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# 14

# Capital Investment Appraisal

## 14.1 Introduction and objectives

Capital investment is a medium or long-term strategic decision that is often a multimillion pound investment and is difficult to change direction once started. Capital investment appraisal is sometimes referred to as capital budgeting, as it relates to the allocation of funding for capital expenditure. Due to these factors, making the wrong decision can be very costly so it is important that any organisation undertakes a thorough appraisal of their potential capital investment projects prior to committing to them. Whilst this chapter focuses on financial appraisal, some consideration is given to the wider appraisal of projects, including the match to organisational strategy and risk management.

After studying this chapter you should be able to:

- Understand the importance of capital investment appraisal (CIA)
- Develop a working knowledge of financial CIA techniques
- Appreciate the 'time value' of money in the CIA context; and
- Be able to consider the strategic implications of CIA decisions.

## 14.2 The value of investment appraisal

For a company to continue to grow it needs to continue to invest and develop, looking at exploiting new market opportunities, plus redevelopment and updating of existing assets in order to meet customers' constantly changing demands. Investment appraisal is a way of financially assessing the value of potential investments to ensure financial resources are utilised effectively by the organisation.

There are a number of different triggers for investment: keeping up with competitors; replacing old assets; expansion or to utilise newly developed technology. There are a number of alternative techniques that can be utilised in practice. Pike

(1996) has undertaken many surveys of industry practice, including longitudinal studies stretching from the 1970s to the 1980s. Back in the 1970s, most organisations used one or two methods, most commonly payback period (PBP) and accounting rate of return (ARR). As computer usage developed so did the ease of investment appraisal, by the 1990s, Pike was reporting companies generally using four methods, up from the previous one or two, with far higher use of ‘sophisticated’ discounting methods. So the traditional methods were not replaced by the newer methods, research still showed PBP as the most commonly-used method. Work related to small firms (SMEs) identifies less use of the more sophisticated CIA methods.

The most common methods are:

- Accounting rate of return
- Payback period
- Discounted payback period
- Net present value
- Internal rate of return
- Profitability index.

These are explained and demonstrated in this chapter and their advantages and disadvantages discussed.

## 14.3 Example data

The following data will be used in this chapter to illustrate the investment appraisal process, using a variety of different methods. A country house hotel has an old barn in the grounds and has decided they could utilise it as a wedding/event venue, if they refurbish. Another alternative suggestion for investment is updating the current spa facility within the hotel to be utilised as a day spa facility. The costing and predicted profit returns are as shown in Table 14.1.

**Table 14.1:** Costings and predicted returns

	Project A – Event venue	Project B – Spa facility
Project investment costs (year 0)	£1,500,000	£1,500,000
Expected profit returns		
Year 1	£30,000	£45,000
Year 2	£35,000	£50,000
Year 3	£45,000	£55,000
Year 4	£60,000	£60,000
Year 5	£80,000	£65,000
Year 6	£90,000	£65,000
<b>Total profit returns</b>	<b><u>£340,000</u></b>	<b><u>£340,000</u></b>

Given the normal advance booking time for weddings and having to build trade, the event venue will not be as profitable in earlier years, but as the reputation grows over time bookings will grow. For the spa facility, the use by guests is more instant, so trade starts earlier with guests using the facility and the day spa trade develops over time, but the facility is small and has a limited capacity. For both projects after six years they will be a need to incur further costs for refurbishment and updating, so these projects and their returns are for a six-year period. At the end of the six years the capital investment has no residual value and depreciation over the six years uses the straight-line method.

## 14.4 Accounting rate of return (ARR)

This approach calculates the average annual profit as a percentage of the average amount invested. It is the only CIA method that is based on profits; all other methods use cash flows (discussed later). It is calculated as follows:

$$\frac{\text{Average Annual Profit}}{\text{Average Investment}} * 100 = \%ARR$$

An alternative formula is to use 'initial investment' instead of 'average investment'.

$$\frac{\text{Average Annual Profit}}{\text{Initial Investment}} * 100 = \%ARR$$

There is an argument that as the investment by the end of year 6 is £0, due to depreciation, the average invested in the project (half the original investment) is a more realistic figure to use. Either formula can be used; as long as the same formula is used consistently valid comparisons can be made between projects. Given projects A and B have the same initial investment, same total profit returns and same life in years the ARR calculations are the same for each project.

$$\begin{aligned} \text{Average annual profits} &= \text{total profits/number of year of project} \\ &= £340,000/6 = £56,667 \end{aligned}$$

$$\begin{aligned} \text{Average investment} &= \text{initial investment} + \text{residual value at the end of the project}/2 \\ &= £1,500,000 + £0/2 = £750,000 \end{aligned}$$

ARR Projects A and B (using average investment)

$$\frac{£56,667}{£750,000} * 100 = 7.6\%$$

ARR Projects A and B (using initial investment)

$$\frac{£56,667}{£1,500,000} * 100 = 3.8\%$$

If using ARR there is no difference in these two projects, they both make the same financial returns over the six-year period. It is a method more widely used with projects with a shorter time period and has a number of failings: