# Project Id: 78G0OL

Amazon Sales Report – Project Report

## Problem Statement:

Analyze and provide insights on Amazon Sales Report.

## Problem Description:

The provided dataset contains detailed sales transactions from Amazon, such as order ID, date, product category, amount, quantity, fulfillment method, status, shipping details, and more. The goal is to perform data analysis to derive actionable insights that can help improve business strategies and decision-making.

## Project Objective:

## 1. Sales Overview: Understand the overall sales performance, trends, and patterns over time.

## 2. Product Analysis: Analyze the distribution of product categories, sizes, and quantities sold to identify popular products.

## 3. Fulfillment Analysis: Investigate the fulfillment methods used and their effectiveness in delivering orders.

## 4. Customer Segmentation: Segment customers based on their buying behaviour, location, and other relevant factors.

## 5. Geographical Analysis: Explore the geographical distribution of sales, focusing on states and cities.

## 6. Business Insights: Provide actionable insights and recommendations based on the analysis to optimize sales strategies, improve customer satisfaction, and enhance overall business performance.

## Deliverables :

* Top 5 sales contributing states
* Top revenue-generating product categories
* Highest selling products
* Preferred sales channels
* Shipping & courier status
* Monthly sales performance

## Data Analysis Process:

**Data Cleaning:**

Data cleaning is the process of removing the duplicate records, missing values from the data to obtain reliable information from the dataset.

* Duplicate entries, missing values, and irrelevant records (e.g., cancelled, promotional, or returned orders with no sales value) were removed to improve data quality and accuracy.

**Data Pre-processing:**

Data pre-processing is the process to make data consistent by removing the inconsistencies.

* Minor inconsistencies were identified but not fully standardized—for example, variations in state names were retained in the analysis.

**Data Visualization:**

Data Visualization means Once the data is cleaned and pre-process it is ready for further representation in the form of table or different types of graphical visualizations. Data viz. is a process of representing a large dataset in term of charts so that it can make sense for everyone.

* Pivot tables and Excel charts were used to convert the data into meaningful visual insights.

## Key Data Cleaning Actions Taken:

* Removed columns with a single repeating value such as “Currency”, “Ship Country”, and “Sales Channel”.
* Deleted records with quantity = 0 or with amounts that were cancelled post dispatch.
* Retained some non-revenue-generating product records for possible customer acquisition strategy insights.
* Cleaned blanks from key fields like “Amount”, “Ship City”, and “Ship State”.

## Data Visualization & Insights:

### Fig. 1 – Monthly Sales Performance

* The data clearly indicates a **seasonal sales peak in April**, likely driven by promotions, new launches, or festival demand.
* **Sales decline in June** suggests possible off-season effects or lower campaign activity.
* **Actionable Recommendations:**
  + **Boost marketing and inventory** in **April-May** to leverage high customer engagement.
  + Investigate **June's downturn**—optimize pricing, run discount campaigns, or introduce new products to rejuvenate demand.
  + Consider **replicating April's strategy** in similar upcoming seasons to maximize returns.

### Fig. 2 – Product analysis by category:

* T-shirts are the best-selling product in both quantity (41,372) and revenue (₹36.7 million).
* Shirts closely follow in quantity sold (40,457) and generate ₹19.5 million in revenue.
* Blazers, despite lower quantity (12,982), yield high revenue (₹10.6 million), indicating higher price per unit.
* Perfumes rank 5th in revenue among the top categories, though sold in relatively fewer units

### Fig. 3 – Product analysis based on Sizes sold:

* Medium (M) size leads in both quantity sold (18,520) and revenue (₹12.9 million), followed closely by Large (L) and Extra Large (XL).
* Smaller sizes like XS and S show moderate sales but generate decent revenue, indicating steady demand.
* Plus sizes (3XL to 6XL) have comparatively lower sales and revenue, with 3XL being the highest among them.
* “Free” size shows minimal sales, suggesting limited applicability or preference among customers.

### Fig. 4 – Fulfillment Method

* **Fulfilled by Amazon (FBA)** significantly outperforms Merchant Fulfilled orders in both:
* **Total sales value (₹5.08 Cr vs. ₹2.24 Cr)**
* **Order volume (76,684 vs. 33,863 orders)**
* **69%** of the total orders and revenue are through FBA, indicating that customers may **prefer the speed and reliability** of Amazon-managed fulfilment.

