

MAFA : CA FINAL

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Every effort is taken to avoid errors and omissions.

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CAPITAL BUDGETING

Introduction

Chapter	Known as Capital Budgeting
Capital	Funds available for Investment
Budgeting	Maximum funds available for investment
Investment	Long term Investment
Summary	We have to decide whether, A particular fund to be invested / not

Objective of capital Budgeting

Information available	Capital available Investment opportunity Cash flows
Decision Making	Accept the Proposal Reject the Proposal

Evaluation not possible through Profit

Reasons	Present value of profit is not possible Profit has different meanings, EBIT EBT EAT EA 2 ESH <i>This is the reasons, why cash is considered for evaluation of proposal</i>
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Basic knowledge of P & L Statement

	<i>Sales</i>	XXXXXX
Less :	Variable cost	(XXX)
	<i>Contribution</i>	XXXXXX
Less :	Operating Fixed Cost	(XXX)
	<i>EBIT</i>	XXXXXX
Less :	Interest	(XXX)
	<i>EBT</i>	XXXXXX
Less :	Tax	(XXX)
	<i>EAT</i>	XXXXXX
Less :	Dividend to PSH	(XXX)
	<i>EAT to ESH</i>	XXXXXX

Main Theme of Capital Budgeting

Capital budgeting has 2 legs

Determination of Cash flows of Proposal

Evaluation of proposal

Determination of Cash flows

Methods of determination

Indirect Method

Direct Method

Evaluation of Proposal

Based on

Profit (Not Preferred)

Cash

Methods of evaluation

PBP Pay back period

DPBP Discounted pay back period

NPV Net present value

PI Profitability Index

IRR Internal rate of return

Determination of Cash flow : Indirect Method

Compute : PAT	Cash Income
	Add : Non Cash Income
	Less : Cash Expenses
	Less : Non Cash Expenses

Compute : CFAT	PAT
	Less : Non Cash Income
	Add : Non Cash Expenses

If not specifically
provided in the problem
Income provided
is deemed to be Cash
Income

Assumptions

Method of Depreciation not provided,
SLM to be applied

Depreciation = $\frac{\text{Cost} - \text{Salvage Value}}{\text{No. of Years}}$

Determination of Cash flow : Direct Method

Profit & loss items can be classified into following groups

CASH INCOME	NON-CASH INCOME	CASH EXPENSES	NON - CASH EXPENSES
A	B	C	D
NCIF	NCOF	NCOF	NCIF
$A (1 - t)$	$B.t$	$C (1 - t)$	$D.t$

Multiply Cash item, by	$(1 - t)$
Multiply Non-cash, by	t

Net Cash Inflow Cash income
 Non Cash Expense

Net Cash Outflow Non Cash Income
 Cash Expense

PBP **Pay Back Period**

Definition Number of years by which
The initial Investment is recovered

$$\boxed{\text{Initial investment} = \text{Future CFAT}}$$

Disadvantage Doesn't consider the Discount Factor

Decision Rule Lower the PBP, better the acceptability

PBP in fraction Is calculated by
Required Cash Flow / Available cash flow

DPBP **Discounted Pay Back Period**

Definition Number of years by which
The initial Investment is recovered

$$\boxed{\text{Initial investment} = \text{PV of Future CFAT}}$$

Advantage Considers the Discount factor

Decision Rule Lower the DPBP, better the acceptability

DPBP in fraction Is calculated by
Required Cash Flow / Available cash flow

NPV **Net present value**

In this method we perform the following steps

Step 1 Determine the Initial investment

Step 2 Determine the Future CFAT

Step 3 Determine the PV of Future CFAT

Step 4 Determine NPV (3 - 1)

$$\boxed{\text{Net present Value} = \text{PV of Future cash flow} - \text{Initial investment}}$$

Decision Rule

NPV > 0	Accept
NPV < 0	Reject
NPV = 0	Indifference

Other formulas

$$\boxed{\text{PV of Future CFAT} = \text{Initial Investment} + \text{NPV}}$$

$$\boxed{\text{Initial Investment} = \text{PV of Future CFAT} - \text{NPV}}$$

PI **Profitability Index**

Definition Amount of PV of Cash inflow of investment, for each rupee 1

$PI = \frac{\text{PV of future CFAT}}{\text{Initial investment}}$

Decision Rule

PI > 1	Accept
PI < 1	Reject
PI = 0	Indifference

Other formulas

$\text{PV of Future CFAT} = PI * \text{Initial Investment}$

$\text{NPV} = \text{Initial Investment} (PI - 1)$

IRR **Internal Rate of Return**

Definition It may be defined as as Discounting Rate @ which,

$\text{Initial Investment} = \text{PV of Future CFAT}$
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Steps to Find out the IRR

- A Find the 'r' @ which PV of FCF is > Initial Investment
- B Find the 'r' @ which PV of FCF is < Initial Investment

