Quality Assurance Impact on Automotive Industry

Is Automotive Industry going in the right way ?!I

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Executive Summary

Over the last 30 years, the manufacturing industry has undergone a notable shift in terms of pushing geographic and cultural boundaries. An increased dependence on global trade, offshore labor and a worldwide supply chain are the determining factors for where, what, when and how produced goods reach consumers in an increasingly level global playing field. This shift has been particularly prevalent in the automotive sector, as automotive manufacturers obtain parts from hundreds of suppliers, and the standards for quality are becoming more stringent.

In this environment, opportunities for business success can be fleeting. Even under ideal circumstances, an unforeseen, outlying factor can determine whether a company wins or loses an important contract. It is critical to establish a competitive advantage to simply maintain profits, let alone increase revenues. Businesses can simultaneously reduce costs and remain competitive by investing in process improvements that increase quality. For example, identifying and implementing efficiencies in production methods can result in reduced scrap, rework and even labor costs. Automotive manufacturers are rapidly adopting technologies for the automation of not only processes, but quality control functions.

Automotive manufacturers are trying to adapt to the latest standards to create a faster, safer and cheaper car, so they try to apply the latest quality standards to get to their common goals which is increasing revenue and increasing customer satisfaction.

Methodologies such as statistical process control (SPC), six sigma, lean manufacturing, and total quality management (TQM) have arisen out of the steadily emerging culture of continuous improvement. They are key aspects of the operations management strategies that help manufacturers gain the competitive advantage needed to remain profitable. In the automotive industry, focusing on comprehensive process improvements leads to the creation of more precise parts with less variability.

Introduction

In times of severe competition, it is of crucial importance to create a competitive advantage to differentiate from the competitors and to sustain the business of the company. This shows that a customer-focused quality management is one way to create a sustainable competitive advantage. Quality controls along the whole value chain before, during and after production-leads to failure free products, which save costs on the one hand and have thus a positive influence on the company's revenue. On the other hand, failure free products that meet the customers' expectations lead to satisfied customers who build up a brand loyalty and conduct retention sales, which have a positive influence on the company's sales, market share as well as the overall image.

Furthermore, it is important to listen to 'the voice of the customers' and get an insight in the customer's needs and wants. To fulfil or even exceed their expectations leads to customer satisfaction, which is a key to success in today's business world. In addition, the customer demands in regard of quality are growing continuously and new technologies are appearing on the markets on a regular basis. Therefore, the producers are forced to keep to the latest technology developments and to get hold on the changing customer needs.

But even without this external pressure, quality improvement is justified from a cost point of view.

Today's business environment creates a growing need for quality management. Tougher competition leads to the demand for cost savings and higher profitability. These days the consumer can choose from a variety of similar products, which are often exchangeable in the eyes of the customer. If they are not satisfied with a product's performance, they switch to the competitor's brand. Thus, the focus on the customer's needs and wants in line with quality is one way of differentiation from the vast number of competitors. Satisfied customers are likely to build up a brand loyalty and this helps to ensure long term sales. The explosive growth of technology led to a higher product complexity and thus favored the quality movement.

In this research, I'll be discussing I'll be discussing the effect of applying quality assurance standards and methodologies on the automotive industry.

Flashback

Before Getting into details, let’s go back really quick to the post WWII Era in the American Industry, back then companies was selling anything that it can make regardless of its quality, Quality means Everything applied that make the product reach an area called almost-perfection.

Quality Advocates like Edward Deming (The father of Quality Evolution) were being ignored in the US, But the Japanese were smart enough to listen to him.

The superior quality control procedures of today's Japanese industry were originally developed under the guidance of Edwards Deming.

Further, the statistical and mathematical element of Deming's procedures, and, in turn, those of Japanese industry were based on the work of another American quality control expert, Walter Shewhart.

What Deming sought was a mathematical means of controlling the level of quality by seeking "ever finer manufacturing tolerances".

Deming insisted that true quality control began with a real commitment from top management. American companies, particularly automobile manufacturers, however, made quality control a minor function of middle or lower level management. People would agree that fear is the enemy of success. According to Deming, fear is the enemy of innovation and improvement.

"No one... can put in his best performance unless he feels secure. Secure means without fear...," stated Deming.

I'll discuss Deming's Strategy and its applications further in this research.

So, our Question will be:

Is Automotive Industry going in the right way?!

My Objective is to answer this question.

Core

I'll be discussing in this research some of the most famous and most acquired ISOs in Automotive industry.

