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Total Quality Management With Reference To Iso 9000 In Construction Industry

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ABSTRACT: *These days "quality" has everyone's attention in the construction industry. One quality management system receiving much attention is ISO 9000.Construction firms account for only small fraction of ISO 9000. As construction projects get bigger & more complex, clients are increasingly demanding higher levels of quality, efficiency & delivery. Companies are being persuaded to adopt quality management systems in order to meet the demands of customers in a global market.*

ISO 9000 was founded in 1946 to promote voluntary, manufacturing, trade & communication standards. The ISO 9000 series of quality management & assurance standards were issued & approved in 1987 by 35 countries. By 1994, 80 countries had adopted the ISO 9000 standards as a national standard.

Total quality management (TQM) has long been recognized as a successful management philosophy in the manufacturing & service industries. TQM can also be embraced in the construction industry to help raise quality & productivity. This report attempts to introduce the system which is being followed to implement ISO 9000 quality based systems which have been using in construction industry & the impact of ISO 9000 quality assurance requirements in the performance of the construction projects.

ISO 9000, a series of international quality management standards, has emerged during the last two decades as a system that can be applied to different types of companies in order to obtain improvements in quality procedures & products. ISO 9000 is being implemented all over the world as a system of standards related to quality assurance management & control for companies & institutions.

Keywords: *ISO 9000, Performance improvement, Quality assurance, Quality in construction, Quality system.*

1. INTRODUCTION

Nowadays, "quality" has everyone's attention in the construction industry. One quality management system getting much attention is ISO 9000. Quality assurance is important in engineering & construction industry because of the risk involved in any project. As construction projects get bigger and are more complex, clients are increasingly demanding higher levels of quality, efficiency and delivery. Total quality management (TQM) has long been accepted as a successful management philosophy in the manufacturing and service industries.

The risk involved in not completing the project on time is high, because many external factors will affect the performance of the project. It is vital that a built in quality assurance system is developed to avoid any inefficiency that could result in poor quality of products & service being delivered to the customer. Everyone involved in the engineering & construction business has, in different ways benefited from a common approach to quality work. Systematic quality work reduces the costs of failure in one's own work & in the final product.
The standards can make quality work more efficient by creating uniformity. One of these quality standards is the ISO 9000 standard, which has been adopted by a large number of countries around the world & is applied in various industries including engineering & construction. Why is there such demand for ISO 9000 certification in construction industry? While ISO 9000 does not guarantee the quality of companies' services or products, these standards do require companies to define & document their operating practices & determine whether personnel are properly trained to perform their designated functions. By undergoing the ISO 9000 registration process, companies can find out deficiencies in their system. To achieve certification not only requires correcting those inadequacies, but further involves assessing and analyzing the root cause of each problem to ensure that it won't reoccur in the future.

Quality system involves internal & external aspects. An internal quality system covers activities aimed at providing confidence to the management of an organization that the intended quality is being achieved. This is called a "quality management system". Successful implementation of quality management systems can contribute to an increase in product quality, improvements in workmanship & efficiency, a decrease in wastage and increased profit. An external quality system covers activities aimed at inspiring confidence in the client that the supplier's quality system will provide a product or service that will satisfy the client's quality requirements. This is called "quality assurance system". The quality system can work effectively only when the top executive responsible for engineering or production takes full responsibility for analysis & achievement of the quality assurance program.

ISO 9000 is an international standard intended to provide the general core of a quality system standard applicable to a wide range of industries & economic sectors. It outlines how a supplier can establish an effective quality system that will display commitment to quality & ability to meet customer requirements. The acceptance of ISO 9000 standards in the construction industries is not as wide as in other industries, such as manufacturing. There are special features in the construction industry that limit the implementation of the ISO 9000 standard.

2. OBJECTIVES

The common nature of the standards often leads to differences in interpretations. In turn the execution, use & impact of ISO 9000 standards can vary from company to company & from country to country. The concept of ISO 9000 has been viewed in various ways, as a means of improving the overall quality of operations; as the requirements of customers to be compiled with; as a necessary response to competition; as a way to reduce cost; as a means to improve the flow of activities & coordination in the organization; as a strategy to have better sale through an improved quality image; as a way to maintain competitive edge in the industry etc. Thus the ISO 9000 standards may vary depending on how it is perceived by companies.

It is observed that the implementation of ISO 9000based quality assurance & quality management systems have received high level of attention in several countries & industrial sectors including construction industry. The number of certifications for general, heavy & specially contracting companies is growing considerably. The success of the ISO 9000 family of standards is still growing & the number of countries where ISO 9000 is being implemented has increased.

