Telkom University

Investment Evaluation and Analysis

The Capital Budgeting Decision Process

Motives for Capital Expenditure

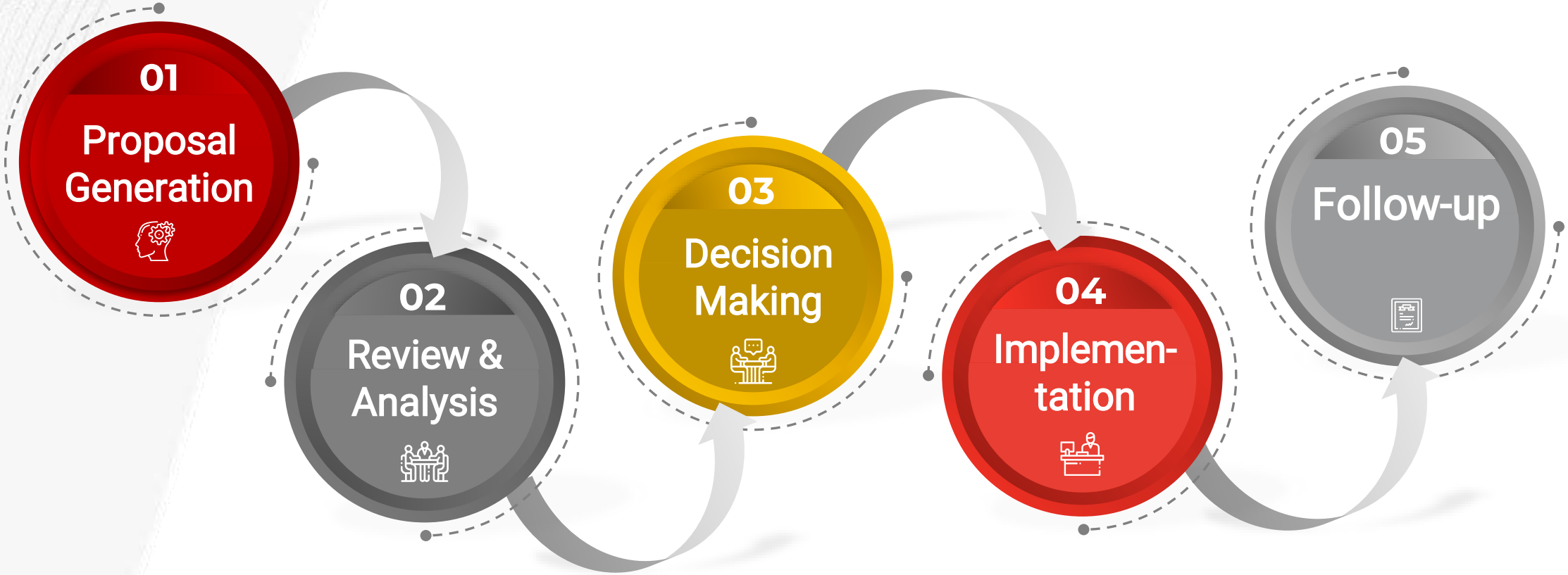
01 Expansion

02 Replacement

03 Renewal

04 Other Purposes :
R&D, New Products

The Capital Budgeting Decision Process



Basic Terminology

Independent	VS	Mutually Exclusive Projects
Unlimited Funds	VS	Capital Rationing
Accept-Reject	VS	Ranking Approaches
Conventional	VS	Non-conventional Cash Flow Pattern

The Relevant Cash Flows (1)

Major Cash Flow Components

- An initial investment → the relevant cash flow at time zero
- Operating cash inflows → the incremental after-tax cash inflows during its life
- Terminal cash flow → the after-tax nonoperating cash flow in the final year of a project.

