In our everyday life, we all have objectives. Usually, the objectives are associated with obligations from work or from our personal lives. Regardless of where the objectives come from, our tendency is to fulfill them the quickest or best we can. Operational excellence is the state of achievement for the work we do to fulfill our objectives. The operational excellence framework and its associated methodology were developed to provide the necessary implementation guidelines and practices to enable the successful achievement of the desired objectives at work. There are 6 steps in the operational excellence methodology:

Step 1 - Create a “burning” desire for success

Step 2 - Turn these “desires” into objectives for success

Step 3 - Mastering the capabilities for achieving the desired objectives

Step 4 - Achieve greatness in the execution

Step 5 - Ensure the Operational Transparency

Step 6 - Continuous Improvement

In the following paragraphs, step 6 of the methodology – the “Continuous Improvement”, will be discussed in details; with guidelines and practices for ensuring the excellent execution of the necessary tasks/operations, for the company to achieve success through its operational excellence capabilities. A company will not achieve operational excellence without the establishment of the “continuous improvement” capabilities to support and sustain its achievements and successes.

**Step 6: Continuous Improvement**

Solid executive buy-in and support, availability of a well defined and communicated set of objectives to achieve, mastering and capitalizing of needed capabilities; are the necessary success factors for the fulfillment of the objectives. Together, these factors will likely ensure the delivery of expected solid
results. Once the desired state of operational excellence is achieved, one needs to have the ability to sustain the operational performance of the organization. This requires the organization to continuously deliver the expected results, to continuously meet and exceed customer satisfaction requirements, and to continuously improve its capabilities to make them better, faster, and more economical to operate.

To sustain its operational performance and business success, the organization must ensure a continuous focus on its capability improvement opportunities through the implementation of techniques and practices, such as: post mortem, failure and root cause analysis, staff improvement meetings/reviews, the introduction and use of new processes, best practices and tools, and to conduct management reviews for the progress of the organization’s operational excellence building effort.

**Continuous Improvement Implementation**

In a research conducted by Rummler and Brache, it has been stated that "process accounts for about 80% of all problems while people account for the remaining 20%." Even with a great workforce, a mediocre process with bottlenecks and waste laden steps can hinder a company's performance and growth. A solid and effective business process is an important asset for a company. If this company's process asset can be continuously improved, it can help sustain the company success and greatly improve its performance.

"Even if you are on the right track, you will get run over if you just sit there." - Will Rogers

Continuous Improvement is a systematic approach to achieving ongoing improvements for the company process to deliver products and services. In implementing continuous improvement, “implementers”: define the problem/issue areas, map the process, identify improvement opportunities, implement the improvements, and then continuously monitor the results for further improvement opportunities.

There are several benefits to using continuous improvement:

- Establishes a culture for using data/metrics for improvement actions. Continuous improvement relies heavily on the quantitative information (e.g., output rate, defects, etc.) instead of subjective information to improve the process. The operational transparency will greatly enhance the effectiveness of the organization’s ongoing focus on identifying the opportunities for improvement.

- Continuous improvement helps to improve employee morale by focusing on the problems in the process, not on the people performing the process.
• Continuous improvement focuses on improving the organization's capabilities in delivering products and services that satisfy customers and in removing problems from the system, and as an obvious result, customer satisfaction will increase.

• Removing errors from the process results in higher product and service quality, less repeated work, less waste, and better ways to fulfill tasks. All these improvements will lead to increases in productivity and reductions in costs.

• By removing errors and increasing customer service, the organization has the opportunity for increased sales.

Essential factors for continuous improvement:

• Total commitment from senior management

• Opportunities for all employees to contribute to the continuous improvement process

• Ensuring employees know their role in achieving the business strategy through continuous improvement

• Equally reward employees for their performance and contribution to continuous improvement

• Clear communication throughout the organization

• Development and training of continuous improvement to all staff and linking training activities to operations and business strategy

• Ensure the company wide recognition and adoption of quality management systems and standards

• Measure and evaluate progress against key performance indicators and benchmarks

Continuous improvement in management perspective means a never-ending effort to expose and eliminate root causes of problems. Usually, it involves many incremental or small-step improvements rather than one overwhelming innovation. Continuous improvement is a philosophy, which seeks to improve all factors related to the transformation process (converting inputs into outputs) on an ongoing basis. It involves all of management and staff, to find and eliminate waste in machinery, labor, materials, operations, and production methods.

