Whether to include or exclude physical and financial adjustment records in your sales trends analysis depends on the **specific goals of the analysis**. Here's how to approach this decision:

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1. Physical Adjustments (e.g., Inventory Returns or Write-offs)

When to Include:

- **Return Trends Analysis**:
    - If you want to understand return rates or track trends in inventory issues, include these records.
    - This is particularly useful for identifying problem products, supplier issues, or seasonal patterns in returns.
- **Net Sales Trends**:
    - If you want to calculate **net sales** (sales minus returns), include them but ensure they are accounted for separately to avoid skewing gross sales figures.

When to Exclude:

- **Pure Sales Trends**:
    - If your analysis focuses solely on gross sales trends over time (e.g., total revenue from sales), exclude these records, as they don’t represent actual sales.

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2. Financial Adjustments (e.g., Bad Debt Write-offs)

When to Include:

- **Revenue Adjustments Analysis**:
    - If you aim to understand how much revenue is being written off as bad debt over time, include these records.
- **Cash Flow Trends**:
    - For an analysis of realized revenue (revenue actually collected), include these records but classify them separately.

When to Exclude:

- **Sales Performance Trends**:
    - For trends focused on customer purchases, exclude financial adjustments, as they don't represent actual transactions with customers.

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3. Recommended Approach:

Step 1: Categorize Records

- Add a new column to your dataset, categorizing records as:

- **"Sales"**: Positive quantities and unit prices representing actual sales.
- **"Returns"**: Negative quantities and positive unit prices.
- **"Financial Adjustments"**: Positive quantities with negative prices or specific descriptions like "Adjust Bad Debt."
- **"Manual Adjustments"**: Generic descriptions like "Manual" or unclear adjustments.

Step 2: Filter Based on Analysis Goals

- For **gross sales trends**: Include only "Sales."
- For **net sales trends**: Include "Sales" and "Returns," and subtract returns from sales.
- For **overall revenue trends**: Include all categories but analyze them separately to understand their impact.

Step 3: Visualize Separately if Needed

- Plot trends for:
  - Gross sales.
  - Returns and adjustments.
  - Net sales after accounting for adjustments. This approach provides a complete picture without mixing different types of records.

Yes, the categorization approach I suggested reflects the state of transactions "at the time of purchase" (or adjustment), and here's why:

Why Categorization Focuses on Transaction Timing

Transaction-Centric Nature of Data:

Your dataset records individual transactions, with each row representing the state of a purchase, return, or adjustment at the time it occurred.

This design doesn't track how these transactions evolve over time but provides a snapshot of events as they happened.

Lack of Historical Changes:

Retail datasets often do not maintain a history of changes (e.g., stock movement after returns or updates to financial adjustments).

For example:

A sale made today is recorded as positive quantity and unit price.

A return next week is recorded as a separate negative transaction but does not modify the original sale.

Net Impact Is Post-Event:

The net effect (e.g., adjusting gross sales with returns or bad debts) is only realized when you aggregate the data over time. This requires treating transactions independently based on their nature.

Implications of Timing in Analysis

At the Time of Purchase:

Positive quantity and price are treated as sales, even if they are later offset by returns.

This view is suitable for analyzing gross revenue trends or customer purchasing behavior.

Post-Purchase Adjustments:

Returns, financial adjustments, and other modifications are treated separately, often occurring after the initial purchase.

Including these in your analysis gives a view of net sales or realized revenue over time.

Practical Example:

Let's say you have the following records:

InvoiceNo	StockCode	Description	Quantity	UnitPrice	Type
10001	A123	Product A	5	10.0	Sales
10002	A123	Return Product A	-2	10.0	Returns
10003	B456	Adjust Bad Debt	1	-5.0	Financial Adjust

At Time of Purchase:

Record 1 reflects a sale: 5 x $10.00 = $50.00.

It does not yet account for potential returns or adjustments.

Net Sales Calculation:

Adding Record 2 (returns): $50.00 - $20.00 = $30.00.

Adding Record 3 (financial adjustment): $30.00 - $5.00 = $25.00.

Why This Matters

Categorizing by transaction type at the time of entry ensures clarity:

It separates the original purchase data from subsequent adjustments.

You can analyze how sales and adjustments impact revenue independently before aggregating.

Alternative View: Cumulative Net Sales

If your goal is to track net sales at any given time, you would need to:

Cumulatively sum transactions (sales + returns + adjustments) over time.

Use the categorization to explain why net sales change, rather than just showing the trend.

Would you like help implementing cumulative net sales tracking?