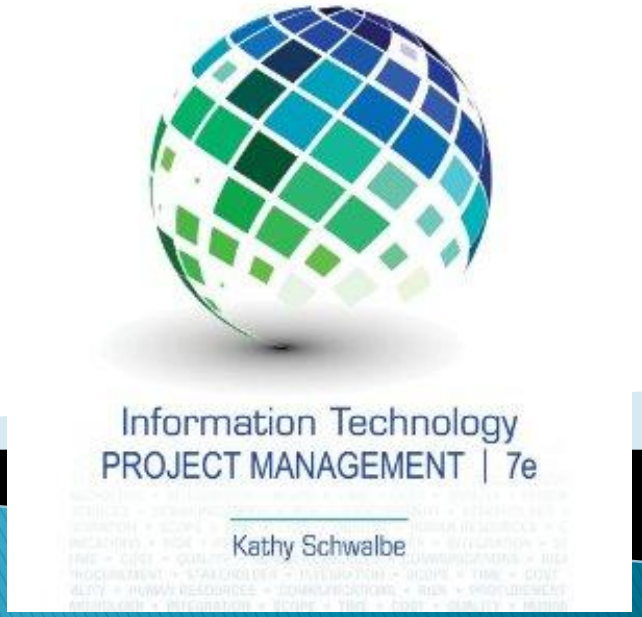
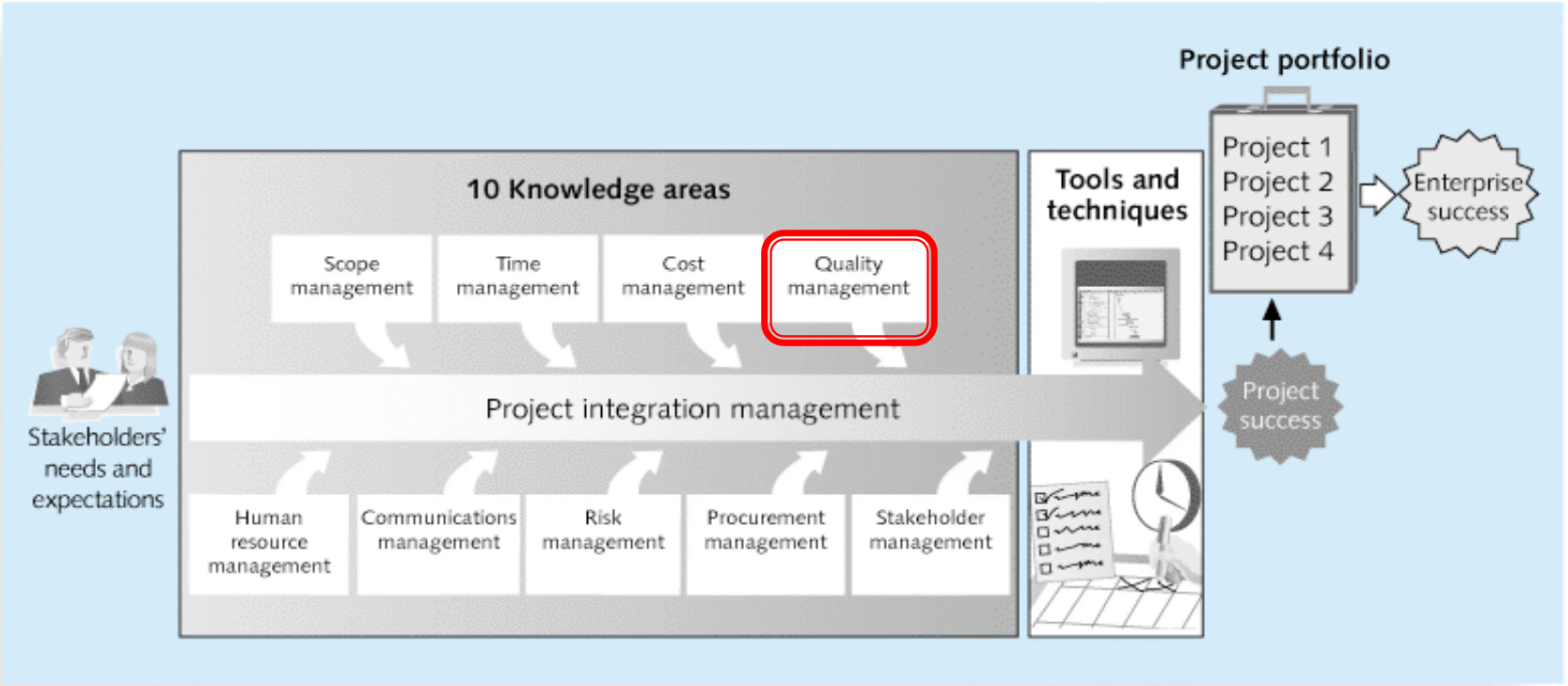
Chapter 8: Project Quality Management

Information Technology Project Management, Seventh Edition



ĐẶNG THỊ THU HÀ – SE
dtthuha79@gmail.com
https://lms.iuh.edu.vn

.


Project portfolio
Project 1
Project 2
Project 3
Project 4
Enterprise success
10 Knowledge areas
Scope management
Time management
Cost management
Quality management
Tools and techniques
Project integration management
Project success
Stakeholders' needs and expectations
Human resource management
Communications management
Risk management
Procurement management
Stakeholder management

Learning Objectives

- Understand the importance of project quality management for information technology (IT) products and services
- Define project quality management and understand how quality relates to various aspects of IT projects
- Describe quality management planning and how quality and scope management are related.
- Understand the tools and techniques for quality control, such as the Seven Basic Tools of Quality

Copyright 2014

What Is Project Quality?

