Chapter 25: Work Design and Process Improvement
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Learning Objectives

- Apply quality management tools to ensure effective work processes
- Analyze workflow processes and responsibilities to meet organizational needs
- Construct performance management measures
- Demonstrate workflow concepts through the development of workflow diagrams
- Benchmark staff performance
- Evaluate staffing levels and productivity
- Examine how workflow, space and equipment, aesthetics, and ergonomics factor into the functionality of a work environment
- Implement alternate methods for distributing work assignments and for scheduling staff to ensure adequate staffing to meet the department's or work unit's service requirements
- Determine how job procedures support employees in delivering effective and efficient services
- Develop examples of qualitative and quantitative standards
- Differentiate the process of standard setting when done through a benchmarking effort vs. a work sampling effort
- Differentiate between preventive controls and feedback controls
- Identify potential areas for improvement in work unit functions through observations and variance analysis, and establish a relevant action plan to address the problem(s) identified
- Select the appropriate tool(s) for use in different types of performance improvement or process improvement efforts
- Evaluate the value of Lean and Six Sigma as process redesign methodologies

Key Terms

Affinity grouping
Benchmarking
Brainstorming
Business process reengineering (BPR)
Check sheet
Closed system
Common cause variation
Compressed workweek
Continuous data
Continuous quality improvement (CQI)
Cybernetic system
Cyclical staffing
DMAIC
Employee self-logging
Ergonomics

External customer
Feedback control
Fishbone diagram
Flextime
Float employee
Flowchart
Force-field analysis
Goal
Histogram
Internal customer
Job procedure
Job sharing
Key indicator
Lean
Movement diagram
Multivoting technique
Narrative

Nominal group technique (NGT)
Objective
Offshoring
Open system
Outsourcing
Parallel work division
Pareto chart
Performance
Performance measurement
Playscript
Preventive control
Procedure manual
Process redesign
Productivity
Qualitative standard
Quantitative standard

Run chart	Standard	Volume log
Scatter diagram	Statistical process control	Waste
Serial work division	(SPC) chart	Work
Service level agreement	Swimlane diagram	Work distribution analysis
(SLA)	System	Work distribution chart
Shift differential	Telecommuting	Work measurement
Shift rotation	Time ladder	Work sampling
Six Sigma	Unit work division	Workflow
Special cause variation	Use case analysis	

Projects

1. Create a document for performance expectations and controls related to a personal goal (for instance, losing weight or earning an A grade). The document may be narrative or in the form of a spreadsheet. It should contain the following:

- Section I: Establish performance expectations. Identify and state at least one expectation of performance you have for yourself.
- Section II: Establish controls on performance. Describe what controls or methods of monitoring performance you could use (or do use) to gather data on your performance relative to that expectation.
- Section III: Type(s) of controls. Classify each control as a "preventative" or "feedback" control.
- Section IV: Develop an action plan. If, when measured, your actual performance exceeded your expectation, what would you do? In contrast, if your actual performance was less than your expectation, what you would do?

2. Choose one PI tool or technique and present it to the class, using handouts or PowerPoint slides. The presentation should cover the following topics:

- Definition of the tool or technique
- When to use the tool or technique
- How to construct or use the tool or technique
- How to interpret the tool or technique
- An in-class exercise using the specific tool
- A published article or other resource that demonstrates an application of the tool. (Be sure to cite the appropriate reference.)

Real-World Cases

1. Inpatient Discharge Process

A lengthy, inefficient process for discharging inpatients is a common concern of hospitals. It causes frustration for patients and family members, and leads to delays for incoming patients. One way to address this issue is to apply Lean, Six Sigma, and change management techniques.

Read "Creating a Lean Six Sigma Hospital Discharge Process: An iSixSigma Case Study" at https://www.isixsigma.com/uncategorized/creating-lean-six-sigma-hospital-discharge-processan-isixsigma-case-study/ and answer the following questions.

Reference: DeBusk, C. and A. Rangel, Jr. 2000. Creating a Lean Six Sigma hospital discharge process: An iSixSigma Case Study. iSixSigma.

Discussion Questions

    a. How did developing a process map of the current discharge process help the team get started? How was the staff involved?

    b. What was the most important tool for determining the critical drivers of waste and variation?

    c. Identify factors that contributed to process variation in the discharge process from the discharge order to the patient leaving.

    d. What specific changes were made in the subprocess of the discharge order to the patient leaving as a result of workflow analysis?

    e. What specific changes were made in the subprocess of the patient leaving the hospital room to the computer showing the bed as available as a result of the workflow analysis?

2. Turnaround Times for Mammography Reports

The Current Situation

Diana is the Director of Health Information Management at XYZ Community Hospital. It is a 250 bed general acute care facility with 15 outpatient clinics. The HIM Transcription Department is responsible for transcribing notes from the hospital, Emergency Department, clinics, and Radiology Department.

    The organization is planning for implementation of an enterprise-wide electronic health record system within the next two years. Active discussions are underway about converting the Radiology Department to a new system prior to the rest of the conversion due to their outdated and highly manual processes for processing patients and reports.

    The Radiology Department uses a digital dictation system into which radiologists dictate interpretations of films. HIM transcriptionists are assigned to do Radiology transcription on a daily basis. There is a consistent issue of service level agreement that is not presently being met. The departments are separated by two floors in the building. The transcription clerk is responsible for picking up 'packets' (which include the report form) from Radiology frequently throughout the day, leaving them on a shelf in Transcription where the staff pick up the packets and transcribe the report, returning the packet to a 'done' section when the report is completed. The clerk returns reports to the Radiology Department when next they pick up new packets ready for transcription.

