

A review on Quality certification in Automobile Industry

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Abstract: This paper discusses the introduction and implementation of ISO 9000 quality standards in Indian car industry performing a comparative Study of Quality certification processes in Indian Automobile Industries environment and Quality certification processes using different criteria. Some more specific objectives are identifying the Quality certification processes used by the companies; identify key performance measures, criteria applicable for quality evaluation, Impact of JIT Implementation and ISO 9000 certification on TQM.

Key words: automotive, standard, quality management systems, productivity improvement.

1. Introduction:

Automotive industry is the key driver of any growing economy. It plays a pivotal role in country's rapid economic and industrial development. The liberalization of the Indian industry saw significant growth in the Indian Automotive Industry. Today, the Indian Automotive Industry is a significant contributor to the Indian economy, contributing nearly 5% to the country's GDP and about 17-18% to the kitty of indirect taxes to the Government, while investment outlay stood over Rs. 83,500 crores in 2008-09. With its wide penetration and strong influence on the country's economic and industrial development, the auto sector is indeed one of the major drivers of our economy. Moreover, economic liberalization coupled with its technological, cost and manpower advantage have made India one of the prime business destination for many global automotive players. With its strong influence on the country's economic and industrial development it is indeed one of the major drivers of our economy. Moreover, economic liberalization coupled with its technological, cost and manpower advantage have made India one of the prime business destination for many global automotive players. The sector has moderate direct employment and significant indirect employment; it is estimated that the sector provides direct and indirect employment to over 13 million people.

India is a global hub of automobile industry having:

- 15 Manufacturers of passenger cars and multi-utility vehicles
- 9 Manufacturers of commercial vehicles
- 16 Manufacturers of 2/3 wheelers
- 14 Manufacturers tractors
- 5 Manufacturers of engines

As India's economy continues to grow at a rapid pace, the automobile industry will be a key beneficiary. This is widely true across automotive markets from those serving customers with two-wheelers and four-wheelers to those offering commercial vehicles.

Taking into account amount of automotive industry, it is very important to satisfy the needs of customers and other stakeholders (Hoyle, 2005). Customers play a significant role in QMS and there is emphasis on customer satisfaction by meeting customer requirements. Although customer satisfaction is included in ISO 9001 but ISO/TS 16949 is more customer-focused and goes beyond (Kymal, 2004), additional requirements are aimed at strengthening the customer (Nicoloso, 2007).

2. Literature Review:

Martinez Costa, Martinez Lorente (2007), Despite the quantity of these studies there is still no clear conclusion about the impact of ISO 9000.

Terziovski et al. (2003) stated that whether or not ISO 9000 is beneficial is likely to be the major determinant of the degree to which managers will embrace or reject ISO 9000 certification in the twenty-first century.

Hongyi Sun (2000) in a sample of 316 companies in Norway stated that companies with ISO 9000 certification perform better productivity.

Rao et. al. (1997) surveyed companies in China, India, Mexico and the United States. They concluded that ISO 9000 certification was significantly related to productivity.

The findings of **Gavin Dick, Inaki Heras and Marti Casadesus (2008)** on 29 study showed that there were many studies reporting expectations of increased market share and improved product quality from ISO 9001 implementation. The studies fall into two categories snapshot (cross-

sectional) and longitudinal studies. Analyses of first group indicate that the strongest findings are for the internal benefits of less waste and lower cost. The second group of studies which are longitudinal covers four research articles that used research designs that could provide evidence of causality.

Haversjo (2000) reported that ISO 9000 certified companies have better earnings (rates of return) than similar non-certified companies (Clare Chow, Mark Goh, Tan Boon; 2003) which is not due to improved internal capacity utilization but rather to an increase in sales (Tord Haversjo; 2000). ISO 9000 certification does not have significant impact on the strategic management of quality and human resources development. These two criteria are significantly correlated to performance improvement (**Hongyi Sun; 2000**).

Evans & Dean, (2003) determine that the standards cover requirements in design, production, process, and service. The registration of a company and the certification of its Quality Management System to the standards imply that the company can comply with its documentation and consequently guarantee a consistent level of quality.

Evans & Dean, 2003; Evans & Lindsay, 2001; Okes & Westcott, (2001), The standards are not specific to a particular process, product, or industry. Hence there are no limitations in terms of the application and can be used in virtually all businesses: electronics, chemicals, services such as hospitals, banks and transportation.

Evans & Dean, (2003), ISO 9000 is extremely important for a company that wants to enter some specific international markets. Europe uses ISO certification as a method to assure product safety, and ISO requirements are applied to telecoms, medical devices, toys, appliances, etc. Resulting from its widespread use, it has been universally adopted by many nations for over 400,000 companies around the world.

