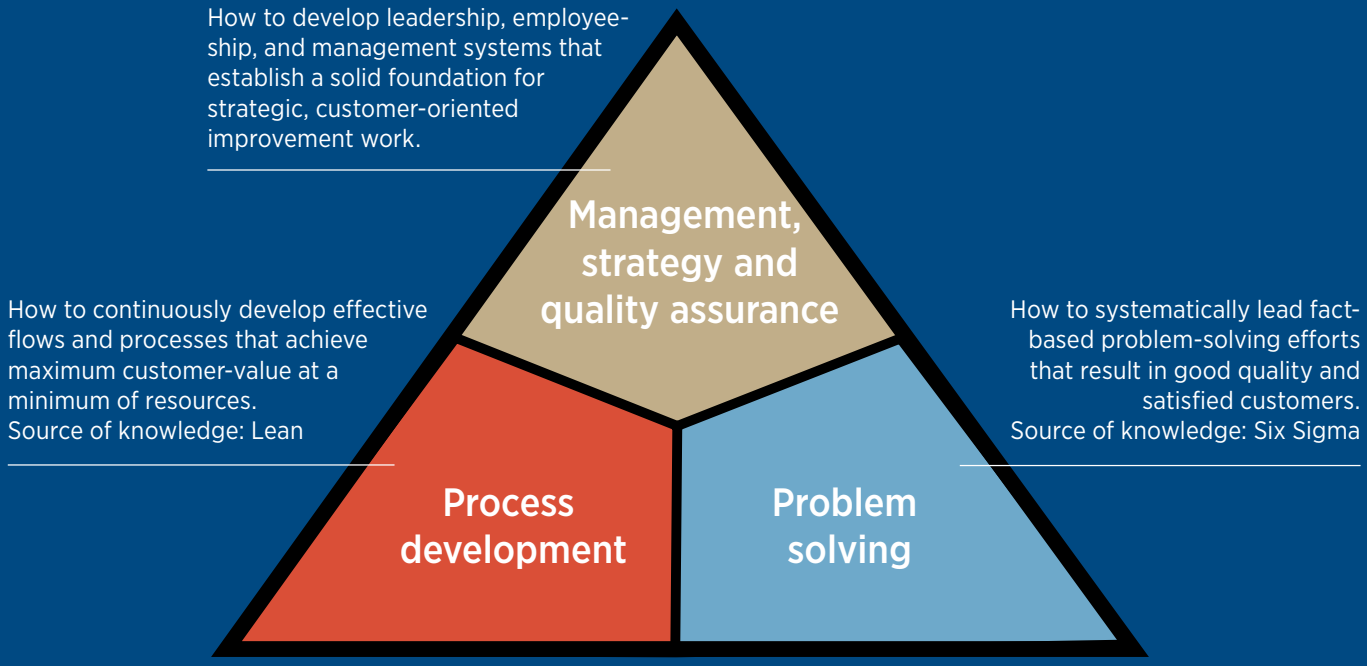
SANDHOLM
EXCELLENCE CENTER

Excellence through Quality Management and Systematic Improvements

Three competencies that give results



Sandholm Associates was founded in Stockholm in 1971 and supports companies and organizations worldwide in developing within quality management and continual improvements, with the purpose of achieving excellence. We do this through education, training, management mentoring and supervision. We are also deeply involved in research and longtime development of the knowledge area of quality. Sandholm Excellence Center is our international training center located in Ponte de Lima, Portugal.

With excellence in focus!

In order to achieve long-term and sustainable success, an organization needs to be in a constant state of development and improvement. Changes happen all the time in an organization's environment. Customers make tougher demands. Competitors are developing and coming up with better offers. Owners demand higher returns. New technological opportunities arise. The economic situation is changing. Organizations that are not constantly improving are therefore at risk of deterioration. Organizations that have a good ability to improve can take advantage of those changes and thus develop towards excellence.

Successful improvements start with the customers of the organization. By continuously improving the ability to meet customer needs and expectations, and thereby delivering quality, good results are achieved both economically and on the market. This also applies to public institutions that ultimately exist to meet the citizens' needs in a cost-effective manner. Quality and continual improvements should be a part of an organization's goal and strategies and ultimately led by its executive management.

To achieve success in quality and improvement work, solid knowledge is required. Many years of research and experience within the subject area of quality management have developed an extensive amount of knowledge. This knowledge involves both quality planning, improvements and control. In a successful organization, quality is usually organized in a quality department and led by a quality manager.

The knowledge needed to implement systematic improvement work is available today from the Six Sigma and Lean concepts. All the tools and methods required to solve problems and manage the challenges an organization regularly faces can be learned from Six Sigma, and the knowledge needed to develop effective and value-creating processes can be found within Lean.

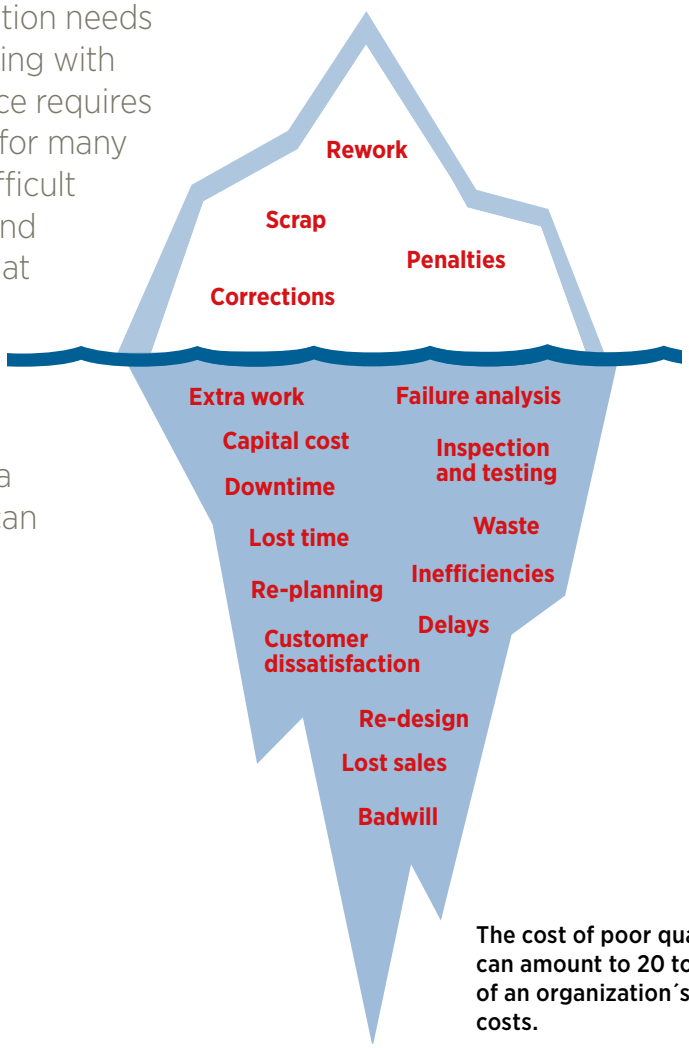
In an increasing number of industries, global demands for quality work are being made today. This is often about ISO 9001 certification, the introduction of Lean and Six Sigma and / or work according to an excellence model such as EFQM. What is important, however, is not the methods themselves but the results and effects that are achieved. In order to succeed, a culture of quality and improvement is required in the organization. An important part of this is the commitment and interest in this work from both managers and employees.

This publication aims to provide an insight into how effective quality and improvement work can be developed and implemented in your organization. You will also find interviews with a number of leaders and specialists who have succeeded and have extensive experience of systematic improvement work.

Lars Sörqvist, CEO
Sandholm Excellence Center
and Sandholm Associates

Quality and improvements are very good investments!

It may seem obvious that an organization needs to develop constantly. However, working with improvements and making a difference requires time, money and priority. In practice, for many quality professionals, it has proved difficult to secure the management support and commitment required. The result is that a lot of quality and improvement initiatives have not achieved the results that they should have done. It is therefore important to increase the understanding of the values that a well-functioning improvement work can bring to an organization.



The cost of poor quality can amount to 20 to 40 % of an organization´s total costs.

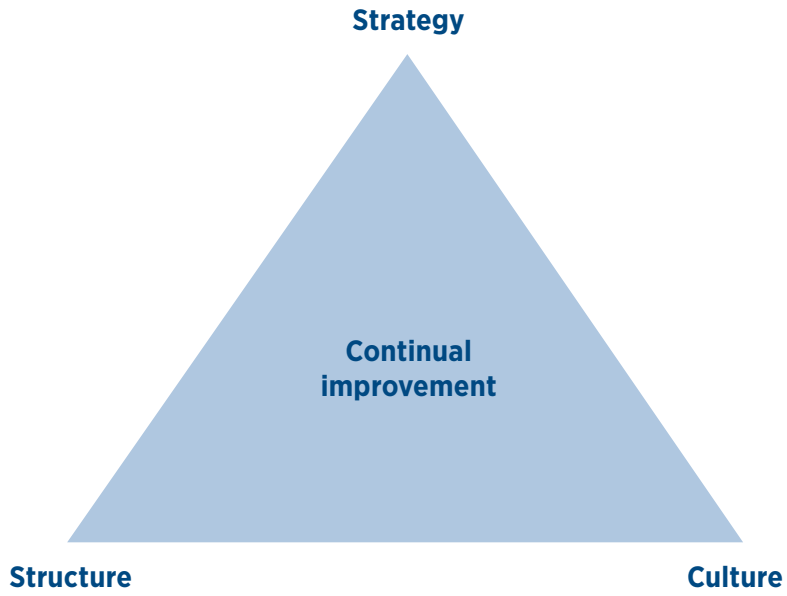
By measuring the cost of poor quality, a different picture of the quality is obtained. It is mostly very costly not doing the right thing from the beginning. In many cases, the cost of poor quality can amount to 20 to 40 % of an organization´s turnover or total costs. Working systematically with improvements is therefore a very good investment with a high return. Studies we have carried out at Sandholm Associates based on more than thousands of supervised improvement projects, show that the average return on the efforts made in improvement projects is often more than five times.

Also, from a market perspective, improvement work is very important. Deficiencies and failures that affect a company's customers can have dramatic consequences. By preventing errors and dealing professionally with problems that arise, trust is created. In addition, if the improvement work is based on the customers' needs and expectations, the values delivered will constantly increase, which leads to enhanced customer satisfaction, loyalty and market success.