Therefore the objectives of this paper are as follows.

a. To identify the system which is being followed to implement ISO 9000 quality based systems.

b. To examine the impact of ISO 9000 quality assurance requirements in the performance of construction projects.

c. To study the factors affecting Total Quality Management (TQM) & ISO 9000.

3. METHODOLOGY

The objectives of the research were met through an intensive literature review and in depth research survey and case studies. In order to achieve the objectives mentioned above ,the data is collected from the various construction companies in Maharashtra state having ISO 9000 recommendations .The companies chosen are mainly engaged in the construction of building and civil engineering works including roads and bridges , construction of highways .

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3.1 Complications Surrounding ISO 9000 Requirements

It is reported that the ISO 9000 standards are not difficult to implement, but there are some complications:

- Huge amounts of required paper work associated with the records of the quality system and its implementation.
- Difficulty in controlling the subcontractors.
- Difficulty in full execution of all the requirements, and the possibility of infrequent variation.
- Difficulty in accepting the terminology of the standards.
- Difficulty in spare company personnel to take on an additional workload in order to establish quality system and its requirements.
- Lack in ability to afford permanent quality managers and specialists.

3.2 Resistance to Total Quality Management in Construction –

The factors which may cause resistance in the implementation of TQM in construction are discussed below.

3.2.1 Product range

All buildings constructed are unique. Quality is seen as consisting of those product features which meet the personalized needs of the customers and thereby provide product satisfaction, supplemented with a provision of freedom from deficiencies.

The construction industry has a high number of organizational collapses, especially during a downturn in the economy Thus, commitment toward TQM strategies and policies that may take several years to provide ''pay offs'' may be perceived as futile or a misdirection of resources. As compared to the head office, the building site is transitory. Teams specially formed for a project may cease to exist after contractual obligations end.

3.2.2 Misunderstanding of the Cost of Quality

It is defined that the cost of quality as costs associated with conformance to requirements and costs associated with non conformance to requirements. Costs in the construction industry are being compounded by prevention and appraisal costs coupled with non conformance costs. Contractors often perceive TQM as an extra cost, but they do not realize that it is not the quality that costs but rather the non conformance to quality that is expensive. The sources of costs associated with the non achievement of quality include the costs of rework, correcting errors, reacting to customer complaints, having deficient project budgets due to poor planning, and missing deadlines The costs associated with implementing a TQM system could be substantial, depending on the size and nature of the company. However, It is pointed out that the costs incurred from not achieving quality can cost owners up to 12% of the total project cost.

3.2.3 Implementing Total Quality Management in Construction

In developing a total quality culture in construction, one important step is to develop a construction team of a main contractor and subcontractors who would commit to the quality process and develop a true quality attitude. Thus, the main contractor should only select subcontractors who have demonstrated quality attitude and work performance on previous jobs.

Following are the basic steps to implementing TQM in construction projects:

- Obtain the commitment of the client to quality.
- Generate awareness.
- Educate, and change the attitudes of staff.
- Develop a process approach toward TQM.
- Prepare project quality plans for all levels of work
- Institute continuous improvement.
- Promote staff participation and contribution using quality control circles and motivation programs
- Review quality plans and measure performance.

4. REASONS TO ADOPT ISO 9000 STANDARDS

Compliance with ISO 9000 series standards is voluntary in most, but not all cases. When compliance is voluntary, incentives come from a variety of internal and external benefits. An internal benefit comes from within the company and relates to the day-to-day operations of the organization. An external benefit comes from outside the company and relates to other entities and factors such as customers and markets. Internal benefits can be realized by any company that uses the ISO 9000 series standards. However, external benefits are limited to those companies that are certified by a second or third party entity. This occurs because customers may not be willing to accept a company's word that it complies with ISO 9000 series and may require second or third party certification.

5. REQUIRED COMPLIANCE

In some instances, ISO 9000 certification is a requirement for doing business. This may be due to the requirements of a customer or, it may be due to requirements of laws of a country or trading bloc. Some countries have passed laws requiring compliance with ISO 9000.

6. BENEFITS OF ISO 9000

6.1 Internal Benefits

Whether certification is required or not, ISO 9000 series certification provides a variety of internal benefits.

1) ISO 9000 certification leads to better documentation of company processes. This, in turn, leads to more efficient production processes and less waste. Both save money for a company.

2) Managers and other employees become more aware of quality. They begin to view operations through a "quality of management" lens. This leads to a more efficient company that can be more competitive in the marketplace.

3) Employee morale improves. When employees feel that they are part of the process, they accept responsibility for quality. This creates an incentive for workers to do a better job and makes the company more efficient.

