

Project Management Professional



PMP PREPARATION COURSE

6TH EDITION

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Chapter 8

Project Quality Management

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- .1 Inputs
 - .1 Project management plan
 - .2 Project documents
 - .3 Approved change requests
 - .4 Deliverables
 - .5 Work performance data
 - .6 Enterprise environmental factors
 - .7 Organizational process assets
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Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)



Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

➤ Plan Quality Management is the process of :

- Identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements and/or standards.
- هي عملية تحديد متطلبات و/أو معايير الجودة الخاصة بالمشروع وتسليماته، وتوثيق طريقة إظهار التزام المشروع بمتطلبات و/أو معايير الجودة

❖ The key benefit of this process:

- ✓ Provides guidance and direction on how quality will be **managed** and **verified** throughout the project.
- ✓ توفر الإرشاد والتوجيه بشأن كيفية إدارة الجودة والتحقق منها على مدار المشروع.

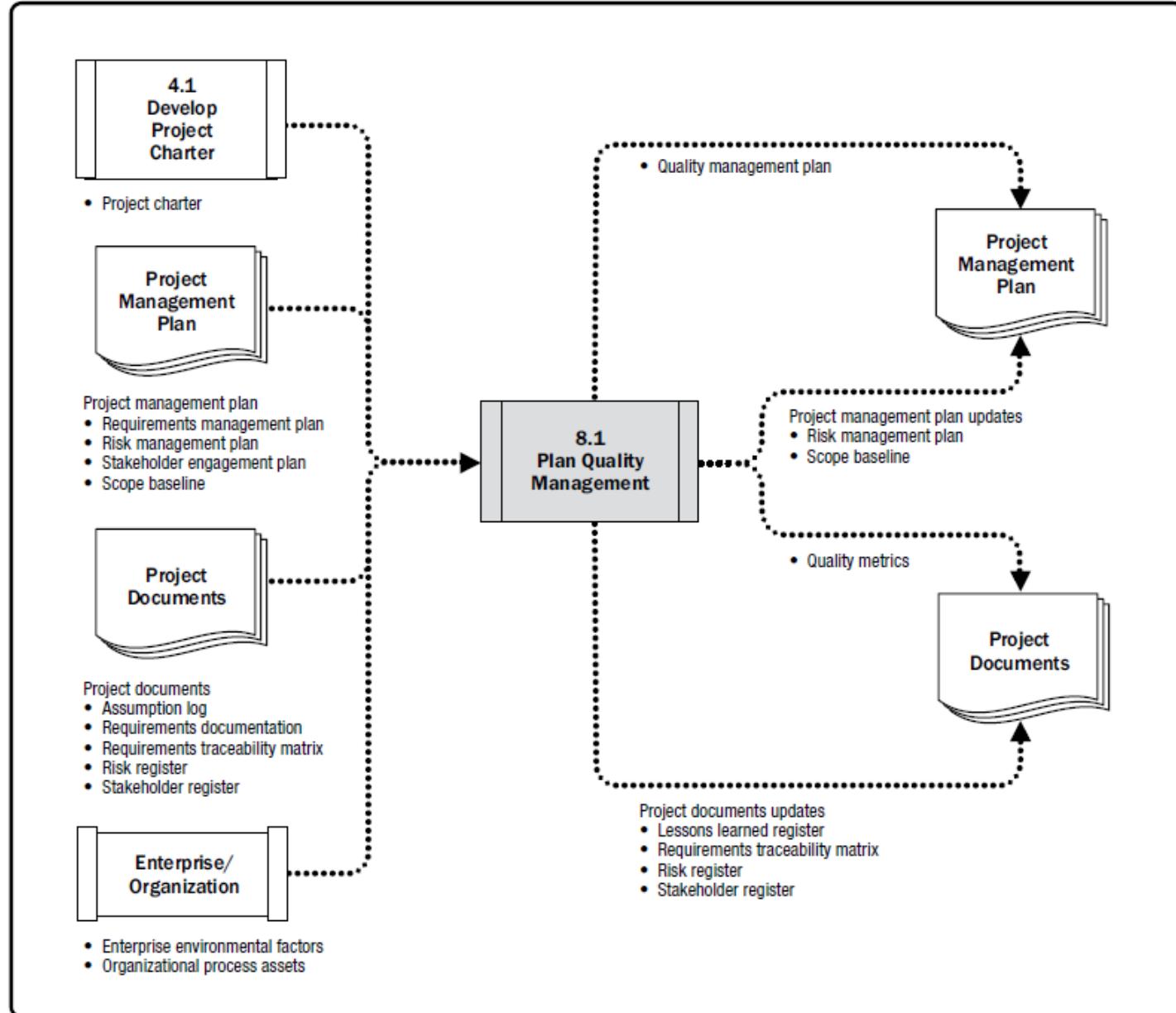
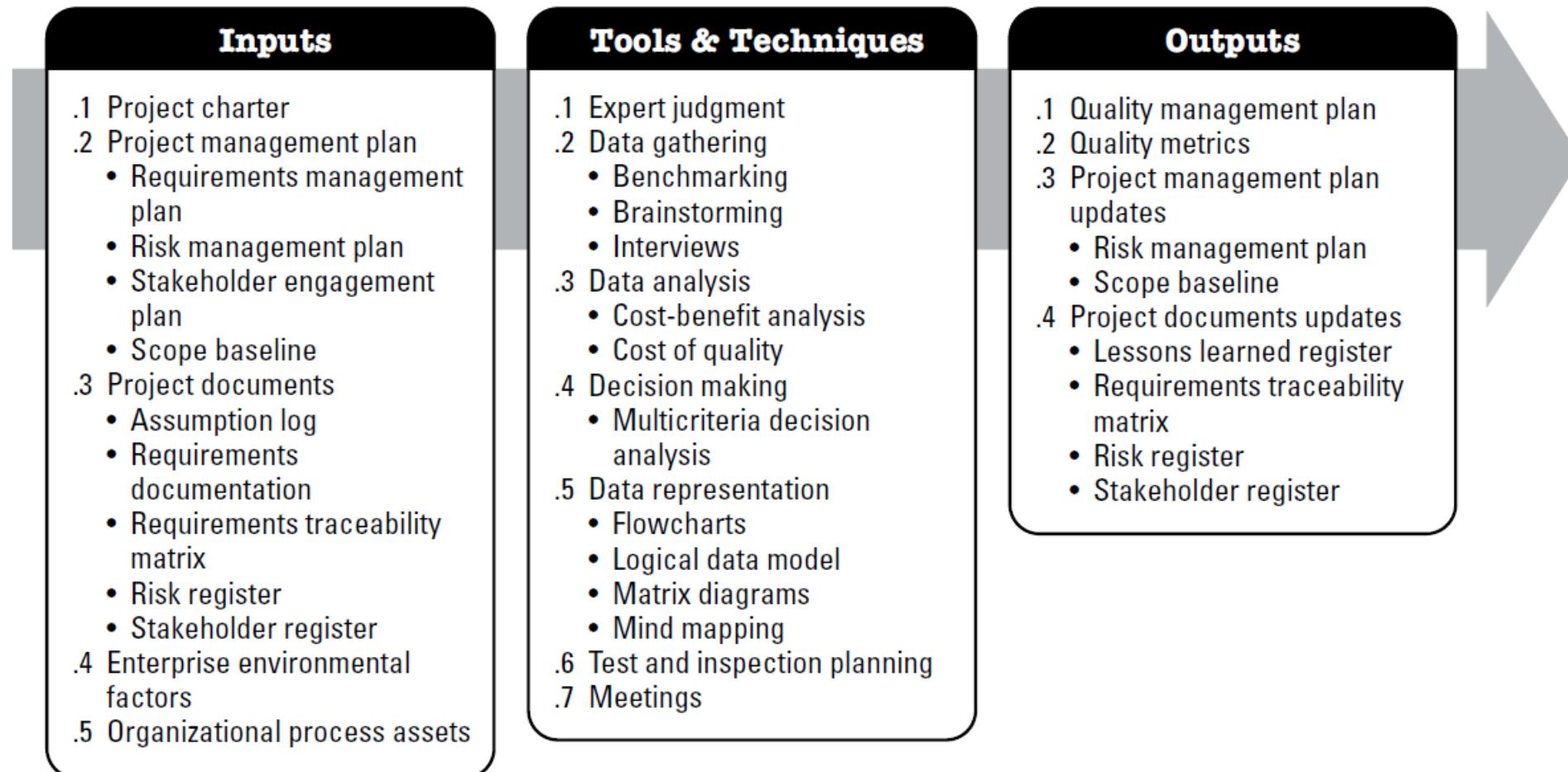


