

GLOBALIZATION EFFECTS ON SPECIFIC REQUIREMENTS IN AUTOMOTIVE PRODUCTION

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Abstract

Currently, there is worldwide overcapacity in the industry - and this has forced manufacturers to contain and even reduce costs. Globalization makes it possible to use the world best improvement techniques in order to reduce costs and satisfy customer.

Key words

customer specific requirements, customer satisfaction, globalization, tools and methods of quality management

Introduction

As the automobile business grows, it is also becoming more competitive. Competitive pressures have forced most companies to increase their focus on using world best improvement techniques. A major benefit of globalization is an access to improvement techniques being developed around the world.

Automotive companies are finding that globalization offers many challenges and opportunities. By establishing an integrated management system, companies can manage the complexity of a global operation so that they can leverage these opportunities where it makes sense for their business.

Customer special requirements versus ISO and other standards

Automotive production is one of the key branches of the Slovak economics. Plenty of world automotive suppliers have come to Slovakia to open their production factories. There were also new Slovak factories opened to meet the needs of the automotive giants [1]. At the

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time of economic crises, each organization makes its best to effectively manage its internal and external processes. It finally leads to setting their specific requirements for suppliers.

Nowadays, high quality of products and affordable price are important, yet not enough to succeed on the global market. Personal relations, specific requirements and knowledge are very important too. Satisfaction of customers' needs should be the primary organizational goal. If the organization wants to be successful, it must follow customers' needs and satisfy these needs as soon as possible. In order to satisfy customers' need in all processes, the organization should establish the management system and make it work for the customer.

It is not enough to build the quality management system according to ISO 9001:2009, not even enough to meet the requirements of ISO TS 16 949:2009 developed especially for automotive production. It is important nowadays to meet the specific requirements of each customer. Different customers have their specific requirement based on their special market strategy in order to satisfy customers' needs better than the competitive organizations do. These special requirements are often based on the manuals of the American quality management standards QS 9000 or the European standards for quality management VDA.

The American organizations often require that their suppliers use QS 9000 manuals such as APQP (Advances Products Quality Planning), PPAP (Production Part Approval Process), MSA (Measurement system analysis), SPC (Statistical Process Control), FMEA (Failure Modes and Effects Analysis) and others. The European automobile producers usually require from their customers to meet for example VDA 4.2 for FMEA, to meet VDA 6.1 in terms of audits and EMPB products approval process. These are just some of the basic customer requirements for automotive production. Besides these requirements, automotive producers often have some special needs which they want their suppliers to fulfil (Fig. 1).

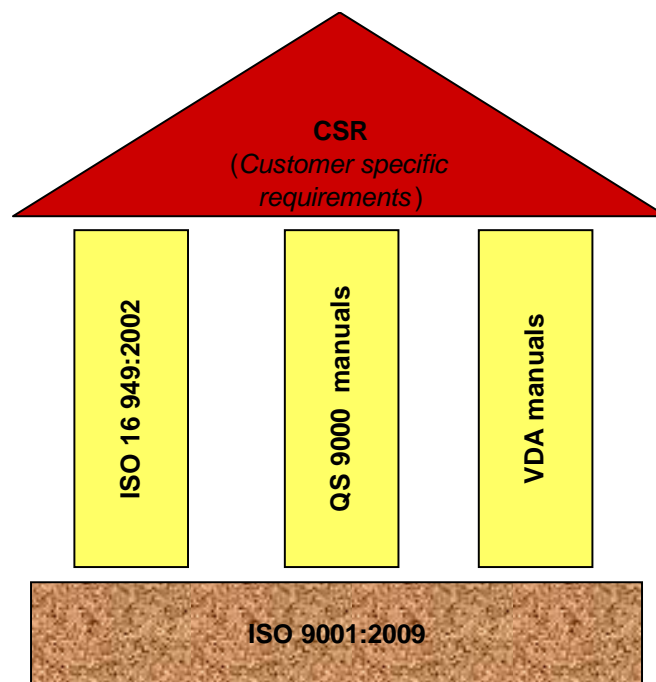


Fig. 1 *Quality management system structure in supply house for automotive production*

To be successful, the organization should flexibly react to satisfy customers' needs. Financial success is contingent on reaction time and outlays amount. It is important to adapt organizational strategy to this trend.

Application of new trends in tools and methods of quality management

Globalization brings the application of new tools and methods in different factories all over the world. There are quality management tools and methods which used to be applied only in particular countries. Nowadays, those methods are widely used all over the world in different production branches.

Product development process is one of the key production processes. Each development system has its advantages and disadvantages. That is why the American automobile producers such as Ford, Daimler Chrysler and General Motors developed an integrated system for product development. Since that time, Advanced Product Quality planning (APQP) and Production Part Approval Process (PPAP) are widely used not only in America, but also by the Korean and Japanese automobile producers. Even some European automobile producers prefer APQP and PPAP instead of VDA standards.

Advanced Product Quality Planning is a formal standardized and structured method of defining and implementing steps to produce a product that satisfies the customer. PPAP is a part of approval process within APQP. APQP is a framework of procedures and techniques used to develop products in industry, particularly the automotive industry. It is quite similar to the concept of Six Sigma.

The Production Part Approval Process (PPAP) is used in the automotive supply chain to establish confidence in suppliers and their production processes, by demonstrating that "....all customer engineering design record and specification requirements are properly understood by the supplier and that the process has the potential to produce a product consistently meeting these requirements during an actual production run at the quoted production rate." Version 4, March 1st 2006 [1].