Okes & Westcott (2001), Mutually beneficial supplier relationships. An organization and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value.

Evans & Lindsay (2001), New market: it allowed salespeople to bring more customers and helped companies to enter new markets which had mandated safety requirements for a variety of products.

Okes and Westcott (2001) gave the definition that TQM was a customer driven and process improvement management style, and it involved technical analysis using quantitative and qualitative methods in the efforts to continuously improve quality from all aspects.

Okes and Westcott (2001) listed eight elements that were considered essential to TQM.

These elements were so important that many companies translated them directly into their

core values or principles for daily operation

George (2002) defined Six Sigma as the disciplined application of statistical problem-solving tools that showed where wasteful costs were and pointed to the steps to take for improvement.

Pande, Newman and Cavanagh (2000) noted that Six Sigma was similar to TQM to some degree and could be considered as rebirth of TQM.

3. What is Quality certification?

When the quality is credence attribute the market for quality collapses, no matter what price consumers are willing to pay, and no matter what quality producers are willing to provide.

For every customer quality is important attribute, customer are willing to pay for quality product, means if they are satisfied for particular product. So for credence attributes the solution is certification.

Certification is a process whereby an unobservable quality of product is made known to the customer through some guarantee system. For example the environmental quality of goods means that product follows the natural environment throughout their life cycle and it score more related to environmental quality.

In the automotive industry most of the standards have designed keeping in mind customer need and suppliers. It contains many different requirements and criteria which make pressure on suppliers. The main issues raised by them were [5]:

- Proliferation of similar standards;
- Different requirements for documentation
- Various independent audits
- Lack of standardized terminology
- More terms for the same concept
- The same term with different meanings
- Different classification scheme

Previously, each company has established what are the expectations from the supplier's quality system and appropriate documentation for evaluation. Common approaches have been established then, harmonized, which took into account several issues considered key issues, which were well developed and verified for the three companies. They are:

- Quality System Requirements (QS 9000)
- Background Statistical Process Control (SPC)
- Analysis of failure modes and effects (FMEA - FMEA)
- Plan in advance of product quality and Quality Plan (APQP)

- Approval Process for production of parts (PPAP)
- Manual measurement system analysis (MSA)
- Quality System Assessment (QSA)

For developing the application of new standard the arrangement for mutual recognition principle is needed so IATF (International Automotive Task Force) was formed. These are producers of raw materials, components, parts and other services directly to original equipment manufacturers (OEMs).

4. Requirements of the Quality Standard - ISO/TS 16949:2002

Standard certifications are applicable to all internal and external suppliers of products or production material or service provider to the original equipment manufacturer (OEM). The standards reflect the automobile sector's interpretation. The eight clauses such as scope, application, terms and definitions, QMS, Management responsibility, resource management, product realization and monitoring and measurement.

ISO/TS 16949:2002 highlight the importance of cross-functional activities as can be seen from the requirement [6,7]:

- A process-oriented quality system
- Control plan for processes producing bulk materials
- Analysis of field failures
- Continual improvement
- Emphasizing defect prevention, reduction of variation & waste in the supply chain
- Customer satisfaction requirements
- Preventive action process
- Improved employee training requirements
- Communication with suppliers and customers to assure quality
- Improve employee quality responsibility
- Employee competence
- Awareness and training
- Design and development
- Production and service provisions
- Control of monitoring and measuring devices

Organizations should implement QMS system that can provide substantial benefits while maintaining consistent compliance with legislative and regulatory requirements. Economics being a key factor, the entire cost of implementation can be recovered in less than three years as

evinced by the length of time that ISO 9000 and QS-9000 have been in place.

5. Methodology:

There is best way to evaluate Quality certification by the organizations use a variety of different approaches, implementing the one that suits best depending on the company's particular requirements. This research is based on a comparative evaluation of Quality certification processes in different corporate environments using a multiple exploratory case study approach.

This study aims to finding the relationship between the quality certification standards and its impact on the processes. The nature of this research required a methodology that could be flexible to allow open questions to collect information since the organizations under study have many different settings.

The methodology suitable for this project is the case study approach, which allows a picture or model to be built up that, illustrates relationships and patterns of interaction between variables. The data used in this research are mainly collected through different sources of evidence such as: semi-structured face-to-face interviews, questionnaires, phone interviews, organization's written procedures, websites, onsite visits, and e-mail correspondence

6. Motivation:

Quality is the key process of any activity. Quality provides competitive edge through higher productivity and lower cost of Production. ISO 9000 has become one of the most sought after International standards the certification under which is considered as passport for quality. The ultimate aim should be to achieve customer satisfaction through continual Improvement of quality of products and services. This implies the importance of an exhaustive and systematic Quality Certification process which can be applied for Automobile Industry. The Quality Certification processes consist of identification the need of Quality, evaluation, and its impact on TQM and development.

