Six Sigma and the organization

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Introduction

Six Sigma is the structured, disciplined pursuit of near perfection in the products or services an organization produced. It is based on statistical techniques and tools and attempts to improve an organization's bottom line by eliminating the variation in business processes that can result in defects. Six Sigma have helped thousands of companies reduce waste, improve productivity and increase profits.

The History of Six Sigma

- The roots of Six Sigma methodology are called quality improvement techniques and has been created in 1920 by Walter Shewhart, while working for Bell. The idea for him was to improve the reliability of their telephony transmission systems. He understood quickly that the most important thing is to reduce variation in the manufacturing process. Then, he introduced the Control Chart as a tool for distinguishing between common cause and special cause of variation.

- In the 50', Japan suffered from the lack of quality of their productions. It is at this time and thanks to Mister Deming that the Control Chart reappeared. Doctor Deming and his methods of quality control become a hero in Japan. His teaching helped Japan built its foundation by which the level of Japan's product quality has been recognized as the highest in the world.

- In the 70', USA suffered from the same problem than Japan in the 50' and one more time, it is Doctor Deming who come trying to solve the quality issue. That took him more than 15 years to make America great again in term of quality.

- In the 80' and the 90', The chairman of Motorola tried to reduce manufacturing defects and manufacturing cycle times. He set the new metric of "defects per million opportunities" (DPMO) which is the foundation of Six Sigma process. After that, a lot of big companies adopted Six Sigma.

Six Sigma Philosophy

Six Sigma is not just a process, it is a philosophical change in the way a company conduct business. There are 4 common philosophical elements found in company that practice Six Sigma:

- Use teams that are assigned to well-defined projects
- Train employees in statistical thinking across the entire organization
- Embrace the use of Define, Measure, Analyse, improve and control methodology
- Ensure management support of Six Sigma as a business strategy

DAMIC

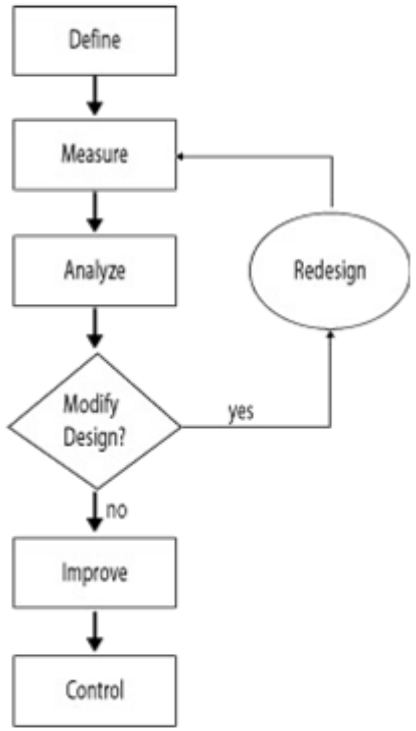


Figure 1: The DMAIC Methodology

Define, measure, analyze, improve, and control (DMAIC) is a data-driven quality strategy used to improve processes. The letters in the acronym represent the five phases that make up the process, including the tools to use to complete those phases shown in Figure 1. It is an integral part of a Six Sigma initiative.

Six Sigma Roadmap

1

Recognize that variation exists in everything we do, and that work must be standardized

2

Identify what the customer wants and needs and reduce variation

3

Use a problem solving methodology to plan improvements

4

Follow the DMAIC Model to deploy the improvement

5

Monitor the process using process behaviour charts

6

Update standard operating procedures and lessons learned

7

Celebrate success

8

Start over again and works towards continuous improvement

Reward and Reinforce

One of the most difficult parts of program is determining how to recognize and reward participants.

Rewards can range from a simple word to economics rewards.

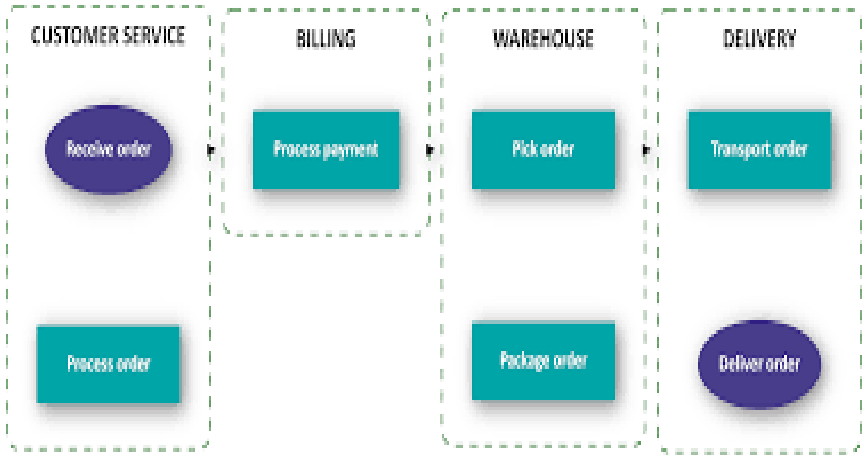
Remember to reward all the participants including management, Black and Green belts, and other team members.

