

Productivity Improvement Using Ten Process Commandments

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Abstract

The purpose of any industry framework is to guide organizations in establishing, documenting, and maintaining an effective and economic quality management system. This demonstrates to the customers the commitment to quality and ability to supply the customers' quality needs with improved productivity savings.

In every organization, rework is waste, and across vertical and horizontal business functions, the true cost of quality is often lost. A cost of quality (CoQ) approach looks at processes and events from both a preventive and corrective perspective and derives a cost that can be analyzed in the context of the business cycle. The objective of a CoQ approach is to capture the total value of poor quality in the organization and provide a method that justifies the elimination of that poor quality. Understanding the true cost of quality in an organization adds value to the business processes, which in turn, increases its business.

This white paper uses 10 "process commandments" as guiding principles and cost of quality as a metric to derive productivity improvements and present a view on how a process framework was deployed in a large financial and insurance organization.

The productivity improvement is a never-ending journey. Many people never take the first step because they do not see the end of the road. Productivity improvement initiatives are often perceived as expensive, when one is not aware of the benefits that they achieve when executed with due diligence. If the process improvement journey is carefully planned and executed, the painstaking investment in the initial cost, effort, and people may be rewarded by overwhelming results. Nothing worthwhile is ever achieved without persistence, and as the famous saying goes "*It takes effort to reduce effort.*"

There are several views on how we can achieve breakthrough results using process improvement principles (PIPs). These principles work well and help organizations translate transparent intentions into visible financial results.

The key success factors for a process improvement program are continuous improvement, commitment from top management, and a sustainable improvement organization.

Business Case and Problem Statement

The organization is on its journey of process improvement and wanted to improve and streamline its software processes in alignment with its strategic objectives and has chosen SEI CMMI® Version 1.2 process model as best practices against which to be evaluated. The organization's IT division wanted to determine costs and benefits of implementing CMMI® Maturity Level 3 framework in alignment with its strategic objectives. The business problems were defined as:

- Lack of consistent, repeatable, and effective processes for IT delivery
- Lack of process discipline and process governance
- Nonavailability of measurement mechanism to measure and track the productivity improvement

Gap Analysis

The organization's IT division was strategizing to improve the value of the services they provide to their business partners. A key element of this strategy was to leverage proven industry standard process frameworks such as CMMI®, ITIL, ISO, etc. as a mechanism to drive broad improvements in the quality and reliability of their service delivery.

A formal gap analysis against a CMMI® model was conducted. The objective of this gap analysis was to objectively evaluate the organization's existing processes and then develop detailed action plans to produce timely and measurable impacts to their delivery efforts.

The following sets of solutions were designed to:

- Define and deploy quality management system (QMS) an integrated and repeatable process framework that encompasses solution delivery, service delivery, people management, and support practices
- Assess organization's practices and processes and identify gaps against industry frameworks and provide a roadmap of higher levels of maturity (e.g., CMMI® Maturity Level 3 compliant process framework)
- Demonstrate improvement in product quality and reduce costs

Achieving Solutions

To achieve the above solutions, TCS was chosen as a vendor partner for deploying a process framework. TCS deployed a

process framework in the organization using the 10 "process commandments" as guiding principles and a CoQ model as a measurement vehicle to derive productivity improvements.

The roadmap for the initiative was divided into process definition, process pilot, process deployment, and business as usual phases.

Ten Process Commandments

1 Leadership Commitment

“ The speed of the leader is the speed of the team. ”

What It Is

A continuous improvement approach requires commitment from top management. To successfully climb the maturity ladder, organizations must install and maintain impeccable improvement processes. To do this, organizations need a sustainable improvement mechanism that is adaptable to changing market circumstances. The organization's strategic goals are the key drivers for achieving process improvement. The key to success lies in the business implication, as this will bring improved employee morale and higher customer satisfaction. Process Improvement without a business implication is not warranted and is a waste of time.

For the Initiative

An initial gap assessment was performed to understand where the organization stands with respect to the process maturity. An effort spanning three weeks was approved and funded and its owners assigned. The top leadership closely monitored the effort and evaluated its findings. The outcome of the analysis



Figure 1: Process improvement journey.

was reviewed at the senior leadership meeting, and a strategy was drafted to address the findings of the gap analysis. As a result, this initiative of process improvement was taken up.