In addition, an organization with a good ability to improve is well equipped in a rapidly-changing world. New customer needs, tougher competition and changing economic conditions can thus be met. In an increasingly global market situation, the need to compete in terms of quality is increasing. Companies from countries that were previously only associated with low prices are increasingly beginning to supply high quality products. In order to achieve a sustainable societal development, waste must be eliminated and the skill of producing precisely what is needed must be refined. All in all, this means that the ability to improve and deliver good quality will become perhaps the most important characteristic of competitive companies and organizations in the future.

Management of quality and improvements

To succeed in quality and improvements, a holistic perspective on improvement is required. In order to achieve excellence, the continual improvements must always be based on the strategies and goals that are important for the organization's long-term success. Critical is also a strong customer focus where the customers' important needs and the ability to meet these are the basis for how the organization is managed and improved. It is of the utmost importance that improvement activities always focus on what is most important to the business. To improve is about developing important things so that they become even better.



Operational improvements are required of both the structure and the culture of the organization. Structural improvements are about continuously developing the systems, processes and working procedures that form the basis of how the business is run. Cultural improvements are about continuously developing the leadership and employeeship, with the intention of building a committed quality and an improvement culture.

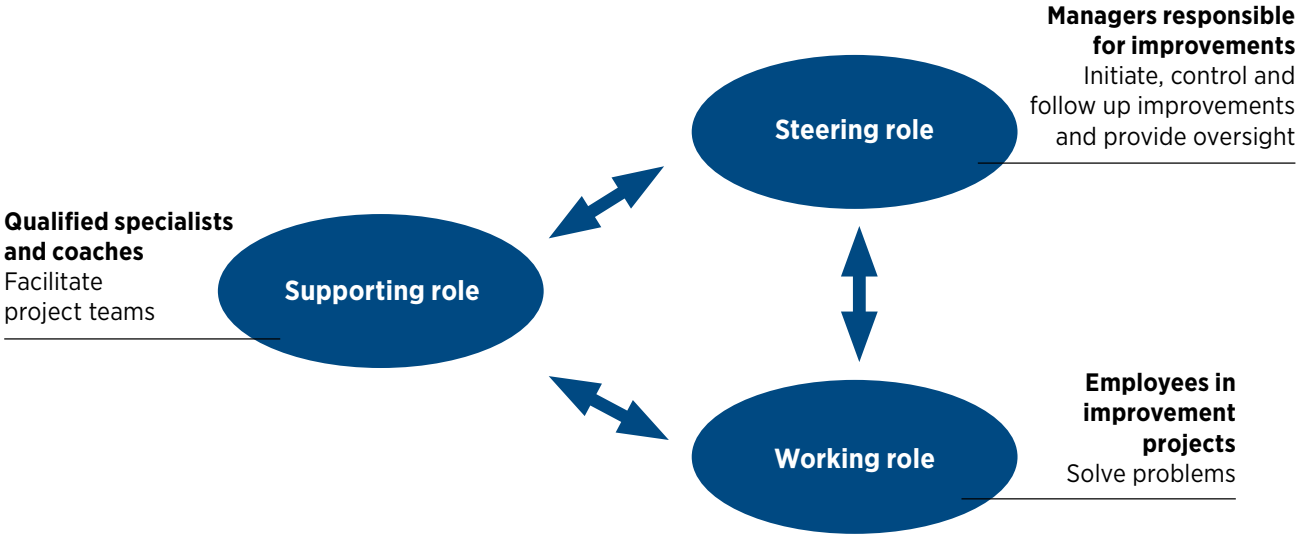
Successful improvement programs put great demands on leadership, organization and methodology. The basis for continual improvements and excellence is a committed and competent leadership at all levels of the organization. Ultimately, good leadership is very much about improvements, i.e. the ability to systematically ensure that important goals and strategies are met. This requires top management to personally own and lead this work. Continual improvements should be a natural part of leadership and must be integrated into the daily work.

It is important to organize the improvement work on several different levels in the organization. Local improvement teams handle daily improvement work. Cross-functional improvement projects focus on organization-wide improvements. Cross-organizational improvements link their improvement work with improvement work within important suppliers and customers. An important part of an effective improvement organization is to establish clearly defined roles and responsibilities for improvement. This is an area where there is much to be learnt from Lean Six Sigma.

Finally, a common and well-developed improvement methodology is required. The ability to solve problems, develop processes and drive innovations is of great importance in order to achieve good results. Solid knowledge of relevant methods and tools are consequently of huge importance. Much of this knowledge can be learned from Six Sigma and Lean. However, significant time and resources should be dedicated for education, training and learning, which is an investment that quickly can give a very good return.

Clearly defined roles and responsibilities

Projects carried out according to Lean Six Sigma are well-defined and involve relevant employees in clearly defined roles as project participants. The role structure of Lean Six Sigma is not only used to clarify the responsibility of management for improvements, but also for the supporting roles that can lead and support ongoing improvement projects. The names of the Lean Six Sigma supporting roles were historically borrowed from Japanese martial arts: Black Belt, Green Belt, etc. These names are now very common in organizations where Lean Six Sigma is used.



Sponsor or Champion (Responsible Manager)

The Sponsor is the originator of the improvement project and the manager of the unit where the project is initiated. In his/her role as manager, the Sponsor is responsible for ensuring that the project is successfully implemented. After selecting the project, the Sponsors should support improvement groups, ensure that the projects lead to results, make decisions on recommended improvement measures, and follow-up on the results of the improvements made.

Black Belt (Improvement Leader)

Black Belts are professional improvement leaders with a solid knowledge of improvement methodology, problem solving methods and improvement tools. They support or lead improvement projects. A Black Belt spends a significant part of his time, sometimes up to full time, as a coach, a method specialist, and even a project manager within improvement projects.

Master Black Belt (Improvement Expert)

An experienced Black Belt can, through in-depth training and higher specialization in improvement-work and problem solving, have the role of Master Black Belt. This assignment can be one of two varieties. It can be of a more strategic nature, in the form of a leadership role for the business's Six Sigma programs. Alternatively, it can be of a more analytical nature, in the form of a highly advanced method specialist with a profound knowledge of complex problem solving and analysis.

Green Belt (Improvement Facilitator)

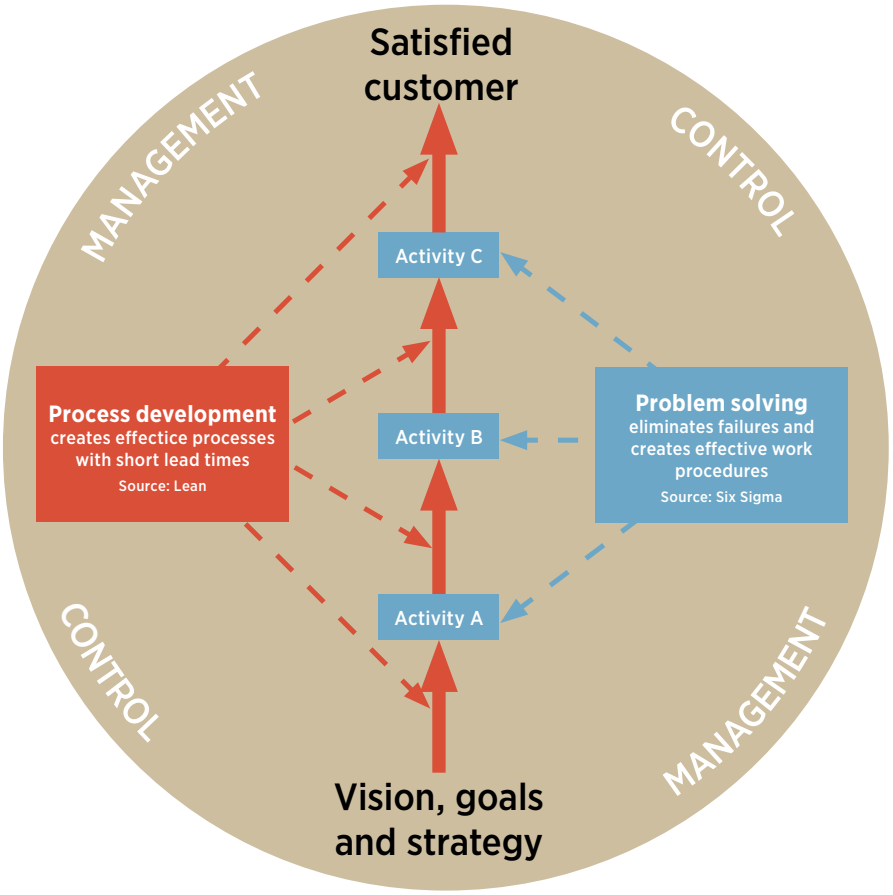
A Green Belt acts as both a participant in larger, complex projects (led by a Black Belt), and as a project leader in smaller" Green Belt" projects that are limited to less difficult problems. Green Belts often coordinate and facilitate local improvement activities in the organization. A Green Belt assignment is usually a task that an employee can complete as part of their usual duties.

Employees (project members)

In a well-functioning Lean Six Sigma program, all concerned employees have an important role as participants in ongoing projects. Participation and access to personnel experiences are of great importance to a successful outcome. This working role is sometimes assigned to so called Yellow Belt and White Belt, which are simpler roles than the Green Belt.

The Six Sigma and Lean improvement methodologies

Quality management is based on leadership that, through clear visions, goals, and strategies, ensures focus on customers and improvements. Central to the leadership is also building a strong quality culture within the organization. The operational improvement process consists of both process development, which creates effective flows, and problem solving, which eliminates obstacles that obstruct the achievement of desired goals. The various methods and tools available in Lean and Six Sigma complement and interact with each other in the overall improvement work of the organization.



Six Sigma is a systematic improvement concept based on a defined role structure, a common problem-solving model (DMAIC) and deep competence in many powerful improvement tools. Historically Six Sigma was invented in 1986 within Motorola and later further developed especially by General Electric. Today Six Sigma is the globally most used concept regarding problem solving and continual improvements on activity level.

Lean is a way of developing and managing a business based on effective, fast and flexible processes that creates optimal customer value in a cost-efficient way. Lean was historically developed in the late 1980´s in a US research program at MIT inspired by improvement methodology and leadership within the Japanese automotive industry. Today Lean is the internationally most used concept for the development of business on a process level.

The integration of Six Sigma and Lean into a common improvement methodology, named Lean Six Sigma, has become very popular as it presents a holistic and complete way of working with continual improvements.

Problem solving with DMAIC and Six Sigma tools

Problem solving is crucial in the improvement work. It is about dealing with failures, deficiencies, risks, business challenges and achieving goals. In Six Sigma improvements are run as well-defined projects in five phases. An important success factor is that improvement projects are based on facts and knowledge (not beliefs and assumptions), and that each project is run systematically through all five phases.

