

Quality Assurance vs Quality Control - Simplified!

"Quality is never an accident. It is always the result of an intelligent effort."

- John Ruskin

With the ever-increasing range of products & services in the markets across the globe, companies are facing cutthroat competition. So, it is very important that businesses must pay special attention to quality if they want to maintain customer loyalty and consistent revenue streams.

Quality Assurance and Quality Control are two commonly confused terms in the field of Quality management. This blog will help you understand the conceptual differences and similarities between QA and QC through [examples](#), [tabular](#) summaries, and many illustrations.



< img src="self-designed" alt="This image is showcasing Quality Assurance and its subset Quality Control falling under Quality management" >

As you can see in the above pictorial illustration, Quality Management (QM) is the comprehensive system employed to attain and manage quality. **Quality Assurance (QA) and Quality Control (QC) fall under the QM umbrella**, wherein QA ensures quality, and its subset QC evaluates quality.

Moreover, both **Quality Assurance and Quality Control** together make sure to maintain the quality of products or services. It's no doubt both QA and QC have the same intention but hold different approaches.

We will first go through the basic definitions of QA and QC. We'll then differentiate between **Quality Control vs Quality Assurance** and look at their similarities for better understanding.

What is Quality?

Simply put, Quality means how well something meets a customer's expectations. It determines the efficacy of a particular product or service an organization offers.

Quality Assurance: What Is It?

Quality Assurance (QA) is a process to ensure that the customer receives the best quality product or service. It is a part of the ISO 9000 series that helps businesses meet different regulatory requirements, satisfy customers' needs, and improve processes and procedures. QA is an expression of positive sentiment about a product by demonstrating confidence in the product's performance.

Quality Assurance ensures that the approaches, techniques, methods, and processes developed for the project are implemented correctly. An effective Quality Assurance program monitors and verifies the strategies to manage and produce the deliverables.

What is the importance of Quality Assurance?

- **Brings Confidence** : Quality Assurance is important as it helps companies bring confidence in their manufacturing.

- **Returning Customers:** Undoubtedly, your customers will stay with you when you provide high-quality products/services to them.
- **Saves Cost:** Most importantly, Quality Assurance is a preventive measure, so it saves the cost & effort of correcting or improving quality at later stages of production.

What Does a Quality Assurance Professional Do?

A Quality Assurance team ensures that procedures, processes, and best practices are followed. Moreover, it explains how and when to monitor and audit processes to ensure development goes smoothly, problems get fixed, and improvements are made where needed.

if you are looking for what all duties you might have to perform as QA professional, here is what a typical Quality Assurance job description would look like:

- Define quality goals, guidelines, templates, tools, and methods based on stakeholders' and organizational requirements.
- Ensure Compliance with regulations and standards by organizing & performing audits.
- Detect and prevent issues as early as possible.
- Follow the test lifecycle and perform end-to-end testing.
- Coordinate Quality Control activities with engineering teams across all steps of the product development lifecycle.
- Evaluate and continuously improve quality processes and their implementation, as applicable.
- Measure and report project quality KPIs or metrics.
- Develop automated tests.
- Inspects inputs.
- Review requirement documentation to ensure it is testable, clear, and unambiguous.
- Document and update SOPs and best practices.
- Coordinate with customers and internal teams to get process feedback and evaluate it.
- Perform Quality Gate reviews.
- Participate in risk management meetings.
- Ensure quality goals are met by implementing policies, procedures, and processes

Advantages of Quality Assurance

- A better process control system
- Ensures quality with internal checks and balances.
- Getting it right at the beginning saves you money.
- Reduces workplace hazards and risks, making a workplace safer for everyone.

Limitations with Quality Assurance

- It is time-consuming
- Initial costs can be high.
- Staff training requires time and resource investment
- Intense resource consumption

Quality Control (QC): What Is It?

As we learned above, Quality Assurance refers to a systematic way of ensuring the quality of products or services. Let's now talk about its subset - Quality Control.

The Quality Control process ensures the product meets functional and non-functional requirements. The main role of Quality Control is to find defects and bugs after a product is built, and report such features that don't work right. Moreover, multiple industries use Quality Control to make sure their products are smooth, strong, and functional.

What Do Quality Control Professionals Do?

A **Quality Control** specialist inspects or tests products before they go on sale to ensure they work as expected, are free of defects, and are safe.

As a QC professional, if you are looking for what all duties you might have to perform, as a QC professional, here is what a typical Quality Control job description would look like:

- Driving Quality Control processes.
- Evaluation and approval/rejection of the final product based on acceptance criteria.
- Identify bugs and defects before releasing a product.
- Ensure products or services provided to customers are fit for use, free of errors, consistent and meet requirements.

