

A New Bottom-line for Government:

QT/OE and the Quest for Ever-Improving Service and Value per Dollar

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Dollars lie in government. Or at the very least, it is hard to get them to tell the truth relative to the value they *should* be buying. How many dollars will it take, or should it take, to accomplish an objective or societal good? How do we know if the program is doing a good job with the money we entrust it with? How do we know if we are getting ever-improving service and value for the dollars our citizens give government? How can we get dollars to tell the truth about the value produced by government?¹ What if we could find a viable “bottom-line” in government? A “bottom-line” similar to “profit and loss” analysis used in a “profit-driven” business; but a fiscal approach that makes sense for a “purpose-driven” government. A government friendly “bottom-line” that could tell managers, in one elegant graph, if and how they are improving overall, over time. What if this technique could provide us a logic and discipline that would drive government, on a daily basis, towards more effective and more efficient operations?

The measure, quality throughput over operational expenses (QT/OE) holds the promise of “telling the truth” about government performance. In this measure, Q (quality) is defined by what quality level of service the program manager would like to provide as compared to the organization’s actual quality level. Quality, often represented as a percentage, can be delineated by time, first-time success rate, error-rate, customer satisfaction, funding source expectations, etc. T (throughput) is simply the good or service that the government produces. Throughput is a term for the widget or service provided. Throughput is public value. Throughput production is the *raison d’être* of the team; the purpose of the team is to produce throughput. OE (operational expenses) are ALL of the expenses incurred by the organization producing the throughput in a defined time period. Thus, if a team produces 100 eligibility determinations this month at a 95% quality and an OE cost of \$9800 then the QT/OE calculation, $(.95)(100)/9800$ would yield 0.0097. The yield of the calculation is a fraction that shows what percentage of the throughput that one dollar will buy. Governmental teams often chose to represent this fraction as a percent change for simplicity and clarity. The inverse of the QT/OE yield ($1 \div \text{QT/OE}$) is the cost per throughput (cost per widget), adjusted for quality; in our eligibility example it would be \$103 dollars per quality determination. This paper will fully explain the QT/OE measurement and explore its use in government. But first, let’s explore some of the broader origins of operational improvement in Texas that helped give rise to the use of QT/OE in Texas Government.

In 2010, a man familiar with the “value of government” question, and decidedly unsatisfied with the answers he heard, was in a position to seek better methods. Representative Raul Torres, a CPA and a Republican from Corpus Christi, proposed a bill to apply continuous improvement theories to government.

¹ The essay offers this short goal of government: to preserve freedom, ensure security, and achieve ever-improving value per dollar expended. Do the most amount of good with the least amount of money.

He knew first hand that clients who adopted Integrated Theories of Constraint and Lean Six Sigma (ITLSS) directly improved their business and dramatically increased profits. He could see the trajectory of his clients' business change for the better on the books he balanced. As a recently certified LSS Black Belt and a State employee, I was immediately interested in the bill. I contacted Representative Torres and offered my assistance. At his request, and as a private citizen, I conducted a series of informational presentations at the capital to legislators, staffers, and "think tank" policy experts prior to the passage of the bill. At the time, Representative Torres asked me to make a cost-savings calculation that made me uncomfortable. Here is the slide from that August 15, 2011 presentation:

What is the Future State of Texas?

- Lets run the numbers:
 - FY2013 looks to need \$82B in general revenue
 - And \$177B in total revenue
- LSS efforts can reduce costs by 25% (at least!)
 - That's \$20.5B in GR and \$44.25B overall
- How can Texas use that money in the future?
- Representative Torres: "The longer we take to implement LSS, the longer we take to achieve these savings."