- The International Organization for Standardization (ISO) defines **quality** as "the degree to which a set of inherent characteristics fulfils requirements" (ISO9000:2000)
- Other experts define quality based on:
  - **Conformance to requirements**: The project's processes and products meet written specifications
  - **Fitness for use**: A product can be used as it was intended

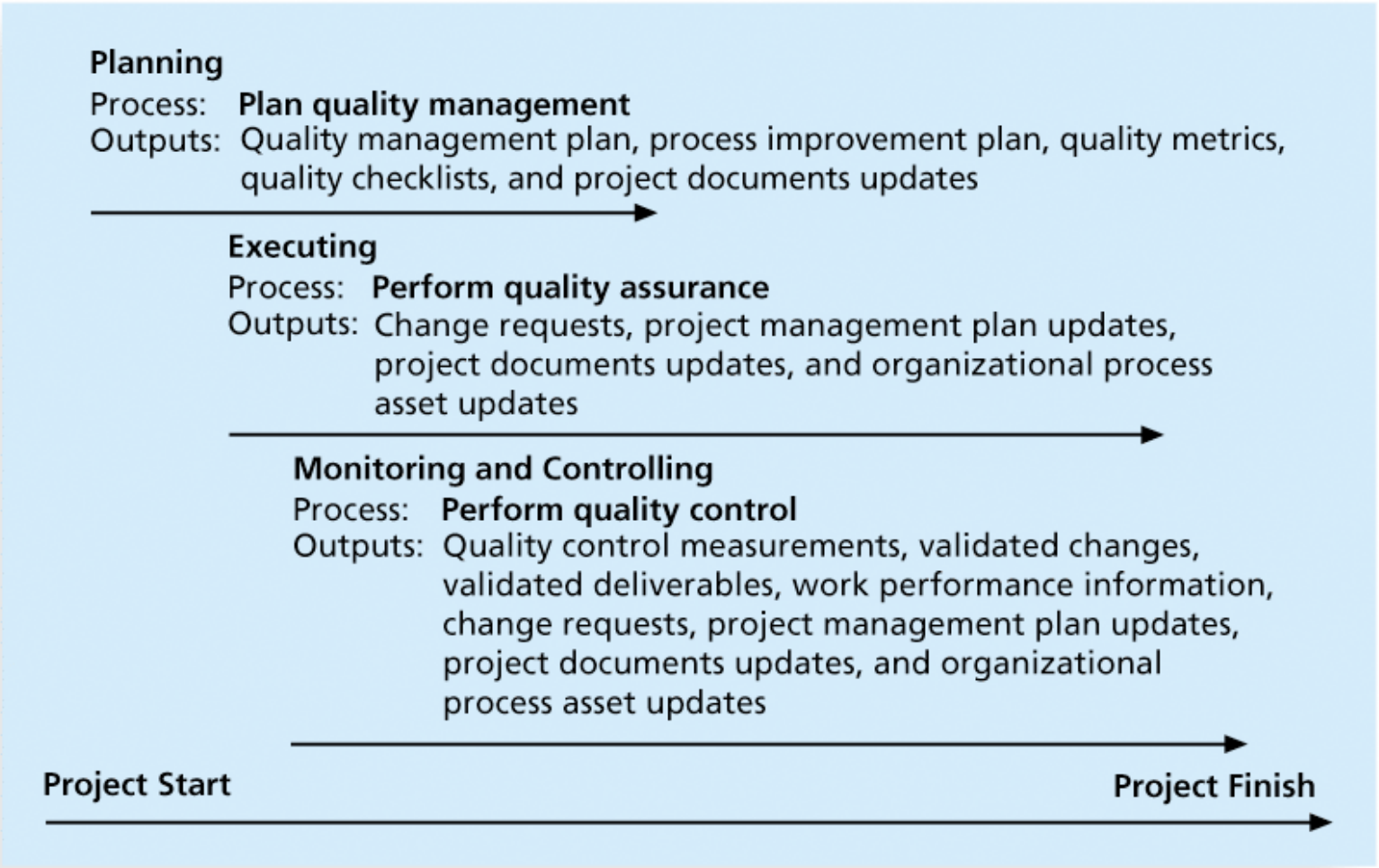
Copyright 2014

What Is Project Quality Management?

- **Project quality management** ensures that the project will satisfy the needs for which it was undertaken
- Processes include:
  - **Planning quality management**: Identifying which quality standards are relevant to the project and how to satisfy them; a **metric** is a standard of measurement
  - **Performing quality assurance**: Periodically evaluating overall project performance to ensure the project will satisfy the relevant quality standards
  - **Performing quality control**: Monitoring specific project results to ensure that they comply with the relevant quality standards

Copyright 2014

Figure 8-1. Project Quality Management Summary



Copyright 2014

Planning Quality

- Implies the ability to anticipate situations and prepare actions to bring about the desired outcome
- Important to prevent defects by:
  - Selecting proper materials
  - Training and indoctrinating people in quality
  - Planning a process that ensures the appropriate outcome

Copyright 2014

Scope Aspects of IT Projects

- **Functionality** is the degree to which a system performs its intended function
- **Features** are the system's special characteristics that appeal to users
- **System outputs** are the screens and reports the system generates
- **Performance** addresses how well a product or service performs the customer's intended use
- **Reliability** is the ability of a product or service to perform as expected under normal conditions
- **Maintainability** addresses the ease of performing maintenance on a product

Copyright 2014

Who's Responsible for the Quality of Projects?

