COST BENEFIT ANALYSIS

DR.RADHIKA MEENAKSHI SHANKAR

GENESIS

- Jules Dupuit, a French engineer, first introduced the concept of in the 1930s. It became popular in the 1950s as a simple way of weighing up project costs and benefits, to determine whether to go ahead with a project.

- As its name suggests, Cost-Benefit Analysis involves adding up the benefits of a course of action, and then comparing these with the costs associated with it.

DECISION MAKING
Individual
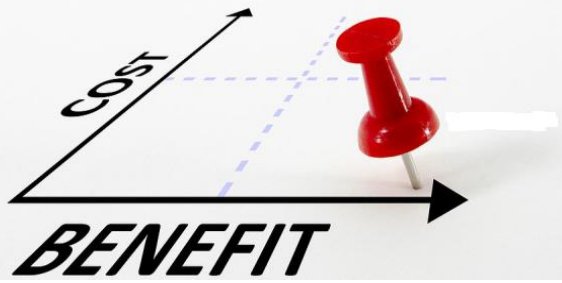
Should I buy a I phone 6 ?

Decision Making
Societal Decision Making

CATCH ME IF YOU CAN….

- A wanted criminal is stuck inside a cave below a historical monument .

The following are the options available for you

- Blast the cave off
- Put sleeping gas into the cave
- Send two commandos in
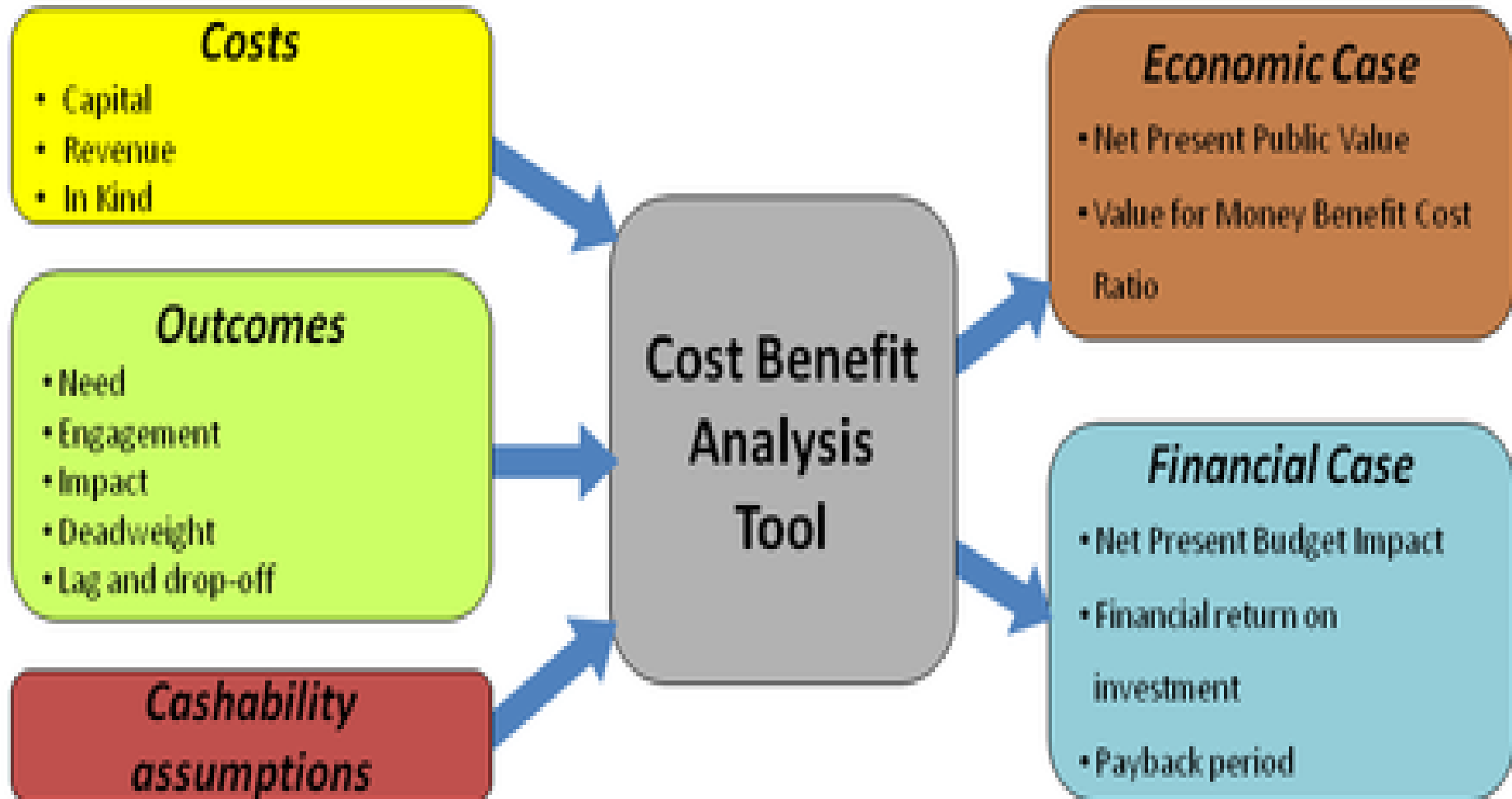- Ask him to surrender and come out with a deal.

