

**Accounting**  
**Building Business Skills**

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Chapter Sixteen:  
Incremental Analysis and  
Capital Budgeting

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**Learning Objectives:**

- Identify the steps in management's decision-making process.
- Describe the concept of incremental analysis.
- Describe the common types of decisions involving incremental analysis.

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**Learning Objectives:**

- Discuss the capital budgeting evaluation process, and explain what inputs are used in capital budgeting.
- Explain the net present value method.
- Explain the internal rate of return method.
- Explain other capital budgeting techniques.

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## Management Decision Making

- Management makes decisions within business that vary in scope, urgency, importance
- Accounting function assists with financial information
- Non-financial information may also be needed to make decisions

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## Management Decision Making

- Ongoing process of:
  - identifying problems and assign responsibility
  - analysing alternatives
  - making decision
  - reviewing results

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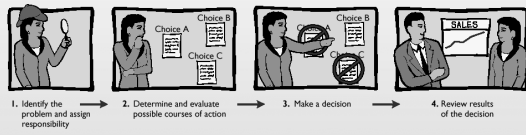
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## Management Decision Making



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## Incremental Analysis

- Identification of relevant financial data that change under alternative courses of action
  - costs and/or revenues
- Also effects of decisions on future earnings
  - involves estimates and uncertainty
- Alternatives evaluated using financial data

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## Incremental Analysis

- Important concepts:
  - variable costs may not differ
  - fixed costs may change according to alternatives
  - relevant costs: focus only on financial items that change
  - opportunity costs: consider benefits foregone under alternatives
  - sunk costs: past costs that will not change

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## Incremental Analysis



• **Relevant cost** In incremental analysis, the only factors to be considered are those costs and revenues that differ across alternatives. Those factors are called **relevant costs**. Costs and revenues that do not differ across alternatives can be ignored when trying to choose between alternatives.



• **Opportunity cost** Often in choosing one course of action, the business must give up the opportunity to benefit from some other course of action. For example, if a machine is used to make one type of product, the benefit of making another type of product with that machine is lost. This lost benefit is referred to as **opportunity cost**.



• **Sunk cost** Costs that have already been incurred and will not be changed or avoided by any future decision are referred to as **sunk costs**. For example, if you have already purchased a machine, and now a new, more efficient machine is available, the carrying amount of the original machine is a sunk cost. It should have no bearing on your decision whether to buy the new machine. Sunk costs are not relevant costs.

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### Incremental Analysis

- Many types of decisions rely on incremental analysis:
  - special orders
  - make or buy
  - extent of processing
  - replacement of assets
  - discontinuation of operations

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### Incremental Analysis

- Special orders – decision to accept or not depends on:
  - revenue and costs that would change if order accepted (relevant data)
  - effects on other markets and customers
  - whether excess production capacity exists or not

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### Incremental Analysis

- Make or buy – manufacturing or outsourcing items depends on:
  - relevant costs
  - productive capacity that cannot be better used elsewhere (opportunity costs)
  - analysis of qualitative factors (e.g. effects on employees, stability of business environment)

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### Incremental Analysis

- Extent of processing – selling item as-is or undertaking further processing depends on:
  - incremental revenue exceeding incremental costs
  - as always, only consider relevant data
  - qualitative factors (e.g. reliability of alternative outsourcing)

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### Incremental Analysis

- Replacement of assets – decision to replace equipment or continue using existing assets depends on:
  - costs that change plus cost of new equipment
  - carrying cost of existing asset is irrelevant (sunk cost)
  - revenue from sale of existing asset is relevant (e.g. trade-in or cash value)

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### Incremental Analysis

- Discontinuation of operations – retention or elimination of business segment depends on:
  - analysis of relevant data (variable and fixed costs plus revenues)
  - analysis usually instigated from lack of profitability
  - qualitative effects important (e.g. sales of related product lines, employee conditions)

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## Capital Budgeting

- Making capital expenditure decisions – which capital projects will maximise return on investments
  - may be annual review process
  - various proposals evaluated
  - top management involved
  - decisions often have significant impact on profitability

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## Capital Budgeting



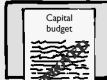
1. Project proposals are requested from departments, factories, and authorised personnel.



