

Supply Chain Management – Data Analyst Challenge Solution

This document explains the complete step-by-step solution methodology to verify courier charges for an ecommerce company (X) based on order weight, delivery zones, and rate cards.

Step 1: Calculate Total Order Weight (X Data)

For each Order ID, sum the gross weight of all SKUs from the SKU master. Convert grams to kilograms if required.

Step 2: Determine Weight Slab

Courier companies charge in slabs of 0.5 KG. $\text{Weight slab} = \text{ceil}(\text{Total Weight} / 0.5) \times 0.5$

Step 3: Determine Delivery Zone

Using the warehouse pincode to customer pincode mapping, determine the delivery zone (A/B/C/D/E). Compare this with the zone mentioned in the courier invoice.

Step 4: Calculate Expected Charges (As per X)

From the courier rate card: - First 0.5 KG → Fixed charge - Each additional 0.5 KG → Additional charge
 $\text{Expected Charge} = \text{Fixed Charge} + (\text{Additional Slabs} \times \text{Additional Charge})$

Step 5: Compare with Courier Invoice

Compare expected charges with billed charges for each Order ID. $\text{Difference} = \text{Expected Charge} - \text{Billed Charge}$

Step 6: Classification

- Correctly Charged → Difference = 0 - Overcharged → Difference < 0 - Undercharged → Difference > 0

Final Output

1. Order-level calculation sheet with all required columns. 2. Summary sheet showing count and amount for: - Correctly charged orders - Overcharged orders - Undercharged orders

This methodology can be implemented using Excel formulas, Python (Pandas), or SQL.