



Project Cost Justification

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Total Number of slides = 35

Module Objective and Outline

- **At the end of this module, you should be able to**
 - Identify the cost components of a project
 - Identify the benefits as a result of the project
 - Carry out a CBA
- **Outline**
 - Types of cost justification
 - Evaluation process
 - Financial justification and financial measures
 - Presenting the case

What is Cost Justification ?

- **The process of comparing the various investment costs with the benefits that it returns to justify or reject the investment**

- **Types of Cost Justification**
 - Quantitative cost benefit analysis
 - Qualitative cost justification techniques
 - Examples
 - » Ranking and scoring
 - » Value chain analysis
 - » Strategic match
 - » Porters Generic Strategy approach



Cost Justification – Types of IT Project Investments

- **Mandatory Investments**
 - Regulatory requirements
 - Organisation requirements
 - Competitive pressure
- **Investments to improve performance**
- **Investments to achieve competitive advantage**
- **Infrastructure investments**
- **Investment in Research**



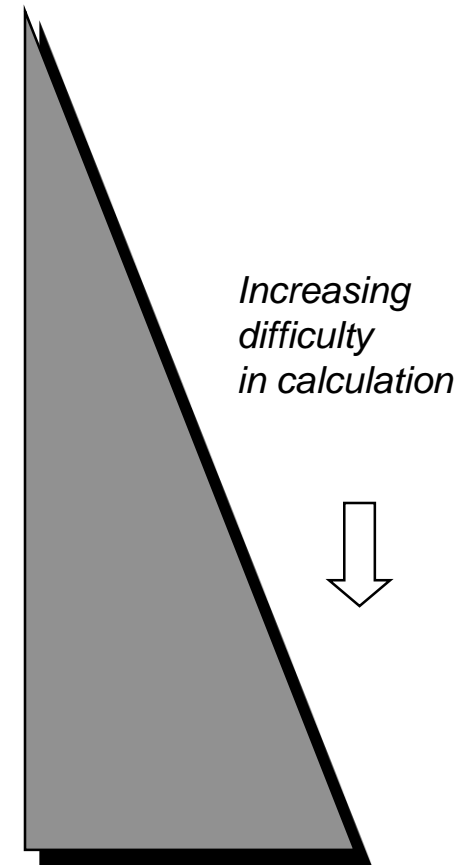
How is Quantitative Cost/Benefit Analysis carried out ?

- Analyse all the costs
 - One-time
 - Recurring
- Identify benefits
- Quantify benefits
- Modify costs and benefits to allow for time-dependent effects
- Summarise the costs and benefits



Classifying Quantitative Benefits

- **Cost reduction/saving**
- **Cost avoidance**
- **Improved business control/performance**
- **Improved Quality**
- **Business Expansion**



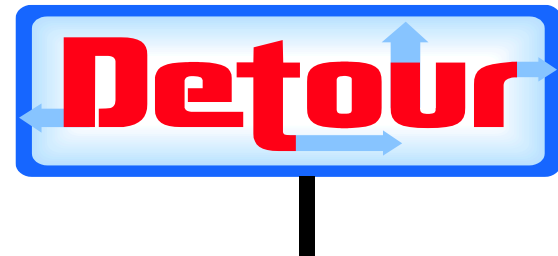
Procedure for Evaluating Cost Reduction/Saving

- **List the activities that will be affected by the new system**
 - Link to staff roles
- **Identify those roles that will no longer be required**
- **Identify the changes in responsibilities, and the reduction in staff**
 - Identify the saving in
 - » Salaries
 - » Overheads
- **Identify the office space which will be released**
 - Determine the savings in cost
- **Identify other saving**
 - Replacing existing hardware maintenance cost
 - Subcontractors/ outside consultants



