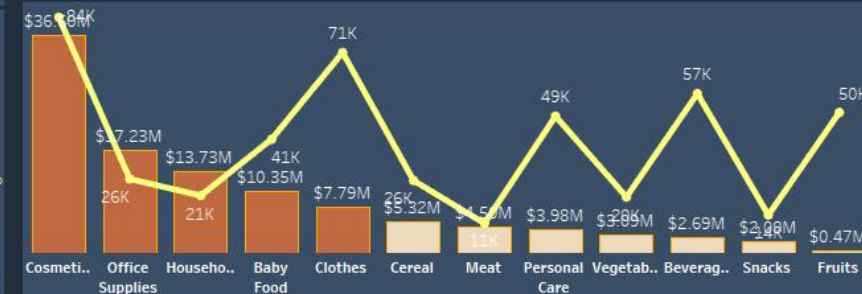
Order Priority / Sales Channel by Total Revenue



Sales and Profit Trends over time



Itemwise Sales and Unit Sold



Insights(Sales Dashboard)

- ▶ The sales dashboard presents a detailed overview of various sales metrics across different regions, channels, and product categories.

- ▶ **Top 5 countries-region wise sales:**

Djibouti leading in Sub-Saharan Africa with sales of \$6.05 million, followed by Turkmenistan in Asia with \$5.82 million, and Azerbaijan in the Middle East with \$4.48 million. Overall, Sub-Saharan Africa shows strong sales figures, with Rwanda and The Gambia also contributing significantly.

- ▶ **Order Priority / Sales Channel by Total Revenue:**

For offline sales, the majority of revenue comes from low-priority orders, which account for \$22 million. High and medium-priority orders each contribute \$15 million. Critical priority orders, however, generate the least revenue in the offline channel, totaling \$6 million.

In the online sales channel, the distribution of revenue is slightly more balanced across different order priorities. Low-priority orders still lead with \$17 million in revenue, closely followed by medium-priority orders at \$15 million. High-priority orders contribute \$10 million, while critical priority orders bring in \$9 million.

- ▶ **The sales and profit trends over time:**

This demonstrate notable fluctuations throughout the year, with the highest profit percentage occurring in August at 14.84%. This indicates a period of peak profitability, while other months, such as February and December, show lower but still positive profit margins.

- ▶ **Item-wise sales and units sold :**

Cosmetics lead in sales revenue at \$36.84 million, while clothes top the list in terms of units sold at 71,000. Other products, such as office supplies, household items, and baby food, show varying levels of sales and units sold, contributing to the overall sales landscape.



\$107.83M
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Total Profit

\$70.26M
Total Cost

Order Priority

(All)

Item Type

(All)

Year of Ship Date

(All)

Sales Channel

☒ Offline
☒ Online

Overview

Sales Report

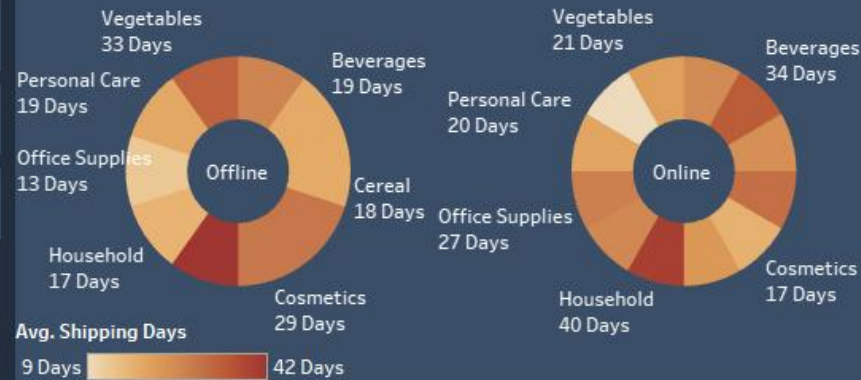
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Other Report

