

Cost to Benefit Analysis

What is truly Best
for the Bottom Line?

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Cost Benefit Analysis (CBA)

is a systematic approach to estimating the strengths and weaknesses of alternatives (for example in transactions, activities, functional business requirements); it is used to determine options that provide the best approach to achieve benefits while preserving savings



Jules Dupuit

The earliest evidence of the use of cost benefit analysis in business is associated with a French engineer, Jules Dupuit, who was also a self-taught economist. In the mid-19th century, Dupuit used basic concepts of what later became known as cost benefit analysis in determining tolls for a bridge project on which he was working.

Systematic Review Process



EVALUATE

Systematically review all options and have tracking systems in place



ANALYZE

Analyze the data on a regular basis to monitor total or potential costs.



RESULTS

Choose the best option that yields the most favorable results.

Cost to Benefit Analysis

An evaluation of the cost to scrap an item as compared to the value as scrap VERSUS the cost to salvage that item as compared to the value as salvage.



In other words...

Don't spend a dollar to make 50 cents when it is not necessary!





**Someone makes an offer
to buy a ball mill for
\$300,000 FOB shipping
point loaded onto buyers
truck when it is only worth
\$50,000 as scrap!**



**Great Deal
Right?
Maybe.....
Do the Math!**

Scrap Option Evaluation of Cost

| | |
|-------------------------------|-----------------|
| Mobilization | \$5,000 |
| Labor 5 Days | \$2,500 |
| Cranes & Heavy Equipment | \$3,000 |
| Support Equipment & Personnel | \$2,000 |
| Oversight | \$500 |
| Materials & Consumables | \$1,950 |
| Demobilization | \$5,000 |
| Sub-total | \$19,950 |
| Purchase Offer | \$50,000 |
| Net Profit/(Loss) | 30,050 |



Salvage Option Evaluation of Cost

| | |
|-------------------------------|-------------------|
| Mobilization | \$75,000 |
| Labor 5 Days | \$25,000 |
| Cranes & Heavy Equipment | \$50,000 |
| Support Equipment & Personnel | \$75,000 |
| Oversight | \$3,000 |
| Materials & Consumables | \$34,200 |
| Demobilization | \$75,000 |
| Sub-total | \$337,000 |
| Purchase Offer | \$300,000 |
| Net Profit/(Loss) | (\$37,200) |



Time to Negotiate **OR** Go with the Scrap Offer

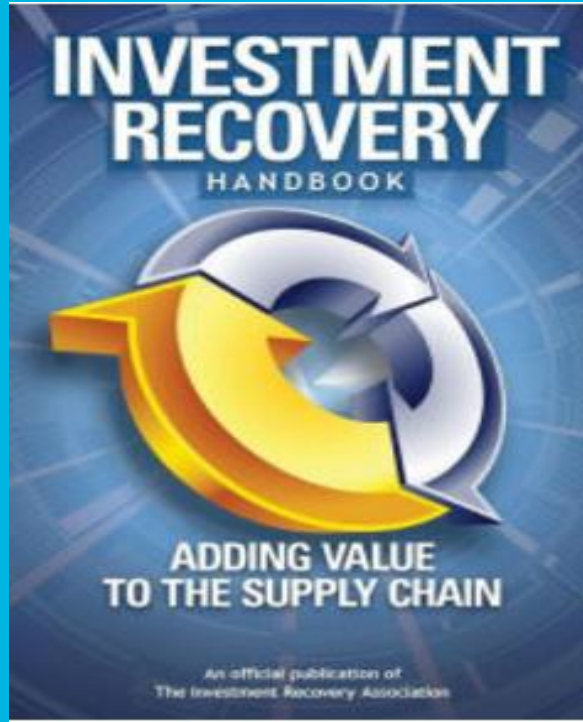
Have the buyer make their offer more attractive by:

ABSORBING THE COSTS OF REMOVAL:

| | |
|-------------------------------|------------------|
| Mobilization | \$-- |
| Labor 5 Days | \$ -- |
| Cranes & Heavy Equipment | \$ -- |
| Support Equipment & Personnel | \$20,000 |
| Oversight | \$3,000 |
| Materials & Consumables | \$1,500 |
| Demobilization | \$ -- |
| Sub-Total | \$24,500 |
| Purchase Offer | \$300,00 |
| Net Profit/(Loss) | \$275,500 |