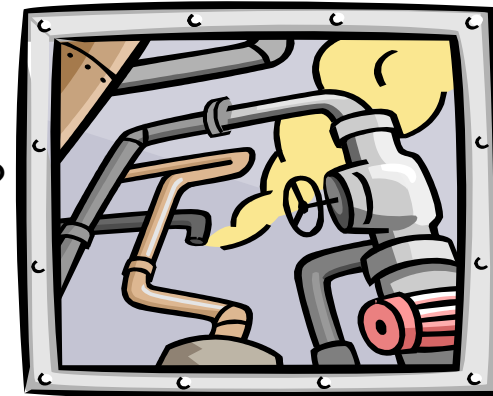
Procedure for Evaluating Cost Avoidance

- **Identify the activities that will have to be performed in order to fulfil new or current requirements.**
-
- **Identify the cost avoidance in**
 - » Salaries
 - » Overheads
-
- **Identify the office space which will be released**
 - Determine the savings in cost
- **Identify other costs avoided**
 - Expansions to existing systems
 - Subcontractors/ outside consultants



Procedure for Evaluating the Benefits as a result of Improved Business/Control Performance

- **Identify the reduction in production cycle time, i.e. reduction in**
 - Product specification
 - Product development
 - Production installation/ delivery
- **Identify the reduction in response time to customer request**
 - What is the resultant cost saving in customer response operations?
- **Identify the reduction in time for information to be transmitted through the organisation**
 - What is the corresponding saving in time to decision?
 - » What is the cost saving in reduced decision times?
 - What is the probability of a better decision being made?
 - » What is the cost saving in better decisions?
- **Identify the reduction in customer billing time**
 - What is the corresponding improvement in cash flow



Procedure for Evaluating the Benefits of Quality of Service

- **Identify the current cost of quality, in terms of**
 - Total number of defects
 - Average cost per defect
- **Identify the reduced cost of quality**
 - Reduced number of defects
 - Reduced cost of repair/maintenance
- **Compare the costs and identify the savings**



Procedure for Evaluating Benefits due to Business expansion

- **Identify the expansion in existing market share that will achieved using the new system**
 - Determine the % increase in sales
- **Identify the new product markets that will be penetrated using the new system**
 - Determine the size of the new markets (in terms of \$ sales p.a.)
 - Determine the % that will be captured by your company
 - Determine the % increase in sales
- **Identify the new geographical markets that will be penetrated using the new system**
 - Determine the size of the new geographical markets (in terms of \$ sales p.a.)
 - Determine the % that will be captured by your company
 - Determine the % increase in sales

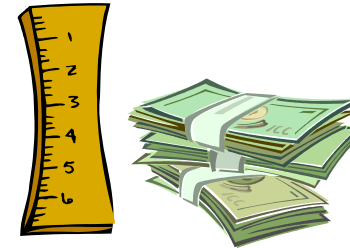
Exercise:

- **A large insurance company has a thousand-strong field force of sales executives, who sell a wide range of policies, insurance investments....**
- **IT is considering equipping the executives with PDA's & Wireless connections to allow them to**
 - Store data and transmit this data to head office on a daily basis
 - Present real-time information to potential customers
 - Sell insurance policies to customers and obtain endorsement from management of those sales
- **In what areas are there opportunities for**
 - Cost savings/avoidance
 - Increased revenue

The Answer?

Financial Justification and Financial Measures

- **Present Value (PV)**
- **Net Present Value (NPV)**
- **Payback Period**
- **Return on Investment (ROI)**
- **Economic Value-Added (EVA)**
- **Net Economic Value (NEV)**



Present Value

- “A dollar today is worth more than a dollar tomorrow”
- **Present Value (PV) = Amount * Discount Factor**
- **The Discount Factor, DF is : $1/(1+r)^n$**

Example

Value of \$100 in 3 years at 8% per annum compound interest is:

\$100 x 1.08	= 108
\$108 x 1.08	= 116.64
\$116.64 x 1.08	= 125.97

Therefore \$100 received in three years is “worth”
 $\$100/(1.08)^3 = \79.38



Net Present Value

- The Net present Value (NPV) calculates the expected net monetary gain or loss from a project by discounting all expected future cash flows to the present point in time i.e.