Measures of Success

- Number of process improvement initiatives undertaken in the organization
- Number of process improvement initiatives successfully implemented

Dos

- Do lead by example and set clear deployment targets and performance goals.
- Do practice a collaborative approach of management.
- Do facilitate transparency and empowerment.

Don'ts

- Don't undertake more improvement initiatives where change management will be a challenge.

2 Manage Change

“ Change must involve people—change must not be imposed upon people. ”

What It Is

Change management is a process designed to assist teams in telling the process improvement story from initial actions

to the improved state. It describes the goals, the motivation for improving, the commitment required by various parties, the assumptions that are being made, the overall process to be applied in managing this initiative, and the infrastructure required to manage and support the initiative. Change management and communication are key components of the quality approach, encouraging organizations to continuously improve their methods and the products and services delivered to customers.

For the Initiative

Using the 3A Window Analysis Model, the organization was assessed for process awareness, acceptance, and adoptability, and gauged the level of readiness of the people for the change.

Organizational strengths and opportunities for improvement were identified including *where* the organization stands in change implementation programs and *what* they need to correct to increase the acceptance of change by the people. This process also ensured that the entire organization had the basic knowledge and were able to demonstrate the skills needed to participate in the proposed solution for change.

Based on the readiness assessment result, new communication channels were created using newsletters, training sessions, general meetings, and discussions so that people could receive information quickly.

Measures of Success

- Change readiness score—i.e., the organization's percentage of strengths and weaknesses

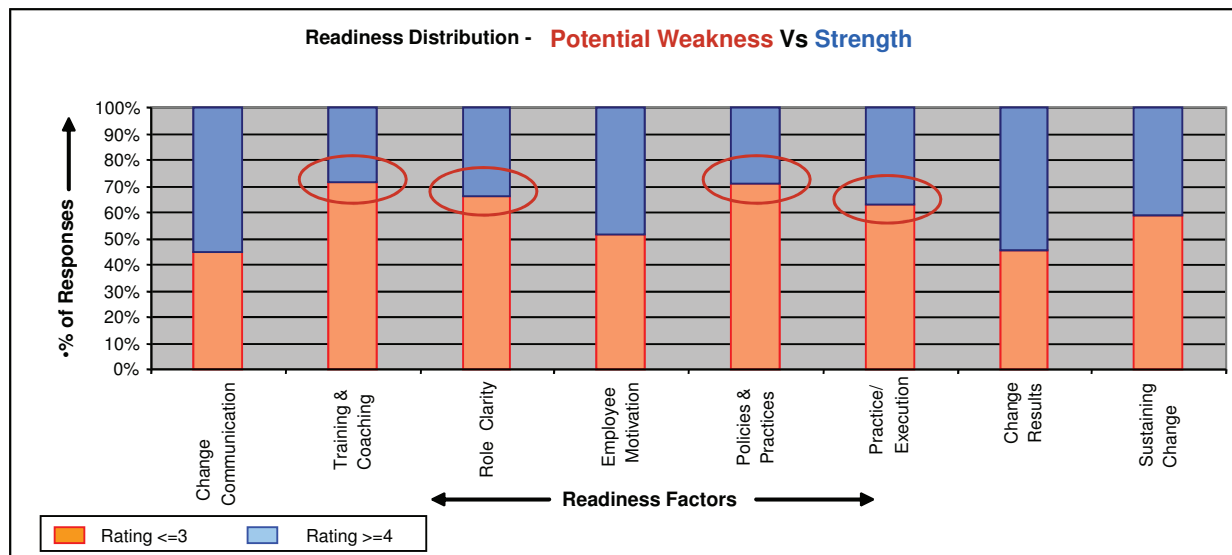


Figure 2: Distribution of responses per readiness factor.

Dos

- Do conduct post-implementation reviews to verify whether the change succeeded or not.
- Do identify impacted entities.

Don'ts

- Don't put people in who can spare time.
- Don't create a separate organization structure in isolation.

3 Organize and Plan

“ Planning: The catalyst for effective deployment. ”

What It Is

Planning includes: setting a strategic direction; determining the monitoring mechanism; making estimations; people management; identifying tools and techniques; and building trust and leadership in the organization. The Deming cycle of “Plan,” “Do,” “Check,” “Act,” when applied at every phase of the project life cycle, keep the cycle oiled and running.

