

KANBAN : scheduling system for lean manufacturing

BENEFITS OF KANBAN IN SOFTWARE DEVELOPMENT



Improved visualization of the workflow

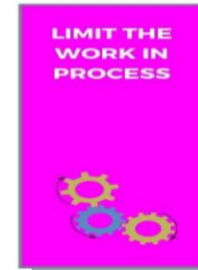


Improved efficiency and productivity



Better team collaboration

Kanban Best Practices





➤ Several components are required for successful :

1. The **scientific method** is utilized to solve problems .
 2. There must **be a manager** who is a facilitator, mentor, and coach .
 3. The **frontline** workers are the ones who identify and solve the problems .
- The quality manager must move the organization toward **reducing the risk** of adverse events and assisting staff and practitioners in the redesign of processes that **improve the quality of the services** provided.
 - One of the first things that must be done is to begin to change the organization culture to one of focusing on the process and not blaming the individual.



Six sigma

Is a disciplined approach to process improvement, used for redesigning or designing new processes. It is a concept **representing the amount of common cause variation** in a process relative to customer needs, expectations, requirements, and/or specifications.

- **Variation** in a process creates waste and errors. Eliminating this variation makes the process more cost-effective, more efficient, and more error-free.
- elimination of defects and **reduce variation**





Six sigma

- ❖ is a business strategy, **focusing on:**
 - Continuous improvement.
 - Understanding **customer needs**
 - Analyzing business processes (evaluate process capability)
 - Utilizing appropriate performance measures and statistical methodology.
- It was **developed** by Motorola in the mid-1980.
- **Goal:** is the near elimination of defects and **reduce variation** [Juran's "**zero defects**" concept from any process, product, or service.





Key Concepts for Six Sigma:

Key Concepts for Six Sigma	
Critical to Quality	Attributes most important to the customer
Defect	Failing to deliver what the customer wants
Process Capability	What your process can deliver
Variation	What the customer sees and feels
Stable Operations	Ensuring consistent, predictable processes to improve what the customer sees and feels
Design for Six Sigma	Designing to meet customer needs and process capability

Utilizes the DMAIC approach:

1-DEFINE:

Translate the "**voice of the customer**" (complaints, unmet needs, interests, quality perceptions).

Costs and benefits to be realized when the proposed change/project is complete; **develop the purpose, scope, charter; map the process**

2-MEASURE:

Collect baseline data on defects and possible causes, aggregate, display, perform initial analysis
Develop key, realistic input, process, and output measures; establish specific unit cost measures for each critical step in the flow-charted process ; flowchart process in detail to understand the current process

COST UNIT:

cost of unit production included storage till selling.

UNIT COST:

cost include fixing and all variable costs involved in the production.

3-ANALYZE:

Root or **potential causes of current or anticipated** defects, respectively; confirm them with data; and **discover** non value-added process steps, translating both into cost of poor quality.

4-IMPROVE:

Create **possible solutions for root causes** and select solutions, develop plans; pilot each plan, then implement; measure results.

Determine unit cost savings as well as all other benefits to customers

5-CONTROL:

Standardize the work processes; develop the monitoring system.





D



DEFINE

- Launch Team
- Establish Charter
- Plan Project
- Gather the Voice of the Customer
- Plan for Change

M



MEASURE

- Document the Process
- Collect Baseline data
- Narrow project focus

A



ANALYZE

- Analyze Data
- Identify Root Cause
- Identify and Remove Wastes

I



IMPROVE

- Generate Solutions
- Evaluate Solutions
- Optimize Solutions
- Pilot
- Plan and implement

C



CONTROL

- Control the Process
- Validate project benefits

SIPOC: Expanded Example

If you recall, a **SIPOC** is a high-level view of a process. It stands for **Suppliers, Inputs, Process, Outputs** and **Customers**:



SUPPLIER

Person/Organization that provides Input to a Process.



INPUT

Resource that is added to a Process by a Supplier.



PROCESS

Series of steps where an Input converts to an Output.



OUTPUT

Resource that is the result of a Process.



CUSTOMER

Person/Organization that receives products or services.



Step 1

We have identified a process that will involve a patient, ward clerk and nurse...

Supplier	Input	Process	Output	Customer
Patient	Patient Information / Systems	<ul style="list-style-type: none"> • Triage/Reception • Patient Assessment • Assign bed & Admissions • Deliver Care 	<ul style="list-style-type: none"> • Discharge Decision 	Ward Clerk
Ward Clerk	Discharge Decision	<ul style="list-style-type: none"> • Discharge decision/activities 	<ul style="list-style-type: none"> • Patient discharge papers 	Nurse
Nurse	Patient Discharge Papers	<ul style="list-style-type: none"> • Patient discharge 	<ul style="list-style-type: none"> • Discharge 	Patient

Step 6

Identify the Supplier(s) of the corresponding input(s). This will be the supplier from the previous row.

Step 5

Identify the input(s) necessary for the Process to function properly (this will typically be the output of the previous row)

Step 2

In some cases, such as the first row of processes, we link together multiple high level processes.

Step 3

The outputs of one process become the input of the next row

Step 4

Identify the Customer(s) that will receive the corresponding outputs from each process step.



There are **five levels of expertise** in Six Sigma methodology, designated by a **color-belt system**:

Work on local problem-solving teams but not part of Six Sigma teams Have an awareness of Six Sigma aspects

Participate as project team member Reviews process improvements that support the project

Leads Green belt projects and teams Assist with the data collection and analysis for Black Belt projects Integrate Six Sigma implementation into their primary jobs

Leads problem-solving projects Trains & coaches project teams Dedicate all their professional efforts to Six Sigma

Concentrates on Six Sigma implementation Trains and coaches Black and Green Belts Functions at the Six Sigma program level Develops key metrics and strategic direction Assures that Six Sigma processes are applied correctly throughout the organization



➤ There are two additional positions that provide organizational support to the team:

Champions:

are **upper management** who are concerned about the overall Six Sigma implementation and work with mentoring lower-level Six Sigma practitioners, **identifying resources and removing road bloc**

They translate the company's **mission, vision, goals** and measures that will identify individual projects and determine a **project deployment plan**.

Executive leadership:

is the **highest level** and includes the CEO and senior managers. The executives determine the overall strategy for Six Sigma implementation, and establish the strategic focus for the program

CHAMPIONS





LEAN

Focuses on efficiency through the minimization of waste errors and delays.



SIX SIGMA

Focuses on quality and consistency, through process improvement and variation reduction.



LEAN SIX SIGMA

Delivers Customer Value through efficient operations and quality standards.



- Remove waste
- Increase speed
- Remove non added value steps
- Fix connection between process steps

Speed

- Reduce variation
- Improve Quality
- Optimized remaining process steps
- Focus on customer

Accuracy



- Better deliver
- Better Quality
- Employee satisfaction
- Customer satisfaction

Develop an Information Flow Chart :

- There must be some form of information flow that is developed for all kinds of information if communication is to be effective .
- As previously discussed, the Quality Council has a flow of information of **how quality information flows** to and from that council
- The committees and departmental meeting minutes also need to have an information flow designated for them.
- This information flow information can be **documented in policies and procedures**, as part of the performance improvement plan, and other such locations. It may also be useful to develop timeframes and expectations of the flow of information

1. Definition of the term quality for the organization
2. Clarify leadership roles
3. Create an accountability structure
4. Determine what the name of your program will be (i.e., quality or performance improvement)
5. Identify the important functions of the organization
6. Identify approaches to process improvement framework
7. Develop an information flow chart
8. Establish reporting routines
9. Integrate quality principles into organization's policies and procedures
10. Identify educational needs