An enterprise should measure Quality Certifications because:

- You can't manage what you don't measure.
- If you measure Quality, how it will improve.
- You can uncover and remove hidden waste and cost drivers in the supply chain.
- You can facilitate Quality performance improvement.
- You can increase competitiveness by shrinking Product cycle times.
- You can make informed business decisions that impact the enterprise

7. The Quality Certifications Includes:

Some important models are:

- 1) ISO 9000 2) ISO /TS 16949 3) PDCA cycle 4) Deming Prize 5) TQM

7.1 The Quality Evaluation Criteria:

- Customer Focus
- Leadership
- Total quality performance, systems, and philosophy
- Involvement of People
- Process approach.
- System approach to Management
- Continual Improvement
- Benchmarking
- Factual approach to Decision Making
- Mutually beneficial Supplier Relationship
- Product development.
- Financial capability and stability
- Productivity.
- Process and technological capability

7.2 Quality Certifications Methodology:

For evaluation of the organization, there is no best way exists but the overall objective of quality certification process is to reduce risk and maximize value to the product/process.

The framework of Quality Certification process includes Five Clauses:

- 1 Quality Management System
- 2 Management Responsibility
- 3 Resource Management
- 4 Product Realization
- 5 Measurement , Analysis & Improvement

The principal requirements of the standard are illustrated below:

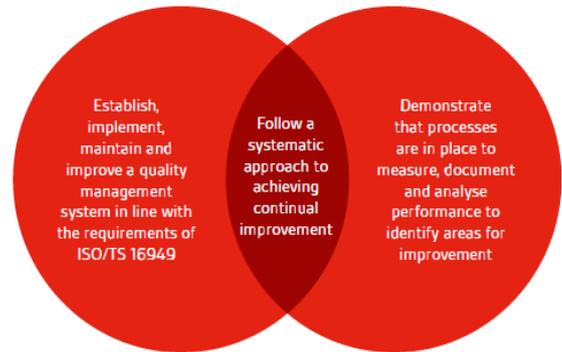


Figure 1 Principal requirement of the standard

Understanding the principles of continual improvement:

The Plan-Do-Check-Act (PDCA) cycle is the operating principle of all ISO management system standards, including ISO/TS 16949. Organization’s effectiveness can be improved by using this cycle. Focusing on a specific task, the PDCA cycle is helpful in achieving continuous improvement within the organization.

The four phases in the Plan-Do-Check-Act Cycle involve:

