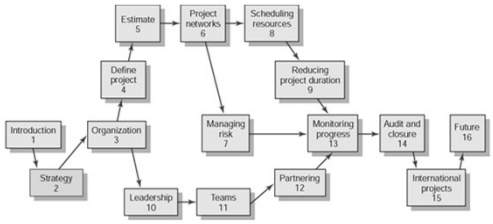
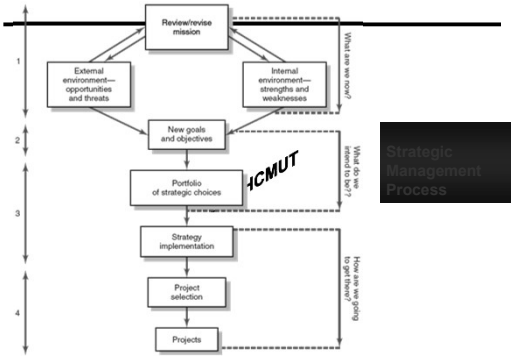
TOPIC 2

Organization Strategy and Project Selection

- Strategic Management Process and Portfolio
- Management System
- Selection Criteria: Financial and Nonfinancial
- Applying a Selection Model
- Assignments and/or case study

L.O.2 - Apply various approaches to assess a project' s feasibility





Strategic Management Process

Strategic Management Process (cont')

- **Four of Activities of the Strategic Management Process**
  1. Review and define the organizational mission.
  2. Set long-range goals and objectives.
  3. Analyze and formulate strategies to reach objectives.
  4. Implement strategies through projects

The Strategic Management Process: An Overview

- **Strategic Management**
  - ✓Provides the theme and focus of the future direction for the firm.
    - Responding to changes in the external environment—environmental scanning
    - Allocating scarce resources of the firm to improve its competitive position—internal responses to new action programs
  - ✓Requires strong links among mission, goals, objectives, strategy, and implementation.

Why Project Managers Need to Understand the Strategic Management Process

- **Changes in the organization's mission and strategy**
  - ✓Project managers must respond to changes with appropriate decisions about future projects and adjustments to current projects.
  - ✓Project managers who understand their organization's strategy can become effective advocates of projects aligned with the firm's mission.

Characteristics of Objectives

S	**Specific**	Be specific in targeting an objective
M	**Measurable**	Establish a measurable indicator(s) of progress
A	**Assignable**	Make the objective assignable to one person for completion
R	**Realistic**	State what can realistically be done with available resources
T	**Time related**	

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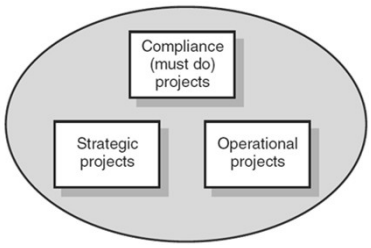
Project Portfolio Management Problems

- **The Implementation Gap**
  - ✓ **The lack of understanding and consensus on strategy among top management and middle-level (functional) managers who independently implement the strategy.**
- **Organization Politics**
  - ✓ **Project selection is based on the persuasiveness and power of people advocating the projects.**
- **Resource Conflicts and Multitasking**
  - ✓ **The multiproject environment creates interdependency relationships of shared resources which results in the starting, stopping, and restarting projects.**

Benefits of Project Portfolio Management

- Builds discipline into project selection process.
- Links project selection to strategic metrics.
- Prioritizes project proposals across a common set of criteria, rather than on politics or emotion.
- Allocates resources to projects that align with strategic direction.
- Balances risk across all projects.
- Justifies killing projects that do not support organization strategy.
- Improves communication and supports agreement on project goals.

Portfolio of Projects by Type



Internal projects
External projects
R&D projects

Project Categories and Criteria

- Derivative projects
- Platform projects
- Breakthrough projects
- R&D projects

Matrix of aggregate project plan, based on product changes or process changes/innovation.

(Wheelwright and Clark-1992)

Innovation and Project Mâanagement

Low-Tech Project: No new technologies.

