



STRATEGIC DECISION-MAKING USING POWER-BI

PRE-REPORT SUBMISSION



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1. PROBLEM STATEMENT

“Amazon Sales Performance Analysis”

The E-Commerce industry is witnessing exponential growth globally yet faces significant challenges in sales strategies. Despite a large volume of transaction data, many companies fail to fully leverage insights from this data due to inefficient processes, fragmented datasets, and lack of actionable analytics.

Objective

To identify and analyze trends in order cancellations, delivery performance, and geographic sales distribution to enhance logistics efficiency and customer satisfaction.

Proposed Approach

1. Cancellation Analysis

- Evaluate the proportion of canceled orders across various product categories and sales channels.
- Identify correlations with shipping methods or geographical regions.

2. Delivery Performance

- Assess the frequency of delayed deliveries and their impact on customer satisfaction.
- Analyze trends in shipping service levels (e.g., Standard vs. Expedited).

3. Sales Trends

- Determine the top-performing categories and regions by revenue.
- Visualize data on sales volume, fulfillment methods, and promotional effectiveness.

Expected Outcomes

Actionable insights to reduce cancellations, improve delivery times, and optimize sales strategies across key regions.

2. DATA REQUIREMENT

Index	Order ID	Date	Status	Fulfilment	Sales Char	ship-servic	Style	SKU	Category	Size	ASIN	Courier Stc	Qty	currency	Amount	ship-city	ship-state	ship-posta	ship-count	promotion	B2B	fulfilled-by	
0	405-80787	#####	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KRSet	S		B09KXVBD7Z			0 INR	647.62	MUMBAI	MAHARAS	400081	IN		FALSE	EasyShip	
1	171-91981	#####	Shipped	Merchant	Amazon.in	Standard	JNE3781	JNE3781-Kkurta	3XL		B09K3WFC	Shipped		1 INR		406	BENGALURU	KARNATAK	560085	IN	Amazon Pl	FALSE	EasyShip

Source: Kaggle Dataset (<https://www.kaggle.com/datasets/thedevastator/unlock-profits-with-e-commerce-sales-data>)

To execute the analysis, the following columns are required:

1. **Order ID** - Unique identifier for each order.
2. **Date** - Date of order placement.
3. **Status** - Order status (e.g., Shipped, Delivered, Cancelled).
4. **Fulfilment** - Fulfillment method (e.g., Amazon, Merchant).
5. **Sales Channel** - Platform through which the order was placed.
6. **ship-service-level** - Type of shipping service (e.g., Standard, Expedited).
7. **Category** - Product category (e.g., Kurta, Set).
8. **Qty** - Quantity ordered.
9. **Amount** - Total order value.
10. **ship-city** - Destination city for the order.
11. **ship-state** - Destination state for the order.
12. **ship-postal-code** - Postal code for the shipping location.
13. **Courier Status** - Delivery status (e.g., Delivered, In Transit).
14. **fulfilled-by** - Fulfillment entity (e.g., Easy Ship, Self-Ship).

3. DATA COLLECTION

To gather relevant sales, logistics, and customer behavior data from diverse sources to analyze market performance, regional trends, and operational challenges.

Sources of Data Collection

1. E-Commerce Platform

- ❖ Sales reports from Amazon's backend systems, detailing order IDs, product categories, sales channels, and fulfillment methods.

2. Logistics Partners

- ❖ Delivery performance data, including shipping times, courier statuses, and regional delivery success rates.

3. Customer Data

- ❖ Purchase patterns and demographic insights based on shipping addresses, preferences, and regional demand trends.

4. Promotional Campaigns

- ❖ Data from promotional activity reports to assess the impact of discounts, offers, and marketing campaigns on sales volume.

5. Market Segmentation

- ❖ Regional data from Tier 1, Tier 2, and Tier 3 cities to analyze geographic performance and customer behavior.

6. Product Analysis

- ❖ SKU-level data from manufacturers or suppliers to track availability, pricing, and market demand.

4. DATA VALIDATION

Purpose: To ensure the accuracy, consistency, and reliability of the dataset before analysis.

Steps:

1. **Check for Missing Values:** Verify that all critical fields (e.g., Order ID, Status, Amount) are complete.
2. **Data Consistency:** Ensure consistent formats for dates, states, and postal codes.
3. **Duplicate Records:** Remove any repeated entries to avoid skewed results.
4. **Range Validation:** Confirm logical values, e.g., positive amounts and valid order statuses.