Figure 8-4. Plan Quality Management: Data Flow Diagram

Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

Plan Quality Management



Project Quality Management

(1) Plan Quality Management



Input

1. Project Charter
2. Project management plan
3. Project documents
4. Enterprise environmental factors
5. Organizational process assets



Tools &
Techniques

1. Expert Judgement
2. Data Gathering
3. Data Analysis
4. Decision making
5. Data representation
6. Test and Inspection planning
7. Meetings



Outputs

1. Quality management plan
2. Quality metrics
3. Project management plan updates
4. Project documents updates

Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

Inputs

Project Charter

- Provides the high-level project **description and product characteristics**.

يقدم ميثاق المشروع وصفاً عاماً للمشروع كما يقدم خصائص المنتج.

- Contains the project approval requirements, measurable project objectives, and related success criteria that will influence the quality management of the project.

يحتوي على متطلبات اعتماد المشروع، وأهداف المشروع القابلة للقياس، ومعايير النجاح ذات الصلة التي سوف تؤثر على إدارة جودة المشروع.

Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

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Data Analysis

Cost Benefit Analysis:

- Compares the **cost of the quality** step to the **expected benefit**.
يقوم بمقارنة تكلفة خطوات الجودة مع المنفعة المتوقعة.
- Help the project manager determine if the planned quality activities are **cost effective**.
يساعد تحليل التكلفة والمنفعة مدير المشروع على تحديد ما إذا كانت أنشطة الجودة المخطط لها فعالة من حيث التكلفة.
- Examples of benefits: less rework, higher productivity, lower costs, increased stakeholder satisfaction, and increased profitability.
تقليل الأعمال المراد إعادتها وزيادة الإنتاجية وانخفاض التكاليف وارتفاع مستوى رضا المعنيين وزيادة الأرباح.

Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

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Data Analysis

Cost of quality: تكلفة الجودة

Cost of Conformance

Prevention Costs

(Build a quality product)

- Training
- Document processes
- Equipment
- Time to do it right

Appraisal Costs

(Assess the quality)

- Testing
- Destructive testing loss
- Inspections

Money spent during the project
to avoid failures

Cost of Nonconformance

Internal Failure Costs

(Failures found by the project)

- Rework
- Scrap

External Failure Costs

(Failures found by the customer)

- Liabilities
- Warranty work
- Lost business

Money spent during and after
the project **because of failures**

Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

TT

Data representation techniques

تمثيل البيانات

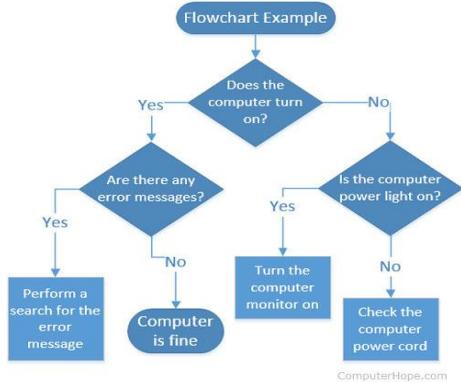
Flowcharts: المخططات الانسيابية

- also referred to as process maps. يشار إليها أيضاً باسم خرائط العمليات
- Display the sequence of steps and the branching possibilities that exist for a process that transforms one or more inputs into one or more outputs.

تعرض تسلسل الخطوات والاحتمالات المتفرعة القائمة لإحدى العمليات التي تحول واحد أو أكثر من المدخلات إلى واحد أو أكثر من المخرجات.

Important

- Useful in understanding and estimating the cost of quality for a process. استيعاب وتقدير تكلفة الجودة لإحدى العمليات



Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

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Test and Inspection Planning

تخطيط الاختبار والفحص

During the planning phase, the project manager and the project team determine:

- How to test or inspect the product, deliverable, or service to meet the stakeholders' needs and expectations.
- How to meet the goal for the product's performance and reliability.

The tests and inspections can include for example:

- Alpha and beta tests in software projects. اختبارات ألفا وبيتا في مشاريع البرمجيات
- Strength tests in construction projects. اختبارات القوة في مشاريع البناء
- Inspection in manufacturing, التفتيش في التصنيع
- Field tests and nondestructive tests in engineering. الاختبارات الميدانية، والاختبارات غير الإتلافية في الهندسة

Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

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Quality Management Plan

خطة ادارة الجودة

- A component of the project management plan that describes how applicable policies, procedures, and guidelines will be implemented to achieve the quality objectives.

The quality management plan may include:

- Quality standards that will be used by the project. معايير الجودة التي سوف يستخدمها المشروع
- Quality objectives of the project. أهداف الجودة الخاصة بالمشروع
- Quality roles and responsibilities. أدوار ومسؤوليات الجودة
- Project deliverables and processes subject to quality review.
- Quality control and quality management activities planned for the project.
- Major procedures relevant for the project, such as dealing with nonconformance, corrective actions procedures, and continuous improvement procedures.

والإجراءات الرئيسية المتعلقة بالمشروع، مثل التعامل مع عدم التطابق، وخطوات الإجراءات التصحيحية، وإجراءات التحسين المستمر

Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

o Quality Metrics مقاييس الجودة

Describes a project or product attribute and how the **Control Quality** process will verify compliance to it.

يوضح سمة مشروع أو منتج وكيفية قيام **عملية ضبط الجودة** بالتحقق من الامتثال لها

➤ Some examples of quality metrics include:

- Percentage of tasks completed on time. نسبة إنجاز المهام في الوقت المحدد
- Cost performance measured by CPI أداء التكلفة المقاسة عن طريق مؤشر أداء التكلفة
- Failure rate معدل الإخفاق
- Number of defects identified per day. عدد العيوب المحددة يومياً
- Customer satisfaction scores درجات رضا العملاء



Lecture 05 : Project Quality Management

01. Plan Quality Management (Planning)

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Quality Metrics

مقاييس الجودة

QUALITY METRICS			
Project Title:		Date Prepared:	
ID	Item	Metric	Measurement Method



Lecture 05 : Project Quality Management

02. Manage Quality (Executing)



Lecture 05 : Project Quality Management

02. Manage Quality (Executing)

➤ Manage Quality is the process of :

- Translating the quality management plan into executable quality activities that incorporate the organization's quality policies into the project.
- هي عملية ترجمة خطة إدارة الجودة إلى أنشطة الجودة القابلة للتنفيذ والتي تدمج سياسات الجودة الخاصة بالمؤسسة في المشروع.