- Perform analytical testing procedures according to QC SOPs.
- Check and inspect products for compliance with established standards and expectations, and note any deviations.
- Ensure that non-conformance issues are identified and resolved.
- Investigate customer complaints.
- Identify and recommend solutions based on customer feedback.
- Assemble and install products according to written instructions.
- Identify improvement areas with QA professionals.

Advantages of Quality Control

- Goodwill or image boosts sales with products.
- Saves money and increases efficiency.
- Developers can verify the product meets the customer's needs.
- Assists the business team with estimating the project's cost.
- Saves rejection costs and reduces rejection rates.

Limitations with Quality Control

- **Time Consuming:** The more inspection is required, the more it adds to time-to-market.
- **Needs more employees :** QC is a big responsibility. Human resources are greatly needed to cover multiple Quality Control activities.
- **Costly Process:** Quality Control adds to the overall cost of production as you need to employ sufficient resources and time to do the inspection.

Types of Quality Control

- **Control Charts** - Graphs and charts show the changes in processes over time. Statistics help control business and manufacturing processes.
- **Process Control** - Quality and performance go up when you monitor and adjust processes. The standard method for consistency is to use feedback loops, industrial-level controls, and chemical processes.
- **Sample Acceptance** - Statistical measures are the best way to determine the quality of a batch or sample.

- **Procedural Guidelines** - Methodology that uses evaluative indicators to improve design and implementation.

Quality Assurance vs Quality Control Examples

Example of Quality Assurance

A simple example of Quality Assurance in software development is writing automation tests covering all possible use cases or business scenarios to ensure that the application does not break anywhere in the flow. These automation tests are then also used for regression testing, which ensures previously working fine things aren't broken due to code changes.

Example of Quality Control

An example of Quality Control in software development would be UAT (user acceptance testing), wherein a user group or business stakeholders test the application to confirm it meets customer needs. Any bugs found in UAT are prioritized and fixed before releasing the application for customer use.

Each industry and product has its own Quality Control system. To make you understand better, let's take an example of Food Quality Control in the Food industry where testers do chemical, microbiological and physical testing of food products to ensure people don't get sick after consuming the product. The overall purpose is to validate that the food product quality is meeting certain standards like HACCP, GMP, etc. Similarly, you can think of the multiple validations we do in the IT industry as part of Quality Control to ensure that the application we are delivering to the client has met certain standards and acceptance criterias , and is fit for use.

Quality Assurance vs Quality Control: Similarities

As we have read above, **Quality Assurance and Quality Control** are two parallel approaches with quite a few similarities like: **Both QC and QA have common goals** - No doubt, you want to make sure the product you make is good because there's no point in releasing something that doesn't meet quality standards. That's why you need to put both QA

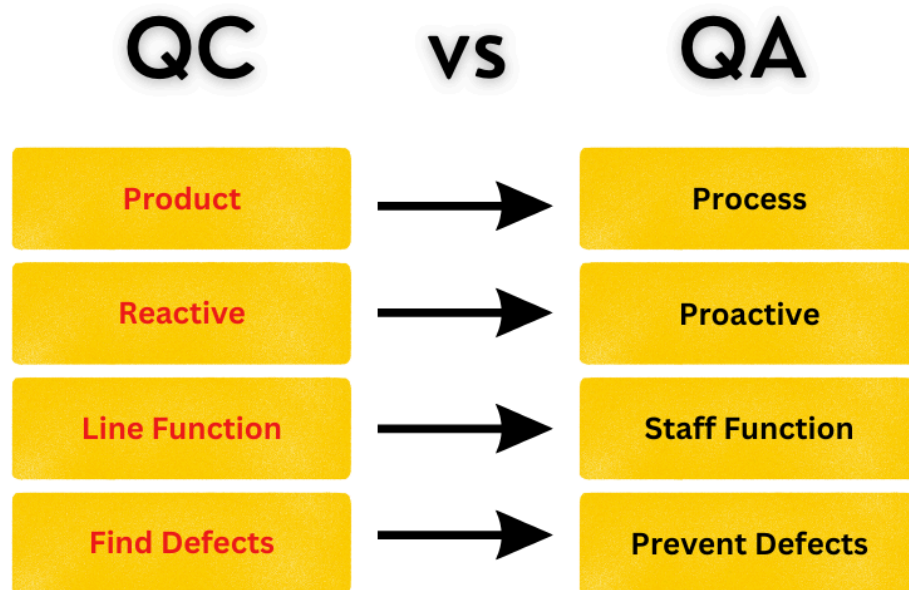
and QC to work. After all, both departments are crucial to providing a quality product and meeting customer expectations.



