

# ECONOMY AND ENTERPRISE MANAGEMENT

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## THE EFFECT OF QUALITY CONTROL ON EFFICIENCY IN CONSTRUCTION PROJECTS

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**Introduction.** The cost to our economy is significant since the building sector has struggled with quality difficulties for a number of years. If the industry adopted the idea of quality assurance, which has been employed with great success by many other areas of the economy, the price might possibly be cut by a large amount. Since the development sector is specialized, adopting quality assurance calls for a strategy that complies with its standards. Building owners must also be informed on quality assurance so they can start speaking out against the adoption of this strategy to protect their assets and lower construction costs. The quality assurance and internal control has broad meaning as per as various sectors are concerned.

Normally to grasp this idea of quality, we formulate four questions as follows,

1. What's mean by Quality?
2. How it's achieved?
3. What's Quality Assurance?
4. What's Quality Control?

When discussing the quality of anything, whether it be a service or a product, only two options should come to mind: YES or NO. There shouldn't be an answer that categorizes the quality as fair, middling, quite low, or quite good. In the end, having quality is really crucial. In general, we may define the standard in a number of ways, including the following:

- Conformance to requirements or specifications is a sign of quality.
- Quality is suitability for usage.
- Quality is the extent to which a group of innate qualities satisfies requirements.

**Quality Assurance in Construction.** It is acknowledged that the preparation or assessment of contractual claims takes up an increasing amount of time in the construction sector. The rising complexity of customers in implementing the specifications of the common construction contract forms is a major factor in this. In these contracts, the contractor is explicitly given the burden of proof. Lack of applicable documents usually makes it difficult to provide this proof, which is commonly presented as documented evidence. In order to make matters worse, economic loss is frequently coupled with a loss of goodwill. According to a review of the project files, queries weren't raised when they should have been, and issues weren't discovered until after they had already happened. It is seldom the case that those engaged lack knowledge or initiative. The more common scenario is

that they are strapped for time due to other challenges, therefore they pay these issues minimal consideration. An additional challenge comes when a person's lack of experience restricts their personal horizon and clouds their perception of the issues ahead. Poor quality-related crises have frequently engulfed contracts that seemed to be moving forward effectively, causing delays and costs that negated any purported gains that had obtained.

**Quality Control in Construction.** The likelihood that a product will match the specified standard and constraints established by the building agency may be used to determine quality. This check guarantees that the completed work must meet the specified standards for quality and longevity. This may be done by performing inspections starting at the point where the raw materials are supplied and ending with the completed product. Verifications of soil qualities, drawings and designs, structural safety, durability, evaluating the quality of materials, requirements, testing of materials, and equipment inspection are major areas of control before and during construction. The field of quality control encompasses a variety of activities, such as testing of materials to be used, field and laboratory tests on mixtures of components, and adequate executive staff/contractor understanding of methods/techniques. The precautions must be taken and the frequency of certain testing first, the materials that will be used in the task must meet the necessary criteria. Making ensuring that all fixtures and materials used in the job meet the requirements indicated in the contract and (Bureau of Indian Standards) BIS specifications listed therein is a crucial first step in raising the quality of the work. Materials that have been authorized by BIS should be used in works as much as practicable. If BIS standards are not available for a particular material, it should be acquired from a producer who produces to standards and tested by accredited testing facilities.

**Requirements for Quality Control.** The Quality Control process involves good planning, training, giving clear choices and directions, regular monitoring, reviewing finished operations right away for correctness and completeness, and documenting all assumptions, suggestions, and conclusions. The designer has a clear obligation to make sure all project components are comprehensive, correct, and appropriately prepared, coordinated, and checked during the creation of the construction plan. Quality must be as critical as the timeline and budget for the project to constantly satisfy the requirements and expectations of our population. The development and assessment of all design products must adhere to defined design rules, methods, standards, and guidelines. Design consultants are project representatives whose main duty is to create building blueprints.

