

MANAGEMENT ACCOUNTING FOR DECISION MAKING

UNIT NO: F82J 35

CAPITAL INVESTMENT APPRAISAL

METHOD 1 - PAYBACK

Payback 1

A project has the following cash flows:

Year	Cash Inflow/(Outflows) £
0 (Initial expenditure)	(25,000)
1	8,000
2	6,000
3	5,000
4	6,000
5	8,000

Calculate the Payback period.

Payback 2

A project with an initial expenditure of £20,000 has the following cash flows:

Year	Cash Inflows £
1	4,000
2	6,000
3	6,000
4	7,000
5	6,000

Calculate the Payback period.

Payback 3

A company is considering the following projects:

Project	Initial Investment £	Cash Inflows £				
		Year 1	Year 2	Year 3	Year 4	Year 5
V	50,000	14,000	12,000	20,000	3,000	35,000
W	70,000	15,000	17,000	18,000	17,000	50,000
X	90,000	20,000	20,000	20,000	25,000	40,000
Y	100,000	50,000	30,000	10,000	11,000	12,000
Z	150,000	35,000	35,000	40,000	35,000	35,000

Calculate the payback period for each one and rank them in order of preference.

Payback 4

An asset costing £120,000 is to be depreciated over ten years to a nil residual value. Profits after depreciation for the first 5 years are as follows:

Year	£
1	12,000
2	17,000
3	28,000
4	37,000
5	8,000

How long is the payback period to the nearest month?

Payback 5

A company is considering which of two projects, X or Y, to invest in, where in both cases the initial investment is £500,000 at the start of year zero.

The company proposes to accept the project with the quicker pay back period. Each project is expected to yield the following cash flows over a 10 year period.

<u>YEAR</u>	<u>CASH FLOWS</u>	<u>PROJECT X</u>	<u>PROJECT Y</u>
		<u>£000's</u>	<u>£000's</u>
0	investment	(500)	(500)
1	cash flows	50	40
2	cash flows	75	60
3	cash flows	110	130
4	cash flows	200	175
5	cash flows	130	380
6	cash flows	300	250
7	cash flows	250	150

8	cash flows	200	100
9	cash flows	100	50
10	cash flows	50	20

Required:

State, with workings clearly shown, exactly how long each project will take to recover the investment and which project the company will choose given that both projects are mutually exclusive.

Payback 6

A company is considering which of two projects, P or Q, to invest in, where in both cases the initial investment is £200,000 at the start of year zero. Included in the estimated annual profit figures for the next 5 years is a depreciation charge which is based on the assumption that at the end of 5 years the investment will have a residual resale value of £25,000. Each project is expected to yield the following PROFITS over the 5 years.

<u>YEAR</u>	<u>PROFITS</u>	<u>PROJECT P</u>	<u>PROJECT Q</u>
	<u>£000's</u>	<u>£000's</u>	<u>£000's</u>
0	investment	(200)	(200)
1	profits	40	30
2	profits	50	70
3	profits	60	40
4	profits	70	60
5	profits	80	100

Required:

State, with workings clearly shown, exactly how long each project will take to recover the investment and which project the company will choose given that both projects are mutually exclusive and that the company proposes to accept the project with the quicker pay-back period. [Take answers to 2 decimals].

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METHOD 2 - ACCOUNTING RATE OF RETURN

ARR 1

An asset costing £60,000 is to be depreciated over five years to a nil residual value. Profits after depreciation for the first 5 years are as follows:

<u>Year</u>	<u>Profits After Depreciation</u>
1	£12,000
2	£17,000
3	£28,000
4	£37,000
5	£ 8,000

Calculate the Accounting Rate of Return (ARR) for the new project.

ARR 2

You are considering investing in a project with an initial expenditure of £10,000. The project is expected to generate cash flows for 5 years.

<u>Year</u>	<u>Cash Flow</u>
1	£3,000
2	£6,000
3	£7,000
4	£9,000
5	£4,000

Calculate the Accounting Rate of Return (ARR) which the new project can earn.