In order for continuous improvement to be successful, the organization must constantly learn from past experiences and translate them into improving
performance. Organizational performance can be improved by the knowledge gained through “operational excellence” efforts. By incorporating lessons learned from mistakes into regular use, mistakes will be less likely repeated in the future. While this learning process occurs throughout the company operations, it is particularly important for accomplishing the long-term business objectives associated with continuous improvement.

Problem solving is the driving force behind continuous improvement. Simply put, it should become a way of life or culture that must be assimilated into the mindset of every individual within the company. Staff members are trained to spot problems that interrupt, or have the potential to interrupt, the smooth flow of work through the system. When such problems do occur, it is important to resolve them quickly. Staff members are also trained to seek improvements in the areas of inventory reduction, set-up time, cost reduction, increasing output rate, generally decreasing waste and inefficiency, etc.

The achievement of continuous improvement requires a long-term view and the support of top management. It is also important that all levels of management actively support and become involved in the process. Proper support structures for training, management, resource allocation, measurement, and reward/incentive systems must be in place for successful continuous improvement adoption. This includes a willingness to provide financial support and to recognition of achievements. It is desirable to develop and generate continuous improvement goals with the worker’s help, publicize the goals, and document the accomplishments. These goals give the workers something tangible to strive for, with the recognition to help maintain worker interest and morale.

By continually reviewing the company’s operational process areas, changes can be managed effectively, with continuous improvement becoming a natural part of the business process. It creates steady growth and development by keeping the business focused on its objectives, priorities and performance. Through continuous improvement, firms are able to increasingly produce better products and services at lower costs, hence, better financial returns. The improvement process also provides greater customer satisfaction. In the long term, with continuous improvement, the company’s products and services will be more reliable, better quality, more advanced, cheaper and more attractive to customers.

**Post Mortem Process Implementation**

Whether it’s called close-out, an after-action report, or a post-mortem, what you do after a major work/project is completed will have a heavy influence on the success of similar works/projects in the future. Post-mortems are an important link in this chain of positive improvement and also an important aspect of an organization’s operational excellence.
"A winner is one who accepts his failures and mistakes, picks up the pieces, and continues striving to reach his goals." - Dexter Yager

A common misconception about post-mortem reviews is that they are only needed when something goes wrong. The purpose of post mortem is to learn, correct, and improve. It is to learning how to do things well and leveraging them as the best practices for use by others in the company. In case the goals are not met, the post mortem review helps to discover what went wrong so failures can be documented for prevention in future works/projects and throughout the organization.

The post-mortem is an end-to-end review of the project from its conception to its delivery. A thorough post-mortem will require the involvement of appropriate stakeholders beside the implementers who work on the project.

The post mortem event should take place soon after the completion of the project and before the members of the project move on to other projects, when the experience and knowledge of working on a previous project is still fresh in everyone's mind.

Post-mortem can vary greatly from organization to organization. A standardized process will make it easier to implement and consistently get the expected results. However, running a successful post mortem does require thoughtful planning. The following tips are useful to consistently get the expected results for the post mortem implementation:

- **Plan for post-mortems.** The postmortem should be a regularly scheduled activity with enough time allocated for the team to prepare for the meeting (going over notes, highlight areas that need discussion, etc., before the meeting), enough time to discuss the lessons learned, and enough time to write the postmortem report.

- **Schedule the post mortem soon after the project completion.** Don’t wait too long after the end of the project to do the post mortem.

- **Pay attention to the project background information.** Prepare and pay attention to the project implementation of historical details in the discussion during the post mortem (how big it was, how long it took, what software was used, what the objectives were, and so on.)

- **Involve relevant stakeholders.** Because different people will have different insights on the project, those insights will be useful to see the different perspectives on things that worked and what didn’t.
• **Have an open-mind during the meeting.** Make it clear that there is no punishment for telling the truth. Avoid the finger-pointing during the discussion.

• **Document and communicate the post mortem results.** Make sure the post mortem results are documented and communicated to stakeholders. The project manager should be responsible for the documentation and communication of the post mortem, with the project manager helping to delegate this if necessary.

