

‘Quality in the digital era: impact on life and industry in Germany’

‘Quality’ and ‘Germany’ – two terms which are often associated. ‘Quality’ and ‘Germany’ – that simply fits together. Both terms are reflected in the identification of origin ‘Made in Germany’. ‘Made in Germany’ is an internationally renowned, accepted and thus very valuable brand – this has been a fact for several decades. Again and again studies show that ‘Made in Germany’ is an esteemed label of origin also internationally. By ‘Made in Germany’ Germany differentiates in the world-wide competition. It provides a real competitive advantage for German companies.

However, in times of international production and supply chains the term will quickly become relative. Even globalization demands a new, broadened concept of ‘Made in Germany’ to keep pace with this development. This extension could be made by the term ‘Quality’. ‘Made in Germany’ would be ‘Quality made in Germany’. The focus would have to be shifted from ‘Made’ in the sense of ‘produced in’ to an understanding of quality that reflects an attitude and a claim to products and services as a whole. This attitude would characterize German companies as well as companies producing in Germany. This ‘Quality made in Germany’ should include further aspects as, for example, ‘Engineered in’, ‘Designed in’ or ‘Innovated in’. The concept of quality would have to be extended as well. It is the German claim to quality which is reflected not only on the production side but also in the basic concept of products and services that we have in Germany.

Digitization as driving force of globalization

When looking at the term globalization, it does not describe a homogenous development – here as well there are many different tendencies and driving forces with effects world-wide. Digitization is one of the most important driving forces of globalization. It acts disruptively for many approved business models, revolutionizes the entire industry or makes sectors disappear. It forces companies to reconsider their entire strategy. And it changes customer needs and expectations massively. These new possibilities require a new understanding of quality. The companies in Germany have also accepted the huge importance of digitization. In June, Germany’s digital association bitkom announced a steadily rising number of members. Also more and more companies that are not from the IT but from completely different sectors (for example chemistry) join bitkom.

A lot of new technologies and areas of application

But, which technologies and areas of application are we talking about when talking about ‘digitization’? What is the impact of digitization on the industry, but also on people? We are talking about areas such as ‘Big Data’, where it is necessary to sensibly filter and use huge amounts of data as ‘Smart Data’. We are talking about areas such as Artificial Intelligence that enable an increasingly targeted contact to customers. We are talking about new technologies such as the Blockchain that mostly remove the need for intermediaries in many areas. This very issue Blockchain – started as niche technology – has taken off in a brilliant pace during the last three or four years, also publicly. Currently ‘Blockchain’ is a very good example because it may be used in many ways. At first this technology put the financial industry in a state of turmoil (just think of the old quote by Microsoft founder Bill Gates in 1994: ‘banking is necessary banks are not’) and will now (in perspective) be examined carefully and tested regarding possible areas of application in more and more areas and sectors – starting from energy, via industry 4.0 up to automotive. There is hardly one large corporation that has not founded an Innovation Lab to test the possibilities of the Blockchain.

You always have to remember: All these areas raise not only technical but also ethical questions. For example, autonomous driving: In the case of an accident, who shall be avoided and spared by the car, whose injuries or even death shall be accepted (It is not a matter of knowing that in such situations even the person does not react ethically but intuitively. For autonomous driving you can define from the beginning how a car has to react, this is not possible for persons).

Digitization changes customer needs

Let's take the topic Social Media – right here we are at the transition to the client side. The technical platforms created by digitization ensure more transparency. By the networked community quality deficits of services and products are not only recognized fast but also distributed faster and with a wide range. In a certain manner this results in a democratization of product and service design, in equal levels between large corporations and their customers. The pressure rises for the companies – they do not only have to provide top-quality offers but also be fast and up-to-date with their products. Product life cycles are dramatically shortened. Customers expect the latest versions and updates at increasingly shorter intervals. Customer loyalty has decreased dramatically. One missed innovation cycle may be enough to push a company out of the market. This development focusses – metaphorically speaking – automatically on the person – in this case his role as customer. The customer need – also the one he is not aware of or has not recognized yet – is in the focus. A good example is the Smartphone, which unites both: Highest usability as expression of highest customer focus and speed in the form of increasingly shorter product life and innovation cycles. Nowadays, especially in the electronics sector, you have to create products that may be handled intuitively by the customer, despite the increasing complexity of functionalities – and without having to study the operating instructions which are mostly only available as pdf.file.