Phase 1: Define
During this phase, the problem is clearly defined, including an understanding of the process involved and the identification of the expectations of internal and external customers affected by the problem. It is also important to divide bigger problems into manageable projects that can be completed in a timely manner. The success of a project is dependent upon a clear and manageable definition of the problem in the Define phase.

Phase 2: Measure
The next step is producing information about the problem by measuring relevant data, collecting any previously measured data, and collecting all other relevant information about the problem and its related processes. This establishes a solid foundation for a proper analysis and for fact-based problem solving.

Phase 3: Analyze
In the Analyze phase, the collected information is systematically analyzed. During this phase, you use the data to identify the root causes and suggest appropriate solutions to be tested. Here, both simple tools and more advanced statistical analysis methods are used. There is a wide range of statistical analysis software available today, Sandholm Excellence Center uses Minitab in the classroom.

Phase 4: Improve
During this phase, solutions are planned and implemented founded on the fact-based analysis. Concrete improvement measures are carefully tested. In addition to purely technical challenges, this phase often contains a significant amount of change management.

Phase 5: Control
The Control phase involves continual follow-up of the implemented solutions in order to ensure that they become truly permanent. In this phase, you calculate the financial gains and other effects of the improvement project and produce a final report. The actual improvement project is finished and handed over to the organization for operation by the regular staff.

Process development based on Lean principles and tools

To work with improvement on a process level and develop effective value-flows that create and deliver benefits and fulfil the needs of customers is of huge importance when aiming at excellence. Lean contains a large number of methods and tools that can be used in this work. The transformation towards Lean can be described in five phases that should be applied to each business process.

Phase 1: Understand customer value
The first step in developing a process towards Lean is to gain an understanding of the value, as seen by the customer, that is created by each process. This is often a difficult and demanding task. Among other things, this is because often not even the customer knows how the process is meeting his/her needs. The foundation for excellence is to squarely put the customer at the heart of the business and create the best possible understanding of the customer's situation, wishes and challenges.

Phase 2: Analyze the current situation
A prerequisite for improving and developing a process is to very clearly understand how well or badly it works today. Therefore, an analysis of the current operational status is required, studying the process and obtaining relevant facts about its effectiveness and ability to deliver customer value. To support this work, you can use a value-flow analysis as well as many other tools within the Lean concept.

Phase 3: Develop the future flow
When you have a clear picture of the value that the process creates and how it works at the moment, it is time to develop a better, future process flow. Within Lean there is a variety of principles and approaches to use. This may include improving the ability of the process to deliver customer value, eliminate waste, streamline operations, reduce change-over times, reduce batch size, introduce a pull-system, balance and eliminate variations, etc. In order to succeed in creating a more efficient process flow, it is important to identify and use the most appropriate approach to the current situation.

Phase 4: Establish a system
Next the new improved flow needs to be consolidated and systematized. It is important to standardize the working procedures and activities of the process. In addition, it is essential to implement mistake proofing, introduce an early warning system (Andon), establish housekeeping (5S) and maintain (TPM) all equipment that is crucial to the results of the process. A central part of this system is to introduce a daily management, which includes handling problems and improvements.

Phase 5: Improve
The final stage is a phase of continual improvement of all activities in the process. This is about solving problems that occur and preventing problems. In order to achieve good results, improvements should be made both in local teams and in cross-functional projects. Future transformations are also part of continuous improvement. New takes on the work that has been completed are constantly needed, and the aim should always be to find a new and better future.

Leadership for excellence and continual improvements

In a culture of excellence, leaders strive to involve all employees in the work of continual improvements, systematically take care of employees' ideas, and create a culture where quality and improvements are the top priority. The success of any improvement program is founded in a committed and competent leadership that, through personal involvement and participation, supports the employees and establishes the prerequisites for systematic improvement work. Such leadership is characterized by:

The leader as a role model

Leaders at all levels of the organization must act in the way they themselves expect the employees to act. By actively prioritizing and actively participating, the importance of continual improvements across the organization is communicated by the leader.

Closely-involved and supportive leadership

Good leaders are actively engaged and present in the organization, and make a substantial contribution in time and energy to the work. To be successful, leaders must have an understanding of the processes of the business, be in constant contact with the employees, have a good knowledge of the customers, and of the products and services involved.

Respect for people and focus on continuous learning

The employees of an organization are the foundation for its success. Job satisfaction, engagement, and competence must be continuously developed. An important part is to develop leaders who lead by asking questions and creating opportunities for reflection. Attention to good examples and celebrating successes play an important role in the development of a quality culture.

Building commitment through involvement and participation

By involving and making all employees participate in improvement projects at different levels, the leadership fosters commitment, dedication and togetherness. Managers listen to employees and welcome good ideas and suggestions.

Decisions are based on facts

All decisions are thoroughly researched and based on facts. By measuring and systematically analyzing key features of the business, opinions and perception fail to govern. Once decisions have been made, they are implemented with speed and decisiveness.

Focus on quality and continual improvement

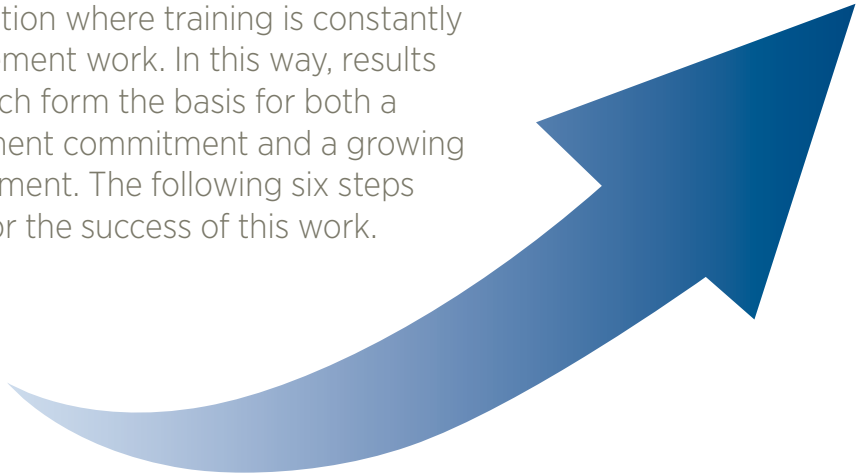
Under good leadership, every employee has a clear responsibility for the quality of the work she/he performs. In each individual situation, it is crucial to do the right things from the beginning and give top priority to quality. Deficiencies, errors, and failures are not seen as threats but as opportunities for improvement. All employees and managers are strongly committed to finding, solving, and eliminating problems and shortcomings together. Quality work is largely preventive.

Holistic view, focus on the customers, and acting long term

Leadership is based on holistic thinking, where customers and overall processes are in focus. Development is moving forward in many small steps with clear goals and according to long-term strategies and goals.

How to develop an improvement program in your organization

An improvement program in a business can be developed in different ways. Our experience shows that the most successful ways are based on a step-by-step implementation where training is constantly interspersed with real improvement work. In this way, results are continuously obtained which form the basis for both a gradually increasing management commitment and a growing culture of quality and improvement. The following six steps have proved very important for the success of this work.



1. Anchor the improvement work in top management
Initially, it is important that the executive management of the business and other key persons gain a basic knowledge and understanding of possibilities and the meaning of improvement work. Management must understand its role, allocate resources for the work and be committed in backing up the work. A natural first step is therefore that a management seminar is set up and later followed up with management workshops and mentoring from our experienced consultants.

2. Train improvement leaders
Once the management has decided to develop the organization`s ability to work with improvements, it is important to quickly build up expertise in the methods and tools that are used in effective improvement work. The fact that the organization has access to its own competence and is not completely forced to rely on external consultants is a very important success factor. We therefore recommend that you train enough improvement managers in the form of the Lean Six Sigma Black Belts so that they will be able to lead and coordinate the improvement work of the business. This usually occurs in the form of a gradual development where more and more improvement leaders are trained as the improvement work gradually expands over a few years.

3. Start improvement projects and show results
It is important to be able to demonstrate results as quickly as possible. In this way, internal confidence is created for the improvement work and the willingness to prioritize and invest more time increases. Working with real improvements also creates important experiences and lessons learned that can form the basis for the ongoing implementation work. This work is already underway in the Black Belt training, where the participants, in parallel with the studies, carry out projects in their own companies.

4. Train sponsors, improvement facilitators and all employees
In order to establish a complete improvement organization in the company, all managers and employees need to gain a basic understanding of the possibilities and the meaning of improvement work as well as knowledge of their own responsibilities and tasks in this work. The business managers are usually trained through a Sponsor training course. The employees are often trained internally by the improvement leaders, who have already been trained in conducting this type of broad-based training during their own training. In order to further develop the improvement ability in the organization, local improvement coordinators are also trained in Lean Six Sigma Green Belt.

5. Follow up, learn and expand
Implemented improvement projects are followed up on an ongoing basis with the intention of verifying the results achieved and compiling lessons learned. These experiences are used partly to create commitment to quality and improvement work in the organization, partly to further develop and expand this work in a realistic way in the organization.

6. Integrate the continual improvements into the business culture and leadership
In the longer term, one should strive to make improvement work a natural part of all the work that is done in the organization. The goal is to create a strong culture of quality and improvement throughout the organization and to develop a leadership that is based on continual improvements.

Experience & success

On the following pages you will find interviews with a number of leaders and specialists who have extensive experience and have succeeded in developing and implementing quality management and systematic improvement work. The articles have been published in Sandholm Associates' newsletter Potential.

Content

Tom Johnstone about requirements for success

As a leader you must never ever jeopardize quality in order to gain a short term financial benefit, says one of Sweden´s most prominent quality profiles Tom Johnstone in an interview with Potential magazine. Later this year there is an opportunity to meet him at the Excellence Summit conference in Gothenburg on September 11–12.

TOM JOHNSTONE is one of the few key individuals who has had the greatest influence over Swedish quality during the past 20 years. He was President & CEO of the SKF Group between 2003 and 2014. Before that he was head of one of SKF´s divisions and he has a long experience within SKF being with the Group for almost 38 years. Today Tom Johnstone is Chairman of Husqvarna as well as a member of the boards of several big companies such as Investor and Volvo Cars.

Successful and committed improvement work

As President & CEO of SKF he successfully led the company's comprehensive improvement work with great commitment – partly with the help of the Six Sigma concept and tools. He managed to integrate the improvement work with the company strategy and his leadership was very clear and educational, which created a strong commitment to improvements and quality throughout the company. He also invested a great deal in improvement training for management and employees.

