Cost Improvement Program Management

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Summary

This project presents the development of a process, supported by a technology mechanism, to facilitate the tracking and management of programs implemented by organizations to lower the cost base and/or promote efficiencies. As organizations grows, the complexity to identify and accurately track the success of a Cost Improvement initiative can be extremely challenging, in many instances, losing evidence of the actual outcome of a given Cost Improvement Project. This work is based on similar applications implemented and led by the author in former jobs but has been developed with a simpler and pragmatic approach in a cost-effective platform. A typical Cost Improvement Process will be taken as baseline in order to understand what are the common challenges faced in such process that promotes inefficiencies primarily due to the utilization of manual activities and lack of governance. From this perspective, this project will apply a subset of Lean Six Sigma techniques to uncover opportunities that might be translated into more flexible and agile processes that will reduce the overall process cycle time.

Introduction

Organizations of all sizes across the world faces the constant challenge of looking for ways of operate in the most cost efficient way. From this regards, they are investing in knowledge, resources and methodologies oriented in facilitating the identification of opportunities to reduce waste and improve the overall cost base. Such methodologies are intended to develop internal capabilities to promote and drive a holistic cultural change where every individual will be capable to identify continuous improvements initiatives and translate these potential initiatives into Cost Improvement Projects. The Cost Improvement Program (CIP) is a critical process to ensure organizations are continuously looking for opportunities to improve their business processes in order to find synergies with direct or indirect impact to their business bottom line. A cost improvement program should be structured in a way that top management is fully engaged, departmental management is accountable for cascading the program across their cost center, project managers performs timely updates of the project activities and all supportive functions, such as Accounting, provide support to ensure committed savings are in the right track.

Background

Enterprises of all sizes aspiration is to operate in the most efficient way to ensure a cost-effective operation. These that fail in having a structured program of finding opportunities to eliminate waste and promote efficient processes are in a disadvantageous position in relation to competitors with formalized continuous improvement programs. A cost improvement program should provide a process supported by a robust governance and mechanisms where the search form improving the processes and changing the status quo is embraced at all levels of an organization. The primary requirement for a cost improvement program success is the engagement of the top management, they would support and cascade the cost improvement philosophy downstream to ensure it is embedded as a cultural behavior rather than a compulsory temporary requirement. Even though this process is a key success factor for any organization, the fact is that there are not standardized ways or automated applications in the market to manage this specific process without the need of investing in a full blown budget system that can be very expensive and complex to use an maintain. This project objective is precisely providing a simple mechanism supported by low cost technology that will help in supporting a Cost Improvement Program forecasting and process.

Problem

Organizations lacking a standard and user friendly means to track Cost Improvement Projects might struggle in providing timely updates and ultimately, having a real time perspective on where the organization stands in terms of the overall committed cost improvements. This means that budget owners will be utilizing diverse ways of tracking the cost improvement initiatives and when it comes the time to provide updates to management executives someone will be manually collecting that information and engage into a manual consolidation process that could be a time consuming-error-prone activity. This project intends to address this last part of the cost improvement process, by proposing an automated, simple, and cost effective mechanism to collect and track a Cost Improvement Program.

Methodology

This project assumes a process improvement type of project as defined in the Lean Six Sigma methodology. The Lean Six Sigma philosophy states that all processes can be Defined, Measured, Analyzed, Improved and Controlled (DMAIC) in order to promote the reduction of waste and process variability. The DMAIC process is a mechanism tailored for Complex Problems or situations where there are high risks. Typically, a complex problem is one where the causes and solutions are not obvious, for instances, there is a need to drill down into different areas and people to discover patterns that can provide clues about the causes. This philosophy further states that processes require inputs that generates outputs, thus, as long as these inputs are controlled, the outputs will be controlled as well. As waste, Lean Six Sigma's objective is to reduce or avoid *Defects, Overproduction, Waiting, Non-Utilized Talent, Transportation, Inventory and Motion.* Variation, in contrast, is the fluctuation of an expected process output and is measured by standard deviation, a measure of how dispersed is the data in relation to its mean being the mean the average expected result. In the specific case of this project, the target goal is to reduce process defects and cycle time in a typical Cost Improvement Program Management in an organization managing such process by non-standard means.

Define

This stage will help in delineating what is the problem that needs to be resolved based on the customer requirements and expectations. At this point, a Problem Statement, SIPOC, Critical-To-Quality (CTQ) and Stakeholder analysis, high-level process map, initial project plan, will be used to understand the macro level problem, the team composition, what the customer is expecting from a Cost Improvement Program and the typical target customers normally involved and concerned. A project charter along with resources allocation (time of team members and initial budget) are key deliverables of this stage when configuring a Lean Six Sigma Project.