May apply experiences

May use PERT method

Medium–Tech Project

Is technology a competive factor?

No→: find a better technology

Yes→:develop a new technology

Innovation and Project Mâanagement (Con't)

- **High – Tech Project:** system integration by module
  Each module must be tested before integration.
- **Super – high – tech Project :** chain of "Go/No Go" decisions

  Time for termination: not known!

A Portfolio Management System

- Selection Criteria
  - ✓Financial: payback, net present value (NPV), internal rate of return (IRR)
  - ✓Non-financial: projects of strategic importance to the firm.
- Multi-Weighted Scoring Models
  - ✓Use several weighted selection criteria to evaluate project proposals.

Financial Models

- **The Payback Model**
  - ✓ **Measures the time it will take to recover the project investment.**
  - ✓ **Shorter paybacks are more desirable.**
  - ✓ **Emphasizes cash flows, a key factor in business.**
  - ✓ **Limitations of payback:**
    - **Ignores the time value of money.**
    - **Assumes cash inflows for the investment period (and not beyond).**
    - **Does not consider profitability.**

Financial Models (cont'd)

- **The Net Present Value (NPV) model**
  - ✓ **Uses management's minimum desired rate-of-return (discount rate) to compute the present value of all net cash inflows.**
    - **Positive NPV: the project meets the minimum desired rate of return and is eligible for further consideration.**
    - **Negative NPV: project is rejected.**

$$\text{Project NPV} = I_0 + \sum_{t=1}^{n} \frac{F_t}{(1+k)^t} \quad \text{where}$$

I_0 = Initial investment (since it is an outflow, the number will be negative)
F_t = net cash inflow for period t
k = required rate of return

Net Present Value (NPV) and Internal Rate of Return (IRR): Example Comparing Two Projects

Project A		Year 1	Year 2	Year 3	Year 4	Year 5	Total	Formulas
Required Rate of Return*	20%							
Outflows		($700,000)					($700,000)	
Inflows		$225,000	$225,000	$225,000	$225,000	$225,000	$1,125,000	Project A: =NPV(B6,C9:G9)
Net Inflows		($475,000)	$225,000	$225,000	$225,000	$225,000	$425,000	
NPV	$89,554							

Project B		Year 1	Year 2	Year 3	Year 4	Year 5	Total	
Required Rate of Return	20%							
Outflows		($400,000)					($400,000)	
Cash Inflows		$110,000	$110,000	$110,000	$110,000	$110,000	$550,000	Project B: =NPV(B14,C17:G17)
Net inflows		($290,000)	$110,000	$110,000	$110,000	$110,000	$150,000	
NPV	−$4,366							

NPV comparison: Accept Project A—NPV is positive
Reject Project B—NPV is negative

Payback Method	Project A	Project B	
Investment	$700,000	$400,000	Project A Payback: =(C32/C33)
Annual Savings	$225,000	$110,000	Project B Payback: =(E32/E33)
Payback Period*	3.1 years	3.6 years	
Rate of Return*	32.1%	27.5%	Project A: =(C33/C32) Project B: =(E33/E32)

Project A: Accept, less than 5 years and exceeds 20% desired rate

Project B: Accept, less than 5 years

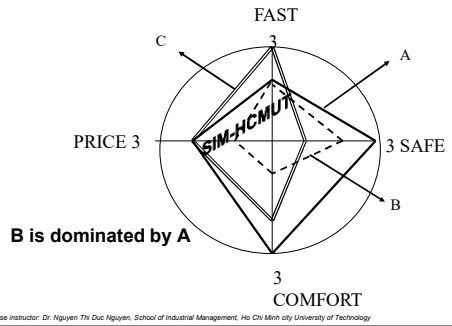
Project Screening Matrix

Criteria / Weight	Stay within core competencies	Strategic fit	Urgency	25% of sales from new products	Reduce defects to less than 1%	Improve customer loyalty	ROI of 18% plus	Weighted total
	2.0	3.0	2.0	2.5	1.0	1.0	3.0	
Project 1	1	8	2	6	0	6	5	66
Project 2	3	3	2	0	0	5	1	27
Project 3	9	5	2	0	2	2	5	56
Project 4	3	0	10	0	0	6	0	32
Project 5	1	10	5	10	0	8	9	102
Project 6	6	5	0	2	0	2	7	55
⋮								
Project *n*	5	5	7	0	10	10	8	83

