

PMP Exam Tips on Time Management, Fourth edition

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Note: - Many of the topics in the exam are not directly in the PMBOK so you'll need to read more widely, but hopefully these notes will help. Some areas of Quality management may seem a little strange, as they are derived from process management.

Many people who attempted the exam reported that the definitions and an overview of the charts are very important in this section – expect around 15 questions on these alone. Not all definitions are in the glossary.

Quality means “conformance to requirements”, “fitness for use”, and “meeting requirements”, so forget “gold-plating” your projects (see later in Tips), don't give freebies – it is estimated that worldwide only 26 percent of projects are successful, so if project management means delivering what you agreed to (and failure therefore means not delivering what you agreed to, or delivering late), then surely it makes sense to concentrate on doing what and when you agreed, rather than what is outside the project scope?

Additionally, if you are able to provide extras on the project without increase the budget or time or reducing the scope, then doesn't that mean that project was not planned correctly to begin with, i.e. there must have been “padding” in the estimates?

NB: Before you manage quality, you need to know what quality is!

Don't confuse quality with grade.

Quality is the sum of the characteristics of a product that allow it to meet or exceed the expectations of the customer, or as PMBOK puts it “conformance to requirements” and “fitness for use.”

Grade is a category or rank given to entities having the same functional use but different technical characteristics.” (PMBOK).

Consider two hamburgers. The choices are a Big Mac from the Mac Fac and an 'Ambugour from the French bistro.

Is the Big Mac high quality? Yes it is. It conforms well to specification and is repeatable.

For example if you had a Big Mac in Perth on Monday and a Big Mac in Sydney on Friday, they will look and taste very similar. Now some would argue that they look little like the photograph on the wall, but let's ignore that for the moment.

So it is high quality (it conforms to specifications) but is it high grade? No, but that's ok with the customers – how do I know the customers are happy? Because they keep coming back to buy them. So low grade is not

always an issue, if that's what the customer wants, but low quality is always an issue. And let's face it, a Big Mac is cheap and filling and the service is usually fast and efficient – that's great for many people.

Now back to the 'Ambu from the French Bistro. Is it high quality? One would expect so (mainly from the \$50 price tag!), and is it high grade? Most likely yes. But what if Pierre simply served up a Big Mac to his clients, would they *still* be happy? No of course not, they would send it back, yet it's still the **same** burger that was considered acceptable before. But now the **expectation** is different. A lesson from this is that the project manager must manage the stakeholder's expectations.

So high quality (conformance to specification) is an absolute – you either meet it or you don't. But grade is subjective – it depends upon the agreement with the customer and the perception/expectations of the customer.

Which brings us neatly to the expectations of the Stakeholders

Note that in Scope Management, the first process is (Collect Requirements) is concerned drilling down to find what the stakeholder's true requirements are (otherwise how can you ever meet the requirements).

Quality Management consists of:

- **Quality Planning** – examining the Organizational Process Assets and deciding which quality standards are suitable for your particular project and how you will fulfill them. This planning stage is vital for your project and is performed first, and QA and QC are then performed in tandem.
- **Perform Quality Assurance (QA)** – now that you have chosen quality standards, this is where you apply them. This sets up the framework for QC to operate. Think of this as a “white collar” job. It is “The process of auditing the quality requirements and the results from quality control measurements to ensure appropriate quality standards and operational definitions are used” (PMBOK)
- **Perform Quality Control (QC)** – with the QA in place, this is where you do all the actual checking and monitoring to check if the results comply with relevant quality standards. If quality problems are discovered, QC finds ways to fix them, and possibly passes information back up the line if changes to the QA policies need to be made. Think of this as a “blue collar” job.

Quality needs to fulfill three criteria:

- **Performance:** Product or service does what it is supposed to do.
- **Cost:** Product or service is provided at a fair and affordable price.
- **Timeliness:** Product or service is delivered on or before the agreed upon time.

Know the difference between Quality Assurance and Quality Control:

Quality Assurance



Quality Control

- **Quality Assurance** is a **management function** and it is concerned with the correctness of the processes that produce the deliverable(s) of the project. These functions are administrative and may include such activities as process checklists and project audits
- **Quality Control** is a **technical function** and is used to verify that deliverables are of acceptable quality and that they are complete and correct (as defined in the **product scope**)

Examples of quality control activities include deliverable peer reviews,

measurements and the testing process.

