

BEFORE THE PROJECT IS CHARTERED
PROJECT SELECTION METHODS

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Comparative Approach (Benefit Measurement Methods)

- Economic Models



Internal Rate of Return
Payback Period
Cost-Benefit Analysis
Present Value
Net Present Value

- Scoring Models

- Peer Review

- Murder Board

Mathematical Approach (Constrained Optimization Methods)

- Dynamic Programming

- Multi-objective Programming

- Integer Programming

- Linear Programming

BEFORE THE PROJECT IS CHARTERED
INTERNAL RATE OF RETURN

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Internal Rate of Return

→ IRR

→ Internal Rate of Return calculation is very complicated.

→ Think bank interest rate

→ Higher IRR → Better project

→ Choose the project with higher IRR

Example: Your company will start a new project. There are 3 alternative projects. Which project should the company choose?

IRR for Project A is 10 %

IRR for Project B is 12 %

IRR for Project C is 16 %

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Internal Rate of Return

→ IRR

→ Internal Rate of Return calculation is very complicated.

→ Think bank interest rate

→ Higher IRR → Better project

→ Choose the project with higher IRR

Example: Your company will start a new project. There are 3 alternative projects. Which project should the company choose?

IRR for Project A is 10 %

IRR for Project B is 12 %

IRR for Project C is 16 % → Highest IRR

BEFORE THE PROJECT IS CHARTERED
PAYBACK PERIOD

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Payback Period

➔ Time required for the invested money to be repaid.

Example: Your company invests \$ 3,000,000 for project A. If expected yearly revenue is \$ 1,500,000 then the Payback Period for project A will be

2 years.

$(3 / 1.5 = 2 \text{ years})$

- **The Project having the shortest Payback Period is the best project.**

Note: The Payback Period may not be the sole criteria to select a Project. Read the questions carefully!

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Payback Period

Example: Your company will start a new project. There are 3 alternative projects. Which project should you choose?

Payback Period for Project A is 20 months

Payback Period for Project B is 25 months

Payback Period for Project C is 32 months

Prepared by Sabri ALI - CPEPM

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Payback Period

Example: Your company will start a new project. There are 3 alternative projects. Which project should you choose?

Payback Period for Project A is 20 months

Payback Period for Project B is 25 months

Payback Period for Project C is 32 months

Answer: Select project A since it has the shortest payback period.

Prepared by abir ALI - CpePM

BEFORE THE PROJECT IS CHARTERED
COST-BENEFIT ANALYSIS

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Cost-benefit Analysis

→ Cost vs Benefits

→ Benefit cost ratio = Total Benefits / Total Costs

Example: If the total benefit for a project is \$23,000,000, and the total cost is \$18,000,000 then the benefit-cost ratio is ...

Prepared by Sabri CALISICI

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Cost-benefit Analysis

→ Cost vs Benefits

→ Benefit cost ratio = Total Benefits / Total Costs

Example: If the total benefit for a project is \$23,000,000, and the total cost is \$18,000,000 then the benefit-cost ratio is **1.28**.

$$(23,000,000 / 18,000,000 = 1.28)$$

Prepared by Sabri ALISICI

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Project Selection Methods

Cost-benefit Analysis

➔ Cost vs Benefits

➔ Benefit cost ratio = Total Benefits / Total Costs

Example: The benefit-cost ratio of a project is 1.28.
What comment can we make on this project?

Prepared by Sabri CALISICI - 2023/2024

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Cost-benefit Analysis

➔ Cost vs Benefits

➔ Benefit cost ratio = Total Benefits / Total Costs

Example: The benefit-cost ratio of a project is 1.28.
What comment can we make on this project?

- The benefits are greater than the costs

Prepared by Sabri CAESICI - 19/05/2020

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Cost-benefit Analysis

➔ Cost vs Benefits

➔ $\text{Benefit cost ratio} = \text{Total Benefits} / \text{Total Costs}$

Example: The benefit-cost ratio of a project is 1.28.
What comment can we make on this project?

- The benefits are greater than the costs
- The profit is 1.28 times the costs

Prepared by Sabi CAESICI 19/03/2020

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Cost-benefit Analysis

➔ Cost vs Benefits

➔ Benefit cost ratio = Total Benefits / Total Costs

Example: The benefit-cost ratio of a project is 1.28.
What comment can we make on this project?

- The benefits are greater than the costs
- ~~The profit is 1.28 times the costs~~

Prepared by Sabi CAESICI 19/03/2020

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Cost-benefit Analysis

➔ Cost vs Benefits

➔ Benefit cost ratio = Total Benefits / Total Costs

Example: The benefit-cost ratio of a project is 1.28.
What comment can we make on this project?

- The benefits are greater than the costs
- The revenue is 1.28 times the costs

Prepared by Sabi CAESICI 19/03/2020

**BEFORE THE PROJECT IS CHARTERED
PRESENT VALUE**

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Present Value

➔ What is Present Value?

Example: You have \$10 in your pocket. Today, you can buy ten pencils for \$10. After five years, is it possible to buy the same ten pencils at \$10?

Prepared by Sabri CALISICI - casePM

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Present Value

➔ What is Present Value?

Example: You have \$10 in your pocket. Today, you can buy ten pencils for \$10. After five years, is it possible to buy the same ten pencils at \$10?

NO! Money loses its value.

Prepared by Sabri CALISICI - casePM

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Present Value

➔ What is Present Value?