The Scoring Model

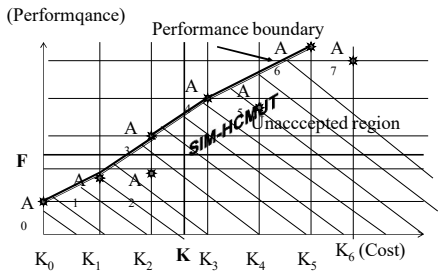
	Criteria												
	FAS T			SAFE			COMFORTABLE			PRICE			∑
	3	2	1	3	2	1	3	2	1	3	2	1	
A		X		X			X				X		10
B		X			X				X			X	6
C	X					X		X			X		8

Polygon Model



B is dominated by A

Performance/Cost model



The Weighted Scoring Model

$$S_i = \sum_{j=1}^{n} s_{ij} w_j$$

where

SIM-HCMUT

S_i = the total score of the i^{th} project

s_{ij} = the score of the i^{th} project on the j^{th} criterion

w_j = the weight or importance of the j^{th} criterion

The Weighted Scoring Model

	Weighted Criteria												
	FAS T (0.6)			SAFE (0.1)			COMFORTABLE (0.1)			PRICE (0.2)			∑
	3	2	1	3	2	1	3	2	1	3	2	1	
A		X		X			X				X		2.2
B		X			X				X			X	1.7
C	X					X		X			X		2.3

Collective Utility (CU)

Weight	Alt. / Goal	A_1	A_2	--	A_i	--	A_m
$ά_1$	Z_1	Z_{11}	Z_{21}	--	Z_{i1}	--	Z_{m1}
$ά_2$	Z_2	Z_{12}	Z_{22}		Z_{i2}	--	Z_{m2}
--	--	--	--	--	--	--	--
$ά_j$	Z_j	Z_{1j}	Z_{2j}	--	Z_{ij}		Z_{mi}
--	--	--	--	--	--	--	--
$ά_n$	Z_n	Z_{1n}	Z_{2n}	--	Z_{in}	--	Z_{mn}
	CU	CU_1	CU_2	--	CU_i	--	CU_m

Collective Utility (CU)

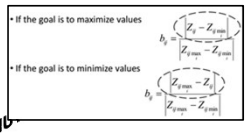
- **Step 1: Transform from Zij to bij**
- **Step 2: Identify weights (importance proportion) for each criteria**
- **Step 3: Calculate Collective Utility Index for each opportunity**
- **Step 4: Choose the opportunity with CU-Max**

Collective Utility (CU)

Standardizing:

→**No-dimension**

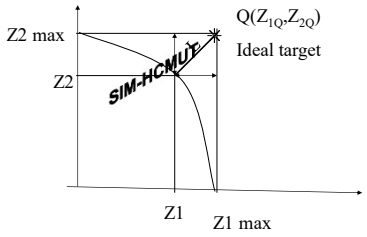
→**Varying on[0,1]**



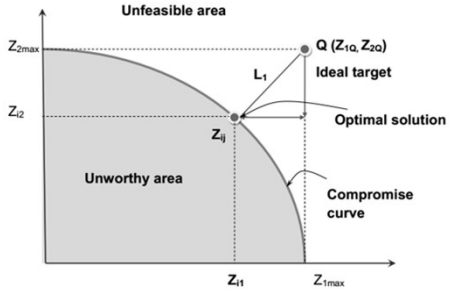
$b_{ij} = (Z_{ij}-Zmin)/(Zmax-Zmin)$

Max CU_i = **Max** $\sum_{j=1}^{n} b_{ij} w_j$

Compromise model



Compromise model



Compromise model

Euclide distance $\underset{i}{Min}\, L_i = \left[\sum_{j=1}^{2}\left(Z_{jQ} - Z_{ij}\right)^2\right]^{\frac{1}{2}}$