Processes

A process is a series of steps designed to create a product or service.

The inputs represent the flow of data and materials into the process from the outside. The processing step includes all tasks required to effect a transformation of the inputs. The outputs are the data and materials flowing out of the transformation process.

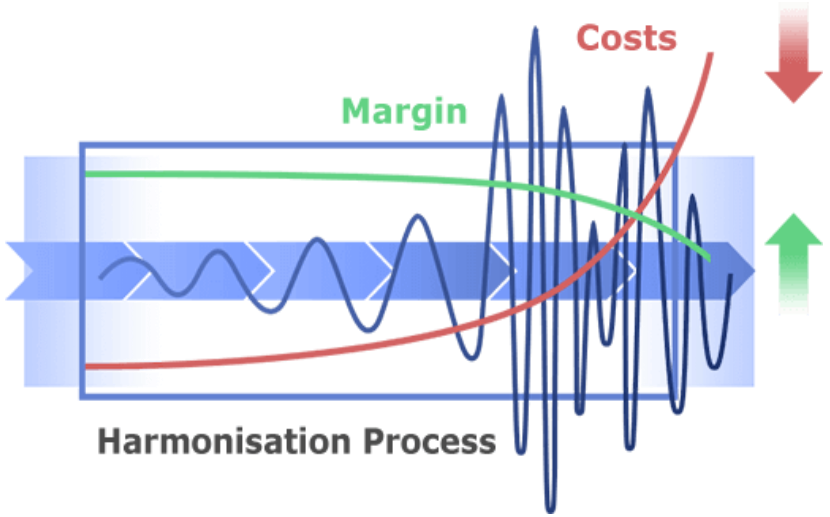
Process mapping



A process map is a planning and management tool that visually describes the flow of work. A process map is also called a flowchart, process flowchart, process chart, functional process chart, functional flowchart, process model, workflow diagram, business flow diagram or process flow diagram.

They are known by number of names like: Flowcharts, Process maps, or Value stream maps.

Business system



It refers to the value-added chain, which describes the value-added process, meaning the supply of goods and services. A business can span one or several business systems.

They are responsible for the implementation of processes, or set of processes, that produce a finished product.

The primary goal should be continual improvement of processes, products, and services.

COST – BENEFIT ANALYSIS

A cost-benefit analysis is a process business use to analyze decisions. The business or analyst sums the benefits of a situation or action and then subtracts the costs associated with taking that action. Some consultants or analysts also build models to assign a dollar value on intangible items, such as the benefits and costs associated with living in a certain town.