Exam tip: when trying to sort out in the exam whether the question is about Quality Control or Quality Assurance, QC is much easier to spot than QA, because QC is usually about testing, measuring, inspecting, etc, so look for signs of QC – if they are not there, then it must be a QA question (hope this makes sense).

Continuous Improvement

Deming's Cycle (or quality wheel) for continuous improvement - Plan Do Check Act – quality control works only if the people doing the work receive prompt feedback and are empowered to make changes to the system. The steps mean **Plan** (what you are going to do) **Do** (the actions described in your plan) **Check** (compare the output with the plan), **Act** (upon the results from “check” to improve the plan).

Notice the similarity between PMI methods and Deming's Wheel:

Deming:	Plan	Do	Check	Act
PMI:	Plan	Implement	Measure	React & Document

Exam tip: memorise this - **Quality is “the degree to which a set of inherent characteristics fulfills requirements”** (PMBOK)

Quality is concerned with **prevention** over **inspection** (another Deming principle). The inspection involved in QC should actually be used to prove that the system works (because you've put good quality practices in place), rather than a way to reject the failures.

This leads to another Deming quote to remember, “**Quality should be planned in not inspected in**” (frequent exam question) because the cost of rework can be very high – or another saying that I like is, “There’s never enough time or money to do things right the first time, but there’s always enough to fix them.” (not from Deming this time :-)

As an example of the above, many years ago a CPU manufacturer in the US used to reject over 90% of their CPU’s, so they had to inspect/test every single one. When the production moved to Japan, the Japanese implemented best practice quality practices (they love Deming). Initially were rejecting close to 10% of the CPU’s, but further improvements in the quality assurance and manufacturing processes reduced that even more, so testing was carried out only on statistical samples of CPU’s rather than every one. So quality had been planned into the system in Japan but inspected-in in the USA. I ran a business for many years building PC’s and other equipment, and I learned that the manufacturer of many of the peripheral cards (drive-controller, sound card, video card etc) did not test anything ever! Their reasoning was that their quality procedures were so high that the chance of failure was extremely low, so having technicians and expensive time-consuming testing equipment could not be justified (remember, even if you test only 1 in 10,000 – you still need the equipment, floor-space and technicians). And if a customer received a faulty card, the supplier would simply replace it – no questions asked.

The scope statement details everything to be included in the project, so it should be a major input to the process – BUT a big change with PMBOK Four is that the Scope Statement, when used as an input is normally integrated with the WBS and WBS Dictionary to form the **Scope Baseline**.

The project manager must be very clear on the quality expectations of the project.

The “**cost of quality**” includes any actions to prevent poor quality and can include the cost of training and any safety measures. The **costs of poor quality** can far outweigh the cost of quality, being typically, loss of (or conflict with) customers, costly rework, lost time, damaged materials, and even risk to the safety of workers. And of course damaged materials, poor scheduling or injuries can lead to downtime.

The quality policy is set by senior management and should be followed by the project manager and project team.

If the organization doesn’t have a policy then the **PM should design one** – but the stakeholders have to be informed of the details.

Remember to look at the PMBOK for numbers, percentages, ranges, formulae etc, as there are likely examination questions. For example the values for the four sigmas (68.26, 95.46, 99.73, 99.99) are likely exam fodder.

This is a good quote from somewhere (can't remember where), "**Optimal quality is reached when the cost of the improvements equals the incremental costs to achieve quality**".

Marginal analysis is the study of when optimal quality is reached. The PMP candidate should know what marginal analysis is—and why management is concerned with it. Ideally, the cost of quality is earned back because the deliverables of the project are better and more profitable than if the quality of deliverables was lacking."

More Exam tips

Low Quality is always a problem in a project, but low grade may not be. Remember the cheap hamburger? Not good grade but it's repeatable (especially if you eat it late at night) and meets expectations (therefore, good quality).

Customer satisfaction is achieved when the project team delivers what was agreed at the start of the project.

