WEEK 1 - LECTURE 1 Management Accounting

What is accounting?

"… a process of collecting, summarising, analysing and communicating information to enable users of that information to make informed decisions"

"Accounting is the language of business. It's how businesses communicates about what they're doing to their investors and to their creditors and to anybody interested in the performance of the firm"

Financial and management accounting: a comparison

Financial accounting

Branch of accounting. That generates financial reports for use by people outside the organisation

-External users; Banks and investors
-Regulated
-Aggregated; whole organisation
-backwards looking

Management accounting

The process of generation financial and non financial information to be used by managers for planning, monitoring and controlling an organisation.

-Internal users; Managers - some information may get distributed externally (e.g social, environmental accounting)
-**Unregulated; usefulness is key - what techniques will be helpful in decision making**
-Department focused; particular - looks at specific things for internal decision making (e.g what product to produce)
-Forward looking

Management Accounting-process

-Identifies
-measures
-records
-accumulates
-communicates

Examples

Which of these is an internal decision?

- An employee deciding whether to ask for a raise
- A shareholder deciding whether to invest further funds
- A supplier deciding whether to extend credit
- A manager deciding whether to increase production ; Internal decision makers are people inside the company who make decisions; managers
- A bank deciding whether to call in a loan

Which of these is not an internal decision?

- Whether to offer a discount to larger purchasers
- Whether to pay a creditor within the discount period
- How much GST to pay to the IRD
- How much dividend to pay to shareholders

Which of these is not a cost object? - A cost object is any item for which we can calculate a cost for

- Brand
- Customer
- Employee
- Division
- Service
- All of these
- None of these

What makes accounting information useful (qualitative characteristics- most useful to MA)
-Relevance: can provide helpful information about past events and help in predicting future events or in taking action to deal with possible future events.
-Faithful Representation: statements are complete, neutral, free from error
-Comparability: Comparability is the degree to which accounting standards and policies are consistently applied from one period to another.
-Verifiability: verifiability is the extent to which information is reproducible given the same data and assumptions.
-Timeliness: Timeliness is how quickly information is available to users of accounting information.
-Understandability: Information that is understandable to the average user of financial statements is highly desirable.

Although accounting information is subject to constraints such as
-Materiality; context matter - holistic picture
-Cost benefits; MA is not mandated therefore each action requires justification hence for each action the pros must outweigh the cons - must add value to the organisation.
-Balance between characteristics; trade off one characteristic for another e.g faithful representation for timeliness (estimation used to save time)

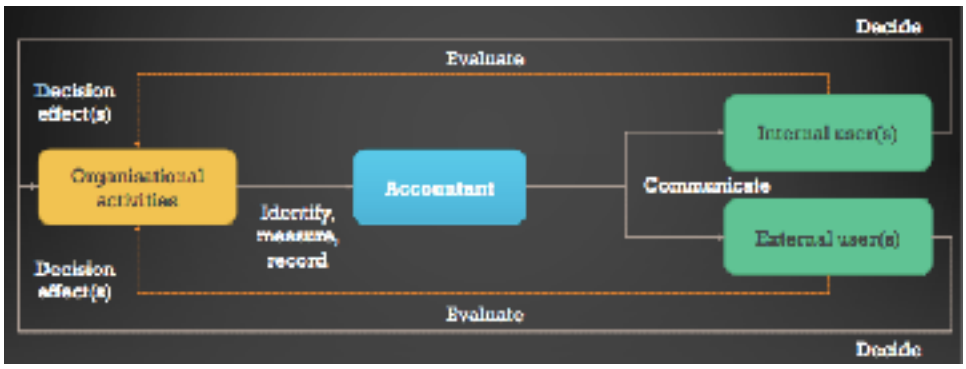
Similarities between management accounting and financial accounting
- Same organisational activities
- Same data sources (mostly)
- Same basic uses
- Transformation of data to information
- Communication

Main uses of Accounting
-Accountability; what we have done what we are doing to who we are accountable
-Decision-making; what are we going to do in the future

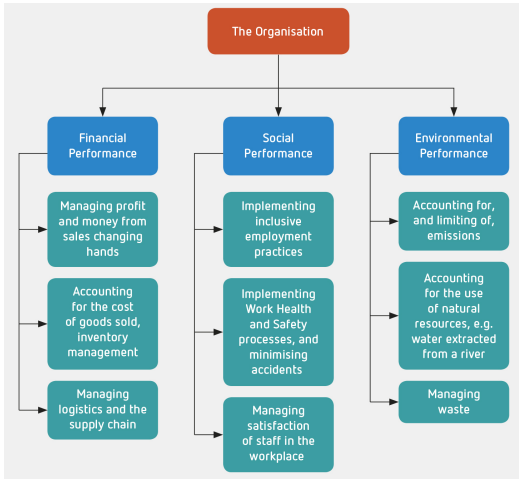
WEEK 1 - Lecture 2 Linking Accountability & decision making

Objective: Discuss the function and accountability of management in an organisation

Accounting provides link between accountability and decision making



Accountability for what?



<u>Accountability Model</u>

-Why? Is the company collecting and reporting particular information

Management e.g why generate management accounts: assist managers to achieve an organisation's objective

-To whom? Is the organisation reporting the information

Management e.g to whom: managers and stakeholders

-What? Information is it collecting and reporting

Management e.g what information is collected: depends what is considered important (cost v benefit)

-How? Is it reporting the information, where is the information appearing and what reporting frame work is being used.

Management e.g how is it presented: not bound by regulations; will presented in most useful way using various frameworks

Why do we account?

~~-Legal requirement; MA unregulated~~

~~-Forestalling imposition of legal requirements; MA unregulated~~

<u>(NOT APPLICABLE TO MANAGEMENT ACCOUNTING)</u>

-Perceived responsibility

-Demands of powerful stakeholders

-Increased profits

-Responding to crisis

To whom do/should we account; Responsibility generates accountability

<u>Primary audience of MA</u>

-Organisation's managers
-Other stakeholder's; may be interested, but not able to cope or negotiate access/disclosure

For what and How do we account?
Depends what aspect are considered important (relevance) - management accounting is based on usefulness (qualitative characteristics)
Hence this may range from:
-responsibilities and accountabilities of the manager
-range of reporting boundaries
-type of product or services offered by the organisation
-type of resources being consumed - nature of the output/impacts being created and measured
-location of activities - environmental and social impact
-level of competition
-profit or non profit

Additionally we have to make sure benefits outweigh cost
Benefits might arise because the information allowed us to make more informed decisions, which may result in reduction in financial cost or negative externalities on environment/society.
Collecting too little information is bad however collecting too much information is not useful swell as this can cause an information overload; individuals have a limit in relation to how much information they can assimilate

What does management do?
"The function of management accounting is to assist the management to perform its functions of planning, organising, directing, controlling and decision making"

Decision making, planning and control process; management process (what they do)
-identify objectives; high level objective (mission) to department goal
-collects relevant info
-search for alternative course of action
-Gather data about alternatives
-select course of action
-makes decisions
-implement action
-Compare actual and planned outcomes
-Respond to divergence from plan
>return to alternative course of action and repeat process
>revisit objective and identify new ones if initial plan is no longer appropriate

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WEEK 2 - Lecture 1 How decisions are made
Objective; Discuss how decisions are made

Planning as a way to manage uncertainty
The future is uncertain- planning offers a way to exert control over what happens

Management control systems
Simon's levers of control (1995)
-belief systems; have senior managers communicated the core values of business in a way that people understand and embrace

-boundary systems; have managers in your organisation clearly identified the specific action and behaviour that are off limits E.G Microsoft wont enter hardware market - manager starts own company
-diagnostic control system; Are diagnostic control systems adequate at monitoring critical performance variable e.g set market share goal and monitor
-interactive control system; are your control systems interactive and designed to stimulate learning; know what we want to do but not sure how to get there
"management control systems are the formal, information based routines and procedures managers use to maintain or alter patterns in organisational activities"

Rational decision-making - Apply logic to the problem

Formal rationality

Technical, calculation-orientated process focused on "concrete, quantifiable events" and clear means-end relationships
-Concerned with finding 'the answers' and attaining 'the goal'

homo economicus (rational economic man)

Unswervingly rational, completely selfish and can effortlessly solve even the most difficult optimisation problems

Rational decision-making process benefits

Provides:
-structure; return to decision making process mode when making choice
-discipline; forced to think about each step
-consistency; same process applied to all problem
-comprehensive assessment; considered everything outlined in process

7 step decision making process

1. Ask questions
2. Gather information
3. Analyse options
4. Develop ideas
5. Evaluate proposals
6. Select solutions
7. Act on a plan

Decision-making & risk

Decision making means making judgements about what is likely to happen in the future but the future is unknowable - this creates risk

Impediments to rationality

Uncertainty, probability and ambiguity

Uncertainty; what we do not know, but could (potentially); e.g definite answer to how many birds in air at one time but we cannot access this information - can be reduced with information
Probability; The likelihood of something happening - total guess to estimate based on previous info
Ambiguity; What we do not know and cannot know (no amount of extra information can resolve) - is it the right thing to do? (can't make call even with further information)

Limits to knowledge

Society creates as much new information every two days as it did from the dawn of civilization to 2003 - not possible to know everything because of the amount of new information generated everyday

Bounded rationality
Decision makers cannot access, assimilate, and digest all information potentially available. Therefore we tend to search for solution only until finding first acceptable solutions instead of continuing to find all possible solutions and evaluating to find optimal alternatives - statisficing

Logical reasoning
Deduction
Deduction starts from general rule & applies to particular
e.g all swans are white + this bird is a swan = this bird is white
E.g all lectures are 50 minutes long = this lecture will be 50 minutes long
Induction
Induction starts from observation(s) and generalises
e.g every swan ever seen has been white > the next swan I see will be white

What happens when an event occurs outside of out logical reasoning?
Black swan event- what you don't know is far more important than what you do know
There are things that we know we don't know but there are things that we don't know we don't know, the latter is crucial
e.g
9/11, development of technology, virus, natural disaster

WEEK 2 - Lecture 2 Cognitive biases

Optical illusions
Systematic & predictable patterns of errors in visual perception

Cognitive illusions
Cognitive biases are systematic and predictable patterns of errors of cognitive perception (understanding)

Judgement Under Uncertainty: heuristics & biases
cognitive bias
-Anchoring effect; Giving too much weight to a single piece of information (especially the first one) e.g was $60 now $30
-Confirmation bias; Paying attention only to information that agrees with what you already think
-Group-think; Going along with the rest of the group, Dissent may be punished by 'in-group'
-Halo effect; One positive or attractive quality unduly influences unrelated judgments e.g using celebrity endorsement
-Reverse halo (or horns) effect; One negative or unattractive quality unduly influences unrelated judgments
-Sunk cost fallacy; Persisting with something unrewarding because you've already invested so much in it
-Availability heuristic; Equating how easy it is to think of an example with probability
-Mental arithmetic; Brain takes shortcuts with numbers
-Mental accounting; Mentally treat money differently depending on its source or destination
-Predictive fallacy; Overestimating how accurately we predicted what would happen e.g hindsight bias, Overestimating outcome's probability, Distorting memory of prediction

Should we despair?
"I know that I know that knowing I have biases isn't enough"- **GI Joe Fallacy**
-Biases are innate
-Knowledge is not enough
-Judgement is fallible

How to make better decisions
Coping with imperfect, biased inputs, decision processes, & decision makers
1. Be aware of issues/bias
2. Need system 1 and 2 thinking
3. Use 'nudge' strategies

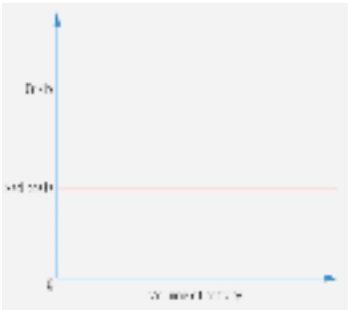
'Even the smartest people exhibit biases in their judgments and choices. It's foolhardy to think we can overcome them through sheer will. But we can anticipate and outsmart them by nudging ourselves in the right direction when it's time to make a call'