- Project managers are ultimately responsible for quality management on their projects
- Several organizations and references can help project managers and their teams understand quality
  - International Organization for Standardization (www.iso.org)
  - IEEE (www.ieee.org)

Copyright 2014

Performing Quality Assurance

- **Quality assurance** includes all the activities related to satisfying the relevant quality standards for a project
- Another goal of quality assurance is continuous quality improvement
- **Benchmarking** generates ideas for quality improvements by comparing specific project practices or product characteristics to those of other projects or products within or outside the performing organization
- A **quality audit** is a structured review of specific quality management activities that help identify lessons learned that could improve performance on current or future projects

Copyright 2014

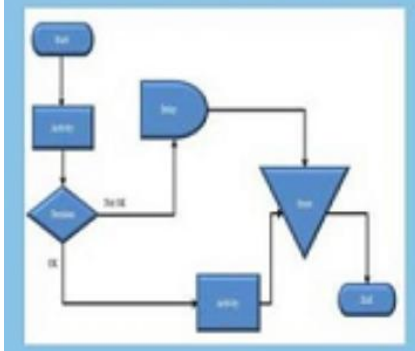
Controlling Quality

- The main outputs of quality control are:
  - Acceptance decisions
  - Rework
  - Process adjustments
- There are Seven Basic Tools of Quality that help in performing quality control