I knew from my experience, Michael George's assurances of 30 to 50% improvements in *Six Sigma for Service*, and the City Manager of Irving Texas assertion that if we applied ITLS to government we would be able to improve by at least 25%.² I was aware Army Undersecretary Westphal had affirmed ITLS saved the "Army \$1 billion in cost savings and \$3.3 billion in cost avoidances during fiscal year 2010."³ But I was not convinced that we could guarantee that a robust application of ITLS would result in 25% savings. The slide indicated we could take \$20.5B off of a \$82B budget. Frankly, I was worried about promising something we could not deliver. However, after four years of applying ITLS to a wide variety of more than 28 government programs, I am convinced that the 25% improvement mark is a very conservative estimate. True application of ITLS across Texas government will have a much greater yield. The process improvement projects outlined below, and my 10 year experience applying these principles to government, indicate that

² Michael George in *Six Sigma for Service* (New York: McGraw-Hill, 2003) provides assurances of reduced service costs by 30 to 60%, improved service delivery time by 50%, expanded capabilities by 20% -- without increasing staff, and increased customer satisfaction. Tommy Gonzales, the City Manager of Irving Texas, testified to the Texas State Legislature in 2011: "I invested \$200 thousand dollars in LSS and saved \$20 Million" and that he cut his \$188M budget to \$168M while increasing city services. My own experiences up to 2011 included knowledge that we could, after applying ITLS methodologies, take complex government processes like HUD sponsored home loans from 138 days to 58 days while reducing staff effort considerably.

³ FORSCOM Process Improvement Branch Offers Efficiencies Training at Forts Bragg, Drum and Riley March 24, 2011 by Paul Boyce; <http://www.army.mil/article/53777/forscom-process-improvement-branch-offers-efficiencies-training-at-forts-bragg-drum-and-riley/>.

improvements of 30% to 50% are routine. Costs-per-item and cycle-time decreases often exceed the 50% improvement mark by cutting times and dollar values by more than half.

Although it is beyond the scope of this essay to fully explain and validate my claim, it is important give some examples of breakthrough improvements in government, before I return the discussion of what may become the primary measure of government value: QT/OE. My argument concerning the efficacy of the QT/OE calculation is not as persuasive unless the QT/OE measure rides shotgun with ITLS improvement results. Starting with concentric circles around me, a LSS Black Belt and TOC Jonah, let's examine the value this continuous improvement initiative has provided and compare it with how much I, and my staff of 1.5 people, have cost the state over the last 3 years.⁴ TWC invested \$257,000 in my office and received well over 2 million in return in salary-savings only.

Let us also examine the results from improvement efforts at TDHCA and TWC. The Unemployment Insurance Tax department reduced tax adjustment backlogs from 10,000 to less than 500 taking the wait time from 5 months to one; or reducing the open records request from a backlog of 2300 to zero, taking the wait time from 37 days to 10 days; or reducing the wait time for a career school business to get a permit from 126 days to 68 days; or reducing our average time to contract from 314 days to 266 days; or reducing our time to investigate fraud from 84 days to 2.46 days; or reducing HUD backed home loans from 138 days to 58 days; or eliminating a total of 11 employee-time-costs spent on menial administrative tasks, freeing us up to increase the quality of our call center's interaction with the public. The brag list of "value provided" goes on, but you get the picture: The ITLS initiative at TWC has validated the 2011 predictions Michael George, City Manager Tommy Gonzalez, Representative Raul Torres and myself.

Let us imagine for a moment that the State of Texas decides to pursue a state-wide government improvement initiative similar to the ones I have led at Texas Department of Housing and Community Affairs (TDHCA) and TWC and described above. How could we possibly measure the ensuing improvements? How would we know if your investment in rapid process improvement was worth it? In business, such return or investments (ROI) calculations are routine. Increase in margin. Increase in customer base or market share. Increase in total sales. Invest in designing a product and sell more stuff. But it is not so simple in the purpose driven, not profit driven, world of government. What can we use to measure our productivity that has the ease and elegance of the "bottom line"?

