

# A COMPANY IS EVALUATING TWO SEPARATE PROJECTS, BOTH WITH THE SAME \$15,000 INITIAL INVESTMENT. YEAR NET

A COMPANY IS EVALUATING TWO SEPARATE PROJECTS, BOTH WITH THE SAME \$15,000 INITIAL INVESTMENT. YEAR NET IS A COMMON SCENARIO FACED BY BUSINESS MANAGERS AND FINANCIAL ANALYSTS WHEN DETERMINING THE MOST PROFITABLE AND SUSTAINABLE INVESTMENT OPPORTUNITIES. MAKING THE RIGHT CHOICE REQUIRES A THOROUGH ANALYSIS OF EACH PROJECT'S POTENTIAL RETURNS, RISKS, AND STRATEGIC FIT. THIS ARTICLE EXPLORES THE KEY FACTORS INVOLVED IN EVALUATING TWO DISTINCT PROJECTS WITH IDENTICAL INITIAL INVESTMENTS, FOCUSING ON FINANCIAL METRICS SUCH AS NET PRESENT VALUE (NPV), INTERNAL RATE OF RETURN (IRR), PAYBACK PERIOD, AND OTHER CRITICAL CONSIDERATIONS. BY UNDERSTANDING THESE CONCEPTS, COMPANIES CAN MAKE INFORMED DECISIONS THAT MAXIMIZE VALUE AND SUPPORT LONG-TERM GROWTH.

## UNDERSTANDING THE BASICS OF PROJECT EVALUATION

BEFORE DIVING INTO SPECIFIC EVALUATION METHODS, IT'S ESSENTIAL TO GRASP THE FUNDAMENTAL PRINCIPLES THAT UNDERPIN PROJECT ANALYSIS. WHEN A COMPANY CONSIDERS MULTIPLE PROJECTS REQUIRING THE SAME INITIAL INVESTMENT, THE GOAL IS TO IDENTIFY WHICH PROJECT OFFERS THE HIGHEST POTENTIAL RETURN WHILE MINIMIZING RISK.

### KEY OBJECTIVES IN PROJECT EVALUATION

- MAXIMIZE SHAREHOLDER VALUE
- ENSURE STRATEGIC ALIGNMENT WITH CORPORATE GOALS
- ASSESS RISK AND UNCERTAINTY
- DETERMINE THE TIME FRAME FOR RECOUPING THE INVESTMENT

### COMMON FINANCIAL METRICS USED IN EVALUATION

1. **NET PRESENT VALUE (NPV):** MEASURES THE DIFFERENCE BETWEEN THE PRESENT VALUE OF CASH INFLOWS AND OUTFLOWS OVER THE PROJECT'S LIFESPAN.
2. **INTERNAL RATE OF RETURN (IRR):** THE DISCOUNT RATE AT WHICH THE NPV OF CASH FLOWS EQUALS ZERO, REPRESENTING THE PROJECT'S EXPECTED RATE OF RETURN.
3. **PAYBACK PERIOD:** THE TIME IT TAKES FOR THE PROJECT TO RECOVER ITS INITIAL INVESTMENT FROM CASH INFLOWS.
4. **PROFITABILITY INDEX (PI):** THE RATIO OF THE PRESENT VALUE OF FUTURE CASH INFLOWS TO THE INITIAL INVESTMENT.

## SCENARIO OVERVIEW: TWO PROJECTS WITH SAME INVESTMENT

LET'S CONSIDER A HYPOTHETICAL SCENARIO WHERE A COMPANY IS EVALUATING TWO PROJECTS, PROJECT A AND PROJECT B. BOTH REQUIRE AN INITIAL INVESTMENT OF \$15,000. PROJECT A HAS A SHORTER DURATION WITH HIGHER ANNUAL CASH INFLOWS, WHILE PROJECT B HAS A LONGER DURATION BUT POTENTIALLY HIGHER TOTAL RETURNS.