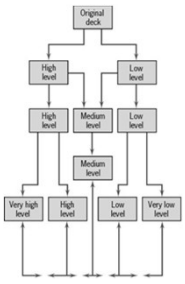
Standardization distance $\underset{i}{Min}\, L_i = \left[\sum_{j=1}^{2}\left\{\frac{\left|Z_{jQ} - Z_{ij}\right|}{\left|Z_{j\max} - Z_{j\min}\right|}\right\}^2\right]^{\frac{1}{2}}$

Standardization distance with weighting scores $\underset{i}{Min}\, L_i = \left[\sum_{j=1}^{2}\left\{\frac{\left|Z_{jQ} - Z_{ij}\right| \times \alpha_j}{\left|Z_{j\max} - Z_{j\min}\right|}\right\}^2\right]^{\frac{1}{2}}$

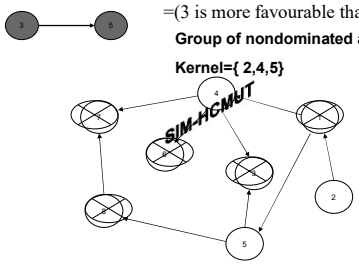
Nonnumeric Selection Methods

- **The Sacred Cow- Special pet project advocated by President or Supervising Manager of Firm.**
- **The Operating/Competitive Necessity**
- **Comparative Benefits**

The Q-Sort Method



Electre MODEL



=(3 is more favourable than 5)

Group of nondominated alternatives

Kernel={ 2,4,5}

Applying a Selection Model

- **Project Classification**
  - ✓ **Deciding how well a strategic or operations project fits the organization's strategy.**
- **Selecting a Model**
  - ✓ **Applying a weighted scoring model to bring projects to closer with the organization's strategic goals.**
    - **Reduces the number of wasteful projects**
    - **Helps identify proper goals for projects**
    - **Helps everyone involved understand how and why a project is selected**

Project Proposals

- **Sources and Solicitation of Project Proposals**
  - ✓ **Within the organization**
  - ✓ **Request for proposal (RFP) from external sources (contractors and vendors)**
- **Ranking Proposals and Selection of Projects**
  - ✓ **Prioritizing requires discipline, accountability, responsibility, constraints, reduced flexibility, and loss of power.**
- **Managing the Portfolio**
  - ✓ **Senior management input**
  - ✓ **The priority team (project office) responsibilities**

Date _____ Number _____

Project Title _____

Responsible Manager _____ Project Manager _____

☐ _____ ☐ General support ☐ Quality ☐ Legal ☐ New product
☐ _____ ☐ _____ ☐ Cost reduction ☐ Replacement ☐ Capacity
☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ _____

YES ☐ NO ☐ The project will take more than 500 labor hours?
YES ☐ NO ☐ The project is a one-time effort? (will not occur on a regular basis)
YES ☐ NO ☐ The project proposal was reviewed by the product manager?

Problem definition

Describe the problem/opportunity.

Goal definition

Describe the project goal.

Objective definition

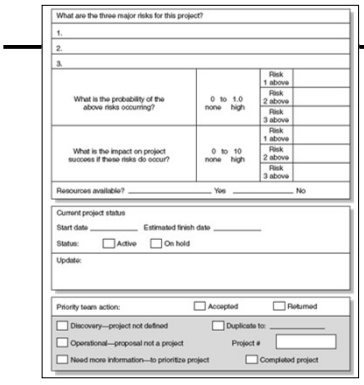
Performance: Quantify the savings/benefits you expect from the project.

Cost: Labor hours, materials, methods, equipment?

Schedule: Overall duration in months.

Major Project Proposal

FIGURE 2.4A



What are the three major risks for this project?