❖ The key benefit of this process:

- ✓ Increases the probability of meeting the quality objectives. تزيد من احتمالية تحقيق أهداف الجودة
- ✓ Identifying ineffective processes and causes of poor quality. تحديد العمليات غير الفعالة.
- ✓ Uses the data and results from the control quality process to reflect the overall quality status of the project to the stakeholders. ✓ تستخدم إدارة الجودة البيانات والنتائج من عملية ضبط الجودة لكي تعكس حالة الجودة الشاملة الخاصة بالمشروع للمعنيين.

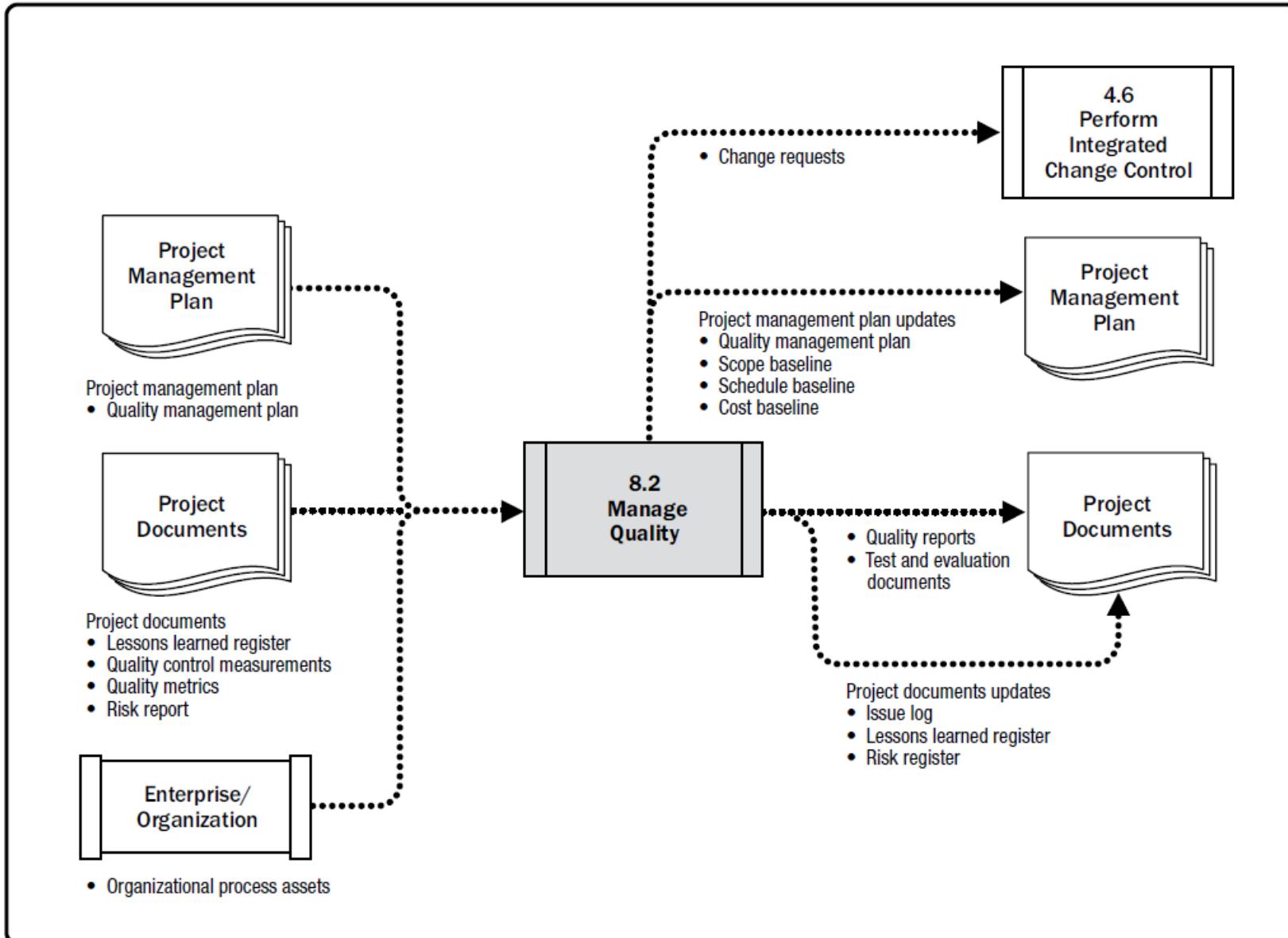


Figure 8-8. Manage Quality: Data Flow Diagram

Project Quality Management

(2) Manage Quality



Lecture 05 : Project Quality Management

02. Manage Quality (Executing)

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Data gathering

■ Checklists قائمة الفحص

- is a structured tool, usually component-specific, used to verify that a set of required steps has been performed or to check if a list of requirements has been satisfied.



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DATA Analysis

1- Alternatives analysis.

- used to evaluate identified options in order to select which different quality options or approaches are most appropriate to use.

يستخدم هذا الأسلوب في تقييم خيارات محددة من أجل تحديد خيارات أو أساليب الجودة المختلفة الأكثر ملائمة للاستخدام

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02. Manage Quality (Executing)

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DATA Analysis

2- Document analysis تحليل الوثائق



3- Process analysis تحليل العمليات

- Examines problems, constraints, and non-value-added activities that occur during a process.
يفحص المشكلات والقيود والأنشطة التي ليس لها قيمة مضافة التي تحدث أثناء العملية.

4- Root cause analysis (RCA) تحليل السبب الجذري

- Used to determine the basic underlying reason that causes a variance, defect, or risk.

عبارة عن أسلوب تحليلي يستخدم لتحديد السبب الأساسي المؤدي إلى حدوث تباين أو عيب أو خطر

- Used as a technique for identifying root causes of a problem and solving them.

يستخدم كأسلوب لتحديد الأسباب الجذرية للمشكلة وحلها

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02. Manage Quality (Executing)

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Data Representation

Affinity diagrams

مخططات التقارب

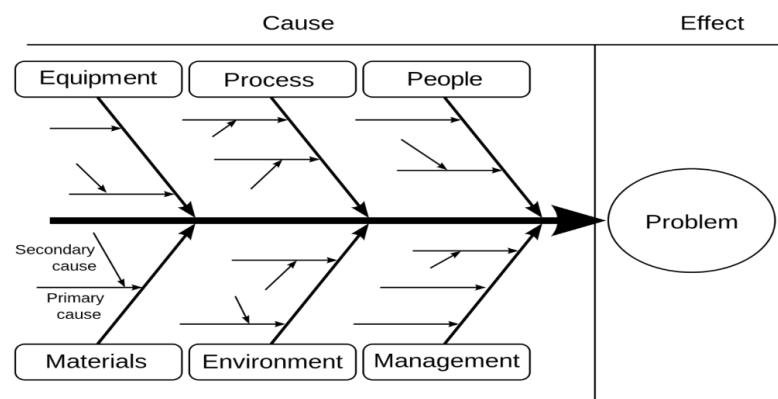
- Affinity diagrams can organize potential causes of defects into groups showing areas that should be focused on the most.



