DECISION MAKING AND SCENARIOS
MODULE 4.3 – New Product Venture

NPV and IRR Calculations

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Agenda – Valuation of a Proposed New Product Venture and Evaluation of Alternative Scenarios

- Introduction and Spreadsheet Set up
- Forecasting of Future Cash Flows
- **Valuation (NPV and IRR)**
- Formulation and Evaluation of Alternative Scenarios
- Expanding Beyond the Time Horizon

Take The Forecasted Cash Flows

CASH FLOW STATEMENT	0	1	2	3	4	5	6	7	8
Net Income		($28,880)	($31,400)	$27,200	$25,800	$25,240	$24,680	$24,400	$1,800
Add Depreciation		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$0
Minus Change in Accts Rec		$0	$0	($20,000)	$0	$0	$0	$0	$20,000
Minus Change in Inventory		$0	$0	($9,000)	$0	$0	$0	$0	$9,000
Plus Change in Accts Payable		$0	$0	$4,950	($450)	$0	$0	$0	($4,500)
Plus Change in Wages Payable		$7,500	$0	$9,000	$0	$0	$0	$0	($16,500)
Other		$0	$0	$0	$0	$0	$0	$0	($5,000)
Cash From Operations		($11,380)	($21,400)	$22,150	$35,350	$35,240	$34,680	$34,400	$4,800
Investment in PPE	($70,000)	$0	$0	$0	$0	$0	$0	$0	$0
Disposal of PPE	$0	$0	$0	$0	$0	$0	$0	$0	$5,000
Net Cash Inflow (Outflow)	**($70,000)**	**($11,380)**	**($21,400)**	**$22,150**	**$35,350**	**$35,240**	**$34,680**	**$34,400**	**$9,800**

- Negative Cash Flows During the Startup / Investing Phase
- Positive Cash Flows During the Operating Phase
- Positive Cash Flows (in this case) During the Termination Phase

And Feed them Into the Net Present Value Calculations

CASH FLOW STATEMENT	0	1	2	3	4	5	6	7	8
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Calculate Net Present Value (NPV) and IRR

- Use the after-tax Cost of Capital (6%) to calculate NPV
- Recall that this represents the opportunity cost of our capital
  - The rate we could earn on our next best use (of equivalent risk) of capital
- Remember that the NPV function in Excel assumes the first cash flow is one period away

Initial Cash Flow	-$70,000
Present Value of Future Cash Flows	+$96,624
Total Present Value of Cash Flows	**$26,624**
Internal Rate of Return	**11.5%**

Interpretation of Net Present Value (NPV)

- NPV = $26,624
- This is the economic value that the New Product Venture will add to the firm.
- This considers both the timing and magnitude of the inflows and outflows of cash
- It should also reflect the riskiness associated with the cash flows. (the discount rate is supposed to reflect this)

Interpretation of Internal Rate of Return (IRR)

- IRR = 11.5%
- This means that the money we invest in the New Product Venture earns a rate of return of 11.5%
- Again, this takes the timing as well as the magnitudes of the inflows and outflows of cash into consideration
- Since 11.5% is considerably above the cost of capital (6%), this is additional evidence that this is a profitable product venture
  - If the cost of capital was 11.5%, this venture would have an NPV of zero
  - If the cost of capital was above 11.5%, this venture would have a negative NPV. It would be destroying value; not creating it.

How believable are those numbers?

- The NPV and IRR numbers look “precise”
- But they’re only as credible as the quality of the inputs that went into our spreadsheet
  - These are the parameters we put into the Assumptions Section of the Spreadsheet
- But these are all judgments or estimates (or guesses) about the future and how our business strategy will play out over time
- We know that this can’t possibly be 100% accurate
- So let’s think about alternative scenarios for how things might turn out

WE’RE NOT FINISHED!

- In fact, we’re just starting
- Now we want to ask some hard questions
  - What can go wrong?
  - How wrong can it go?
- And to try to think “outside the box”
  - Re-think all our assumptions
  - How can we do this better?

  - Ideally we’ve set up the spreadsheet in a way that allows the series of future financial statements and the Net Present Value to be easily re-calculated under alternative scenarios

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