For the Initiative

Planning was performed with all the internal and external stakeholders of the initiative who knew the process. Due to the magnitude of the initiative, it was divided into substreams, and owners were assigned along with their responsibilities. Best practices were identified and adopted. During the execution, the data was collected and monitored very closely. The risks of the project were appropriately identified and mitigated, and unknown obstacles encountered were appropriately managed (escalated, addressed). All cross-functional interdependencies were effectively identified, prioritized, planned for, and managed. Any conflicts and issues were managed effectively and constructively. Daily stand-up meetings were conducted to identify and address the burning issues and address the backlog from previous day. Applying Deming's cycle of “P,” “D,” “C,” and “A” helped in identifying and fixing the problems by understanding the root causes of the problems.

Measures of Success

- Health assessment score of the project at optimal intervals.

Dos

- Do reprioritize the plan due to the changes.

Don'ts

- Don't forget to pay attention to the early warning signals.

4 People are the assets

“ Reward people and give positive reinforcement to drive success. ”

What It Is

People are the key factors to bring in any change. Generally, organizations that commit to process improvement for improving their processes rely heavily on its most valuable resources—i.e., people. Having a good process improvement framework in place probably will not solve all of the problems that an organization has; it must have good people who are process oriented to execute the process framework that has been laid down.

For This Initiative

Recognition and encouragement were the key factors in keeping people motivated. It did not take long for the leadership to understand the strength of each team member and assign responsibilities and accountabilities. One senior team member was assigned as a mentor to a junior team member to help create more transparency in the individual's performance. People felt empowered to take risks and liked to stretch beyond their comfort zones.

Measures of Success

- Number of trained auditors, reviewers, and quality coaches

Dos

- Do create a career growth path.
- Do “reprimand in private, but reward in public.”
- Do hold events and celebrate success to spread the best practices and motivate others.
- Do foster integrity and trust in the work environment.

Don'ts

- Don't introduce bias.
- Don't compromise on excellence for rewards.

5 Organizational Training

“ Training is an investment, not an overhead. ”

What It Is

Create buy-in within key leadership team for process training. Develop a training plan in alignment with the organization’s vision and business objectives. Time, money, and resources need to be sponsored for training.

For the Initiative

People identified to work on the Initiative from the client organization were nominated to undergo a 3-day CMMI® introduction class. A generic Process Framework Foundations class was mandated for everyone in the organization. Different training modules to suit the training needs of various cross-sections of the organization were identified and crafted. People were assigned goals to complete a certain number of process trainings per year. The training feedback was collected and evaluated, and the feedback was incorporated into the training material. Appropriate job aids and learning tools were created and deployed to aid learning.

Measures of Success

- Number of trained people on process

Dos

- Do set clear targets on process (awareness, training, and certification targets).

- Do design training to suit organization’s line of business, product, and services.
- Do invest in training.

Don’ts

- Don’t expect an immediate return on investment.
- Don’t make training another “to do” checklist item.

6 Process is the backbone

“ Process infrastructure is the foundation for sustenance. ”

What It Is

The framework for process adoption should be chosen in such a way that it best suits and meets the organization’s objectives. This will be an acid test for the organization’s senior management’s thought leadership. Half the battle for process improvement is already won if a right process framework is chosen by the performing organization. The framework should address the business, technology, and people needs. The focus is to move away from crisis management and move towards process management.

For the Initiative

The framework chosen for this process improvement initiative is industry recognized; multiple model compliant frameworks (such as ISO, CMMI®, and PCMM) are called a standard quality management system (QMS) framework. The