- C Find the difference b/w the 2 'r'
- D Find the difference b/w the 2 'PV'

For every change in rupee 1, the change in r = C / D

Find the difference b/w PV & Initial investment for 1st 'r'
Find the difference b/w PV & Initial investment for 2nd 'r'

- E Find the difference among the above 2, which ever is less

So, for the change in amount of above, the change in r = C * E / D
The resultant 'r', should be deducted / added,

ANALYSIS about the problems

Method of evaluation

If not provided

It is better to apply the NPV method

Depreciation

Method of Dep

If the problem is silent, then Apply Straight line method Dep

SLM Dep	=	$\frac{\text{Cost - Salvage value}}{\text{Life of the asset}}$
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Effect on Dep, if subsidy is provided (SLM METHOD)

Subsidy - (Non- Tax free)

SLM Dep	=	$\frac{\text{Cost - Salvage value - Subsidy (Non-tax free)}}{\text{Life of the asset}}$
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Tax free subsidy

SLM Dep	=	$\frac{\text{Cost - Salvage value}}{\text{Life of the asset}}$
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WDV Method : Depreciation

Other assets are there in the block

Calculate dep for all year

Including the year of sale

The salvage value, will not be considered separately,

But included in the last year while calculating dep

Only asset in the block

Calculate dep for all year

Except the last year. Dep should not be calculated

The salvage value to be included in last year,

Which may result in Capital gain / loss

Capital loss

it can be setoff only against the capital gain

So, if there is not capital gain in such year

We cannot consider the tax savings as inflow

So, it should be carried forward to next year

Working Capital

If W.cap mentioned	If problem is silent, as to year of introduction Then it is assumed to be in the year Zero If the problem is silent, as to its recovery Then it is assumed to be in the last year
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PBT : Is loss

If enough income is available to set off the loss
Then, while calculating tax, calculate it as a positive figure
Which will lead to tax savings

If enough income is not available to set off the loss
Then, transfer the same to next year
While calculating tax in the year of loss, it should be left blank

In the next year the loss should not be deducted from the PBT
Instead, the same to be deducted to compute tax only, and the resultant tax to be deducted from the PBT

Salvage Value

It all depends on the method of depreciation

SLM depreciation	There will be no effect of tax on the salvage value Just add, the full amount, as cash inflow
WDV method	To be considered 2 times Once, while computing depreciation / CG / CL Twice, by considering the full amount as cash inflow

CFAT @ the year 0

Add :	Purchase cost of the equipment
Less :	Working capital requirement
	Receipt of subsidy

MUTUALLY EXCLUSIVE PROJECTS

If the life of the projects are equal

Then find the NPV for each projects,
and select the project, which has higher NPV

If the life of the projects are not equal

They, are called as Problem of unequal Lives

Steps to solve the problem

- | | |
|----------|---|
| Step : 1 | Determine the CFAT, for each proposal from year 0 to n |
| Step : 2 | Determine the PV of above CFAT, for each proposal |
| Step : 3 | Determine the sum of PV, as calculated above for each proposal |
| Step : 4 | Determine the sum of Discounting factor, from year 1 to n |
| Step : 5 | Compute Equivalent Annual Cost(EAC)/Equivalent Annual Income(EAI) |

$$\text{EAC / EAI} = \frac{\text{Step 3}}{\text{Step 4}}$$

Therefore, $\text{EAC / EAI} = \text{CFAT}$ and not the PV of CFAT

Decision Rule

EAC	Lower the EAC, better is the acceptability
EAI	Higher the EAI, better is the acceptability

FACT : If there is no tax, there is no need of considering the depreciation

REPLACEMENT MODEL

It is very, natural way of solving the problem,

Analyse the problem by calculating the CFAT, and analyse for every
year, and specify in which year the same to be replaced

OIP

OPTIMUM INVESTMENT PACKAGE

Types of OIP Projects which are Divisible
 Projects which are Indivisible

Projects are Divisible (projects, for which partial funds can be allocated)
 Steps for solving

Step : 1 Determine PI for each project
Step : 2 Eliminate the projects, which have $PI < 1$
Step : 3 Rank the projects accordance with the PI
Step : 4 Allocate the funds in accordance with the Rank

Step : 5 OIP = Projects, to whom the funds are allocated

Step : 6 Compute the NPV for OIP

Projects are Indivisible (projects, which can be accepted only in full)
 Steps for solving

Step : 1 Determine NPV for each project
Step : 2 Eliminate the project having negative NPV
Step : 3 Determine all possible combinations of project, wrt limitations
Step : 4 Eliminate the combination which exceeds the available funds

Step : 5 Determine NPV for the balance possible combinations

Step : 6 OIP = Combination having the highest NPV

Analysis of problems

When there is 2 alternatives, such as to manufacture / purchase the product
 Apply the incremental approach