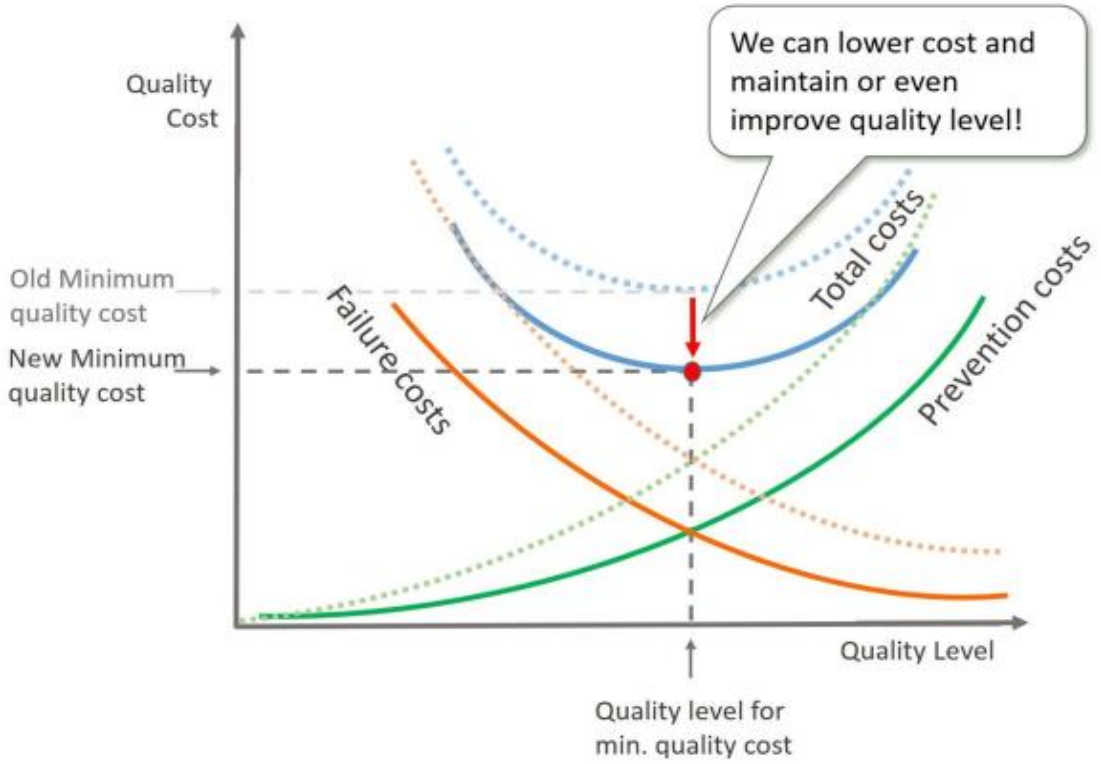


Figure 5. The change in quality cost due to improved quality management process efficiencies

- # Prevention Cost :

Prevention costs are incurred to prevent or avoid quality problems. These **costs** are associated with the design, implementation, and maintenance of the quality management system. They are planned and incurred before actual operation, and they could include: ... Training: Development, preparation, and maintenance of programs.

- # Appraisal Cost :

Appraisal costs are **fee** a company pays to detect defects in its products ahead of delivering them to customers; they are a form of quality control. For most companies, the money that would be lost as a result of selling faulty products or services far outweighs the **appraisal costs**.

- # Failure cost :

Failure costs are those incurred by a manufacturer when it produces defective goods.

Types of Failure cost:

1) Internal Cost Failure
2) External Cost Failure

1) Internal Cost Failure :

Internal **failure costs** occur before goods are shipped to customers

2) External Cost Failure :

External **failure costs** arise subsequent to shipment.

Cost of Poor Quality:

COPQ stands for **Cost of Poor Quality**. A company's COPQ is the total sum of the associated **costs** which are lost due to failure. This includes all waste and variation, overheads to fix the issue, rework **costs**, as well as lost opportunities such as churned customer or reputation damage.

Failure Cost (45%)
Appraisal Cost (30%)
Prevention Cost (25%)

Key Drivers and Process performance Information

Process measurement and tracking helps analyzing the organization performance. This process provides important information about output, result and feedback.

The data gathered in this process is categorized into different categories which help is identifying **Key drivers.**

Key drivers are the core processes which will lead to improved performance and are the factors which are presented to senior executives and staff

Image Source : Google

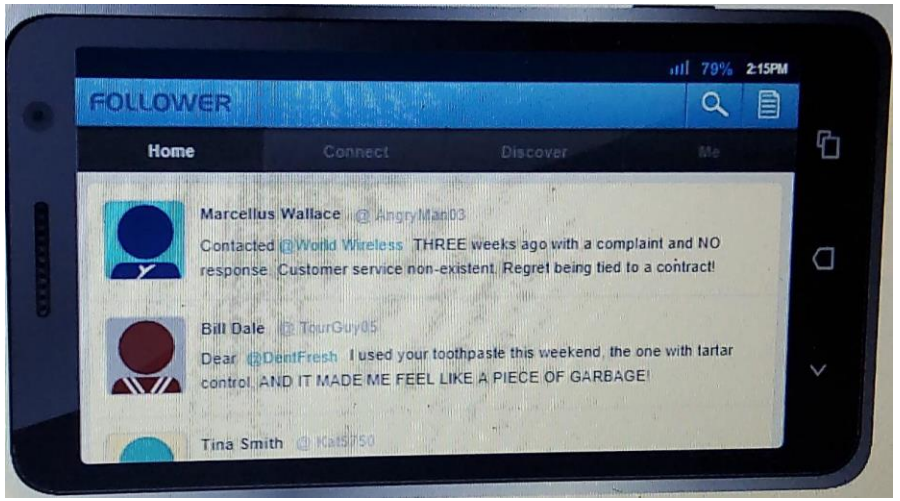
Voice of the Custome (VOC) & Balanced scorecard