Sunk Cost vs Opportunity Cost

Sunk costs
(Ignore)

vs

Opportunity costs
(as cash outflows)

International Capital Budgeting

Currency risks
&
Political risks

The Relevant Cash Flows For Replacement Decisions (2)

Initial Investment

=

Initial investment needed to acquire new asset

–

After-tax cash inflows from liquidation of old asset

Operating Cash Inflows

=

Operating cash inflows from **new asset**

–

Operating cash inflows from **old asset**

Terminal Cash Flow

=

After-tax cash flows from termination of **new asset**

–

After-tax cash flows from termination of **old asset**

Finding The Initial Investment

Initial Invest-ment =

+ Installed cost of new asset =
  - Cost of new asset
  - + Installation costs
- After-tax proceeds from sale of old asset =
  - Proceeds from sale of old asset
  - -/+ Tax on sale of old asset
+/- Change in net working capital

Calculating The Initial Investment

Book Value	=	Installed Cost of Asset	–	Accumulated Depreciation
Net Working Capital	=	Current Assets	–	Current Liabilities

Finding The Operating Cash Inflows

Revenue

− Expenses (exc. Depreciation & Interest)

= **EBDIT**

− Depreciation

= **EBIT**

− Taxes (rate = T)

= **NOPAT (EBIT x (1-T))**

\+ Depreciation

= **OCF**

Finding The Terminal Cash Flow

Terminal Cash Flow =

+ After-tax proceeds from sale of new asset =

Proceeds from sale of new asset

-/+ Tax on sale of new asset

- After-tax proceeds from sale of old asset =

Proceeds from sale of old asset

-/+ Tax on sale of old asset

+/- Change in net working capital

Summary

1. The relevant cash flows
2. How to determine whether to undertake a proposed capital investment?
3. Self-Test Problems
   - ST 8-2
   - ST 8-1

Modified Accelerated Cost Recovery System (Table 3.1 And Table 3.2)

*Use of the half year convention

Year	3 Years*	5 Years*
1	33%	20%
2	45%	32%
3	15%	19%
4	7%	12%
5		12%
6		5%

ST 8-1

a) Accumulated depreciation
= $50,000 x (0.2 + 0.32 + 0.19 + 0.12)
= $41,500
Book value = $50,000 - $41,500
= $8,500

b) Gain on sale = Sale price – Book value
= $55,000 - $8,500
= $46,500

Taxes = 0.4 x $46,500 = $18,600

Initial Investment

Initial Invest-ment =

+ Installed cost of new asset =

Cost of new asset

\+ Installation costs

Total installed cost-new (depreciable value)

- After-tax proceeds from sale of old asset =

Proceeds from sale of old asset

-/+ Tax on sale of old asset

Total after-tax proceeds-old

+/- Change in net working capital

Book Value, Tax On Sale, and NWC

Book value of old machine
= 40,000 – (0.2 + 0.32)x40,000 = 19,200

Gain on sale
= 42,000 – 19,200 = 22,800

Taxes
= 0.4 x 22,800 = 9,120

Change in net working capital
= 10,000 + 25,000 – 15,000 = 20,000

Finding The Operating Cash Inflows

Revenue

− Expenses (exc. Depreciation & Interest)

= **EBDIT**

− Depreciation

= **EBIT**

− Taxes (rate = T)

= **NOPAT (EBIT x (1-T))**

\+ Depreciation

= **OCF**

Incremental Operating Cash Inflows (in $)

Year	New Machine	Old Machine	Incremental
1	91,800	45,040	46,760
2	105,000	43,920	61,080
3	87,000	43,920	43,080
4	4,200	800	3,400

Terminal Cash Flow (End of Year 3)

Terminal Cash Flow =

+ After-tax proceeds from sale of new asset =
  Proceeds from sale of new asset
  -/+ Tax on sale of new asset
- After-tax proceeds from sale of old asset =
  Proceeds from sale of old asset
  -/+ Tax on sale of old asset
+/- Change in net working capital

Book Value And Tax On Sale

Book value of new machine at end of year 3
= $250,000 – (0.33 + 0.45 + 0.15)x150,000
= $10,500
Tax on sale = 0.4x($35,000 - $10,500) = $9,800

Book value of old machine at end of year 3
= $40,000 – (0.2 + 0.32 + 0.19 + 0.12 + 0.12)x40,000
= $2,000
Tax on sale = 0.4x($0 - $2,000) = -$800

The Relevant Cash Flows

- IO = 137,120
- OCF (1) = 46,760
- OCF (2) = 61,080
- TCF (3) = TCF + OCF (3)
  = 44,400 + 43,080
  = 87,480

References

Gitman, Lawrence J and Zutter, Chad J. Principles of Managerial Finance. 14th edition, Pearson.

Keown, Arthur J., Martin, John D and Petty, J William. Foundations of Finance. 9th edition, Pearson.