Tom Johnstone has emphasized that quality improvement is an evolution. It is very important to build on earlier efforts in the organization. He has also stressed that it is important for leaders to be patient, consistent, have a clear vision and see to it that everybody in the organization knows about this vision and how they can contribute to it. Quality starts with the customer and is about delivering value to the customer in the most effective and efficient ways.

Tom Johnstone's interest in quality started early. His university degree is in Mathematics and so he has always liked things that are logical and factual, he says. When during his career he came across Quality Management tools it fitted him very well. When Tom Johnstone saw the good results from focusing on customers and working in a structured way with improvements, he quickly understood that he needed to bring these concepts into the organizations he was leading.

As President & CEO at SKF you succeeded in making quality the platform for the corporate strategy.

How did you manage this and what can management in other companies learn from that?

– Every organization has its own history when it comes to Quality Management and improvement. SKF has had a very strong quality focus over many, many years. When I became President & CEO of SKF, I had already been in the company for 26 years, so I had a long experience of the company. When designing the next step for quality within a company it is important to recognize the history of the company. We saw the development of Quality in SKF as a staircase with each step building on previous quality initiatives such as quality systems, TQM, Six Sigma etc. There is always another step to take at the top of the staircase.

– At SKF we were lucky to have very demanding customers in industries like aerospace and nuclear and that gave us the best push to become better all the time. A specific improvement, like in Six Sigma, can be run as a project, but overall, continual improvements within an organization are vital and this is indeed a never ending journey.

In many organizations quality work is quite fragmented, focusing on different concepts and systems. As an effect the organization loses efficiency and power.

What is your advice to make these different concepts and systems cooperate towards common goals?
– I recognise this fact. Quality Management has many dimensions, and the challenge is to make sure all quality professionals are pulling in the same direction and working together. It is important to remember that the ultimate quality responsibility lies with the line management and all employees. Quality professionals are more like coaches with specific knowledge of quality management and tools that support all parts of the organization to be customer focused and have more efficient processes. I was fortunate to have an excellent Quality team in SKF – or, we could say excellent coaches – to help support and guide the organization.

What is required of the management in order to achieve success through quality and continual improvement?
– The absolutely most critical thing for top management is to integrate quality and customer focus as part of the business strategy and then to "walk the talk". Never ever can you as a leader jeopardize quality in order to, for example, gain a short term financial benefit. Many people think quality costs due to all the systems and reporting. In fact quality does not cost – non-quality costs!!

How did you learn about the basics of quality management yourself?
– As I mentioned, quality management became quite natural to me as I like things that are logical and based on facts. It was when I visited a 3M factory in Brazil back in 2002 that I first came across Six Sigma as a concept. To me it was exactly what we needed and there and then we decided to introduce Six Sigma into SKF – at that time within the Automotive Division. Later on, a year or so after I became CEO, we brought Six Sigma into the SKF Group as our systematic way of working. When we were up and running, we gradually started to see savings in the magnitude of 500 MSEK on a yearly basis, which made both customers, employees and shareholders happier.

What is needed to develop a quality culture within an organization? And what would you say builds up a quality culture?
– It is important to remember that competitors can copy your products and over time will copy your processes and techniques. However, they can never copy your people. Hence, the culture you develop becomes a key competitive edge. For me a quality culture is built on a customer focus combined with the endless effort of always making things a bit better every time. Sometimes bigger efforts are needed but a process of continuous improvement is absolutely the best way forward. Deviations should be seen as a way to improve and you should embrace them and not hide them. Management has a key role in this. In the daily operation, it comes down to treating people the same way as you would like to be treated. That is a golden rule I always carry with me.

If you were to be appointed CEO of an organization that has not been working that systematically with Quality Management – what would be the first thing you would do?
– First analyse the organization and its history. You can never launch a new approach or direction without understanding the history to refer to and build on. Then again – the very definition of quality is customer satisfaction, so assuring that the organization becomes customer focused and embraces continuous improvement is the most important thing to do.

Today people are talking a lot about investing in digitization. How would you say digitization can affect internal efficiency as well as deliver new customer benefits?
– This is very important. Digitization has effect on all kinds of aspects and hence also on quality. First of all, through digitization new functionalities and customer benefits can be achieved. It is also important to remember the astonishing benefits achieved through connected products and machines that can feed back data on how they perform and are being used. If this data is used properly, it will quickly drive quality improvements in existing products, eventually through machine learning, and to new products and future generations of products. It will be another big step forward for quality and a differentiator between organizations. The organizations that succeed in doing this will outperform competitors.

Today quality and sustainability are getting closer and closer. What is your view of the connection between Quality Management and Sustainability?
– This is also very important. To me sustainability is about the balance and care between different perspectives. Within SKF we designed the SKF Care program to be built on the balance between four pillars – Business care, Employee care, Environment care and Community care. Success is achieved by developing all these areas while at the same time maintaining the balance.

What is your view of the global development of quality? For instance, how do you view the quality development in China and India and how this will affect industry in the western world?
– I have always worked in companies with an international coverage and international customers. It has been extremely interesting to see how various countries progress and how they do this at very different speeds. The development in China impresses me a lot. Some years ago we looked upon Chinese industrial products as primarily suitable for the Chinese market. But for some years now this has been developing into a global business and many Chinese companies have clear global aspirations. I also keep a close eye on India. We can clearly see a similar development in this country. The thorough education system in India in combination with both business and with the structure the government is putting in place means that we can expect to see a strong development there.

What are your key lessons learned in relation to quality management based on all your experiences?
– The more experienced you become, the more you learn how important it is to present things in a way that is easy to understand so that it becomes clear and logical to all what the organizational direction and the need for change is and why and how each and every employee can contribute.

What is your view of the initiative for the new global conference "Excellence Summit" in Gothenburg on September 11–12, 2018?
– I like the idea. The focus on Business Excellence is just right. Also, as things go so much faster these days, it is even more important to meet and learn from each other. Hence, I immediately said yes to be a keynote speaker as soon as I got the question. I also like the proposed combination of mixing top management professionals with the leading researchers in Quality and Business Excellence.

India's largest company – a model for quality and excellence

– The role of a leader cannot be overemphazied in the excellence journey. We have not come across any organisation where the excellence movement has succeeded without visible and active participation of the leaders, says *Sunil Sinha,* Resident Director in India's largest global company, the Tata Group, which today is a model for companies throughout the world.

THE TATA GROUP consists of some 100 independent operating companies with a total of 660,000 employees and the annual revenue amounts to around 100 billion USD, of which 68 percent outside India. For example Jaguar Land Rover, headquartered in the United Kingdom, is part of the group. The Tata Group has grown 20-fold in the past 20 years.

The Tata Group is held together through a common ownership structure which ties back to Tata Sons with its approximately 1,000 employees. At this central level Sunil Sinha is head of the Middle East, North Africa and Central Asia regions. He is also responsible for the development of the markets in several other regions. Prior to this role Sunil Sinha was head of the Tata Quality Management Services where he was guiding the implementation of the Tata Business Excellence Model in the whole of the Tata Group, which has been of great significance for the development of the group.

Focusing on results that reflect effective operations

The Tata Group has a long history and regards the community as the prime stakeholder. The operations comprise many different trades and regions. Tata Sons drives quality management and excellence across its many companies and operations via an institutionalised approach that, according to Sunil Sinha, may be unique in the world today.

– Rather than dictate to companies required business practices, Tata focuses on the results that would reflect effective company operations. This approach allows companies to adopt approaches best suited to their business sectors and global locations – making Tata one of the most agile organisations in the world, he says.

To accomplish this, Tata needed to have a reliable and comprehensive means of assessing results, as well as incentive mechanisms tied to those results. This was done through a mechanism called the "Brand Equity and Business Promotion Agreement". If a Tata company wishes to use the name "Tata" in its name or as part of its own brand marketing, which many of the companies regard as an important advantage, it must agree to adhere strictly to the rigorous Tata Code of Conduct and agree to undergo regular assessment of its business practices and results by Tata Sons.

– These assessments, which are done using the Tata Business Excellence Model (TBEM) are the "secret ingredient" of Tata's success. TBEM drives quality management and excellence not only through what it does, but how it does it. TBEM has evolved from an assessment process into a unique value driver that has made Tata a benchmark for companies across the world, Sunil Sinha says.

Supports improvement and encourages intelligent risk

TBEM encourages continuous improvement through a formal system of benchmarking and assessment. The model has provided Tata companies with a framework for improving their competitive strength, financial performance and operational efficiencies across levels that range from strategy and leadership, to customer centricity and information analysis. This work is supported by the central organisation of Tata Sons, which also provides other kinds of support for success. For instance a variety of training programmes and different programmes to share good examples and to encourage innovation.

Something that has drawn global attention is that Tata does not only celebrate innovative ideas but also failed innovations through an award category called "dare to try".

Competition is increasing but the driving factor is that things change, Sunil Sinha says.

– This practice has helped build the groups' enthusiasm for risk-taking – something called "intelligent risk". By high-lighting the risks taken across Tata's best companies, other companies are more comfortable in shifting their approaches, Sunil Sinha says.

Stakeholders considerad as customers

When it comes to the question how the Tata Group has developed a strong customer focus throughout the organisation, the reply may according to Sunil Sinha be a bit surprising.

– Unlike many companies, Tata considers "the big picture" and "the long term." This means that we do not focus solely on financial gains or solely on annual financial reports. Tata recognizes that we serve a number of stakeholders – and each of these stakeholders needs to be considered as "customers" of Tata. As such, our foundational messages do not contain the word "customer" –

Some challenges and success factors according to Sunil Sinha

CHALLENGES AND DIFFICULTIES

- The right scale of ambition – setting challenging, but not impossible, goals
- Not losing focus in processes management
- Engaging motivated employees
- Shifting leadership priorities, and running too many initiatives at the same time

SUCCESS FACTORS

- Unwavering leadership commitment and persistence
- An environment of continuous learning and improvement
- Flexibility – being able to learn rapidly and quickly respond to the new information

Advice to Swedish companies

The three first pieces of advice Sunil Sinha would give management in Swedish companies on how to remain competitive:

- Learn all you can about your customers, constantly, and use that information to draw conclusions and inspire innovation.
- Build flexibility into your culture and your processes – be ready to adopt and adapt rapidly in response to all changes across the world.
- Consider your entire value chain and design it for enhanced sustainability – both from an environmental standpoint driven by concern for the community and from a financial standpoint driven by concern for shareholders.

rather using the word "consumer" for the stakeholder that other companies might call "customer."