1.

2.

3.

What is the probability of the above risks occurring?	0 to 1.0 none high	Risk 1 above
		Risk 2 above
		Risk 3 above
What is the impact on project success if these risks do occur?	0 to 10 none high	Risk 1 above
		Risk 2 above
		Risk 3 above

Resources available? _____ Yes _____ No

Current project status

Start date _____ Estimated finish date _____

Status: ☐ Active ☐ On hold

Update:

Priority team action: ☐ Accepted ☐ Returned

☐ Discovery—project not defined ☐ Duplicate to: _____

☐ Operational—proposal not a project Project # _____

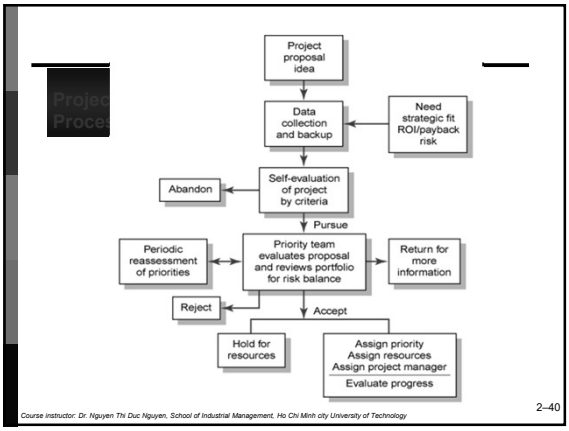
☐ Need more information—to prioritize project ☐ Completed project

Risk Analysis

FIGURE 2.4B

Managing the Portfolio

- **Senior Management Input**
  - ✓ **Provide guidance in selecting criteria that are aligned with the organization's goals**
  - ✓ **Decide how to balance available resources among current projects**
- **The Priority Team Responsibilities**
  - ✓ **Publish the priority of every project**
  - ✓ **Ensure that the project selection process is open and free of power politics.**
  - ✓ **Reassess the organization's goals and priorities**
  - ✓ **Evaluate the progress of current projects**

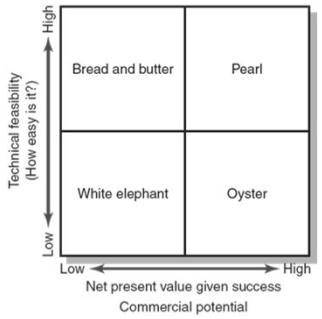


Priority Analysis

Must objectives	Must meet if impacts	Project number ...26	27	28	29
All activities meet current legal, safety, and environmental standards	Yes-Meets objective No-Does not meet obj N/A-No impact	n/a			
All new products will have a complete market analysis	Yes-Meets objective No-Does not meet obj N/A-No impact	yes			
Want objectives	**Single project impact definitions**	Weighted score	Weighted score	Weighted score	Weighted score
Provides immediate response to field problems (Relative importance 1-100: 99)	0 ≤ Does not address ① = Opportunity to fix 2 ≥ Urgent problem	99			
Create $5 million in new sales by 20xx (Relative importance 1-100: 88)	⓪ < $100,000 1 = $100,000–500,000 2 > $500,000	0			
Improve external customer service (Relative importance 1-100: 83)	0 ≤ Minor impact 1 = Significant impact ② ≥ Major impact	166			
Total weighted score					
Priority					

FIGURE 2.6

Project Portfolio Matrix



Project Portfolio Matrix Dimensions

- **Bread-and-butter projects**
  - ✓ Involve evolutionary improvements to current products and services.
- **Pearls**
  - ✓ Represent revolutionary commercial advances using proven technical advances.
- **Oysters**
  - ✓ Involve technological breakthroughs with high commercial payoffs.
- **White elephants**
  - ✓ Projects that at one time showed promise but are no longer viable.

Key Terms

Balanced scorecard
Implementation gap
Net present value
Payback
Organizational politics
Priority system
Priority team
Project portfolio
Project screening matrix
Sacred cow
Strategic management process