Challenges for the quality management

This rapid advance is a major challenge for the classical quality management. Increasingly shorter development cycles result in products that are not always fully perfected when launched into the market. The Smartphone is again a good example: Two years ago Samsung had big problems with exploding accumulators. Increasingly beta-release products, still in the prototype stage and certainly not fully tested, are launched. Not without reason the number of call-backs in the automotive sector is increasing. This is no wonder, vehicles that are even more complex and developed faster increase the risk for defects.

Regulation gap and over-regulation

How do legislators and supervisory authorities react? They assume a gap in the regulation and create new regulations, laws and requirements to close this gap. The problem is that these assumed regulation gaps are totally new challenges in a completely changed situation. And as Albert Einstein already knew, problems cannot be solved with the same way of thinking by which they were generated. Legislators and supervisory authorities react with their regulatory requirements but with measures following the old way of thinking. They create a kind of 'over-formalization', and thus increasingly more of the things that do not help. This does not solve the problems of the new world. The reaction of the affected companies is simple: They try to avoid this over-regulation – also at the expense of efficiency and

credibility of the quality management. Out of a supposed greater transparency a fraud evolves. Another example are the filter bubbles created by the supposedly transparency creating social media applications.

Digitization and changed customer needs are closely interlinked

Digitization and changed customer requirements are inter-linked. Digitization creates solutions which have not been possible up to now. First it creates customer enthusiasm that becomes customer expectation fast. That is the product side. Due to the possibility of networking digitization creates a new customer strength by uniting the votes of many, previously separated customers. This is the customer side. On the other side, increased customer expectation and strength act as driving force for new digitization. There are new chances for exchange by using Social Media applications. Companies can come into exchange with customers and, where necessary, work together with them regarding product development.

At the customer side another aspect is important: The demand for increased sustainability. Primarily it is about a non-technical and non-digital aspect, but it is the digital networking which emphasizes the customer requirement for sustainability of products and services by pooling, distribution and channeling of their opinion.

For the companies this is a doubled challenge: Digitization attacks the business model from one side, from the other side there are customers with their changed requirements.

New developments, new risks

New developments also stand for previously unknown risks when utilizing the new digital possibilities to create value. A good example for this is the industrial sector. In Germany the term 'Industry 4.0' has been introduced. It stands for an industry with networked production. Cyber security requirements to this sector are completely different from the requirements to the traditional IT-Office-Infrastructure. In a company network it is relatively easy to install firewalls and protection software but not in a production plant that has to run around the clock. The question of competence has to be asked here. Who is responsible: IT or production staff? The DGQ is aware of this need and has designed trainings in cooperation with the renowned Fraunhofer Institute of Optronics, System Technologies and Image Exploitation (IOSB in German). It provides the participants with continued trainings regarding cyber security in networked production and thus supports the companies on their way into digitization. But this can only be the beginning. At the moment the topic 'Cyber security in networked production' is still flying below the radar.

Companies face increasingly more demands and challenges. They not only have to develop their products and services in a consistently high quality faster but also have to act in an ethically sound as well as environmentally and socially responsible manner. All this stipulates new requirements to the quality management which has to think and also integrate more and more areas.

'Agilisation' as solution for many of these problems

How do companies react to the challenges of digitization? At the moment an approach is discussed in a lot of companies: 'agility'. Agile companies are faster, more mobile, more innovative. They launch products faster, manage to adapt to changing framework conditions

and to realign their whole culture for this. Agile companies are typically networked organizations. They use new, creative methods to develop new ideas and solutions, and they manage their projects in new ways.

Design Thinking and Scrum are typical methods used in these companies. Design Thinking is a method for product design and problem-solving. Scrum is a method for the management of development projects, it can also be transferred to other project areas. Agility stands for working in shorter and faster cycles to be able to check the interim results in a lot of small iteration steps. Especially regarding project work you can recognize continually and at an early stage if you are still on the right track. Agility at company level means recognizing the disruptive potential of new (technological) developments in time and being able to adjust strategy as well as business model and product range at an early stage.

Digitization and agilisation are interlinked

Let me say it again: Agility and digitization are also interlinked – as before digitization and **customer needs**. On the one hand, due to its disruptive potential digitization forces companies of different sectors to 'agilise'. On the other hand, digitization provides all tools and instruments for agile work in the companies. As examples shall be mentioned Social-Collaboration-Tools and platforms. Interestingly some of the agile methods come from the area IT (respectively digitization). The method Scrum has been developed by IT staff. This is reflected in the manifest for agile software development. One thing must be clear for all companies thinking about agilisation: In conjunction with agilisation there is a far-reaching cultural change, for example the cooperation in interdisciplinary teams across hierarchies. This also has effects on the corporate culture. Here, too, happens a process that emphasizes personal responsibility. Analogous – so to say – to the democratization process, that is ever more affecting the relationship between companies and customers.

