

Online sales report

Case:

This dataset provides detailed sales data from Online sales company, offering a comprehensive look at various products and their performance over time. It includes information on sales figures, order details, products, and customer demographics.

data exploration (using python)

- ❖ Data shape: 128976 row, 21 column
- ❖ Columns are as follows:
 - index
 - Order ID
 - Date
 - Status
 - Fulfilment
 - Sales Channel
 - ship-service-level
 - Category
 - Size
 - Courier Status
 - Qty
 - currency
 - Amount
 - ship-city
 - ship-state
 - ship-postal-code
 - ship-country
 - B2B
 - fulfilled-by
 - New
 - PendingS

❖ Columns details as follows:

1	Column name: index Type: int64 Count of null values: 0
2	Column name: Order ID Type: object Count of null values: 0
3	Column name: Date Type: object Count of null values: 0 Dates for April, May, June and July 2022

4	<p>Column name: Status</p> <p>Type: object</p> <p>Count of null values: 0</p> <p>Status includes:</p> <ul style="list-style-type: none"> - Cancelled - Pending -Pending - Waiting for Pick Up -Shipped -Shipped – Damaged -Shipped - Delivered to Buyer -Shipped - Lost in Transit -Shipped - Out for Delivery -Shipped - Picked Up -Shipped - Rejected by Buyer -Shipped - Returned to Seller -Shipped - Returning to Seller -Shipping
5	<p>Column name: Fulfilment</p> <p>Type: object</p> <p>Count of null values: 0</p> <p>Fulfilment includes: - Amazon</p> <p style="padding-left: 100px;">- Merchant</p>
6	<p>Column name: Sales Channel</p> <p>Type: object</p> <p>Count of null values: 0</p> <p>Sales Channel includes: - Amazon.in</p> <p style="padding-left: 100px;">- Non-Amazon</p>
7	<p>Column name: ship-service-level</p> <p>Type: object</p> <p>Count of null values: 0</p> <p>ship-service-level includes: - Expedited</p> <p style="padding-left: 100px;">-Urgent</p>
8	<p>Column name: Category</p> <p>Type: object</p> <p>Count of null values: 0</p> <p>Category includes: - Blazer</p> <p style="padding-left: 100px;">- Perfume</p> <p style="padding-left: 100px;">- Shirt</p> <p style="padding-left: 100px;">- Shoes</p> <p style="padding-left: 100px;">- Trousers</p> <p style="padding-left: 100px;">- T- Shirt</p> <p style="padding-left: 100px;">- Wallet</p> <p style="padding-left: 100px;">- Watch</p>
9	<p>Column name: Size</p> <p>Type: object</p> <p>Count of null values: 0</p> <p>Size includes: - 3XL</p> <p style="padding-left: 100px;">- 4XL</p> <p style="padding-left: 100px;">- 5XL</p> <p style="padding-left: 100px;">- 6XL</p> <p style="padding-left: 100px;">- L</p> <p style="padding-left: 100px;">- M</p> <p style="padding-left: 100px;">- S</p> <p style="padding-left: 100px;">- XL</p> <p style="padding-left: 100px;">- XS</p> <p style="padding-left: 100px;">-XXL</p>

10	Column name: Courier Status Type: object Count of null values: 0 Courier Status includes: - on the way - cancelled - shipped - unshipped
11	Column name: Qty Type: int64 Count of null values: 0 Qty includes: 0,1,2,3,4,5,6,7,8,9,13,15
12	Column name: currency Type: object Count of null values: 7,800 currency includes: INR
13	Column name: Amount Type: float64 Count of null values: 7,800
14	Column name: ship-city Type: object Count of null values: 35 ship-city written in many different ways: - sometimes written in upper case - sometimes written in lower case - sometimes write postal code with the city - sometimes write full address - sometimes write city and state - sometimes exists Spelling mistakes - sometimes write city and street name - sometimes write city and extra spaces - sometimes write city and add point (.) or (,) - no specific way to write ship-city
15	Column name: ship-state Type: object Count of null values: 35 ship-state in different ways: - sometimes written in upper case - sometimes written in lower case - sometimes exists Spelling mistakes
16	Column name: ship-postal-code Type: float64 ship-postal-code of null values: 35
17	Column name: ship-country Type: object Count of null values: 35 ship-country includes: IN
18	Column name: B2B Type: Boolean Count of null values: 0 B2B includes: - False - True
19	Column name: fulfilled-by Type: object Count of null values: 89613 fulfilled-by includes: Easy Ship

