

Finance Management & Planning

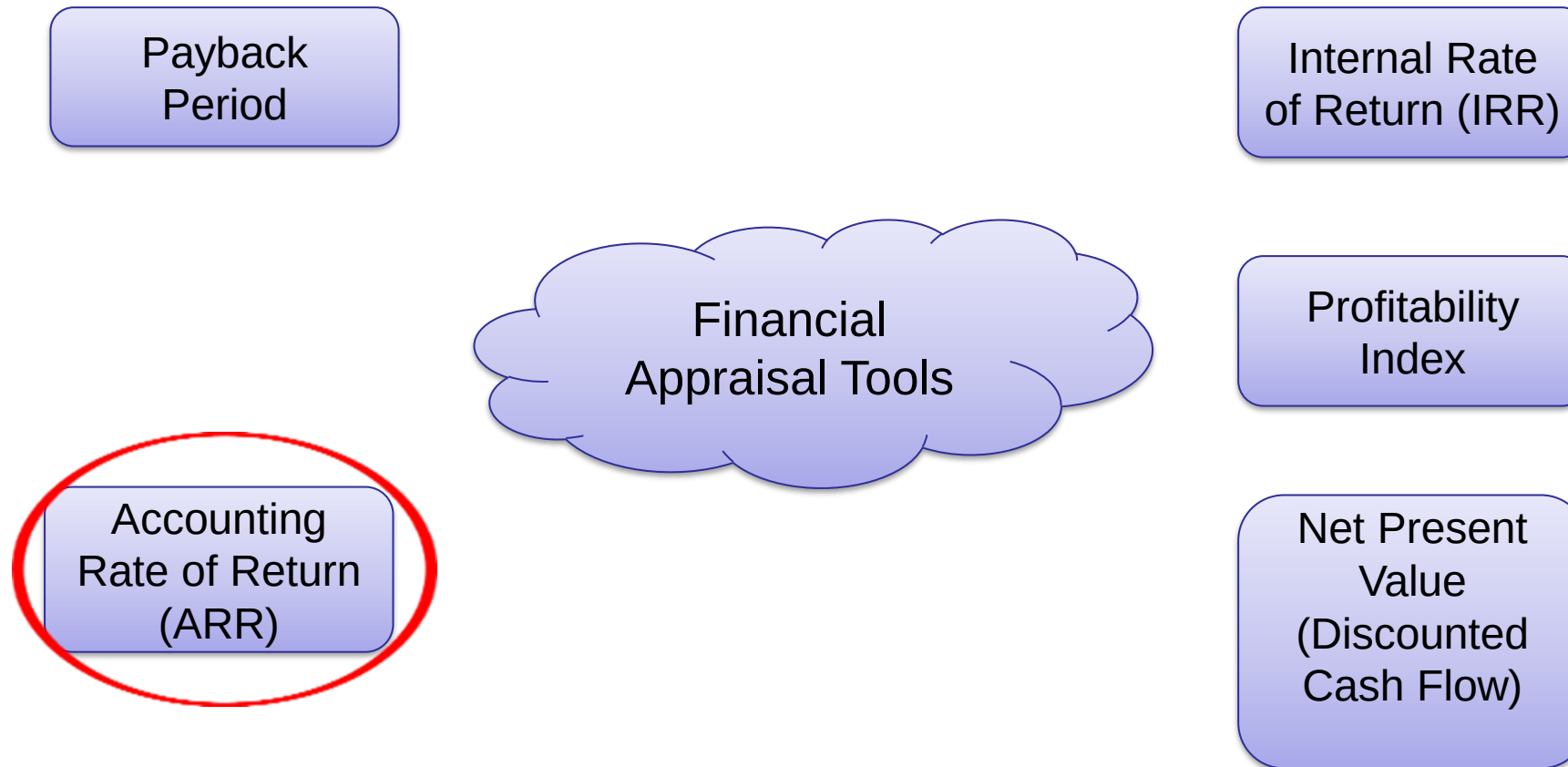
Project Appraisal (Week 8)

This Week

- How are your assignments progressing ?
- Any Questions on
 - NPV, Payback , IRR and PI / BCR
 - Capital Rationing
- Accounting Rate of Return (ARR) Refresh
- Review of module

26/08 Holiday week
02/09 1:1's
09/09 1:1's
16/09 Smart Cymru presentation
23/09 Presentations
30/09 Presentations
03/10 Submit Business Report to Moodle

Financial Appraisals Tools



	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

- How do we treat Long term assets withing an organisation ?
 - Small assets such as stationary etc would be charged straight to profitability and reduce the profit of the business
 - Large Long term are expense and treated as an asset within the business , these usually have an expected useful life of more than 1 year.
 - Concept of Depreciation

	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

In this example , we have purchased New Machinery for £100,000 with a useful life to the business of 5 years , no residual value at the end of the project.