How does the Tata Group work with continuous improvements and what methods do they use? Each Tata company is free to use whatever methods it likes in order to drive continuous improvement. The Tata Business Excellence Model itself is "non-prescriptive".

– What we recommend is something that most people would recognize as "Lean Six Sigma" – recommending Lean techniques and thought processes to instill a culture of continuous improvement and Six Sigma techniques to institute metrics-based control plans and to manage large-scale improvement projects, Sunil Sinha says.

Each Tata company has a designated Corporate Quality Head (CQH) whose role is to lead the Business Excellence efforts in their company and to act as the primary contact point between their company and the Tata Sons Business Excellence resources. Most CQHs are also strongly involved in the TBEM community. Another factor that has made TBEM successful and that strongly spurs improvement is the friendly competition between Tata company CEOs. Tata's CEOs compare their TBEM performances with other Tata companies. Relative performance is well known at the top Tata levels and considered when choosing candidates for higher level jobs.

No success without good leadership

The TBEM process itself helps to develop leadership in the Tata Group in a variety of ways. Tata also has other programs for leadership development. Among those is The Tata Management Training Center and in addition a programme where a selected few dozen talented young people are given three years of temporary assignments in key areas of various Tata companies. According to Sunil Sinha the leaders have a very important role in the work for quality and excellence.

– The role of a leader cannot be overemphasized in the excellence journey. We have not come across any organisation where the excellence movement has succeeded without visible and active participation of the leaders. The quality leaders in the Tata Group are generally well perceived and respected. This stems from both their recognized ability to drive the business results of their company and their close connections within the group. The company leaders are encouraged through TBEM to build their own effectiveness in leading daily work for quality and excellence in their organisations.

Training plays a very important role in spreading the culture of excellence throughout the Tata Group. All 660,000 employees, including new entrants, are given training in business excellence. In addition, all line managers are encouraged to undergo Assessors' programme and participate in the TBEM Assessment. The CEOs play the role of Mentors. The cross-pollination that comes through the TBEM process does a great deal to spread the culture of excellence and improvement.

The driving factor is that things change

Sunil Sinha agrees that active programs for improvement and excellence are even more necessary for organisations today and that global competition is increasing.

– While we have learned that there is no one "best" system for quality management, improvement and excellence, we have also learned that the absence of such a system leads to downfall. While it is accurate to say that global competition is increasing, that is not the primary driving factor. The driving factor is that things change: customers may be capricious, regulations may change, political climates may swing, unexpected events may occur. Without an active program for quality management, improvement and excellence, any of these changes could be catastrophic to the long-term sustainability of a company.

Regarding the future Sunil Sinha thinks that many of the basic philosophies of quality and business excellence are timeless – they are less like "philosophies" and more like "laws of nature". However, acting upon these philosophies and extending their reach and power will change dramatically with emerging technologies.

Sunil Sinha is one of the keynote speakers at the Excellence Summit in Gothenburg on September 11–12, 2018.

Holistic leadership and reduced waste - cornerstones in Scania's success

There are several reasons why Scania over the past 20 years has more than doubled its efficiency, improved its quality and at the same time gained significantly healthier employees. Leadership and a continuous reduction of waste are among the main reasons why. CEO *Leif Östling* presented his experiences of Scania's development at a Sandholm Lean & Six Sigma conference.

BEFORE SCANIA STARTED implementing Lean seriously in the 1990's, the company had worked for a long time with quality and improvements.

– But we did not do this in a systematic way, Leif Östling told the audience at Sandholm Associates' Lean & Six Sigma Conference. Over the years, various methods have been trendy in the improvement area, but they must be put into their proper context. Otherwise, it won't work, he stressed.

Leif Östling has been part of the entire improvement journey within Scania. He has been in the company for almost 40 years – 18 years as the company's CEO, and during 17 of these years as stock exchange CEO. This is very unusual. The average time for a Swedish Stock Exchange CEO is about 2.5 years.

Photo: Scania, Göran Wink

Learned from Toyota

When Scania became interested in Lean, executive management studied Toyota and looked, among other things, at their site in Kentucky, USA. There, four times more vehicles were produced per year than at Saab in Trollhättan, Sweden. This was despite the fact that they had roughly the same number of employees and equivalent investments in production equipment.

At Scania, management decided to learn what the Toyota Production System was. Based on this understanding, they built their own Scania Production System, where the three core values are: the Customer first, Respect for the individual, Quality and Elimination of waste.

Holistic leadership is needed

Leif Östling claims that organizations do not succeed in reducing different kinds of variation in a production flow and often suffer different time losses. Leadership has also long been characterized by a military model, and an attitude based on "them and us". This has led to the development of advanced systems for controlling flows, where we have assumed that there are no variations. The information has taken complicated routes back and forth between the management and the various sections in production. The information has been separated from the flow, and the management has consisted of giving orders.

But much of this information flow can instead be kept within production and be given a simpler control where you directly see what is happening. No advanced information system is needed to understand such a flow. According to Östling, a holistic leadership is needed, one where the leader is more like a teacher

Less waste also gives higher quality

Östling also points out the importance of taking care of all the information that is

Photo: Erik Hagman

embedded in the flow. It is also important to clarify the normal flow and to focus on waste.

– You should not make a map of what things should be like, but what they actually are like. We have learnt to focus on mapping the reality.

The internal reaction within Scania has often been astonishment at what reality really looks like. For example, in the case of uneven workload. There are very large losses in such areas, says Östling. Reducing these losses in the flow is important for several reasons. Waste and quality are two sides of the same coin.

– Low losses through reduced waste not only provide high efficiency, but also high quality. Low quality, conversely, means huge losses and having a poor understanding of what you do.

Time is money in several ways, in the form of labor costs, capital, depreciation of machines, etc. Loss of time is something that customers are not prepared to pay for, says Östling.

Learning to see waste is very important. Waste can represent a very large amount of time and effort spent in vain.

– When we took a closer look at this, we found that up to 50-70 percent of the time spent was of no use to anyone, neither to the employee, nor to the company and least of all to the customer.

Examples of such waste are waiting times, unnecessary transportation, storage, overproduction, unused skills and so on.

The details are important

Scania Production System is based on four levels that are all interconnected: values, principles (ways of thinking), methods (working methods) and results. The basic parts are production, leadership and employees. When it comes to production, it is central to have standardized processes, to make waste visible and to help employees develop the working procedures. In addition to giving clear priorities, the leadership of the company must focus on developing work on reducing waste.

Concerning employees, it is important that everyone is committed and empowered, and feel involved in the job, which also contributes to the absence and employee turnover being low.

There is a tremendous amount of knowledge among workers. It is important to log in to all that, says Leif Östling.

Scania's leadership principles emphasize building know-how through continuous learning and engaging employees through participation. Leadership is also about coordinating and taking responsibility, as well as both acting now and thinking long-term. Another important leadership principle at Scania is to work with details and really understand the context.

– Success lies in working with the details. The more you focus on details, the better quality and less waste you will have. And there are no alternatives.

Stability delivers quality

A central part of the Scania Production System is a strong focus on continual improvements. But the basis for Scania's way of working is to always keep track of the flows, says Leif Östling.

– It is only when you know what the workflows look like that you can start to improve. Some try to improve production without seeing the flows, but that is just campaigns that sooner or later will die.

Östling also emphasizes that one must assume that there are always variations in all processes, in all flows.

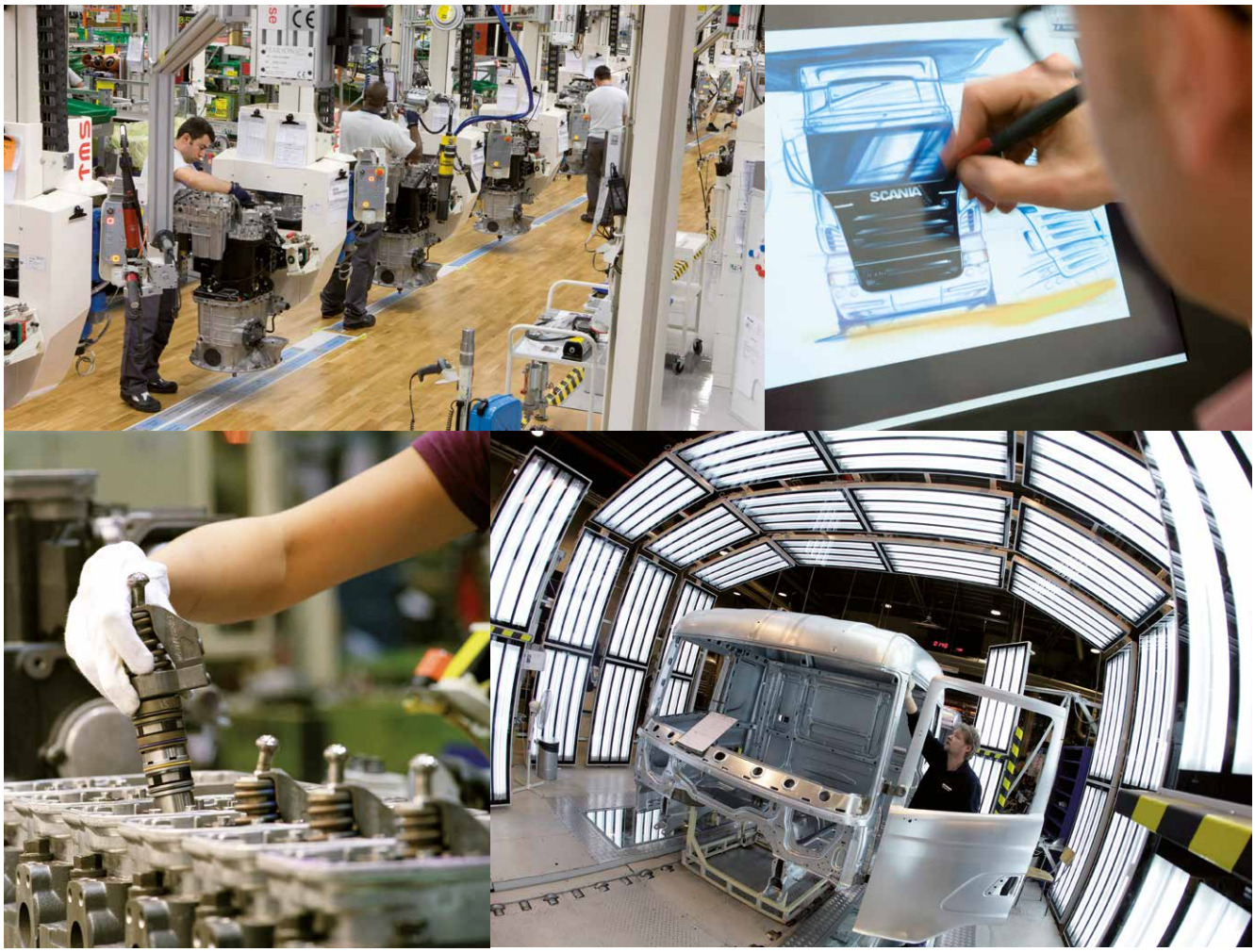


Photo: Scania, Carl-Erik Andersson, Dan Boman

– When the variations are too big, this interferes with the entire subsequent flow. An enormous amount of work and time is spent on fighting such fires. It is important to get variations within levels that you can control, and then challenge and improve step by step.

