

Manajemen Keuangan Dasar: *REAL ASSET INVESTMENT*

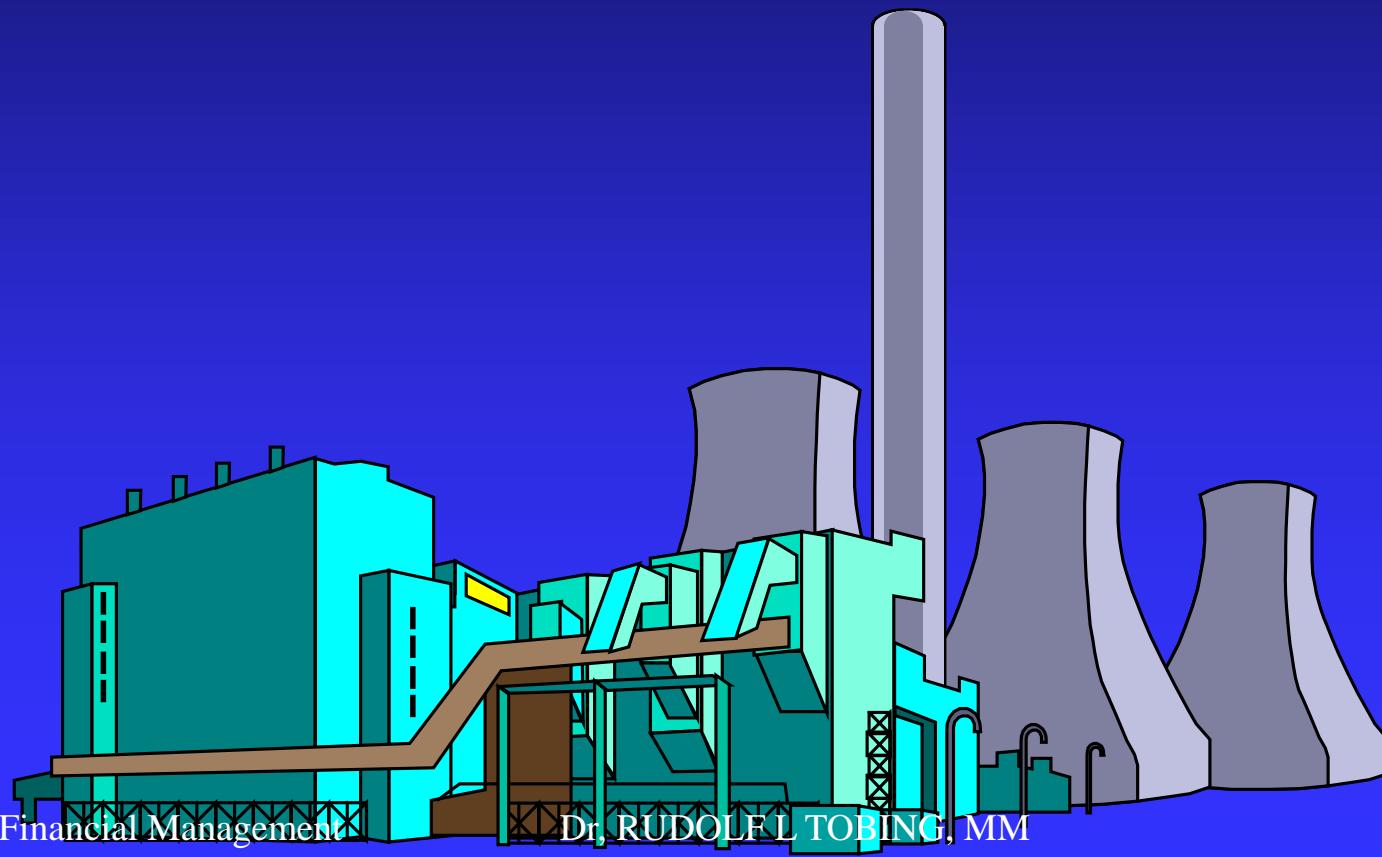
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INVESTASI AKTIVA FISIK

(Real Asset Investment)



Capital Budgeting

the process of planning for purchases of long-term assets (*proses perencanaan untuk pembelian aktiva jangka panjang*).

Example #1: Proposed Project Data

Mrs Regina is evaluating a new project for her finance lease; Elerge's *Wonders Leasing (EWL)*. She has determined that the after-tax cash flows for the project will be \$10,000; \$12,000; \$15,000; \$10,000 and \$7,000, respectively, for each of the years 1 through 5. The initial cash outlay will be \$40,000.