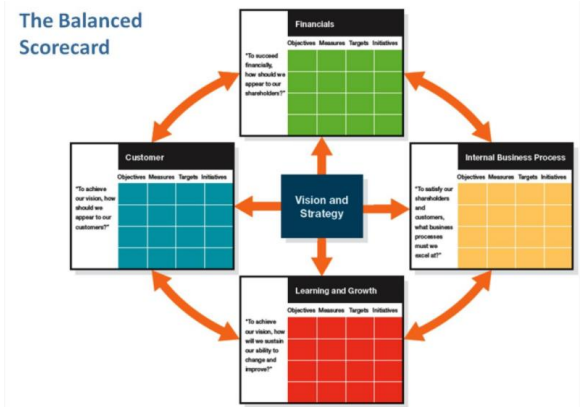
Voice of the customer (VOC) is the process of capturing customer related information. This process is used to anticipate, needs and requirement of the customer.

Method for VOC : Face to face, surveys, focus groups, warranty data and complaint logs

Balanced scorecard: The balanced scorecard is a feedback tool that provides constant feedback on internal processes and external outcomes.

With the help of scorecard there is a kind of feedback loop created which transforms this information and provides continuous improvement in strategic performance and results.





Hoshin Panning & Linking projects to organization goals

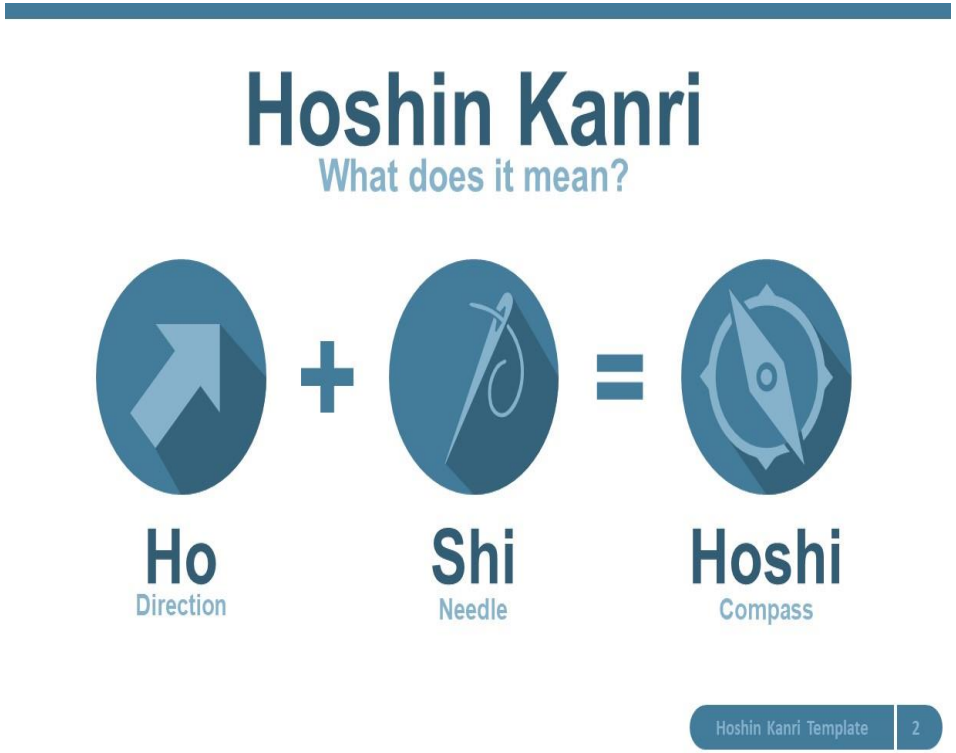


Image source: Google

- Hoshin planning is a management approach where the organization develops up to four visions statements indicating where the company would be in five years time
- Goals and strategies are developed based on these vision statement
- Linking projects to organization goals:
- When adopting six sigma idea for projects would spring up constantly there is chance that the projects can divert from the company goals , to prevent overload a procedure must be developed for the selection of projects.
- This may include the creation of formal proposals that include precise statement about the problem's definition, the magnitude of the problem on the organization

Conclusion

Whether the goal is to improve production, customer service or resource management, the methodologies of Six Sigma can assist all organizations in identifying critical operation flaws and develop improved business practices. However, the company needs to have large majority of people who are trained and understand the methodology. In such a company, it is easier to drive initiatives and new projects that are designed to improve processes.