Nudge strategy
-make high-medium-low estimates; better than high/low
-look from outside
-use comparative evaluation- compare 2 different pieces
-think twice; do work leave it overnight - do it again and combine
-seek advice
-use 'vanishing options' test; look at backup option
-use 'premortems'; lets pretend project went wrong - what went wrong?
-cycle through objectives
-set tripwires; set up sunk cost limit

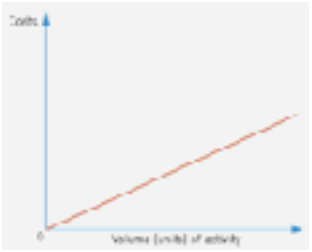
WEEK 3 - Lecture 1 Applied Decision Making

Objectives; -Explain & apply concept of relevant costing
- Determine whether to accept (or keep) or reject a contract or activity, on financial grounds alone;
-Choose between products when certain inputs are in scarce supply;
-Determine whether it is better to make or buy a component or service, under specified circumstances; and
-Explain reasons for closing or continuing a section or department

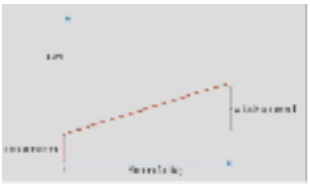
Cost behaviour
-Fixed Cost; cost incurred regardless of level of production (Total cost does NOT change with volume, Per unit cost DOES change with volume)



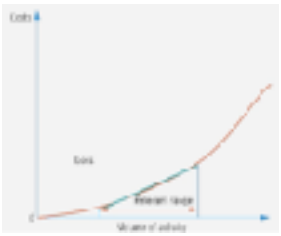
-Variable cost; cost which are influenced by level of production (Total cost DOES change with volume, Per unit cost does NOT change with volume)



-Mixed cost; partially fixed and variable (Total cost and Per unit cost changes with volume) e.g electricity



-Relevant Range; span of activity for a given cost object where both total fixed costs and variable costs per unit remain constant



Formula
-Contribution margin; Sales - Variable cost = Contribution margin
-total cost; VC +FC
-sales; profit + total cost

Relevant costs- Which cost to include?
Characteristic of relevant cost
Those costs that change as a result of a particular decision
-occurs in the future
-differ between different courses of action
-need not be financial

Sunk cost
costs created by a decision in the past and that cannot be changed by any decision that will be made in the future
-already paid in past e.g amount paid for holiday
-cost obliged to pay in future because of decision made in the past
e.g
- A firm has an obsolete machine purchased two years ago, net book value now $72,000

>Book value is a sunk cost as it was incurred in the past

Option
-Make alterations, estimated cost $20,000, then sell for $40,000
-Sell for scrap, estimated selling price $15,000

ALTER, THEN SELL	
	$
Future benefits	40,000
less future costs	(20,000)
Net benefit	20,000

SELL FOR SCRAP	
	$
Future benefits	15,000
less future costs	
Net benefit	15,000

Opportunity cost
the benefits that could have been received but which were given up because of the decision to take another course of action
e.g
You buy a car on TradeMe for $6,000, well below its market value.
Your neighbour offers you $10,000 for it.
What is the cost of keeping the car for your own use?
$10,000 <- amount of resources forgone by not selling

Differential cost
Only differential (i.e incremental) costs are relevant to future decisions
e.g
Janet is deciding whether to stay in a hall or a private flat next trimester
Which of the following costs are differential?

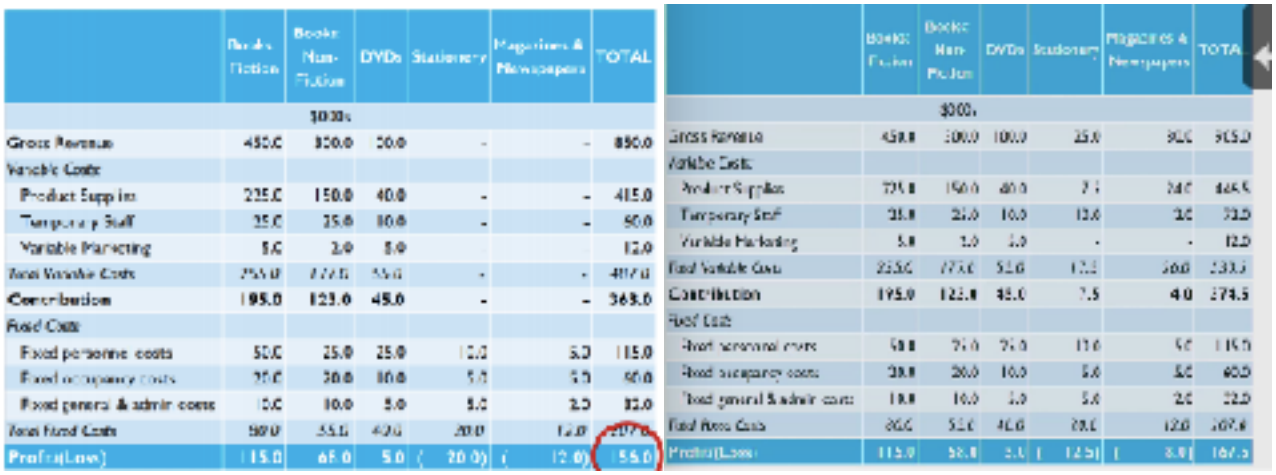
	Item	Cost	Extra info
☑	Rent	$400	Per month, min lease 6 months
☑	Share of bills	$75	Per month
☑	Groceries	$200	Per month
☒	New couch	$350	Bought over summer
☑	Storage for couch	$35	Per month, needed if choose hall
☒	University fees	$3,500	Per trimester
☒	Textbooks	$350	Per trimester
☑	Hall fees	$2,900	Per trimester, 10 weeks
☒	Food plan	Inc. in hall fee	20 meals per week, non-refundable

<u>Accept or reject decisions</u>
-Special type of mutually exclusive decisions; Accepting one alternative means rejecting other/s
-Yes/no question; Do we? Do we not?

<u>Unconstrained resources - Accept or Reject decisions</u>
<u>Decision to:</u>
Retain or Divest; department, product, service
e.g
You are the management accountant for Whitcoulls NZ. You have analysed the gross revenues and costs by department for one of the stores as follows:

	Books – Fiction	Books – Non-Fiction	DVDs	Stationery	Magazines & Newspapers	TOTAL
			$'000s			
Gross Revenue	450.0	300.0	100.0	25.0	225	900.0
less Costs	335.0	210.0	95.0	37.5	145	822.5
Profit/(Loss)	115.0	90.0	5.0	(12.5)	(8.0)	167.5

Should the Stationery and Magazines & Newspapers departments be closed?



If we decided to drop loss-making departments, the company would incur greater loss < this is because fixed cost are unavoidable regardless of production level

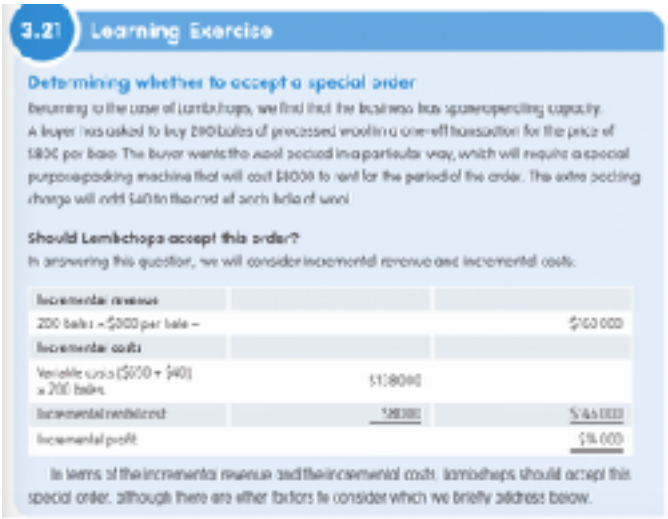
Accept or Reject; Special (one-off) contract; Basic Decision rule

If fixed costs unavoidable, retain all departments, products, services with positive contribution (revenue), divest all others

<u>What if some/part of fixed costs are avoidable</u>?

–Retain/continue if contribution is greater than avoidable fixed costs

–Divest/stop if contribution is less than avoidable fixed costs



Other consideration

-Capacity; Do we have resources spare, or are they scarce? e.g machine time, demand etc.

-Other factors; What else is important? E.g reputation, quality etc.

Special orders with spare capacity - Accept or reject decisions

<u>Using spare capacity</u>

If a company has spare capacity, at what point should it sell its products or services at a lower price to utilise that capacity?

e.g

- Hotel International (HI) has 200 rooms, for which it charges $150 a night, but historically averages an 80% occupancy rate. The hotel's monthly costs are summarised below:
- Fixed overheads (rates, insurance, lease, etc) $150,000 per month
- Monthly operating costs fixed in short term (management salaries, other staff costs, general area power costs, etc) $200,000 per month
- Variable operating costs (laundry, room power, water rates, etc.) $50 per room per night

Revenue		
(30 * 200 * $150) * 80% =		720,000
Variable room costs:		
(30 * 200 * $50) * 80% =	240,000	
Monthly operating costs	200,000	
Monthly fixed overheads	150,000	
		590,000
Operating Profit		**$130,000**

- Hotel International has an opportunity to place as many rooms as it wishes on Grab-a-Room – an internet site offering last minute deals on hotel accommodation that normally discounts room prices by 60%

-Should the hotel offer its rooms at $60?

Potential revenue from Grab-a-Room sales:	
(30 * 200 * 20%) * $60 =	$ 72,000
Associated extra cost:	
(30 * 200 * 20%) * $50 =	$ 60,000
Potential net gain/(loss)	**$ 12,000**

Additional considerations

is this revenue really additional?

-is it displacement of existing business? : guests who would have stayed at HI anyway and paid full price change to booking through Grab-a-Room instead

-Opportunity cost?

Decision rule

-If existing business displaced, accept if extra revenue exceeds contribution lost

- If not, accept if additional sales make positive contribution
- If neither, reject

Other considerations?

- Is there another alternative? e.g. another customer willing to pay more than 40% of normal price
- Potential loss of goodwill from existing customers from differential pricing
- Brand & reputation
- If over-capacity is ongoing issue, may be better to reduce capacity (& so fixed costs)

WEEK 3 - Lecture 2 Applied Decision Making

Constrained resources- Accept or reject

What is a constraint? limitation or restriction

Examples of constrained resources

-Raw materials

-Machine capacity

-space

-time

-skilled staff

Consequences

If resource limited, production is also limited therefore we cannot apply same decision rule of 'accept all opportunities with positive contribution'

The Challenge
We must determine
-What is optimum output within constraint/s?
-Which products or services should be produced and how many of each?