Let's Begin.

Deming's Strategy In brief

After applying Deming's techniques, Japanese automotive businesses like Toyota saw great success Their quality was far superior to that of their global competitors, and their costs were lower. The demand for Japanese products soared – and by the 1970s, many of these companies dominated the global market. American and European companies realized that they could no longer ignore the quality revolution.

The 14 Deming's Points

1- Create a constant purpose toward improvement.
2- Adopt the new philosophy.
3- Stop depending on inspections.
4- Use a single supplier for any one item.
5- Improve constantly and forever.
6- Use training on the job.
7- Implement leadership.
8- Eliminate fear.
9- Break down barriers between departments.
10- Get rid of unclear slogans.
11- Eliminate management by objectives.
12- Remove barriers to pride of workmanship.
13- Implement education and self-improvement.
14- Make "transformation" everyone's job.

Deming's 14 points have had far-reaching effects on the business world.

While they don't really tell us exactly how to implement the changes he recommends, they open our eyes on what to change. The challenge for all of us is to apply Deming's points to our companies, departments, and teams. Taken, the 14 points are a guide to the importance of building customer awareness, reducing variation, and fostering constant continuous change and improvement throughout organizations.

ISO 9000

The ISO 9000 family of quality management systems standards is designed to help organizations ensure that they meet the needs of customers and other stakeholders while meeting statutory and regulatory requirements related to a product or program.

ISO 9000 deals with the fundamentals of quality management systems, including the seven quality management principles upon which the family of standards is based.

ISO 9001 deals with the requirements that organizations wishing to meet the standard must fulfill.

Third-party certification bodies provide independent confirmation that organizations meet the requirements of ISO 9001. Over one million organizations worldwide are independently certified, making ISO 9001 one of the most widely used management tools in the world today. However, the ISO certification process has been criticized as being wasteful and not being useful for all organizations.

The increase in ISO 9001 certification is shown in the tables below.

Source: Wikipedia

Worldwide total of ISO 9001 certificates (end of each year)

2000[24]	2001[24]	2002[24]	2003[24]	2004[25]	2005[25]	2006[25]	2007[25]
409,421	510,616	561,747	567,985	660,132	773,867	896,929	951,486
2008[26]	**2009**[26]	**2010**[27]	**2011**[27]	**2012**[28]	**2013**[29]	**2014**[29]	
982,832	1,064,785	1,118,510	1,111,698	1,096,987	1,126,460	1,138,155	

The ISO 9000 series are based on seven quality management principles (QMP)

The seven quality management principles are:

QMP 1 – Customer focus

QMP 2 – Leadership

QMP 3 – Engagement of people

QMP 4 – Process approach

QMP 5 – Improvement

QMP 6 – Evidence-based decision making

QMP 7 – Relationship management

The ISO 9001 standard is generic; its parts must be carefully interpreted to make sense within a organization. Developing software is not like making cheese or offering counseling services, yet the ISO 9001 guidelines, because they are business management guidelines, can be applied to each of these. Diverse organizations—police departments (United States), professional soccer teams (Mexico), and city councils (UK)—have successfully implemented ISO 9001:2000 systems.

Over time, various industry sectors have wanted to standardize their interpretations of the guidelines within their own marketplace. This is partly to ensure that their versions of ISO 9000 have their specific requirements, but also to try and ensure that more appropriately trained and experienced auditors are sent to assess them.

Automotive quality standard ISO /TS 16949

ISO/TS 16949 is an ISO technical specification aimed at the development of a quality management system that provides for continual improvement, emphasizing defect prevention and the reduction of variation and waste in the automotive industry supply chain.

It was prepared by the International Automotive Task Force (IATF) and the "Technical Committee" of ISO. It harmonizes the country-specific regulations of quality Management systems.

The ISO/TS16949 standard unites automotive industry quality requirements that exist worldwide, and is therefore recognized by both the American and the European automobile industries. The automotive industry has become increasingly international, and this has led to the need for a commonly accepted management system.

About 30 percent of the more than 100 existing automobile manufacturers affiliate the requirements of the norm but especially the large Asian manufacturers have differentiated, own requirements for the quality management systems of their corporate group and their suppliers.

ISO/TS16949 is based on ISO9000, EAQF (French), VDA6.1 (German), AVSQ (Italian) and QS9000 (US) automotive catalogues.

ISO/TS16949 is a breakthrough as it combines global quality system requirements in one standard which can be used along the automotive supply chains.