Mark Moore in his 2008 lecture entitled, "Recognizing Public Value: The Challenge of Measuring Performance in Government," put the challenge thus: "while standard financial accounting systems can capture financial flows through and organization together with the costs expended by an organization in

⁴ Myself, my project manager, and my ¾ time executive assistance are staff are payed a total of \$257,400 a year (including benefits). Texas Workforce Commission answer to the Legislative Budget Board's December 2014 question as to how many FTE's we have reduced due to our "Rapid Process Improvement" ITLS efforts was a reduction of 52 positions. At any rate, assuming the annual salary at TWC is \$45,000 (\$58,500 including benefits) the ITLS-only savings to the organization was and estimated \$1,334,000 a year. Subtracting the salary costs of my office, you get a net savings of \$1,077,000 a year.

producing particular products and services, it should be clear that if we want to measure the public value an organization produces, we will have to construct some other technical system that can allow us to record when public value is being produced.”⁵ The measurement system Moore envisions would need to clearly identify what is produced by government and be able to reflect the value of that good or service. But the value in government cannot be “market value” because there necessarily is no market as a reflection of demand. There may be demand for government’s goods or services, but the value should not vary based on demand. The result would likely border on bribery. Instead, while the value to the customer will likely remain an intangible, we can determine the cost to produce the item of value and this may assist us in recognizing public value.

I propose a ratio between the contributions of government organizations and the costs they incur producing quality services or products.⁶ In order to fully explore this concept, we need to establish some terms and definitions. The good or service produced can be referred to as “throughput.” Quality can be defined as the percent or fraction of throughput that our customers’ expectations or the standards we public servants set for ourselves and our teams. If a team processes 100 applications, but only 90 are accomplished to both the quality standard of 95% error free or the time standard of 20 days, then the T will be 100, but the Q will be 90%. If it costs \$8000 for the salaries and other costs during the time the 100 are produced then the QT/OE will be 0.01125. $(0.9)(100)/8000 = 0.01125$. Taking the inverse of that fraction we can get the actual cost per quality application produced: \$88.89 dollars. This is the governmental equivalent of a “cost per widget,” adjusted for quality.

Taking a closer look at this example, we mathematically note that if the quality goes up to say 95% then QT/OE goes up (the decimal fraction number gets bigger). If we produce more, and throughput grows, then QT/OE will go up, as long as costs are held constant. On the other hand, if costs go down (and quality and throughput remain constant) then QT/OE gets bigger. Once we have baselined the QT/OE for each organization that produces a good or service (*every* team should produce a good or service) then we can begin to track percent change over time. Thus, if a good thing happens to quality, throughput, or costs, then we will see the QT/OE go up.

Let us take a moment to express QT/OE in straightforward terms everyone can relate to. In this example we can have our cake and understand it too. Let us say that you are making cakes for your church’s

⁵ Mark Moore, Lecture: 2008 lecture entitled, “Recognizing Public Value: The Challenge of Measuring Performance in Government,” Chapter 8, “A Passion for Policy: Essay’s in Public Sector Reform.” John Wanna, editor. The Australian National University, E Press. Accessed on internet: [HTTP://epress.anu.edu.au/anzsog/policy/pdf/cho8.pdf](http://epress.anu.edu.au/anzsog/policy/pdf/cho8.pdf).

⁶ Although I am proposing this ratio measure for the State of Texas and in governments globally, I am not the originator of this measure. Eli Goldratt and Robert Fox, *The Race* (Croton on the Hudson, NY: North River Press, 1986), page 29, developed this ratio for measuring productivity in response to the cost-cutting craze of the late 70’s and early 80’s which they saw as counterproductive to a growing, productive business, especially when manufacturers were cutting into the muscle of the most productive aspects of their enterprises. GOMB in Utah is currently using this system of measurement to measure agency productivity against Governor Herbert’s challenge to state government to improve their organizations by 25% in four years or less (improvements in quality, throughput, and/or efficiency all count toward this objective.)