PROJECT DETAILS:

| FEATURE                 | PROJECT A                                             | PROJECT B                                                                                   |
|-------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------|
| INITIAL INVESTMENT      | \$15,000                                              | \$15,000                                                                                    |
| DURATION                | 3 YEARS                                               | 5 YEARS                                                                                     |
| ESTIMATED CASH FLOWS    | YEAR 1: \$6,000<br>YEAR 2: \$6,000<br>YEAR 3: \$6,000 | YEAR 1: \$4,000<br>YEAR 2: \$4,000<br>YEAR 3: \$4,000<br>YEAR 4: \$4,000<br>YEAR 5: \$4,000 |
| DISCOUNT RATE (ASSUMED) | 10%                                                   | 10%                                                                                         |

THIS SCENARIO ALLOWS US TO COMPARE THE PROJECTS ACROSS VARIOUS METRICS AND DETERMINE WHICH ALIGNS BETTER WITH THE COMPANY’S FINANCIAL STRATEGIES.

## ANALYZING PROJECT A AND PROJECT B

### NET PRESENT VALUE (NPV) CALCULATION

NPV IS A FUNDAMENTAL METRIC THAT HELPS QUANTIFY THE PROFITABILITY OF A PROJECT BY DISCOUNTING FUTURE CASH FLOWS TO THEIR PRESENT VALUE.

NPV FORMULA:

$$NPV = \sum_{T=1}^N \frac{CASH\_FLOW\_T}{(1 + R)^T} - INITIAL\_INVESTMENT$$

WHERE:

- $CASH\_FLOW\_T$  = CASH INFLOW IN YEAR T
- $R$  = DISCOUNT RATE
- $N$  = PROJECT DURATION

CALCULATING NPV FOR PROJECT A:

- YEAR 1:  $\$6,000 / (1 + 0.10)^1 = \$5,454.55$
- YEAR 2:  $\$6,000 / (1 + 0.10)^2 = \$4,958.68$
- YEAR 3:  $\$6,000 / (1 + 0.10)^3 = \$4,507.89$

$$TOTAL\ PRESENT\ VALUE\ OF\ INFLOWS: \$5,454.55 + \$4,958.68 + \$4,507.89 = \$14,921.12$$

$$NPV = \$14,921.12 - \$15,000 = -\$78.88$$

CALCULATING NPV FOR PROJECT B:

- YEAR 1:  $\$4,000 / 1.10 = \$3,636.36$
- YEAR 2:  $\$4,000 / 1.21 = \$3,305.79$
- YEAR 3:  $\$4,000 / 1.331 = \$3,006.17$
- YEAR 4:  $\$4,000 / 1.4641 = \$2,731.97$
- YEAR 5:  $\$4,000 / 1.61051 = \$2,482.70$

$$TOTAL\ PV\ OF\ INFLOWS: \$3,636.36 + \$3,305.79 + \$3,006.17 + \$2,731.97 + \$2,482.70 = \$15,162.99$$

$$NPV = \$15,162.99 - \$15,000 = \$162.99$$

## INSIGHTS:

- PROJECT A'S NPV IS SLIGHTLY NEGATIVE, INDICATING IT BARELY MISSES PROFITABILITY AT A 10% DISCOUNT RATE.
- PROJECT B'S NPV IS POSITIVE, SUGGESTING IT COULD ADD VALUE TO THE COMPANY.

## INTERNAL RATE OF RETURN (IRR) ANALYSIS

IRR IS THE DISCOUNT RATE AT WHICH THE NPV EQUALS ZERO. IT HELPS ASSESS THE PROJECT'S PROFITABILITY INDEPENDENTLY OF THE COMPANY'S REQUIRED RATE OF RETURN.

IRR FOR PROJECT A:

USING TRIAL-AND-ERROR OR FINANCIAL CALCULATOR, THE IRR FOR PROJECT A IS APPROXIMATELY 10.2%. SINCE THIS IS VERY CLOSE TO THE DISCOUNT RATE USED, IT CONFIRMS THE PROJECT IS marginally PROFITABLE.

IRR FOR PROJECT B:

CALCULATING IRR FOR PROJECT B YIELDS APPROXIMATELY 12.3%, INDICATING A MORE ATTRACTIVE RETURN THAN PROJECT A.

KEY POINT: A HIGHER IRR SUGGESTS A MORE PROFITABLE PROJECT, BUT IT SHOULD BE COMPARED WITH THE COMPANY'S REQUIRED RATE OF RETURN TO DETERMINE ACCEPTABILITY.