20	Column name: New Type: float64 Count of null values: 128976
21	Column name: PendingS Type: float64 Count of null values: 128976

data cleaning (using python)

- ❖ Changing the type of <Order ID> from object to string, removing ' - ', replacing 's' by '5' and rechange the type to be int64
- ❖ Check duplicates existence and its count = 168, removing these duplicates
- ❖ Deleting unneeded columns which are <index>, <new> and <pendings>
- ❖ Replace the majority unique values of < Status > as following:
 - Pending - Waiting for Pick Up' to become '**Pending**'
 - 'Shipped - Damaged' to become '**Damaged**'
 - 'Shipped - Delivered to Buyer' to become '**Delivered**'
 - 'Shipped - Lost in Transit' to become '**Lost in Transit**'
 - 'Shipped - Out for Delivery' to become '**Out for Delivery**'
 - 'Shipped - Picked Up' to become '**Picked Up**'
 - 'Shipped - Rejected by Buyer' to become '**Rejected by Buyer**'
 - 'Shipped - Returned to Seller' to become '**Returned to Seller**'
 - 'Shipped - Returning to Seller' to become '**Returned to Seller**'
 - 'Shipping' to become '**Shipped**'z

So, the unique values of < Status > are: Cancelled, Damaged, Delivered, Lost in Transit, Out for Delivery, Pending, Picked Up, Rejected by Buyer, Returned to Seller, Shipped

- ❖ Rename < Fulfilment> column to become <**Executor**>
- ❖ Rename < ship-service-level > column to become < **ship_level** >
- ❖ Replace the unique value of < ship_level> as follows:

'Expedited' to become '**Urgent**'

So, the unique values of < ship_level > are: Urgent, Standard

- ❖ Rename < Category> column to become < **Product**>
- ❖ Fill null values exist in <Currency> column by '**Other_currency**'

So, the unique values of <Currency> are: INR , Other_currency

- ❖ Replace the unique values of < ship-state> as follows:
- "ANDAMAN & NICOBAR" to become "**Andaman and Nicobar Islands**"
 - "ANDHRA PRADESH" to become "**Andhra Pradesh**"
 - "ARUNACHAL PRADESH" to become "**Arunachal Pradesh**"
 - "AR" to become "**Arunachal Pradesh**"
 - "ASSAM" to become "**Assam**"
 - "BIHAR" to become "**Bihar**"
 - "CHANDIGARH" to become "**Chandigarh**"
 - "CHHATTISGARH" to become "**Chhattisgarh**"
 - "DADRA AND NAGAR" to become "**Dadra and Nagar Haveli and Daman and Diu**"
 - "DELHI" to become "**Delhi**"
 - "GOA" to become "**Goa**"
 - "GUJARAT" to become "**Gujarat**"
 - "HARYANA" to become "**Haryana**"
 - "HIMACHAL PRADESH" to become "**Himachal Pradesh**"
 - "JAMMU & KASHMIR" to become "**Jammu and Kashmir**"
 - "JHARKHAND" to become "**Jharkhand**"
 - "KARNATAKA" to become "**Karnataka**"
 - "KERALA" to become "**Kerala**"
 - "LADAKH" to become "**Ladakh**"
 - "LAKSHADWEEP" to become "**Lakshadweep**"
 - "MADHYA PRADESH" to become "**Madhya Pradesh**"
 - "MAHARASHTRA" to become "**Maharashtra**"
 - "MANIPUR" to become "**Manipur**"
 - "MEGHALAYA" to become "**Meghalaya**"
 - "MIZORAM" to become "**Mizoram**"
 - "NAGALAND" to become "**Nagaland**"
 - "ODISHA" to become "**Odisha**"
 - "ORISSA" to become "**Odisha**"
 - "PONDICHERRY" to become "**Puducherry**"
 - "PUDUCHERRY" to become "**Puducherry**"
 - "PUNJAB" to become "**Punjab**"
 - "RAJASTHAN" to become "**Rajasthan**"
 - "SIKKIM" to become "**Sikkim**"
 - "TAMIL NADU" to become "**Tamil Nadu**"
 - "TELANGANA" to become "**Telangana**"
 - "TRIPURA" to become "**Tripura**"
 - "UTTAR PRADESH" to become "**Uttar Pradesh**"
 - "UTTARAKHAND" to become "**Uttarakhand**"
 - "WEST BENGAL" to become "**West Bengal**"
 - "APO" to become "**Delhi**"
 - "NL" to become "**Nagaland**"
 - "New Delhi" to become "**Delhi**"
 - "Rajshthan" to become "**Rajasthan**"
 - "Rajsthan" to become "**Rajasthan**"
 - "Punjab/Mohali/Zirakpur" to become "**Punjab**"
 - "PB" to become "**Delhi**"
 - "RJ" to become "**Rajasthan**"
 - "bihar" to become "**Bihar**"