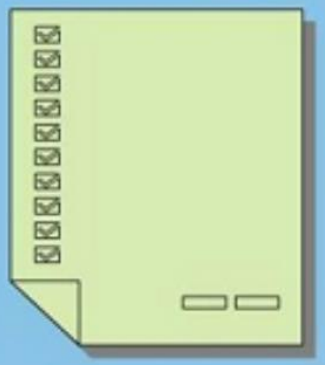
Copyright 2014

7 Q C Tools

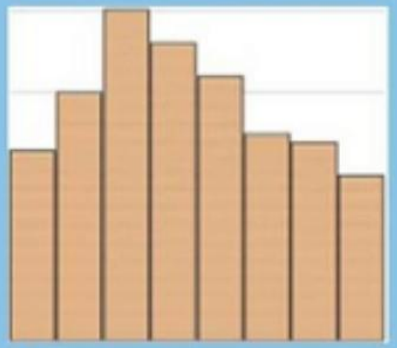
Process Flow Diagram



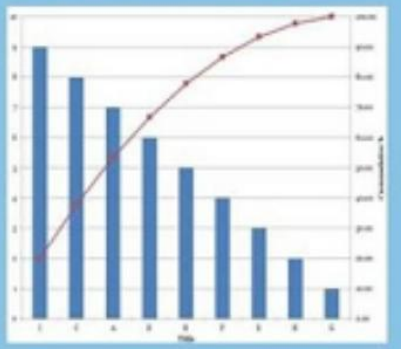
Check Sheet



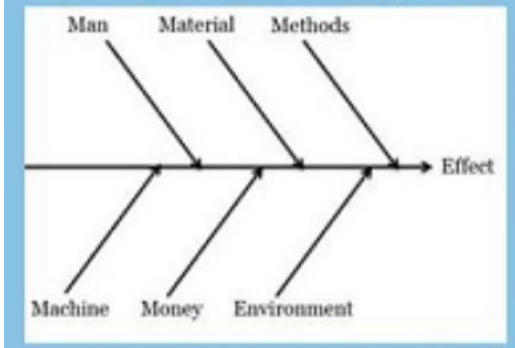
Histogram



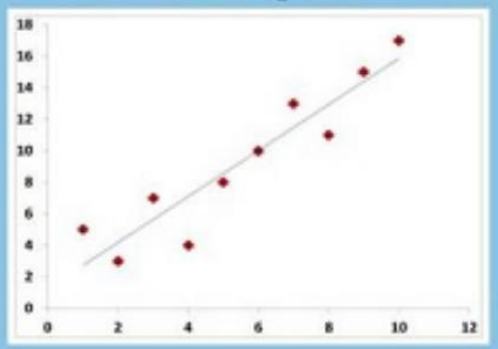
Pareto Diagram



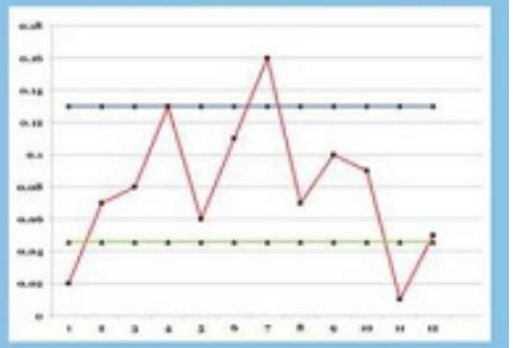
Cause and Effect Diagram



Scatter Diagram



Control Charts

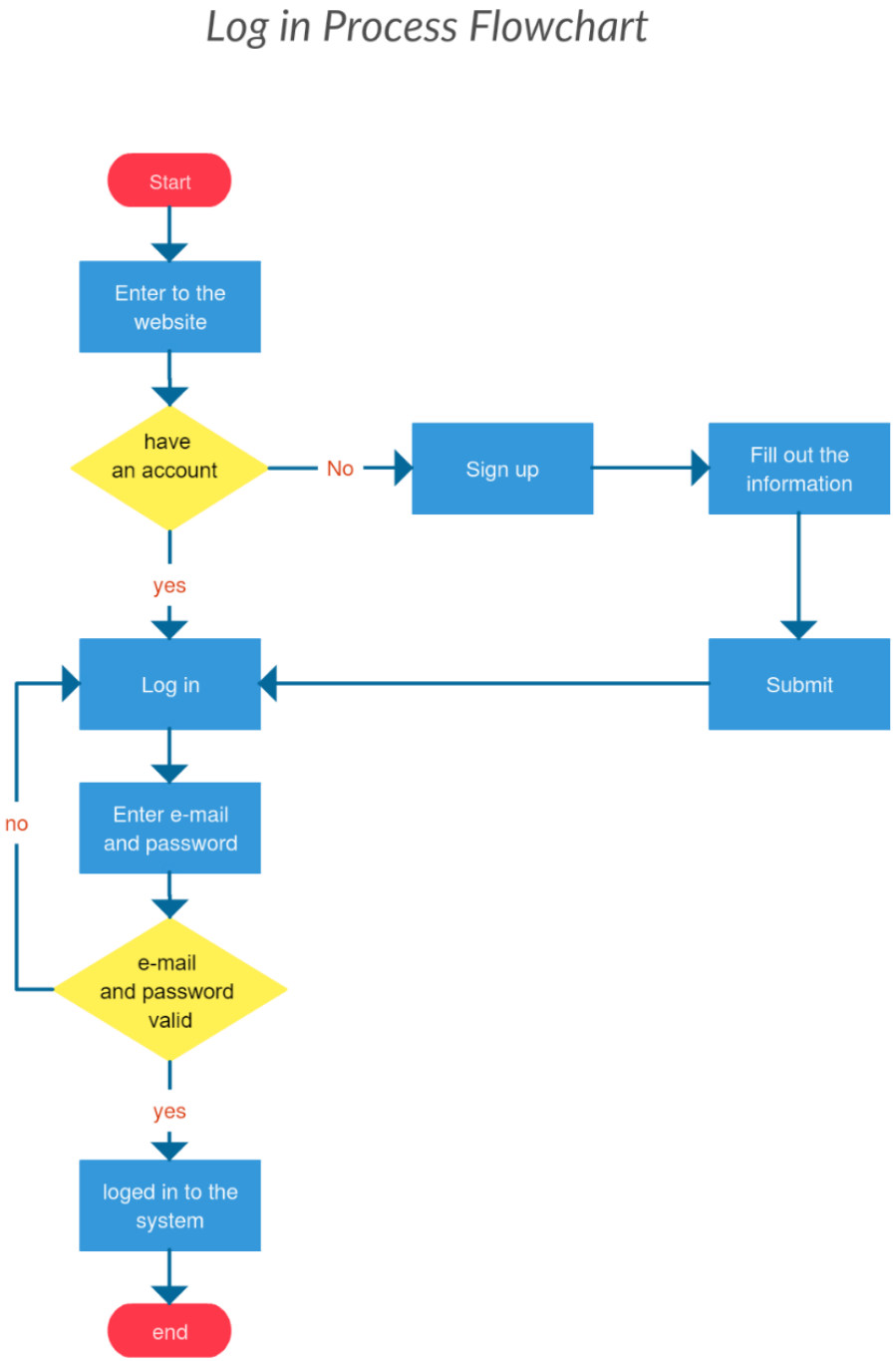


Flowcharts

- Flowcharts are graphic displays of the logic and flow of processes that help you analyze how problems occur and how processes can be improved
- They show activities, decision points, and the order of how information is processed

Copyright 2014

Figure 8-8. Sample Flowchart



Copyright 2014

Checksheet

- A checksheet is used to collect and analyze data
- It is sometimes called a tally sheet or checklist, depending on its format
- In the example in Figure 8-4, most complaints arrive via text message, and there are more complaints on Monday and Tuesday than on other days of the week
- This information might be useful in improving the process for handling complaints

Copyright 2014

Figure 8-4. Sample Checksheet

System Complaints

Source	Day							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Email	𝍸	𝍸	𝍸	𝍸	𝍸		𝍸	12
Text	𝍸 𝍸	𝍸	𝍸	𝍸	𝍸	𝍸	𝍸	29
Phone call	𝍸	𝍸	𝍸	𝍸	𝍸	𝍸		8
Total	11	10	8	6	7	3	4	49