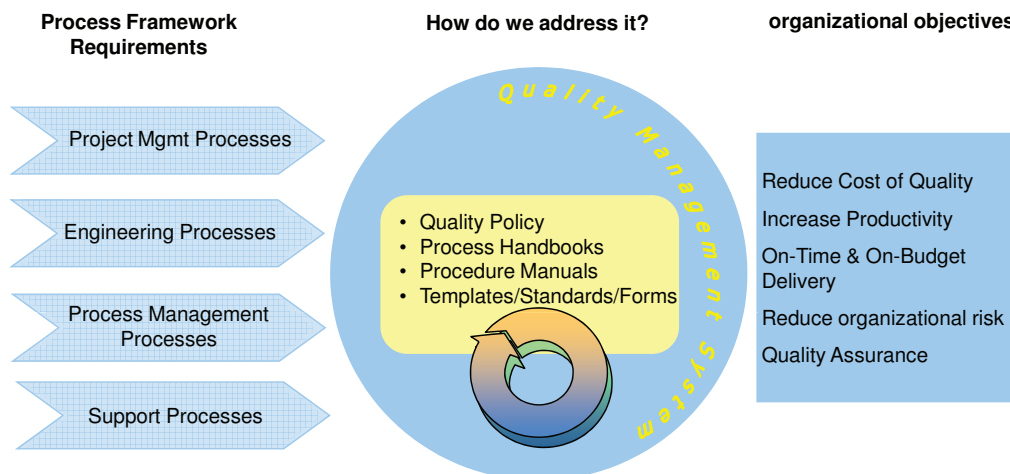


Figure 3: Quality management system.

framework evolution mechanism is built into the framework through process improvement proposals. Little tailoring was performed to adapt to the organization's current and future needs yet retain the original process flavor, rigor, and model compliance.

Process Definition

The intent of the process definition phase was to close the gaps from the gap analysis phase. The process adoption teams were formulated taking the most experienced subject matter experts from various process areas of the organization. During the process definition phase, the tailoring opportunities identified by these process adoption teams were incorporated into the process framework. A few projects were identified to baseline the organization's CoQ, which was at 64%.

Process Pilot

The process framework has been tested for its effectiveness in order to satisfy the very basis of its definition. Hence a few projects were selected for piloting the processes initially. The CoQ was tracked for the pilot projects. Process champions were identified and assigned to each project to facilitate the team members to understand process and implement it effectively in their day-to-day business activities. The quality group, consisting of process group, quality assurance group, metrics group, and training group, was established. The analysis of the CoQ data (example in Figure 4) has shown the testing phase to be the maximum contributor.

Deductions from the root cause analysis:

- 76% of defects captured in testing were originated in the initial phases of the life cycle; however they have been leaked to the testing phase.
- There needs to be greater emphasis (planning/preparation/effectiveness) on final inspections, external

reviews, AND code reviews/walk-throughs.

- A large percentage of defects attributed to code were due to not very effective unit testing.

The intent behind this root cause analysis was to explicitly focus on the process variables and show improvements in CoQ from its baseline of 64%.

Process Deployment Phase

With the learning from the pilot phase, the process framework was updated through process improvement proposals improvising the process framework. The process framework training was conducted and was deployed on all of the new projects coming through the pipeline in the organization. The process framework deployment results were monitored through process checks, audits, reviews, tailoring opportunities for the process framework, and metrics. The results of all the above were plotted to study the trends.

BAU Phase

The TCS consultants' presence was minimized. The client organization ramped up their resources in quality group and in process coaching and facilitation activities. Assessment was performed to evaluate the process maturity against CMMI® model.

Measures of Success

- Process maturity index / project deployment scorecard
- Number of projects deployed using the new process framework
- Number of reusable assets created