bake sale. You make 10 cakes and it costs you a total of \$42.78 to produce all 10 cakes. But three of the cakes have turned out turnip-ugly and you decide not to take them to church because you would be too embarrassed sell those to the church ladies (who would buy them anyhow?). So your “T” is 10 cakes, but your “QT” is only 7 cakes (it is 7 because, out of 10 cakes, only 7 of them turned out good. So your QT is calculated as 70% quality measure—70% because only 7 out of 10 were good—multiplied by your T, which is 10... $70\% \times 10 = 7$). Your “OE” is the total cost for all baking goods, or \$42.78. So your QT/OE is 0.16363. This means that one dollars buys you 16 percent of a whole cake; one buck gets you a 1/8th slice of cake. Take the inverse of that ($1/0.16363$) and you get the cost per cake of \$6.11 for each cake you made. Lower your cost, your QT/OE goes up. Increase your quality to 8 good cakes out of the 10 you baked and QT/OE goes up. Bake and sell more cakes (with Q & OE held constant) and your QT/OE goes up. When good things happen in the organization, QT/OE usually goes up.

The impact of calculating and reporting this measure in government is tremendous. First of all, we become aware of our relative efficiency and we see the impact of our decisions. For example, if we invest in a new IT system we can directly see and calculate the impact of those costs relative to the throughput we produce. If the IT system is a great enabler, we would likely see QT/OE spike down with the cost of the purchase, but then begin to trend up as the efficiencies of the IT application avail themselves through a higher ROI.

QT/OE is designed to drive us to effective, efficient models that make sense from the perspective of the customers, employees, and organization. This natural momentum and propensity is very similar to how the “bottom line” drives good decisions for customers, employers and companies in the free market. QT/OE functions in government as an effective substitute for the margin and profit analysis constantly performed in the private sector. Over time, say in one year, our QT/OE rendering will enable us to compare our productivity of today with our relative effectiveness a year from now. Simply put, if the QT/OE continues to trend in positive performance, then the organization is gaining more quality output for each dollar it spends to produce the output. As such, the main message in QT/OE is in its performance over time. By tracking QT/OE, regardless of the budgetary process, we can tell if we are getting more or less efficient and effective.

It is important to recognize that a good QT/OE representation right now will tell you very little about any given organization except today’s cost per item. The real value of QT/OE is seeing and appreciating the performance over time. Used properly and consistently, QT/OE is instructional. An organization can baseline each throughput-producing activities, with 100 representing that baseline on a graph. If QT/OE has a positive percent change we should see the graph go up to 101, indicating a one percent change.

Some people are not comfortable working with such a small fraction and would prefer to simply use the actually cost-per value. For example, major investigations involving travel and months of work can cost \$4,000 on average. In this case, the T/OE would be 0.00025. Such a tiny fraction does not make sense to many: why not just use “cost per” of \$4000 dollars? The best argument for using the small fraction and not

using the cost-per value is that there is a tendency for stakeholders is to focus on the actual cost of the item when we use the cost-per instead of focusing on improvement. In our example of major investigations, a stakeholder would be tempted to concentrate on the large cost: why does an investigation cost \$4,000? They are likely to lose the focus on the quality aspect, or the fact that the organization has brought the cost down from \$4400 in the last year, or the fact that increases in production have eliminated all backlog. The QT/OE fraction (or percent change calculations) enables us to see improvement trends over time and appreciate the importance of quality and production improvements, along with reduced costs.⁷

It is important to note that organizations rendering a QT/OE metric do not have to turn every bit of throughput into a QT/OE calculation. Much of what occurs in your organization adds value to our throughput production, but that effort is often just the cost of doing business. Managers and leaders should not be concerned if their QT/OE does not include some of their ancillary goods or services. It is both acceptable and functional if the QT is *representative* of our organization (and thus not entirely descriptive or encompassing of *all* our processes). QT/OE is a calculation of productivity, efficiency and effectiveness. It is not an accounting tool and therefore does not have to account for all activity in the organization (although it *does* account for all operational costs).