Cause-and-effect diagrams

مخططات السبب والأثر

- Also known as fishbone diagrams, why-why diagrams and Ishikawa diagrams
- Helping to identify the main or root cause of the problem.



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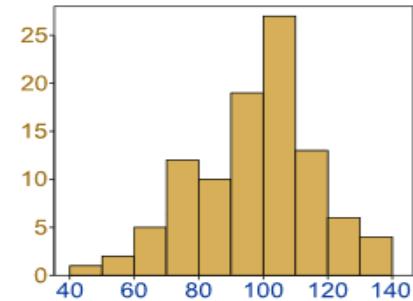
02. Manage Quality (Executing)

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Data Representation

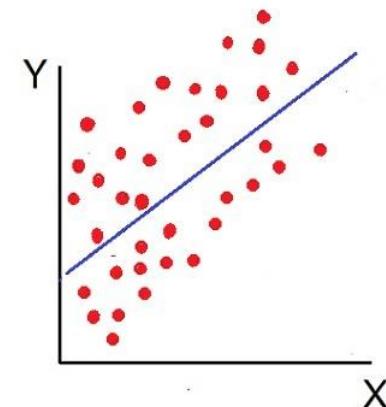
Histograms رسوم بيانية توزيعية

- Show a graphical representation of **numerical data**.
تبين الرسوم البيانية التوزيعية التمثيل التوضيحي للبيانات الرقمية.
- Histograms can show the **number** of defects per deliverable, a **ranking** of the cause of defects, the **number of times** each process is noncompliant.
تبين عددًا من العيوب لكل تسليم، وتصنيف سبب العيوب، وعدد المرات التي تكون فيها كل عملية غير مماثلة.



Scatter diagrams مخططات التشتت

- Shows the **relationship** between **two variables**.
هو رسم توضيحي يبيّ العلاقة بين متغيرين.



Lecture 05 : Project Quality Management

02. Manage Quality (Executing)

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Audits

عمليات التدقيق

- Audit is a **structured, independent process used to determine if project activities comply with organizational and project policies, processes, and procedures.**
 - عملية منظمة ومستقلة تستخدم لتحديد ما إذا كانت أنشطة المشروع تتوافق مع سياسات وعمليات وإجراءات المؤسسة.
- Identifying all good and best practices being implemented. تحديد كافة الممارسات الجيدة وأفضلها قيد التنفيذ.
- Identifying all nonconformity, gaps. تحديد كافة جوانب عدم التطابق والفجوات وموضع القصور.



Lecture 05 : Project Quality Management

02. Manage Quality (Executing)

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DESIGN FOR X

التصميم لأجل التميز

- a set of technical guidelines that may be applied during the design of a product for the optimization of a specific aspect of the design. هو مجموعة إرشادات فنية يمكن تطبيقها أثناء تصميم منتج لأجل تحسين جانب محدد من التصميم.
- DfX can control or even improve the product's final characteristics. يمكن أن يضبط أو حتى يحسن الخصائص النهائية للمنتج.
- DfX may result in cost reduction, quality improvement, better performance, and customer satisfaction. وقد ينتج عن استخدام DFX انخفاض التكاليف، وتحسين الجودة، والأداء الأفضل، ورضا العميل.



Lecture 05 : Project Quality Management

02. Manage Quality (Executing)

TT

Problem Solving

حل المشكلات



تعريف المشكلة

تحديد السبب الجذري

توليد الحلول الممكنة

اختيار افضل حل

تطبيق الحل

التحقق من فعالية الحل.

Problem Solving



Lecture 05 : Project Quality Management

02. Manage Quality (Executing)

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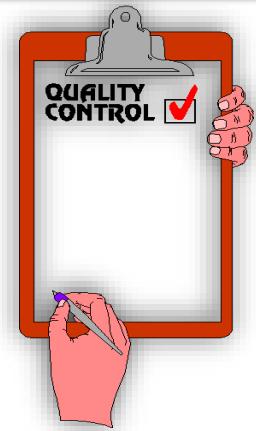
Quality reports

تقارير الجودة

- The quality reports can be graphical, numerical, or qualitative.

Ex: - quality management issues escalated by the team.

- recommendations for process, project, and product improvements.
- summary of findings from the Control Quality process.



o

CHANGE REQUESTS

طلبات التغيير

- If changes occur during the Manage Quality process that impact any of the components of the project management plan, project documents, or project or product management processes, the project manager should submit a change request and follow the Perform Integrated Change Control process.



Lecture 05 : Project Quality Management

03. Control Quality (M/C)



Lecture 05 : Project Quality Management

03. Control Quality (M/C)

➤ Control Quality is the process of :

- Monitoring and recording results of executing the quality management activities in order to assess performance and ensure the project outputs are complete, correct, and meet customer expectations.
- هي عملية مراقبة وتسجيل نتائج تنفيذ أنشطة إدارة الجودة لتقدير الأداء وضمان أن تكون مخرجات المشروع كاملة وصحيحة وتلبي توقعات العملاء.

❖ The key benefit of this process:

- ✓ verifying that project deliverables and work meet the requirements specified by key stakeholders for final acceptance.
- ✓ التحقق من وفاء تسليمات وعمل المشروع بالمتطلبات التي يحددها المعنيون الرئيسيون بالمشروع للقبول النهائي.

