Life-Cycle Cost Analysis Formula

A Guide to Calculating the Lifetime Cost of a Fixed Asset

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Every dollar counts when running a business. Poor financial decisions can lead to unnecessary financial strain and damage to your business's bottom line. Life-cycle costing is a great way to reduce risk and understand the true cost of an asset over the course of its useful life. This will enable you to work with your financial team to plan ahead and forecast an accurate amount of money for maintenance reserves.

Conducting a life-cycle cost analysis on a piece of equipment is easier than you may think. Use the formulas listed in this guide to determine whether it is more cost-effective to make repairs or order a replacement.

How to Navigate the Life-Cycle Cost Equation

Before you begin, it's important to understand the different data points you'll need in order to complete the life-cycle cost equation. Let's take a closer look at the numerical values in the formula and what they mean.

Life-Cycle Cost Analysis Equation Key

Equation Abbreviation	Meaning	Explanation
LCC	Life-Cycle Cost	This is how much money you will spend on an asset over the course of its useful life.
I	Initial Cost	This is the original cost to purchase the asset.
REPL	Replacement Cost	This is how much it would cost to replace the asset, especially if the system isn't expected to last its full life cycle.
RV	Remaining Value	This is any remaining value you can recover from the asset at the end of the time period. If you can't sell the asset or trade it, the remaining value is zero.
TP	Time Period	This is the time period (typically in years) you expect the asset to be useful and profitable.
OMR	Operating, Maintenance and Repair	This is the yearly average operating, maintenance and repair costs of the asset. Remember to include fuel and utility costs.

After understanding the different elements of the life-cycle cost equation, you'll be ready to start utilizing the formula for your business. To simplify the process, use the following workspace to gather the information you'll need to get started.

A Simple Formula for Calculating Life-Cycle Cost

What was the initial cost of purchasing and installing the asset?

• Use this value for “initial cost”

How much money could you recover from the asset if you were to sell it or trade it?

• Use this value for “remaining value”

What would it cost to replace the system today?

• Use this value for “replacement cost”

How many years do you expect the asset to be functional and profitable?

• Use this value for “time period”

On average, what is the yearly operating, maintenance and repair costs of the asset?

• Remember to include fuel and utility costs.

• Use this value for “operating, maintenance and repair costs”

Once you’ve answered each question above, you’re set! Plug these numbers into either of the following formulas to determine the life-cycle cost of your asset. The simple and expanded versions will give identical answers.

Life-Cycle Cost Formula (Simple)

LCC = I + REPL - RV + TP(OMR)

Life-Cycle Cost Formula (Expanded)

Life-Cycle Cost = Initial Cost + Replacement Cost - Remaining Value + Time Period(Operating, Maintenance and Repair Costs)

Remember: Multiply “TP” by “OMR” first. Then, add and subtract the factors in the order the equation is written. The result will be your life-cycle cost (LCC) for the asset. You can use this data to compare different system options and learn which will be the most cost-effective for your business over the time period you’ve chosen.

Need an example? We've got you covered.

A company purchases a fixed asset for $100,000 (initial cost). The asset has an expected lifetime of 10 years (time period), which means the asset will lose $10,000 in value through each year of its life.

Initial Cost ÷ Useful Life = Annual Equipment Depreciation
$100,000 ÷ 10 years = **$10,000/year in depreciation**

Seven years later, the asset breaks down. The organization needs to calculate the remaining value of the asset to determine if it would be more cost-effective to repair or replace the asset.

Since the asset has three more years of expected life left, the current or remaining value of the asset is $30,000.

Annual Depreciation x Remaining Useful Life (Years) = Remaining Asset Value
$10,000/year x 3 years left = $30,000 remaining asset value

If the cost of repair is ***less than $30,000***, it would make more sense for the organization to fix the asset and allow it to operate for its remaining three years.

If the cost of repair is ***more than $30,000***, it would make more sense for the organization to replace the asset.

For the sake of our life-cycle analysis equation, let's say that the asset costs $10,000 a year to operate, maintain and repair (OMR). Let's plug this information into our formula.

Life-Cycle Cost = Initial Cost + Replacement Cost - Remaining Value + Time Period(Operating, Maintenance and Repair Costs)

Life-Cycle Cost = $100,000 + $100,000 - $30,000 + 7($10,000)
Life-Cycle Cost = $240,000

According to this equation, the total amount spent on this asset and its replacement will be $240,000. This includes upfront costs, replacement costs, a $30,000 resell credit, and money spent on maintaining the asset over the seven years the asset was owned by the company.

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