INCREASING THEIR OFFER:

| | |
|-------------------------------|----------------|
| Mobilization | \$75,000 |
| Labor 5 Days | \$25,000 |
| Cranes & Heavy Equipment | \$50,000 |
| Support Equipment & Personnel | \$75,000 |
| Oversight | \$3,000 |
| Materials & Consumables | 34,200 |
| Demobilization | \$75,000 |
| Sub-Total | 337,200 |
| Purchase Offer | 500,000 |
| Net Profit/(Loss) | 162,800 |



Determining the Value of an Asset

Chapter 2

Surplus Asset Valuation

Appraisals are Made by:

- Assembling pertinent data;
- Gathering market research from new and used markets;
- Applying knowledge and appropriate appraisal techniques;
- Possessing the experience and judgement to reach an appraisal conclusion;



Everything Comes Off the Value

- Every time you look at it, touch it, kick it, and show it;
- Storage space and labor costs;
- Insurance, security and taxes;
- Cost to carry it on the books;
- Loss in scrap value if price of scrap drops;
- Maintenance of the item if applicable.



Definitions for Case Studies

- **Replacement Cost New**-the current cost of using the same or closely similar materials to produce a new replica of a property;
- **Fair Market Value**-the estimated dollar amount the company can expect to be paid for a property.
- **Scrap Value**-the estimate dollar amount the company could realize for the property if it were sold for its material content rather than for a productive use.



Case Study – 1 Year Old Mining Hoist



Replacement
Cost New:
\$500,000

Case Study – 1 Year Old Mining Hoist

| | | | | |
|----------------------------------|-------------------|----------------|-------------|--------------|
| Replacement Cost New | \$ 500,000 | % of FMV | 25% | Net Return % |
| Fair Market Value | \$ 200,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 50,000 | \$ 80,000 | \$ (30,000) | -6% |
| Scrap Value | \$ 20,000 | \$ 1,000 | \$ 19,000 | |
| Purchase Offer as % Scrap | 250.00% | | | |
| | | | | |
| | | | | |
| Replacement Cost New | \$ 500,000 | % of FMV | 50% | Net Return % |
| Fair Market Value | \$ 200,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 100,000 | \$ 80,000 | \$ 20,000 | 4% |
| Scrap Value | \$ 20,000 | \$ 1,000 | \$ 19,000 | |
| Purchase Offer as % Scrap | 500.00% | | | |
| | | | | |
| | | | | |
| Replacement Cost New | \$ 500,000 | % of FMV | 75% | Net Return % |
| Fair Market Value | \$ 200,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 150,000 | \$ 80,000 | \$ 70,000 | 14% |
| Scrap Value | \$ 20,000 | \$ 1,000 | \$ 19,000 | |
| Purchase Offer as % Scrap | 750.00% | | | |

Case Study – 1 Year Old Mining Hoist

| | | | | |
|----------------------------------|------------------|----------------|------------|--------------|
| Replacement Cost New | \$ 500,000 | % of FMV | 25% | Net Return % |
| Fair Market Value | \$ 200,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 50,000 | \$ 30,000 | \$ 20,000 | 4% |
| Scrap Value | \$ 20,000 | \$ 1,000 | \$ 19,000 | |
| Purchase Offer as % Scrap | 250.00% | | | |
| | | | | |
| Replacement Cost New | \$ 500,000 | % of FMV | 25% | Net Return % |
| Fair Market Value | \$ 200,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 50,000 | \$ - | \$ 50,000 | 10% |
| Scrap Value | \$ 20,000 | \$ 1,000 | \$ 19,000 | |
| Purchase Offer as % Scrap | 250.00% | | | |

Case Study – 5 Year Old Air Compressor with 500 HP Motor



Fair Market
Value:
\$150,000

Case Study – 5 Year Old Air Compressor with 500 HP Motor

| | | | | |
|----------------------------------|------------------|----------------|------------|--------------|
| Replacement Cost New | \$ 350,000 | % of FMV | 27% | Net Return % |
| Fair Market Value | \$ 150,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 40,000 | \$ 20,000 | \$ 20,000 | 6% |
| Scrap Value | \$ 30,000 | \$ 5,000 | \$ 25,000 | |
| Purchase Offer as % Scrap | 133.33% | | | |
| | | | | |
| | | | | |
| Replacement Cost New | \$ 350,000 | % of FMV | 33% | Net Return % |
| Fair Market Value | \$ 150,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 50,000 | \$ 20,000 | \$ 30,000 | 9% |
| Scrap Value | \$ 30,000 | \$ 5,000 | \$ 25,000 | |
| Purchase Offer as % Scrap | 166.67% | | | |
| | | | | |
| | | | | |
| Replacement Cost New | \$ 350,000 | % of FMV | 50% | Net Return % |
| Fair Market Value | \$ 150,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ 75,000 | \$ 20,000 | \$ 55,000 | 16% |
| Scrap Value | \$ 20,000 | \$ 5,000 | \$ 15,000 | |
| Purchase Offer as % Scrap | 375.00% | | | |