The solution
Most profitable combination of products occurs when contributions per unit of limiting factor is maximised

Decision Rule
Maximise contribution per unit of limiting factor

Application

1. Identify key constraint
2. Identify contribution per unit of constraint for each product
3. Optimise use of constraint to maximise contribution

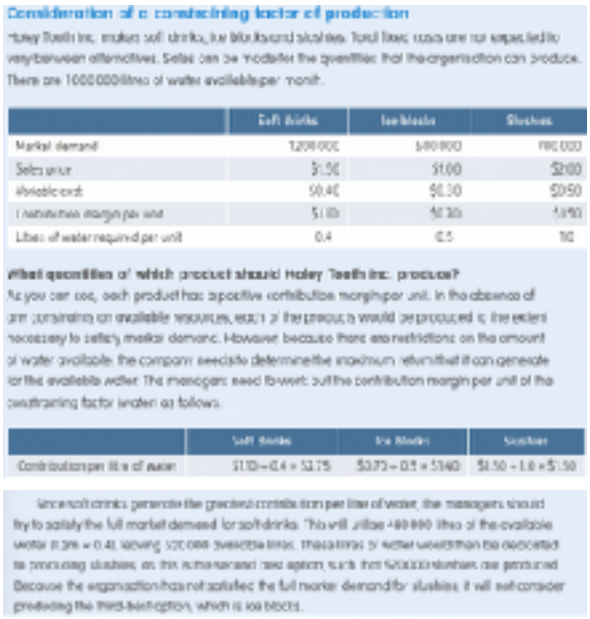
E.g

- BoxCo makes and sells three different boxes

-All else being equal, Green Boxes most profitable
-profits increased most by selling Green Boxes

	Red Box	Blue Box	Green Box
	($)	($)	($)
Selling price per box	50	40	70
Variable costs per box	20	20	35
Contribution per box	30	20	35
Ranking	2	3	1

Decision: focus on making & selling Green Boxes


Consideration of a constraining factor of production

Holey Teeth Inc. makes soft drinks, ice blocks and slushies. Total fixed costs are not expected to vary between alternatives. Sales can be modelled the quantities that the organisation can produce. There are 1000 000 litres of water available per month.

	Soft drinks	Ice blocks	Slushies
Market demand	1,200 000	640 000	440 000
Selling price	$1.50	$1.00	$2.00
Variable cost	$0.40	$0.50	$0.50
Contribution margin per unit	$1.10	$0.50	$1.50
Litres of water required per unit	0.4	0.5	1.0

What quantities of which product should Holey Teeth Inc. produce?

As you can see, each product has a positive contribution margin per unit. In the absence of any constraints on available resources, each of the products would be produced in the orders necessary to satisfy market demand. However because there are restrictions on the amount of water available the company needs to determine the maximum return that it can generate for the available water. The managers need to work out the contribution margin per unit of the constraining factor (water) as follows:

	Soft drinks	Ice blocks	Slushies
Contribution per litre of water	$1.10 ÷ 0.4 = $2.75	$0.50 ÷ 0.5 = $1.00	$1.50 ÷ 1.0 = $1.50

Since soft drinks generate the greatest contribution per litre of water, the managers should try to satisfy the full market demand for soft drinks. This will utilise 480 000 litres of the available water (1 200 × 0.4), leaving 520 000 available litres. These litres of water would then be allocated to producing slushies, on the same basis as above, such that 520 000 litres are produced. Because the organisation has not satisfied the full market demand for slushies it will not consider producing the third contribution, which is ice blocks.

What if we were limited to 100 skilled labour hours per week?

Contribution per box	$30	$20	$35
Skilled labour time per box	4 hrs	4 hrs	5 hrs
Contribution per labour hour	= $30/4 hrs = $7.50	= $20/4 hrs = $5.00	= $35/5 hrs = $4.38
Contribution for 100 labour hours	$750	$500	$438

What if there was a limit to demand as well?

	Red Box	Blue Box	Green Box
Skilled labour time per box	4 hrs	4 hrs	5 hrs
Contribution per labour hour	$7.50	$5.00	$4.38
Ranking	1	2	3
Weekly demand in units	5	20	15
Required labour hours	= 5 boxes @ 4hrs = 20 hrs	= 20 boxes @ 4 hrs = 80 hrs	= 15 boxes @ 5hrs = 120 hrs

Optimising use of constraint

Produce in rank order

-highest contribution per constraint to lowest
-fill demand, then move to next highest
-until constraint exhausted
E.g

OPTIMAL PRODUCTION PLAN

	Red Box	Blue Box	Green Box	Total
Ranking	1	2	3	
Weekly demand in units	5	20	15	
Required labour hours	20 hrs	80 hrs	120 hrs	220 hrs
Production plan				
Production quantity	5	20	0	
Required labour hours	20	80	-	100
Total contribution	= 20 * $7.50 = $ 150	= 80 * $5.00 = $400		= $ 150 + 400 = $550

Make or buy decision - constrained resources

Should we make a product (or deliver a service) using our own resources, or pay someone else to do it for us? - it depends!

E.g
Better Bakers (BB), a small boutique bakery, makes three types of loaf and has spare capacity.
Bread Bin Bakery (3B) has offered to make their sliced white loaf for $5 per loaf.
-Should BB continue to make this loaf or buy it from 3B?

BB: ADDITIONAL INFORMATION

Better Bakers - February 20xx	Sliced White	Brown	Wholemeal	Total
Production units per week	1,000	1,500	2,000	
	($)	($)	($)	($)
Selling Price	8.00	10.00	12.00	
Sales	8,000	15,000	24,000	47,000
Variable Costs	6,000	9,000	20,000	35,000
Contribution	2,000	6,000	4,000	12,000
Attributable Fixed Costs	1,000	3,000	1,000	5,000
Apportioned Fixed Costs	800	2,400	800	4,000
Profit	200	600	3,200	3,000

Suggested Approach: Spare Capacity

1. **Calculate avoidable cost per unit**

-VC
-attributed FC e.g marketing

2. **Compare to external purchase cost**

BB: AVOIDABLE COSTS PER UNIT

	Sliced White Loaf
Production units per week	1,000
Total variable costs	$6,000
VC/unit = $6,000/1,000 units	$6
Attributable fixed costs	$1,000
Attributable FC/unit = $1,000/1,000 units	$1
Total avoidable cost/unit = $6 + 1	$7
External purchase cost per unit	$5
Savings/(loss) per unit if buy	$2

>@ 1000 loafs savings = $2000 (2*1000)

3. Consider other factors

E.G

-Quality; Will 3B's loaf be as good as BB's

-Employees; Will decision affect morale?

-Customers; How will they respond

-Ethics; Are 3B's business practices acceptable to BB?

4. Make recommendation

E.g

Based on financial analysis; Recommend that BB accept the offer and outsource production of sliced white loaves to 3B

Overall; it depends - other factors may mean that BB may be better off making its own loaf

Under Constraint - Make or buy

E.g

What if BB made a fourth loaf, a Farmhouse loaf, that used the same production facilities as the Wholemeal Loaf?

- 3B can also make Farmhouse loaves, at a cost of $12 each

-Should BB continue to make this loaf or buy it from 3B?

Better Bakers – Forecast	Wholemeal	Farmhouse
	($)	($)
Selling Price	*12.00*	*13.00*
Variable Costs:		
materials	6	4
labour	4	4
Total variable cost	10	8
Contribution	2	5

No Spare capacity - Suggested Approach

1. calculate variable cost

2. calculate opportunity cost

e.g
Forgo production of wholemeal loaves

3. compare to external purchase cost

e.g profit of wholemeal + TVC

Cost to buy = 3B's offered price	Cost to make?	Cost to buy = 3B's offered price	Cost to make?
• $12 per loaf	• Unit VC + opportunity cost	• $12 per loaf	• $10 per loaf ($ 8 + 2)

4. consider other factor

E.g
Spare capacity

5. make recommendation

E.g
Based on financial analysis; BB reject 3B's offer and make Farmhouse loaves themselves although they will have to forgo making Wholemeal loaves

Overall

If they have spare capacity; If cost to buy less than VC, buy **otherwise** If cost to buy more than VC, make

If they do not have spare capacity; If cost to buy less than VC + opportunity cost, buy **otherwise** If cost to buy more than VC + opportunity cost, make

---

Tutorial 1

What are the main steps in a rational decision model?

A. Set objectives
B. Gather data
C. Evaluate data
D. Make decision
E. Review results & compare to plan
F. Respond to/learn from results & comparison

WEEK 4 - Lecture 1 Making investment decisions

Objectives; -Essential features of investment decisions
-Useful MA techniques, i.e
-accounting rate of return (PP)
-Net present value (NPV)
-Internal rate of return (IRR)
-Risk and sensitivity analysis
-Qualitative Considerations

Why do investment decisions matter?

-(usually) Specific to organisation

assets involved have limited resale market; if we have to sell an asset in the short term we're unlikely to recoup initial investment - difficult and expensive to get out of an investment, what are we using capital for to further aim of company

-large amounts of resources involved

effect of mistakes can be catastrophic; use large amount of resource additionally opportunity cost add to this expenditure - effects viability of firm

-time factor

long-term horizon; e.g 10 year lease

outlay usually upfront; spend money initially to make money

benefits expected in future

Examples

Specificity Bauer Media NZ; shut down firm abruptly due to effect of covid on the market, assets include titles (women weekly etc.), some of which they will be able to sell others will not be attractive enough to be of value

Resource involved Auckland city rail link; large investment made into rail will incur extra cost due to covid 19

Long-term commitment Ngai Tahu Holdings; whale watching owns 43% so they are an active owner and intend to keep these holdings

Other Example

PPE decisions; property, plant, equipment

Product design; do we want to launch a new product

Customer decisions; do we want to chase a new market

Strategy decisions; do we want to expand our strategy

Operational vs Investment decision

Operational

-Routine

-Predictable

-Short-term focus

-Small (relatively)

Investment

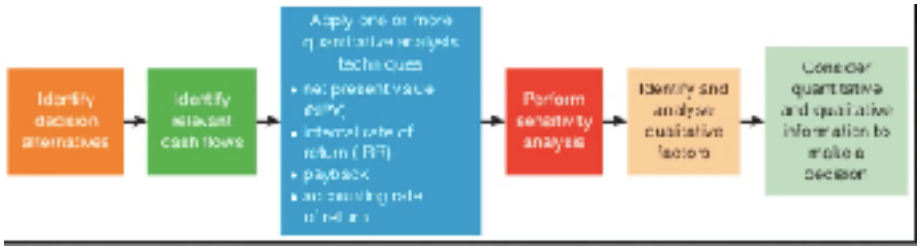
-Irregular

-Rely on estimates

-Long term focus

-Large (relatively)

Capital Investment decision process



Useful MA techniques
Gathering input to selecting course of action

First we must identify relevant cashflow, which are cashews that change as a result of a particular decision

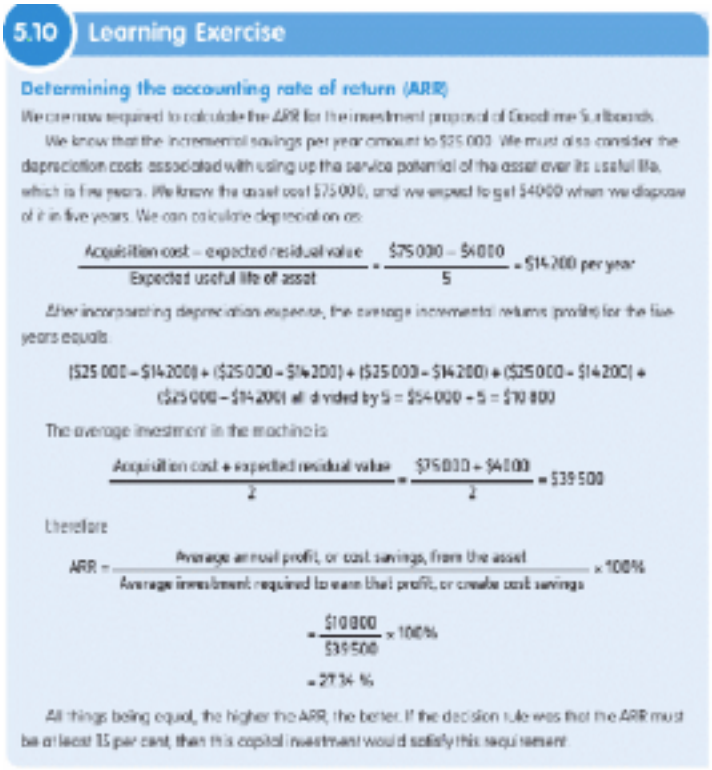
Relevant cashflows
-occur in the future; sunk cost irrelevant
-differ between alternatives; e.g venture vs term deposit
-may flow in OR out; payment, revenue, assets, liabilities, tax, remaining value of asset

3 types:
-initial investment (start of project); purchase price of new machine, consultant cost
-incremental operating cashflow (mid project); extra revenue expected/extra cost expected e.g new territory may mean interpreter cost
-terminal (end project); wether we can sell equipment, cost of closing business

Apply one or more quantitative analysis techniques
ARR; accounting rate of return
Expected annual increase in income from increase in investment
ARR=(Average expected annual profit from investment/average investment required)*100%

Average investment required = (acquisition cost + expected residual value)/2

Example
WH Engineering plans to buy a new machine press, costing $210,000 so it can expand production. The machine is expected to have a useful life of 10 years, at the end of which it will have a scrap value of $30,000. By expanding production, WH estimates that it can increase annual net profit by $12000
Required:
A) whats the ARR of the new press?
B) Should WH buy it?