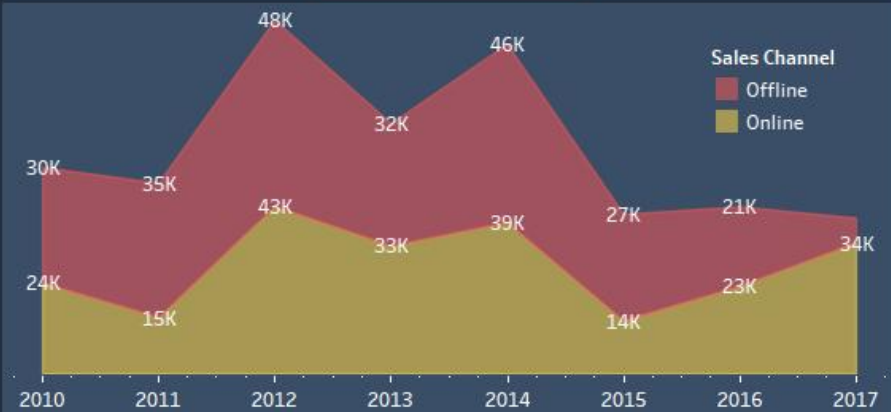
Shipping Report

Shipping Dashboard

Itemswise Average Shipping days by sales channel



Total Unitsold Yearwise



Average Shipping Days by Order Priority/Item wise

Order ..	Baby Fo..	Beverag..	Cereal	Clothes	Cosmeti..	Fruits	Househ..	Meat	Office S..	Persona..	Snacks	Vegetab..
Critical	17	25	24	32	0	15			16	17		33
High	23	4	25	13	23	32			8	17		21
Low	25			33	42	28	24	42	6	12	14	20
Medium	45		3	41	27	23	4	9	31	30	0	

Insights(shipping dashboard)

- ▶ The shipping dashboard contains several charts, each offering different insights:

- ▶ **Item-wise Average Shipping Days by Sales Channel:**

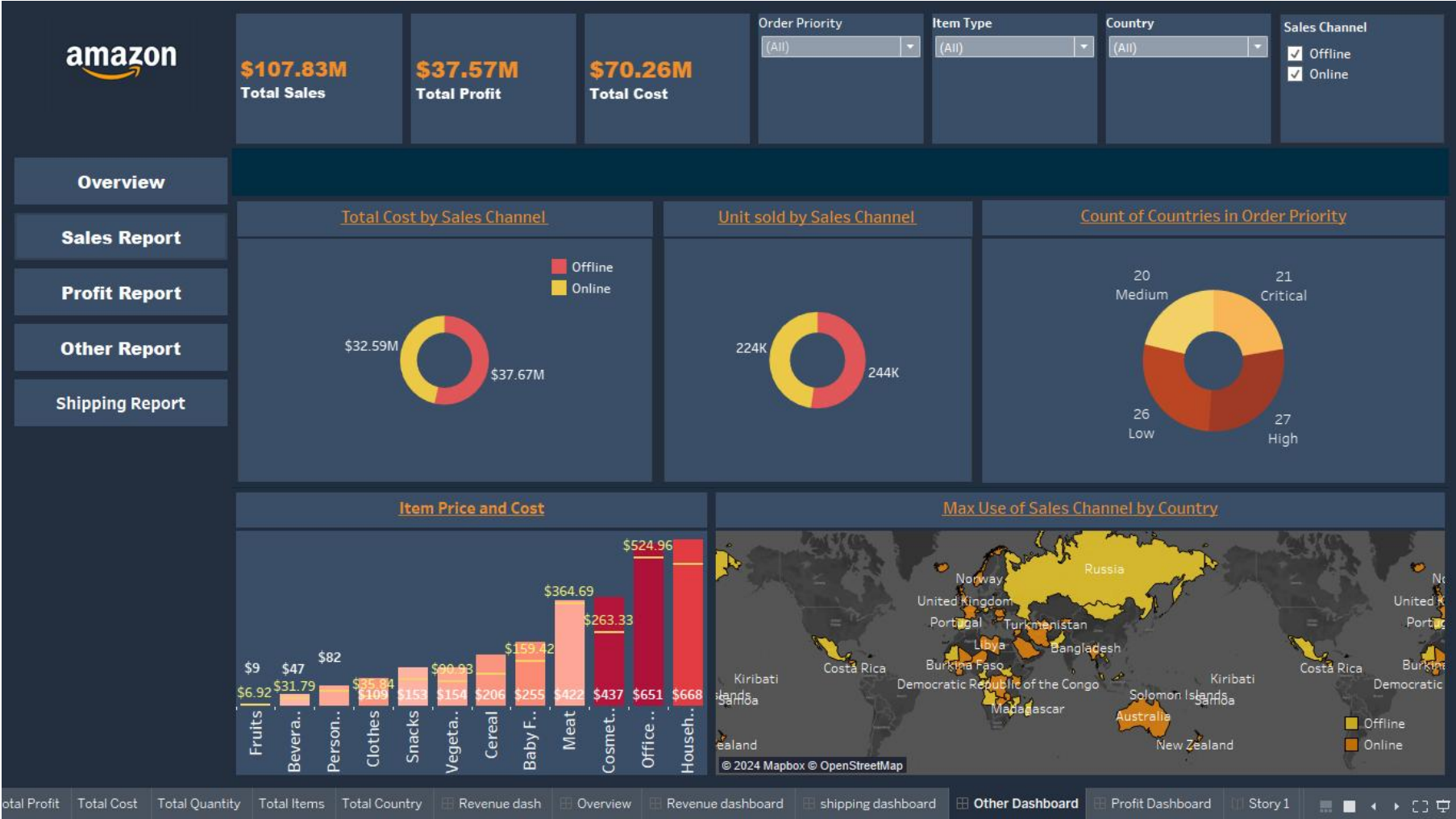
This chart compares average shipping times between offline and online channels for different product categories. Offline shipping is slower for items like vegetables and cosmetics, while online shipping is faster for some categories, although household items take significantly longer online.

