Capital Investment
[Name of the Writer]
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Business Analysis Project 3 – Capital Investment Analysis

The capital investment committee of Informatics Management Company is currently considering two investments (a Truck or Equipment) and has asked you to evaluate each and provide your analysis. The estimated income from operations and net cash flows expected for each investment are as follows:

	Truck		Equipment	
Year	Income from Operations	Net Cash Flow	Income from Operations	Net Cash Flow
1	6000	22000	13000	29000
2	9000	25000	10000	26000
3	10000	26000	8000	24000
4	8000	24000	8000	24000
5	11000	27000	3000	19000

Each investment requires $ 80,000. Straight line depreciation will be used, and no residual value is expected. Management has informed the committee to use 15% as the discount rate for purposes of net present value analysis.

1. Using your required reading and lecture materials as reference, create an Excel workbook (formatted for presentation) to compute the following for each investment:

a) The payback period

b) The average rate of return

c) The net present value

	Truck			Equipment		
Year	Income from Operations	Net Cash Flow	Accumulated Cash Flow	Income from Operations	Net Cash Flow	Accumulated Cash Flow
0		(80,000)	(80,000)		(80,000)	(80,000)
1	6,000	22,000	(58,000)	13,000	29,000	(51,000)
2	9,000	25,000	(33,000)	10,000	26,000	(25,000)
3	10,000	26,000	(7,000)	8,000	24,000	(1,000)
4	8,000	24,000	17,000	8,000	24,000	23,000
5	11,000	27,000	44,000	3,000	19,000	42,000

Payback Period

Payback Period Truck	3+ (7000/24000)
Payback Period Truck	3.291666667 years
Payback Period Equipment	3 + (1000/24000)
Payback Period Equipment	3.041666667 years

Average Rate of Return

Average Rate of Return = Average Income/Average Investment

ARR Truck

Average Income =	8800

Average Investment = (Initial Investment - Scrap Value)/Useful Life

Average Investment =	16000
ARR Truck =	8800/16000
ARR Truck =	55.00%

ARR Equipment

Average Income =	8400

Average Investment = (Initial Investment - Scrap Value)/Useful Life

Average Investment =	16000
ARR Equipment	8400/16000
ARR Equipment	52.50%

Net Present Value

NPV Truck

Net Cash Flow of Truck
(80,000)
22,000
25,000
26,000
24,000
27,000

NPV Truck $1,978.52

NPV Equipment

Net Cash Flow of Equipment
(80,000)
29,000
26,000
24,000
24,000
19,000

NPV Equipment $3,326.91

2. Which has the better average rate of return & NPV? What is your analysis and explanation of this comparison?

	Truck	Equipment
NPV	$1,978.52	$3,326.91
ARR	55.00%	52.50%

The NPV of equipment is significantly better than NPV of truck but average rate of return of truck is slightly higher than that of equipment as can be seen in above graph. Higher ARR of truck but lower NPV means that average income of truck is higher than equipment but the present value of cash flow of truck is lower. It is largely due to the fact that project of truck produces higher income and cash flow in its ending years where as project of equipment of produces higher income in initial years. The cash flows in later years are affected by time value of money in later years and hence lower NP is a result (Bierman & Smidt, 2012).

3. Identify and explain potential capital project risks for each investment.

Both ARR and NPV have their own advantages and disadvantages which in turn will affect the risks associated with both projects (Bierman & Smidt, 2012).

Advantages of ARR

- ARR is based on accounting profit and is easy to calculate.
- ARR is based on accounting profit hence measures the profitability of project.
- Special reports are not required for determining RR.

Disadvantages of ARR

- ARR ignores time value of money.
- ARR ignores cash flow from investment.
- ARR do not consider terminal value of project**.**

Advantages of NPV

- NPV gives importance to time value of money.
- Both initial investment and cash flow over the life of project are considered.
- Profitability and risk are given high priority.
- It helps maximizing firm's value.

Disadvantages of NPV

- NPV is slightly difficult to calculate
- Cannot give certain decision if initial investment is not equal.
- It is difficult to calculate appropriate discount rate.
- May not give correct decision when projects are not of equal life.

Risk associated with Projects

Risks associated with both projects are

- Both projects are vulnerable to changes in discount rate.

- Time value of money affects truck more than equipment because the truck project has higher income and cash flows in later years where as equipment has higher income and cash flows in earlier years.
- Both projects are dependent on future cash flows which are just a forecast and not certain.
- Changes in future cash flow of both projects may dynamically change both projects (Bierman & Smidt, 2012).

4. Prepare a summary for the capital investment committee, advising it on the relative merits of the two investments and explain why you would recommend one or the other.

	Truck	Equipment
NPV	$1,978.52	$3,326.91
ARR	55.00%	52.50%
Payback Period	3.29 years	3.04 years

The capital investment committee should select the project of equipment because NPV of equipment is way better than NPV of project truck. The equipment also has a better payback period than truck. Only ARR of truck is slightly better than ARR of equipment of but the difference is minimal when considering that ARR does not take time value of money into account. Hence slightly higher ARR but lower NPV of truck suggests that though truck generate a little more operating income than project of equipment but in terms of present value an NPV the profitability of equipment is better (Bierman & Smidt, 2012).

Hence on the basis of calculations and above assessments the capital investment committee should chose project of equipment over truck.

References

Bierman Jr, H., & Smidt, S. (2012). *The capital budgeting decision: economic analysis of investment projects*. Routledge.

Gervais, S., Heaton, J. B., & Odean, T. (2011). Overconfidence, compensation contracts, and capital budgeting. *The Journal of Finance*, *66*(5), 1735-1777.