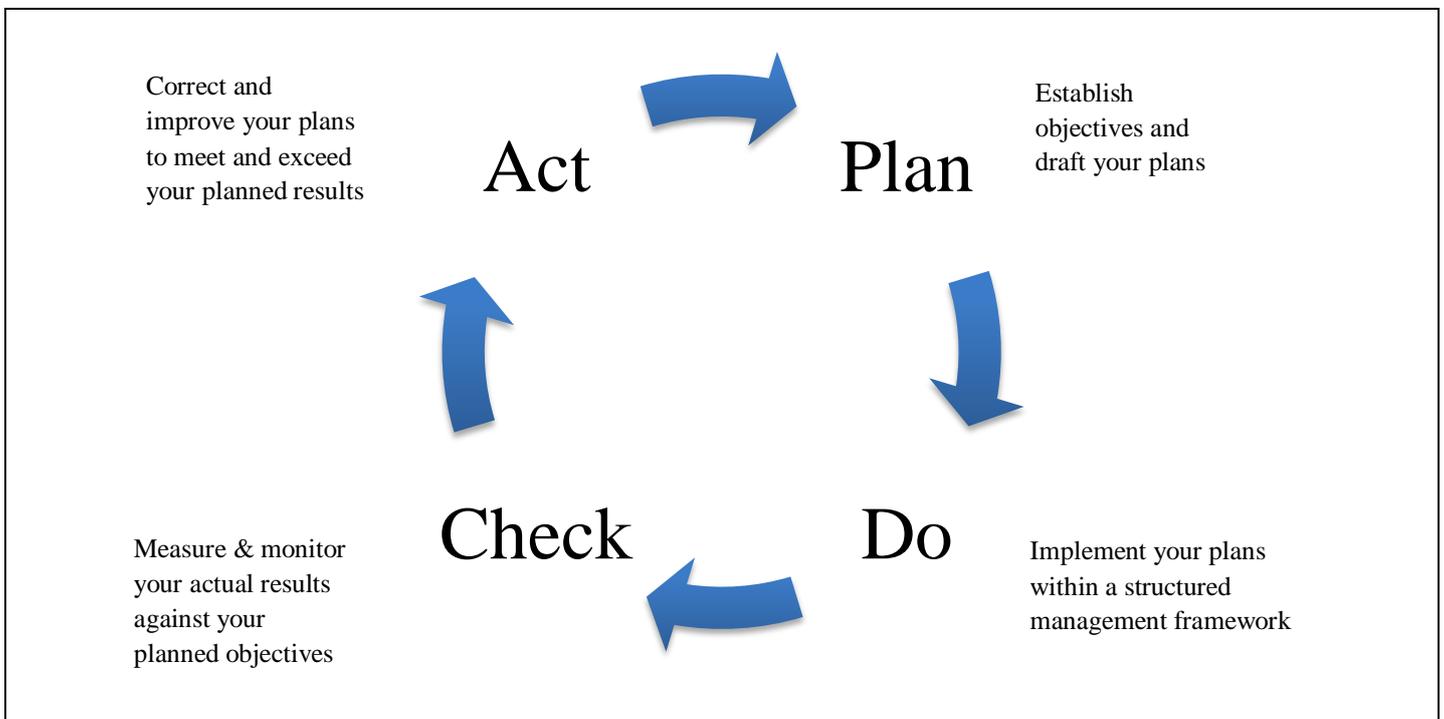


Figure 2 PDCA cycle

7.3 Importance of Quality Certifications:

Poor supplier quality leads to reduce company's revenue, impact on market share, cost of product, brand image and reputation. According to AMR survey almost 67% of the cost of poor quality can be due to supplier failure. So organization must attain reduction in cost of poor quality by implementing a quality management system.

What are the benefits of certification to TS 16949? [7]

- Global recognition as a reputable supplier - certification is recognized and accepted throughout the automotive supply chain as an industry benchmark
- Customer satisfaction - through delivery of products that consistently meet customer requirements
- Reduced cost of compliance with customer specifications - through implementation of a single management system and reduced audit requirements
- Reduced operating costs - through continual improvement of processes and resulting operational efficiencies
- Improved stakeholder relationships - including staff, customers and suppliers
- Legal compliance - by understanding how statutory and regulatory requirements impact the organization and its customers
- Improved risk management - through greater consistency and traceability of products and services
- Proven business credentials - through independent verification against recognized standards
- Ability to win more business - particularly where procurement specifications require certification as a condition to supply.

7.4 How can ISO/TS 16949 help your business?

By adopting ISO/TS 16949 certification, organization acquired most of the benefits as below:

- The automotive industry is the most efficient and productive sectors within the global economy as a result of quality management techniques. Whether you operate internationally or expand locally, certification to the standard provides firm evidence that your management system meets the exact requirements of the automotive sector.
- ISO/TS 16949 standard is proven to help deliver tangible commercial improvements such as:
- Enhanced corporate reputation: By demonstrating compliance with industry and legal requirements.

- Improved customer satisfaction: Through delivery of products that consistently meet customer requirements.
- Ability to win more business: Via easier access to global markets and new business and investment prospects.
- Improved operational processes and greater efficiency through implementation of a single management system and reduced audit requirements.
- Improved risk management: Through greater consistency and traceability of products and services.

8. Conclusion:

- In general, quality is the most important criterion in the organizations studied. In addition, delivery is a critical supplier's performance measure in the Automobile Industry, since in case of a delivery failure, this could result in a late end product to the final customer and this delay could be lethal for the client. Furthermore, in the manufacturing business this issue is noticed since these organizations can also be ISO 9000 certified.
- In India many large and medium-sized auto component producers and vehicle manufacturers have adopted the ISO/TS-16949 Standard which, we believe, has contributed to their global competitiveness. However, if we look at the entire automotive sector in India, there is much scope for further spread of the ISO/TS-16949 certification. A significant proportion of auto component SMEs in India are still without any QMS certification, like even the basic generic Standard ISO-9000. China is far ahead of India in adopting the ISO/TS-16949 Standard (also ISO-9000), and, of course, in terms of total automotive production as well.
- The study concluded that the standard of ISO 9000 series was working as a base to regulate the Group's affairs and not to improve its productivity directly as this large business by itself set the minimum levels of quality management standards.
- The study suggests that the standard to be efficient and effective is more helpful for small businesses rather than large ones and other standards with higher levels of quality management requirements may be appropriate for large businesses.
- The survey confirms suspicions that many suppliers to larger companies will be required to seek registration in the coming years, and that more and more company's view registration as a critical marketing tool. Almost 96 percent said they were

now using, or planned to use registration for those in the future.

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