5.10 Learning Exercise

Determining the accounting rate of return (ARR)

We are now required to calculate the ARR for the investment proposal of Goodtime Surfboards.

We know that the incremental savings per year amount to $35 000. We must also consider the depreciation costs associated with using up the service potential of the asset over its useful life, which is five years. We know the asset cost $75 000, and we expect to get $4000 when we dispose of it in five years. We can calculate depreciation as:

$$\frac{\text{Acquisition cost} - \text{expected residual value}}{\text{Expected useful life of asset}} = \frac{\$75\,000 - \$4000}{5} = \$14\,200 \text{ per year}$$

After incorporating depreciation expense, the average incremental returns (profits) for the five years equals:

($35 000 – $14 200) + ($35 000 – $14 200) + ($35 000 – $14 200) + ($35 000 – $14 200) + ($35 000 – $14 200) all divided by 5 = $54 000 ÷ 5 = $10 800

The average investment in the machine is:

$$\frac{\text{Acquisition cost} + \text{expected residual value}}{2} = \frac{\$75\,000 + \$4000}{2} = \$39\,500$$

Therefore

$$\text{ARR} = \frac{\text{Average annual profit, or cost savings, from the asset}}{\text{Average investment required to earn that profit, or create cost savings}} \times 100\%$$

$$= \frac{\$10\,800}{\$39\,500} \times 100\%$$

$$= 27.34\ \%$$

All things being equal, the higher the ARR, the better. If the decision rule was that the ARR must be at least 15 per cent, then this capital investment would satisfy this requirement.

average investment required=((cost+residual)/number of values)
ARR=(Average expected annual profit from investment/average investment required)*100%
ARR=(12000/(240000/2))*100%
ARR=10%

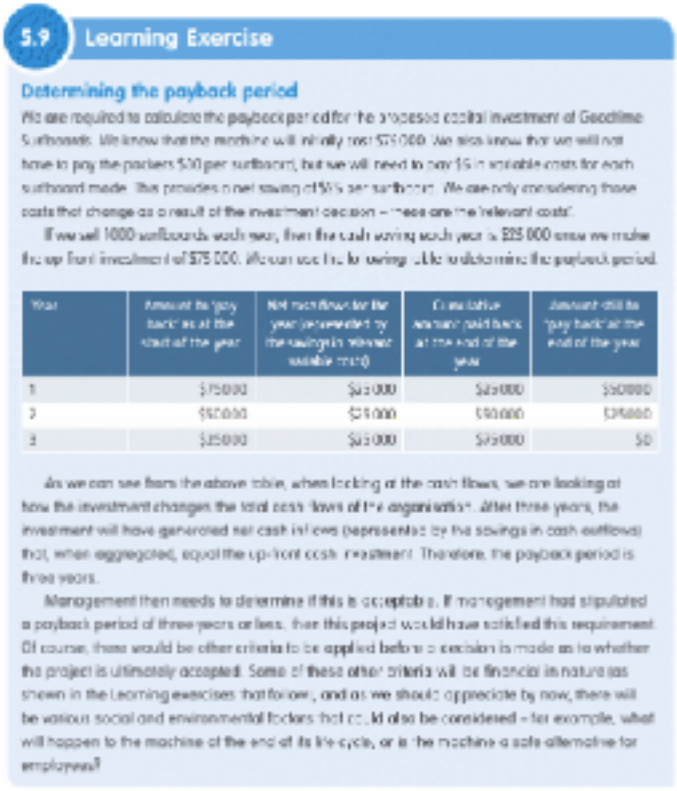
ARR decision 'rules'
Higher ARR is better; higher return from investment
If unconstrained resources, accept all alternatives with ARR above required minimum
If resources constrained, accept in decreasing ARR order

PP: payback period

How long initial investment cash outflow will take to be recouped from additional cashflow

-if additional cash flow is uniform (same every year)
PP=initial investment/annual additional cash inflow

-if additional cash inflow is uneven, subtract each year's additional cash inflow in turn from initial investment amount until reach zero



5.9 Learning Exercise

Determining the payback period

We are required to calculate the payback period for the proposed capital investment at Goodtime Surfboards. We know that the machine will initially cost $75 000. We also know that we will not have to pay the partners $30 per surfboard, but we will need to pay $5 in variable costs for each surfboard made. This provides a net saving of $25 per surfboard. We are only considering those costs that change as a result of the investment decision – these are the relevant costs.

If we sell 1000 surfboards each year, then the cash saving each year is $25 000 and we make the up-front investment of $75 000. We can use this saving to determine the payback period.

Year	Amount to 'pay back' as at the start of the year	Net cash flow for the year (generated by the savings in variable costs)	Cumulative amount paid back at the end of the year	Amount still to 'pay back' at the end of the year
1	$75 000	$25 000	$25 000	$50 000
2	$50 000	$25 000	$50 000	$25 000
3	$25 000	$25 000	$75 000	$0

As we can see from the above table, when looking at the cash flows, we are looking at how the investment changes the total cash flows of the organisation. After three years, the investment will have generated net cash inflows (represented by the savings in cash outflows) that, when aggregated, equal the up-front cash investment. Therefore, the payback period is three years.

Management then needs to determine if this is acceptable. If management had stipulated a payback period of three years or less, then this project would have satisfied this requirement. Of course, there would be other criteria to be applied before a decision is made as to whether the project is ultimately accepted. Some of these other criteria will be financial in nature (as shown in the Learning exercises that follow), and as we should appreciate by now, there will be various social and environmental factors that could also be considered – for example, what will happen to the machine at the end of its life cycle, or is the machine a safe alternative for employees?

Example

WH Engineering plans to buy a new machine press, costing $210,000 so it can expand production. The machine is expected to have a useful life of 10 years, at the end of which it will have a scrap value of $30,000. By expanding production, WH estimates that it can increase annual cashflow by $30,000
Required:
A) whats the PP of the new press?
B) Should WH buy it?
PP=initial investment/annual additional cash inflow
PP=210,000/30,000
PP=7 years

WH engineering has revised its estimates of the expected increased annual cashflow
Required:
A)What is the revised PP of the new press?
B) should WH buy it?

Year	Initial investment	Cash inflow	Net cash flow
0	210000	0	(210000)
1		5000	(205000)
2		10000	(195000)
3		15000	(180000)
4		20000	(160000)
5		20000	(140000)
6		20000	(120000)
7		30000	(90000)
8		45000	(45000)
9		70000	25000
10		65000	90000

Total	(210000)	300000	90000

8.65 years (45000/70000)

PP decision 'rule'

Lower PP is better; especially in higher risk areas - sooner we payback sooner we operate with positive cashflow (reduced uncertainty)

If constrained resources, accept all alternative with PP below acceptable maximum

If resources constrained, accept in increasing PP order

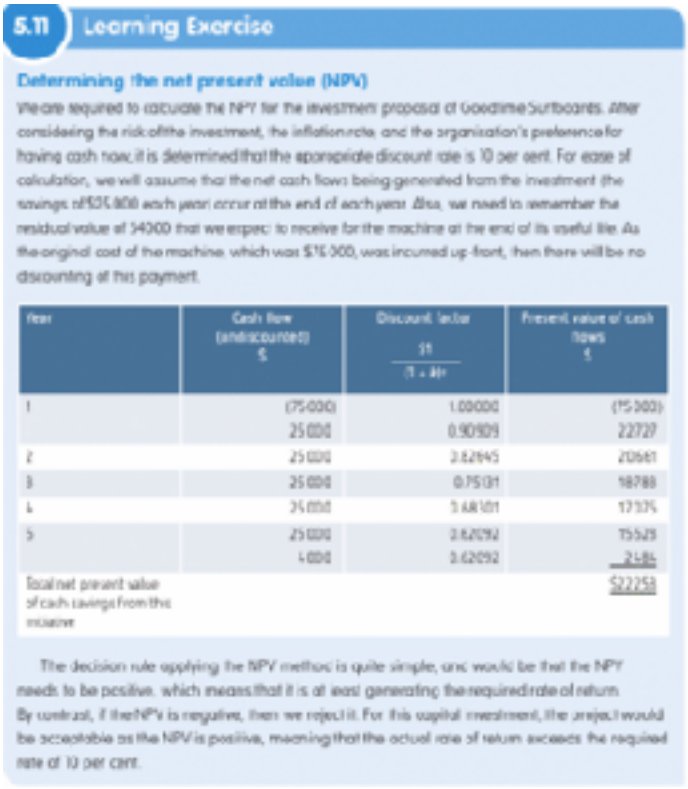
WEEK 4 - Lecture 2 Making investment decisions

NPV: net present value

Total cashflow of investment in today's dollars

$$= \sum_{t=1}^{n} \frac{\text{expected cashflow}}{(1+r)^t}$$

Where:
t = time period (years)
n = life of investment
r = discount rate



5.11 Learning Exercise

Determining the net present value (NPV)

We are required to calculate the NPV for the investment proposal of Goodtime Surfboards. After considering the risk of the investment, the inflation rate, and the organisation's preference for having cash now, it is determined that the appropriate discount rate is 10 per cent. For ease of calculation, we will assume that the net cash flows being generated from the investment (the savings of $25 000 each year) occur at the end of each year. Also, we need to remember the residual value of $4000 that we expect to receive for the machine at the end of its useful life. As the original cost of the machine, which was $75 000, was incurred up-front, then there will be no discounting of this payment.

Year	Cash flow (undiscounted) $	Discount factor $\frac{1}{(1+k)^n}$	Present value of cash flows $
1	(75 000)	1.00000	(75 000)
	25 000	0.90909	22727
2	25 000	0.82645	20661
3	25 000	0.75131	18783
4	25 000	0.68301	17075
5	25 000	0.62092	15523
	4 000	0.62092	2484
Total net present value of cash savings from the investment			$22253

The decision rule applying the NPV method is quite simple, and would be that the NPV needs to be positive, which means that it is at least generating the required rate of return. By contrast, if the NPV is negative, then we reject it. For this capital investment, the project would be acceptable as the NPV is positive, meaning that the actual rate of return exceeds the required rate of 10 per cent.

NPV assumption

-All cashflow occur at period end

-consistent pattern of cashflow

-single interest rate over whole of life

-inputs can be reliably estimated

Discount rate r

Interest rates used to reduce future dollars to today's dollars

-may vary to account for risk; higher r for riskier projects

-requires judgement

-compound effect

NPV decision 'rules'

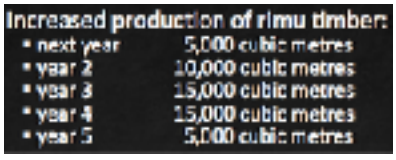
-Higher NPV is better

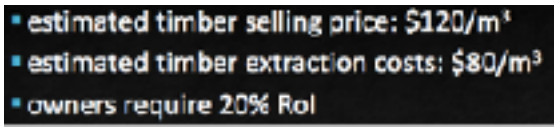
-If unconstrained resources, accept all alternatives with positive NPV

-If resources constrained, accept in decreasing NPV order

Example

The company has a rimu logging concession on the West Coast of the South Island. It has the opportunity to expand production over the next five years by the purchase of a new saw mill that will cost $1,000,000 but could be sold at the end of the five years for $200,000.





