# P10 Instructor & Reference Guide – Case Study: Analytics Applications

## Theory Brief

Case studies demonstrate how data analytics applies to real business problems. In e‑commerce, understanding revenue drivers across categories helps optimise inventory and marketing strategies.

## Worked Example

Below is a snapshot of the first few rows of the synthetic dataset and summary statistics:

Date Category SubCategory Quantity Price Revenue  
2025-05-03 Fashion Accessories 4 1768.94 7075.74  
2025-04-22 Sports Team 3 1580.97 4742.90  
2025-02-28 Sports Accessories 2 1589.53 3179.05  
2025-05-09 Home Kitchen 4 533.15 2132.59  
2025-04-15 Sports Team 4 519.21 2076.85

### Basic Statistics

* Quantity\_mean: 2.35
* Quantity\_median: 2.00
* Quantity\_mode: 1.00
* Quantity\_var: 1.30
* Quantity\_std: 1.14
* Price\_mean: 1015.97
* Price\_median: 1048.58
* Price\_mode: 105.20
* Price\_var: 287064.52
* Price\_std: 535.78
* Revenue\_mean: 2331.30
* Revenue\_median: 1887.90
* Revenue\_mode: 105.20
* Revenue\_var: 2924716.49
* Revenue\_std: 1710.18

### Correlation Matrix

Quantity Price Revenue  
Quantity 1.000000 -0.098087 0.568580  
Price -0.098087 1.000000 0.678414  
Revenue 0.568580 0.678414 1.000000

### Visualisations

An example plot is saved in the results folder as P10\_plot1.png.

## Evaluation Rubric

* Completeness and accuracy of tables and charts (40%)- Depth of analysis and insight (40%)- Organisation and clarity of report (20%)

## Common Pitfalls

Neglecting to consider the impact of quantity on revenue, mislabelled charts, or drawing conclusions without sufficient evidence.