

# Quality Control in Improving Product and Service Quality

## Kontrola jakości w doskonaleniu jakości produktów i usług

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**Abstract:** Quality control is a system that facilitates companies make certain that their products or services meet specific first-rate requirements. Quality is defined as the diploma of excellence or superiority that a products or services possesses, whilst control is the method of tracking, inspecting, and comparing products and services to ensure they meet unique necessities. Quality control is the system of mixing these two standards to make sure that products and services meet the preferred level of quality. This article examines the role of quality control in improving service or product quality. It provides definitions of quality, control, and quality control and explains the different types of control and quality control that organizations can use to improve the quality of their products or services. There are various sorts of control, which includes direct control, technical control, and bureautical control, and every kind focuses on different aspects of the quality control technique. Also, there are different types of quality control, which include internal and external quality control. By implementing quality control measures, organizations can perceive and deal with quality issues earlier than they come to be primary issues. This article also highlights the benefit of quality control, including increased customer satisfaction, improved efficiency and reduced cost. It also addresses the challenges and limitations of quality control, and the need for continuous evaluation and improvement. At the end, quality control is an important tool for organizations looking to improve the quality of their products or services, increase customer satisfaction, and maintain a competitive advantage in the market.

**Streszczenie:** Kontrola jakości to system, który umożliwia firmom upewnienie się, że ich produkty lub usługi spełniają określone wymagania jakościowe. Jakość definiuje się jako stopień doskonałości lub wyższości, jaką produkt lub usługa posiada, podczas gdy kontrola to metoda monitorowania, badania i porównywania produktów i usług w celu zapewnienia, że spełniają one określone wymagania. Kontrola jakości to proces łączenia tych dwóch kryteriów w celu zapewnienia, że produkty i usługi spełniają pożądany poziom jakości. W tym artykule omówiono rolę kontroli jakości w poprawie jakości usług lub produktów. Przedstawiono definicje jakości, kontroli i kontroli jakości oraz wyjaśniono różne rodzaje kontroli i kontroli jakości, których organizacje mogą użyć do poprawy jakości swoich produktów lub usług. Istnieją różne rodzaje kontroli, w tym bezpośrednia kontrola, kontrola techniczna i kontrola biurokratyczna, a każdy rodzaj skupia się na innych aspektach procesu kontroli jakości. Istnieją również różne rodzaje kontroli jakości, w tym wewnętrzna i zewnętrzna kontrola jakości. Dzięki wdrożeniu działań kontroli jakości organizacje mogą wykryć i rozwiązać problemy jakościowe, zanim staną się one poważnymi kwestiami. Artykuł ten podkreśla korzyści wynikające z kontroli jakości, w tym zwiększoną satysfakcją klientów, poprawę efektywności i zmniejszenie kosztów. Przedstawia również wyzwania i ograniczenia kontroli jakości oraz potrzebę ciągłej oceny i poprawy. W końcu, kontrola jakości jest ważnym narzędziem dla organizacji, które szukają sposobów na poprawę jakości swoich produktów lub usług, zwiększenie satysfakcji klientów i utrzymanie konkurencyjnej pozycji na rynku.

**Key words:** quality, control, quality control, improvement

**Słowa kluczowe:** jakość, kontrola, kontrola jakości, doskonalenie

### 1. Introduction

Quality control is a system that is built and developed with certain standards or specifications to ensure that the product or service provided is in accordance with customer satisfaction.

It is an important component of the manufacturing process. Reducing production costs, raising performance, and improving customer satisfaction are examples of results of a good quality control application. It can be challenging to maintain good quality control due to the complexity of manufacturing processes such as inspection, testing, and data analysis, and it requires the involvement of different stakeholders, including suppliers, manufacturers, distributors, and customers.

For author, quality control is an activity to maintain the product or service provided always meet the customer satisfaction by doing research and making a sustainable system that keep improved.

In today's highly competitive marketplace, quality has become a crucial factor for the success of any business. Organizations that fail to deliver high-quality products or services risk losing customers and their market position. Therefore, it is essential to implement quality control measures to identify and address quality issues before they become major problems.

## 2. Definition of quality

There is no universal definition of quality that is accepted because it is difficult to operationalize and not sufficiently comprehensive to capture the richness and complexity of the concept [1]. The term quality is defined differently by different people and different circumstances. Quality is defined as conformance to specifications [2,3] which means the product or service needs conformance related to a standard that has been designed to specify as a quality product or service. Quality is also defined as best for certain customer conditions [4]. From this definition, it consists of a customer with certain characteristics at the expected cost or price of a product or service. The product or service will be quality when it is suitable for the customer's expectations.

Quality has been defined as reaching for the highest standard [5], a product that successfully serves the purpose of the user [6,7], based on the presence or absence of a particular attribute [8], and avoidance of possible losses [9].