Or as PMBOK puts it, "Understanding, evaluating, defining, and managing expectations so that customer requirements are met. This requires a combination of conformance to requirements (to ensure the project produces what it was created to produce) and fitness for use (the product or service must satisfy real needs)".

The quality management plan spans all areas of project quality—not just the product the project is creating.

Benchmarking (read this one twice) compares the quality **processes** used in this project to those of other projects (in the same or other organizations) to generate ideas for improvements in the quality processes and to provide a standard by which to measure performance. Benchmarking requires only the **processes** to be similar; it does **not** require the projects or organizations to be similar.

Quality Improvements are measures against the Quality Baseline.

Management responsibility - The project team must deliver on the quality agreements, but management must provide the resources needed from them to deliver.

The output of Quality Assurance is quality improvement.

Even if the project deliverables have been produced, the project is considered unfinished if the quality (as defined in the scope statement) is unacceptable, i.e. it has failed to meet the stakeholder's stated and implied needs.

Design of experiments statistically tests individual variables within a project to see how they affect the outcome, and is most often used in conjunction with the **product** of the project, rather than on the project itself. It is a "what-if" test. "What if we use faster-drying paint?" (product)

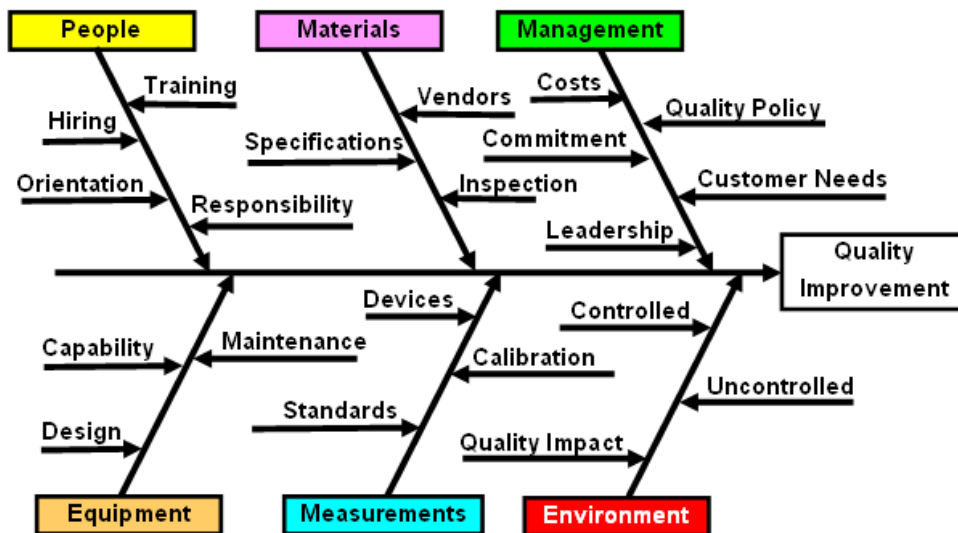
“What if we fit a Miller-cycle engine?” (product) “What if we have supervisors immediately feed the output of the graph back to the engineers, and the engineers are allowed to make changes to the system within narrow limits, without waiting for authorization” (project).

ISO9000 is an international standard. It is **not** a quality system or a methodology in itself; rather it is a method of implementing and following an internally-produced quality system.

QC Terms:

- **Statistical quality control** – testing just a statistical sample, instead of every item. If the sample is chosen correctly, the faults in the whole population should be in proportion to the faults in the sample. Used when testing all items is too costly, or too time-consuming, or destroys the item under test. Imagine testing all matches produced.
- **Prevention** – keeping errors out of a process. Quality should be planned in, not tested in (know this for the exam)
- **Inspection** – keeping errors away from customers / proving the system
- **Attribute sampling** – binary - either the result conforms or doesn't
- **Variables sampling** – the results are rated on **variable** scale that measures degree of conformity.

The **Ishikawa diagram** (also called herringbone or fishbone diagram, because of its shape) shows the causes of quality problems and their effects – it is passive.



Ishikawa diagram

The Pareto Diagram, a bar chart that shows items in order of decreasing importance, identifies the 20% of the causes in a system which cause 80% of the faults.