• **Record successes as well as failures.** Make sure the post mortem covers both what’s working and not working.

• **Take actions and follow-through to closure.** The written post-mortem should make recommendations on how to continue things that worked, and how to fix things that didn’t work. It is necessary to keep track of the recommendations and follow-through to their closure. A non-closure recommendation is a waste of company time and resources and is an opportunity lost.

"There are no mistakes, no coincidences. All events are blessings given to us to learn from." - Elizabeth Kubler-Ross

To get the most out of your post mortem implementation: make sure the post mortem is carefully prepared in advance, analyze the project systematically, produce actionable findings, and actively share the results.

**Failure Analysis/Root Cause Analysis implementation**

“*It isn’t that they can’t see the solution. It’s that they can’t see the problem.*” - G. K. Chesterton

Companies are facing many challenges in improving their processes to ensure high product and service quality, better productivity, etc. These challenges include non-sustaining improvements caused by ineffective solutions. This is due in part to a lack of a failures analysis (FA) and a root cause analysis (RCA) implementation that results in the following:

• Lack of awareness of the FA/RCA methodology and its capability

• Lack of information for an effective FA/RCA

• Information overload, which dilutes the focus on the common defect patterns
• Lack of a supporting structure for FA/RCA because it is not integrated into the engineering process and there is no tool to support the implementation

By implementing the industry standard for best practices on a failure analysis and a root cause analysis (FA/RCA), companies can significantly reduce incoming defects, efficiently improve the defect detection, and shorten the customer problem resolution cycle time.

In failure analysis, a large amount of failures is analyzed for the identification of common patterns for the process or a product’s weaknesses. Information about the common weak areas will help toward the development for their appropriate resolutions and improvements. In root-cause analysis, staff and engineer-based group reasoning is applied toward failure information to better understand the organizational causes of a particular class of failures so that an effective solution can be put in place to eliminate and prevent the occurrence of the same failure. To effectively solve and prevent the occurrence of failures, both types of analysis should be implemented together.

The industry’s best practices suggested the following tips for effective implementation of FA and RCA:

• **Preserve the system stability:** Don’t try to change a working system based on a single failure. Introducing change to a system will de-stabilize it and require a new effort to re-establish the understanding of a new system’s operational limits. Hence, we must have enough information (adequate number of data points) to make sure the failure is permanent before we make the change or correction to the system.

• **Less is more:** When facing many failures, the typical reaction is to deal with all of them at once. However, in a real business environment, we do not have all the resources to fix all the failures. Industry best practices in failure analysis recommend creating a simple grouping of similar failures: based upon the failure type, the process that caused the failure, the place where they were introduced, etc. As the distribution of the failures is known, you can focus on the top one or two failure groups with the most impact (cover the majority of the distribution percentage). This will help out in focusing on the failed areas that have that have the most impact and the highest ROI.

• **More is less:** In failure and root cause analysis, people typically want to have detailed information on the failure before developing a solution. When this thinking is applied to a variety of application domains, you can experience a proliferation of many types of information for failure classification. This large number of classifications will fragment the failure analysis results into many buckets of distribution, making the focus for resolution nearly impossible. Industry best practice suggests having a small number of generic but common classes of failure classification: such as, 15 to 20 failure types, 5 to 6 failure origination
points, 5 to 6 failure reasons, etc. This simplification of failure classification buckets will help out with the highest-level of focus on common failure classes, which in turn will make the failures resolution more effective and efficient to deal with.

- **Get staff/engineers’ inputs:** In classifying failures, engineers who were involved with these failures usually have the most knowledge on their cause. They can most effectively and efficiently provide accurate, meaningful, and useful information about the failures and also the root causes for them. Try to get these engineers involved in the analysis as much as possible.

- **Ensure buy-in from staff/engineers:** When synthesizing the solutions for failures, the engineers who were involved with the failures are more likely to be the ones with the best practical and effective recommendation for the resolutions. Better yet, engineers are more likely to follow and implement their own recommendations.

- **Use the staff/engineers time wisely:** On the average, it takes about 30 minutes of time for an engineer to properly do the software failure analysis and root cause analysis for a failure. Make sure sufficient resources are allocated for engineers when doing FA/RCA.