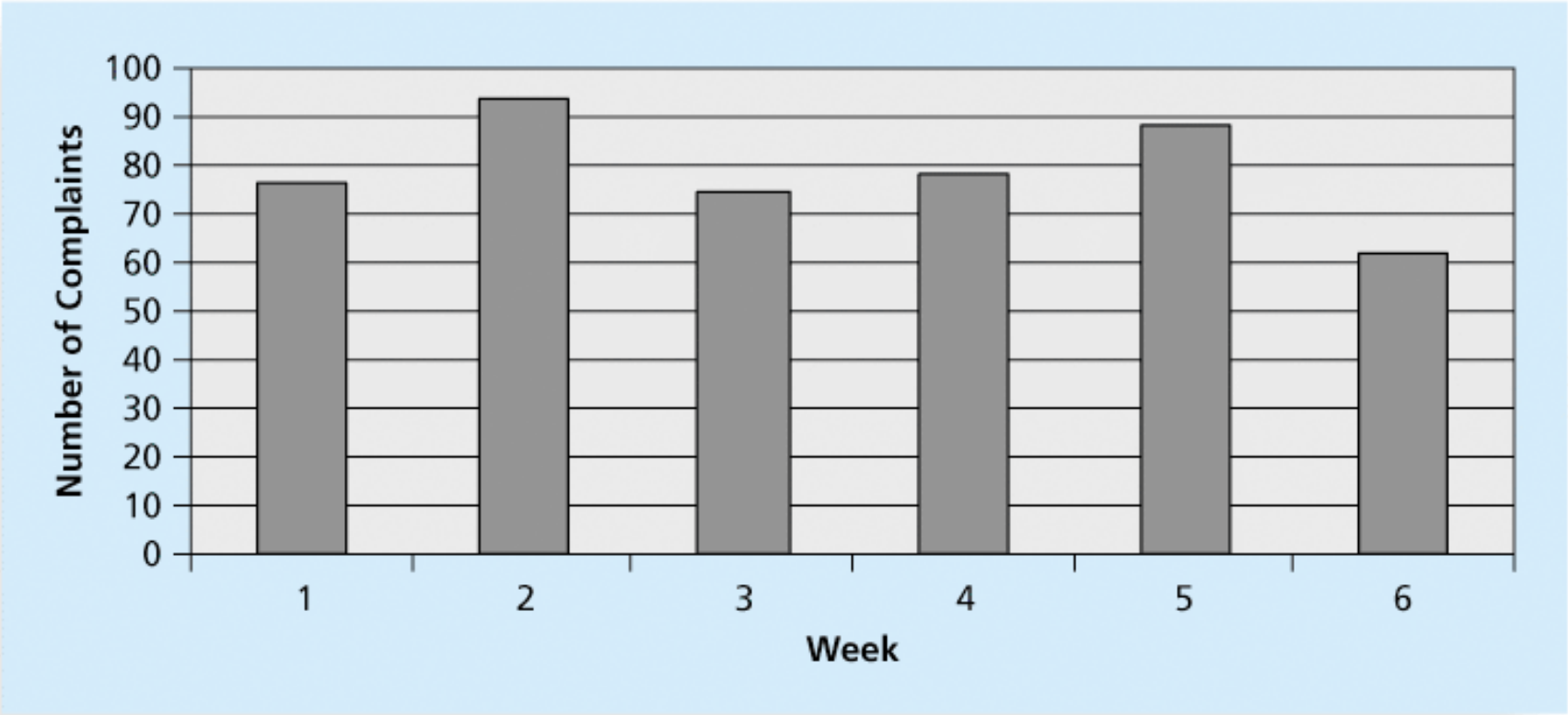
Copyright 2014

Histograms

- A **histogram** is a bar graph of a distribution of variables
- Each bar represents an attribute or characteristic of a problem or situation, and the height of the bar represents its frequency

Copyright 2014

Figure 8-6. Sample Histogram



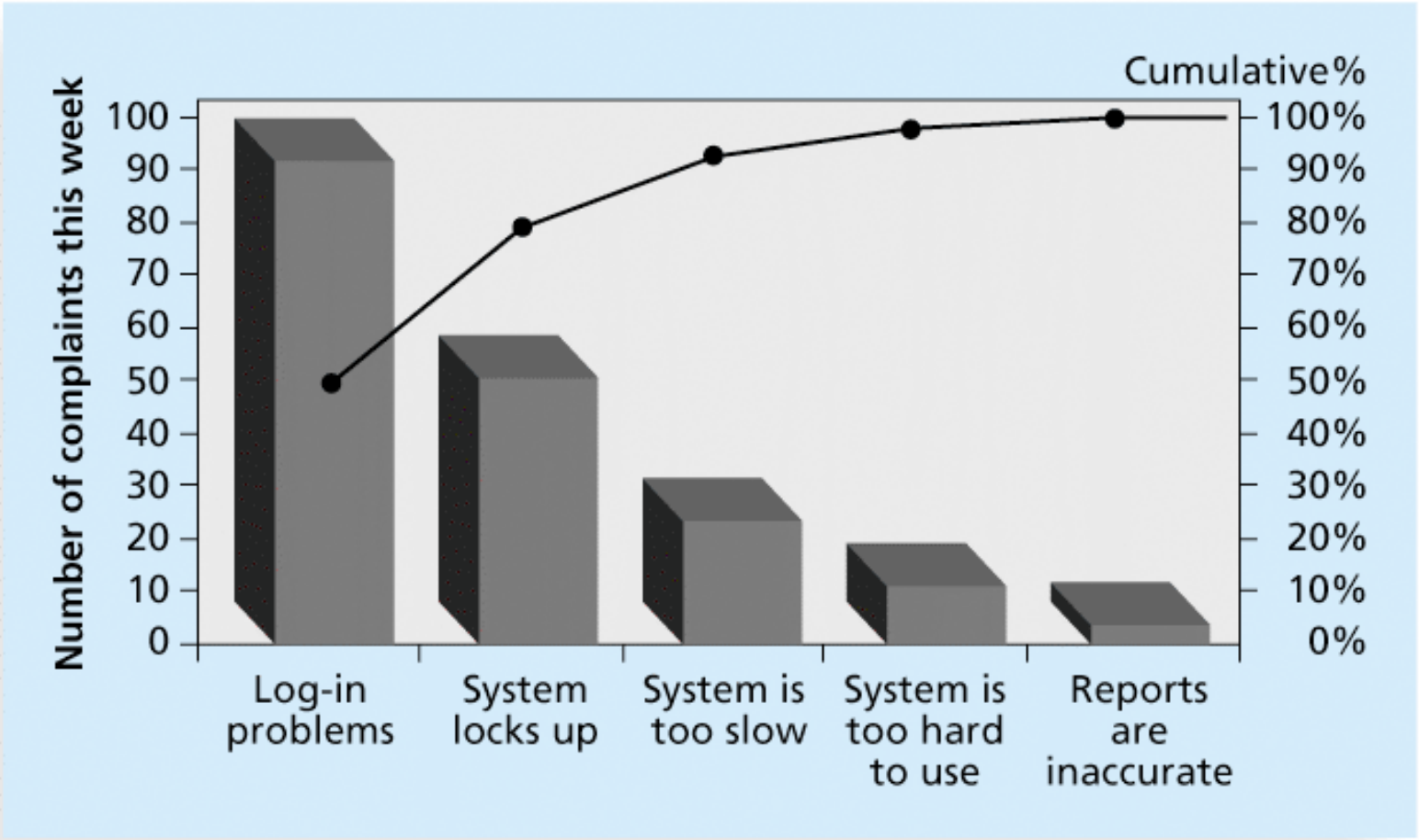
Copyright 2014

Pareto Charts

- A **Pareto chart** is a histogram that can help you identify and prioritize problem areas
- **Pareto analysis** is also called the 80-20 rule, meaning that 80 percent of problems are often due to 20 percent of the causes