Quality is a characteristic that determines the level of excellence of a product or service. It is a standard of how far a product or service meets customer expectations. Quality is usually subjective, what is considered high quality by one person or organization is not necessarily considered high quality by another person or organization. Therefore, quality is often defined based on specific criteria and standards set by the industry or organization that produces the product or service.

In a manufactured product, the customer as a user recognizes the quality of fit, finish, appearance, function, and performance, while service product may be rated based on the degree of satisfaction by the customer receiving the service.

Companies must maintain that the products or services provided always meet quality standards. The following are 6 ways that can be taken to achieve maintain and improve the quality:

1. Understand What Quality Is. After being able to define what quality is, then a company can understand how to achieve and improve it.
2. Build a Solid Product Strategy. To be able to compete among the many products, companies need to develop a brilliant product strategy. Companies must be able to make a new breakthrough that makes the product or service offered unique.
3. Implement a Quality Management System (QMS). Implementing a QMS will allow the company to audit the processes itself along with a certification body. Since a quality management system is based on the 7 strict principles of quality, the customers will not have to audit the business themselves.
4. Make Quality a Part of The Company Culture. The quality principles need to be embedded firmly across the entire organization. The entire team needs to be on the same page when it comes to what constitutes a quality product.
5. Perform Product and Market Testing. Beta testing will allow meeting the promised user experience and ensure all product components including quality perform as initially intended. Product testing will also allow seeing how the product performs in the real world vs. its performance in a controlled environment.
6. Always Strive for Quality. A lot of experts have different opinions on what constitutes quality. Remember to create a strategy, implement a QMS, embed quality in the company culture, and perform regular product and market tests. By doing all this, the company is well on the way toward creating high-quality products that will delight the customers and keep them coming back for more [10].

Why Quality is Important? These are some reasons why quality is important:

1. Customer satisfaction: Having a high-quality product or service can satisfy the customer, which can result in customer loyalty.
2. Cost saving: High-quality products or services are often more efficient and require less maintenance, which can result in lower cost and increased profitability over time.
3. Brand reputation: High-quality products or service can enhance the reputation of the company or brand [3].
4. Employee satisfaction: High-quality products and services can also lead to greater employee satisfaction. When employees are proud of the quality of the work they produce, they are more likely to be engaged and motivated [4].
5. Sustainability: High-quality products and services can also contribute to sustainability efforts by reducing waste, improving efficiency, and promoting responsible production practices [5].

## 3. Definition of quality control

### Control

Before understanding further what quality control is, it is also necessary to know what control is and its types. Control is also defined differently in different circumstances. Cambridge dictionary the ability or power to decide or strongly influence the particular way in which something will happen or someone will behave, or the condition of having such ability or power [11]. Control can mean an evaluation to indicate needed corrective responses, the guiding or the state of process in which the variability is attributed to a consistent system of chance causes [12]. Control represents a process through which managers ensure that resources are procured and used efficiently and effectively to meet the goals of the organization. It is a dynamic function interrelated with the other management functions, and it plays a role of critical determinant in achieving organizational success [13].

In general, control refers to the process of managing or regulating something with a goal that wants to be achieved. In psychology, control means the belief of individuals in their ability to influence events and outcomes in their environment in concepts such as self-efficacy, locus of control, and perceived control.

In management, control refers to the process of monitoring and regulating the activities of employees or groups to ensure that they are aligned with organizational goals and objectives. This can involve setting targets, providing feedback, and implementing measures to correct deviations from desired outcomes. Overall, control can refer to a wide range of processes and concepts, but it generally involves managing or regulating something to achieve a desired outcome.

### Types of Control

1. Direct Control: Probably the best-known reference to direct control is Taylor's *The Principles of Scientific Management* [14]. Taylor prescribes a very clear division of labor between managers who conceive of and control work, and workers who execute it. Managers are expected to describe in detail what workers should do and how they should do it.
2. Technical Control: Under technical control, authority is no longer vested in the person of the manager but resides in the organization's physical structure, such as machinery and information technology. The typical example of technical con-

trol is the assembly line, where the line replaces the foreman. In other words, instead of a foreman communicating what to do, the line does that job.

3. **Bureaucratic Control:** The managerial problems associated with technical control – the vulnerability of the line and the absence of positive incentives – fostered the development of bureaucracy as a new form of structural control. Under technical control, authority resides in the physical structure of the organization; but under bureaucracy it resides in the social structure. Bureaucracy is based on rules: rules for who does what and how to do it and who is superior to whom, and rules for promotion procedures and wage scales. In other words, bureaucracy provides rules for the horizontal and vertical divisions of labor in the organization, and also for the organization's career system. This positive incentive solved some of the problems of motivation associated with direct and technical control.
4. **Output Control:** Output control is based on the measurement of outputs [15]. Unlike direct, technical, and bureaucratic control, it is thus directed not toward employees' behavior, but toward the results of their work. Output can be controlled quantitatively as in the case of wages based on piecework, or qualitatively as when the functionality of output (such as an application for mobile phones) is measured.
5. **Normative Control:** Under normative control, the target of control is shifted once more. Direct, technical, and bureaucratic control target employees' behaviors, and output control targets their results. Normative control, in turn, is directed at employees' norms, thoughts, and values [16]. Normative control is said to be more effective when it is difficult to measure output, and when bureaucratic rules fail to offer guidance because the work processes are difficult to predict [17-18].