To ensure the effective implementation of the FA/RCA process, the following information should be documented in each of the failure reports:

- Failure Phase (where the failure is introduced)
- Failure Type (what is the type of the failure)
- Failure Reason (why the failure happened)

There are two complementary techniques for FA/RCA analysis: the full and mini FA/RCA analysis. The two techniques should be implemented to provide the necessary information on the needed company continuous improvement opportunities.

For the purpose of process and product quality improvement, full-FA/RCA analysis should be conducted at the end of a major process cycle (for example a product release cycle). In this kind of full FA/RCA analysis, failures during the process cycle are collected and then classified into common failure bucket types. The top two or three failure types are then further analyzed by a team of staff/engineers to identify the common root causes and the potential preventive measures for them. Positive attributes for this approach are:

- The use of failure statistics to identify the most common mistakes so that effective and permanent improvements can be made
The leveraging of staff/engineer knowledge and participation to come up with preventions that are likely to be followed and used by other engineers

The identification of common and recurrent issues so the best ROI practices can be selected and used for addressing them that will generate the highest impact on the organization

For the purpose of effective problem resolution, mini-RCA analysis should be used when a critical problem is discovered. In this kind of analysis, the staff/engineer or owner of the problem, analyzes and documents the problem, and asks the following kinds of questions:

- What is the problem type?
- Did it impact another part of the product?
- What caused it to happen?
- How did it escape the review and testing process?
- What is the fix?
- How do we prevent the same problem type from happening in the future?

Positive attributes of this mini FA/RCA approach include the following:

- Information from the problem analysis is used by the staff/engineers to make an effective fix
- The explicit problem analysis and fix can be communicated to appropriate staff/engineers to eliminate any negative side effects caused by the fix
- The analyzed information can be used as the basis for future process improvements

One typical outcome of the FA/RCA analysis is the identification of a list of processes and products that have significantly more critical failures than others. These identified failures compose about 20% of all the processes and products, and yet they accounted for 80% of all the critical failures. A full-RCA conducted on the top two or three problems, followed by the implementation of recommendations and complemented by the implementation of the mini-RCA for each occurrence of a critical failure, will give the companies a good chance to meet their process and product quality improvement objectives.
Managing the Introduction of New Processes, Best Practices and Tools

To improve the company’s capabilities by making them better, faster, and cheaper; it may be necessary for the company to introduce new processes, best practices, and tools for use by its employees. The introduction process for these new improvement items will include the checking/validating of new approaches, exploring new methods and testing new ideas for improving the various processes, etc. Once the validations of potential improvement items are completed, the company must prepare and implement a solid deployment plan to place these newly adopted improvement items into regular use.

The following guidelines will ensure a smooth introduction of new improvement items (processes, best practices, tools, etc.):

1. **Proof of concept phase**
   - a. Identify the needs for improvement items
   - b. Identify the suitable improvement items for the needs
   - c. Pilot the improvement items

2. **Preparing for the improvement items introduction**
   - a. Make arrangements to acquire the improvement items for company’s use
   - b. Install and establish the infrastructure to support the use of improvement items
   - c. Communication planning
   - d. Training preparation
   - e. Identify the necessary process change to accommodate the improvement items usage, make the change when necessary
   - f. Establish the working group(s) to champion the use of the improvement items in the company
   - g. Define the successful criteria for the improvement items usage, establish the metrics for measuring both of the deployment progress and the benefits for the improvement items usage
3. Deployment
   
a. Initial deployment
   1. Communicating the improvement items
   2. Training on the improvement items
   3. Appropriate handholding for some limited number of teams
   4. Measure and track the deployment and results
   5. Coordinate with the workgroup and the vendor on the potential enhancements for the improvement items
   6. Update the capability to accommodate the process change from using improvement items
   
b. Full deployment
   1. Implement the updated capability
   2. Measure and track the deployment and results
   3. Establish and implement an organizational level review of the improvement items usage progress
   4. Coordinate with the workgroup and the vendor for potential enhancements on the improvement items

4. Continuous Improvement
   
a. Conduct a post-mortem on the deployment of improvement items
   
b. Implement the necessary improvement
   
c. Update the process if necessary
   
d. Start step 3b again

Management review of Continuous Improvement and Operational Excellence Progress

The successful strategy of operational excellence ultimately depends on the ability to sustain a high level of focus and engagement throughout the company, especially if the company’s objectives require employees to change: how they do their jobs, deal with customers, relate to colleagues, or call for them to boost their performance or productivity. Executive leadership will be needed to provide the
necessary focus and engagement for the successful execution of the operational excellence strategy.