Calculate the NPV of this opportunity:

Step 1:
Calculate net in/(out) flow per cubic meter of timber

	$
Estimated timber selling price	120
(less) Estimated timber extraction cost	80
Estimated net cash in/(out)flow per m3	$40

Step 2:
Calculate net cash in/(out)flow per year

Year & source	Estimated net annual cash in/(out)flow
Year 0: (initial investment) purchase of sawmill (given)	$(1,000,000)
Year 1: extra production 5,000 * $40	$200,000
Year 2: extra production 10,000 * $40	$400,000
Year 3: extra production 15,000 * $40	$600,000
Year 4: extra production 15,000 * $40	$600,000
Year 5: extra production 5,000 * $40 sale of sawmill (given) 5,200,000	$400,000

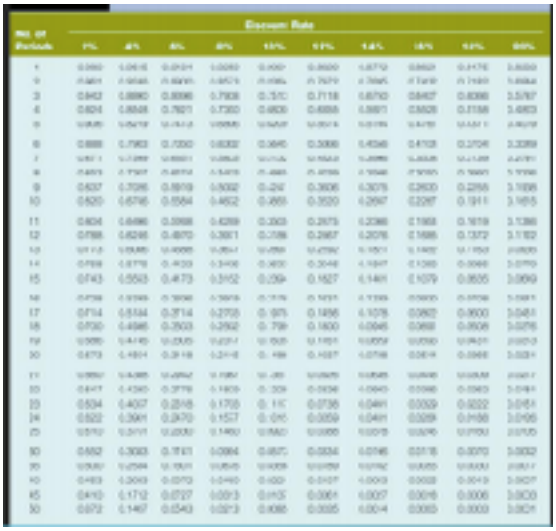
Step 3:
Calculate present value of all cashflows

Year	Net cash in/(out)flow (from part 2)	Calculation of PV (=)	PV
0	$(1,000,000)	= (1,000,000)/(1 + 0.2)^0	(1,000,000)
1	200,000	= 200,000/(1 + 0.2)^1	166,700
2	400,000	= 400,000/(1 + 0.2)^2	277,800
3	600,000	= 600,000/(1 + 0.2)^3	347,200
4	600,000	= 600,000/(1 + 0.2)^4	289,400
5	400,000	= 400,000/(1 + 0.2)^5	160,800
Total	$1,200,000		$241,900

Calculate PV using factor table:
Step 3:
Calculate present value of all cashflows

Alternative summary presentation

$000	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Purchase of sawmill	(1,000)					
Net Cash Flow from production		200	400	600	600	200
Disposal of sawmill						200
	(1,000)	200	400	600	600	400
Discount factor	1	0.833	0.694	0.579	0.482	0.402
	(1,000)	166.6	277.6	347.4	289.2	160.8
Net Present Value						$241,[illegible]
Total	$1,200,000					$241,900

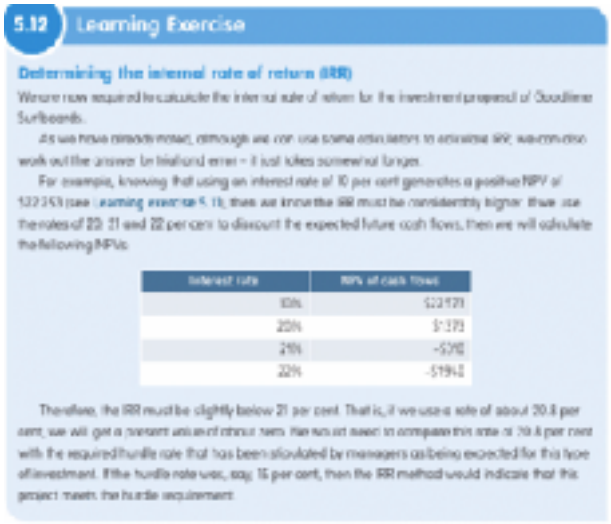


IRR: Internal rate of return

Estimates economic yield to investor; how much return are we getting

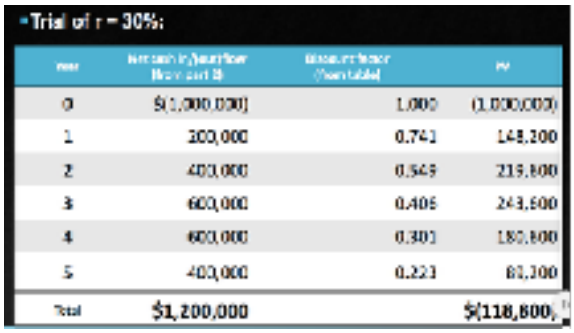
-Defined as 'discount rate that sets NPV to zero'; PV (cash inflows) = PV (cash outflows)

-Requires complex algebra to calculate; Use Excel or specialist software OR – trial and error!



Example

- Using same data as for NPV
- NPV calculations showed positive NPV; So IRR must be higher than 20%...



Because total NPV is negative we know that the IRR must be higher than 20% but lower than 30%

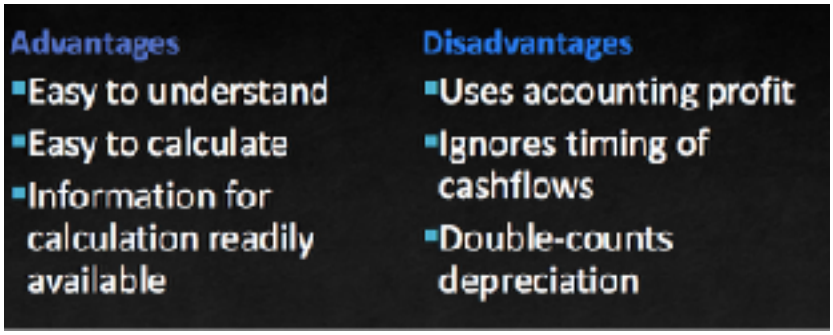
IRR decision 'rules'

-Higher IRR is better

-If unconstrained resources, accept all alternatives with IRR above required threshold; at least cost of capital

-If resources constrained, accept in decreasing IRR order

ARR advantage & disadvantage



-Main advantage :understandability stronger point than availability due to availability bias

- Accounting profit over cashflow; this is because accounting profit is manipulable - depending on different accounting policy
- Double count depreciation; depreciation expense and average investment (which declines due to depreciation)
- Ignore timing of cashflow; doesn't take in time value of money into account 1$ today = $1 in the future

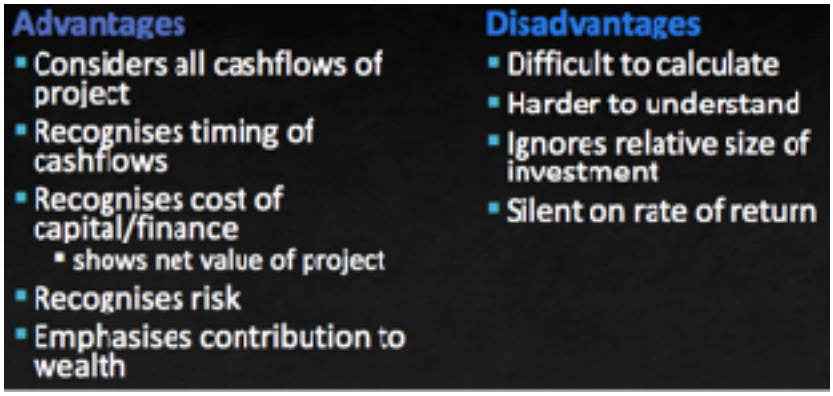
PP advantage & disadvantage

-Strongest point is emphasis on liquidity ; make sure we get out investment back

- Ignore timing of cashflow; doesn't take in time value of money into account 1$ today = $1 in the future

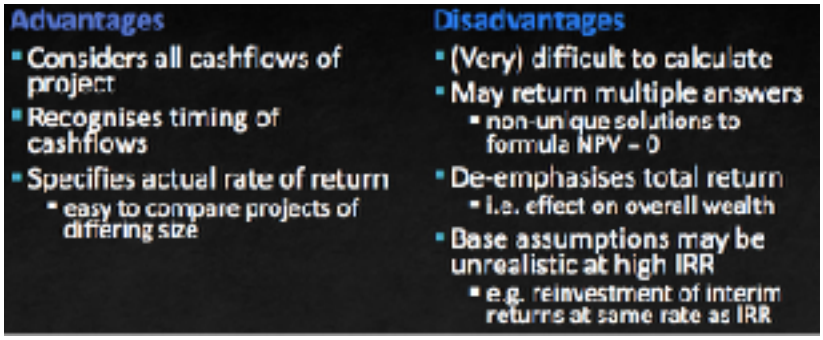
-excludes post payback cashflow; reinforce short term thinking by only taking repayment time into account but not return of investment after its been paid back

NPV advantage & disadvantage



-silent on rate of return; when positive we know that the Rate of return is higher than time value of money but not how much it actually is

IRR advantage & disadvantage



Sensitivity analysis

-Shows how results of analysis would change if inputs differ from estimates
-Gives insight into impact of estimates
To do this:
-Change one input at a time and rerun calculation (done using reasonable amount)
how do results vary?
would decision change as result?
e.g timber company has estimated selling price, because timber price is dependent on the global market in a crisis if this changes selling price do we still get a positive NPV?

Examples of important qualitative factors

'not everything that can be counted counts, and not everything that counts can be counted'

- Customer expectations
- Impact on brand
- Staff welfare
- Ethicality
- Laws & regulations
- Competitor reaction
- 'Social licence to operate'
- Quality

Balancing quantitative & qualitative factors (value vs price)

Have to consider both financial and non financial factor

- Alignment to strategy? e.g differentiation strategy - how does investment move us closer to his goal?
- Value for money?
- Achievability?
- Ethical position?
- Social responsibility?
- Others?

Tutorial 1

Question 1

Frank owns a caravan and loves to visit national parks with his family. However, the family only takes two one-week trips in the caravan each year. Frank's wife Ana would rather stay in motels than the caravan. She presented him with the following itemisation of the cost per trip, hoping that he will sell the caravan and use motels instead.

	Cost per trip
Caravan:	
Cost: $20 000	
Usable for 10 seasons, two camping trips per season	$1000
Transportation expense:	
1000 km @ $0.37 per km	370
Includes:	
$0.15 per km for petrol, oil, tyres and maintenance	
$0.22 per km for depreciation and insurance	
Groceries	250
Beverages	100
Cost per trip	$1720
Cost per person ($1720/5 family members)	$ 344

Required:

(a) What are the relevant costs for deciding whether the family should go on one more camping trip this year?