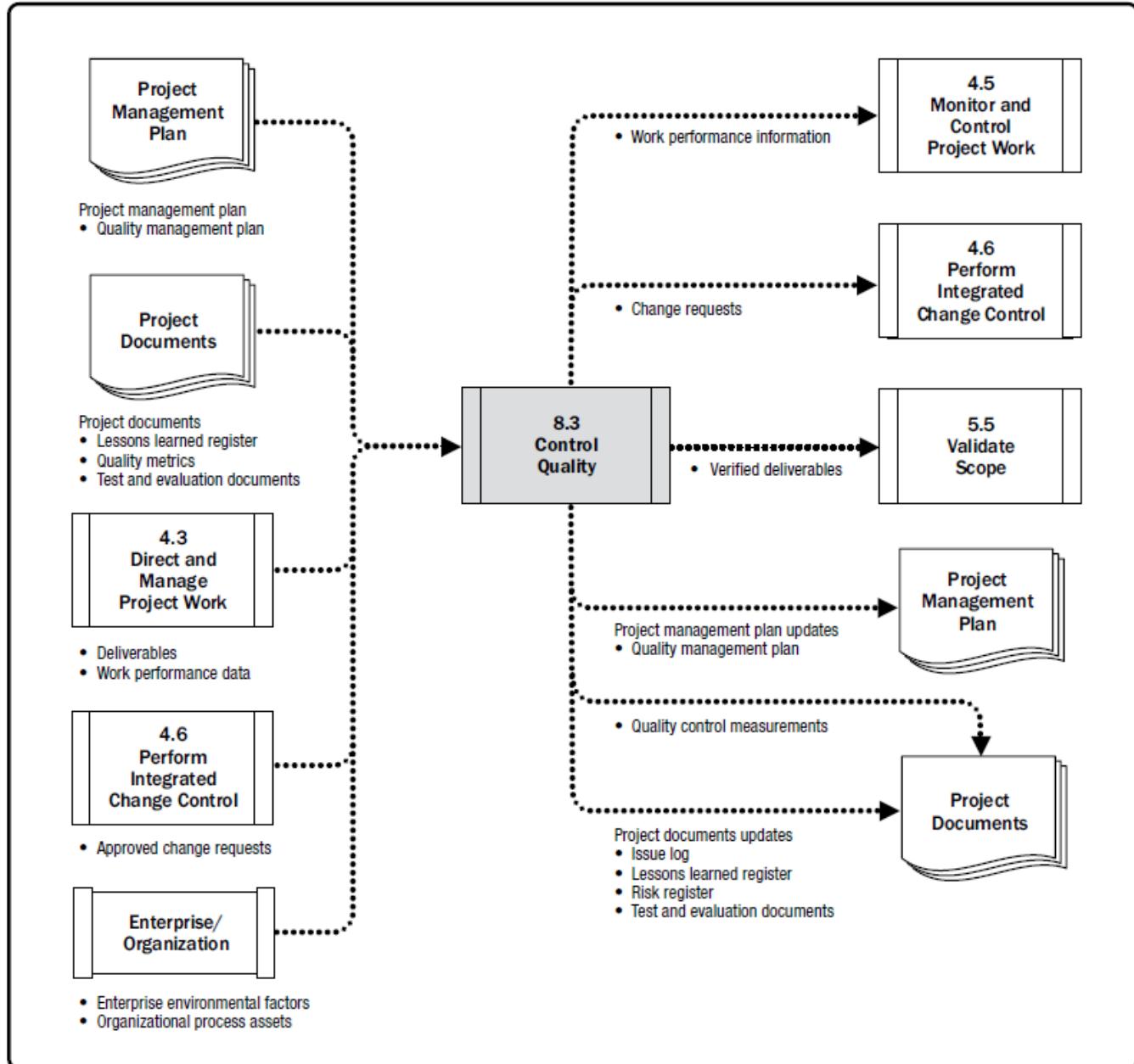


Figure 8-11. Control Quality: Data Flow Diagram

Project Quality Management

(3) Control Quality



Input

1. Project management plan
2. Project documents
3. Approved Change requests
4. Deliverables
5. Work performance data
6. Enterprise environmental factors
7. Organizational process assets



Tools &
Techniques

1. Data Gathering
2. Data Analysis
3. Inspection
4. Testing/product evaluations
5. Data representation
6. Meetings



Outputs

1. Quality control measurements
2. Verified deliverables
3. Work performance information
4. Change requests
5. Project management plan updates
6. Project document updates

Lecture 05 : Project Quality Management

03. Control Quality (M/C)

TT Data gathering

- Checklists
- Check sheets أوراق الفحص.
 - Are also known as tally sheets
 - Useful for gathering attributes data while performing inspections to identify defects.
 - Collection of useful data about a potential quality problem.

مفيدة بصورة خاصة في تجميع بيانات السمات أثناء تنفيذ عمليات الفحص لتحديد العيوب.
- Statistical Sampling : العينات الاحصائية
 - Choosing a sample from population with a planned frequency and size.
- Questionnaires and Surveys الاستبيانات والاستقصاءات.
 - Used to gather data about customer satisfaction after the deployment of the product or service

تستخدم لجمع البيانات حول رضا العملاء بعد نشر المنتج أو الخدمة

Defects/Date	Date 1	Date 2	Date 3	Date 4	Total
Small scratch	1	2	2	2	7
Large scratch	0	1	0	0	1
Bent	3	3	1	2	9
Missing component	5	0	2	1	8
Wrong color	2	0	1	3	6
Labeling error	1	2	1	2	6

Figure 8-12. Check Sheets

Lecture 05 : Project Quality Management

03. Control Quality (M/C)

TT INSPECTION الفحص

- Examination to the product to determine if it conforms to documented standards or to validate defect repairs. Also called reviews, audits, or walkthroughs.
- Conducted at any level (ex: single activity or final product) هو دراسة منتج الأعمال لتقرير ما إذا كان يتوافق مع المعايير الموثقة.

TT DATA REPRESENTATION

- **Control charts** خرائط المراقبة

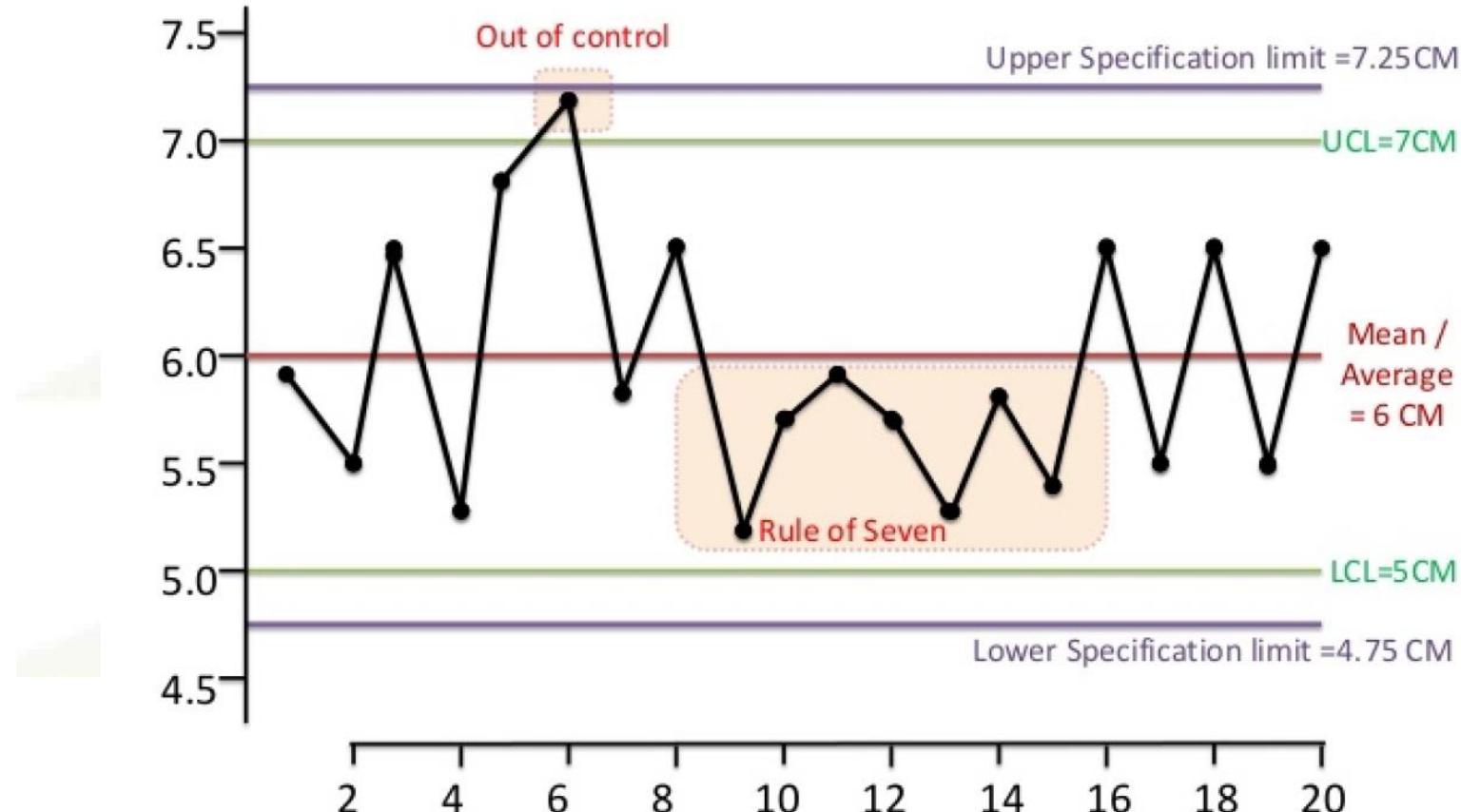
- Used to determine whether or not a process is **stable**.
- Upper and lower specification limits are based on the requirements and reflect the maximum and minimum values allowed.