Here we have three aspects affecting each other in their triad and to some extent also requiring each other: Digitization, customer requirements, agilisation. And in this tension field between these three aspects one thing becomes clear very fast. With all technologization and automation the person is in the focus again – as customer anyway, but also as member of staff because he plays a decisive role in the corporate culture.

A new quality concept is necessary...

We must be clear on one thing: There has to be a new quality concept. It has to be a concept promoting the concept of quality and adding new facets to it. What does 'quality' stand for in times of digitization, considering sustainability and in terms of the people? The new quality concept has to be able to answer these questions. It has to include different aspects such as quality of algorithms of artificial intelligence. It has to identify that quality results, more than ever before, from networking, as an effect of the network between international supply chains that have increasingly more and more international links. It also has to recognize that 'quality' is 'quality of life' nowadays – with all its facets. This new quality concept has to master all this and much more, but there is one thing it must not do: It must not question itself as factor for prosperity, business success or quality of life. This quality concept has to show that quality – still and in the long-term – is a decisive factor for differentiation and thus the success of every business location. This applies particularly to Germany.

...and a new quality management is necessary

And on this basis the challenge in the company is to create an appropriate system which enables the managing of this new quality. Existing quality management systems with their often relatively rigid processes are no longer sufficient to stay innovative and become agile. This is a huge challenge for quality managers – precisely what they have always done well, maybe even legitimized (clear hierarchies, stable processes, explicit key figures, decision making based on facts) has to be questioned and, if necessary, to be modified for the purposes of a stronger agilisation. At the same time it is a huge chance to actively pursue this topic to appear not longer as the brakeman in the company but as someone who has understood that quality management can be a driving force towards the agile company. Quality management can take over the position it should have under an integrated perspective: The position of a promoter who pools quality-related topics and spreads them throughout the entire company.

The DGQ dedicates itself to important issues of the future

It is precisely these questions that worry and stimulate us as German Association for Quality. How could the quality management of the future look like? How can it stay effective and accepted in these disruptive times of digitization? How can it promote innovations instead of – at least apparently – hindering it? The DGQ is THE association for quality in Germany. It is the first port of call for all questions regarding quality. It is the expert association for quality management, has a large network and offers a unique platform for all who are interested in quality. It cannot keep this status if it does not deal with these core aspects and questions about the future as the effects of digitization besides the classical specialist questions. Two years ago the DGQ decided to address the subject 'agile quality management'. The DGQ keeps on working on that, also with the support The DGQ continues working on these issues consequently supported by many cooperation partners from science, research and economy.

German preconditions, but China catches up (optional)

Germany actually has good conditions in the international competition. The formerly big advantage of German products regarding quality and innovation has shrunk considerably. Other nations have closed the gap and caught up and even overtaken in some areas. By using the keyword 'innovation' it strikes directly that these disruptive, mostly digital business models are created mostly in northern America and Asia, particularly in China, but not in Germany. 'Made in Germany' –is no longer a strong synonym for innovation in the international competition. Mainly there is a backlog regarding the digital infrastructure (fast internet). It is generally valid for other conditions such as education, risk mentality and the connected financing models. The whole system is designed for a relatively stable linear pace of change. Germany has had very good experiences with this system for decades. It seems increasingly what makes us strong is slowing us down in times when fast changes are needed.

Germany and China benefit from cooperation

China has another approach. In recent years China has made significant progress regarding the issue 'quality'. When talking about digital, innovative and maybe also disruptive business models China is already among the leaders and already one step ahead of Germany. I feel confident that – even though we are in international competition – China and Germany can learn a lot from each other. This was also the general course of last year's Sino-German-

Quality-Forum, which was for the first time held in Germany in 2017. We are competitors but can benefit from cooperation when connecting Chinese pace with German quality.

The DGQ has cooperated with Chinese institutions for years

The DGQ has cooperated with Chinese institutions and authorities for a number of years. It has offered and carried out different trainings for quality personnel in China. There are very close connections to the SAQ as can be seen in different Memorandum of Understanding or our engagement at the Sino-German Quality Forum. This cooperation is very productive. Let us strengthen this cooperation. We can work together to find new solutions and standards for the digitization that take all three aspects into consideration: quality, industry and people.

I look forward to meeting you at the next Sino-German Quality Forum – then again in Germany.

Many thanks for your attention.