*Sum of present value of expected cash flow
minus Sum of investment cost*

A project has the following costs and benefits:

	Costs	Benefits	Net benefits-costs (no discounting)	Net benefits-costs (15% discount pa)
Year 1	\$10000	\$0	- \$10000	- \$10000/1.0 = - \$10,000
Year 2	\$5000	\$4000	- \$1000	-\$1000/1.15 = - \$ 870
Year 3	\$1000	\$8000	\$7000	\$7000/(1.15) ² = \$ 5,293
Year 4	\$1000	\$8000	\$7000	\$7000/(1.15) ³ = \$ 4,603
Year 5	\$1000	\$8000	\$7000	\$7000/(1.15) ⁴ = \$ 4,002
Total =			<u>\$10000</u>	<u>\$3028</u>

i.e. NPV = \$3028

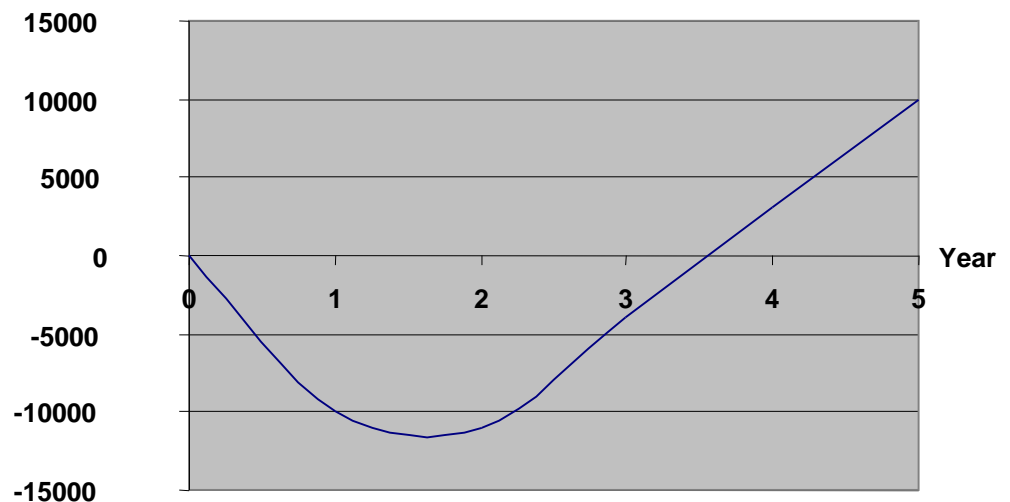
Payback Period

▪ Payback Period

- The amount of time to repay the initial investment
- Example:

	Costs	Benefits
Year 1	\$10000	\$0
Year 2	\$5000	\$4000
Year 3	\$1000	\$8000
Year 4	\$1000	\$8000
Year 5	\$1000	\$8000

Benefits-costs (\$)



For the above example the payback period is about 3.5 years

▪ Discounted Payback Period

- Makes allowance for change in money value over time.

Return on Investment

- Return On Investment (ROI)

$$= \frac{\text{NPV of benefit}}{\text{Total discounted Investment}} * 100 \%$$

$$= \frac{(\text{Total discounted benefit} - \text{Total discounted Investment})}{\text{Total discounted Investment}} * 100\%$$