Straight Line Depreciation

	Income Statement	Balance Sheet
Year 0		100,000
Year 1	20,000	80,000
Year 2	20,000	60,000
Year 3	20,000	40,000
Year 4	20,000	20,000
Year 5	20,000	0

	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

For this example , the cash would be adjusted by the depreciation to attain the yearly profit of the project.

Cash In	£	Depreciation	Profit
1	35,000	(20,000)	15,000
2	35,000	(20,000)	15,000
3	35,000	(20,000)	15,000
4	35,000	(20,000)	15,000
5	35,000	(20,000)	15,000

	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

Another way to calculate

The machinery is purchased in Year 0 at £100k and has no residual value at the end of the project.

We know the cashflows for the life of the project is £35k per annum

Cashflows totals £175k

Machinery value in year 0 is £100k and at the end of year 5 is 0

Depreciation charge of £100k

Project Net Income = Total Cashflows £175k less Depreciation of £100k = £75k

So what would be the Net Income if the residual value was £20k at the end of year 5

Total Cashflows £175k less Depreciation of £80k = £95k

Financial Appraisals Tools

Accounting Rate of Return (ARR)

- ARR measures the annual operating profit over the average investment as a percentage
- The ARR is calculated

$$\text{Annual Rate of Return} = \frac{\text{Average Annual Profit}}{(\text{Initial Investment} + \text{Future Residual Value})/2}$$

Financial Appraisals Tools

Accounting Rate of
Return (ARR)

Video Link

[\(73\) Accounting Rate of Return \(ARR\) - YouTube](#)

Accounting Rate of
Return (ARR)

Annual Rate of Return

=

Average Annual Profit

(Initial Investment + Future Residual Value)/2

- Exercise together
- Project A has an investment requirement for a new machine of £50,000 with a residual value after 5 years of £5,000.
- The Expected Net Cashflows are as follows :

	Net Cash Flow
Year 1	10,000
Year 2	20,000
Year 3	30,000
Year 4	30,000
Year 5	10,000

Step by Step process

- Calculate the Total Net Income
- Calculate the Average Investment
- Calculate the ARR for each project

Total Cashflows	100,000
Depreciation	45,000
Net Income / Profit	55,000

Initial Investment	50,000
Residual Value	5,000
Average Investment	27,500

Total Net Income	55,000
Average Net Income	11000
Average Investment	27500

ARR	40%
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Accounting Rate of
Return (ARR)

Annual Rate of Return = $\frac{\text{Average Annual Profit}}{(\text{Initial Investment} + \text{Future Residual Value})/2}$

•Exercise

Project	A	
Project Investment	150,000	
Net Profits	Year 1	5,000
	Year 2	10,000
	Year 3	15,000
	Year 4	20,000
	Year 5	25,000
Residual Value	5,000	



Average Annual Profits =

Total Profit	Years	Average
75,000	5	15,000

Average Investment

Investment	Residual	Average
150,000	5,000	77,500

ARR = $\frac{15,000}{77,500} \times 100\% = 19.4\%$

Accounting Rate of Return (ARR)

Annual Rate of Return = $\frac{\text{Average Annual Profit}}{(\text{Initial Investment} + \text{Future Residual Value})/2}$

Project

A

B

Project Investment

100,000

250,000

Net Profits

Year 1	5,000
Year 2	10,000
Year 3	15,000
Year 4	15,000
Year 5	15,000

Year 1	5,000
Year 2	10,000
Year 3	30,000
Year 4	40,000
Year 5	50,000

Residual Value

5,000

10,000

Average Annual Profits =

Total Profit	Years	Average
60,000	5	12,000

Total Profit	Years	Average
135,000	5	27,000

Average Investment =

Investment	Residual	Average
100,000	5,000	52,500

Investment	Residual	Average
250,000	10,000	130,000

ARR = $\frac{12,000}{52,500} \times 100\% = 22.9\%$

ARR = $\frac{27,000}{130,000} \times 100\% = 20.8\%$

Accounting Rate of
Return (ARR)

Annual Rate of Return =
$$\frac{\text{Average Annual Profit}}{(\text{Initial Investment} + \text{Future Residual Value})/2}$$