Relevant cost

Sunk cost; cost incurred in the past that cannot be recovered - irrelevant

Incremental cost; cost which change based on action (still have to pay)- relevant

Avoidable cost; cost which change based on action (doesn't have have to pay)-relevant

Caravan cost - irrelevant; sunk cost
Petrol, oil, tyres and maintenance - relevant; incremental cost
Depreciation & insurance - irrelevant; depreciation (past cost) insurance (unavoidable cost)
Groceries- relevant (if incremental); if cost change then its relevant
Beverages- relevant (if incremental); if cost change then its relevant

(b) What are the relevant costs for deciding whether Frank should sell the caravan? Assume the family will take the same vacations but stay in motels if the caravan is sold.
Purchase cost divided by number of trips - irrelevant; sunk cost
Petrol, oil, tyres and maintenance - relevant; differential/incremental cost
Depreciation- irrelevant; sunk cost
Insurance- relevant; avoidable cost
Groceries- relevant (if incremental); if cost change then its relevant
Beverages- relevant (if incremental); if cost change then its relevant

(c) What factors other than costs might influence the decision to sell the caravan? List as many as you can.
-enjoyment frank receives from camping
-children enjoyment
-expected price
-environmental impact
-wife displeasure with camping
(d) Consider your own preferences for this problem. Do you expect Frank's preferences to be the same as yours? How can you control for your biases and consider this problem from Frank's point of view?
-Your preference will not always be the same as another person - the purpose of this question is to show that personal preference will alter the weighting given to the different factor
-personal biases often sway the way people look at information for a problem; information that contradicts opinion is often ignored
-one way to control bias is to first recognise their own preference, then they will better understand how their preference affect what they consider to be relevant or important
-another way is to talk about this problem with other people who are likely to have preferences different from theirs.
(e) Frank asks you to help him decide what to do. Do you think he should sell the caravan? Why?
-must use financial and non financial information to advise
e.g
Will receive X amount of money if he sold which could be used for other holidays
Save money from no insurance
His wife does not enjoy the camping trips
Will save storage space

Question 2

ABC Ltd manufactures three products with cost details and selling price as follows:

	Product K	Product Y	Product Z
	$	$	$
Selling price per unit	70	95	105
Costs per unit			
- direct materials ($5 per kg)	10	5	15
- direct labour ($8 per hour)	16	24	20
- variable overhead	8	12	10
- fixed overhead	24	36	30

Required: In a period when direct materials are restricted in supply;
(a) which product makes the most profitable use of direct materials?
Product X
(b) which product makes the least profitable use of direct materials?
Product Y

	Product x	Product y	Product z
Contribution per unit	36	54	60
Material per kg	2	1	3
Contribution per kg	18	54	20
Ranking	3	1	2

Steps
1.Calculate contribution per unit = selling price - variable cost
2.Calculate material per kg = direct material / cost per kg
3.Contributions per kg = contribution per unit / material per kg

Tutorial 2

The Big Apple Farming Company (BAFCo) is considering replacing its manual fruit pickers with a fruit-picking machine. Each year, the company spends $80,000 on fruit pickers. These pickers will no longer be required if the machine is purchased.

The relevant costs are as follows:

Cost of acquiring fruit-picking machine	$200,000
Annual insurance cost for fruit-picking machine	$10,000
Annual registration cost for fruit-picking machine	$3,000
Expected annual fuel cost for fruit-picking machine	$6,000
Fixed price maintenance contract for fruit-picking machine, per year	$4,000
Estimated useful life of fruit-picking machine	8 years
Estimated residual value at end of useful life of fruit-picking machine	$10,000

Required:

Q1: Assess this potential investment using:

(a) the payback period method;
(b) the accounting rate of return (ARR) method; and
(c) the NPV method.

PP
The amount of time taken to recover the amount of investment from the net cash flow of the project

ARR
takes the average accounting profit the investment will generate and expresses it as a% of the average investment in the project as measured in accounting term

$$ARR = \frac{\text{Average annual profit}}{\text{Average investment to earn that profit}} \times 100\%$$

NPV

$$= \sum_{t=1}^{n} \frac{\text{expected cash flow}}{(1+r)^t}$$

Calculates the expected

Annual net cashflow from the machine

Savings	$	$	$
Salaries no longer need to be paid			800000
Less variable cost			
Fuel cost	6000	6000	
less fixed cost			
Annual insurance cost		10000	
Annual insurance cost		3000	
annual maintenice contract		4000	23000
Net annual cashflow			57000

Year	Amount to 'pay back' as at the start of the year	Net cash flow for the year	Cumalative amount paid back at the end of the yea	Amount still to pay at the end of the year (when negative = surplus/profit)
1	200000	57000	57000	143000
2	143000	57000	114000	86000
3	86000	57000	171000	29000
4	29000	57000	228000	(-28000)
PP=	3	+ (29000/57000)	3.51	

Or PP = initial investment/annual additional cashflow Note Only works when cashflow is the same	
200000/57000	3.508 years

The payback period of this investment is therefore approximately 3.5 years this satisfies the decision rule provided by management which was a payback period of 6 years

Average annual accounting profit			
drececiation			

(Acquisition cost - expected residual value)/ expected useful life of asset	190000/8		
Annual depreciation	23750		
Average annual profit			
Annual Cashflow-annual depreciation	57000-23750		
Average annual profit	33250		
average investment required ti earn that profit			
Acquisition cost +expected residual value/2	(200000+10000)/2		
average investment required ti earn that profit	105000		
ARR			
Average annual profit/ average investment to earn that profit	(33250/105000)*100		
	31.67%		

since the ARR is higher than 18%(minimum threshold for Bafco) it makes this investment project acceptable for them

NPV	Year	Cashflow	Discount factor	PV of cashflow
	0	(200000)	1	(200000)
	1	57000	0.9091	51818.7
	2	57000	0.8264	47104.8
	3	57000	0.7513	42824.1
	4	57000	0.683	38931
	5	57000	0.6209	35391.3
	6	57000	0.5645	32176.5
	7	57000	0.5132	29252.4
	8	57000	0.4665	26590.5
	8	10000 (sell machine)	0.4665	4665
Total net PV from this initiative				108754.3

Using an interest rate of 10% the Pv of cashflow is a positive 108756
This therefore meets the decision rule set by the managers of big apple farming company

Q2:

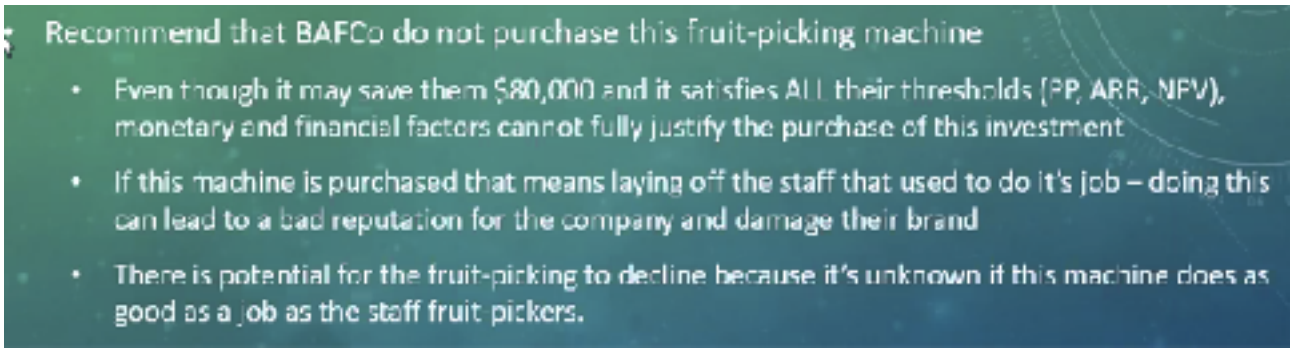
Explain TWO qualitative factors that BAFCo should also consider before deciding whether to purchase the investment.

No right or wrong answer- have to justify answer
-storage capacity
-impact on crop
-in line with company's mission and goal?
-impact on service quality
-impact on employees
-impact on company's brand and decision

Q3:

Make a recommendation on whether BAFCo should purchase the fruit-picking machine

No right or wrong answer- have to justify answer (have to consider both financial and especially the non financial factor)



5.13 Learning Exercise

Calculation of payback period, ARR and NPV for a proposed capital investment

Scenario: Sunset Beach Company is thinking of acquiring a drink dispenser to place at the front of its shop. The machine dispenses cans of cold drinks, which will sell for $4 each.

The relevant costs are as follows:

Cost of acquiring the drink dispenser	$14 400
Annual licence fees to be allowed to offer drinks	$1500
Supplier cost of each can of drink	$1.00
Expected annual electricity cost of running the drink dispenser	$1400
Fixed price maintenance contract for the machine, per year	$2500
Expected number of sales	3000 per year
Expected life of the machine	7 years
Expected residual value at the end of its useful life	$0

Management would like the machine to:

- achieve a payback period of less than five years
- generate an accounting rate of return of at least 20 per cent
- generate a positive NPV at an interest rate of at least 10 per cent.

Task: You are required to assess this potential capital investment by using the payback, ARR and NPV methods, and make a recommendation as to whether to acquire the drink dispenser.

Solution: To answer these questions, you need to determine the following:

1 The payback period

We can calculate the annual net cash flows as follows (we have assumed that the income and expenses remain the same each year, and that the costs and cash flows occur in the same period):

Income			
Soft-drink sales	3000 × $4		$12 000
Variable costs			
Cans of drink	3000 × $1	$3 000	
Fixed costs			
Annual licence fees	$1500		
Annual electricity costs	$1400		
Annual maintenance contract	$2500	$5 400	$8 400
Net annual cash flows			$3 600

Year	Amount to 'pay back' as at the start of the year	Net cash flows for the year (represented by the savings in variable costs)	Cumulative amount paid back at the end of the year	Amount still to 'pay back' at the end of the year
1	$14 400	$3 600	$3 600	$10 800
2	$10 800	$3 600	$7 200	$7 200
3	$7 200	$3 600	$10 800	$3 600
4	$3 600	$3 600	$14 400	$0

The payback period of this investment is therefore four years. This satisfies the decision rule provided by management, which was that the payback period be less than five years.

2 The accounting rate of return

We know the incremental cash flows that are expected to arise following the investment in the new drink dispenser. Because the machine is only expected to last seven years, we must also consider the amount by which the machine has fallen in value throughout each year. That is, we must also consider the depreciation costs associated with using up the asset over its useful life, which is seven years. We know the asset cost $14 400 and we expect it not to have any residual value in seven years' time. We can calculate the annual depreciation expense as:

$$\frac{\text{Acquisition cost} - \text{expected residual value}}{\text{Expected useful life of asset}} = \frac{\$14\,400 - \$0}{7} = \$2057 \text{ per year}$$

The average incremental returns (profit) for the seven years equals:

($3600 – $2057) + ($3600 – $2057) + ($3600 – $2057) + ($3600 – $2057) + ($3600 – $2057) + ($3600 – $2057) + ($3600 – $2057) all divided by 7 = $1543

The average investment in the machine is:

$$\frac{\text{Acquisition cost} + \text{expected residual value}}{2} = \frac{\$14\,400 + \$0}{2} = \$7200$$

$$\text{Therefore, the ARR} = \frac{\text{Average annual profit from the asset}}{\text{Average investment required to earn that profit}} \times 100\%$$

$$= \frac{\$1543}{\$7200} \times 100\%$$

$$= 21.43 \text{ per cent}$$

All things being equal, the higher the ARR, the better. An ARR of 21.43 per cent would generally be considered a good rate. It satisfies the decision rule stipulated by the management of Sunset Beach Company, which was that the rate must exceed 20 per cent.

3 The NPV method

We will use the following table to work out the net present value of the capital investment. Management has said that they want to apply an interest rate of 10 per cent to this type of investment.

Year	Cash flow (and accumulated) $	Discount factor $\frac{\$1}{(1+i)^n}$	Present value of cash flows $
1	(14 400)	1.00000	(14 400)
	3600	0.90909	3273
2	3600	0.82645	2975
3	3600	0.75131	2705
4	3600	0.68301	2459
5	3600	0.62092	2235
6	3600	0.56447	2032
7	3600	0.51315	1847
Total net present value of cash savings from this initiative			$3126

Using an interest rate of 10 per cent, the present value of the cash flows is positive. This therefore meets the decision rule set by the managers of Sunset Beach Company.

4 Overall decision to purchase, or not

In terms of the three tools we have just applied, this proposal satisfies all the requirements stipulated by the managers of Sunset Beach Company. However, prior to accepting the project, consideration should be also given to other factors. Does the proposed investment perform in a way that is consistent with the organisation's mission and goals? Are there any other opportunities that would provide better returns and that might be pursued if this investment is not made? Also, are there any environmental or social implications throughout the life cycle of the investment that are inconsistent with the responsibilities that the managers accept? In the absence of any negative information in these respects, the managers of the Sunset Beach Company should probably pursue this investment opportunity.

WEEK 5 - Lecture 1/2 Budgetary control: Static vs. flexible budgets

-Describe and compare/contrast static & flexible budgeting
-Prepare & analyse a flexible budget
-Discuss how budgets are used for control

Preparing a budget

What is a budget?