Large fluctuations also come from customers and the market, for example in terms of variation in demand, specifications, customer service and so on. It is important to try to include these fluctuations within a range of variations that you can control.

Standardized working methods promote creativity

A large and important part of Scania's operations is product development. Even here, it is central to have standardized working methods and flow orientation.

– Standardized work in R&D does not kill creativity, which some believe. The more standardized the work is and the more you have control over the intellectual flows, the more creatively people can work. There will at the same time be less of what might be called "hobby work", which is something the customers don't want to pay for.

R&D every day checks the state of each project. Boards are used to visualize how the total work time can be balanced in a way that makes it possible to deliver on time.

– There is an incredible amount of time to gain.

R&D at Scania is closely linked to the company's other functions and also includes the suppliers. It is important that suppliers are included in the flows, as they have the same interest in achieving efficient flows.

Reduced fuel consumption

An important area of improvement that Scania is working hard on is reducing fuel consumption for customers. Among other things, Scania has its own testing center with about 20 vehicles where they optimize the vehicles and test everything, including different driving styles. There are opportunities to significantly reduce fuel consumption and carbon dioxide emissions, which is important for customers both in terms of emissions and economy.

– The more the customer earns, the more we earn, says Leif Östling.

More than doubled production per employee

The strong improvement focus in Scania over the past 20 years has really given results, among other things in efficiency. In 1990, approximately 3 vehicles were produced per employee and year, in 2010 the number was 7 vehicles, and the vision for 2015 is 15 vehicles per employee and year.

– The strange thing is that the possibility to find waste never ends. At the same time, quality just keeps getting better and better, says Leif Östling.

– We have also seen a steady increase in employees' attendance, which has increased by almost 7 percentage points since 1990 and now stands at about 97 percent. It proves that we do not wear out our employees. This is an expression of the respect we have for people and the fact that employees think that working with us is fun. Motivated people make a good business.

Important to have a committed board

The importance of the board and the CEO working together with quality and improvement work cannot be exaggerated. At the Lean & Six Sigma 2011 Conference, both this point and leadership at large were discussed with SKF's CEO Tom Johnstone and Scania's CEO Leif Östling, who is also chairman of SKF's board. Here are some of the comments and advice that came up:

- If you are to succeed in quality and improvements, you must have the full support of all levels, and it starts with the board. In SKF, this is a standing point at the board meetings. Without support from the board, the organization will not have the right focus.
- Interaction with the board is important, not least when it comes to setting reasonable goals. The board has valuable knowledge and experience from other businesses.
- Important as it is to have the support of the board, it is still the CEO who should run the business. It is actually more important that the employees applaud than the board. It is also crucial to have the management team on board.
- It takes courage to start, set goals and provide support to quality and improvements. Have patience! Cultural changes take time.
- Have a clear vision and make sure others understand it. Figure out how you yourself can contribute to the goal. Provide your co-workers with tools to reach the goals, have good people around you and follow up on the results.
- Listen to people, work with them and be prepared to change your mind a bit.
- Reduce the mental gap between management and employees.
- Walk the talk. Explain, talk to people and show an active interest. The motivation factor is huge when the top management spend time being out in the organization. Managers can get more direct information walking on the gemba/shop floor, while information from middle managers often is more filtered.
- Spend a lot of time in the organization and on the floor, otherwise you lose contact with it and the development might then go in the wrong direction.
- Show employees that people do not lose their jobs when becoming more effective. The purpose is to have more people in value-creating activities, not to reduce staff. You can't do this kind of work if your employees are suspicious.
- Middle management may think that information is a power tool that one does not want to give away. Change that attitude. Empowerment is self-supporting and gives more from the employees. It makes for less conflicts and stress and for a better atmosphere.
- Keep in mind that information on improvement boards is for the employees, not for the management. Avoid overly aggregated numbers.
- Celebrate success – it's important. But also set new goals. Set tough but realistic goals.
- Leaders also have one mouth and two ears. Use these in the same proportion.

It is the very combination of both doing the right things according to Lean and solving problems in the right way according to Six Sigma, which gives good results and success in our improvement work, says David Dreven.

The combination of Lean and Six Sigma was a success in the improvement work

In Swedish Match's Swedish snuff production, an improvement program has been implemented based on both Six Sigma and Lean. It has proven to give very good results. For example, a single improvement project has resulted in a production increase worth several tens of thousands of euros per day.

IN THE IN KUNGÄLV PLANT, Swedish Match produces snuff of many varieties. *David Dreven,* who has the role of Improvement leader and Master Black Belt, has together with his colleague *Niklas Sommargren* developed the improvement program that is in use today. In his role he coaches employees in improvement work and supports problem solving and process development.

Lean + Six Sigma give a higher level of improvements

The improvement program is based on a combination of Six Sigma and Lean, both in terms of philosophy, structure and tools.

– An overall goal for us is to have the freshest products on the market. So we need to constantly challenge and transform our processes in accordance with the Lean approach, for example by leveling and balancing flows, shortening lead times and meeting the customers' needs in a timely manner. We also need to work with systematic problem solving, and that's where Six Sigma comes in, says David Dreven.

In the problem solving, they follow Six Sigma's DMAIC project structure with its five phases: Define, Measure, Analyze, Improve and Control.

– We define problems in order to identify the root causes, we make measurements in order to make fact-based decisions, we analyze to find the best solution and then we implement and control the improvement to eliminate problems.

At the same time, according to David Dreven, it is important to do the right things from a holistic perspective, i.e. to focus on the improvements that have the greatest potential and which can provide the highest customer value.

– It is the combination of both doing the right things according to Lean and solving problems in the right way according to Six Sigma that gives good results and success in our improvement work. We do not distinguish between the two concepts. Our working method consists of both, although we do not actually use the name Lean and Six Sigma.

Successful project

Our improvement work has resulted in reduced waste, increased customer satisfaction, shorter lead times and a more sustainable production that does not overload personnel and equipment. David Dreven tells us about a Master Black Belt project that produced very good results. The machine efficiency was not satisfactory in the production of a certain snuff product for which market demand is very high.

In the improvement project a combination of tools from both Lean and Six Sigma was used. For example, value stream mapping and leveling and balancing of the flows according to Lean, as well as control charts and statistical analysis according to Six Sigma, including regression analyzes and capability studies. Six Sigma tools were also used in the process development itself.

– This improvement project is still ongoing and we have now succeeded in significantly increasing machine efficiency, which means that we are able to deliver more of this popular product. The improvements have increased the overall machine efficiency by 30 percent, says David Dreven.

– The most important reason for this success is that we have worked systematically to produce facts so that we know that we are doing the right things. This has given good results in a short time.

Improvement projects are initiated in different ways in the Kungälv plant. They can arise during process analyzes and process transformations, as problems are found that need to be solved through Green Belt or Black Belt projects. Projects can also be generated from non-conformity reports and from the daily management of the production.

There is also a special process for improvement projects. For example, if there is a problem which a department cannot solve, it is addressed in a special forum. This forum consists of managers from different functions and also includes David Dreven. A business case is put together in order to solve the problem and it is directed to the right owner.

Structure and roles

In the improvement program at Swedish Match in Kungälv there is a role structure that is similar to Six Sigma. The same structure is also found in the plant in Gothenburg where Niklas Sommargren has a corresponding role. The roles are also related to specific levels of competence in problem solving and continual improvements.

All employees in the Kungälv and the Gothenburg plants have White Belt and Yellow Belt training. There are several specific roles in the improvement work. Green Belts work with improvements up to 50 percent of their time, Black Belts are improvement leaders who work up to 100 percent in leading improvement projects. Master Black Belts are improvement leaders who run larger and more complex projects that can include several different organizations, and they also develop the improvement program itself. A champion is a person in management who coordinates improvement work and ensures that what is done is in line with the company's goals. At the top of the improvement work is the Quality leader, which is the plant manager who has the main responsibility. All managers in the Kungälv and the Gothenburg plants have also been trained and they receive continual coaching in order to actively run improvement work.

Education pays off quickly

At the Kungälv plant, a lot of effort is spent on education and training in improvement work. David Dreven himself attended both Black Belt training and Lean leader training at Sandholm Associates. Niklas Sommargren, who has a corresponding role in the Gothenburg factory, has completed both Black Belt training and Master Black Belt Analytical at Sandholm Associates.

– This training has changed my approach to seeing and solving problems and I have built a very good base, from which I act all the time. With more knowledge and experience, I can address more complex problems and projects that extend across multiple organizational boundaries, says David Dreven.

He believes that training in improvement work is something that pays off quickly, often already at the first improvement project, and the future potential is huge.

– If you make sure you do the right things and have a good improvement program, this will pay for the entire improvement organization.

But at the same time, David Dreven emphasizes that training and focus should be according to the actual needs that the organization may have in different situations.

– It is important that those who are trained really have time to work with improvements. Knowledge needs to be maintained and used all the time. Our ambition is to continue developing the improvement work and training more Green Belts and Black Belts.

In the improvement work at Swedish Match, Sandholm Associates have provided training for Black Belts, Master Black Belts, Lean leaders and Green Belts.

Photo: Kenneth Sundh

The most important thing is the employees' commitment and attitude to their work and with quality education you can reach even further, Regina Lundell believes.

Building knowledge to reach new levels of improvements

Seco Tools has a clear global structure for their improvement work that runs in half-year cycles. In Fagersta, Sweden, they have managed to significantly reduce rejections in production. Now, new steps are being taken in the improvement work to find even better solutions – among other things by investing in skills development.

SECO TOOLS is part of the Sandvik Group and manufactures hard steel and carbide inserts for cutting machinery such as milling and turning. Seco is located in 75 countries and its head office is in Fagersta, where the largest production unit is also situated with its 800 employees. It´s a complex production in many steps and with many different process paths, from raw material to finished products.