2. Proposals are screened by a capital budgeting committee.



3. Managers determine which projects are worthy of funding.



4. Board of directors approves capital budget.

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## Capital Budgeting

- Cash flow information – ultimate value of financial investments depends on cash results:
  - consider availability of funds
  - interdependence of proposed projects
  - take basic decision-making approach
  - assess risks associated with proposed projects

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## Capital Budgeting

- Net present value (NPV) – one of discounted cash flow techniques:
  - results in amount of cash to be returned from project
  - recognises time value of money
  - total cash inflow = sum of annual cash flows plus residual value of asset when sold, discounted by required rate of return

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## Capital Budgeting

- annual cash flows may be equal or unequal
- compare capital outlay to total cash inflow
- NPV is difference between outflow and inflow
- zero or positive NPV = acceptable proposal
- highest NPVs are most acceptable

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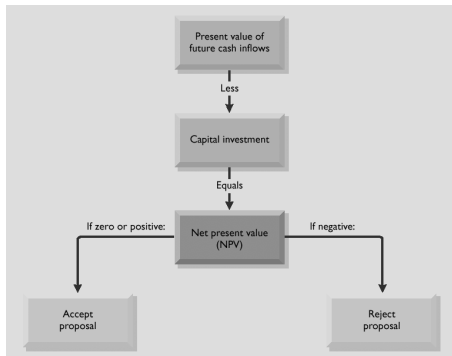
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## Capital Budgeting



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### Capital Budgeting

- Discount rate for NPV – management decision:
  - usually equal to cost of capital
  - cost of capital = weighted average of rates on borrowed funds and returns to shareholders
  - risk of project may affect rate
  - small changes in discount rate can have significant effect on NPV

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### Capital Budgeting

- NPV assumptions – may or may not be realistic:
  - all cash flows occur at end of year
  - all cash flows are immediately reinvested with similar returns
  - all cash flows are predictable

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### Capital Budgeting

- Internal rate of return (IRR) – another discounted cash flow technique:
  - results in estimated interest yield to be returned from project

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## Capital Budgeting

- IRR = internal rate of return factor combined with present value of an annuity



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## Capital Budgeting

- IRR = rate at which NPV equals zero (present value of cash outflow equals present value of cash inflows)
- assumes equal annual net cash flows
- IRR above minimum required rate of return = acceptable proposal

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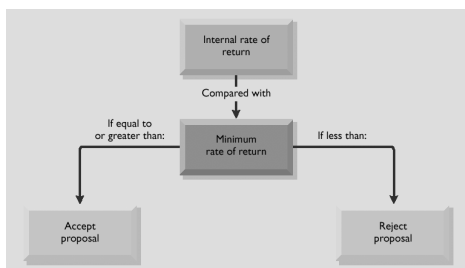
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## Capital Budgeting



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## Capital Budgeting

- Comparison of discounted cash flow methods:
  - NPV and IRR both provide relevant quantitative data

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## Capital Budgeting

|                  | <b>Net present value</b>   | <b>Internal rate of return</b>  |
|------------------|--|---|
| 1. Objective     | Calculate net present value (a dollar amount)  | Calculate internal rate of return (a percentage).   |
| 2. Decision rule | If net present value is nil or positive, accept the proposal; if net present value is negative, reject the proposal. | If internal rate of return is equal to or greater than the minimum required rate of return, accept the proposal; if internal rate of return is less than the minimum rate, reject the proposal. |

- both methods ignore qualitative decision factors (e.g. market trends, employee satisfaction, product quality)

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## Capital Budgeting

- Additional considerations:
  - intangible benefits (attempt to quantify and incorporate value of intangibles into capital decisions)
  - mutually exclusive projects (prioritising may be necessary)
  - risk analysis (sensitivity analysis uses 'what-if' approach)

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## Capital Budgeting

- Other techniques: cash pay back – time required to recover cost of investment
  - may relate to estimated useful life of asset purchased
  - often used as initial screening tool

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## Capital Budgeting

- easy to calculate
- ignores time value of money



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## Capital Budgeting

- Other techniques: return on average investment – profitability of capital investments
  - based on accrual data, not cash
  - minimum rate of return usually based on cost of capital

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## Capital Budgeting

- easy to calculate
- ignores time value of money

$$\begin{array}{|c|} \hline \text{Expected annual} \\ \text{net profit} \\ \hline \end{array} + \begin{array}{|c|} \hline \text{Average} \\ \text{investment} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Return on} \\ \text{average investment} \\ \hline \end{array}$$

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