Measure

During the measure stage, the current process state will be thoroughly understood and data relevant to the process collected. Critical inputs and outputs in the process will be identified and eventually used to analyze defects, variations, process speed and flow. The current state process is depicted utilizing a Value Stream Map, while process input and output variables are identified in the SIPOC diagram delivered at the Define stage. When applicable, a data collection plan and strategy is deployed in order to develop relevant measures and establish baselines. The measure stage could provide perspective of opportunities that might be managed immediately as quick-hit initiatives. If the data analyzed at this point provides solid evidence that the benefit is considerable and the risk low, such improvement can be implemented and the project continued later.

Analyze

In this phase, the process flow will be analyzed in order to identify opportunities that could be improved while causes affecting key input and output variables will be pinpointed. The potential root causes are documented along with value-added and non-value added activities. The primary goal of this stage is discover what the actual problem root cause is and implement any quick win identified during the process. The overall process cycle time is also calculated at this point. As collected data is analyzed there might be new aspects overseen during the prior stages that would require going back to the project charter and project plan to make any required updates or amendments.

Improve

This stage will deliver an enhanced process Future State Value Stream Map reflecting new enhanced process after integrating improvement identified in prior stages. Potential solutions are generated and piloted and, as the success of these are confirmed, a full scale implementation plan is worked out.

Control

After deploying the enhanced process, the Control phase completes the project and hand off improved process to the process owner. It will depict the standard operating process that will prevail going forward to ensure improved Cost Improvement process is sustainable. Documented transition plan of improved process, before and after metrics, and training are key deliverables of this stage.

Discussion and Results

DEFINE

Critical-To-Quality (CTQ) – A CTQ for a typical Cost Improvement Process is summarized in Figure 1. It reflects what is the fundamental need of this project which looks for the cycle time reduction on having a Cost Improvement Program status readily available when needed. The factors stakeholders are expecting from the CIP overall process are categorized as cycle time, customer satisfaction, Efficiency and Accuracy.

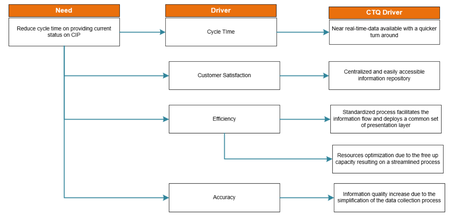


Figure 1: Critical-to-Quality

Stakeholder Analysis – Even though a CIP Process can be implemented within any organization irrespective it size or scale, this project targets a process that is typically managed by Mid-sized to large organizations with the following group of stakeholders: *Business Unit Leaders, Regional Directors, Directors, Senior Manager and Managers, Project Managers*.

SIPOC stands for Suppliers, Input, Process, Output and Customers. It is intended to provide a high level depiction of the inputs and outputs of a process along with what are the customers expectations for each process step.

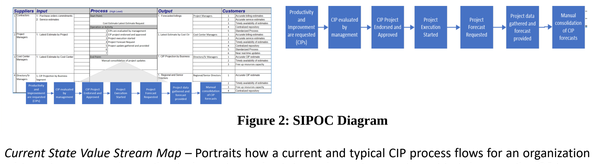


Figure 2: SIPOC Diagram

MEASURE

Current State Value Stream Map – Portraits how a current and typical CIP process flows for an organization with such program. Immediately, it can be noticed the estimated non-value-added time totaling 96 hours, resulting from this process primarily because of the significant manual intervention. Non-Value-Added time is seen, for instances, the objective of this project is to reduce the overall cycle time of the process by reducing the total non-value-added time.

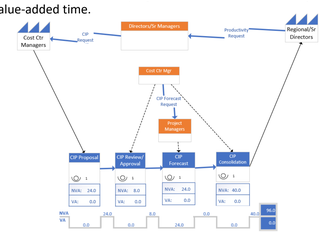
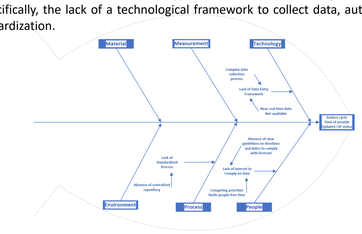


Figure 3: Current State Value Stream Map

ANALYZE

At this point a significant time investment of 96 non-value-added hours is noted due to the manual process looks as the primary target to improve the process by 25%. During the analyze step, a Fishbone Diagram was worked to reflect potential root causes contributing to the lagging of the Cost Improvement Process. There, it can be noticed that the Technology dimension could be driving most of the inefficiencies of the process specifically, the lack of a technological framework to collect data, automate consolidation and promote standardization.