Cash flows for the project:



The management of EWL has set a maximum payback period of **3.5 years** for projects of this type.

Should this project be accepted?

Capital Budgeting: the process of planning for purchases of long-term assets.

- Let we see **Regina's finance lease project EWL cash flows.**
- **How does she decide?**
- **Will the project be profitable?**
- **Will her firm earn a high rate of return on the investment?**

Decision-Making Criteria in Capital Budgeting



How do we decide if a capital investment project should be accepted or rejected?

Decision-making criteria in Capital Budgeting

- The Ideal Evaluation Method should:
 - a) include all cash flows that occur during the life of the project,
 - b) consider the time value of money,
 - c) incorporate the required rate of return on the project.

PAYBACK PERIOD

- Payback Period is the period of time required for the cumulative expected cash flows from an investment project to equal the initial cash outflow.
- Payback Period answers the question “how long will it take for the project to generate enough cash to pay for itself ?”

Let we see the previous example!

Rumus *Payback Period*

□ Periode Pengembalian:

□
$$PP = n + \frac{(a - b)}{(c - b)}$$

n = Tahun terakhir dimana jumlah arus kas masih belum bisa menutup investasi mula-mula (IO)

a = Jumlah investasi mula-mula (IO)

b = Jumlah kumulatif arus kas pada tahun ke – n

c = Jumlah kumulatif arus kas pada tahun ke n + 1



Payback Solution



Cumulative Inflows PP $\equiv n + (a - b) / (c - b)$

$$\begin{aligned} &= 3 + (40 - 37) / (47 - 37) \\ &= 3 + (3) / (10) \\ &= 3.3 \text{ Years} \end{aligned}$$

Payback Period Acceptance Criterion

The management of *EWL* has set a maximum payback period of 3.5 years for this projects.

Should this project be accepted?

Yes! The firm will receive back the initial cash outlay in less than 3.5 years, because ***3.3 Years < 3.5 Year Max.***

Contoh #2:

- Suatu usulan proyek investasi mesin fotocopy senilai Rp 600 juta dengan umur ekonomis 5 tahun dan biaya modal 12% per tahun. Syarat periode pengembalian 2,5 tahun dan arus kas per tahun adalah :
 - Tahun 1 RP. 300 juta
 - Tahun 2 Rp. 250 juta
 - Tahun 3 Rp. 200 juta
 - Tahun 4 Rp. 150 juta
 - Tahun 5 Rp. 100 juta



Periode Pengembalian dengan Diskonto

- Periode Pengembalian dengan arus kas bersih yang didiskontokan dengan $k = 12\%$ per tahun:

Tahun	Arus Kas	Diskonto 12%	Arus Kas Diskonto	AK Kumulatif Diskonto
1	300	0.893	267.90	267.90
2	250	0.797	199.25	467.15
3	200	0.712	142.40	609.55
4	150	0.636	95.40	704.95
5	100	0.567	56.70	761.65

Diskonto $k = 12\%$

761.65

Pada tahun ke-2
investasi belum
selesai $N = 2$

Penyelesaian Perhitungan

□ Periode pengembalian

$$\begin{aligned} PP &= n + (a - b) / (c - b) \\ &= 2 + [(600 - 467,15) / (609,55 - 467,15)] \\ &= 2 + [132,85 / 142,4] \\ &= 2 + 0,9329 \\ &= \textcolor{red}{2,9329} \text{ tahun atau } 2 \text{ tahun } 11 \text{ bulan } 19 \text{ hari} \end{aligned}$$

Periode pengembalian lebih dari yang disyaratkan sehingga usulan investasi pengadaan mesin fotocopy tersebut **ditolak**.

Other Methods

- 1) Net Present Value (NPV)
- 2) Profitability Index (PI)

Each of these decision-making criteria:

- Examines all net cash flows,
- Considers the time value of money, and
- Considers the required rate of return.

NET PRESENT VALUE

- NPV = the total PV of the annual net cash flows - the initial outlay.

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1 + k)^t} - IO$$

Net Present Value (NPV)

NPV is the present value of an investment project's net cash flows minus the project's initial cash outflow.

$$\mathbf{NPV} = \frac{\mathbf{CF}_1}{(1+k)^1} + \frac{\mathbf{CF}_2}{(1+k)^2} + \dots + \frac{\mathbf{CF}_n}{(1+k)^n} - \mathbf{IO}$$

Net Present Value

- Decision Rule:
- If NPV is positive, accept.
- If NPV is negative, reject.