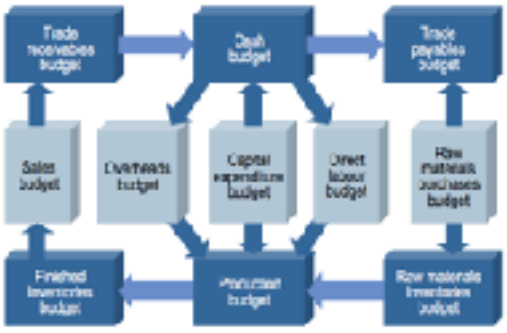
A quantified plan of action relating to a given period of time

Why budget?

- quantify plan or forecast
- motivate action
- communicate and coordinate priorities
- evaluate performance
- aid decision making

Preparing a budget

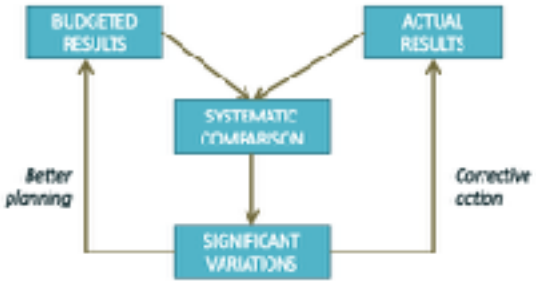
Budget inter-relationships



Static Budgets

Support planning before or at beginning of relevant timeframe
Valid only for only the planned level of activity **if the level of activity is higher than planned** :
-variable costs will be higher than planned
-fixed costs will remain the same
Impact on performance evaluation

Budgetary control loop



Example; static budget

Dianne's Doggie Daycare is a dog daycare service that looks after dogs whilst their owners are at work.

As part of her service, Dianne provides the dogs with snacks, treats, and a walk each day.

At the end of September Dianne prepared her October budget based on caring for 250 dogs in total. Since all the dogs are treated alike, Dianne thought that the number of dogs cared for in a month would be the best way to measure overall activity for her business.

DIANNE'S DOGGIE DAYCARE BUDGET FOR OCTOBER 20XX	Revenue/Cost Formula	Planning Budget
Number of dogs cared for (q)		250
Revenue	$60 * q	15,000
Expenses		
wages & salaries	$4,000 + ($10 * q)	6,500
snacks & supplies	$5 * q	1,250
equipment maintenance	$3 * q	750
office utilities		400
rent		2,000
depreciation		1,900
insurance		1,000
Total expenses		13,800
Net operating income		1,200

DIANNE'S DOGGIE DAYCARE ACTUALS FOR OCTOBER 20XX	Revenue/Cost Formula	Planning Budget	Actual Results	Variance
Number of dogs cared for (q)		250	280	
Revenue	$60 * q	15,000	16,800	1,800 F
Expenses				
wages & salaries	$4,000 + ($10 * q)	6,500	6,900	400 U
snacks & supplies	$5 * q	1,250	1,320	70 U
equipment maintenance	$3 * q	750	700	50 F
office utilities		400	380	20 F
rent		2,000	2,000	- -
depreciation		1,900	1,900	- -
insurance		1,000	1,200	200 U
Total expenses		13,800	14,400	600 U
Net operating income		1,200	2,400	1,200 F

Do unfavourable variances mean Dianne has done a bad job at controlling her costs?

DIANNE'S DOGGIE DAYCARE ACTUALS FOR OCTOBER 20XX	Revenue/Cost Formula	Planning Budget	Actual Results	Variance
Number of dogs cared for (q)		250	280	
Revenue	$60 * q	15,000	16,800	1,800 F
Expenses				
wages & salaries	$4,000 +			400 U
snacks & supplies	$5 * q			70 U
equipment maintenance	$3 * q			50 F
office utilities				20 F
rent		2,000	2,000	- -
depreciation		1,900	1,900	- -
insurance				200 U
Total expenses				600 U
Net operating income		1,200	2,200	1,000 F

Do favourable variances mean Dianne has done a good job at controlling her costs?

<u>problem of assessing DDD's performance using static budget</u>

-If actual activity was higher than planned, wouldn't we expect variable costs to be higher as well?

-Compares actual level of activity to planned activity; Doesn't show what costs should be at actual level of activity

-Doesn't distinguish between fixed and variable costs; Fails to highlight cost behaviour

-Doesn't distinguish between variances due to activity & variances from (in)efficiencies; Not useful for evaluation & control

To solve this flex your budget

Flexing budget

why?

Shows how much actual level of activity should have cost

How?

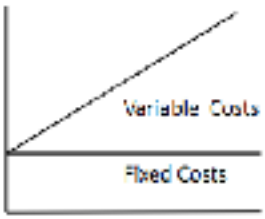
Prepare new budget for actual level of activity

How to separate effects of volume & control; Flex a budget

To flex a budget is to find out the relevant budgeted costs for the actual level of activity

-total variable costs change in direct proportion to the level of activity;

-total fixed costs remain the same within the relevant range



1. Determine actual level of activity
2. Determine which costs are fixed, which variable, and which mixed
   - Relevant range?
3. Adjust budgeted variable costs and variable portion of mixed costs to actual activity level
   - DO NOT adjust fixed costs (assuming within relevant range)
4. Compare actuals to adjusted (flexed) budget
5. Analyse variances
   - Activity variances and performance variances now separated

Example

1.Determine actual level of activity

DIANNE'S DOGGIE DAYCARE ACTUALS FOR OCTOBER 20XX	Revenue/Cost Formula	Planning Budget	Actual Results	Variance
Number of dogs cared for (q)		250	280	
Revenue	$60 * q	15,000	16,800	1,800 F
Expenses				
wages & salaries	$1,000 + ($10 * q)	6,500	6,900	400 U

2. Determine which costs are fixed, which variable, and which mixed

1. Determine which costs are fixed, variable or mixed?

• Wages & Salaries	• Mixed
• Snacks & Supplies	• Variable
• Equipment Maintenance	• Variable
• Office Utilities	• Fixed
• Rent	• Fixed
• Depreciation	• Fixed
• Insurance	• Fixed

3. Adjust budgeted values for actual activity

Mixed

Wages and salaries

=4000+(10*q)

=4000+(10*280)

=4000+2800

=6800

Variable

Snacks & supplies

=5*q

=5*280

=1400

Maintenance

=3*q

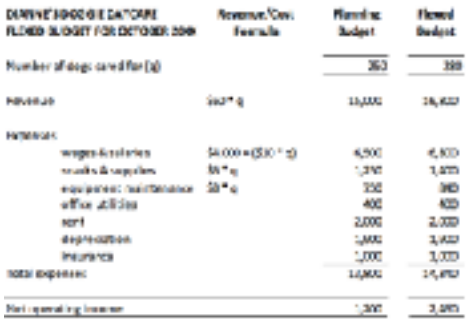
=3*280

=840

Fixed

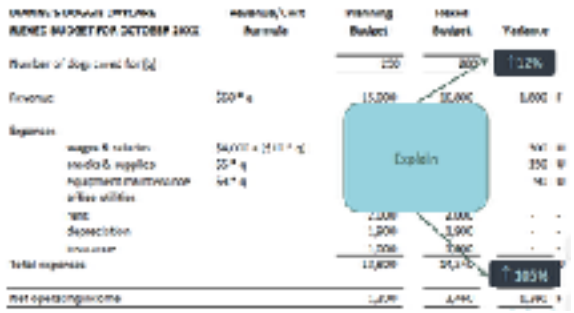
Unchanged

4. Compare actuals to re-budgeted values



5.Analysing variances

Separates out effects of changes in activity from those of efforts to control costs



Two types of variance

-Activity

-Flexed budget

Activity

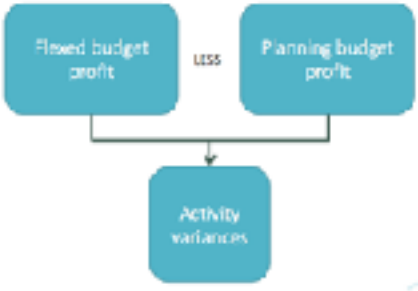
Change in profit (or total cost for cost centres) due solely to difference in activity between planning budget & actual activity

Calculated as:

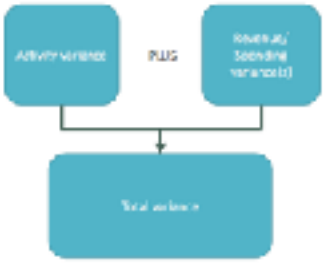
$= flexed\ budget\ profit - planned\ budget\ profit$

or

$planned\ budget\ CMunit \times \Delta unit$



Calculating flexed budget variances

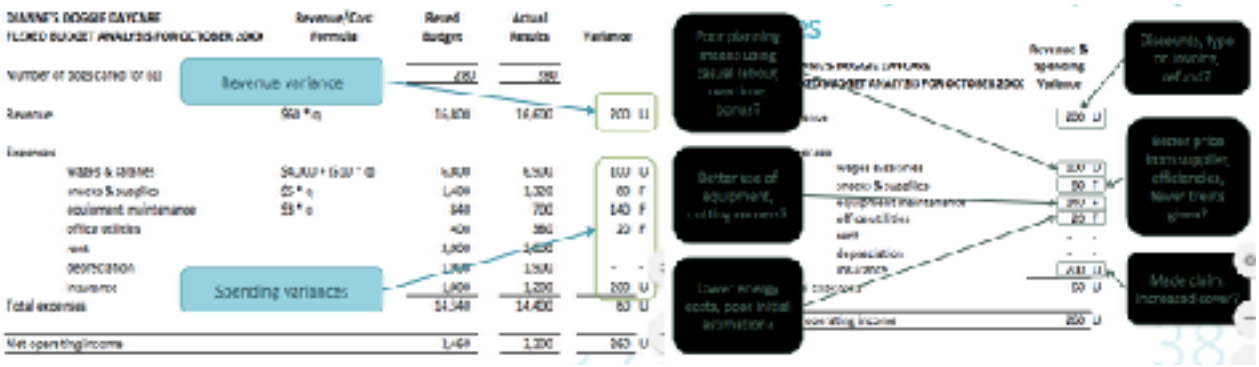


Change in profit (or total cost for cost centres) not due to difference in activity between planning budget & actual activity

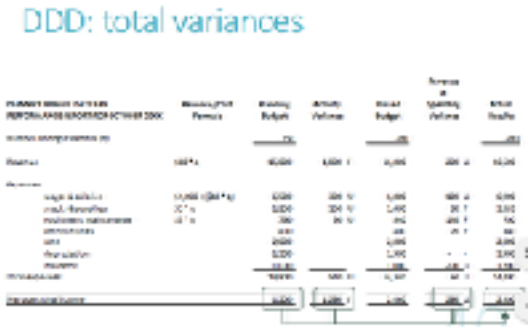
Calculated as:

= *actual result – flexed budget amount*

NB: ONE activity variance, many flexed budget variances



DDD's performance report: combining activity & flexed budget variances



Flexed budgets with multiple drivers

Common to have more than one cost driver

Answer: adjust formulae to prepare flexible budget for actual level of multiple activities

Example

Dianne decides that the size of the dogs she cares for will make a difference to the cost of supplies

-Big dogs need twice as many snacks and supplies as small dogs

New formula:
Budgeted cost of snacks & supplies = (no. big dogs * $7) + (no. small dogs * $3.50)

Using flexed budgets for performance evaluation

Problem with evaluating performance against budgets?

-Under static budget, DDD's NOI was $1,000 F

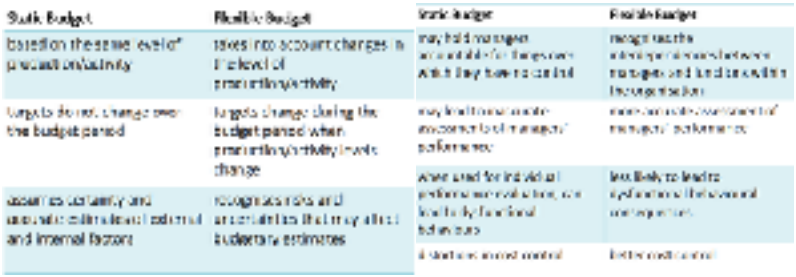
-Under flexible budget, DDD's NOI was $260 U

Same result, same manager, different evaluation!