Tracking QT/OE over time enables government organizations to identify the “value realized” results of improvement efforts. The definition of “value realized through improvement” is the value of the additional work that is made possible through improvements in efficiency, productivity, and quality in the time following improvement projects as compared to the baseline year, plus any actual net savings.⁸ In other words, the value realized is the additional cost that would have been incurred by producing the volume of quality throughput in a subsequent year at the rate of cost from the baseline year.

Here is an example: One office team of four accomplished 4000 eligibility determinations in 2014, which was the year prior to launching a process improvement project. After the project the team was able to accomplish 5000 determinations in 2015 and 2016. If the team did not go through the improvement project then, in order to accomplish this additional 1000 determinations of throughput, they would have had to hire a fifth person. This additional FTE, at the government agency, would have cost \$59,300 a year. This \$59,300 is the value realized for the improvement effort for each year, or \$118,600 (for both 2015 and 2016). The improvement efforts resulted in more services, and/or higher quality services, without increasing the budget of the organization. This is value creation; this is “value-realized.”

⁷ The QT/OE can be represented as a percent change to compensate for the tiny fraction which may be confusing to some. Utah’s continuous improvement experience was that when cost per was used instead of QT/OE then the “Q” factor, the quality, was often lost in the discussions and operations. The Utah Governor’s Office of Management and Budget now tracks and reflects the QT/OE percent change of improving agencies.

⁸ The baseline year would ideally be the year (or average of years) *prior* to launch of the improvement projects. This will help isolate the true value of the improvement. Net savings is any program funds (cash) left over from program costs. Note that net savings in program work can be problematic; government professional ethics drive managers to spend all their allocated funds to accomplish as much public good as possible. Mechanisms must be established to allow for net savings when the additional expenditure is not necessary.

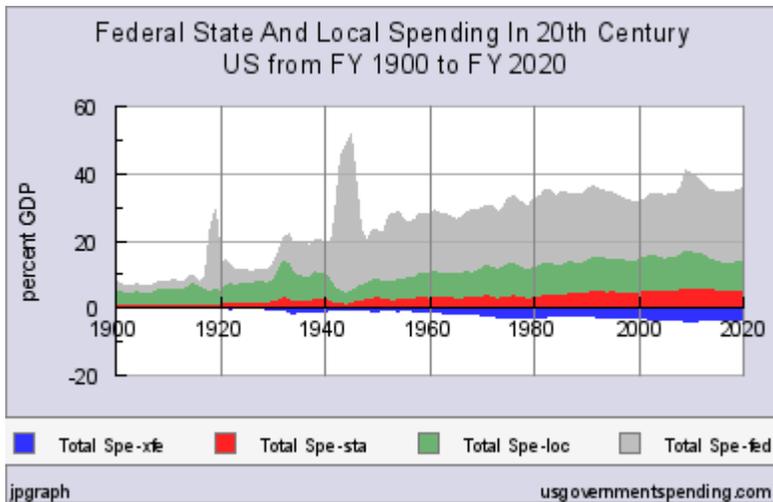
Typically in government, there is little connectivity between the value that an employee provides an enterprise and the bottom line. This essay aims to change that. Operational costs and budgets are abstractions that don't mean much to employees on a day-to-day, week-to-week basis. When raises or promotions are given, they are often granted because of the service and dedication of the individual relative to his or her peers, not because the organization achieved its mission with less costs, produced more throughput faster, quality went up precipitously, or thoroughly satisfied our customers. In fact, until now, there has been no viable model for connecting the work of the individual with the success of the office in government. All too often "gut assessments" (AKA favoritism by some) is the dominant method of evaluating performance. Pay for performance arrangements have often produced perverse incentives and undermined the original intentions. In general, the market forces business to have connectivity between employee contributions and the satisfaction of the customer. Do they buy our product, do they come back, are they pleased, are our profits increasing? All those things matter and are tracked in business. Consequently the value and productivity of employees is tied directly to the value and success of the organization. Can we accomplish this in government?