4) Cooperation and communication are improved. Documenting procedures facilitates communication and promotes cooperation.

5) Production processes can be made more efficient. When there is better coordination of processes, there is less "down time," and resources are shared among departments more efficiently.

6) Fewer defective products are produced. Better quality results in fewer defects, less scrap, and, therefore, lower production costs. Finally, documentation of safety standards results in fewer accidents. In turn, there is less downtime for employees. The ultimate results are more efficient workers and lower costs of production.

6.2 External Benefits

Similarly, there are many potential external benefits.

1) The first is that company prestige increases. Companies following ISO 9000 series standards are perceived as "good corporate citizens" that produce higher quality products. Thus, they gain prestige that can help retain old customers and attract new ones.

2) It improves customer satisfaction. Higher quality means higher customer satisfaction. Further, the manufacturer of a product is certified, a customer may feel better about the product even if it is, in fact, of no higher quality than that of a non-certified manufacturer.

3) It creates a higher level of trust. Customers perceive a certified company as being more trust worthy than a non-certified company.

4) It reduces the need for customer audits. With certification, a company has already been audited. Therefore, customers will not feel a need to audit every time they want to do business with a company. This can result in major savings. For example, it is reported that in some industry segments in the United States, a facility may be subject to dozens of audits per year; in some cases it may be as many as 30 per month.

5) It can help a company increase its market share. Certified companies gain access to markets that require ISO certification and they can deepen penetration of existing markets.

Finally, the company can respond more quickly to market needs. With better quality procedures, it is easier to develop and market new product lines. Being the first to reach a market results in higher profits for the company.

7. COSTS AND PROBLEMS RELATED TO ISO 9000

There are costs in time and money for companies becoming certified to an ISO 9000 series standard. For example, an ISO program may take three months to over one year to implement, and it requires continual efforts to review progress and pursue improvement. Further, it costs money to develop a certification program and attain certification. There may be benefits in terms of increased sales resulting from public perception that the firm produces quality goods, but sometimes non-ISO certified companies may be able to produce a similar product more cheaply.

ISO certification does not mean that a firm's product is better than that of a non-ISO certified firm. For example, ISO 9000 series certification does not prevent design defects. To reiterate, the ISO series 9000 standards are process standards; they are not product standards.

The quality of an audit performed for ISO certification purposes depends on the qualifications and honesty of the auditor, and whether the auditor is acting in a first, second, or third party capacity. In addition, there are numerous problems inherent in the third party certification process.

The ISO does not have standard procedures for certification. As a result, various countries have developed different certification procedures without an international certification procedure, companies and members of the public are uninformed about what is involved in certification. And, of course, standards for certification are not uniform.

Certification is not always recognized across borders of countries. Therefore, a registrar should be chosen in view of the company's customer base. One practice that facilitates operations of companies in various countries is that some U.S. registrars have signed memoranda with registrars in Europe. As a result of such agreements, a company can become ISO-certified in several countries through the completion of a single certification process.

There is no centralized record of registrations. This makes proof of certification difficult, and potential customers must rely on documents in the possession of the certified firm or the auditing firm hired by the firm.

Certification is costly. and may take six to 18 months to perform, depending on the size of the company. This can be prohibitive for small companies and for companies with severely limited resources. Such companies tend to come, in disproportionate percentages, from developing countries as compared to companies from industrialized countries.

The quality movement in the corporate sector has been gaining momentum and more and more manufacturing companies and construction companies are launching quality initiatives. One of the most talked about and vital components of this quality initiative is the ISO 9000 quality system standard. Companies all over the world are aiming to get registration of this standard. ISO 9000 is a quality standard which is designed to apply to any product or service made by process anywhere in the world. ISO 9000 standards are unique to other ISO technical standards because for the first time, there was a standard that dealt with the way of doing things and not the end product itself. These ISO series are accepted by more than 80 countries and these standards appear under their respective national codes.

7. CONCLUSION

This paper highlights the various documents designed to examine the system and success outcomes of ISO 9000 certified companies in construction industries. Construction organizations should understand that results cannot be gained immediately and that an organization needs time to adapt, change, and learn.TQM embraces the philosophy, principles, procedures, and practices necessary for providing customer satisfaction as well as achieving productivity and business performance in the construction industry. Assurance and determination are necessary when embarking on this journey. The compulsory requirement to hold a valid ISO 9000 certification in order to be registered and thus becoming eligible to bid for tenders of Government projects may encourage the construction companies to pursue and possess an effective and continuous improved quality management system.

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