## PAYBACK PERIODS AND CASH FLOW TIMING

PROJECT A:

- YEAR 1: RECOVERS \ \$6,000
- YEAR 2: REMAINING \ \$9,000; PARTIAL RECOVERY OCCURS IN YEAR 2
- YEAR 2 CASH INFLOW: \ \$6,000; CUMULATIVE: \ \$12,000
- YEAR 3: ADDITIONAL \ \$3,000 NEEDED; WITH \ \$6,000 INFLOW, FULL RECOVERY OCCURS DURING YEAR 3

ESTIMATED PAYBACK: APPROXIMATELY 2.5 YEARS

PROJECT B:

- YEAR 1: \ \$4,000
- YEAR 2: \ \$8,000 CUMULATIVE
- YEAR 3: \ \$12,000 CUMULATIVE
- YEAR 4: \ \$16,000 CUMULATIVE; INITIAL INVESTMENT RECOVERED DURING YEAR 4

ESTIMATED PAYBACK: APPROXIMATELY 3.75 YEARS

IMPLICATION: PROJECT A RECOVERS INITIAL INVESTMENT FASTER, OFFERING LESS RISK OF LONG-TERM UNCERTAINTY.

## STRATEGIC CONSIDERATIONS BEYOND FINANCIAL METRICS

WHILE FINANCIAL METRICS ARE CRUCIAL, DECISION-MAKERS SHOULD ALSO EVALUATE QUALITATIVE FACTORS:

## STRATEGIC FIT AND BUSINESS GOALS

- DOES THE PROJECT ALIGN WITH THE COMPANY'S LONG-TERM STRATEGY?
- WILL IT OPEN NEW MARKETS OR REINFORCE EXISTING ONES?
- DOES IT SUPPORT INNOVATION OR CORE COMPETENCIES?

## RISK ASSESSMENT

- WHAT ARE THE OPERATIONAL, MARKET, OR TECHNOLOGICAL RISKS ASSOCIATED WITH EACH PROJECT?
- HOW VOLATILE ARE THE EXPECTED CASH FLOWS?
- WHAT IS THE IMPACT OF EXTERNAL FACTORS SUCH AS ECONOMIC CHANGES OR REGULATORY SHIFTS?

## RESOURCE AVAILABILITY AND CAPACITY

- DOES THE COMPANY HAVE THE NECESSARY RESOURCES (PERSONNEL, TECHNOLOGY, EQUIPMENT)?
- ARE THERE POTENTIAL CONSTRAINTS THAT COULD DELAY OR HINDER PROJECT EXECUTION?

## ENVIRONMENTAL AND SOCIAL IMPACT

- ARE THERE SUSTAINABILITY CONSIDERATIONS?
- COULD THE PROJECTS AFFECT THE COMPANY'S REPUTATION POSITIVELY OR NEGATIVELY?

## DECISION-MAKING FRAMEWORK

TO FACILITATE AN INFORMED CHOICE, COMPANIES OFTEN EMPLOY A STRUCTURED DECISION-MAKING PROCESS:

1. CALCULATE KEY FINANCIAL METRICS (NPV, IRR, PAYBACK PERIOD) FOR EACH PROJECT.
2. ASSESS QUALITATIVE FACTORS AND STRATEGIC ALIGNMENT.
3. EVALUATE RISK LEVELS AND RESOURCE REQUIREMENTS.
4. COMPARE PROJECTS BASED ON OVERALL VALUE CONTRIBUTION, RISK APPETITE, AND STRATEGIC FIT.
5. PRIORITIZE PROJECTS THAT OFFER THE BEST BALANCE OF RETURNS, STRATEGIC BENEFITS, AND MANAGEABLE RISKS.

ADDITIONAL TOOLS AND TECHNIQUES:

- SENSITIVITY ANALYSIS: TESTS HOW SENSITIVE OUTCOMES ARE TO CHANGES IN KEY ASSUMPTIONS.
- SCENARIO ANALYSIS: CONSIDERS BEST, WORST, AND MOST LIKELY SCENARIOS.
- REAL OPTIONS ANALYSIS: EVALUATES THE VALUE OF FLEXIBILITY AND FUTURE DECISION RIGHTS.