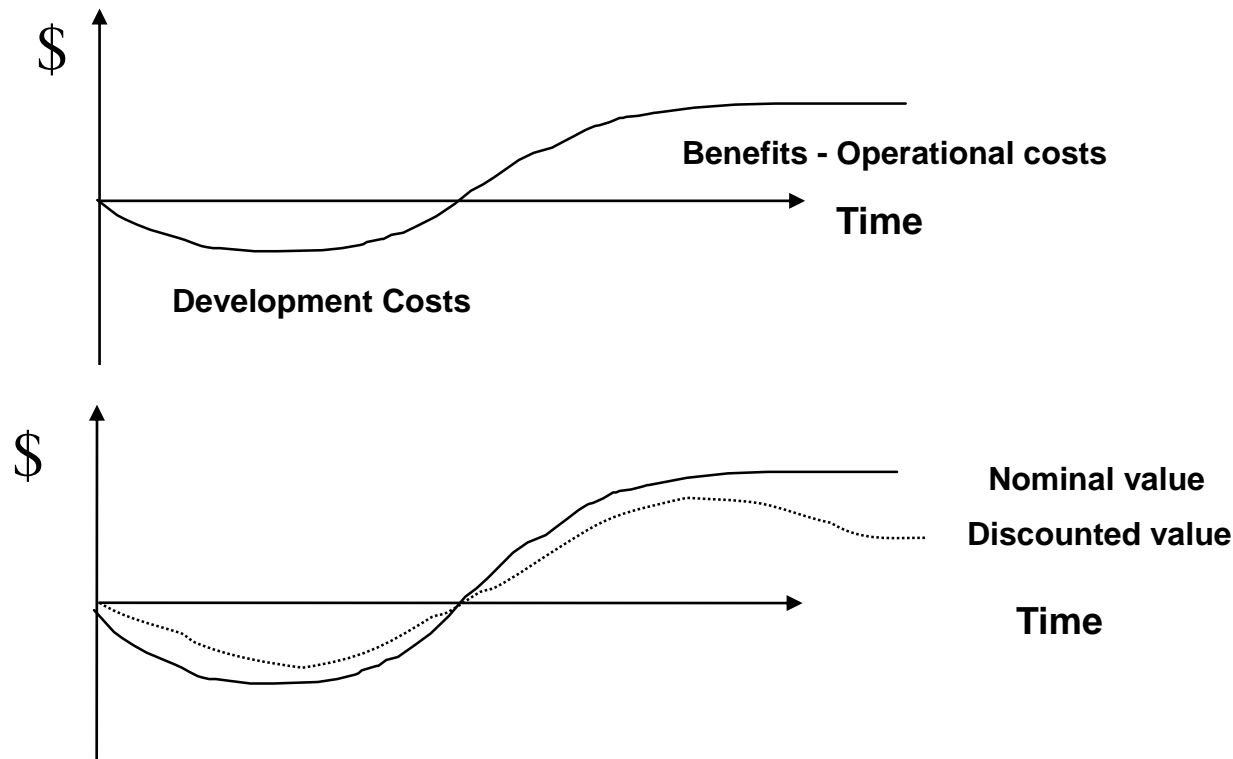
- Example:

- A project has the following costs & benefits, and assumes 10% discount pa

	Costs	Discounted Costs	Benefits	Discounted Benefits	
Year 1	\$10,000	\$10,000	\$0	\$0	
Year 2		-	\$4,000	$\$4000/(1.1)$	= \$3636.4
Year 3		-	\$4,000	$\$4000/(1.1)^2$	= \$3305.8
Year 4		-	\$4,000	$\$4000/(1.1)^3$	= \$3005.3
Year 5		-	\$4,000	$\$4000/(1.1)^4$	= \$2732.1
TOTAL		\$10,000		\$12,680	
			ROI =	26.80%	

Constructing a Cash Flow Analysis

- **The cash flow = the net revenue - net costs for a software development measured for a particular period of time**



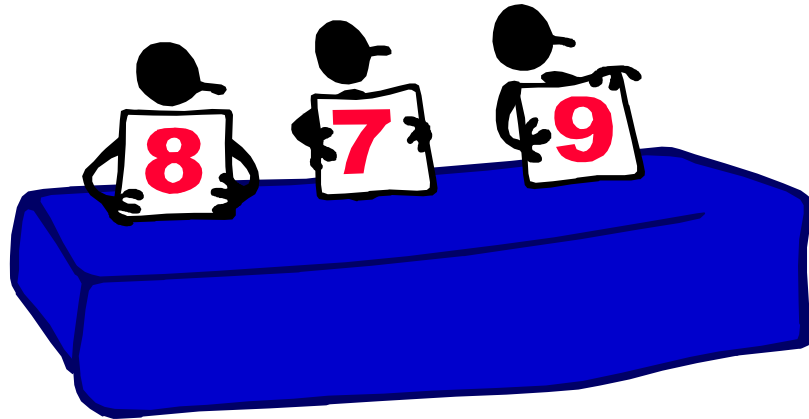
Intangible Benefits

- **Sometimes it is difficult to quantify some benefits**
 - But they are real!
- **Primarily occur in**
 - Strategic investments
 - Infrastructure investments
 - Long-term investments
- **Various methods/techniques including;**
 - General analytic ranking and scoring approach
 - Value chain Analysis
 - Strategic Match analysis
 - Porter's Generic Strategy model