WHAT IS CBA

- Technique for rational decision making.
- It lists the costs and benefits of a decision over a time frame and justifies the decision taken.
- It converts implicit costs and benefits BASED ON JUSTIFIABLE ASSUMPTIONS also in money terms and factors it into the decision.

WHAT IS COST-BENEFIT RATIO

- A cost–benefit ratio is determined by dividing the projected benefits of a program by the projected costs. In general, a program having a high benefit–cost ratio will take priority over others with lower ratios.

- Determining this ratio is a difficult task, however, because of the wide range of variables involved. Both quantitative and qualitative factors must be taken into account, especially when dealing with social programs.

- For instance, the monetary value of the presumed benefits of a given program may be indirect, intangible, or projected far into the future.

- The time factor must be considered in estimating costs, especially in long-range planning. Variable interest rates, tying-up of funds, and the disruption of normal cash flow must be factors in the analysis if an accurate cost–benefit ratio is to be determined.

SOURCE : http://www.britannica.com/topic/cost-benefit-analysis

TOOL AT A GLANCE

Costs
- Capital
- Revenue
- In Kind

Outcomes
- Need
- Engagement
- Impact
- Deadweight
- Lag and drop-off

Cashability assumptions

Cost Benefit Analysis Tool

Economic Case
- Net Present Public Value
- Value for Money Benefit Cost Ratio

Financial Case
- Net Present Budget Impact
- Financial return on investment
- Payback period

SOURCE: neweconomymanchester.com

Process of CBA

- Define the problem and decision question
- List the explicit costs
- List the implicit cost
- List the explicit benefits
- List of Implicit benefits
- Compare the total costs and benefits
- Take a decision.

Kinds of cba

- Financial
- Economical (fin + social considerations)

costs

- Capital- Machinery, building, computers,office equipments
- Working costs-rent elecitricity, travelling expenses, water,gas……
- Implicit costs- time, feelings,opportunities lost

Benefits

- Explicit- Revenue, cash
- Implicit- good feeling, euphoria, reputation, public relations

Why cba

- **Minimize risks**
- **Better credibility**
- **Best informed,rational quality decision making.**
- Good evidence
- Good alignment with vision
- Helps better customer relations
- Be a **good society citizen.**

Economic tools

- Impact outcomes-

Number of jobs created

Time saved

Carbon emissions reduced

- Time period
- Implicit returns
- Explicit returns

CONVERSIONS OF IMPLICIT COSTS AND BENEFITS

- IMPLICIT COSTS AND BENEFITS TRACED TO THE DECISION NEEDS TO BE FIRST CONVERTED IN MONEY AND MONEY'S WORTH FIRST.

- FOR THIS PAST EXPERIENCES OR JUSTIFIABLE ASSUMPTIONS CAN BE TAKEN.

- SUBJECTIVE DATA NEED TO BE CONVERTED TO QUANTIATIVE DATA

- EG: LOSS OF REPUTATION-assuming loss of sales as compared to similar periods of the same company or similar companies as a basis.We can calculate a quantitative figure .

Financial Techniques

- Time value for money

- Capital budgeting techniques-NPV,IRR,B/C & pay back.

- Risk adjusted NPV can be used.

Financial Decision tools

- Net Present Value NPV

- Internal Rate of Return

- Payback Period

- Benefits Costs Ratio

Time value

What would you take?

1000rs today or 1000 rs two years from now.

today – as you have opportunity to use it during the time - time value for money………

TIME allows you the *opportunity* to postpone consumption and earn INTEREST.

Compund interest

- $A = P(1 + r/100)^n$

- $P = \dfrac{A}{(1+r/100)^n}$

$PV_0 = FV_n / (1+i)^n$

$PV0 = FV_n \times pvif_{r.n \text{ (tables)}}$

NPV

- Cash flows across a time zone- inflows and outflows
- Interest rate-called DISCOUNT rate usually the cost of capital/roi of the industry
- Discount value table.

NPV

- The present value of inflows across the time zone in years MINUS the present value of outflows reveals the NET PRESENT VALUE.

- If NPV is positive then the proposal is accepted else rejected.

- If NPV = 0 then (the discount rate is called IRR) and the decision is based on other criterions as the resultant NPV is indifferent.

Present value tables

Period	6%	7%	8%
1	.943	.935	.926
2	.890	**.873**	.857
3	.840	.816	.794
4	.792	.763	.735
5	.747	.713	.681

example

50000 cost of machinery

Yields 20000 every year for 3 years.if cost of capital is 8%

Pv of inflows = 20000 x . 926 + 20000 x.857 +20000 x .794

18520+17140+15880 = 51540

Pv of outflows = 50,000 x 1.000 =50000

NPV = 51540 – 50000= 1540

positive hence acceptable.

BCR = 51540/50000 = 1.03

>1 acceptable financially.

PROCEEDURE

- ADD EXPLICT COSTS AND IMPLICT COSTS QUANTIFIED ON A TIME FRAME AND APPLY TIME VALUE FACTOR.(OUTFLOWS)

- ADD EXPLICT BENEFITS AND IMPLICIT BENEFITS QUANTIFIED ON A TIME FRAME AND APPLY THE TIME VALUE FACTOR(INFLOWS)

Benefits Costs Ratio

$$BCR = \frac{\text{Pr}esent\ Value\ of\ Cash\ Inflows}{\text{Pr}esent\ Value\ of\ Cash\ Outflows}$$

ACCEPT IF RATIO IS MORE THAN 1. .