Present Value (PV) = The value of money today

Future Value (FV) = The future value of the money

Formula to remember!

$$PV = \frac{FV}{(1 + r)^n}$$

r = interest rate

n = number of time periods

Prepared by Sabri CALISICI - casePM

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Project Selection Methods

Present Value

Example: If the interest rate is 8%, what is the Present Value of \$10,000 received 3 years from now?

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BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Present Value

Example: If the interest rate is 8%, what is the Present Value of \$10,000 received 3 years from now?

$$PV = 10,000.00 / (1 + 0.08)^3$$

$$PV = \$7,938.32$$

Prepared by Sabri CALISICI - casePM

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Project Selection Methods

Present Value

Example: If the interest rate is 8%, what is the Present Value of \$10,000 received 3 years from now?

$$PV = 10,000.00 / (1 + 0.08)^3$$

$$PV = \$7,938.32$$

$$PV < FV$$

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BEFORE THE PROJECT IS CHARTERED
NET PRESENT VALUE

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Net Present Value

→ (Total Present Value of the revenue) - (Total Present Value of the costs)

Example: If the Total Present Value of the revenue for Project A is \$20,000,000 and the Total Present Value of the costs for the same project is \$15,000,000, what is the net present value?

Prepared by Sabri CALISICI - cas@calisici.com

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

Net Present Value

→ (Total Present Value of the revenue) - (Total Present Value of the costs)

Example: If the Total Present Value of the revenue for Project A is \$20,000,000 and the Total Present Value of the costs for the same project is \$15,000,000, what is the net present value?

Net Present Value:

$$= \$20,000,000 - \$15,000,000$$

$$= \$5,000,000$$

Prepared by Sabir CALISICI - cas@calisici.com

BEFORE THE PROJECT IS CHARTERED
HOW TO SELECT THE PROJECT

BEFORE THE PROJECT IS CHARTERED

Project Selection Methods

How To Select The Project

- ➔ The Project having the **highest IRR** is the best Project.
- ➔ The Project having the **shortest Payback Period** is the best Project.
- ➔ The Project having the **highest Benefit-cost Ratio** is the best Project.
- ➔ The Project having the **highest Present Value** is the best Project
- ➔ The Project having the **highest Net Present Value** is the best Project

Prepared by Sabri CUSICI - C&EPM

BEFORE THE PROJECT IS CHARTERED
ACCOUNTING TERMS TO KNOW

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Opportunity Cost

➔ Cost of not selecting the other Project

Prepared by Sabri CALISICI - casePM

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Opportunity Cost

➔ Cost of not selecting the other Project

Example: Consider there are two projects, Project A and Project B. Project A has NPV of \$80,000 and Project B has NPV of \$50,000. If you choose Project A, what will the opportunity cost be?

Prepared by Sabri CALISICI - Capital Budgeting

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Opportunity Cost

➔ Cost of not selecting the other Project

Example: Consider there are two projects, Project A and Project B. Project A has NPV of \$80,000 and Project B has NPV of \$50,000. If you choose Project A, what will the opportunity cost be?

Answer: \$50,000

Prepared by Sabri CALISICI - Capital

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Sunk Cost

➔ Money that cannot be recovered

Prepared by Sabri CALISICI - casePM

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Sunk Cost

➔ Money that cannot be recovered

Example: You will decide whether or not to continue the Project A. Up to now the Actual Cost, that is the money we have spent, is \$100,000. Therefore, the Sunk Cost is \$100,000.

Prepared by Sabri CALISICI - ccalisici@gmail.com

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Sunk Cost

➔ Money that cannot be recovered

- Sunk Cost is gone and cannot be recovered.
- Sunk Cost is the actual cost spent up to now.
- When you make calculations, do not consider the sunk cost to decide whether or not to continue the project. (You should never look back 😊)

Prepared by Sabri AL-Saleh - caspm

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Economic Value Added (EVA)

➔ The profit provided by the Project to the company

Prepared by Sabri CALISICI - casePM

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Law of Diminishing Returns.

Example:

1 painter → 4 days

2 painters → 2 days

4 painters → 1 day???

Prepared by Sabri CALISICI - casePM

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Law of Diminishing Returns.

Example:

1 painter → 4 days

2 painters → 2 days

4 painters → ~~1 day~~ More than 1 day

Prepared by Sabri CHSICI - casePM

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Working Capital

➔ The amount of money that the company can spend for investments

Prepared by Sabri CALISICI - casePM

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Depreciation

Example: This year you bought a new computer. If you try to sell it after two years, it may go for half the price you pay today.

Prepared by Sabri CALISICI - case17M

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Depreciation

- Straight Line Depreciation

Example: Assume, you paid \$600 for your computer one year ago. You try to sell it now, and the sale price is \$450. But you decide not to sell it now and to wait for the 2nd year. At the end of the 2nd year, the price you can sell is decreased to \$300. Therefore the computer lost the same value (\$150) each year.

Prepared by Sabri CALIC

BEFORE THE PROJECT IS CHARTERED

Accounting Terms to Know

Depreciation

- Straight Line Depreciation

Example: Assume, you paid \$600 for your computer one year ago. You try to sell it now, and the sale price is \$450. But you decide not to sell it now and to wait for the 2nd year. At the end of the 2nd year, the price you can sell is decreased to \$300. Therefore the computer lost the same value (\$150) each year.

- Accelerated Depreciation

Example: Assume, you paid \$600 for your computer one year ago. You try to sell it now, and the sale price is \$450. But you decide not to sell it now and to wait for the 2nd year. At the end of the 2nd year, the price you can sell is decreased to \$100. Therefore, the computer lost its value more than the previous year.