Dos

- Do select a single framework that complies with industry-

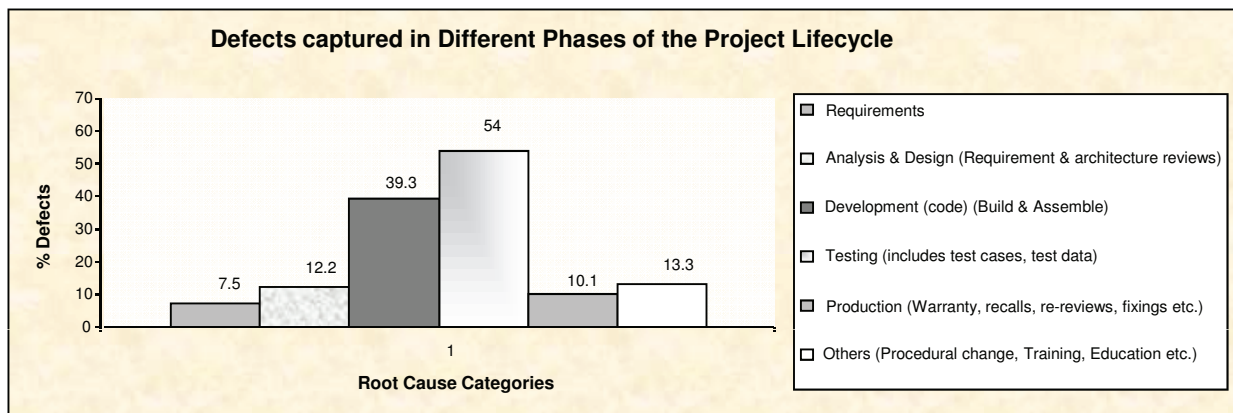


Figure 4: CoQ root cause analysis.

recognized models, thus meeting the organization's business and technology needs.

Don'ts:

- Don't make too many adaptations to the process framework.

7 Metrics Based Approach

“ Track, monitor, and manage performance. ”

What It Is

It is a performance measurement system that improves the bottom line by reducing process cost and improving productivity. A performance measurement system allows aligning strategic activities to the strategic plan of an organization. The measurement system permits real deployment of the strategy on a continuous basis; defines KPIs and metrics; captures status, progress, and alerts; and, finally, provides online real time data to enable decision making.

For the Initiative

A top-down measurement system using the project and IT level dashboards was established to measure and monitor process efficiency. The top-down measurement system provided accountability and incentives based on real project and program data, and not subjective judgments. CoQ metric was the performance indicator through which improvements in productivity were measured.

Measures of Success

- IT and project dashboard usage
- Accuracy of information with respect to project CoQ and process measures (percentage of project savings)
- Accessibility of project and IT dashboard information

Dos

- Do provide drill down and roll up from organization goals to individual goals.
- Do leverage digitized enablers.
- Do use dashboards for status and performance reviews.

Don'ts

- Don't use complex measures.
- Don't use too many measures.

8 Assess and Evaluate

“ Evaluate what you want—because what gets measured gets produced. ”

What It Is

This process is the requirement of any industry recognized model to evaluate and assess the current framework and the processes followed in the projects. Unless the processes are evaluated, it is uncertain in what direction the projects are headed in the organization. Also, this process gives the leadership the trust and confidence on quality assurance practices built into the products and applications being developed.

For the Initiative

The standard process followed was evaluated through a practice called “random” audits. The random audits were conducted on projects more frequently than the formal once-a-quarter audits to check the compliance to CMMI® and other models. Product reviews were diligently planned and conducted and these ensured that the quality assurance pieces were built into the products. The deviations gave the project manager the early warning signals to which to react. CMMI®-based SCAMPI assessments were performed at strategic milestones of the initiative to evaluate the new process deployment and process framework compliance to the CMMI® model.

Measures of Success

- Number of reviews and evaluations conducted per project per time interval

Dos

- Do conduct on-time reviews and evaluations/audits.
- Do perform timely closure of the process deviations.

Don'ts

- Don't link the process evaluation results to any individual's performance.

9 Improved Communication

“ Communication is the central nervous system. ”

What It Is

Communication binds everything together. Starting from the foundation and ending with the roof of the process deployment, everything is bound by a strong mortar of communication, ensuring the right information reaches the right people, on time. It influences thoughts, feelings, and actions in alignment to objectives, and enables sharing of knowledge and information. It acts as a vital link between all elements of organizational DNA. The success of process and productivity improvement demands communication with and among all the organization members, suppliers, and customers.

For the Initiative

A communication plan was created with different communication channels as needed towards preparation, readiness, and awareness of the new process framework. The communication plan had three dimensions of communication—downwards, upwards, and sideways—to handle all-ways communication for a better understanding of organizational needs, to provide suggestions to upper management of the challenges faced during process deployment, and to deal with client partner and key service providers in a more professional manner.

Measures of Success

- Number of best practices adopted across the organization
- Number of trained and experienced process coaches.

Dos

- Do package the right way: if it looks important, then it must be important.

- Do have a good mix of various modes and channels of communication.

Don'ts

- Don't push communication to the back seat.
- Don't communicate without a purpose.
- Don't make it one person's job.

