

# Capital Investment Decisions – Learning Workbook Guide

Self-Directed Learning Companion for Excel Workbook

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## Welcome

This workbook and guide are designed to help you actively develop your intuition and technical skills in evaluating capital investment decisions. Each worksheet in the Excel file corresponds to a topic introduced in the lecture slides and provides an opportunity to learn by doing.

The activities promote a growth mindset: it's okay to test, change, break, and fix. Use this guide to support your journey toward confidence with investment appraisal tools and concepts.

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## Worksheet 1: Introduction and Dashboard

The Dashboard provides an overview of all topics. It links visually and structurally to your Excel workbook.

- **Yellow cells** = inputs you can modify
- **Blue cells** = formulas – learn by tracing them
- Navigation is via worksheet tabs – click through them freely

*Tip: Think of this like a financial control panel – each tab gives you a different tool to assess the quality of an investment.*

## Worksheet 2: Payback Period

### What It Measures

Payback Period tells you how long it takes to recover your investment.

### How to Use It

- Trace the **cumulative cash flows**
- The payback is the point where cumulative CF becomes positive

### Try This:

- Add a sixth year with £15,000 income. What happens to payback?
- Replace Year 3 with a smaller inflow. Does payback still occur?

*Learning point: It's not about total profitability, just time to breakeven.*

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## Worksheet 3: Discounted Payback Period

### What's Different?

Same concept as Payback – but now includes time value of money.

- Each cash flow is discounted
- Still uses cumulative logic

### Learn-by-Doing:

- Change the discount rate to 15%
- Which projects now fall outside your required DPP window?

*Use the chart to visualise breakeven under discounting.*

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## Worksheet 4: Net Present Value (NPV)

### The Gold Standard

NPV shows total value created by a project – in today's money.

- $NPV > 0$ : worth doing (adds value)
- $NPV < 0$ : destroys value

### Try This:

- Test discount rates from 5% to 20%
- Add a £10k outflow in Year 2 – does it still pass?

*Most investors use NPV as their core decision rule.*

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## Worksheet 5: Internal Rate of Return (IRR)

### What IRR Tells You

IRR is the discount rate where  $NPV = 0$ . It reflects the internal profitability.

### Explore:

- How does IRR compare with your cost of capital?
- Use the NPV profile chart – where does it cross the axis?

*Some projects have multiple IRRs – always double-check using NPV too.*

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## Worksheet 6: Accounting Rate of Return (ARR)

### Why Use ARR?

It's a simple profitability measure based on accounting averages.

- Average Profit  $\div$  Average Investment
- Doesn't discount – but easy to calculate

### Test Your Assumptions:

- What happens when depreciation changes?
- How does ARR behave with high Year 5 cash inflows?

*Banks and internal management often still ask for ARR.*

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## Worksheet 7: Method Comparison

### Bringing It All Together

This worksheet shows each method side-by-side for a single project.

- You can compare Payback, NPV, IRR, ARR decisions in one place

### Practice:

- Test consistency across 3 scenarios
- If NPV and ARR disagree, which would you trust?

*Learning is in the contradictions – think critically.*

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## Worksheet 8: Risk Analysis

### Adding Depth

Risk isn't just volatility – it's uncertainty in your inputs.

#### Explore:

- Sensitivity Analysis: How far can inputs move before NPV hits 0?
- Scenario Analysis: Pessimistic vs Optimistic projections

#### Activity:

- Adjust probabilities – how does expected NPV change?
- Add your own worst-case row

*Learn to stress-test your assumptions.*

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## Worksheet 9: Case Study – Plumbing Business

### Real-World Synthesis

This ties everything together. You assess a full venture using all tools.

#### Use:

- Live inputs for cost, rates, exit value
- Real-time feedback via NPV/IRR updates

**Try This:**

- Change the exit value to £20k
- Increase upfront investment by £5k
- What's your final recommendation?

*This is the moment to think like an investor.*

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**Final Reflection**

All models are simplifications of reality. As George Box famously said:

“All models are wrong, but some are useful.”

In this workbook, you've built useful models that give structure to uncertain decisions. By experimenting, adjusting, and observing how the outcomes respond, you build not just financial insight, but critical thinking.

Let the spreadsheet be your sandbox for decision-making. Use it to make better guesses, ask better questions, and learn from every simulation.