Assessing by Ranking and Scoring techniques

- **Four steps involved in an evaluation of IT alternatives**
 - Identify the different investment options
 - Select the evaluation criteria and the individual factors that influence those criteria
 - Associate weights to factors
 - Score the investments against these factors
 - Select investment with highest score
- **Basis for criteria**
 - Operational value
 - Critical value
 - Architectural value
 - Risk assessment
 - Strategic value



Basis for Criteria

- **Operational value**
 - Systems ability to improve the current efficiency of the organisation
- **Critical value**
 - Systems ability to improve the current competitive advantage of the organisation
- **Architectural value**
 - A measure of the benefit/disadvantages that the system will bring to the organisations IT infrastructure
- **Risk assessment**
 - A measure of the problems that arise during the system implementation or operation
- **Strategic advantage**
 - Systems potential to create a competitive advantage to a firm

Possible Factors

Criteria	Factors
Operational value	Administrative improvements Legislative requirements Contractual requirements
Critical value	Expenditure control Asset reduction Equipment Utilisation Sales increase Production enhancement Waste minimisation
Architectural value	Software Hardware Interconnections Skill set
Risk assessment	New technology New application Application size Market damage
Strategic Value	Industry attractiveness Offensive Defensive

Possible Factors

- Select factors from the list of factors/criteria on the basis of:
 - *Ease of measurement*
 - *Relevance to a particular situation*
- Assign weights to the factors
 - *Weights should be > -10 and < +10*
 - *Weights should be proportional to the relative importance of a factor to the organisations*
 - » 1 = very little importance
 - » 10 = vitally important

Criteria	Factors	Wts
Operational value	Administrative improvements	8
	Legislative requirements	9
	Contractual requirements	10
Critical value	Expenditure control	7
	Asset reduction	
	Equipment Utilisation	
	Sales increase	
	Production enhancement	3
	Waste minimisation	
Architectural value	Software	
	Hardware	
	Interconnections	
	Skill set	
Risk assessment	New technology	-8
	New application	-5
	Application size	-7
	Market damage	-4
Strategic Value	Industry attractiveness	
	Offensive	
	Defensive	

Ranking Process

▪ For each alternative system

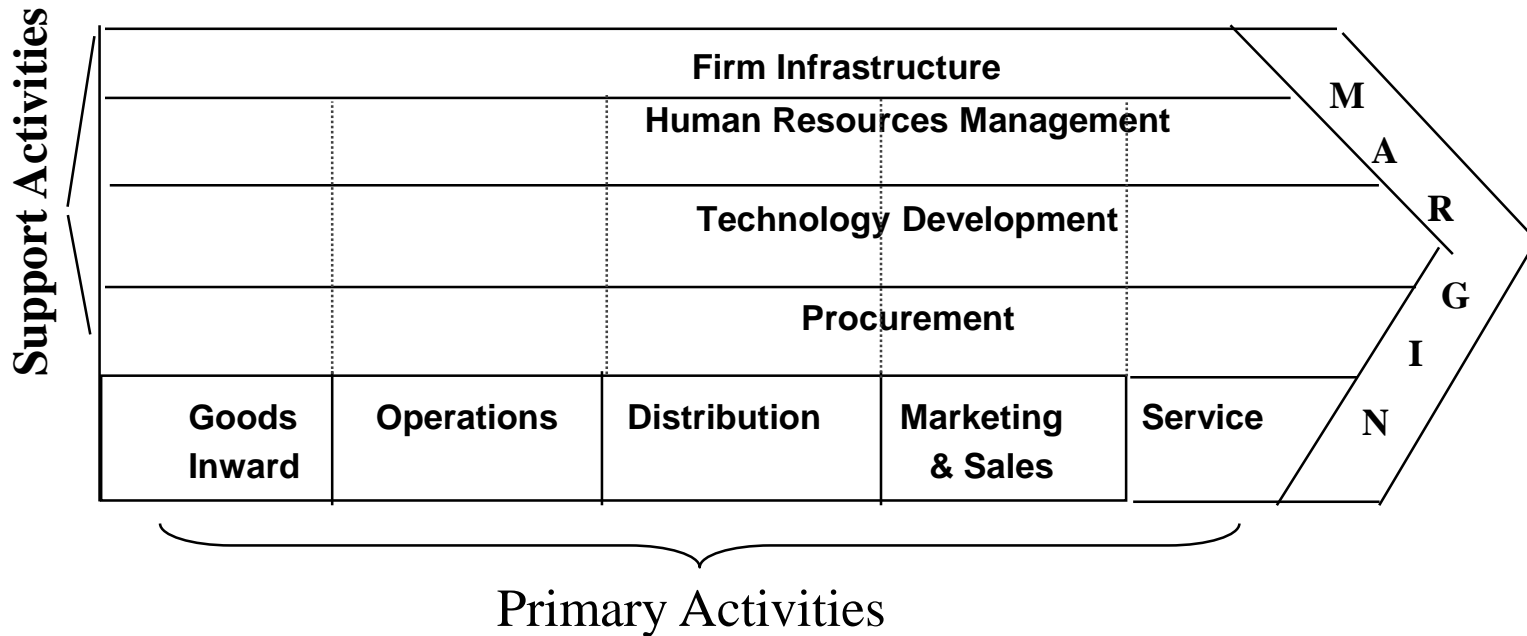
- Determine a score for each factor
1 = no influence \Rightarrow 5 = great influence
- Calculate value = score*weight
- Determine score = Σ individual weights