Improvement work is based on strategies

In Fagersta, *Regina Lundell* is head of technology and quality. She explains how the work on quality and improvements is structured in the production.

– We have a global improvement structure that we call Life2 and which runs in half-year cycles where each cycle starts with a seminar together with the employees, at which we review a strategic rationale for the next six months. The senior managers of each function are in charge of these seminars.

The strategic reasoning clarifies the importance of the work ahead, what customers do and need, competitors, trends, threats and opportunities. This translates into priorities for the various functions and is then funneled to the different levels of the organization, all the way down to the work shifts. At the beginning of each cycle, we also have development talks where employees set personal goals for the coming six months.

The teams at different levels determine how to contribute to the overall strategy. Every second week there are follow-up meetings. On a monthly basis the teams present and share what has been done and what results have been achieved. Then we get an updated strategic direction for the next period.

Important that everyone feels accountable

– Much of the improvement work is concentrated on streamlining manufacturing processes, shortening lead times and improving quality. A lot of effort is also spent on understanding the customer-supplier dependencies in the value chain. We have so many handovers in our processes and it is important that everyone understands how a change that you make will affect the next operation, says Regina Lundell.

– We work a lot with the degree of awareness. Everyone should understand their part and accept responsibility. Quality is the responsibility of the production and of every individual employee, not of the quality department.

Regina Lundell elaborates further: since starting her Life2 program, there has been an increasing focus on cross-functional improvement teams, with the right skill sets for each problem definition. There are several examples of how much has been gained from this. Among other things, she mentions an old problem that had been around for a long time and that they have now managed to reduce significantly.

– When we pooled all our brain power in this way instead of blaming each other, we solved the problem.

The improvement work at Seco in Fagersta has led to important results for several years now. For example, the amount of rejections has gradually been reduced by 37 percent between 2012 and in 2018.

New level of improvement work capabilities

– This work continues based on the same structure. We have now harvested the low hanging fruits but need to take the improvement work to a new level to find even better solutions and to solve even more complex problems. That is why we are investing more in skills development in problem solving and in root cause analyzes, for example, says Regina Lundell.

One should look more closely at the various tools available to make progress, including tools within Six Sigma. Regina Lundell has attended a Quality Manager course at Sandholm Associates. A colleague is currently attending the Black Belt training. Recently Sandholm Associates also trained 20 Green Belts on site at Seco Tools. These programs include, among other things, the implementation of real improvement projects, which often give good results. For example, one of the projects, currently progressing at Seco, has an annual savings potential of SEK 9.6 million.

Skills development provides wide and deep know-how

Competence development in this area, according to Regina Lundell, provides both broader and deeper capabilities of the improvement work.

– More employees can work on problem solving by themselves, using statistical tools and root cause analyses. You do not always need the help of specialist skills, which otherwise tend to be overloaded if there are many improvement projects going on at the same time. And for the specialists, technicians and others, skill development means that the organization can reach higher levels in the improvement work than before.

– I believe that what matters the most is the attitude our employees have to their own work and that they feel involved and included. With quality training you can go even further. The leaders also need a certain form of training in how to work on improvements and understanding that each individual is important, says Regina Lundell.

Be persistent, strategic ... and nice

One of the challenges in the improvement work is, according to Regina Lundell, to keep up the disciplined work and to allocate time for improvement activities, also when there is much else to be done. It's about prioritization. Here, she believes it is also important to avoid overloading certain individuals and skills and to get the teams to find improvements they can make by themselves. Another challenge she mentions is to renew the improvement work, to gain new commitment, without changing everything.

What advice would you like to give to quality colleagues in other businesses?
– That you should be persistent and stick to what you believe in. Be like an ambassador, convey the message and demonstrate why it is important. You also need to have a strategic mind-set about which individuals you need to get onboard and then get support from. It is also important to ensure that the responsibility for quality gets properly delegated and understood in the entire organization. It is not the quality function that should have that responsibility. Our task is to be coaches.

– It is also a good thing to be positive and nice and have the courage to try new approaches. It´s OK to fail as long as you learn from your mistakes. When improvement work is perceived as fun, you get the employees' commitment and a willingness to do more, says Regina Lundell.

In Seco Tools' quality work in Fagersta, Sandholm Associates has contributed with consultation to the management team, Quality Manager course, Black Belt training and internal Green Belt training for 20 people.

Photo: Pia Nordlander/bildN

Without proper quality competence, the improvement work comes to nothing, says Karl Williams.

It is crucial to have a good quality competence

In order to develop and maintain a profitable improvement culture, it is critical to have a broad and deep competence in quality and improvement management. Genuine understanding of this and knowledge in methodology such as statistical analysis is required. Just relying on common sense is not at all enough, says *Karl Williams,* who is Quality and Operation Excellence Manager at ABB Robotics Production in Västerås.

AT THE VÄSTERÅS FACTORY, more than 1,000 people work at designing, adapting and building industrial robots, primarily for the automotive industry, but for other industries as well. Throughout ABB, efforts are being made to develop quality competence. One goal is that 50 percent of the employees should be certified to run Plan-Do-Check-Act (PDCA) projects, or 4Q, as it is called within ABB.

Without quality competence, nothing happens

Karl Williams's department is a central function within the Västerås plant. It coaches leaders, managers and quality coordinators. Investing in genuine quality competence is of great importance, he says.

– It is crucial in order to be able to strategically establish and maintain an improvement culture. Many people think that this is only a matter of common sense, but if it were, all businesses would have high quality. Without good quality competence, the improvement work will drop dead sooner or later.

Karl Williams sees obvious effects when the improvement work is run in a competent way.

We get a higher yield in production and fewer complaints. We finalize more improvement projects that lead to lower costs, and production is generally more profitable.

Persistence and competence of many

According to Karl Williams, it is important that many people in an organization have quality competence. In addition to the strategic competence of quality managers and other quality professionals, all managers should have a basic quality training. This is necessary in order to create an understanding of what quality is really about.

– Within our production, every production coordinator has had quality training. They report to line managers

who must also have a basic training. Throughout the entire management organization, employees have undergone quality training. ABB is investing a lot in quality competence and I think this is the right way to go.

– Top management has understood that it is such skills that are needed throughout the organization if improvements are to be achieved, says Karl Williams.

In support of the improvement work within ABB, there are systems to identify opportunities and improve quality. There are also requirements to run improvement projects and report savings every year. What Williams considers important in order to succeed in this work is, besides competence, to maintain a long-term focus and not look for new methods over and over again. The ability to make fact-based decisions is also important and related to quality competence.

"Statistical competence is like being able to see colors, after being color blind"

– Within our quality organization, we invest a great deal in building deep competence in our area of knowledge. For external training I found Sandholm Associates training courses a few years ago, which have provided most of the external courses I attended. They have been crucial to the leadership and coaching role I have today.

Williams first attended a Sandholm Associates course on The Cost of Poor Quality, which became an eye opener. Later he also attended The Sandholm Associates Black Belt training and The Quality Manager course, among others. Several managers and colleagues are now also attending the Black Belt training. Something that Williams particularly emphasizes is the know-how in statistical analysis which is an important part of the Six Sigma methodology and the Black Belt education.

– After that training it feels as if I used to be color-blind and now suddenly see colors. It's about being able to analyze and see the relevant trends in statistics and data. In this important area, I think proper understanding only appears among those who have studied statistics. Therefore, it is important that more people acquire this competence.

Karl Williams gives an example of an improvement project that he is currently running where these skills are central. The project is about introducing statistical process control in a system test that includes many parameters and is done on each robot. A lot of data is gathered, and it is important to be able to use and understand these in the best way.

– I do not think that this kind of improvement project can be carried out without proper statistical competence.

Investing in tailwind

Competence development takes a long time, Williams points out. In the future, he and his colleagues will continue to focus on increasing the general competence in all quality areas, and on training new employees. He is also convinced that it is important to find a balance so that there will not be too much training when people are pressed for time. But here Williams also points out a general paradox.

– It is common for companies and organizations to understand the importance of quality and improvement work when they find themselves in any kind of crisis. But it is important to have the required strategic competence to coach and develop when having tailwind. When things are going well, that´s when the biggest investments should be made, although it can be difficult to catch up right then. If organizations have built quality competence, they also have something to fall back on. Work becomes more structured and sustainable, with less ad hoc solutions.

Karl Williams began his career in quality within the US Navy, where he was a quality inspector of submarines. In the 90´s he moved to Sweden and worked as a quality manager at Gunnebo and then continued his quality career within ABB. He has always looked for new knowledge in the area of quality skills and has attended many courses.

– You can never get too much competence in this area; you always learn something new and must never stand still. In training courses, you learn from other people's ideas, you get new, valuable contacts and larger networks, says Karl Williams.

In the development work within ABB Robotics, Sandholm Associates has contributed with several training courses, including Black Belt, Quality Manager courses and courses on process management and quality audit.

We have just as much to gain from systematic improvement work as the big companies, says Per Fahrman. Photo: Göran Billeson

Engströms Bil gained huge savings in their first pilot project

A saving of millions, less stress and happier employees. After a couple of successful pilot projects at Engströms Bil, it is clear that a lot can be earned from working systematically with quality and improvements – and that training within this area can pay off very quickly.

ENGSTRÖMS BIL works with car sales and workshop service for the Audi, Volkswagen, Skoda and Seat brands. The company has facilities in Linköping, Vimmerby and Västervik with a total of about 280 employees. The business has doubled in 10 years and this is what made it necessary to find new ways of working.

– Existing procedures and processes weren't good enough anymore. We got low profitability and stressed employees and we were not sure where the shortcomings really were, says *Per Fahrman,* who used to be technical manager and now instead the improvement manager of the company.

Important competence development

After some time of discussion, it was decided to take a closer look at Lean and start a pilot project. Shortly thereafter, Per Fahrman took part in Sandholm Associates Lean leader training, where he also gained a basic understanding of the Six Sigma methodology. Today, the improvement work at Engströms Bil is characterized by both concepts.

– It is of great importance to develop competence within this area. It also gave me the strength and energy to run the improvement projects and to be an ambassador for improvements in the company, which would otherwise have been difficult. In my case, the training cost was also paid for within half a month through the savings made in

the first improvement project, says Per Fahrman.

He also believes that competence development and understanding methods make it easier to get the working teams committed, united and involved in improvement work and the results. This is very important, something that Per Fahrman could see already from the first pilot project.

Much to gain even in smaller companies

We sometimes get the impression that systematic quality work is primarily something that large organizations work with. But Engströms Bil is an example of the fact that small and medium-sized companies also stand to gain a lot from such work and that the results can come very quickly.