- **Histograms**

- **Scatter diagrams**

Lecture 05 : Project Quality Management

03. Control Quality (M/C)



Lecture 05 : Project Quality Management

03. Control Quality (M/C)

○ **QUALITY CONTROL MEASUREMENTS** قياسات ضبط الجودة

- Quality control measurements are the documented results of Control Quality activities.
النتائج الموثقة لأنشطة ضبط الجودة. ويجب تسجيلها بالتنسيق المحدد في خطة إدارة الجودة

○ **VERIFIED DELIVERABLES** التسليمات المتحقق منها

- A goal of the Control Quality process is to determine the correctness of deliverables.
- The results of performing the Control Quality process are verified deliverables that become an input to the Validate Scope process for formalized acceptance.

○ **WORK PERFORMANCE INFORMATION**

○ **CHANGE REQUESTS**

○ **PROJECT MANAGEMENT PLAN UPDATES**

Control Quality	Manage Quality
Focuses on defect identification .	Focuses on defect prevention .
You try to find defects and correct them while making the product.	You plan to avoid the defect in the planning phase.
Is a Reactive process	Is a Proactive process.
Are used to verify the quality of the product .	Involves processes managing quality
Dealing with the deliverables to confirm if it is matching with the requirements and if it is approved will take it to validate scope Process for Formal Acceptance by the customer.	Dealing with the processes during the execution to confirm if it is matching with organizational and project policies,processes, and procedures.
Inspection are example of the quality control process.	Quality audit is an example of Manage Quality Process

Summary

Control Quality = Product

Manage Quality = Process

Validate scope = formal acceptance > accepted deliverables by customer



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/PMP TRICKS

Manage Quality

- is quality assurance. It's making sure you have GOOD PROCESSES.

Control Quality

is making sure you have a GOOD PRODUCT (or deliverable). It's an internal check to see if what you are producing is good before you hand it over to the customer.

Validate Scope

- is where the customer checks to see if the product or deliverable is good.

Quality Control:

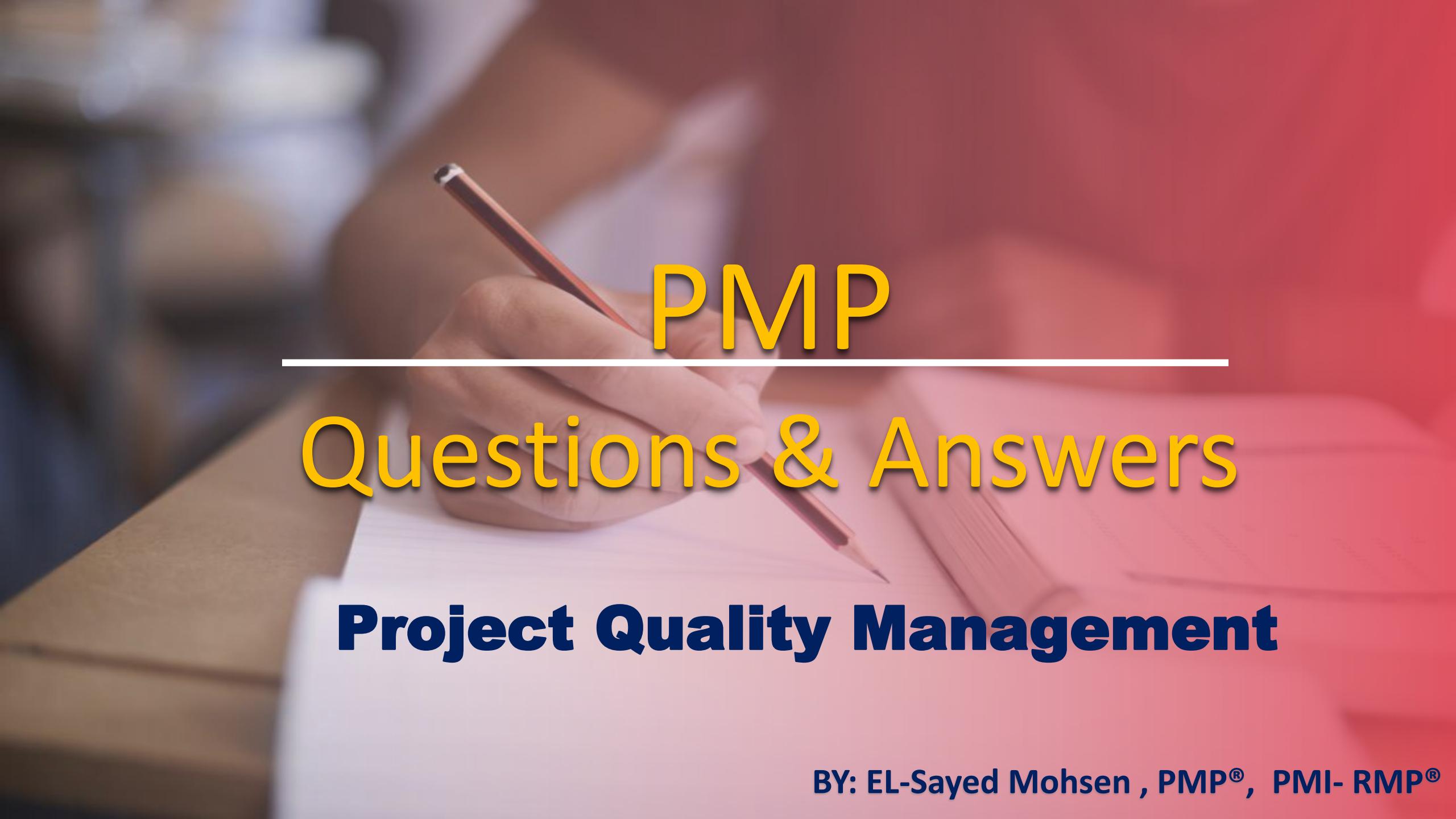
- quality control is in the “monitoring and controlling process group” and is concerned with the activities and measures taken to achieve quality requirements (as in the Control Quality process).
- In simpler words, Quality Control is concerned with the quality of the “**products/deliverables**”. Its major aim is to ensure the **correctness** of and check for **defects** in the products/deliverables.
- Quality Control is a “reactive” process to inspect the products/deliverables to detect any non-conformance in them.
- Quality Control is used to verify the quality of the product