The management of EWL has determined that the required rate is 13% for projects of this type. Should this project be accepted?

$$\mathbf{NPV = \$ 38,572 - \$ 40.000 = \$ (1,428)}$$

No! The NPV is negative. This means that the project is reducing shareholder wealth.

[*Reject* as $NPV < 0$]

Lihat Contoh #2 sebelumnya arus kas setiap tahun jumlahnya berbeda

- Suatu usulan proyek investasi mesin fotocopy senilai Rp 600 juta dengan umur ekonomis 5 tahun dengan arus kas per tahun adalah :
 - Tahun 1 Rp 300 juta
 - Tahun 2 Rp 250 juta
 - Tahun 3 Rp 200 juta
 - Tahun 4 Rp 150 juta
 - Tahun 5 Rp 100 juta



Analisislah dengan menggunakan NPV apakah usulan proyek investasi tersebut layak untuk dijalankan?

Tahun	Arus Kas	Diskonto 12 %	Arus Kas Diskonto	Arus Kas Diskonto Kumulatif
1	300	0.893	267.90	267.90
2	250	0.797	199.25	467.15
3	200	0.712	142.40	609.55
4	150	0.636	95.40	704.95
5	100	0.567	56.70	761.65

$$PV = 761.65$$

**NPV = PV - IO → NPV = Rp 761,65 juta – Rp 600 juta = Rp 161,65 juta (positif)
sehingga usulan proyek investasi tersebut layak.**

Profitability Index (PI)

PI is the ratio of the present value of a project's future net cash flows to the project's initial cash outflow.

$$PI = \sum_{t=1}^n \frac{CF_t}{(1 + k)^t} / IO$$

Profitability Index

- Decision Rule:
- If PI is greater than or equal to 1, then Accept.
- If PI is less than 1, then Reject.

Exercise #1

- Berikut tiga usulan investasi rencana pembelian mesin fotokopi *laser printing* dengan umur ekonomis 5 tahun dan investasi awal \$ 100.000, dengan tingkat *return* 12 % per tahun.
- Analisis mesin fotokopi jenis mana yang layak untuk dipilih berdasarkan metode penilaian aset riil (*Payback*, dan *NPV*)?

Arus Kas (\$) Per Tahun			
Tahun	MESIN A	MESIN B	MESIN C
1	30000	50000	10000
2	30000	40000	20000
3	30000	30000	30000
4	30000	20000	40000
5	30000	10000	50000

PROYEKSI ALIRAN KAS

Penilaian kelayakan investasi didasarkan pada aliran kas dan bukan pada keuntungan. Untuk menghasilkan keuntungan tambahan maka pelaku usaha harus memiliki kas untuk ditanamkan kembali.

Aliran Kas terdiri 3 macam, yaitu:

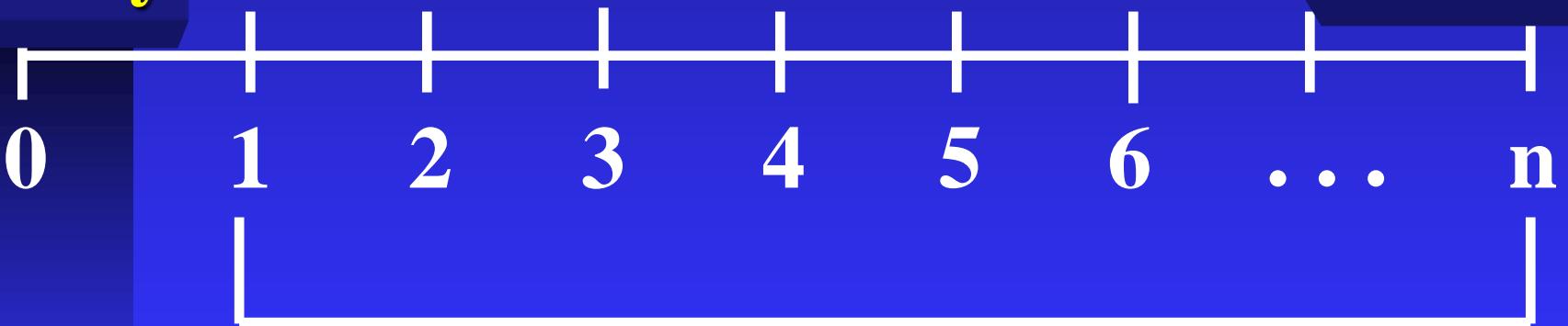
1. *Aliran Kas Keluar* (*outflow of cash/initial outlay*), yaitu aliran kas yang dibutuhkan untuk investasi baru.
2. *Aliran Kas Masuk* (*inflow of cash/proceeds*), yaitu aliran kas sebagai hasil dari investasi baru tersebut.
3. *Aliran Kas Terminal* (*terminal cashflow*), yaitu aliran kas yang timbul di akhir periode investasi.