Copyright 2014

Figure 8-7. Sample Pareto Chart



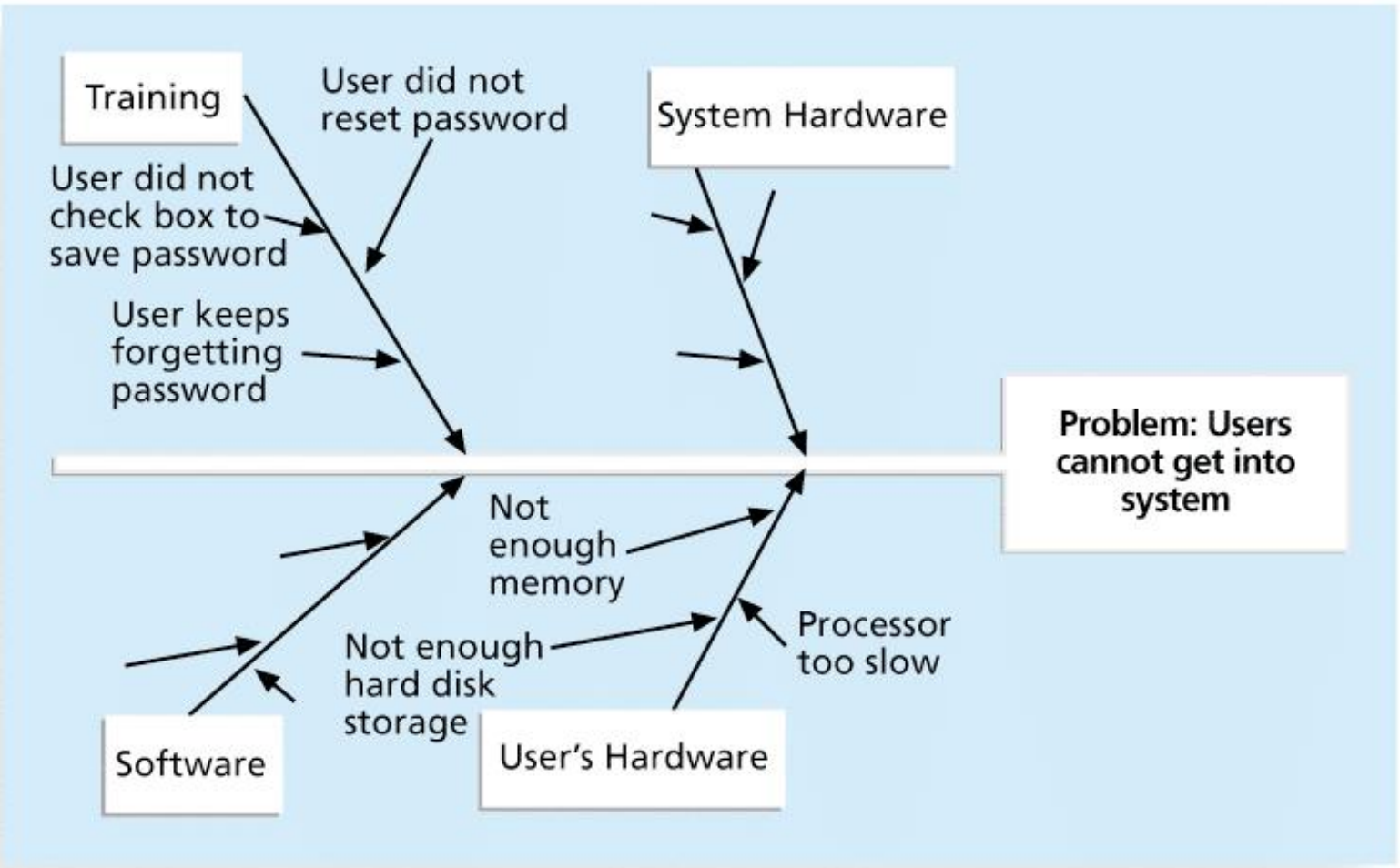
Copyright 2014

Cause-and-Effect Diagrams

- **Cause-and-effect diagrams** trace complaints about quality problems back to the responsible production operations
- They help you find the root cause of a problem
- Also known as **fishbone** or **Ishikawa diagrams**
- Can also use the **5 whys** technique where you repeated ask the question “Why” (five is a good rule of thumb) to peel away the layers of symptoms that can lead to the root cause

