The profit mystery: use AI to find what changed.

A 25-minute practice case with fictional e-commerce data. Your mission: investigate rising revenue and falling profit - without blindly trusting the AI.

> **Your role:** You are the analyst at Northstar Goods, a fictional online store. Sales are up. Finance is concerned. The CEO needs a short recommendation backed by numbers.

What you need

1. Download the accompanying Excel workbook: northstar_profit_case_dataset.xlsx.

2. Open ChatGPT, Claude, or another AI assistant that supports spreadsheet analysis.

3. Use only this synthetic training data. Never upload confidential employer or client data without permission.

Mission 01 / Ask AI for a first-pass diagnosis

> I am analyzing a fictional e-commerce business. Use the attached workbook to compare Q1 (Jan-Mar) and Q2 (Apr-Jun). Calculate net revenue, operating profit, and operating margin by quarter and channel. Show your definitions and intermediate calculations in a compact table. Identify the largest changes. Do not infer causation from correlations; flag missing context and assumptions.

Mission 02 / Challenge the answer

Ask AI to examine **Paid vs Organic** channel profitability. Does more paid revenue necessarily mean better performance? Which cost lines deserve investigation? Request a numeric explanation for every claim.

Mission 03 / Verify independently

Check at least two quarter totals in Excel. Use these definitions:

> Net revenue = Gross sales - Discounts - Refunds
> Operating profit = Net revenue - COGS - Ad spend - Fulfillment - Payment fees - Allocated overhead
> Operating margin = Operating profit / Net revenue

Remember: good analysts use AI as an assistant, not as the source of truth.

FROM NUMBERS TO A BUSINESS DECISION

Your answer is not a chart. It is a recommendation.

Now turn the evidence into a decision the CEO can actually act on.

Mission 04 / Write the CEO memo

> Based on the verified quarter and channel results, write a three-sentence CEO summary: (1) What changed, with figures? (2) Where is the deterioration concentrated? (3) What should we test or change next? Distinguish evidence from hypotheses. Do not recommend cutting all marketing without considering customer lifetime value and incrementality.

Your quality-control checklist

□ The Q1 / Q2 totals match the workbook.

□ I can explain every KPI definition and denominator.

□ I have separated what the data shows from what it cannot prove.

□ The recommended action is specific and reversible where possible.

□ I have proposed at least one additional test or dataset needed.

Optional: make the lesson reusable

Save your best prompt and a short verification checklist. Next time you analyze a new dataset, apply the same process: **inspect -> calculate -> challenge -> verify -> recommend.**

Want the full framework?

The AI Data Analyst Playbook is in development: a practical mini-course on analyzing messy business data with AI, checking mistakes, and communicating decisions. The free case is a sample of the learning approach, not a completed paid course.

Northstar Goods is fictional. All training figures are synthetic. For educational use.