Kalkulasi Arus Kas Pada *Capital Budgeting*

Evaluate Cash Flows

Initial
outlay

Terminal
Cash flow



Annual Cash Flows

- Example:

Our school must decide whether to purchase a new photo copy machine for Rp 127 million. How do we decide?

- Will the machine be **profitable**?
- Will our school earn a **high rate of return** on the investment?
- The relevant project information follows:

- The cost of the new machine is Rp 127 million.
- Installation will cost Rp 20 million.
- Rp 4 million in net working capital will be needed at the time of installation.
- The project will increase revenues by Rp 85 million per year, but operating costs will increase by 35% of the revenue increase.
- Simplified straight line depreciation is used.
- Class life is 5 years, and the school is planning to keep the project for 5 years.
- Salvage value at year 5 will be Rp 50 million.
- 14% cost of capital; 34% marginal tax rate.

Step 1: Evaluate Cash Flows

- a) Initial Outlay: What is the cash flow at “time 0?”

(127.000)	Purchase price of asset
+ (<u>20.000</u>)	shipping and installation
(147.000)	depreciable asset
+ (4.000)	net working capital
+ <u>0</u>	proceeds from sale of old asset
(151.000)	net initial outlay

Step 1: Evaluate Cash Flows

- b) Annual Cash Flows: What incremental cash flows occur over the life of the project?



For Each Year, Calculate:

Incremental revenue

- Incremental costs
- Depreciation on project

Incremental earnings before taxes

- Tax on incremental EBT

Incremental earnings after taxes

- + Depreciation reversal

Annual Cash Flow

For Years 1 - 5:

85.000	Revenue
(29.750)	Costs
<u>(19.400)</u>	Depreciation
35.850	EBT
<u>(12.189)</u>	Taxes
23.661	EAT
<u>19.400</u>	Depreciation reversal
43,061	= Annual Cash Flow

Step 1: Evaluate Cash Flows

- c) Terminal Cash Flow: What is the cash flow at the end of the project's life?

Salvage value

+/- Tax effects of capital gain/loss

+ Recapture of net working capital

Terminal Cash Flow

Step 1: Evaluate Cash Flows

- c) Terminal Cash Flow: What is the cash flow at the end of the project's life?

50.000 Salvage value

+/- Tax effects of capital gain/loss

+ Recapture of net working capital

Terminal Cash Flow

Tax Effects of Sale of Asset:

- Salvage value = **50.000**
- Book value = depreciable asset - total amount depreciated.
- Book value = **147.000 – 147.000**
= 0.
- Capital gain = SV - BV
= 50.000 - 0 = \$50.000
- Tax payment = **50.000 x 0,34 = (17.000)**

Step 1: Evaluate Cash Flows

- c) Terminal Cash Flow: What is the cash flow at the end of the project's life?

50.000

Salvage value

(17.000)

Tax on capital gain

4.000

Recapture of NWC

37.000

Terminal Cash Flow



Step 2: Calculate Project NPV

- $CF(0) = -151.000$
- $CF(1 - 4) = 43.061$
- $CF(5) = 43.061 + 37.000 = 80.061$
- Discount rate = 14%
- $NPV = 16.047,96$
- The School should accept the project.



- Perhitungan NPV dan PI untuk arus kas bersih yang didiskontokan dengan $k = 14\%$ per tahun:

Tahun	Arus Kas	Diskonto 14%	Arus Kas Diskonto	AK Kumulatif Diskonto
1	43061	0.87719	37772.679	37772.679
2	43061	0.76947	33134.148	70906.827
3	43061	0.67497	29064.883	99971.710
4	43061	0.59207	25494.968	125467.267
5	80061	0,51937	41581.282	167048.549

167047,96

Diskonto $k = 14\%$

$$\begin{aligned} \text{NPV} &= 167.047,96 - 151.000 &= 16.048,55 & (>0) \rightarrow \text{LAYAK} \\ \text{PI} &= 167.047,96 / 151.000 &= 1,10628 & (>1) \rightarrow \text{LAYAK} \end{aligned}$$

TERIMA KASIH

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