5. DATA CLEANING

Purpose: To prepare the dataset for meaningful analysis by addressing errors, inconsistencies, and irrelevant data.

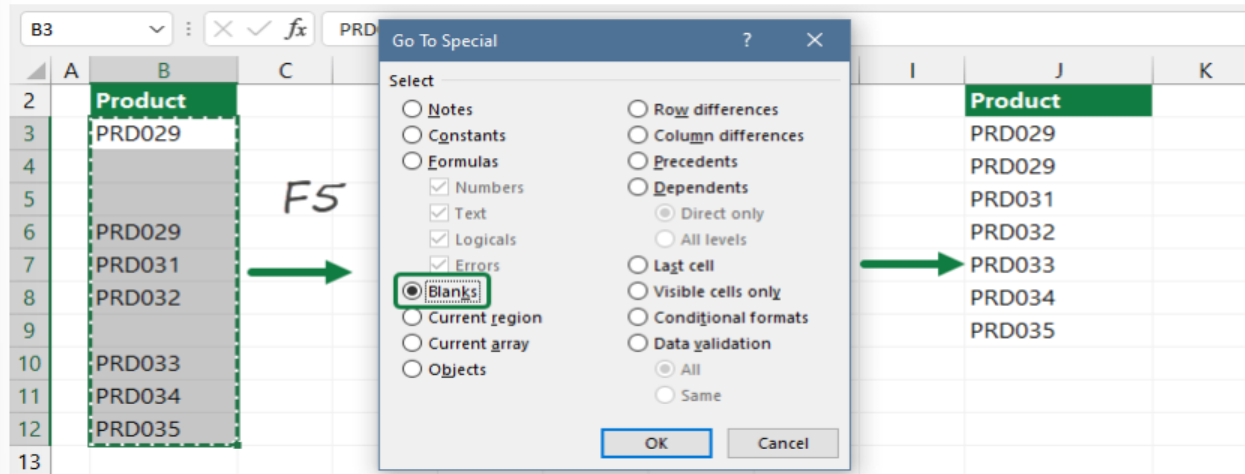


Figure 1, Data Cleaning, <https://exceldashboardschool.com/15-ways-to-clean-data-in-excel>

Steps:

Handle Missing Data:

- ❖ Impute missing values for essential fields or exclude records where necessary.
- ❖ Remove redundant columns like "Unnamed: 22" that add no value.

Correct Data Formats:

- ❖ Convert date fields to a standard format (e.g., DD-MM-YYYY).
- ❖ Standardize text fields such as product categories and state names.

Filter Outliers:

- ❖ Remove transactions with unreasonable values, e.g., negative quantities or amounts.
- ❖ Address anomalies in postal codes or delivery statuses.

Consolidate Data:

- ❖ Combine similar categories or values for simplified analysis.

6. TOOLS

Tools to be Used for Analysis and Visualization:

1. **Power BI:** For creating interactive dashboards and visualizations.
2. **Microsoft Excel:** For data cleaning, validation, and basic exploratory analysis.

7. DASHBOARD



Figure 2, Amazon Sales Dashboard

Key Components of the Power BI Dashboard:

1. Sales Performance Overview:

- ❖ Total sales by region, category, and fulfillment method.
- ❖ Percentage contribution of Tier 1, Tier 2, and Tier 3 cities.

2. Cancellation Analysis:

- ❖ Breakdown of order cancellations by product category, region, and shipping type.
- ❖ Trends in cancellation rates overtime.

3. Delivery Performance:

- ❖ On-time delivery rates across regions.
- ❖ Insights into delays by shipping service level (Standard vs. Expedited).

4. Revenue Trends:

- ❖ Monthly revenue growth trends.
- ❖ Top-performing regions and products by revenue.

8. STORYTELLING

Crafting Insights into a Narrative for Decision-Making:

1. **Introduction:** Highlight the objective of the analysis and the dataset's scope.
2. **Challenges Identified:**
 - ❖ Regions with high cancellation rates and delayed deliveries.
 - ❖ Disparities in sales performance across tiers and categories.
3. **Key Insights:**
 - ❖ Tier 2 and Tier 3 cities show increasing demand for specific categories but suffer from delayed deliveries.
 - ❖ Expedited shipping leads to higher customer satisfaction but is underutilized in high-demand regions.
4. **Recommendations:**
 - ❖ Focus marketing efforts on high-potential regions like Tier 2 cities.
 - ❖ Partner with reliable logistics providers to improve last-mile delivery in underperforming areas.
 - ❖ Optimize stock availability for frequently canceled items to reduce cancellations.