Automobile manufacturers such as GM, Ford, Volkswagen, BMW, Nissan, Renault, Peugeot, Citroen and Daimler Chrysler require their suppliers to be ISO/TS16949 certified. Certification in accordance with ISO/TS16949 has several advantages.

It creates transparency and comprehensibility for all processes. Thus, it becomes possible to evaluate the profitability of all the divisions of a company. It is also the door opener to the automotive supply chain. Instead of fulfilling several national requirements, companies need only to comply with one international standard, reducing the time and the cost of the certification process.

What are the benefits of ISO/TS 16949 Certification?

• Improved product and process quality

• Provide additional confidence for global sourcing

• Lowers costs through improved customer and supplier communication

• Open up supplier resources for other quality activities

• Consistent QMS approach in the supply chain for supplier/subcontractor development

• Reduction of variation and increased efficiency in the supplier chain

• Reduction in 2nd party system audits

• Reduction in multiple 3rd party registrations, only one certificate

• Common language to improve understanding of quality requirements

• Customer confidence from non-automotive markets as well as automotive markets.

What are TS 16949:2002 requirements?

The requirements cover a wide range of topics, including:

• Your organization's top management commitment to quality, its customer focus,

• Adequacy of its resources, employee competence,

• Process management (for production, service delivery and relevant administrative and support processes), quality planning, product design, review of incoming orders, purchasing, monitoring and measurement of its processes and products, calibration of measuring equipment,

• Processes to resolve customer complaints, corrective/preventive actions and requirements to drive continual improvement of the QMS.

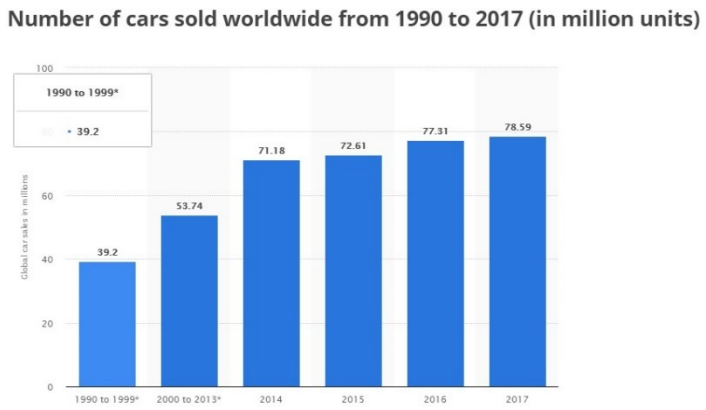
• Last, there is a requirement to monitor customer perceptions about the quality of the goods and services it provides.

TS 16949:2002 does not specify requirements for your products or services; these are specified by your customer. It specifies requirements for your quality management system. An effective QMS will reap the benefit of providing/improving your ability to consistently meet customer product and other requirements.

Results

Due to the applying of quality standards methodologies, Automotive Manufacturers Sales have increased a lot in the past few years.

As TQM Philosophy focuses on Customer Satisfaction and continuous Improvement we can also notice the increasing of car sales worldwide in the below figure.



We can take an example and look at the German automotive industry after applying TQM Philosophies, VDA & ISO Methodologies.

The automotive industry is the largest industry sector in Germany. In 2016, the auto sector listed a turnover of EUR 404 billion, around 20 percent of total German industry revenue. Source: VDA 2017

Germany is Europe's number one automotive market; accounting for over 30 percent of all passenger cars manufactured (5.75 million) and about 20 percent of all new car registrations (3.35 million). Source: VDA 2017

Germany is home to 41 automobile assembly and engine production plants with a capacity of over one third of total automobile production in Europe. Source: ACEA 2016

