OCTAVE

WHITE PAPER

The guide to understanding the impact on cost of poor quality





Cost of poor quality (COPQ) isn't merely a buzzphrase making the rounds. It's an issue that can affect any manufacturing organization and has severe implications for top and bottom-line financial results. However, the concept is little understood and the remedies to mitigate its impact are not well-known nor as widely applied as they should be.

What is the cost of poor quality?

The cost of poor quality is, put simply, the costs associated with providing poor-quality goods or services. Poor quality always comes with a price, and continued quality issues can lead to a drag on financial performance for the organization and possibly existential failure if enough customers abandon ship for an organization that offers superior quality consistently.

Fundamentally, it is critical to mitigate the cost of poor quality in order to minimize business disruption, brand risk and revenue impact.



The business impact of poor quality costs

Issues happen, people make mistakes and things go wrong — but these instances should be monitored and controlled to minimize their regularity. They should be so infrequent that they have zero impact on overall business performance and processes established such that future products or services will never incur the same cost of poor quality.

All businesses will have something related to quality management in their business plan. However, sometimes all that does is maintain the status quo year-to-year. And far too many businesses still rely on manual or paper-based processes that are ripe for error and hamstrung organizational efficiency. Clearly, the status quo is no longer acceptable for guaranteeing quality and the positive business value it brings.

Some of the main effects of the cost of poor quality are:

- Inability to quantify the cost of quality
- Lack of visibility, reporting or trending
- Disparate systems
- Disparate data
- Poor data quality
- Increased scrap/rework
- Increased complaints
- Higher warranty costs and increased exposure to recalls
- Poor brand reputation
- Customer retention issues



The importance of understanding COPQ

Having an understanding of the COPQ and the potentially devastating impact it can have on the entire organization is essential to strategic and roadmap planning within a business. Making effective change takes time, but not addressing the problems at all costs time, materials and money while potentially also leading to a loss of reputation.

It's important to remember that quality touches every part of a business and must be recognized as a wide-ranging issue. All organizational functions are responsible for identifying bottlenecks and quality issues in the system so they can be fixed promptly.

There's often a perception that quality is a cost center rather than a business optimization or operational efficiency tool, meaning the quality function or department ends up chasing after problems that could have been prevented elsewhere in the business. Complete support from the entire company is key.

Four categories of the cost of poor quality

COPQ can easily be split into four distinct categories, each having a place in the quality management process.



Appraisal costs

These costs are attached to measuring and monitoring activities that are directly linked to quality. Ensuring that products and services meet both customer and regulatory requirements incurs expenses, and these are categorized as appraisal costs. Mostly, any money that could be lost due to selling sub-par products or services would outweigh appraisal costs.

Examples:
Testing and inspection costs.



External failure costs

These are costs incurred by a company to fix defects discovered by customers after being sold to them. Many of these involve legal fees, which can be staggeringly costly. Even bigger costs are losing a customer — especially if that customer repeatedly bought from that business — and losing future customers after your reputation is tarnished.

Examples:
Warranty claims, customer returns and lost sales.



Internal failure costs

These are costs allocated to remedy product defects before the item or service is delivered to an end user or consumer. This money should be spent on making sure the product or service doesn't leave the factory if it has faults; they should be caught by the organization's internal inspection processes long before they can get that far.

Examples:
Rework, scrap and defects costs.



Prevention costs

These are costs incurred to prevent or avoid quality problems associated with the quality management system's design, implementation and maintenance. The aim is to minimize the number of problems and defects in products or services from the beginning, which is far less costly than selling said goods with defects and dealing with the consequences later.

Examples:
Quality control and inspection costs, training programs/ certification programs to ensure specific standards are met.

Calculating the cost of poor quality

To truly understand the cost of poor quality, it's important to calculate what poor quality truly means to your business. Here's the formula for calculating COPQ:

COPQ =
(Waste (materials) + defects (variation occurrence)) *
inefficiencies (time spent fixing)

When calculating an organization's COPQ, it's important to begin by specifying the timeframe that's being evaluated. Then, add up the total waste or variation encountered during this timeframe, and multiply the resulting number by the time spent correcting each mistake or problem. The number at the end is the company's cost of poor quality for that timeframe.

Of course, this cost is only the tip of the iceberg. The impact is much further ranging and includes:

- The longer-term impact on quality
- Customer complaints
- Lost sales
- Product reworks
- Poor brand image
- Lost customer trust

The longer problems are allowed to continue, the higher the associated costs. The COPQ might be 10-15% of operations, but **the hidden costs can be up to four times** the visible costs.

That's why implementing this formula is so vital. To break it down further, let's imagine for a moment that you're evaluating COPQ for a manufacturing company, and the timeframe that's being examined is one month. In that month, ten product defects occurred, which caused complaints, reworks and delays.

Assuming each defective product costs $1,000 (including rework costs, materials and additional labor), the total waste created by ten defective products comes to $10,000.

On average, it takes four hours to address and fix each defective product. Multiplying the total waste ($10,000) by the time spent fixing each issue (four hours) comes to $40,000 per month. Not many businesses are interested in losing $40,000 every month for very long.



The positive impact of automating QMS functions

Automation does so much more than tackle the cost of poor quality; in fact, it adds a wealth of capabilities to the QMS as a whole, including:

- The ability to effectively monitor and report on quality costs
- Efficient and harmonized processes and data
- Autonomous processes
- Connected and accessible data providing a single source of truth
- A comprehensive view of risk across the product life cycle

These features have a knock-on effect across the business that not only helps reduce the cost of poor quality. Automating your QMS functions has many benefits, including:

- Lower costs associated with scrap/rework
- Higher quality products
- Brand protection
- Increased revenue
- Visibility across the organization

Reducing the cost of poor quality

Knowing what the COPQ is for a business is the first step to ensuring it can begin to slash those costs. Allowing this knowledge to guide future business decisions guarantees that quality is always top-of-mind. When quality leaders drive change, procedures are streamlined, training is improved and continuous improvement becomes a priority.

Prioritization of quality drives quality culture across the business and impacts both visible and hidden issues. It also ensures quality becomes everyone's responsibility, removing roadblocks.

A comprehensive quality management system (QMS) is an invaluable tool for improving visibility, making quality processes more streamlined and removing any obstacles that might hinder progress.

With Octave Reliance (formerly ETQ Reliance), customers have shown measurable improvement in reducing their cost of poor quality

- Kimberly Clark's solution for two-way supplier collaboration delivered a 3,200% ROI through the elimination of unnecessary software, manual work and business risk.
- Lumileds has cut its QMS technology footprint by 35% and trimmed about $700,000 per year in operating costs for QMS.
- Trane reduced scrap and rework by 32% and reduced overall warranty costs by 70% and tens of millions of dollars.
- Wabtec saw $30M in annual savings in cost of quality programs. Cut the cost of poor quality by 15%, including a 50% reduction in tooling costs. Added $10-$12M in productivity gains over the last decade.
- United Airlines saves $120,000 in future damage costs with Octave Reliance® Safety Management.

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property, and assets– for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency, and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.

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