## CONCLUSION: MAKING THE RIGHT CHOICE

WHEN A COMPANY FACES TWO PROJECTS REQUIRING THE SAME INITIAL INVESTMENT, SUCH AS \$15,000, A COMPREHENSIVE EVALUATION IS ESSENTIAL. FINANCIAL METRICS LIKE NPV AND IRR PROVIDE QUANTITATIVE INSIGHTS INTO PROFITABILITY, WHILE PAYBACK PERIOD ANALYSIS OFFERS PERSPECTIVE ON RISK AND LIQUIDITY. HOWEVER, STRATEGIC ALIGNMENT, RISK ASSESSMENT, AND RESOURCE CONSIDERATIONS ARE

## FREQUENTLY ASKED QUESTIONS

### WHAT FACTORS SHOULD A COMPANY CONSIDER WHEN EVALUATING TWO PROJECTS WITH THE SAME INITIAL INVESTMENT?

THE COMPANY SHOULD ASSESS FACTORS SUCH AS EXPECTED CASH FLOWS, RETURN ON INVESTMENT (ROI), PAYBACK PERIOD, NET PRESENT VALUE (NPV), INTERNAL RATE OF RETURN (IRR), RISK LEVELS, STRATEGIC ALIGNMENT, AND PROJECT LIFESPAN TO DETERMINE WHICH PROJECT IS MORE VIABLE.

### HOW DOES NET INCOME DIFFER FROM CASH FLOW WHEN EVALUATING THESE PROJECTS?

NET INCOME REFLECTS ACCOUNTING PROFIT, INCLUDING NON-CASH EXPENSES, WHEREAS CASH FLOW MEASURES ACTUAL CASH RECEIVED AND SPENT. FOR PROJECT EVALUATION, CASH FLOW IS MORE RELEVANT AS IT INDICATES THE PROJECT'S ABILITY TO GENERATE LIQUIDITY.

### WHAT IS THE IMPORTANCE OF CONSIDERING THE TIME VALUE OF MONEY IN PROJECT EVALUATION?

CONSIDERING THE TIME VALUE OF MONEY ENSURES THAT FUTURE CASH FLOWS ARE DISCOUNTED TO THEIR PRESENT VALUE, ALLOWING FOR A MORE ACCURATE COMPARISON OF PROJECT PROFITABILITY AND HELPING TO IDENTIFY THE PROJECT THAT MAXIMIZES VALUE OVER TIME.

### WHICH FINANCIAL METRIC IS MOST APPROPRIATE FOR COMPARING THESE TWO PROJECTS?

THE NET PRESENT VALUE (NPV) IS OFTEN THE MOST APPROPRIATE METRIC, AS IT ACCOUNTS FOR THE TIME VALUE OF MONEY AND PROVIDES A CLEAR INDICATION OF THE EXPECTED INCREASE IN VALUE FROM EACH PROJECT.

### IF BOTH PROJECTS HAVE THE SAME INITIAL INVESTMENT, HOW CAN THE PAYBACK PERIOD INFLUENCE THE DECISION?

THE PROJECT WITH THE SHORTER PAYBACK PERIOD RECOVERS ITS INITIAL INVESTMENT FASTER, REDUCING RISK AND PROVIDING QUICKER RETURNS, WHICH CAN BE A DECISIVE FACTOR IF LIQUIDITY AND RISK MITIGATION ARE PRIORITIES.

### HOW DOES RISK ASSESSMENT IMPACT THE CHOICE BETWEEN THESE TWO PROJECTS?

ASSESSING THE RISK INVOLVES ANALYZING FACTORS SUCH AS MARKET VOLATILITY, PROJECT UNCERTAINTIES, AND OPERATIONAL RISKS. A PROJECT WITH LOWER RISK MAY BE PREFERRED EVEN IF ITS EXPECTED RETURNS ARE SLIGHTLY LOWER, TO ENSURE STABILITY.

### WHAT ROLE DOES STRATEGIC ALIGNMENT PLAY IN CHOOSING BETWEEN THE TWO PROJECTS?

STRATEGIC ALIGNMENT ENSURES THAT THE PROJECT SUPPORTS THE COMPANY'S LONG-TERM GOALS AND CORE COMPETENCIES. A PROJECT THAT BETTER ALIGNS WITH THE COMPANY'S STRATEGIC OBJECTIVES MAY BE PRIORITIZED OVER PURELY FINANCIAL CONSIDERATIONS.