IMPROVE

Future State Value Stream Map is supported by a technological solution that expedites the overall Cost Improvement Status feedback loops by providing a cost effective framework that facilitates the Projects Submission, Approval and Real Time consolidation.

A significant Non-Value-Added reduction from 96 hours to 34 hours when compared to the Current State Value Stream Maps which represents a 65% cycle time reduction was achieved.

This improvement was primarily due to the virtual elimination of manual intervention in the process.

CONTROL

Utilizing the AdHoc reporting capability, management can get a clear perspective of active project that haven't been updated based on its last update date and follow up on the downstream team to get feedback and rationale on why a given CIP initiative has not been updated. Project managers are required to enter to CIP projects under their responsibility and save the given project even when the forecast remains the same. This activity will update the modified date of the project so that management knows that the project has been looked and reviewed by its project manager.

Conclusion

This work presented how a specific problem was addressed using methodologies that can be extrapolated to more complex situations to get similar results. In the specific instance of this work, which addressed a quick win type of problem, a basic subset of the methodology was applied, however this methodology provides a wide range of tools and processes to address problems with bigger complexities. As previously suggested in this document, organizations need to embed the Cost and Continuous improvement philosophy at all levels to ensure that it is capable to maintain its competitiveness considering the fast-paced trends happening in the globe.

Based on the problem statement utilized in the content of this work, it can be concluded that utilizing the appropriate analytical tools it is possible to dissect a problem in its potential root causes, identify ways to determine the major offender of these causes, and figure out improved ways to diminish or eliminate the root causes.

As organizations of all types and sizes are constantly facing the challenge to continuously improve their processes to promote efficiencies and lower their cost base, it is imperative to create a Cost Improvement culture so that everyone in an organization would be able to have the right training, programs, tools, and empowerment to collaborate and actively participate in searching for ways to provide initiatives to improve the organizational spending and cost base. A well-structured Cost Improvement Program is the right mechanism to provide with the right framework that can be holistically deployed and adopted at all levels as the primary provider of cost improvement initiatives. The blending of technology and business process standardizations portrayed in this work are a showcase of the potential analytical tools could benefit any process looking for improvement and cost effectiveness.

Proposed Next Steps

To ensure the sustainability of the Future State Process designed in this work, which relies in the technological solution designed, it is important to define clear role and responsibilities. Also, the following process elements are highly recommended:

- *Training Materials* – A proforma training material that could be provided to new users to the application.
- *Yearly CIP submission schedule* – Responsible to define dates where the CIP Latest Estimate (Forecast) needs to be submitted.
- *Application Administrator(s)* – Responsible to update application users access profiles.
- *Trainers* – Responsible to train new application users.
- *Forecast Compliance Reviewer* – Responsible to verify that all projects' managers submitted forecast updates for all CIP projects under his responsibility.

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References

[1] Breyfogle III, F.W., Implementing Six Sigma: Smarter Solutions Using Statistical Methods, 2nd Edition, 2003,54 John Wiley & Sons Ed.
[2] Eliyahu M. Goldratt, What Is This Thing Called Theory of Constraints, 1st Edition, 1999, North River Press
[3] V. Jayakumar, R. Raju, Total Quality Management, LAKSHMI Publications, 3rd Revised Edition, 2016
[4] Martin Brenig-Jones, Jo Dowdall, Lean Six Sigma for Dummies, 4th Edition, 2021, John-Wiley & Sons, Inc.
[5] Peter S. Pande, Robert P. Newman, R. Cavanagh, The Six Sigma Way: How to Maximize the Impact of Your Change and Improvement Efforts, 2nd Edition, 2014, McGraw-Hill
[6] Yasuhiro Monden, Toyota Production System: An Integrated Approach to Just-In-Time, 4th Edition, 2012, Taylor & Francis Group, LLC.
[7] The Council for Six Sigma Certification, Six Sigma: A Complete Step by Step Guide, July 2018 Edition
[8] "5 Lean Six Sigma Project Types" https://goleansixsigma.com/5-lean-six-sigma-project-types/
[9] https://www.lucidchart.com/blog/process-improvement-methodologies
[10] https://www.leanproduction.com/theory-of-constraints/