- Exercise
- Project A has an investment requirement for a new machine of £250,000 with a residual value after 5 years of £10,000.
- Project B has an investment requirement of £500,000 with a residual value after 5 years of £50,000.
- The Expected Net Profits are as follows :

Project
Net Profits

A	
Year 1	15,000
Year 2	15,000
Year 3	20,000
Year 4	25,000
Year 5	25,000

B	
Year 1	30,000
Year 2	40,000
Year 3	50,000
Year 4	50,000
Year 5	60,000

- Calculate the ARR for each project

Accounting Rate of
Return (ARR)

Project	<u>A</u>			<u>B</u>		
Project Investment	250,000			500,000		
Net Profits	Year 1	15,000		Year 1	30,000	
	Year 2	15,000		Year 2	40,000	
	Year 3	20,000		Year 3	50,000	
	Year 4	25,000		Year 4	50,000	
	Year 5	25,000		Year 5	60,000	
Residual Value	10,000			50,000		
Average Annual Profits =	Total Profit	Years	Average	Total Profit	Years	Average
	100,000	5	20,000	230,000	5	46,000
Average Investment =	Investment	Residual	Average	Investment	Residual	Average
	250,000	10,000	130,000	500,000	50,000	275,000
ARR =	$\frac{20,000}{130,000}$			X	100%	
	= 15.4%			ARR =	$\frac{46,000}{275,000}$	
					X 100%	
					= 16.7%	

- Which project should proceed ?
- What other factors should we take into account ?

A company can invest in one of the projects below, calculate the Payback, ARR for each project and advise which Project should proceed based on the financial information given based on a criteria of a payback of less or equal to 3years and an ARR greater than 30% ?

Project <u>A</u>		Project <u>B</u>		Project <u>C</u>	
Project Investment	300,000		350,000		400,000
	Net Cash Flow		Net Cash Flow		Net Cash Flow
Year 1	100,000	Year 1	40,000	Year 1	200,000
Year 2	110,000	Year 2	100,000	Year 2	150,000
Year 3	104,000	Year 3	210,000	Year 3	240,000
Year 4	112,000	Year 4	260,000	Year 4	120,000
Year 5	138,000	Year 5	100,000		
Year 6	70,000				
Residual Value	20,000		15,000		25,000

Annual Rate of Return =
$$\frac{\text{Average Annual Profit}}{(\text{Initial Investment} + \text{Future Residual Value})/2}$$

Project		A		B		C	
		Net Cash Flow		Net Cash Flow		Net Cash Flow	
Project Investment		-300,000		-350,000		-400,000	
Year 1		100,000		40,000		200,000	
Year 2		110,000		100,000		150,000	
Year 3		104,000		210,000		240,000	
Year 4		112,000		260,000		120,000	
Year 5		138,000					
Year 6		70,000		100,000			
Residual Value		20,000		15,000		25,000	
Payback		2 years and 10 months		3 years		2 Years 3 Mths	
Total Cashflow		634,000		710,000		710,000	
Depreciation		280,000		335,000		375,000	
Net Income		354,000		375,000		335,000	
Project Length		6		5		4	
Average		59,000		75,000		83,750	
Average Investment		160,000		182,500		212,500	
ARR		36.88%		41.10%		39.41%	

Accounting Rate of Return (ARR)

- **Strengths**

- Simple calculation
- Offers a quick comparator against companies expected return.

- **Weaknesses**

- Ignore the future value of money
- The Salvage value may not be realistic
- It is based on accounting profits and not cashflow

Payback Period

- Concentrates on Cashflow
- Simple Calculation
- Ignores Future Value of Money
- How long before the initial investment is repaid