•Rank alternatives on the basis of total score

- Include the “Do-nothing” option
- May include non-IT options

Criteria	Factors		System 1		System 2	
		Weights	Score	Value	Score	Value
Operational Value	Administrative Improvements	8	5	40	4	32
	Legislative requirements	9	4	36	4	36
	Contractual Requirements	10	3	30	4	40
Critical Value	Expenditure Control	7	2	14	4	28
	Waste Minimisation	3	4	12	5	15
Risk Assessment	New technology	-8	5	-40	3	-24
	New Application	-5	4	-20	4	-20
	Application Size	-7	4	-28	4	-28
	Market damage	-3	1	-3	2	-6
Total Score				41		73

Chain of Value Activities



- Value activities are the basis of an organisations existence; These activities provide the money to make the organisation viable and profitable
- IT investments can be assessed on their contribution to:
 - Individual activities
 - Linking Activities
 - Linking to other organisations value chains

Example of Value Chain Analysis

- **Target for *Marketing and Sales***
 - High advertising level and quality
 - High sales force coverage and quality
 - Personal relationships with buyers
 - Superior technical literature and sales aids
 - Most extensive promotions
 - Most effective and extensive credit to buyers
- **Support activities**
 - *Procurement*
 - » Most desirable media placements
 - *Technology Development*
 - » Application Engineering Support
 - *Human Resource Management*
 - » Recruiting capable sales and service personnel
 - » Sales incentive to retain best people
 - » Better training of sales people



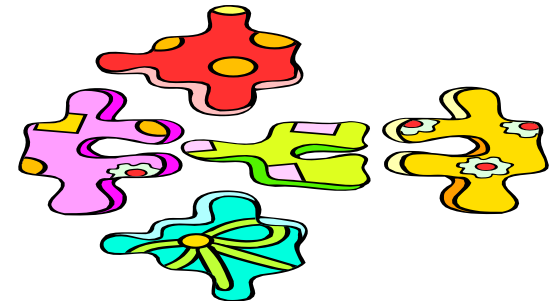
How can an IT Project enhance these activities?