**Project Quality Control Requirements.** The Project Quality Control Plan (PQCP) for each project will be composed of the procedures and techniques outlined in this document. This procedure must be followed in every set of construction blueprints created by or for the project. The intended strategies or procedures for ensuring quality control of all work items are described in detail in the project quality control plan. The work requirements will ensure that this strategy is always up to date. The following areas must be covered by the strategy, but they are not required:

- Organization
- Quality Control Reviews

Method for recording comments, coordinated answers, and records of quality control. Plans for Quality Assurance Certification created by consultants for a project must, at the very least, adhere to the instructions in the handbook. To be approved by the PM, consultants may create their own project quality control plans.

**Implementation in Construction Sector – Quality Assurance.** The following will often be part of the surveillance function:

- a) Observing laboratory and field testing of building supplies and finished works. Examining the contractor's adherence to the requirements for construction processes, personnel, and specifications.
- b) Monitoring, pre-operational testing, or a combination of the two.
- b) Creating and keeping up quality control guides.

The administrative duties will consist of:

- a) Starting, evaluating, and approving design clarification or contract document amendments.
- b) Recording all testing, inspections, and official visitor visits that are linked to the project.
- b) Continue to take pictures of the development of the project and other pertinent construction-related events.
- d) Keep track of all work-related communications, such as phone conversations, memos, and letters, etc.

**Implementation in Construction Sector – Quality Control.** Sound engineering procedures, professional attitudes, excellent construction standards, and quality may all help to maintain quality control. While discussing engineering structures. It may be viewed as a function of ensuring that people, materials, machines, and processes perform to the standards estimated to guarantee that the finished product of the building complies with the established requirements and satisfies the needs of the owner or users.

Quality control is a management practice used to establish goals for the building operations. In this situation, the goal is to achieve the required cost and performance standards. We must take into account every component that contributes to quality-building in a product or service in order to obtain the highest quality at the lowest cost.

In the construction sector, when the contractor does the majority of the work, the contractor is in charge of quality control and is accountable to the designer and the owner for it.

The development of construction projects and structures currently faces several challenges related to technology, including the advancement of their fabrication, improvement of their quality, dependability, and factory finishing. These challenges can be overcome by creating and implementing effective and continuous quality control at each stage of production as well as by testing goods and structures using the most up-to-date tools and equipment. A contractor must be able to satisfy the demands of the owner or user and achieve the performance criteria in the current competitive market of the construction industry if he is to survive. The different procedures needed to fulfill the aforementioned need should be economical.

**Conclusion.** It is acknowledged throughout the implementation of the quality assurance and quality control system that quality cannot be left to chance; rather, it must be managed at each level of the production process. A corporation can organize and manage its resources to attain, maintain, and enhance quality through the use of a quality system. Similar to information technology, financial control, and people management systems are quality systems. A perilous point is only reached after all the time and effort invested in creating the initial system has been expended. The risk is that once the system is finished, it will be a nicely bound document that cannot be altered. This is precisely what has to be avoided, and proactive measures must be made to stop it. An effective quality auditing program should concentrate on improving the procedures in terms of Total Quality and business objectives. In order to draw a conclusion, it would be useful to summarize the main idea from the earlier chapters.

When compared to the project's overall cost, a thorough QC process may be used to produce work of higher quality at a relatively low cost. By strictly adhering to the building specification criteria, QA may be completed on site. This may be accomplished by having a field laboratory that is centrally placed, well-organized, and equipped on the job site. In order to draw a conclusion, it would be useful to summarize the main idea from the earlier chapters. Management must be dedicated to the philosophy of quality assurance; it is not an optional bonus. To have any credibility, a quality assurance system must adhere to ISO 9000 and ISO 14000 standards. Based on the lessons discovered during quality control exercises on earlier projects, the construction specification for a project of a similar kind that will be carried out in the future should be updated. The caliber of the materials to be utilized and the craftsmanship are two major determinants of job quality. For the purpose of completing QA/QC, it is imperative that the pertinent specifications for materials and workmanship listed in the different IS codes be properly followed. QC should be practiced at several stages of the construction process, including preconstruction, construction, and postconstruction. The use of materials for structural members that are manufactured under rigorous control and regulated conditions should be promoted wherever possible. Finally, keep in mind that our quality assurance and quality control system is a dynamic entity that requires a two-way exchange of information in order to develop.