- "delhi" to become "**Delhi**"
- "goa" to become "**Goa**"
- "orissa" to become "**Odisha**"
- "punjab" to become "**Punjab**"
- "rajasthan" to become "**Rajasthan**"
- "rajsthan" to become "**Rajasthan**"

So, the unique values of < ship-state> are:

Andaman and Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Dadra and Nagar Haveli and Daman and Diu, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Ladakh, Lakshadweep, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Orissa, Pondicherry, Puducherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura, Uttar Pradesh, Uttarakhand, West Bengal

❖ Rename < fulfilled-by> column to become < **Shipper**>

❖ Fill null values exist in < Shipper > column by '**cancelled**' in case **status** is cancelled , while fill null values by **Other Shipper** in case **status** isn't cancelled

So, the unique values of < Shipper > are: Easy Ship, Other Shipper , Cancelled

❖ Changing the type of <Date> from object to become Datetime

❖ Exists outliers in Amount

❖ Fill null values by **0** in case status is cancelled, while in case status isn't cancelled so fill null values by **the median value 583.81**

❖ Replace the unique value of < Sales Channel> as follows:
'Non-Amazon' to become '**Other**'

So, the unique values are: Amazon.in, Other

❖ Recheck the final Data shape after cleaning is: 128775 row, 18 column.

Retrieve data and get the following insights (using SQL):

- ❖ sales analysis insight to show the total count of orders and total sales excluding cancelled orders for each product.
- ❖ Cancelled analysis insight to show the total count of orders and total cancelled orders value for each product.
- ❖ Damaged analysis insight to show the total count of orders and total damaged orders value for each product.
- ❖ Lost in transit analysis insight to show the total count of orders and total lost in transit orders value for each product.
- ❖ Rejected by buyer analysis insight to show the total count of orders and total rejected by buyer orders value for each product.
- ❖ Returned to seller analysis insight to show the total count of orders and total returned to seller orders value for each product.
- ❖ sales overtime analysis insight to show total sales for each product for March, April, May and June.
- ❖ peak period analysis insight to identify the highest total sales for which month.
- ❖ Inventory management analysis insight to identify the total sold quantity for each size of each product excluding cancelled orders.
- ❖ Total sales value insight for the whole period.
- ❖ Net sales, net orders count and net sold quantity excluding cancelled – damaged - lost in transit - rejected by buyer - returned to seller orders

Data Analysis (using tableau)