Very Important Keywords

- 1- Flowcharts (understanding and estimating the cost of quality)
- 2- Checklists (verify that a set of required steps has been performed)
- 3- Process analysis (non-value-added activities that occur during a process)
- 4- Root cause analysis (determine the basic underlying reason that causes a variance)
- 5- Affinity diagrams (Organize potential causes of defects into groups)
- 6- Cause-and-effect diagrams (identify the main or root cause of the problem)
- 7- Histograms (Show the number of defects - ranking of the cause of defects)
- 8- Scatter diagrams (Relationship between two variables)
- 9- Audits (project activities comply with organizational policies, processes,procedures)
- 10 - DESIGN FOR X (improve the product's final characteristics)

Very Important Keywords

- 11- Check sheets (Collection of useful data about a potential quality problem)
- 12- Statistical Sampling (Choosing a sample from population)
- 13- Inspection (Examination to the product to determine if it conforms to standards)
- 14- Control charts (Determine whether or not a process is stable - Limit)

A close-up photograph of a person's hands writing in a white notebook with a pink pencil. The background is blurred, showing a wooden surface and some papers.

PMP

Questions & Answers

Project Quality Management

BY: EL-Sayed Mohsen , PMP®, PMI- RMP®



Q1) Rework is an example of a (an):

- A. External failure cost**
- B. Internal failure cost**
- C. Appraisal cost**
- D. Prevention cost**

PMBOK 283

Cost of Nonconformance



Internal Failure Costs

(Failures found by the project)

- Rework
- Scrap

External Failure Costs

(Failures found by the customer)

- Liabilities
- Warranty work
- Lost business



Q2) To create a quality product, the project management team invested in training the project team members and purchasing high-end equipment. Such costs are:

A- Failure costs

B- Costs of Nonconformance

C- Appraisal costs

D- Prevention costs

PMBOK 283

Cost of Conformance

Prevention Costs

(Build a quality product)

- Training
- Document processes
- Equipment
- Time to do it right

Appraisal Costs

(Assess the quality)

- Testing
- Destructive testing loss
- Inspections





Q3) Which of the following Manage Quality techniques examines problems, constraints, and non-value-added activities that occur during project work?

- A- Sensitivity Analysis**
- B- Expected monetary value analysis**
- C- Earned Value Analysis**
- D- Process Analysis**



PMBOK 292

◆ **Process analysis.** Process analysis identifies opportunities for process improvements. This analysis also examines problems, constraints, and non-value-added activities that occur during a process.



Q4) A project manager creates a component-specific tool to verify that a set of required steps has been performed. This tool is called a:

- A- Risk Register**
- B- Assumptions log**
- C- Checklist**
- D- Plan-Do-Act-Check**

PMBOK 292



8.2.2.1 DATA GATHERING

A data-gathering technique that can be used for this process includes but is not limited to checklists (see Section 11.2.2.2). A checklist is a structured tool, usually component-specific, used to verify that a set of required steps has been performed or to check if a list of requirements has been satisfied. Based on the project's requirements and



Q5) You are a project manager for Enormous Co. and are currently engaged in a highly visible project. The company is about to implement an independent review to ensure that the project work is continuing to comply with the project's policies, processes, and procedures. During which process would this review occur?

A- Close Project or Phase

B- Control Quality

C- Monitor Risks

D- Manage Quality

PMBOK 294



8.2.2.5 AUDITS

An audit is a structured, independent process used to determine if project activities comply with organizational and project policies, processes, and procedures. A quality audit is usually conducted by a team external to the project.



Q6) As project manager, you would like to show the relationship between two variables to help your project team understand the quality impact better. Which tool should you use?

A- Scatter Diagram

B- Run Chart

C- Fishbone Diagram

D- Pareto Chart



PMBOK 293

◆ **Scatter diagrams.** A scatter diagram is a graph that shows the relationship between two variables. Scatter diagrams can demonstrate a relationship between any element of a process, environment, or activity on one axis and a quality defect on the other axis.



Q8) In order to keep costs low, a project management team decided to apply statistical sampling while inspecting some of the work products. They decided to select 10 out of 50 engineering drawings for inspection. During which process should the sample be collected?

- A- Collect Requirements**
- B- Control Quality**
- C- Plan Quality Management**
- D- Manage Quality**

PMBOK 303

- ◆ **Statistical sampling.** Statistical sampling involves choosing part of a population of interest for inspection (for example, selecting 10 engineering drawings at random from a list of 75). The sample is taken to measure controls and verify quality. Sample frequency and sizes should be determined during the Plan Quality Management process.



B



Q9) As a project manager, you are analyzing the costs incurred in a project. Which of the following costs cannot be classified under cost of nonconformance?

A- Quality Assurance Costs

B- Warranty costs

C- Costs due to loss of reputation

D- Rework costs

PMBOK 283

Cost of Nonconformance

Internal Failure Costs

(Failures found by the project)

- Rework
- Scrap

External Failure Costs

(Failures found by the customer)

- Liabilities
- Warranty work
- Lost business





Q10) Which of the following processes will determine the correctness of deliverables?

A- Plan Deliverables

B- Plan Quality Management

C- Control Quality

D- Manage Quality



PMBOK 305

8.3.3.2 VERIFIED DELIVERABLES

A goal of the Control Quality process is to determine the correctness of deliverables. The results of performing the Control Quality process are verified deliverables that become an input to the Validate Scope process (Section 5.5) for formalized acceptance. If there were any change requests or improvements related to the deliverables, they may be



Q11) Which of the following is similar to a mind map in that it allows a large number of ideas to be classified into groups for review and analysis?

- A- Control charts**
- B- Histograms**
- C- Affinity diagrams**
- D- Scatter chart**



C

PMBOK 293

◆ **Affinity diagrams.** Described in Section 5.2.2.5. Affinity diagrams can organize potential causes of defects into groups showing areas that should be focused on the most.



Q12) You are in charge of a troubled project. The project includes producing widgets for your customer. You collected production data to help identify the causes of defects in the overall process. Which technique should you use to analyze this data to determine the root cause of defects?

- A- Statistical sampling**
- B- Defect repair review**
- C- Fishbone diagram**
- D- Kaizen**

PMBOK 293



◆ **Cause-and-effect diagrams.** Cause-and-effect diagrams are also known as fishbone diagrams, why-why diagrams, or Ishikawa diagrams. This type of diagram breaks down the causes of the problem statement identified into discrete branches, helping to identify the main or root cause of the problem. Figure 8-9 is an example of a



Q13) The technique of comparing actual or planned project practices to those of other projects to generate ideas for improvement and to provide a basis by which to measure performance is known as:

- A- Workbench**
- B- Benchmarking**
- C- Quality control**
- D- Dependency**

PMBOK 281



B

◆ **Benchmarking.** Benchmarking involves comparing actual or planned project practices or the project's quality standards to those of comparable projects to identify best practices, generate ideas for improvement, and provide a basis for measuring performance. Benchmarked projects may exist within the performing organization or



Q14) A project needed to monitor the technical performance of the project and capture data related to how many errors or defects had been identified and how many remained uncorrected. Which of the following techniques should the project use?