- ▶ **Total Units Year-wise:**

The highest amount of unit sold inventory was recorded in 2012, with offline channels showing a peak of 48K units. After 2012, there's a noticeable decline, with sold units fluctuating but generally decreasing. By 2017, sold units in offline channels have decreased to 23K, while online channels have stabilized at 14K units.

- ▶ **Average Shipping Days by Order Priority and Item-wise:**

This heat map shows how shipping times vary based on order priority (critical, high, low, medium) across different product categories. Critical orders, particularly for cosmetics, are shipped quickly, while low and medium-priority orders take longer, especially for items like household goods and meat.



Insights

- ▶ The dashboard presents several charts that provide a snapshot of costs, units sold, order priorities, and sales channel usage across different countries:
- ▶ **Total Cost by Sales Channel:**

This pie chart shows the distribution of costs between offline and online sales channels. The online channel accounts for a higher total cost of \$37.67 million compared to \$32.59 million for the offline channel.
- ▶ **Units Sold by Sales Channel:**

Another pie chart illustrates the number of units sold through each sales channel. Online sales lead with 244K units sold, slightly more than the 224K units sold offline, indicating a strong performance in the online market.
- ▶ **Count of Countries by Order Priority:**

This chart categorizes countries based on the most common order priorities (critical, high, medium, and low). The most frequent order priorities are high (27 countries) and low (26 countries), followed by medium (20 countries) and critical (21 countries).

- ▶ **Item Price and Cost:**

This bar chart compares the price and cost of different items, with items like household goods and office supplies having the highest costs and prices, while items like fruits and beverages have the lowest. This suggests that high-cost items may be driving overall expenses.
- ▶ **Max Use of Sales Channel by Country:**

The map visualizes which sales channel (offline or online) is most utilized in different countries. With offline channels being more dominant in large parts of Africa, Asia, and Eastern Europe, while online channels have a stronger presence in Western countries like the UK and Australia.

Thank You