10 Focus on Benefits

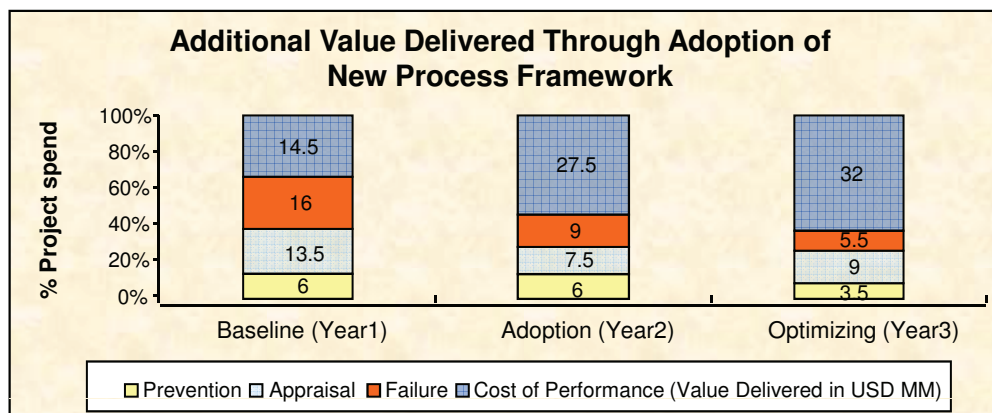
“ \$\$\$ is the bottom line. ”

What It Is

Most often the organization's leadership team / sponsor are interested in knowing what the outcome of the process improvement effort is and how the solutions can be implemented. The methodology and approach used in the projects are essential only to the extent of arriving at the right conclusions and capturing their attention in the beginning. The focus here is to translate project results into hard bottom-line savings and to mandate savings in the improvement efforts across all business and technology platforms.

For the Initiative

During Year 1, the organization had been ramping up capturing CoQ to compare and measure the cost-effective process improvements in its IT projects. The CoQ baselining was done using time-tracking codes for 30 projects with an estimated dollar spend of US\$ 50.1 million, and baselining was done at 64%. The organization has made huge strides towards better process and project management with lesser rework efforts. The overall CoQ in 2 years down the line



(Annual Application Development spend of \$50.1 Million was assumed; and COQ values for projects demonstrated the expected trend and are in close proximity to the established industry values.)

Figure 5: Cost of quality comparative study (value delivered).

was 37% against 64% baseline CoQ, which demonstrated 27% improvement in productivity—a total dollar savings of US\$17.5 million in 26 months. Productivity improvement is evident from a reduction in cost of quality.

Measures of Success

- Cost savings delivered through process maturity using CoQ metric.

Dos

- Do assign representatives from finance to validate project savings.
- Do give due consideration to soft benefits and customer satisfaction.

Don'ts

- Don't make it a cost-cutting exercise.
- Don't set unrealistic targets.

Conclusion

In this article, we have outlined the main elements of the project process, including the architectural foundations of the measurement system, from a performance review standpoint. The purpose of any industry framework is to guide organizations in establishing, documenting, and maintaining an effective economic quality management system that will demonstrate to the customers the commitment to quality and the ability to meet the customers' needs. It brings real economies in its wake; economies in process because this whole project process is controlled from start to finish by capital, economies in resources and in time spent on planning, pre-planning, or modifying the designs. So what is needed is a simple and flexible system for achieving, sustaining, and maximizing business success. It matters to the shareholders due to reduced cost of the solutions, and it matters to our employees because they are being equipped to compete in the marketplace.

Organizations that base their process improvement activities on CMMI®, ITIL, and ISO models can and have achieved marked performance improvements, and to be successful implementing this process framework, they must concentrate on the 10 “process commandments.” The leadership team has a huge stake in developing these commandments in the workplace. Without these commandments, the business entities cannot be successful process implementers. It is very clear from the above paper that process framework without involving integrity and trust would be a great mistake; in fact, it would be incomplete.

Training is the key by which the organization creates a process improvement environment. Leadership and teamwork go hand-in-hand. Lack of communication between departments, supervisors, and employees create a burden on the whole process framework. Last but not the least, recognition should be given to people who contributed to the overall task. Hence, “lead by example, train employees to provide a quality product, create an environment where there is no fear to share knowledge, and give credit where credit is due” should be the motto of a successful quality organization.

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