

Cost of Quality for Government

Christena C. Shepherd, M.A.O.M., ASQ-CMQ/OE, CQA

Jacobs Space Exploration Group

The American society for Quality (ASQ) has recently published ASQ TR2:2018: *Cost of Quality: Guidelines for Development, Implementation and Monitoring to Improve Quality and Performance*.¹ Efforts were made during the Technical Report drafting process to ensure that examples were provided which could apply to government services, rather than just private sector production. The concept of “Cost of Quality” was first described by Joseph Juran in 1951 and Armand Feigenbaum expanded on the topic in 1956.² Since that time, systems have been developed by the private sector to monitor and measure these costs. The concept is often described as “cost of poor quality”. ASQ sets forth guidance for development of a Cost of Quality Program in TR2:2018.

For government agencies, quality is often synonymous with performance, and since government does not typically track costs in the same way as the private sector, it may be useful to envision tracking costs associated with good performance vs. poor performance. Feigenbaum defined four basic “costs” in this methodology and the ASQ TR provides additional examples, some of which are included below, others have been added for this paper:

Prevention Costs: Quality (performance) Management Systems and planning, technical planning, process control, training, design reviews, risk assessments, preventive maintenance, mistake proofing; in general these are activities that are performed “up-front” or techniques introduced into the workflow to ensure that the process runs smoothly.

Appraisal Costs: All manner of inspections, monitoring, surveillance, and tests; audits, computer diagnostics, screening, checking bar codes, samples, preparing and reviewing forms and records.

Internal Failure Costs: All manner of re-processing, re-work, scrap, repair; facility, equipment or supply chain breakdown; downtime, contamination, security breaches, loss of data, internal miscommunication leading to mistakes; accidents and investigations. These occur internally before the public is involved. Some of these remedial and response actions can become routine and therefore, hidden.³

External Failure Costs: Power outages, data breaches, property damage and injuries due to mistakes and accidents; incorrect payments or billing; all manner of errors, failures and misinformation that directly affect the public, public infrastructure, and the environment, or waste significant tax dollar investments. Investigations also fall into this category when an external failure occurs.

It is often thought that “more quality” has to mean more inspectors, more inspections, more screening, and in short, added cost to the process. The objective, however, is to perform the

¹ ASQ TR2:2018: *Cost of Quality: Guidelines for Development, Implementation and Monitoring to Improve Quality and Performance*; ASQ, Quality Press, 2018

² Feigenbaum, Armand V., *Total Quality Control*, Harvard Business Review, **34** (6) November–December 1956

³ Cokins, Gary, *Measuring the Cost of Quality for Management*, Quality Progress, September 2006

prevention-type activities which serve to “do it right the first time” and keep the processes under control; while reserving appraisal activities for areas of risk, failures, hazards, negative trends, and technical requirements. Appraisal activities should not be used as a substitute for prevention, in the hope that the inspector will catch everything. Prevention and appraisal activities are proactive, while failure recovery activities are reactive.

Prevention activities may be difficult to track and measure in a government agency, since government activities may be one-of-a kind, research, new processes, or involve multiple organizations, agencies, or contractors. However, there should be the general understanding that any expenses due to extra time spent with planning and communication, consulting with the technical community, designing the processes, developing clear procedures, mistake proofing, and risk assessments will be miniscule compared to the expenses associated with the kinds of catastrophic failures that can affect the public, infrastructure and environment if government agencies “get it wrong”.

It was noted above in the definitions that remedial and response activities can be so routine, that they become normalized, and ultimately, hidden from any separate accounting. If reacting to mistakes and miscommunications, downtime, re-processing, close calls, and other such activities are an accepted part of doing the job, the mind-set develops that this is just the way things are and nothing can be done to change it. This acceptance of internal failures can be very expensive, and must be examined and challenged, since implementing process improvements will ultimately eliminate most of the “routine” mistakes.

Managers should have an awareness of this methodology and an understanding of the benefits of prevention and the necessary appraisals, which will far outweigh the costs of failures. They in turn need to educate personnel at all levels about the benefits and the specifics of implementing this mind-set. Internal failure costs can be tracked, as a performance indicator, in order to improve. This can be done in conjunction with such methods as Lean, Control Charts⁴, Plan-Do-Check-Act, Root Cause Analysis, or Mallory’s Quality Standards.⁵ Internal failures can also be viewed as close calls-the ultimate worst scenario didn’t happen, but could have if one or two variables had been different. Lessons learned from these close calls should be factored in to process improvement efforts, which is an important and cost effective prevention method.

Performance indicators should be exactly that- metrics that *truly* indicate results, and not a random set of metrics with no context that cannot be used. These indicators will only work, however, if they are used for proactive improvements and not for punitive purposes. A significant aspect of the Cost of Quality culture has to be a positive focus on process improvement. Otherwise, the effort of tracking these costs will not provide a good return on the investment and any negative information will likely not come to light in time to be useful.

⁴ Zadoo, Harsh, *The Power of the Control Chart for Government Decision Makers*, ASQ Government Division Newsletter, Spring, 2018

⁵ Mallory, Richard E., *Quality Standards for Highly Effective Government*, second edition; Productivity Press, 2018

External failures in the public sector can result in the loss of billions of dollars, lost lives, and a general lack of confidence in government. An understanding and implementation of risk management and risk-based thinking serves as a companion tool to identify what can go wrong, and what should be done early in the process or in the work environment (i.e., prevention and/or appraisal) to prevent the risk from becoming reality.

Cost of Quality methodologies should also be considered in the flow-down of requirements to contractors. Much of the work under the purview of government agencies is performed by contractors, and this is one cost saving methodology that can be recommended, especially since the contractors often perform various types of services, such as fabrication, maintenance, public works or infrastructure management on behalf of the government; and they often provide services directly to the public. Contractor costs are passed along to the government, and it is important to know whether prevention activities are an important part of their strategy. The ASQ TR is now available to be offered as a guideline.

Cost of Quality is a business process improvement tool that can be adapted for use by the public sector to improve operational efficiency and effectiveness. While a production-type program would generally not be appropriate for government operations, the methodology does speak to the financial concerns of executives, and could be a useful approach to gaining support for implementation of the other improvement tools.



Process Improvement Tools

References

ASQ TR2:2018: *Cost of Quality: Guidelines for Development, Implementation and Monitoring to Improve Quality and Performance*; ASQ, Quality Press, 2018

Cokins, Gary, *Measuring the Cost of Quality for Management*, Quality Progress, September 2006

Feigenbaum, Armand V., *Total Quality Control*, Harvard Business Review, **34** (6) November–December 1956

Mallory, Richard E., *Quality Standards for Highly Effective Government*, second edition; Productivity Press, 2018

Zadoo, Harsh, *The Power of the Control Chart for Government Decision Makers*, ASQ Government Division Newsletter, Spring, 2018