

Chapter 19: Exam practice question

Investing to stay competitive

- 1** Define the following terms:
- a** residual value (2)
This is the estimated sale or scrap value of an asset at the end of its useful lifespan.
- b** expected life expectancy. (2)
This is the length of time that an asset will probably be useful and productive to a business, before it is sold as scrap or replaced.

Apply **Resources table 3a** mark band descriptors.

- 2** Explain how Asia Print might have forecast future annual sales. (6)
- sales trend analysis
 - by taking past sales performance and adjusting for future economic and/or industry forecasts together with expected changes in fashion or demand (possibly based on research or market data)
 - moving averages trend analysis to take account of seasonal variations

SL: apply **Resources table 1** mark band descriptors.

HL: apply **Resources table 2** mark band descriptors.

- 3** Calculate for each project:
- a** the payback period (4)

Given data	Project Y	Project Z
Purchase price in \$m (p)	20	12
Life expectancy in years (y)	5	4
Sales forecast units million (u)	8	6
Sales price per item \$ (s)	1.25	1.25
Variable cost per unit \$ (v)	0.5	0.5
Annual operating cost in \$m (a)	1	0.5

Cash-flow forecast for project Y

Year	Cash flow $u(s - v) - a$ $= (8m \times 0.75) - 1$ $= 5m$	Cumulative cash flow
0 (machine purchased)	(20)	(20)
1	5	(15)
2	5	(10)
3	5	(5)
4	5	0 = payback period
5	5	5
Total net cash flow	5	5

Payback period = 4 years**Cash-flow forecast for project Z**

Year	Cash flow $u(s - v) - a$ $= (6m \times 0.75) - 0.5$	Cumulative cash flow
0 (machine purchased)	(12)	(12)
1	4	(8)
2	4	(4)
3	4	0 = payback period
4	4	4
Total net cash flow	4	4

Payback period = 3 years**b** the average annual rate of return (ARR). **(4)**

$$\begin{aligned}
 \text{ARR Project Y} &= \text{Total net cash flow} + \text{residual value} \div \text{number of years} \\
 &= £5m + £1m \div 5 \\
 &= £1.2m \text{ per annum}
 \end{aligned}$$

$$\begin{aligned}
 \text{ARR Project Z} &= \text{Total net cash flow} + \text{residual value} \div \text{number of years} \\
 &= £4m + £0.5 \div 4 \\
 &= £1.125m \text{ per annum}
 \end{aligned}$$

- 4 On the basis of your results and any other relevant factors, discuss which project Asia Print should choose. (7)

A comparison of all factors should be written in sentences but for full marks should recognise the following factors:

Factor	Project Y	Project Z	Comment	Which is better?
Total net cash flow	£5m	£4m	Bigger cash flow is better	Y
Project length	5 years	4 years	Shorter means less risk of unknown changes in the market	Z
Payback period	4 years	3 years	Shorter payback is less risky	Z
ARR	£2.2m	£1.625m	Higher ARR is preferable	Y
Machine features	Considerable disruption to change	Considerable disruption to change	Both equal disruption	Y/Z
	New, not proven reliable	Proven reliability	Reliability is important	Z
	Highly automated, fast changeover, full colour, direct internet to customers	Semi-automated	Automated means more can go wrong but quality may be better	Y/Z
		Noisy: residents may complain.	Complaints not good	Y
Staff	2 staff would need selection and training	Existing staff can operate	Training expensive Staff may leave when trained → Z	Z
	6 redundancies Union worried about job cuts	3 redundancies	Redundancies and unions problematic → Z	

Conclusion: there are factors for and against both machines. Z has the slight advantage on the number of factors it has in its favour, but these factors are not weighted. It does, after all, represent lower technology which may not be as competitive in the future.



The student should choose one of the factors and justify why they think that it should be chosen.

SL: apply **Resources table 1** mark band descriptors.

HL: apply **Resources table 2** mark band descriptors.