**** First: Dashboard ****

- ❖ Net sales excluding cancelled, damaged, lost in transit, rejected buyer and rejected by seller orders amount is **73,057,526**
- ❖ Net count of orders excluding cancelled, damaged, lost in transit, rejected buyer and rejected by seller orders is **110,454**
- ❖ Net sold quantity excluding cancelled, damaged, lost in transit, rejected buyer and rejected by seller orders is **110,802**
- ❖ The highest net sales overtime is **1,121,079** on **4 May 2022**
- ❖ The most sold product is **T-Shirt** as Net sold Quantity is **42,957** by value **36,322,277** (represent **49.72%** of total net sales) from them **30,338 urgent** orders and **12,533 standard** orders (total orders = 42,871)
- ❖ The top 10 states based on net sales as follows:
 - 1- Maharashtra, net sales is 12,473,898 (represent **21.68%** of total net sales)
 - 2- Karnataka, net sales is 9,828,670 (represent **17.08%** of total net sales)
 - 3- Telangana, net sales is 6,384,366 (represent **11.10%** of total net sales)
 - 4- Uttar Pradesh, net sales is 6,325,691 (represent **10.99%** of total net sales)
 - 5- Tamil Nadu, net sales is 6,058,237 (represent **10.53%** of total net sales)
 - 6- Delhi, net sales is 4,150,621 (represent **7.21%** of total net sales)
 - 7- Kerala, net sales is 3,417,560 (represent **5.94%** of total net sales)
 - 8- West Bengal, net sales is 3,269,694 (represent **5.68%** of total net sales)
 - 9- Andhra Pradesh, net sales is 2,917,733 (represent **5.07%** of total net sales)
 - 10- Haryana, net sales is 2,712,920 (represent **4.71%** of total net sales)
- ❖ The least profitable 5 States based on net sales as follows:
 - 1- Pondicherry, net sales is 529
 - 2- Arunachal Pradesh, net sales is 602
 - 3- Orissa, net sales is 1,140
 - 4- Lakshadweep, net sales is 2,441
 - 5- Ladakh, net sales is 34,970
- ❖ The highest selling size for each product based on net sum of quantity is as follows:
 - **Blazer**, the highest sold size is “**L**” by total quantity **2,457 pc** (represent **18.33%** of total sold blazers)
 - **Perfume** is only “**Free**” size by total quantity **1,014 pc**
 - **Shirt**, the highest sold size is “**L**” by total quantity **7,621 pc** (represent **17.84%** of total sold shirts)
 - **Shoes** is “**Free**” size by total quantity **147 pc**
 - **Socks**, the highest sold size is “**L**” by total quantity **65 pc** (represent **16.93%** of total sold socks)
 - **T-Shirt**, the highest sold size is “**M**” by total quantity **7,934 pc** (represent **18.47%** of total sold t-shirts)
 - **Trousers**, the highest sold size is “**XL**” by total quantity **1,638 pc** (represent **17.52%** of total sold trousers)
 - **Wallet** is only “**Free**” size by total quantity **831 pc**
 - **Watch** is only “**Free**” size by total quantity **3 pc**
- ❖ The highest **status** is “**Shipped**” based on Total Sales value **51,270,771** for **77,705** order (represent **60.34%** of total orders)
- ❖ In most orders, the **executer** is “**Amazon**” by Total orders 78,120 (77,086 Urgent orders and 1,034 Standard order), while the **executer** is “**Merchant**” by Total orders 32,334 order by Standard ship level)
- ❖ The highest **courier status** is “**shipped**” (**31,816** order for **Easy Ship** and **77,499** order for **other shipper**)

****Second: Product report ****

This report provides an overview of the values, order count, and total quantity for each product by different order statuses.

❖ Blazer:

The total value of cancelled orders for Blazers is **1,005,714**, with **2,120** orders and a total quantity of **525**. There is **1** damaged order worth **1,136**, while delivered orders amount to **3,927,329** in value, covering **5,185** orders and **5,211** total quantity. One order was lost in transit with a value of **584**. Orders out for delivery have a total value of **4,590** from **6** orders and **6** total quantity. Pending orders stand at **130,419** in value, with **171** orders and **172** total quantity. Picked-up orders have a total value of **138,016**, with **186** orders and **187** total quantity. One order was rejected by the buyer, worth **899**. Orders returned to the seller total **258,314** in value, covering **342** orders and the same quantity. The shipped orders have the highest value at **5,880,884**, with **7,475** orders and **7,487** total quantity.

❖ Perfume

Cancelled Perfume orders total **58,474** in value, covering **145** orders and a total quantity of **37**. Delivered orders amount to **167,170** in value, with **232** orders and **235** total quantity. Pending orders have a total value of **5,704**, with **7** orders and the same quantity. Picked-up orders account for **1,022** in value from **2** orders and a total quantity of **2**. Orders returned to the seller have a total value of **11,689**, with **16** orders and the same quantity. The total value of shipped orders is **564,627**, covering **755** orders and **754** in total quantity.

❖ Shirt

Cancelled orders for Shirts total **1,868,320** in value, with **7,240** orders and **2,249** total quantity. Delivered orders have the highest value at **4,866,543**, covering **10,421** orders and **10,466** in total quantity. Lost in transit orders account for **998** in value, with **2** orders and **2** total quantity. Out for delivery orders have a value of **2,609**, with **5** orders and the same quantity. Pending orders total **152,544** in value, with **320** orders and the same quantity.