Q: Who invented the Pareto Diagram? (A: Joseph Juran)

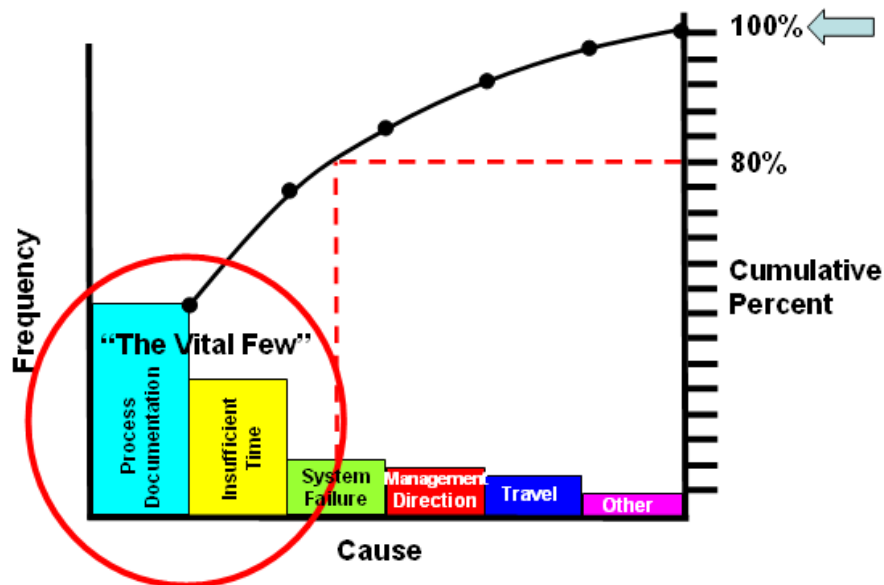


In 1906 Vilfredo Pareto (an Italian economist) made a famous observation that twenty percent of the population owned eighty percent of the property in Sicily. He went on to show that 20% of a store's customers account for 80% of your sales

(Note that 20% of Pareto's face accounted for 80% of his hair)

In the late 1940's Dr. Joseph M. Juran postulated that 80% of the faults in a system come from 20% of the causes

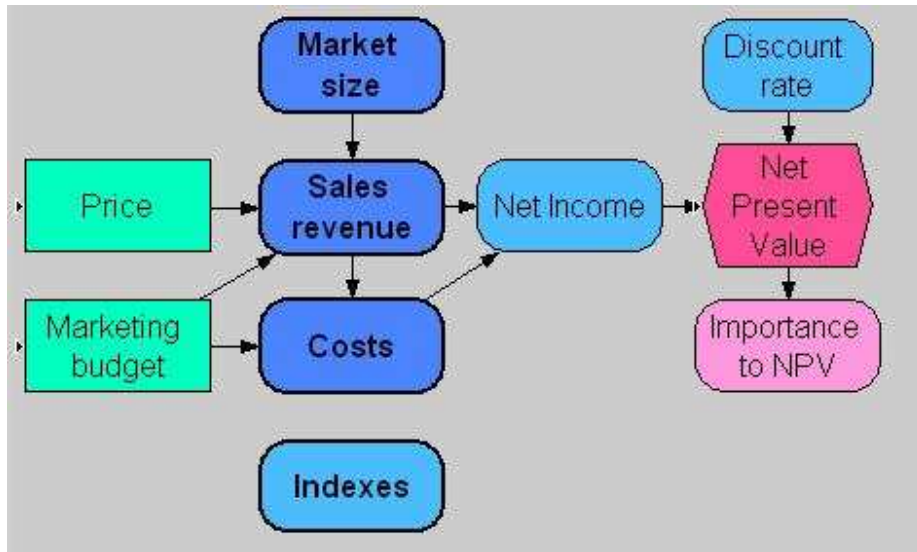
Vilfredo Pareto



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Pareto Diagram

The **influence diagram** (next page) is an active chart and is more like the old-time programming flowcharts, it includes decisions and branches. This distinction is important for the exam.



influence diagram

N.B. Some project managers may have different viewpoints or opinions to those expressed here – but PMI are marking your exam, so the PMBOK is **always** right and if I say anything that appears to contradict the PMBOK, then believe the PMBOK.

PS I've made every effort to get this right to help you in your exam – but if I've missed something please let me know.

Regards, Jim Owens PMP

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