- A- Scatter diagram
- B- Flowchart
- C- Histogram
- D- Control chart

PMBOK 293

ANSWERS

C

◆ **Histograms.** Histograms show a graphical representation of numerical data. Histograms can show the number of defects per deliverable, a ranking of the cause of defects, the number of times each process is noncompliant, or other representations of project or product defects.



Q15) While working on the project in the Manage Quality process, you are determining the factors that may influence specific characteristics of a product under development and can improve the product's final characteristics. What technique are you using?

- A- Design for x (DFX)**
- B- Benchmarking**
- C- Cost of quality**
- D- Analogous estimating**

PMBOK 295



8.2.2.6 DESIGN FOR X

Design for X (Dfx) is a set of technical guidelines that may be applied during the design of a product for the optimization of a specific aspect of the design. Dfx can control or even improve the product's final characteristics. The X in Dfx can be different aspects of product development, such as reliability, deployment, assembly, manufacturing, cost, service,



Q16) Which tool used to facilitated collection of useful data about a potential quality problem ?

A- Pareto Chart

B- Histogram

C- Cause and effect diagram

D- Check sheets

PMBOK 302



◆ **Check sheets.** Check sheets are also known as tally sheets and are used to organize facts in a manner that will facilitate the effective collection of useful data about a potential quality problem. They are especially useful for gathering attributes data while performing inspections to identify defects; for example, data about the frequencies or consequences of defects collected. See Figure 8-12.



Q17) Which of the following techniques can help a project manager review a supplier's internal work processes to ensure compliance to standards during the production of the deliverables?

A- Expert Judgment

B- inspections

C- Analogous estimating

D- Audits



B

8.3.2.3 INSPECTION

PMBOK 303

An inspection is the examination of a work product to determine if it conforms to documented standards. The results of inspections generally include measurements and may be conducted at any level. The results of a single activity can be



Q18) You are managing a construction project in a developing country, During the Manage Quality Process, The information about quality management issues escalated by the team; recommendations for process, project, and product improvements; corrective actions recommendations will record in ?

A- Quality Reports

B- Project Management plan

C- Project charter

D- Risk register

PMBOK 296

8.2.3.1 QUALITY REPORTS

The quality reports can be graphical, numerical, or qualitative. The information provided can be used by other processes and departments to take corrective actions in order to achieve the project quality expectations. The information presented in the quality reports may include all quality management issues escalated by the team; recommendations for process, project, and product improvements; corrective actions recommendations (including rework, defect/bugs repair,





Q19) You are executing a building construction project and you suspect hazardous materials to be present at site. What is the BEST thing to do?

- A- Call a hazardous experts to carry out inspection**
- B- Perform integrated change control**
- C- Stop the work immediately**
- D- inform the customer**





Q20) Which of the following useful in understanding and estimating the cost of quality for a process.?

A- Pareto chart

B- Cause and effect diagram

C- Flow chart

D- Histogram

PMBOK 284



C

◆ **Flowcharts.** Flowcharts are also referred to as process maps because they display the sequence of steps and the branching possibilities that exist for a process that transforms one or more inputs into one or more outputs. Flowcharts show the activities, decision points, branching loops, parallel paths, and the overall order of processing by mapping the operational details of procedures that exist within a horizontal value chain. One version of a value chain, known as a SIPOC (suppliers, inputs, process, outputs, and customers) model, is shown in Figure 8-6. **Flowcharts may prove useful in understanding and estimating the cost of quality for a process.**



Q21) The established upper and lower Control limits are 12 and -12 while you have the following data points readings ; 1.6 , 3.7, 7.8, 9.1, -6.8 , 14, 8.9, 4.2, 0.0, - 5.2 How will you consider this process?

A- In control

B- Out of control

C- cant be determined

D- it has predictable performance





Q22) Quality metrics used during the Control Quality process are defined during which process?

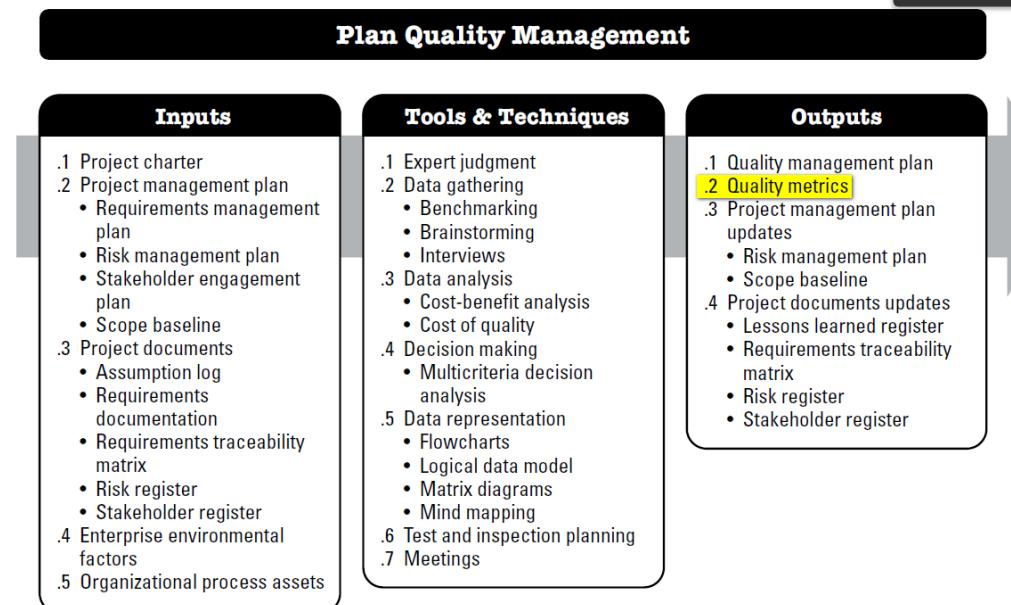
A- Plan Quality Management

B- Define Scope

C- Manage Quality

D- Collect requirement

PMBOK 277





Q23) Which of the following are more important inputs to the Plan quality management Process ?

A- Project charter

B- Quality metrics

C- Test and inspection planning

D- Deliverables

PMBOK 277



8.1.1 PLAN QUALITY MANAGEMENT: INPUTS

8.1.1.1 PROJECT CHARTER

Described in Section 4.1.3.1. The project charter provides the high-level project description and product characteristics. It also contains the project approval requirements, measurable project objectives, and related success criteria that will influence the quality management of the project.



Q24) You are managing a large infrastructure project .One of the key stakeholders want to review the quality metrics of the project . Which of the following Processes can help the project manager ?

- A- Plan Quality Management
- B- Plan Resource management
- C- Project Charter
- D- Define Scope

PMBOK 277

Plan Quality Management

- | Outputs |
|---|
| .1 Quality management plan
.2 Quality metrics
.3 Project management plan updates <ul style="list-style-type: none">• Risk management plan• Scope baseline
.4 Project documents updates <ul style="list-style-type: none">• Lessons learned register• Requirements traceability matrix• Risk register• Stakeholder register |



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Q25) Ben is the project manager for a mobile application development project. A problem has been occurred and one of the team members has solved it but not documented it in the lessons learned. After few weeks the problem appeared again .

As a project manager What should have done to prevent this situation?

- A- Stakeholder analysis
- B- Root cause Analysis
- C- Escalate the problem to the sponsor
- D- Review Stakeholder management plan



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