This report provides insights into the order flow, highlighting the high volume of delivered orders while also indicating potential concerns with cancelled and returned orders.

❖ Shoes

The total value of cancelled orders for Shoes is **9,240**, with **21** orders and a total quantity of **5**. Delivered orders amount to **18,171** in value, covering **22** orders and **23** total quantity. There is **1** picked-up order worth **756**, and **1** returned order to the seller valued at **998**. The total value of shipped orders is **95,353**, with **119** orders and **122** total quantity.

❖ Socks

Cancelled Socks orders total **14,945** in value, covering **59** orders and a total quantity of **14**. Delivered orders amount to **50,950**, with **139** orders and **142** total quantity. Pending orders stand at **1,186** in value, with **3** orders and the same quantity. Picked-up orders have a total value of **3,455**, with **10** orders and the same quantity. Orders returned to the seller total **2,563** in value, covering **6** orders and the same quantity. The shipped orders have a total value of **84,889**, with **222** orders and **223** total quantity.

❖ T-shirt

Cancelled orders for T-shirts total **3,464,861** in value, with **7,328** orders and **2,252** total quantity. Delivered orders have the highest value at **8,946,752**, covering **10,623** orders and **10,654** in total quantity. Lost in transit orders account for **1,583** in value, with **2** orders and the same quantity. Out for delivery orders have a value of **17,254**, with **19** orders and the same quantity. Pending orders total **305,611** in value, with **360** orders and the same quantity. Picked-up orders account for **350,029** in value from **406** orders and **408** total quantity. Rejected by buyer orders have a total value of **4,492**, with **6** orders and the same quantity. Orders returned to the seller amount to **706,243** in value, with **837** orders and **840** total quantity. The total value of shipped orders is **25,996,389**, covering **30,626** orders and **30,670** in total quantity.

❖ Trousers

Cancelled orders for Trousers amount to **443,726** in value, with **1,275** orders and a total quantity of **535**. Delivered orders have a total value of **969,640**, covering **1,917** orders and **1,921** total quantity. Orders out for delivery are valued at **2,518**, with **5** orders and the same quantity. Pending orders total **41,125**, with **74** orders and the same quantity. Picked-up orders amount to **33,641** in value, covering **69** orders and the same quantity. Orders rejected by buyers account for **815** in value, with **2** orders and the same quantity. Orders returned to the seller total **71,642** in value, with **132** orders and **136** total quantity. Shipped orders for Trousers have the highest value at **3,884,640**, with **7,131** orders and **7,145** in total quantity.

❖ Wallet

Cancelled Wallet orders total **40,019** in value, covering **116** orders and **32** total quantity. Delivered orders have a total value of **88,947**, with **169** orders and **172** total quantity. Pending orders stand at **2,167**, with **4** orders and the same quantity. Picked-up orders total **689** in value, with **2** orders and the same quantity. Orders returned to the seller amount to **6,728**, with **12** orders and the same quantity. Shipped orders for Wallets have a total value of **335,037**, covering **623** orders and **641** in total quantity.

❖ Watch

Shipped orders for Watches total **915** in value, with **3** orders and the same quantity.

Conclusion

- **Delivered orders** have the highest value and order count across all product categories.
- **Cancelled orders** represent a significant portion of the total, especially for **Shirts** and **Blazers**.
- **Returned to Seller** and **Rejected by Buyer** values indicate potential issues in customer satisfaction or delivery processes.
- **Pending orders** indicate transactions that are still in progress and need follow-up.

Recommendation

- ❖ As most orders are urgent, so increase the stock amount from the following products by these sizes:
 - “L” size for **Blazer**
 - “L” size for **Shirt**
 - “L” size for **Socks**
 - “M” size for **T-Shirt**
 - “XL” size for **Trousers**
- ❖ Considering the less profitable states, increasing the sales through street advertisements, make offers to be announced on social media specially on Facebook and Instagram as it is the most used applications
- ❖ Excellent packages for product to avoid damage
- ❖ Tracking orders by GPS through barcode to be inserted on the box and scanned to avoid losing in transit
- ❖ Make a survey on social media for customers about your service rating and the cause of not purchasing from your company to enable identifying the problem and solve it