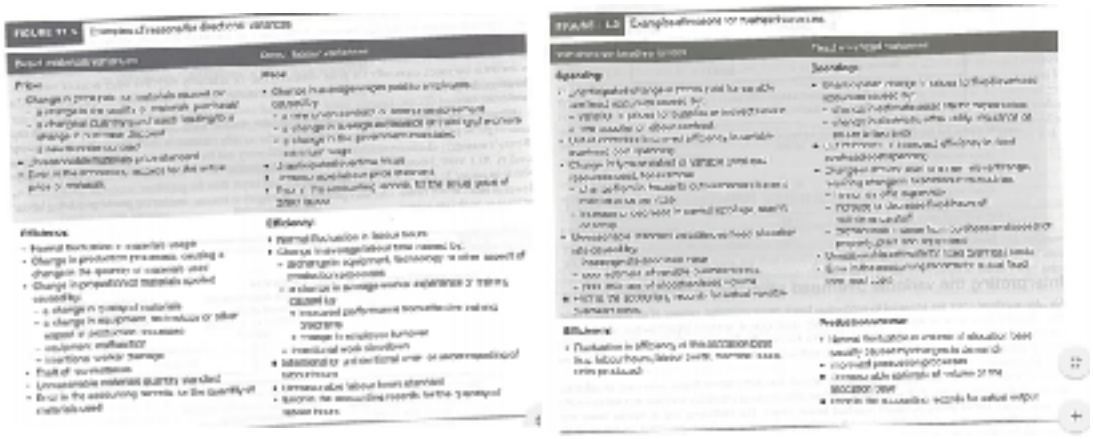
Who is responsible for
-Change in activity?
-Change in costs?
e.g. wages & salaries?
e.g. insurance?

Responsibility accounting…

Comparing static & flexible budgets



Budget justification



WEEK 6 - Lecture 1 Budgetary control: **Introduction to Financial Accounting & NZ Legislative and Business Environment**

1.Re-define what accounting is; understand why we "account"; and identify the different forms of accounting practice covered in this course.

2.Identify the various "users" (stakeholders) of accounting information and their needs.
3.Understand the various types of business activities, and distinguish between different organisational forms.
4.Understand and explain the various assumptions and characteristics underpinning the preparation of financial statements ("qualitative characteristics").

Traditional definitions of accounting

Traditional definitions of accounting states that the practice is purely technical and not an art - much like math

However this is outdated and no longer apply to the profession

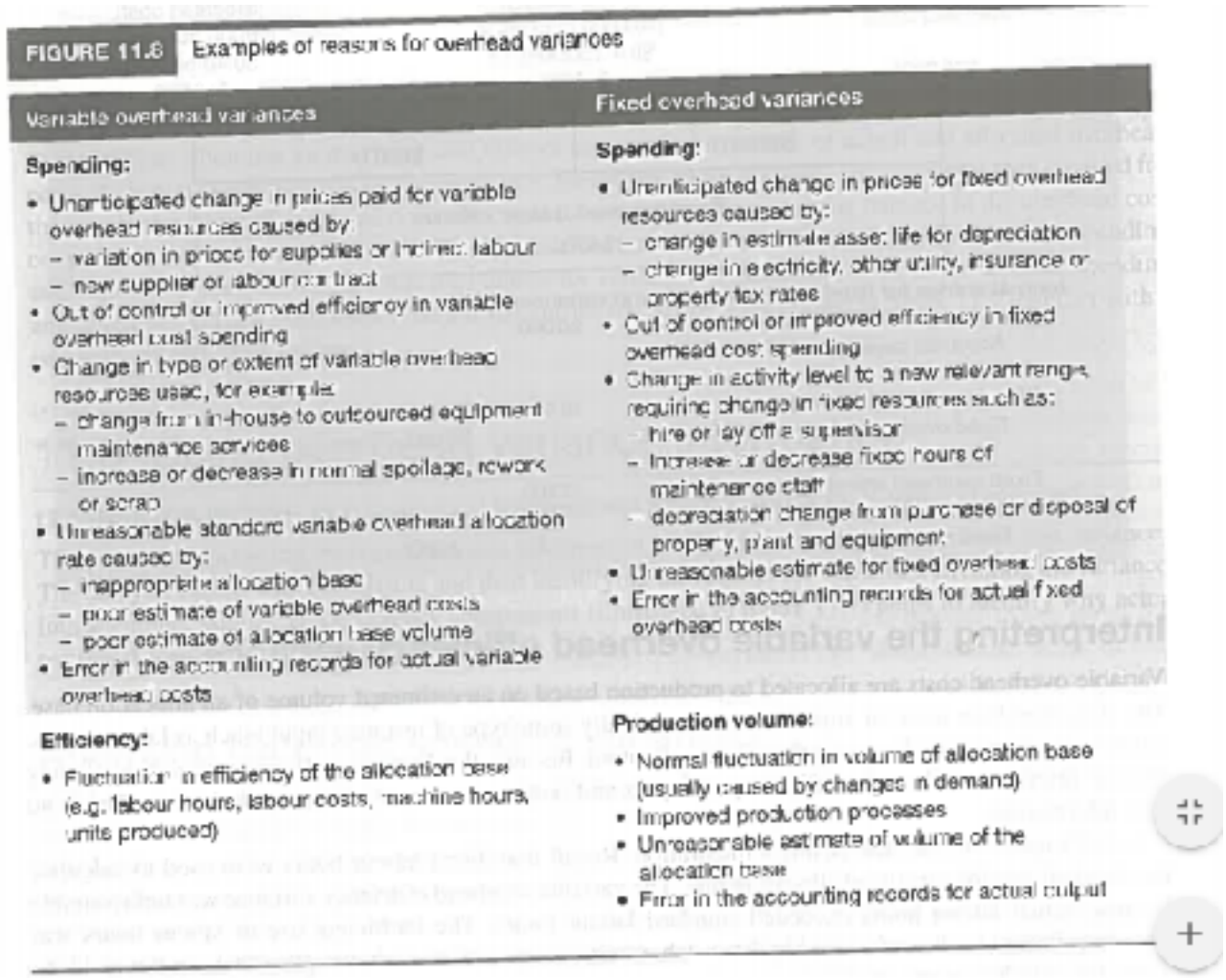


FIGURE 11.6 Examples of reasons for overhead variances

Variable overhead variances	Fixed overhead variances
Spending: • Unanticipated change in prices paid for variable overhead resources caused by: – variation in prices for supplies or indirect labour – new supplier or labour contract • Out of control or improved efficiency in variable overhead cost spending • Change in type or extent of variable overhead resources used, for example: – change from in-house to outsourced equipment maintenance services – increase or decrease in normal spoilage, rework or scrap • Unreasonable standard variable overhead allocation rate caused by: – inappropriate allocation base – poor estimate of variable overhead costs – poor estimate of allocation base volume • Error in the accounting records for actual variable overhead costs	**Spending:** • Unanticipated change in prices for fixed overhead resources caused by: – change in estimate asset life for depreciation – change in electricity, other utility, insurance or property tax rates • Out of control or improved efficiency in fixed overhead cost spending • Change in activity level to a new relevant range, requiring change in fixed resources such as: – hire or lay off a supervisor – increase or decrease fixed hours of maintenance staff – depreciation change from purchase or disposal of property, plant and equipment • Unreasonable estimate for fixed overhead costs • Error in the accounting records for actual fixed overhead costs
Efficiency: • Fluctuation in efficiency of the allocation base (e.g. labour hours, labour costs, machine hours, units produced)	**Production volume:** • Normal fluctuation in volume of allocation base (usually caused by changes in demand) • Improved production processes • Unreasonable estimate of volume of the allocation base • Error in the accounting records for actual output

For profit organisation; what is accounting (NZ framework Para. OB2)

"The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling or holding equity and debt instruments, and providing or settling loans and other forms of credit."

3 main limitations of this definition

•Accounting FOR financial information only; no longer concern with just reporting and communicating on financial and economic transaction, accountants regularly provide information of non financial non economic nature

Accountants for decades have been providing non financial information when you observe a annual report after the financial statement there are notes - these often outline non financial information
•Accounting TO investors, lenders and other creditors only; we have a broader range of users
•Accounting for the PURPOSES of making decision only; it is not the only use, accounting is used by stakeholder and users to hold company's accountable

Role of Accounting: Accountability

Being accountable to different stakeholders for different things means that there is no one right answer or set of information

Deegan's accoutability model (2020)

-Why? Is the company collecting and reporting particular information
-To whom? Is the organisation reporting the information
-What? Information is it collecting and reporting
-How? Is it reporting the information, where is the information appearing and what reporting frame work is being used.

Internal v External reporting

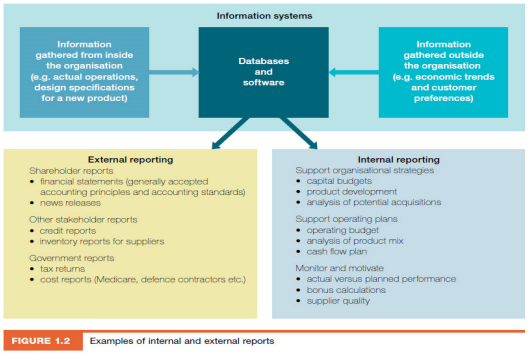


FIGURE 1.2 Examples of internal and external reports

Modern definition of accounting

"The objective of accounting is to provide financial and non-financial information to stakeholders and citizens for accountability and decision making purposes".

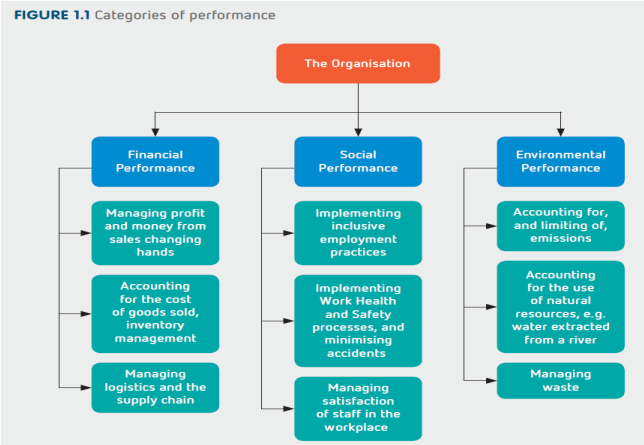
Informed decisions

•The type of information a stakeholder needs or wants will depend upon the decisions they want to make and the expectations they hold about what aspects of an organisation's performance are important.
•Information, if it is **reliable** and **relevant**, effectively provides us with the **power to make informed decisions**

•It is the role of the accountant to determine what information is most appropriate to enable stakeholders to make informed decisions.

Performance

•Broadly speaking, we can categorise performance in three ways:
–financial performance,
–social performance and
–environmental performance.
•Accounting can address aspects of each of these broad performance categories.



The 'stakeholders' of an organisation

•A 'stakeholder' is commonly defined as
–any group or individual who can affect, or is affected by, the achievement of an organisation's objectives.
•The stakeholders of an organisation could include owners or investors, loan providers, employees, customers, suppliers, government and local communities.
•Broader definitions of stakeholders would also include the physical environment and **future generations**.

Internal
- -managers

External
- -government
- -banks
- -communities
- -tax payers

When do organisations have to collect and disclose information to EXTERNAL stakeholders ?

•Legal requirements to report
•Forestalling the imposition of mandatory reporting requirements
•Managers' perceived responsibilities
•Demands of powerful stakeholders
•To increase profitability
Responding to a crisis

What information needs to be reported?