How to apply Value Chain Analysis

- **For any IT project**
 - Determine what activities on the value chain the IT project will enhance
 - Determine what activities it will replace
 - Determine costs within these activities
 - Construct either
 - » A reasoned set of arguments supporting the above
 - » If possible identify the numerical benefits and use financial cost benefit analysis
 - » In many cases use ranking and scoring techniques, where
 - **Activities on the value chain are the criteria**
 - **Weights are the importance of these activities**
 - **The scores are the enhancements (or added value) to those activities**

Strategic Match Analysis

- **Determine what the overall strategic goals of your company are, and how the proposed IT developments fit into them**
 - Competitive edge
 - » The application is a key to successively obtaining and maintaining competitive advantage
 - Business goals link
 - » The application is clearly and directly required to help achieve a business goal
 - Technical importance
 - » Supporting development in the infrastructure
 - » Although not totally understood, technology is perceived important in future breakthroughs and must be absorbed
 - Re-engineering
 - » The application is a crucial enabler of a new or modified process
 - » Both application and infrastructure form part of a larger project aiming at significant improvements
 - Benchmarking
 - » The application is required to achieve a desired level of service
 - **Possibly in response to requests by shareholders, government legislation, customers**
- **Select the overriding goal and score alternative developments against them**



Porters Generic Strategy Approach

Generic Strategies for competitive advantage

- **A business may either**
 - Enhance its image in the market and hence charge a premium price
 - Offer a low cost “no-frills” product or service
- **These two generic strategies can assist firms to become superior performers in their line of business**
- **IT systems can be classed as supporting one of these generic strategies**
 - **Differentiation**
 - » Field Maintenance Systems
 - » Remote Purchasing Systems
 - **Lower Cost**
 - » Automated production systems
 - » EDI

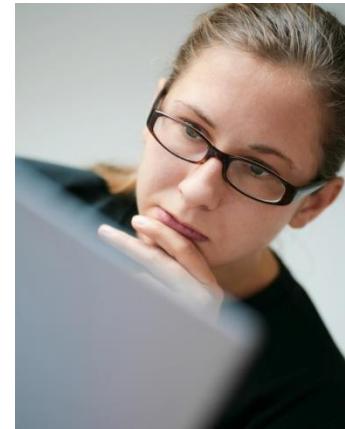
Competitive
Scope

	Lower Cost	Differentiation
Broad Target	Cost Leadership	Differentiation
Niche Target	Cost Leadership Focus	Differentiation Focus

Presenting Conclusions

Reporting Results

- **Audience**
 - Senior Management
 - Board of Directors
 - Accountants
- **Financial, not technical arguments will dominate**
 - Use Cashflow, ROI, NPV if available
- **Use qualitative analysis in reasoned arguments**
- **One-side Executive summary**
 - Terms of Reference
 - Description of proposed development options
 - Recommendations
 - Financial summary
 - » Costs
 - » Benefits
 - Figure
- **Main report for Details**
 - Appendices



Presenting Results

- **How long is an Executives attention span?**
- **Concentrate on**
 - Choices
 - Figures
 - Recommendations
- **Cost Benefit Analysis should be presented by:**
 - Users/Owners
 - Not IT department
- **Have slides detailing technical issues but only use them for answering questions**



Summary

- **Every project has an a lifecycle cost**
- **The cost must be justified**
- **A Cost Benefit analysis is the means to do so**
- **Benefits can be both financial or otherwise, tangible or intangible**
- **Project cost justification is the responsibility of both User and IT**

Examples – Business Case

- “Business case for new office automation equipment” and “The Business Case Primer” (<http://www.impactonthenet.com/bc-oae.html>)
- FREP Handheld business case (http://www.for.gov.bc.ca/hfp/frep/site_files/ciworkshop2007/tab10/Business-Case-FREP-Handheld.pdf)
- “Sample business case for change @ XYZCO” (<http://it.toolbox.com/blogs/enterprise-solutions/sample-business-case-for-change-xyzco-27295>)
- “Making Smart IT Choices - Preparing a Business Case” (<http://www.ctg.albany.edu/publications/guides/smartit2?chapter=5>)

Contents of a Business Case

- **Executive Summary**
- **Background**
 - Description of issue, problem, opportunity and current situation
- **Project Description**
 - Objectives, scope, output/outcome, stakeholders
- **Strategic Alignment**
- **Consideration of Alternatives**
- **Benefit-Cost Analysis**
 - Quantitative analysis – Financial
 - Qualitative Analysis – Non-financial
 - Assumptions made
- **Investment Appraisal**
- **Impact Assessment - business and operational**
- **Risk Assessment**
- **Conclusion and Recommendations**
- **Appendices**