Copyright 2014

Figure 8-2. Sample Cause-and-Effect Diagram



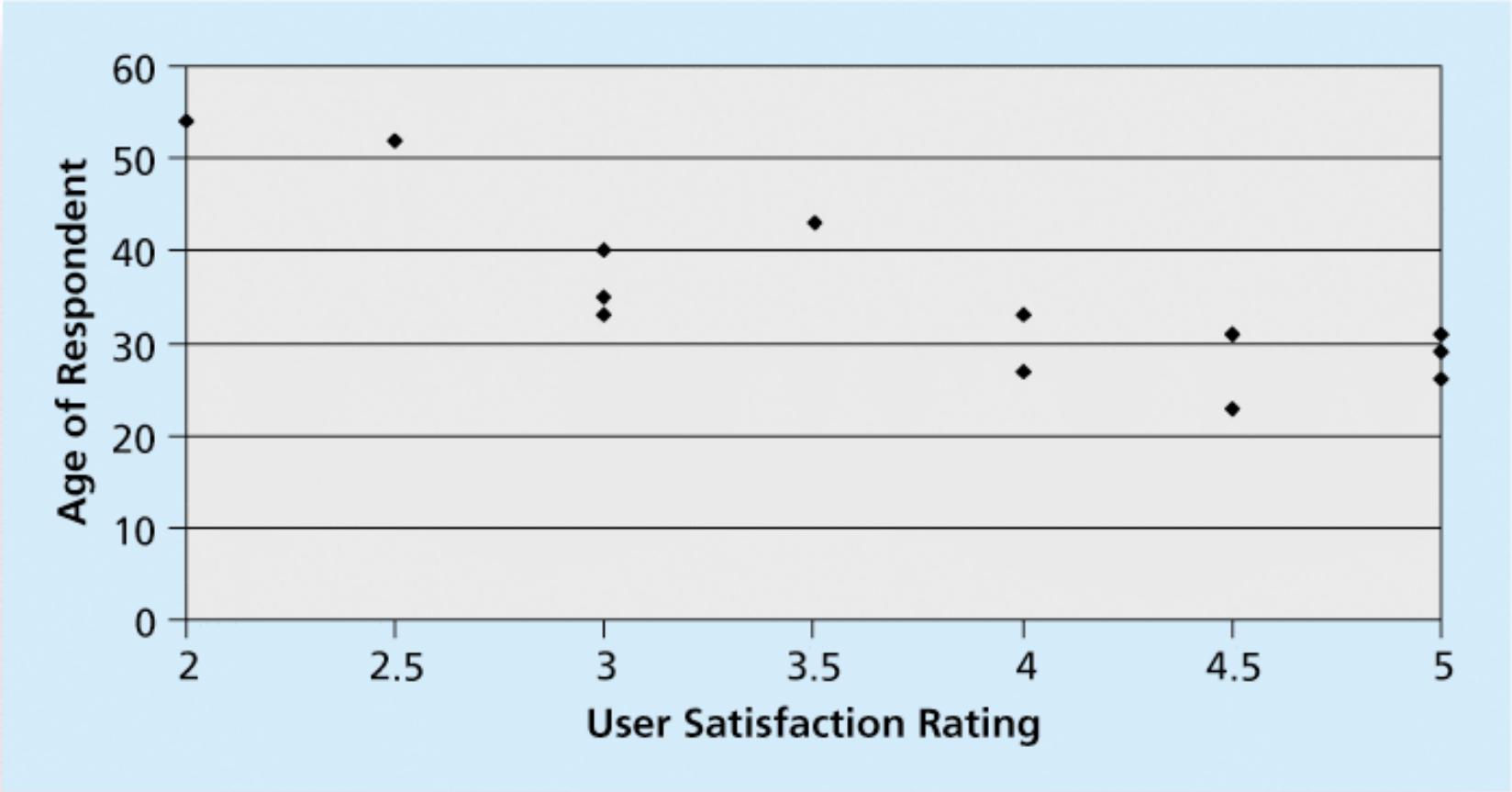
Copyright 2014

Scatter diagram

- A **scatter diagram** helps to show if there is a relationship between two variables
- The closer data points are to a diagonal line, the more closely the two variables are related