If you could only invest in one project, which would it be?

If your target rate of return was 30% which project(s) would you invest in?

ARR 3

The library is considering purchasing a photocopier for public use. The cost and anticipated cash flows are shown below:

Photocopier £2,500

<u>Year</u>	<u>Cash Flow</u>
1	£ 900
2	£1,300
3	£1,600

Calculate the Accounting Rate of Return (ARR) which the new photocopier can earn.

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ARR 4

A firm is considering investing in one of two mutually exclusive projects, L or M, both of which will require an initial investment of £750,000 and both of which will have a life of 8 years.

The estimated profits to be generated by each project are as follows:

<u>YEAR</u>		<u>PROJECT L</u>	<u>PROJECT M</u>
		<u>£000's</u>	<u>£000's</u>
0	Investment	(750)	(750)
1	Profits	100	200
2	Profits	150	300
3	Profits	200	400
4	Profits	250	250
5	Profits	300	250
6	Profits	350	200
7	Profits	400	150
8		200	125

Required:

Calculate the accounting rate of return (A.R.R) based on:

- i the initial capital invested
- ii the average capital invested

ARR 5

A firm is considering investing in one of two mutually exclusive projects, project S or project T. Project S requires an initial investment of £2,000,000 and project T an initial investment of £1,500,000.

The investment in project S will last for 5 years at the end of which time its estimated residual value is expected to be £250,000, while project T is expected to have a residual value at the end of 5 years of £200,000. The estimated *CASH FLOWS* to be generated by each project are as follows:

<u>YEAR</u>		<u>PROJECT S</u> <u>£000's</u>	<u>PROJECT T</u> <u>£000's</u>
0	Investment	(2,000)	(1,500)
1	Cash flows	1,800	1,500
2	Cash flows	1,700	1,300
3	Cash flows	1,400	1,000
4	Cash flows	375	280
5	Cash flows	375	280

Required:

- (a) Calculate the accounting rate of return, A.R.R. based on:
- the initial capital invested
 - the average capital invested
- (b) State which project the firm should choose to invest in.

Assignment – Barclay Ltd

Barclay Limited is considering some possible capital investment proposals and has given you the following information regarding two possible capital investments:

<u>Year</u>		<u>Project A</u>	<u>Project B</u>
0	Initial cost	£250,000	£350,000
1	Cash inflow	£85,000	£60,000
2	Cash inflow	£95,000	£80,000
3	Cash inflow	£100,000	£100,000
4	Cash inflow	£65,000	£105,000
5	Cash inflow		£200,000
6	Cash inflow		£150,000
7	Cash inflow		
8	Cash inflow		

The normal policy for capital investment appraisal in Barclay Limited is to use the payback period method. Only projects which pay back in 3 years or less are chosen.

Required

- 1 Calculate the **payback period** of each of the projects and make your recommendation to management based on the usual criteria adopted in this business (The projects are mutually exclusive)
- 2 Calculate the **ARR** for each project instead and make your recommendation based on this instead.

Assignment – Porter Ltd

Porter Limited is considering two mutually exclusive capital investment projects, details of which are given below:

<u>Year</u>		<u>Project Alpha</u>	<u>Project Delta</u>
0	Initial cost	£1,500,000	£1,500,000
1	Cash inflow	£220,000	£200,000
2	Cash inflow	£350,000	£280,000
3	Cash inflow	£480,000	£400,000
4	Cash inflow	£550,000	£560,000
5	Cash inflow	£400,000	£640,000

Required

1	Calculate the payback period of each project and recommend which project should be undertaken, given that the projects are mutually exclusive.
2	Calculate the Accounting Rate of Return (ARR) based on initial investment and recommend which project should be undertaken using this method, given that the projects are mutually exclusive.
3	What qualitative factors may have to be considered when choosing the project to go ahead?