## Quality Control

According to Dr. K. Ishikawa, Quality and control is an activity of researching, developing, designing and fulfilling customer satisfaction, providing good service where the implementation involves all activities within the company, from top management to executive employees. Quality and Control is an effective system for integrating quality maintenance and development activities within an organization so that production and service can be obtained at the most economical level and satisfying consumers. Quality and control is the activity of maintaining and improving the products and services offered to the company, quality control is not only the responsibility of the quality control department, but all employees or parties become one unit to solve this problem (Ishita Nobuyuki) [19].

Quality control is important to safeguard the company's reputation, prevent products from being unreliable, and increase trust on the side of consumers. It ensures that the company looks at evidence-based data and research rather than anecdotal observations to ensure that the services/products live up to the standards.

In such a system, there are 3 main objectives of quality control: enhance product quality and reduce risks, gain production efficiencies, and garner customer loyalty. These 3 objectives will be evident in any manufacturer with a robust and functional quality control program:

1. **Enhance Product Quality & Reduce Risks:** the economic and reputational cost of product recalls or failures is often really high. Manufacturers with solid and established quality programs consistently meet the requisite product specifications and are less likely to have quality incidents such as off-spec batches or product recalls – reducing the level of risk for the

supplier and OEM. One of the benefits of strong quality procedures is that potential errors or issues are identified in advance, enabling the team to address the problem and prevent the quality issue from occurring in the first place.

2. **Gain Production Efficiencies:** a robust quality control and quality assurance program improves workflow, resulting in efficiency gains along the production line as well as across the entire supply chain. Quality programs typically track a large volume of data – often real-time – to trend key metrics and enable operations personnel to make decisions based on accurate and timely information. With this data, potential quality issues along the production line are identified and resolved promptly.
3. **Garner Customer Loyalty:** a manufacturer that has a high level of production quality control and repeatability is able to deliver consistent products to customers – becoming a trusted partner. When products meet or exceed customer expectations, the company gets repeat business. Customer loyalty and a long-term partnership benefit both the manufacturer and the customer [20].

## Types of Quality Control

1. **Off-line Quality Control:** Its procedure deal with measures to select and choose controllable product and process parameters in such a way that the deviation between the product or process output and the standard will be minimized. Much of this task is accomplished through product and process design.
2. **Statistical Process Control:** SPC involves comparing the output of a process or a service with a standard and taking remedial actions in case of a discrepancy between the two. It also involves determining whether a process can produce a product that meets desired specification or requirements. On-line SPC means that information is gathered about the product, process, or service while it is functional. The corrective action is taken in that operational phase. This is real-time basis.
3. **Acceptance Sampling Plans:** A plan that determines the number of items to sample and the acceptance criteria of the lot, based on meeting certain stipulated conditions (such as the risk of rejecting a good lot or accepting a bad lot) is known as an acceptance sampling plan[21].
4. **Internal Quality Control:** If the company establishes an in-house protocol to check the system, this is called internal quality control. It can range from routine checking of equipment, having a co-worker go over another employee's data analysis or running standards and controls on a regular basis. It is generally up to management to decide if internal quality control measures are reliable and performed as needed.
5. **External Quality Control:** When products or data are sent to an outside business not affiliated with the company, this is external control. One example of external control is in food production. A food company may routinely analyse the nutritional value or shelf life of a food item it produces in its own lab, but to verify the results, the same food item will also be sent to an outside lab. This verification by a third party is important to obtain Food and Drug Administration labelling and to prove to the FDA that the food company's production methods are sound [22].

## 3. Conclusions

Quality control is an essential process that involves ensuring products and services meet certain quality standards. The definition

of quality may vary in different circumstances, but it generally refers to the degree of excellence or superiority that a product or service possesses. Control, on the other hand, refers to the process of monitoring, inspecting, and evaluating products and services to ensure they meet specific requirements.

Quality control is the process of ensuring that products and services meet certain quality standards by implementing control measures. There are several types of control and each type of control focuses on different aspects of the quality control process, and they can be used together to ensure that products and services meet specific quality requirements.

There are also different types of quality control, including internal and external quality control. Internal quality control refers to the measures that a company implements to monitor and improve its own processes, while external quality control involves third-party organizations that assess a company's products and services to ensure they meet specific quality standards.

In conclusion, quality control is an essential process that involves ensuring that products and services meet certain quality standards. It involves monitoring, inspecting, and evaluating products and services to ensure they meet specific requirements. There are different types of control and quality control, and companies can implement these measures to improve their products and services and ensure customer satisfaction.

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