One in every five cars worldwide carries a German brand. Source: VDA 2015

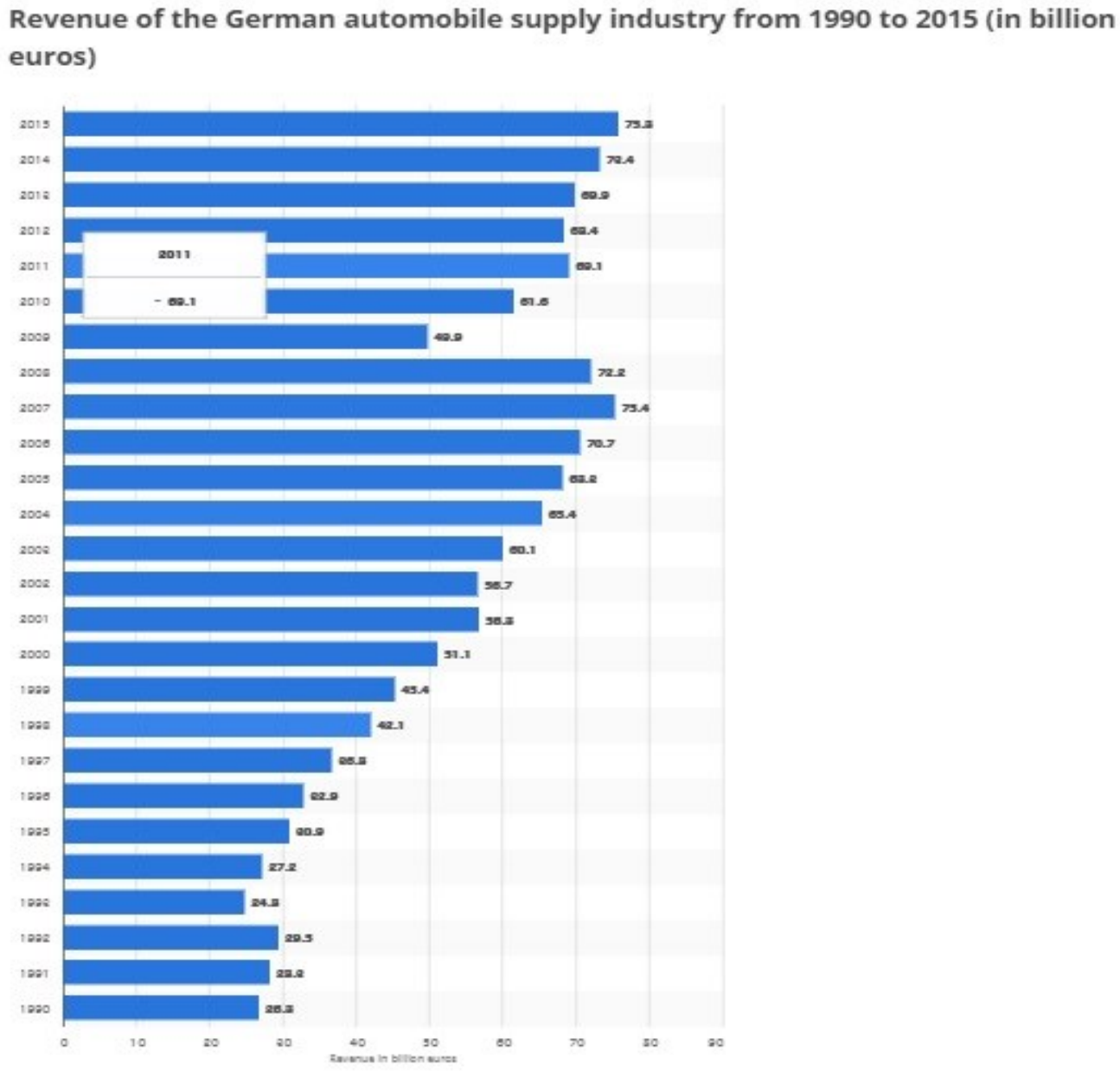
In 2016, domestic internal automotive industry R&D expenditure is expected to reach EUR 21.7 billion, equivalent to 35 percent of Germany's total R&D expenditure. Source: VDA 2017

21 of the world's top 100 automotive suppliers are German companies. Source: Automobilwoche, Spezial Dez. 2015

Around 77 percent of cars produced in Germany in 2015 were ultimately destined for international markets – a new record. Source: VDA 2017

R&D personnel within the German automobile industry reached a level of just about 110.000 in 2016. Around 808.500are employed in the industry as a whole. Source: VDA 2017

German Car Sales have increased more than 280% in the last 27 Years as show sin in the figure below.



All are satisfied, Customers are satisfied & Companies increased their revenue all of this happened because of the changing of quality standards in the fields of Safety, Emissions and Performance.

Conclusion

My Research have come to its end, So finally We'll have seen the effect of applying Quality Standards on a field of industry and it proved its efficiency.

Applying quality standard to all fields of life have become ambient.

There are many methodologies I didn't discuss in this research that of use today in the automotive industry, but I discussed the most famous and important ones.

Looking for Success?? Then Check your Quality Standards and philosophies.

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