Case Study – 50,000 pound admiralty heat exchanger with brass head and carbon steel baffles



A buyer offers \$0.60 per pound as-is loaded onto their truck. Admiralty is worth \$1.20 per pound. Can you double your money if you separate and prepare the material?

| Weight of Exchanger | Value/Lb | Total Value |
|----------------------------|-------------------|--------------------|
| 50000 | \$ 0.60 | \$ 30,000 |
| | Expenses | \$ 5,000 |
| | Net Return | \$ 25,000 |

If the material was all on kind, probably so, but most cases it is not

| Metal | Pounds | Value/Lb | Total Value |
|--------------|--------|--------------------|------------------|
| Admiralty | 20000 | \$ 1.20 | \$ 24,000 |
| Yellow Brass | 10000 | \$ 0.60 | \$ 6,000 |
| Carbon Steel | 20000 | \$ 0.10 | \$ 2,000 |
| | | Gross Value | \$ 30,000 |
| | | Expenses | \$ 10,000 |
| | | Net Return | \$ 20,000 |

Will the additional cost to separate and prepare the material result in a higher return?

Suppose the quantity breakdown is different?

| Metal | Pounds | Value/Lb | Total Value |
|--------------|--------|--------------------|------------------|
| Admiralty | 30000 | \$ 1.20 | \$ 36,000 |
| Yellow Brass | 10000 | \$ 0.60 | \$ 6,000 |
| Carbon Steel | 10000 | \$ 0.10 | \$ 1,000 |
| | | Gross Value | \$ 42,000 |
| | | Expenses | \$ 10,000 |
| | | Net Return | \$ 32,000 |

Do the math!

Spending a Dollar to Make 50 Cents - When Does it Make Sense?

- On demolition projects;
- When something has to be removed anyway;
- When it is time to cut your losses;
- When no interest has been generated over a certain period of time;



Spending a Dollar to Make 50 Cents - When Does it **NOT** Make Sense?

- When time is on your side;
- A cost to benefit analysis deems it not to be worth it;
- When there are more attractive alternatives;
- When separating bi-metals where the cost to separate is more than the composite value;



Warehousing-Case Study-600 Widgets



Widgets Case Study

| Replacement Cost New for All | \$ 10,000 | % of FMV | 0% | Net Return % |
|----------------------------------|-----------------|----------------|------------|--------------|
| Fair Market Value | \$ 2,000 | Cost to Remove | Net Return | RCN |
| Purchase Offer | \$ - | \$ 200 | \$ (200) | -2% |
| Scrap Value | \$ 500 | \$ 200 | \$ 300 | |
| Purchase Offer as % Scrap | 0.00% | | | |
| | | | | |
| Storage cost per month | \$ 300 | | | |
| # Months in Storage | 8 | | | |
| Total Cost | \$ 2,400 | | | |

Do the Math!

Broadly, CBA has two main purposes:

1. To determine if an investment/decision is sound (justification/feasibility) – verifying whether its benefits outweigh the costs, and by how much;
2. To provide a basis for comparing opportunities – which involves comparing the total expected cost of each option against its total expected benefits.^[2]

Some Risk Factors

- Number of man-hours exposed to hazards;
- Additional oversight needed to salvage items;
- Hazards of critical crane lifts;
- Chance of significant drop in the scrap market;
- Product liability concerns;
- CERCLA
- Market becomes saturated with similar equipment



EVALUATE



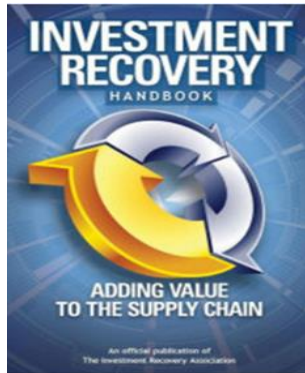
ANALYZE



RESULTS



Cost Benefit Analysis
gives you a simple,
quantitative approach for
deciding whether to go
ahead with a decision.



The background is a solid blue color. On the right side, there are several thin white lines that intersect to form a series of overlapping triangles and other geometric shapes, creating a modern, abstract design.

Questions?

The AECOM logo is located in the top right corner of the slide. It consists of the word "AECOM" in a bold, white, sans-serif font. The background of the slide is a dark teal color with a faint, intricate pattern of gears and architectural drawings. Two white diagonal lines cross the top of the slide.

Thank You!

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