Topic 12 – capital investment

Aldi press-release

- "There is a strong appetite among South Australians for an alternative place to shop and we are eager to show them the significant benefits that can come from shopping at ALDI, both for their wallets and lifestyles."
- To support its state-wide expansion, ALDI has signed contracts with 12 new South Australian produce suppliers and hired 250 employees for Store Manager, Retail Assistant and Distribution Centre roles. The supermarket's long-term investment in the state will see a total of 900 new permanent jobs at ALDI.
- Today's store openings form part of ALDI's long-term expansion plans, which will see up to 50 stores developed across South Australia in the coming years, providing increased grocery options and employment opportunities for local residents.

LO 1 Explain the nature and scope of investment decisions.

Investment decisions are made by managers in all sorts of entities, large and small. Some of the most common features of investments are that they:

- often involve large amounts of resources in relation to entity asset bases or turnover
- involve risk and uncertainty that stem from the inability to cost projects accurately and to foresee operating revenues and costs
- often span long periods of time
- normally require a relatively large initial cash outlay, and returns are received over a long period into the future
- are often difficult to reverse without the loss of substantial funds
- must be made on the basis of best available data, and the values factored into the initial decision may not prove to be correct, due to the effects of unexpected external influences.

Risk in finance is defined as measurable variation in outcomes.
Uncertainty, is the unmeasurable variation in outcomes.

The process of decision making:

The steps involved in making an investment decision are:

1. Identify all the investment alternatives available at the time.
2. Select a decision-support tool and set the decision rule.
3. Collect the data necessary to make the decision.
4. Analyse the data.
5. Interpret the results in relation to the decision rule.
6. Make the decision.

- After making the investment decision, the next step is often to arrange finance (the financing decision) and start the planning and physical implementation of the project or investment.
- The investment alternatives available at any one time to an entity normally fit into one of three categories:

- new investments to increase revenue

- new technology to decrease costs
- replacement of old assets as they wear out.

LO 2 Describe and apply the concept of the accounting rate of return (ARR).

Accounting rate of return: Average profit over the period of the investment as a percentage of the average investment.

values.

The ARR is calculated as follows:

$$\text{ARR} = \frac{\text{Average profit}}{\text{Average investment}}$$

Decision rule:

- Most entities accept the investment with the highest ARR at the time, and set a minimum level (their required rate of return (RRR)) below which they would not consider investments.
- How the RRR is set varies.
  - Some entities base the level on their own past performance, others look to industry averages, and still others compare the estimated ARR with currently available yields or returns from other investments outside their industries.

The advantages of the ARR measure are that it is:

- simple to calculate
- easy to understand
- consistent with the ROA measure, which entities often try to increase in an attempt to maximise owners' wealth.

The disadvantages of the ARR method are that:

- the **time value of money** and the timing of profits are ignored
- it ignores the importance of cash as the ultimate resource without which entities cannot survive (entities must have sufficient cash to meet their obligations on time, no matter how asset-rich they are)
- profits and costs may be measured in different ways.

Overall, the ARR is considered by most managers to be too simplistic a measure to be appropriate by itself as a decision-support tool for the application of scarce investment funds. T

LO 3 Explain and use the payback period (PP) method.

- Entities invest in order to make profits.
- Investments normally require the outlay of cash and, as noted above, cash is important to entities that want to survive. Thus, the time it takes to recoup cash expended on investment is important.
- **If two investments were potentially equally profitable, most entities would prefer the investment where the outlaid cash was recouped earlier.**

Payback period: Time necessary to recoup with net cash inflows the initial outlay.

Decision rule for PP:

- The decision rule with PP varies among entities, but most have maximum periods beyond which they would not invest.
- Just as with ARR standards, the maximum periods might be based on past performance in that individual entity, or on industry averages. The maximum periods generally vary quite markedly.