< img src="self-designed" alt="This image demonstrates the umbrella of quality that defines all three quality disciplines" >

- **Policy and Procedure Implementation** - QA and QC ensure high quality, even though QA is more process-oriented. Some exploratory, fringe, or UX testing techniques require creativity, but defect detection and remediation must still be systematic.
- **Cost and Issue Mitigation** - You can have minor inconveniences or significant, business-threatening problems with defects. Early detection also makes fixing a defect cheaper and easier. QA and QC try to reduce costs; the former sets up early detection policies, while the latter fixes as many bugs as possible.
- **Enhance the organization's product-making processes** - The concept of a feedback loop is familiar to developers. Each iteration should make an organization more efficient and effective. Organizations can learn where they can improve in areas like bug detection, test automation, requirements gathering, and user experience through QC and QA programs.

Difference between Quality Control and Quality Assurance



< img src="self-designed" alt="This image depicts the difference between Quality Assurance and Quality Control" >

Below is a quick summary of QA vs QC:

Parameter	Quality Assurance	Quality Control
Definition	Quality Assurance is a process that makes sure the product has passed all stages of quality check during development.	Quality Control involves identifying the defects in a product and fixing them to ensure that it works well.
Nature of Process	Preventive or Proactive Process: Establishes methods that can prevent	Corrective or Reactive process: Detects and fix bugs.

	bugs.	
Origin	QA formally came into the picture in the 1950s as a strong need was felt across industries to have a system that can provide confidence about quality to the internal and external stakeholders.	QC is the basic unit of the quality management system, it formally came into practice in the 1920s in manufacturing and engineering sectors.
Approach	Process-based approach. QA has a future focus. There is a strong focus on the quality of underlying processes used to build a product.	Product based approach. QC looks backwards. There is a strong focus on quality of outcome - products or services.
Verification or Validation	This is a verification activity that makes sure your procedures are correct.	The Quality Control team validates that the requirements of the product are met.
Activities Involved	Process management activities - Process checklists, Process standards, Documentation, Project audits, etc.	QC is the subset of QA activities. It typically involves deliverable peer reviews, inspection, acceptance testing, etc.
Who	QA involves the whole team who is part of the process. It's about training, documentation, and reviewing standards across the organization, while quality management systems	QC is usually handled by a specialized team of employees who follow standard operating procedures for Quality Control and document their findings.

	(QMS) are handled by the quality department.	
Process intent	QA prevents bugs from happening by setting up methods to prevent them. QA sets the guidelines.	Quality Control's intent is to identify and resolve the bugs if any arise. QC verifies that the guidelines have been met.
Responsibility	Every person who is engaged in the production of the good is responsible.	It is the responsibility of a particular team to find and fix product or service bugs.
Level of Activity	This is a Low-Level Activity that can detect errors and mistakes that QC cannot detect.	This is a high-level activity that finds errors QA won't find.
Statistical Techniques	Statistical Process Control (SPC) graphs are used here, as QA involves process related parameters.	SQC or Statistical Quality Control graphs are used here, as the focus is on the finished product.
Time consumed	Consumes less time	Consumes a lot of time

FAQs

1. What comes first, QA or QC?

The early phases of software development are QA-driven, while the execution phase is QC-driven. It's therefore, QA's turn first.

2. What are the 4 types of Quality Control?

There are four kinds of Quality Control:

- Process control
- Sample Acceptance
- Procedural guidelines
- Control charts

3. What are Quality Techniques?

The key to quality is controlling activities and planning so the product or service meets the customer's expectations.

4. What are the three main purposes of Quality Assurance and Quality Control Process?

Quality Assurance and Quality Control serve three main purposes:

- Ensure the product doesn't have any defects
- Error-reduction efforts
- Maintaining brand reputation and increasing sales

5. Is Quality Assurance Software Testing?

Quality Assurance makes sure software meets certain standards. Tests are part of the Quality Assurance process. It's about finding errors, bugs, or deficiencies in a program or system.

6. Why are Quality Control & Quality Assurance important?

Quality Control and Quality Assurance guarantee products are up to specs and satisfy customers. These processes help to find, report and fix bugs so that the customers are happy.

7. What is the difference between Quality Engineering and Quality Assurance?

QA vs QE: While QA is inclined towards processes, QE is inclined towards engineering.

Quality Engineering (QE) is a discipline of engineering which focuses on optimizing product quality by applying strategies, tools, techniques and practices of both QA and QC during product development.

A perfect example of Quality Engineering (QE) in software development would be TDD (Test Driven Development). It acts as a Quality check, created and applied before commencing the development work. In TDD, first, the tests cover all requirements, and then the code is written & refactored until all tests pass. This is opposite to the traditional practice of developing and testing software.

TDD falls under QE because it helps programmers write the code correctly while focusing on the usability of the application and design verification since the work's inception. It also prevents a lot of debugging at later stages of development and increases the programming team's productivity while reducing long-term costs.

Conclusion

Quality Assurance and Quality Control sit on the same quality management board, and when you differentiate them, you can see their specific scopes and priorities.