**Recommendations:**

* **Double down on Fulfilled by Amazon (FBA):**
  + Consider shifting more products to FBA to ensure faster delivery and potentially higher customer satisfaction.
  + Explore FBA-specific promotional strategies to boost revenue.
* **Evaluate Merchant Fulfillment performance:**
  + Identify if product types, pricing, or delivery delays are contributing to the lower numbers.
  + Work on improving delivery speed or customer experience in Merchant Fulfilled operations.

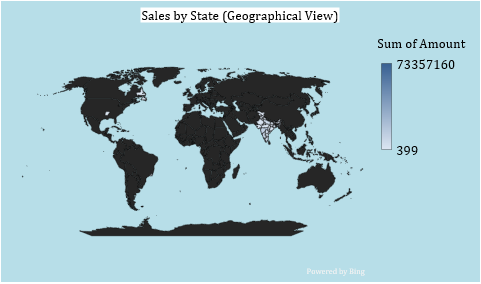
### Fig. 5 – Customer Segmentation by State.

* Maharashtra leads in both sales amount (₹12.4M) and order volume (19,214 orders), showing strong market performance.
* Karnataka and Telangana also show high sales and order counts, making them key target markets.
* Despite a moderate number of orders, West Bengal and Haryana generate relatively lower revenue, suggesting lower average order value.
* Andhra Pradesh and Kerala show potential for growth with moderate order volume and mid-range sales.

### Fig. 6 – City-wise Sales

* Bengaluru leads city-wise sales with 22.4%, indicating it as the strongest market.
* Hyderabad (16.87%) and Mumbai (13.05%) also contribute significantly to overall sales.
* New Delhi and Chennai show solid performance with 12.22% and 10.88% respectively.
* Cities like Gurugram, Thane, and Lucknow have lower sales contributions, indicating potential for targeted marketing.

### Fig. 7 – Geographical Analysis



* **Top Performers**: Maharashtra, Uttar Pradesh, Karnataka, Tamil Nadu, and Telangana are the highest revenue-generating states.
* **Low Sales Regions**: States/UTs like Lakshadweep, AR (Arunachal), PB (Punjab), and Pondicherry show minimal sales.
* **Geographical Reach**: Sales are distributed across most Indian states, but metro and industrial states dominate the revenue.

### Fig. 8 – Order Status Breakdown

### The majority of orders (64.32%) have been successfully shipped, indicating efficient order processing.

### A significant portion (23.35%) of shipped items are delivered to buyers, showing good last-mile fulfillment.

### 9% of orders were cancelled, which may suggest issues with inventory, payment, or buyer behavior.

### Very few orders are pending or experiencing shipping issues, reflecting an overall stable logistics process.

### Fig. 9– Courier Status

* **90.27%** of the orders are **Shipped**, showing excellent order processing efficiency.
* Only **4.28%** are currently **On the Way**, suggesting swift transit handling.
* **5.46%** are still **Unshipped**, indicating a minor backlog that needs attention.
* Overall, courier operations are highly effective, with scope for small improvements.

## Actionable Insights:

* **Top States Drive Revenue**: Maharashtra, Karnataka, Uttar Pradesh, Tamil Nadu, and Telangana contribute the highest to sales—focus on maintaining strong supply and targeted promotions in these regions.
* **Low-Contribution Regions Are Untapped**: Areas like Lakshadweep, Pondicherry, AR (Arunachal Pradesh), and PB show minimal sales—launch awareness campaigns or analyze barriers to entry.
* **High Sales in Metro Cities**: Bengaluru, Hyderabad, Mumbai, and Delhi dominate city-wise sales—these hubs should receive priority in new product launches and express delivery services.
* **FBA Outperforms Merchant Fulfillment**: Fulfilled by Amazon accounts for 69% of total sales—consider transitioning more products to this model to enhance logistics and satisfaction.
* **Inventory and Ad Strategy**: Ramp up inventory for best-sellers (e.g., T-shirts, Blazers), and tailor digital ads for high-value cities and underperforming regions to unlock new customer segments.