Introduction to Cost Benefit Analysis - Written Exam

Fahim Shahriar

(fasha23@student.sdu.dk)

Definition

Answer to the question no 1:

Cost benefit analysis (CBA) is an economic concept where it gives the economic value by comparing the benefits and the cost. It helps the decision makes to assess the project or decision based on the result. If the benefits outweigh the cost, then the project or decision could be worthwhile.

In our daily life, CBA helps many ways to make a decision in times of implementing something like project or decision which is helpful for the society.

For example, CBA can help in public policy decision-making. If decision-makers want to make any public policy for the society such as making new rules. In that case the cost will be the implementation and assessment cost and after the implementation the benefit will be the public wellbeing.

Answer to the question no 3:

The timing is important to conduct CBA. Because without time correct time we cannot measure the benefit and the cost which will not be helpful for the project or decision making.

Let's assume that a company wants to implement new software. So, the cost will be the implementation cost and maintenance cost. Benefits will be the faster production. If we don't have the actual time frame, then it's really to estimate that how long it's going to take to cover up the cost. In the end it is bad for the company.

So, we could say that timing is really important to conduct CBA.

Answer to the question no 4:

Usually the project manager, finance officer or a dedicated team oversees conducting the CBA. If any company wants to conduct their own CBA when making its own decisions, they could do that. Because every company should have their own personal or they could assign a team to conduct their CBA.

Answer to the question no 5:

Willingness to pay: Willingness to pay (WTP) is an economical concept that refers to the maximum amount of money an individual or group of individuals can sacrifice or pay for the good, service or other economic matters.

the individual's willingness to pay using a generic utility function would be,

$U_x = \frac{\delta x}{\delta u}$

This function indicates that the amount of utility (U) can get an individual's willingness to pay.

Answer to the question no 6:

To infer people's willingness to pay for visiting a National Park, we need to conduct some surveys and make decisions based on the result of the survey. The following step should be followed to get people's WTP.

- Make a context of the research: In the step we should research about our goals and why we need this and how we could accomplish that goal.
- Select survey area: After completing the research, we should make selections about our target area and people of the area.
- Select questionaries relevant to WTP: After selecting the survey area, we should make some question related to people's willingness to pay.
- Conduct the survey: Then we should implement our survey on people's willingness to pay based on the questions that we prepared.
- Gather the data: After conducting several surveys from different areas, we collected all data for the analysis.
- Data analysis: Then we analyzed the gathered data in a systematic way.
- Implication and recommendation: After the analysis and based on the results of the analysis we should make a recommendation for our goal.

Answer to the question no 7:

The Standing of the project is an economical term where benefits and cost is count for every alternative of the project.

Answer to the question no 8:

The benefit cost ratio ($\frac{Benefit_t}{Cost_t}$) will give the average monetary value which is likely to be same for all alternatives. On the other hand, difference between benefit and cost ($Benefit_t - Cost_t$) will give the actual monetary value for each alternative.

So, it not ideal to use the benefit cost ratio instead of the difference between the benefits and the cost as an equivalent.

Answer to the question no 9:

The 9 steps of CBA analysis are: -

- Step 1: Specify a set of alternative projects:
    - Before conducting the CBA of the project, find some other alternatives or areas that are relevant to the project.
- Step 2: Decide whose benefit and cost count:
    - make a decision of how benefit and cost can be count by considering stockholder and other factors. Different opinion leads to different conclusions. So it is best to make decisions at first.
- step 3: Define the impact of the category, catalogue them and select the measurement indicator:

    - define and make a category of the sector that going to impact and then catalogue them. Then make a selection of the measurement tools.
- Step 4: predict the impact over the time of the project:
    - Predict the impact and assign a value of those impacts over the time frame of the project.
- Step 5: Monetize all impacts:
    - After assessing the predicted value to all impact get the monetary value of the impact.
- Step 6: Discount benefit and cost to obtain the present value.
    - Decide a discount rate to see how much present value generate.
- Step 7: Calculate the net present value for each of the alternatives.
    - Then apply NPV formula for each of the alternatives and get the result.
- Step 8: compute sensitivity analysis
    - Apply some systemic analysis to the result that was generated previous step.
- Step 9: make a recommendation.
    - After the analysis make a decision or recommendation and decide the project is worthwhile or not.

Problem

Answer to the question no a:

NPV = $\sum_{t=0}^{50} \frac{B_t - C_t}{(1+r)^t}$