Versus

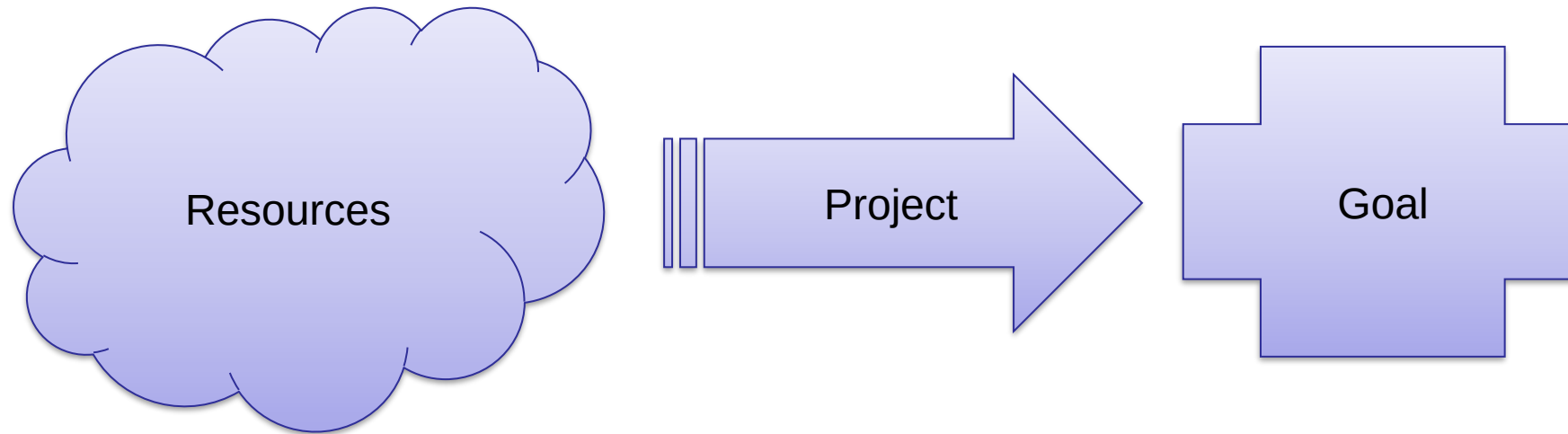
Accounting Rate of Return (ARR)

- Concentrates on Net Profit
- Simple Calculation
- Ignores Future Value of Money
- Residual Value may not be realistic

