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SKU: 9780134413273-SOLUTIONS

Chapter 2

2.1 The three purposes of Dr. Shewhart's control charts are: to define standards for the process, to aid in problem-solving efforts to attain the standards, and to serve to judge if the standards have been met. These three purposes work together during an integrated problem-solving process. The first purpose, defining standards, sets the expectations for the process. The third purpose, judging if the standards are met, is used to determine if the process is capable of meeting the expectations placed on it. If the process is not capable, then the second purpose, to aid in problem-solving efforts, comes into play as the charts are used to determine the root causes associated with the processes' inability to meet specifications.

2.2 Deming's fourteen points interact by creating an integrated and systematic method of approaching the management of an organization. This method is grounded in the philosophy of constantly and forever improving the business of providing goods and services. While the fourteen points do not tell a company how to run every aspect of its business, they do provide guidelines which support the development of company-specific management systems grounded in continuous improvement.

2.6 Little q has a focus on the product, manufacturing, and the person buying the product. Its focus is narrow. Big Q, on the other hand focuses on the products and services as well as any processes involving the customer. The customer is anyone who interacts with the product or service. Big Q requires a larger focus on how we do the work we do and what is involved in our business.

2.7 Juran's approach to quality is described by his Trilogy of quality: quality planning, quality control and quality improvement.

2.9
A. Crosby's definition of quality: conformance to requirements
B. Crosby's system of quality: prevention of defects
C. Crosby's performance standard: zero defects
D. Left to the reader.

2.10 Customer satisfaction centers on how the customer felt the last time he or she bought a product or service from an organization. It is a comparison between customer expectations and customer experience. A successful customer is one who receives a product or service that meets his or her expectations the first time. When a customer is merely satisfied, steps may have been taken to rework or redo the product or service until the customer is happy. In the action of satisfying a customer whose expectations weren't met the first time, the company may have incurred quality costs.

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2.11 Crosby's erroneous assumptions:
Quality is goodness, luxury.
Quality is the responsibility of the quality control department.
Quality is intangible and not measurable.
Quality problems begin with the operator.
There is an "economics of Quality."

2.12 Dr. Deming: Constancy of purpose/Continuous improvement/Institute training
Dr. Juran: Quality Improvement/Steering arm provides resources for improvement/Big Q
Crosby: Economics of Quality/prevention of defects.

2.13 Taguchi's loss function describes the difference between focusing on a target (the center of the specification) and focusing on the tolerance (the allowable spread). A company that fails to focus on the target and allows the process to vary between tolerance limits faces loss. This loss exists because the product or service is varying from the desired target. For instance, if a cereal box is supposed to hold 12 ounces, if it holds more than 12 ounces, the company loses money. If it holds less than 12 ounces, the customer won't be happy because they are shorted cereal.

2.14 The traditional approach to quality emphasizes conformance to requirements, usually a specification with +/- limits. The Taguchi Loss Function points out that any deviation from the target specification results in a loss.

2.15 Dr. Deming's Red Bead experiment is a tool which describes the effects of processes and variation on worker performance. With the experiment, Deming is able to show that processes and systems can create situations where an employee can be performing to the best of their ability, yet still not be able to perform to a high standard, because the process is not providing appropriate input. The experiment also shows the effect of variation on a process.

2.16 Dr. Deming's Funnel experiment shows how randomly adjusting the process can lead to poorer quality. The focus should be on the target, the process should be allowed to settle down to its normal operating level, then the process can be examined for potential improvements that will enable it to achieve the target each time. Read Real Tools for Real Life example about tampering with the process.

2.17 Dr. Deming's system of profound knowledge has four parts:
An appreciation for a system
Knowledge about variation
Theory of knowledge
Psychology

An appreciation for how a system works is key to improvement. People working with the system must understand how the different parts of a system interact in order to produce a product or provide a service. Once this is understood, the entire system can be optimized and made more effective.
Knowledge of variation enables a problem solver to understand whether or not they are dealing with common cause or special cause variation. Improvements made to remove common cause variation from the system involve changing processes, changing the way work gets done. Special cause variation requires specific changes to prevent the special cause from happening again.

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Theory of knowledge means that the person has an understanding of the how the process is performing. Knowledge comes from using performance measures to monitor the process and any process changes. Measures can reveal trends, patterns, and other anomalies. Psychology refers to the need to understand people and how they interact with each other.

2.18 a. Doctors: actual experience: doesn't want patient to get sick from other bacteria
Stated/unstated: sterile equipment/clean environment/infection control
Conscious/merely sensed: sterile equipment and good hygiene/ overall hospital cleanliness and employee compliance with hand washing requirements
Technically operational/subjective: antibacterial soap/how long washing takes
Nurses: actual experience: doesn't want patient to get sick from other bacteria
Stated/unstated: sterile equipment/clean environment/infection control
Conscious/merely sensed: sterile equipment and good hygiene/ overall hospital cleanliness and employee compliance with hand washing requirements
Technically operational/subjective: antibacterial soap/how long washing takes
Patients: actual experience: doesn't want to get sick from other bacteria
Stated/unstated: sterile equipment/clean environment/infection control and staff that cares about infection risk
Conscious/merely sensed: sterile equipment and good hygiene/ overall hospital cleanliness and employee compliance with hand washing requirements
Technically operational/subjective: antibacterial soap/how long washing takes
b. Several common causes would be: weakness of patients so they are susceptible to bacteria, existence of bacteria due to the very nature of hospital, number of visitors and patients in hospital who could transmit disease.
c. Several assignable causes would be: no sinks in room, broken sinks in room, no towels or soap in room, no training in hand washing techniques.
d. Institute leadership. Leadership must stress the importance of this problem by providing funding and support and holding people accountable for making improvements.
e. Little q focuses on the small processes within a single area. Big Q focuses on the overall picture. Big Q takes a larger view of the situation and would institute a hospital wide improvement program to solve this problem.
f. The economics of quality. Here the economics of quality can be clearly quantified as the costs of treating patients who contract other diseases or illnesses. Their deaths, loss of work time, suffering can all be quantified. These costs can be used to counterbalance and justify improvements.

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