### CAN QUALITATIVE FACTORS INFLUENCE THE DECISION BETWEEN THESE TWO PROJECTS BESIDES QUANTITATIVE METRICS?

YES, QUALITATIVE FACTORS SUCH AS BRAND REPUTATION, EMPLOYEE IMPACT, REGULATORY CONSIDERATIONS, AND

ENVIRONMENTAL SUSTAINABILITY CAN INFLUENCE THE DECISION, ESPECIALLY IF THEY SIGNIFICANTLY AFFECT THE COMPANY’S OVERALL STRATEGY AND STAKEHOLDER INTERESTS.

WHAT IS THE SIGNIFICANCE OF CONSIDERING OPPORTUNITY COST WHEN CHOOSING BETWEEN THESE PROJECTS?

OPPORTUNITY COST REPRESENTS THE BENEFITS FOREGONE BY NOT SELECTING THE NEXT BEST ALTERNATIVE. EVALUATING OPPORTUNITY COSTS HELPS ENSURE THAT THE COMPANY INVESTS IN THE PROJECT THAT OFFERS THE GREATEST OVERALL VALUE AND ALIGNS WITH STRATEGIC PRIORITIES.

ADDITIONAL RESOURCES

PROJECT EVALUATION: AN IN-DEPTH ANALYSIS OF TWO INVESTMENT OPPORTUNITIES WITH A \$15,000 INITIAL INVESTMENT

WHEN A COMPANY FACES THE DECISION OF CHOOSING BETWEEN TWO POTENTIAL PROJECTS, THE EVALUATION PROCESS DEMANDS A COMPREHENSIVE ANALYSIS OF VARIOUS FINANCIAL AND STRATEGIC FACTORS. BOTH PROJECTS, REQUIRING AN INITIAL INVESTMENT OF \$15,000, PRESENT UNIQUE OPPORTUNITIES AND CHALLENGES. THIS REVIEW DELVES INTO EACH ASPECT OF THE EVALUATION, PROVIDING A DETAILED COMPARISON TO AID DECISION-MAKERS IN MAKING AN INFORMED CHOICE.

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UNDERSTANDING THE BASICS OF PROJECT EVALUATION

BEFORE DISSECTING EACH PROJECT, IT’S CRUCIAL TO UNDERSTAND THE FOUNDATIONAL CONCEPTS INVOLVED IN PROJECT EVALUATION. THE PRIMARY GOAL IS TO ASSESS WHICH PROJECT OFFERS THE BEST RETURN RELATIVE TO THE INVESTMENT AND ALIGNS WITH THE COMPANY’S STRATEGIC OBJECTIVES.

KEY EVALUATION METRICS INCLUDE:

- NET PRESENT VALUE (NPV): THE DIFFERENCE BETWEEN THE PRESENT VALUE OF CASH INFLOWS AND OUTFLOWS.
- INTERNAL RATE OF RETURN (IRR): THE DISCOUNT RATE THAT MAKES THE NPV ZERO.
- PAYBACK PERIOD: THE TIME IT TAKES FOR THE PROJECT TO RECOVER ITS INITIAL INVESTMENT.
- PROFITABILITY INDEX (PI): THE RATIO OF THE PRESENT VALUE OF FUTURE CASH FLOWS TO THE INITIAL INVESTMENT.
- QUALITATIVE FACTORS: STRATEGIC ALIGNMENT, RISK PROFILE, MARKET CONDITIONS, AND OPERATIONAL CONSIDERATIONS.

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PROJECT 1: AN OVERVIEW AND FINANCIAL ANALYSIS

SUPPOSE PROJECT 1 INVOLVES LAUNCHING A NEW PRODUCT LINE AIMED AT EXPANDING THE COMPANY’S MARKET SHARE. THE INITIAL INVESTMENT IS \$15,000, WITH PROJECTED NET CASH INFLOWS OVER THE NEXT FIVE YEARS AS FOLLOWS:

| Year | Expected Net Cash Inflows |
|------|---------------------------|
| 1    | \$4,000                   |
| 2    | \$4,500                   |
| 3    | \$5,000                   |
| 4    | \$5,500                   |
| 5    | \$6,000                   |

# CASH FLOW PROJECTIONS AND ASSUMPTIONS

- THE CASH INFLOWS ARE BASED ON MARKET RESEARCH AND SALES FORECASTS.
- OPERATING COSTS ARE EMBEDDED WITHIN THE NET CASH INFLOWS.
- A DISCOUNT RATE OF 10% IS ASSUMED, REFLECTING THE COMPANY'S COST OF CAPITAL AND RISK PREMIUM.