TABLE 12.2 Payback decision rate

Year	Net cash flow $	Cumulative net cash flow ($)	
0	(120 000)	(120 000)	
1	30 000	(90 000)	
2	60 000	(30 000)	Payback occurs between years 2 and 3
3	50 000	(20 000)	
4	100 000	120 000	

Advantages and disadvantageous

The advantages of the PP measure are that it:

- is simple to calculate
- is easy to understand
- provides a crude measure of incorporating awareness of risk into the decision, as projects with relatively high early cash surpluses will have smaller PPs.

The disadvantages of the PP method are that:

- the time value of money is ignored, as the PP method treats all cash inflows equally
- it also ignores all cash inflows after payback has occurred, so that inherently more profitable investments may be rejected in favour of less profitable short-term investments given that the time horizon of analysis is restricted to the period up until the initial investment is recouped. For example, with the Pampered Pets Company no consideration is given to cash flows beyond the payback period.

LO 4 Discuss and calculate net present values (NPV) and apply the decision rule.

- As discussed in the previous section, ignoring the time value of money is a major defect of both the ARR and PP tools.
- Discounted cash-flow techniques overcome this problem by specifically recognising that $1 received in the future is worth less than $1 received now

$1000 (present value)	$1040 (future value)
T_0 = now	T_1 = 1 year's time

Here is the formula you used to do this calculation in your head.

$$FV = PV\,(1 + i)^n$$

where FV = future value
PV = present value
i = interest rate/period
n = no. of periods.
For example, FV = 1040 = 1000 $(1 + 0.04)^1$.

$$PV = \frac{FV}{(1+i)^n}$$
$$PV = \frac{1000}{1.04} = 961.54$$

Here, that factor is 1.04 (i.e. 1 + the relevant interest rate for the year). You can check to find if $961.54 is correct by multiplying it by 1.04 to see if you get $1000.

$961.54 (present value)	$1000 (future value)
T_0 = now	T_1 = 1 year's time

- The reason for calculating the present values of all the cash flows is so that the initial investment may be matched with the expected inflows in terms of the same units of money with the same purchasing power.
- In addition, the cash flows are adjusted for risk and the opportunity cost of capital. The cash flows used in the analysis are the net cash inflows (either positive or negative) for each period.
    - This means that the final net cash inflow also includes any salvage value that might be gained by selling the infrastructure or materials that are left over at the completion of the project.

NPV: Sum of the present values of the expected cash inflows from the project less the PVs of the expected cash outflows.
IRR: Rate of return that discounts the cash flows of a project so that the present value (PV) of the cash inflows equals the PV of the cash outflows.
Discount rate: Interest rate at which a future cash flow is converted to a present value.

$$PV = CF_1/(1 + r) + CF_2/(1 + r)^2 + CF_3/(1 + r)^3 \cdots CF_n/(1 + r)^n$$
$$NPV = CF_1/(1 + r) + CF_2/(1 + r)^2 + CF_3/(1 + r)^3 + \cdots + CF_n/(1 + r)^n - INV$$

where CF = the net cash flow at the end of period n
r = the selected discount rate per period
n = the number of periods, and
INV = the initial investment.

Decision rule for NPV

- The cash flows are assumed, for simplicity, to have occurred at the end of each relevant period. This point is discussed in more detail later in this section.
- The investment decision rule based on the financial analysis is to invest in projects (assets) if the NPV is positive (i.e. PV net CF > initial investment). This is because the positive value indicates a project that is potentially able to yield a higher return than the opportunity cost of funds (whose value is incorporated in the discount rate.)

Advantages and disadvantages of the NPV method

The advantages of the NPV method are that it takes into account:

- all of the expected cash flows
- the timing of expected cash flows (with cash flows received sooner being more beneficial to the entity)
- cash flows only, so it is not subject to changing accounting rules and standards as profit figures are.

In addition, the decision rule is explicit, in that positive NPVs will increase entity value, if the data are correct.

The disadvantages of the NPV method are that:

- the method relies on the use of an appropriate discount factor for the circumstances
- the actual return in terms of the percentage of the investment outlay is not revealed
- ranking of projects in terms of highest NPVs may not lead to optimum outcomes when capital is rationed
- in some cases, it conflicts with IRR rankings. (There also can be multiple IRRs.)

Factors affecting the discount rate:

- Inflation
- Risk