Executives lead the company in the drive for the operational excellence strategy; by managing the three emphasized areas:

- Communicate the ‘operational excellence’ messages to the company
- Develop tracking systems that facilitate decision making and problem solving
- Setup formal reviews for the progress of the company’s operational excellence effort.

Communicate and establish the measurement systems for the “operational excellence” strategy has been discussed in the previous sections. We will now focus more on the “executive review” practice in the next sections.

Executives conduct reviews on operational excellence progress to ensure that the company as a whole is following the strategy and meeting the stated objectives. Failures to meet these set objectives open up opportunities for the company to revisit current capabilities to improve and adjust them accordingly. Achievement of the objectives provides the opportunities for recognition and rewards a job well done by individuals, teams, and organization.

Executive reviews also provide the necessary visibility into the company’s commitment and support for the operational excellence strategy. The reviews also look at the opportunities for the dialog between company management and staff and at questions or concerns regarding the operational excellence benefits, costs, efforts, etc. which can be openly discussed and clarified. This creates a solid foundation for buy-in and alignment on the strategy and execution of the company operational excellence effort.

The following tips are helpful for the smooth and effective implementation of executive reviews for operational excellence progress:

- **Schedule executive reviews for operational excellence progress regularly:** The executive reviews should be scheduled on a regular basis. The rescheduled reviews should be communicated to relevant stakeholders (who will participate in the review), and published and posted in an accessible place (e.g. internal company website) ahead of time. Review schedule options can be monthly, quarterly or bi-annually – depending on the business schedules and needs.

- **Choose a group of involved Executives across the company:** To review the progress of the operational excellence effort. By using a group, this will
help gain insight on different perspectives; enhance the effectiveness of the review with visibility; and influence the company alignment on operational excellence strategy.

• **Document the results of executive reviews**: This documentation is used as records of the company operational excellence strategy and effort, and provide the historical source of information for future references.

• **Establish review standards**: Standards should be established for the review of operational excellence progress:
  
  o What is the format of the review meeting?
  
  o What are the review items?
  
  o What metrics will be reviewed?
  
  o How the metrics will be presented, interpreted?
  
  o Who is responsible for recording the action items, and taking those actions?
  
  o Who is responsible for generating the review reports?
  
  o How long will it take for action items closure?

The review standards should be based on company policies and standards.

• **Plan for action**: The manager of the business (which is responsible for the implementation of operational excellence strategy) and the employees should complete the executive review by creating a plan for actions, or an action plan. The actions plan addresses areas where the team failed to meet objectives and ones where it excelled. Steps to bring performance up to standards or to exceed them should be documented along with a schedule for when they will be completed. The plan for action should also indicate how the areas of excellence will be maintained and not ignored while improving in those areas of struggle.

As a part of the overall continuous improvement strategy; executive reviews will make their contribution to the achievements by building trust within the company with Incremental Improvements. As the strategy rolls out changes incrementally, it won’t take much effort to implement each change, but will give tangible results. Resistance to small changes will be lower, and positive results will encourage people to accept, and perhaps even welcome further changes. Because the pace of change is slower, it will be easier to absorb them without disrupting any work in progress.
Summary

Once the desired state of operational excellence is achieved, one needs to have the ability to sustain the operational performance of the organization; this requires that organization continuously deliver the expected results, to continuously meet and exceeded customer satisfaction requirements, and to continuously improve its capabilities to make them better, faster, and more economical to operate.

To sustain its operational performance and business success, an organization must ensure a continuous focus on its capability improvement opportunities through the implementation of techniques and practices such as: post mortem, failure and root cause analysis, staff improvement meetings/reviews, the introduction and use of new processes, best practices and tools, and to conduct management reviews for the progress of the organization’s operational excellence building effort.