## FINANCIAL METRICS CALCULATION

### 1. NET PRESENT VALUE (NPV):

USING THE FORMULA:

$$NPV = \sum_{T=1}^N \frac{\text{CASH INFLOW}_T}{(1 + r)^T} - \text{INITIAL INVESTMENT}$$

CALCULATING EACH YEAR'S PRESENT VALUE:

- YEAR 1:  $\frac{4,000}{(1 + 0.10)^1} = 3,636.36$
- YEAR 2:  $\frac{4,500}{(1 + 0.10)^2} = 3,719.01$
- YEAR 3:  $\frac{5,000}{(1 + 0.10)^3} = 3,757.52$
- YEAR 4:  $\frac{5,500}{(1 + 0.10)^4} = 3,757.52$
- YEAR 5:  $\frac{6,000}{(1 + 0.10)^5} = 3,727.21$

SUM OF DISCOUNTED CASH INFLOWS:

$$3,636.36 + 3,719.01 + 3,757.52 + 3,757.52 + 3,727.21 = 18,597.62$$

SUBTRACTING INITIAL INVESTMENT:

$$NPV = 18,597.62 - 15,000 = 3,597.62$$

### 2. INTERNAL RATE OF RETURN (IRR):

THE IRR IS THE RATE  $r$  THAT MAKES THE NPV ZERO. USING FINANCIAL CALCULATOR OR SOFTWARE:

- APPROXIMATE IRR  $\approx 18.5\%$

### 3. PAYBACK PERIOD:

- YEAR 1: \$4,000 RECOVERED
- YEAR 2: TOTAL RECOVERED = \$8,500
- YEAR 3: TOTAL RECOVERED = \$13,500
- YEAR 4: ADDITIONAL \$1,500 NEEDED

AT YEAR 4, CUMULATIVE CASH INFLOWS ARE \$17,000, WHICH EXCEEDS INITIAL INVESTMENT OF \$15,000.

PAYBACK PERIOD:

- BETWEEN YEAR 3 AND YEAR 4, SPECIFICALLY:

$$\frac{15,000 - 13,500}{5,500} \approx 0.273 \text{ YEARS}$$

TOTAL PAYBACK PERIOD:

$$3 + 0.273 \approx 3.27 \text{ YEARS}$$

### 4. PROFITABILITY INDEX (PI):

$$PI = \frac{\text{PRESENT VALUE OF CASH INFLOWS}}{\text{INITIAL INVESTMENT}} = \frac{18,597.62}{15,000} \approx 1.24$$

## QUALITATIVE FACTORS AND STRATEGIC FIT

- MARKET POTENTIAL: GROWING DEMAND IN THE TARGETED SEGMENT SUGGESTS HIGH UPSIDE.
- OPERATIONAL FEASIBILITY: EXISTING PRODUCTION LINES CAN SUPPORT THE NEW PRODUCT WITH MINIMAL ADDITIONAL COSTS.
- RISK PROFILE: MODERATE, GIVEN MARKET VOLATILITY AND COMPETITION.
- STRATEGIC ALIGNMENT: COMPLEMENTS EXISTING PRODUCT PORTFOLIO AND ENHANCES BRAND VISIBILITY.

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## PROJECT 2: AN OVERVIEW AND FINANCIAL ANALYSIS

IMAGINE PROJECT 2 INVOLVES UPGRADING EXISTING MACHINERY FOR EFFICIENCY GAINS, WITH THE SAME INITIAL INVESTMENT OF \$15,000. THE EXPECTED NET CASH INFLOWS ARE PROJECTED AS FOLLOWS:

| YEAR | EXPECTED NET CASH INFLOWS |
|------|---------------------------|
| 1    | \$3,500                   |
| 2    | \$4,000                   |
| 3    | \$4,500                   |
| 4    | \$5,000                   |
| 5    | \$5,500                   |

## CASH FLOW PROJECTIONS AND ASSUMPTIONS

- COST SAVINGS FROM EFFICIENCY IMPROVEMENTS ARE FACTORED INTO INFLOWS.
- MAINTENANCE COSTS MAY SLIGHTLY INCREASE BUT ARE OFFSET BY SAVINGS.
- DISCOUNT RATE REMAINS AT 10%.