QA and QC experts are on separate teams, but they must not operate in silos. They must constantly communicate, share experiences, participate in joint meetings, and talk to stakeholders. They should communicate regularly with developers, designers, and marketing managers to achieve quality goals. So, both teams should work together rather than compete.

A successful combination of Quality Assurance and control can lead to high-quality production.

<Meta Description:QA vs QC: Quality Assurance (QA) and Quality Control (QC) fall under the QM umbrella, wherein QA ensures quality, and its subset QC evaluates quality.>

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We will first go through the basic definitions of QA and QC. We'll then differentiate between quality control vs quality assurance as well as look at their similarities for better understanding.

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What is Quality?

Quality refers to identifying how well something meets your expectations. Most often, it is used to determine the quality of a particular product and the level of service that is offered by an organization.

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Quality Assurance - What is it?

Quality Assurance is a process to make sure that the customer receive best quality product as well as service. It is known to be a part of ISO 9000 series that help businesses to meet the different regulatory requirements, satisfy customers needs, and improve processes and procedures.

Quality assurance ensures that the approaches, techniques, methods, and processes developed for the project are implemented correctly. An effective quality assurance program monitors and verifies the strategies to manage and produce the deliverables.

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What is the importance of Quality assurance?

Quality Assurance is considered important as it helps companies to bring confidence in their manufacturing. Undoubtedly, your customer will stay with you when you provide high-quality products/services to them. Also, if your product meets customers' expectations then they will stay with you. So, a business owner needs to go through a quality assurance process to ensure customer loyalty and brand value if they want to make sure that their customers like their produced products.

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A quality assurance team makes sure your team follows procedures, processes, and best practices. Moreover, it explains how and when to monitor and audit processes to ensure development goes smoothly, problems get fixed, and improvements are made where needed. As a QA, you might have to do these things:
Ensure quality with policies, procedures, and processes.
Document and update SOPs and best practices.
Compliance with regulations and standards is audited.
Analyze current processes to see what can be improved.
Make sure the production and engineering teams follow the rules.
Implement solutions to current processes and procedures.
Inspection of raw materials is important.

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Advantages of Quality Assurance

A better process control system

Ensures quality with internal checks and balances.

Getting it right at the beginning will save you money.

QA can reduce workplace hazards and risks, making a workplace safer for everyone.

Limitations with Quality Assurance

It is time-consuming

Initial costs are high.

Staff training is a lot of work.

Intense resource consumption

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Advantages of Quality Control

Goodwill or image boosts sales with products.
Saves money and increases efficiency.
Developers can verify the product meets the customer's needs.
Assists the business team with estimating the project's cost.
Saves rejection costs and reduces rejection rates.

Limitations with Quality Control

This is a time-consuming task.
Human resources are greatly needed.
It's a big responsibility for the quality control team.
Quality control also increases production costs.

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Types of Quality Control

Control charts - Graphs and charts show the changes in processes over time. Statistics help control business and manufacturing processes.

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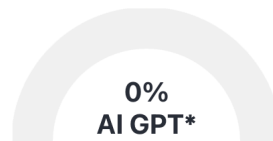
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Example of Quality Assurance

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Example of Quality Control

An example of Quality control in the field of software development would be UAT (user acceptance testing) wherein a user group or business stakeholders test the application to confirm it is meeting customer needs. Any bugs found in UAT are prioritized and fixed accordingly before releasing the application for customer use.

Each industry and product has its own quality control system. Let's take another example from the food

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Quality Assurance vs Quality Control: Similarities

As we have read above, Quality Assurance and Quality Control are two parallel approaches. And, they are similar too. Here are some similarities:

Both QC and QA have common goals - No doubt, you want to make sure the product you make is good because there's no point in releasing something that doesn't meet quality standards. That's why you need to put both QA and QC to work. After all, both departments are crucial to providing a quality product and meeting customer expectations.

Policy and procedure implementation - QA and QC ensure high quality, even though QA is more process-oriented. Some exploratory, fringe, or UX testing techniques require creativity, but defect detection and remediation must still be systematic.

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Quality Control

Definition

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Quality control involves identifying the defects in a product and fixing them to ensure that it works well.

Nature of Process

Preventive or Proactive Process : Establishes methods that can prevent bugs.

Corrective or Reactive process : Detects and fix bugs.

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FAQs

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Procedural guidelines

Control charts

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The key to quality is controlling activities and planning so the product or service meets the

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Conclusion

Both Quality Assurance and Quality Control sit on the same quality management board, and when you differentiate them, you can see their specific scopes and priorities.

Though QA and QC experts are on two separate teams, it is crucial that they don't operate in silos.

They must constantly communicate, share experiences, participate in joint meetings, and talk to stakeholders. They should communicate regularly with developers, designers, and marketing managers to achieve quality goals. So, both teams should work together rather than compete.

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