The issue of compensation in state government comes up often when discussing challenges to government productivity and improvement. QT/OE provides us a model to increase compensation when a team increases quality and productivity while controlling costs. QT/OE will enable us to see the relative gains if an organization can do the same amount of work if they are "down" several employees. In this example, if our quality remains good and our productivity remains constant then the three vacancies will result in less spent on salaries. The work that is accomplished by a team of 40 can be accomplished by a team of 37 why shouldn't we allocate the windfall similar to a business. First re-invest in your organization: where do you need upgrades or new equipment. Then payback your investors; in the case of government this would be the taxpayers. Then reward the people who efficiently and effectively produced the quality good or service, in this case the government worker. The ratio for how we would allocate the "profit" would need to be worked out, but why not allocate at least one of the three salaries to each of the areas described: investment, taxpayers, and employees?

Imagine every manager who is in charge of producing any throughput is thoroughly familiar with their QT/OE ratio. This would apply to the team that approves permits all the way up to the director of Health and Human Services who might have a quality throughput of assisted persons (T) whose quality-of-life was improved (Q). A manager's understanding of the vicissitudes of their processes is dramatically enhanced by tracking QT/OE over time. Norma Martinez, the manager of TWC's WOTC program knows every nook and cranny of her QT/OE productivity chart. "This dip is when I loaned out two of my staff to assist with the migrant farmworker assistance program," she explains. "This spike looks like a jump in efficiency, but it was because the federal government's sequestration. The end of that released a torrent of applications, most of which were easy and fast to execute. You can see here that applications slowed down

until re-authorization happened.” Norma has reduced her staff from 16 to 9, yet her team processes more applications than ever before, to a very high quality standard. Just ask her, she will tell you.

We should pause our discussion of QT/OE’s use in government and consider the magnitude of government spending in the United States. Government spending currently exceeds 38% of the gross national product. It is over 6 trillion annually.⁹ Government improvement initiatives and QT/OE tracking have the potential to improve services while reducing costs. The quality and improvement efforts in the United States during the 80’s and 90’s are often credited with revitalizing American industry. Continuous improvement and QT/OE can do the same in our government.



Let us return to imagining. Envision every level of government embracing a continuous improvement ethic to some extent. Imagine accomplishing more government services, at every level, with less effort. Imagine every agency of Texas staffing a quality, innovation, and improvement director capable of leading improvement efforts. Perhaps much more important, imagine knowing your tax dollars are working in any given program because an army of managers like Norma Martinez stands ready to demonstrate their team’s value to society. Imagine every manager is familiar with the QT/OE’s indication of improvement and relative efficiency in their areas of responsibility. Imagine trusting government. Imagine 25% of 6 trillion dollars. That is a lot more savings-dollars than Representative Torres asked me to commit to in 2010.

⁹ http://www.usgovernmentsspending.com/recent_spending reports: “Government spending first reached \$1.5 trillion in the mid 1980s, and then breached \$2 trillion in the recession year of 1991. In the 1990s spending increases started to level off, reaching \$3 trillion in 1999. But in the 2000s with the dot-com crash and the response to 9/11 government spending began to accelerate, reaching \$4 trillion in 2004 and \$5 trillion in 2008. Then came the Crash of 2008 and government spending exploded to \$6 trillion in 2010. After a few years of modest growth in nominal dollars, spending is expected to resume regular increases by the late 2010s. . . In FY 2016, total US government spending, federal, state, and local, is “guesstimated” to be \$6.6 trillion. Federal spending is budgeted at \$3.95 trillion; state spending is “guesstimated” at \$1.62 trillion; local spending is “guesstimated” at \$1.82 trillion.”