    Recent complaints from patients and physicians about delays in turning around mammography reports have escalated to the point where Diana and the manager in the Radiology Department (Donna) believe they have to make improvements in the workflow immediately as an interim measure until the EHR can be implemented. Their goal is to achieve the service level agreement for mammograms of 36 hours from the time the patient has the films taken, which has been endorsed by the Medical Staff.

Reference: AHIMA. 2006. Optimizing Investment in the EHR: Workflow Analysis as the Foundation for Success [Workshop resource book]. Chicago: AHIMA

Application Assignment:
- Map the current process illustrated in the Case Study using each of the process mapping tools below.
  - Flowchart
  - Top Down Process Map
  - Swimlane Diagram
- You will submit three different diagrams illustrating the same process as outlined in the Case Study. You may use Microsoft Word, Power Point, or Visio or another approved tool to map the process. The intent of this assignment is not to know a particular software, rather to know how to map a process using various tools.

Application Exercises

1. Using the criteria for writing effective procedures presented in the chapter, write a procedure for frying an egg, brushing your teeth, registering for a class, or ordering lunch at a fast food restaurant. Have another person test the accuracy and clarity of the procedure by using it to complete the task. Post-test and document any changes required in the procedure to improve it.

2. Develop two performance standards for a job that you currently have or have had in the past: one must be a qualitative standard and one must be a quantitative standard.

3. Review each situation presented below, analyze it relative to the characteristics of the various work measurement techniques available for consideration (time study, predetermined standard data, work sampling, historical data approach, and employee self-reporting or self-logging), and note which measurement tool would work best.

Situation	Selected Measurement Tool
A management engineering department exists in this healthcare organization and prefers to use scientific methods of measurement. Repetitive tasks are to be measured. Personnel have been unreliable in the past in completing log sheets but they do not appear threatened by being measured.	
Supervisor suspects process improvement is required in the department but there are very limited resources available to do a study. Supervisor wants more statistically valid data than the estimate available through self-logging.	

Data are needed immediately. Good records have been consistently maintained on work volume and staffing hours associated with work activities. Employees may be slightly threatened at first and not be able to participate to provide accurate data.	
Accurate data about the volume and type of activities is required and it is needed in about a month from now. However, limited resources (money and personnel) are available in the facility to apply to the work measurement effort. Employees are detail oriented and are generally eager to get involved.	

Review Quiz

Instructions: Choose the most appropriate answer for the following questions.

1. A swimlane diagram:
   a. shows who, what, and when.
   b. requires little to no training to develop.
   c. can show an entire business process.
   d. all of the above

2. A use case analysis is a technique:
   a. that uses symbols to show a process flow.
   b. that measures return on investment.
   c. to determine how users will interact with a system.
   d. none of the above

For questions 3 through 7 label each standard that is stated in measurable terms with standard (S) and each that is stated in unmeasurable terms with unmeasurable (UM).

3. _____ Respond to a written request for Release of Information in a timely way

4. _____ Complete timesheets for payroll by 6:00 p.m. on the last day of the payroll period

5. _____ Scan 2000 images per hour

6. _____ Maintain an accurate master patient index

7. _____ Audit transcribed reports with 98 percent accuracy in spelling and word usage

For questions 8 through 13, identify each standard as a qualitative standard (L) or a quantitative standard (N).

8. _____ Deliver the record to a STAT requester within 10 minutes of receiving the request

9. _____ Respond to requests in two working days 95 percent of the time

10. _____ Assign the correct medical record number to a returning patient with 99 percent accuracy

11. _____ Transcribe 1,500 lines per day

12. _____ Prep 350 to 400 images per hour

13. _____ Complete five birth certificates per hour

14. CQI tools are intended to produce all of the following outcomes except _____.
   a. group communication
   b. problem identification
   c. adherence to hierarchical roles
   d. group consensus

15. Which of the following is a CQI tool frequently used to display data?
   a. Scatter diagram
   b. Brainstorming
   c. Nominal group technique
   d. Multivoting

16. Which of the following is not a true statement about reengineering?
   a. It is intended to make small incremental changes to improve a process.
   b. It seeks to reevaluate and redesign organizational processes to make dramatic performance improvements.
   c. It implies making massive changes to achieve significant improvements in cost, quality, service, and speed.
   d. Its main focus is to reduce costs.

17. Lean is a management strategy focused on:
   a. Reduction of waste
   b. Downsizing
   c. International trade
   d. Joint Commission standards

18. Six Sigma follows the scientific methodology involving all of the following steps except:
    a. Define
    b. Monitor
    c. Analyze
    d. Improve

19. A use case analysis will not help:
    a. Determine how users will interact with a system
    b. Design the user interface
    c. Determine return on investment
    d. Facilitate documentation

For questions 20 through 25, match the performance tools and techniques with their descriptions.
    a. Performs a cause-and-effect analysis
    b. Displays data on the drivers of and barriers to a course of action
    c. Generates a large number of creative ideas from a group
    d. Plots the points for two variables to see if they are related
    e. Displays the frequency of responses
    f. Organizes similar ideas into logical groupings

20. ____ Root-cause analysis

21. ____ Force-field analysis

22. ____ Histogram

23. ____ Scatter diagram

24. ____ Brainstorming

25. ____ Affinity grouping