## FINANCIAL METRICS CALCULATION

### 1. NPV CALCULATION:

PRESENT VALUE OF INFLOWS:

- YEAR 1:  $\frac{3,500}{1.10} = 3,181.82$
- YEAR 2:  $\frac{4,000}{1.21} = 3,305.79$
- YEAR 3:  $\frac{4,500}{1.331} = 3,382.29$
- YEAR 4:  $\frac{5,000}{1.4641} = 3,415.07$
- YEAR 5:  $\frac{5,500}{1.61051} = 3,416.54$

TOTAL INFLOWS:

$$3,181.82 + 3,305.79 + 3,382.29 + 3,415.07 + 3,416.54 = 16,701.51$$

NPV:

$$16,701.51 - 15,000 = 1,701.51$$

2. IRR ESTIMATION:

- APPROXIMATE IRR ≈ 15.2%

3. PAYBACK PERIOD:

- YEAR 1: \$3,500 RECOVERED
- YEAR 2: TOTAL = \$7,500
- YEAR 3: TOTAL = \$11,000
- YEAR 4: TOTAL = \$16,000

THE INVESTMENT IS RECOVERED BETWEEN YEAR 3 AND YEAR 4:

$$\left[ \frac{15,000 - 11,000}{5,000} = 0.8 \text{ YEARS} \right]$$

TOTAL PAYBACK:

$$\left[ 3 + 0.8 = 3.8 \text{ YEARS} \right]$$

4. PROFITABILITY INDEX (PI):

$$\left[ PI = \frac{16,701.51}{15,000} \approx 1.11 \right]$$

QUALITATIVE FACTORS AND STRATEGIC FIT

- OPERATIONAL IMPACT: IMMEDIATE EFFICIENCY GAINS CAN LEAD TO LONG-TERM COST REDUCTIONS.
- RISK PROFILE: LOWER COMPARED TO PROJECT 1, WITH TECHNOLOGICAL RISKS BEING MINIMAL.
- STRATEGIC FIT: SUPPORTS OPERATIONAL EXCELLENCE AND SUSTAINABILITY INITIATIVES.
- MARKET CONSIDERATIONS: LESS DIRECT MARKET EXPANSION, MORE INTERNAL PROCESS IMPROVEMENT.

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COMPARATIVE ANALYSIS OF BOTH PROJECTS

HAVING EVALUATED THE CORE FINANCIAL METRICS AND QUALITATIVE FACTORS, A SIDE-BY-SIDE COMPARISON OFFERS CLARITY.

FINANCIAL PERFORMANCE

| METRIC              | PROJECT 1   | PROJECT 2  |
|---------------------|-------------|------------|
| NPV                 | \$3,597.62  | \$1,701.51 |
| IRR                 | ~18.5%      | ~15.2%     |
| PAYBACK PERIOD      | ~3.27 YEARS | ~3.8 YEARS |
| PROFITABILITY INDEX | 1.24        | 1.11       |

INSIGHTS:

- HIGHER NPV AND IRR SUGGEST PROJECT 1 OFFERS MORE VALUE.
- FASTER PAYBACK PERIOD INDICATES QUICKER RECOVERY OF THE INITIAL INVESTMENT.
- PROFITABILITY INDEX FAVORS PROJECT 1, IMPLYING BETTER VALUE PER DOLLAR INVESTED.

## STRATEGIC AND QUALITATIVE CONSIDERATIONS

- MARKET EXPANSION VS. OPERATIONAL EFFICIENCY: PROJECT 1 AIMS AT GROWTH AND MARKET SHARE, ALIGNING WITH EXPANSION STRATEGIES. PROJECT 2 EMPHASIZES COST

### **A Company Is Evaluating Two Separate Projects Both With The Same 15 000 Initial Investment Year Net**

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