Japanese are famous for their statistical methods. **7 basic (Japanese) tools** of quality managements are widely used all over the world. Since that time, one more Japanese method has become famous. **5S** (Seiri – Chipping, Seiton – Visual disposition, Seiso – Clearance, Seiketsu – Standards building, Shitsuke – Improvement) is a method which has to bring tidiness and discipline to the workplace. Many organizations have started to use this method even though discipline is the traditionally Japanese feature. 5S brings systemization to the workplace, making subsequently the management system easier. It saves time and money. This is one of the most often used tools for housekeeping, standardization and continuous improvement.

5S method the 8D method has become extremely important for many organizations in the world as well. The 8D methodology is a tool for problems root causes analysis, corrective actions definition and problems of repetitive occurrence elimination. The 8D is a technique for products and processes improvement. 8D methodology is a team-oriented problem solving tool, which consists of 8 basic steps. Team work is considered to be much more efficient than individuals' efforts subtotal. This tool prevents the common mistakes made by individuals or problem solving teams, who frequently develop elegant solutions to the wrong problem - or disguise the evidence of failure with quick fixes without finding the root causes [2].

The 8D methodology comes from the USA. The U.S. government first used the 8D-like process during the World War I, referring to its military standard 1520 (Corrective action and disposition system for non conforming material). Ford Motor Company first documented the 8D method in 1987 in a course manual entitled “Team oriented problem solving”. This course was written at the request of senior management of the Power Train organizations of the automaker facing growing frustrations of the same problems that were recurring year after year [3].

There are also many new tools and methods of quality management which have become widely used together with the 8D. They are for example *Is / Is not analysis* and *5Why* tools. *Is / Is not analysis* is very easy to implement and represents an efficient method to analyze process shortcomings. It is usually used in terms of step 4 Root Cause Analysis of the 8D tool. *Is* is a very efficient way of how to define what had not been done in order to prevent the analyzed problem occurrence.

“If you don't ask the right questions, you don't get the right answers. A question asked in the right way often points to its own answer. Asking questions is the ABC of diagnosis. Only the inquiring mind solves problems.” said Edward Hodnett.

Another globalized Japanese tool is **5 Why**. The methodology was designed by Sakichi Toyoda and was first implemented in Toyota Motor Corporation. The architect of the Toyota Production System, Taiichi Ohno, described the 5 whys method as “... the basis of Toyota's scientific approach ... by repeating why five times, until the nature of the problem as well as its solution becomes clear [4].

Globalization effects on specific customers’ requirements

Specific customer’s requirements are a component of ISO/TS 16949:2009 that cannot be ignored. In fact, customer’s specific requirements are more important in ISO/TS 16949:2009 than they were in QS-9000 and VDA standards, which considered them as part of the standard. Detailed customer specifications can be implemented into the processes by following a documentation strategy. Mapping the specific customer’s requirements to processes is the least risky, and so the best, documentation strategy. Adopting a common process for the entire organization and clearly indicating different ways should be performed to satisfy different customers [5].

Globalization brings the best improvement tools and methods which have been developed in different countries and companies throughout the world. Organizations help each other to improve their internal and external processes. Using the same tools for the same processes in different organizations in the world helps the suppliers who can use familiar techniques to communicate with different customers and satisfy different customers’ needs.

Despite the globalization advantages, modern organizations make their best to develop unique products and services to satisfy their customers. Modern organizations want to offer their customer something more than the competitive organizations do. In this manner, specific customers’ requirement phenomenon develops.

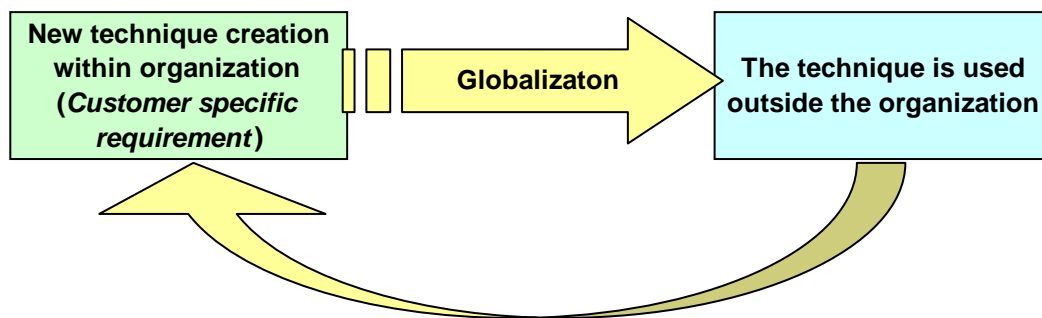


Fig. 2 Globalization vs. Specific customer requirements

Thus the globalization phenomenon in fact generates new specific customer's requirements. These specific requirements will soon become globalized and used in competitive organizations (Fig. 2). This may be called global continuous improvement spiral.

Summary

Globalization is a process which, in terms of quality management, introduces the application of similar improvement techniques in different organizations in the world. On the ground of the particular tool efficiency, it becomes a famous methodology which is used in different organizations all over the world. The techniques such as APQP, PPAP and 8D are the example of the quality management technique globalization. However, in order to satisfy customers' needs and to offer the customer something extraordinary, the organizations continuously specify their special requirements. It actually drives the global continuous improvement process.

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