Finance Management & Planning

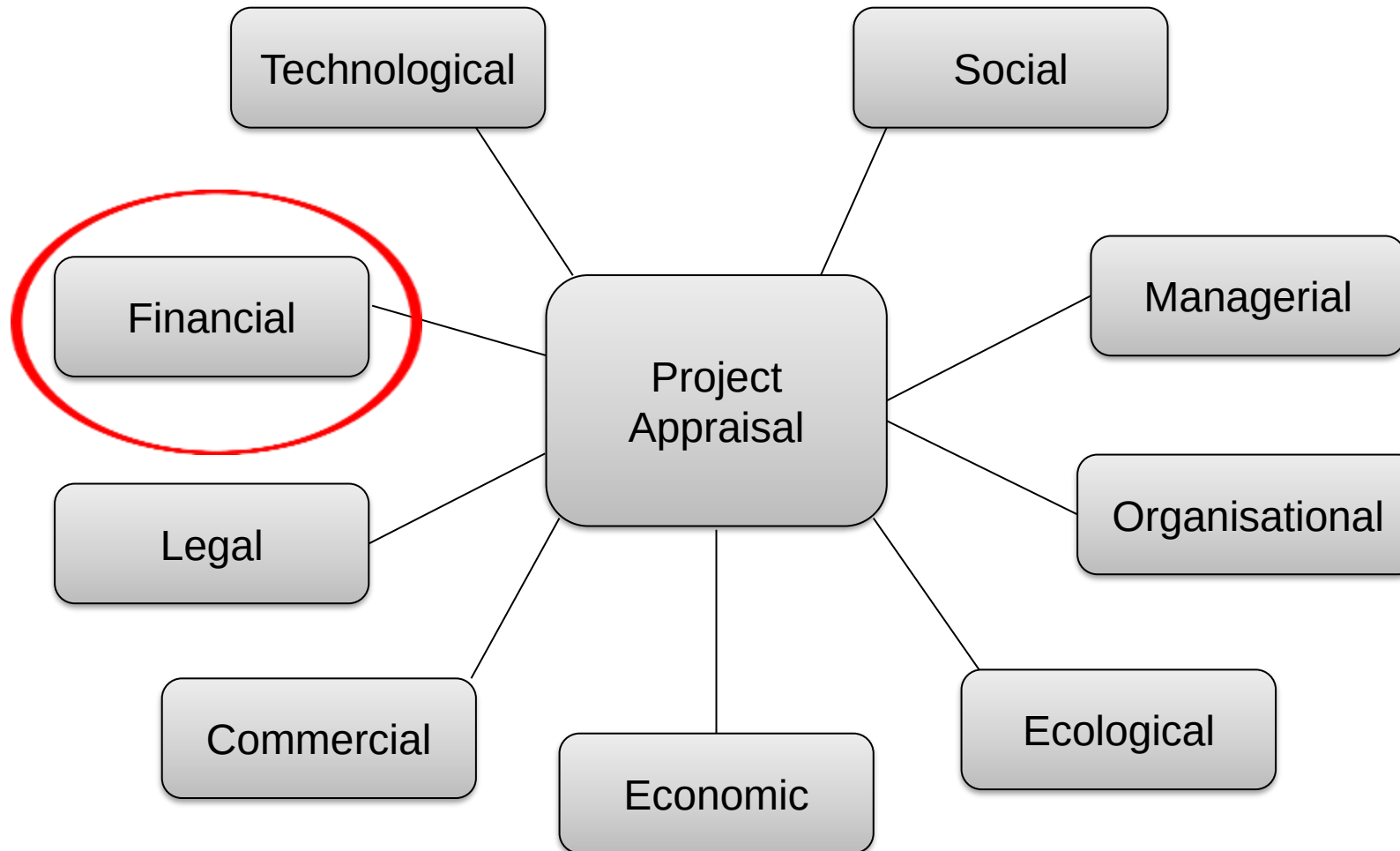
Project Appraisal – Course Refresh

A project is a means to achieve a goal by applying a certain amount of resources.

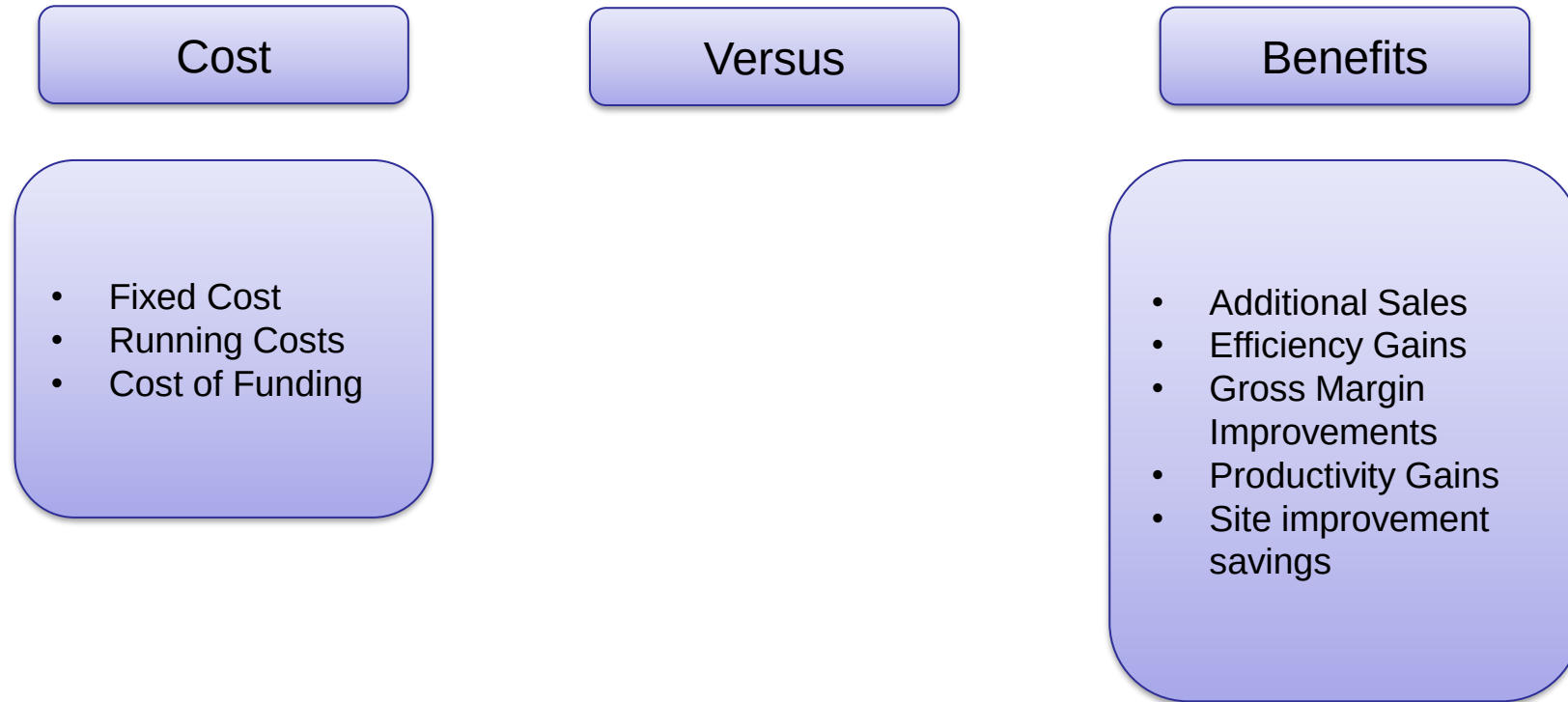


Reference: Early Financial Appraisal , Making the initial choices, Samset K. (2010)

A **Project appraisal** is a costs and benefits analysis of a proposed project with an objective to adjudge is feasibility.