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The development sector has struggled with quality concerns for a number of years, which has had a profound impact on our economy. If the industry adopted the idea of quality assurance, which has been employed with great success by many other areas of the economy, the price might possibly be cut by a large amount. In order for building owners to effectively advocate for the adoption of this strategy to protect their assets and lower construction costs, they must be forced to learn about quality assurance. Internal control (QC) and quality assurance (QA) are becoming more and more significant project management concerns. Costly repairs might be needed if built-in facilities have flaws or malfunctions. Reconstruction is needed and facility operations are hampered even with minor flaws. The effect is higher expenses and delays. Any building process should include quality assurance and internal control to raise the project's standard and consistency. Due to substantial developments, technological improvements, and high customer expectations, the need for QA and QC in building projects has significantly expanded in recent years. The QA and QC keep the building process constant and assure more cost-effective material use, which significantly lowers the cost to the consumers. The additional expense associated with QA and QC is closely correlated with the benefits. In the housing business, a method has been established for QA and QC. The building procedure achieves the necessary quality thanks to the technique. In the end, having quality is essential. In general, we may define the standard in a number of ways, including the following: Conformity to requirements or specifications defines quality. Fitness for usage equates to quality. The degree to which a group of innate qualities meets standards is the definition of quality. In the opinion of the author, during the application of the quality assurance and quality control system, it is necessary to take into account that the quality cannot be left to chance; rather, the production process must be managed at a comprehensive level. Quality control includes such activities as testing of materials to be used, field and laboratory testing of component mixtures, and adequate understanding of the contractor's methods and techniques by executive staff.

**Key words:** quality assurance, quality control, construction, structure, effectiveness, project

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Сектор розвитку протягом кількох років боровся з проблемами якості, що мало глибокий вплив на нашу економіку. Якби галузь прийняла ідею забезпечення якості, яка з великим успіхом використовується в багатьох інших галузях економіки, ціна могла б значно знизитися. Для того, щоб власники будівель могли ефективно виступати за прийняття цієї стратегії для захисту своїх активів і зниження витрат на будівництво, їх потрібно змусити дізнатися про забезпечення якості. Внутрішній контроль (QC) і забезпечення якості (QA) стають все більш і більш важливими питаннями управління проєктами. Може знадобитися дорогий ремонт, якщо вбудовані приміщення мають дефекти або несправності. Потрібна реконструкція, а робота об'єкта ускладнена навіть незначними недоліками. Результатом є більші витрати та затримки. Будь-який будівельний процес має включати гарантію якості та внутрішній контроль для підвищення стандартів та послідовності проєкту. Завдяки суттєвим розробкам, технологічним удосконаленням і високим очікуванням клієнтів потреба в QA та QC в будівельних проєктах значно зросла в останні роки. QA та QC підтримують постійний процес будівництва та забезпечують більш економічне використання матеріалів, що значно знижує витрати для споживачів. Додаткові витрати, пов'язані з QA та QC, тісно пов'язані з перевагами. У житловому бізнесі був створений метод забезпечення якості та контролю якості. Процедура нарощування досягає необхідної якості завдяки техніці. Зрештою, якість є важливою. Загалом ми можемо визначити стандарт кількома способами, зокрема такими: Відповідність вимогам або специфікаціям визначає якість. Придатність до використання означає якість. Ступінь, до якого група вроджених якостей відповідає стандартам, є визначенням якості. На думку автора, під час застосування системи забезпечення та контролю якості необхідно враховувати, що якість не можна залишати напризволяще; навпаки, виробничим процесом необхідно керувати на комплексному рівні. Контроль якості включає такі дії, як випробування матеріалів, які будуть використовуватися, польові та лабораторні випробування сумішей компонентів, а також адекватне розуміння методів і техніки підрядника виконавчим персоналом.

**Ключові слова:** забезпечення якості, контроль якості, конструкція, структура, ефективність, проєкт.