Copyright 2014

Figure 8-5. Sample Scatter Diagram



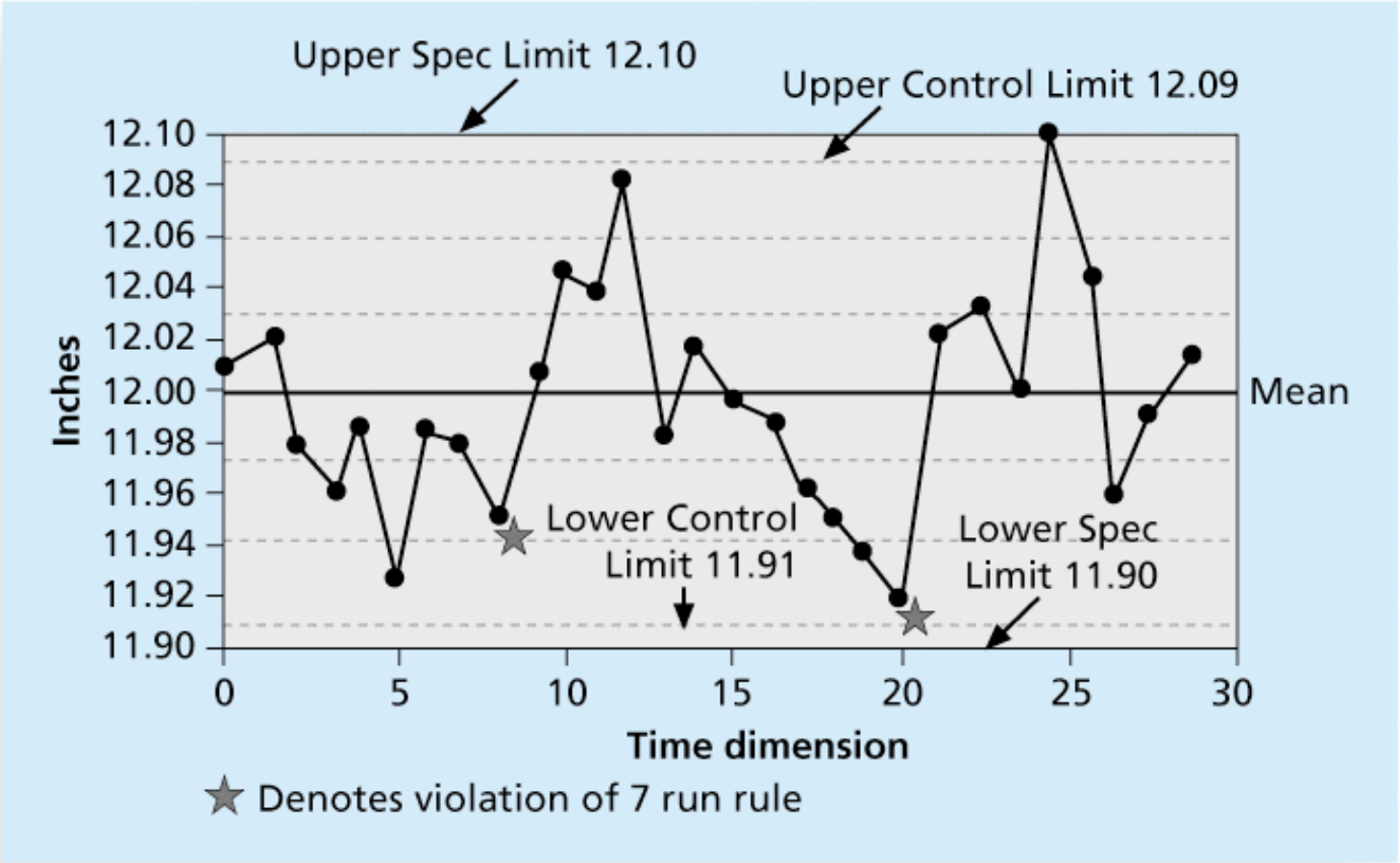
Copyright 2014

Quality Control Charts

- A **control chart** is a graphic display of data that illustrates the results of a process over time
- The main use of control charts is to prevent defects, rather than to detect or reject them
- Quality control charts allow you to determine whether a process is in control or out of control
  - When a process is in control, any variations in the results of the process are created by random events; processes that are in control do not need to be adjusted
  - When a process is out of control, variations in the results of the process are caused by non-random events; you need to identify the causes of those non-random events and adjust the process to correct or eliminate them

Copyright 2014

Figure 8-3. Sample Quality Control Chart



Copyright 2014

Improving Information Technology Project Quality

- Several suggestions for improving quality for IT projects include:
  - Establish leadership that promotes quality
  - Understand the cost of quality
  - Focus on organizational influences and workplace factors that affect quality
  - Follow maturity models

Copyright 2014

The Cost of Quality

- The **cost of quality** is the cost of conformance plus the cost of nonconformance
  - **Conformance** means delivering products that meet requirements and fitness for use
  - **Cost of nonconformance** means taking responsibility for failures or not meeting quality expectations
- A study reported that software bugs cost the U.S. economy $59.6 billion each year and that one third of the bugs could be eliminated by an improved testing infrastructure

Copyright 2014

Five Cost Categories Related to Quality

- **Prevention cost**: Cost of planning and executing a project so it is error-free or within an acceptable error range
- **Appraisal cost**: Cost of evaluating processes and their outputs to ensure quality
- **Internal failure cost**: Cost incurred to correct an identified defect before the customer receives the product
- **External failure cost**: Cost that relates to all errors not detected and corrected before delivery to the customer
- **Measurement and test equipment costs**: Capital cost of equipment used to perform prevention and appraisal activities

Copyright 2014

Chapter Summary

- Project quality management ensures that the project will satisfy the needs for which it was undertaken
- Main processes include:
  - Plan quality
  - Perform quality assurance
  - Perform quality control

Copyright 2014

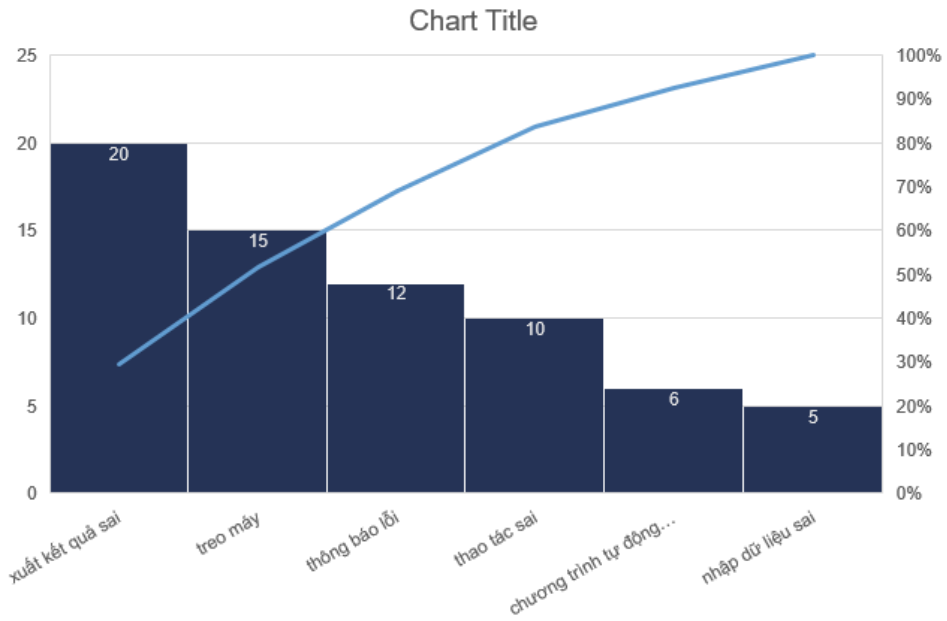
2.3 Điều khiển chất lượng (Perform Quality Control)

- **Cách vẽ Biểu đồ Pareto**
  - **Phân tích biểu đồ**: Những cột cao hơn thể hiện lỗi xảy ra nhiều nhất, cần được ưu tiên giải quyết. Những cột này tương ứng với đoạn đường cong có tần suất tích lũy tăng nhanh nhất (hay có độ dốc lớn nhất).
  - Những cột thấp hơn (thường là đa số) đại diện cho những lỗi ít quan trọng hơn tương ứng với đoạn đường cong có tần suất tích lũy tăng ít hơn (hay có tốc độ nhỏ hơn).

Copyright 2014

2.3 Điều khiển chất lượng (Perform Quality Control)

- **Pareto Chart**:



Copyright 2014