Financial Appraisals



Remember your analysis is only as good as the strength of your data

- Aims of Project Appraisal?
 - Selecting the best project
 - To assess projects credit-worthiness,
 - To assess the profitability of the project;
 - To assess the probable cost and benefit;
 - To assess the requirements of raw material;
 - To assess the fixed and working capital;
 - To anticipate a possible market of the product;
 - To assess the management's competence,
 - To find out whether the various factors of production are available,
 - Fulfilment of social objectives such as employment generation, regeneration of areas.
 - Legal requirements
 - Environmental requirements

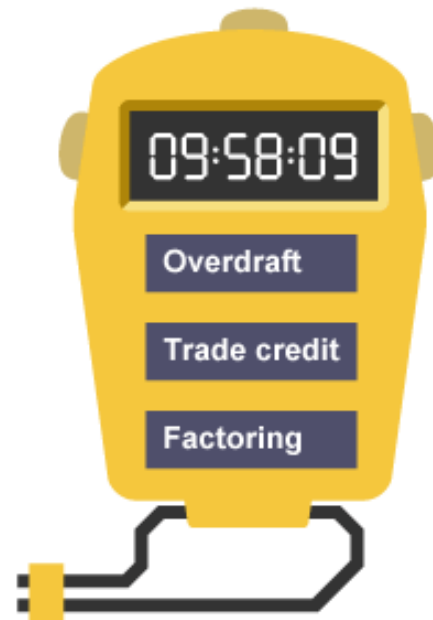
- Types of rationing:
 - Soft rationing
 - Hard rationing
 - One-period rationing
- Soft rationing are internally imposed limits by the business
- Hard rationing relates to capital made available from external sources
- One-period rationing is the simplest because limits are placed on finance availability for one year only; for subsequent years funds are unlimited

- One-period capital rationing carry two options:
 - Divisible projects
 - Indivisible projects
- Divisible projects are projects for which a fraction can be undertaken
e.g. plan to open 5 new stores but only open 3.
- Indivisible projects are projects which have to be completed in full
e.g. project to build a bridge

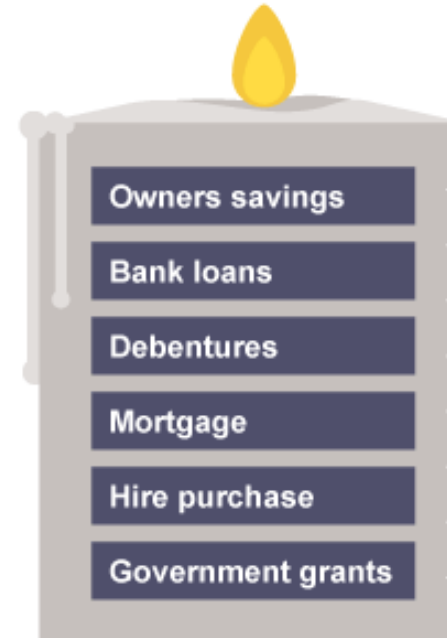
Key sources of finance

Short-term internal Tighter credit control for receivables Reducing inventory levels Delaying trade payables	Long-term internal Retained profits
Short-term external Bank overdrafts Debt factoring Invoice discounting	Long-term external Ordinary shares Preference shares Borrowings Finance leases Hire purchase agreements Securitisation of assets

Short term sources of finance



Long term sources of finance



TYPES OF BUSINESS FINANCE



DEBT FINANCE

- Start up loan
- Overdraft
- Bank loan / bond
- Peer-to-peer lending
- Asset-based finance
- Leasing / hire purchase
- Export / trade finance
- Growth finance



EQUITY FINANCE

- Seed finance
- Angel Finance
- Equity Crowdfunding
- Venture Capitalist
- Corporate Venture Capital
- Private Equity
- IPO / Public Offering



GRANTS

- Business start-up grant scheme
- Childcare business grants
- Enterprise Europe Network
- Food Enterprise Advisory Support Team (FEAST)

Financial Appraisals Tools





Any Questions ?

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