– If, for example, you see the results as a return per employee, we have as much profit to gain from improvements as the big companies have. It is profitable wherever you do it, and last but not not least it is important in the long-term development. Working with continuous improvements means that the business is constantly improving. Otherwise, such large steps may be needed that they may never be taken and then there is a risk that the competitors will overtake you, says Per Fahrman.

Calmer working methods and savings in the region of millions of SEK in the first project

In the first pilot project at Engströms Bil, some of the workshop technicians were chosen to investigate what could be improved in the working methods. First, there was an introductory meeting to explain that the goal was to develop the best working method. Then, during one working day, Fahrman followed each of the technicians, who were initially a bit skeptical and nervous about this, Fahrman says. Movement patterns were studied, and spaghetti diagrams drawn, showing movements and activities, including how much time was spent on fetching spare parts. They also looked at ambiguities in the technicians' work orders and so on.

– We started coaching them and saw immediately that we could make them work calmer in a way that actually made the work go faster anyway.

All notes were then evaluated on the basis of the seven forms of waste, and value stream mapping was done. Then the forms of waste to work on were chosen and were noted on an activity board to keep focus on the improvement work.

– Employee participation was very important. We involved the guys and it took four to five meetings before we won their loyalty. They then saw that this was good for them and that they could easily achieve results. After this the techniques of the improvement work became more self-propelled.

The financial results came fairly fast. The average revenue per hour and technician increased dramatically and the project resulted in a saving of 180 000 euros during the 11 months evaluated – without increasing stress.

– Crucial to the success was that all managers agreed that this was systematic, planned work and not least that the staff became so involved. The technicians say that they now cooperate better and have more fun at work and I think that is fantastic, says Per Fahrman.

Relaxing and more getting done in the administration

A similar project was then also run with some employees in the administrative staff. Measurements were made, focused on how the employees worked. Here, too, it took time to win the trust of the employees and get them to see the benefits. They were evaluated according to the seven forms of waste, and then value stream mapping and fish bone diagrams were done. An assessment was also made using a template from Six Sigma to select what the project would work on.

– Work environment proved to be an important area of improvement. The administrative staff was sitting too close to each other and were disturbed by each other and therefore the workplace was redesigned. Today much more gets done and nobody wants to go back to the old situation.

Economically, this improvement has led to increased revenue, and less administration absence as well. This has also resulted in shorter lead times and fewer un-invoiced hours under normal staffing. The improvement work continued by reducing variations in how invoicing was performed. Here, among other things, a Lean simulation was used as a method to show how important it is not to do things in different ways.

Culture and power in the improvement work

Engströms Bil will now continue spreading this improvement work in the organization, but at a reasonable pace so that everyone is involved. Among other things, focus will be on equipping team leaders and workshop managers for this way of improvement.

– We will create a culture of continuous improvement. If the managers are involved in this, the employees will be involved as well. Then we will gain great momentum in the improvement work, just as we did in the first improvement projects, says Per Fahrman.

Per Fahrman has completed Lean Leader training at Sandholm Associates.

Photo: Fotografen Saxin

It is important to base improvements on facts and to work preventatively, says Mia Tavander and Ing-Marie Larsson.

Knowledge, commitment and facts deliver results at Karlskoga hospital

At Karlskoga hospital there has been a long history of consistent quality work and no jumping between different management trends. Training, commitment, measurable goals and fact-based decisions are some important components that have given valuable results and a few years ago also the Swedish Quality Award. Today, development work continues in the same spirit and with new challenges.

KARLSKOGA HOSPITAL is in the Örebro County and today it has about 750 employees and another few hundred more at five health centers which are now also part of the organization. The quality development work at the hospital, which led to the Swedish Quality Award in 2012, has been ongoing since the end of the 1990's.

– We have chosen not to jump at different trendy methods in this area, but to stick to our concept. Our philosophy is very lean, but we have never said that we are a lean hospital, says Quality and Development Manager *Ing-Marie Larsson*.

Early on, Karlskoga hospital created a common vision and a focus on how to work to achieve this vision. Later on, this vision has been broken down into target areas and specified into measurable goals. Over the years, the hospital has had the same emphasis on goals and how to work with those.

– We started by looking at whom we exist for, i.e. our most important customer groups, and how we can interact with them. In addition to the patients, we also chose to attach importance to close relatives, who can assist and support the patients. We also regard students on internships as customers. We want them to learn and come back and to work with us.

Invest a lot on education

– Another important success factor is to have a committed management. Without their commitment nothing will be achieved. We therefore started with a four-day training course for the management team on tools, goals, measurement methods, processes and more, says Ing-Marie Larsson.

The hospital has continuously invested a lot in training as a central part of the quality and improvement work. For a long time they have had, among other

things, a three-day training course in quality that is mandatory for all employees.

– The training has been a very important part of our development work, not least in order to gain a common language for and understanding of our processes. Without the training we would not have achieved what we have, says business developer *Mia Tavander.*

– We also started early on with a mandatory training course in ethics, which we have today woven together with the quality training. This is important because we work in a context where there are many difficult ethical situations.

The focus on training is closely linked to an early endeavor at the hospital to create employee participation.

– In our organization, all employees must have their own and well-defined area of responsibility . We train people in how to do this and how to take responsibility, says Ing-Marie Larsson.

The training at the hospital also includes medical knowledge. Here, among other things, they have been early with using knowledge tests to identify needs and to focus training on treatment methods that develop over time. Real-life scenario training is also used to clarify responsibility and to prepare people for situations where for example a cardiac arrest occurs.

Valuable improvement results

When it comes to examples of good results, a mandatory five-day basic training course in how to best move patients has contributed to a radical reduction in both pressure ulcers in patients and sick leave among employees.

The proportion of patients at Karlskoga hospital who get pressure ulcers during the hospital stay is now down to 1 per cent, while the average for other hospitals in Sweden is at least 7 per cent. The need for care and the costs for pressure ulcers have almost disappeared at Karlskoga hospital. If all hospitals in Sweden had the same low frequency of pressure ulcers, healthcare would save SEK 1.4 billion per year.

The other important improvement associated with moving patients is that sick leave of employees caused by stress has decreased from previously 400 sick leave days per year to 6. In this area, the hospital saves around SEK 650,000 each year, in addition to saving the costs and inconvenience of taking in temporary workers.

Right now, Karlskoga hospital is working a lot on improving processes within certain diagnostic groups, especially stroke and heart failure and the most ill elderly patients. Focus is on the entire value chain of care from the patient leaving the home, all the way through the hospital including rehabilitation and back home. This work includes representatives from all parties involved.

– This will be a basis for reviewing the entire operation of the medical clinic. Some of the institutional care may possibly become outpatient care instead, in collaboration with municipalities and others. It may also lead to more rehabilitation in homes. This improvement work can also provide more contacts that create increased security for patients, says Ing-Marie Larsson.

– We also look at whether we have the right skills and whether we utilize our teams in the best way, i.e. if the right person does the right things. Some tasks that previously were done by physicians are taken over by other staff when possible. This has given good results, says Mia Tavander.

Patients and relatives are also involved in the improvement work, through special groups once a year in selected diagnostic areas. The hospital also has good cooperation with disability associations. Here, many good ideas and proposals emerge that help the hospital to focus on the right things into the development work.

Facts and safe prevention

At Karlskoga hospital, the emphasis is on improvements and decisions based on facts. According to Ing-Marie and Mia this has not always been the case within health care, as there has not been so much measurable data available before.

– At the same time, it is important to create a culture and a transparency, and not look for scapegoats. People should feel confident in highlighting also less good results. Our employees and managers today want their work and operations to be reviewed and resources spent on prevention, says Mia Tavander.

– Yes, we want to prevent rather than have to put things right after the event, and we use, among other things, risk analyzes to help see where problems might arise. There we are probably quite far ahead. Quality problems are usually what cost a lot in an organization, while preventive work unfortunately is a very small part of the budget, says Ing-Marie Larsson.

In hospitals, there is sometimes an organizational dilemma in that responsibilities and resources are connected to functions, while patients and processes cross several functions. But this does not seem to stop the development work at Karlskoga hospital.

– Since our management has knowledge about quality, patient safety and ethics, and those issues are on the agenda at the management meetings, focus in the discussions has long been on how we can improve together, says Mia Tavander.

Challenges

However, there is another organizational and relatively new challenge in the quality and improvement work. A major reorganization of the hospital has been carried out, which means that some clinics have become county clinics with management groups of their own. It is also new that five health centers have been included in the local health care area.

– This means new contacts and new management teams, changed mandates and more managers to work with. Now it is important to keep up and not lose momentum in the improvement work that has led to success. It is important to maintain close contacts, focus on the patients, to continue with the training courses and to benefit from each others' experiences, says Ing-Marie Larsson.

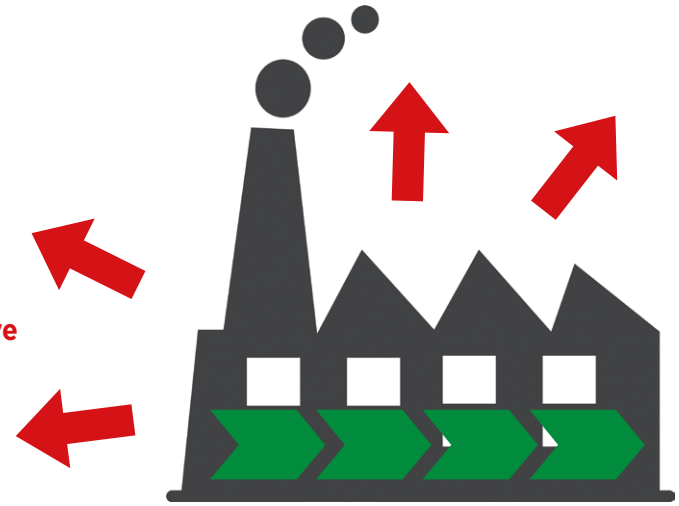
Another challenge in this work is that employees can sometimes feel that they do not really have time for development work.

– Everyone should contribute to improvements, but people must also be given the opportunities and responsibility to do so. By smart scheduling, time that no one thought existed can be made available. We also ask for results. If people have been given a mandate to work on improvements, it should lead to something, says Ing-Marie Larsson.

In the development work at Karlskoga hospital, Sandholm Associates have contributed with training in process orientation and process management as well as the Quality Manager course.

Sustainability is created at micro-level

Both quality and sustainability look at how many resources an organization uses to create great customer value. Therefore, the methods of quality management and systematic improvements are essential when it comes to increasing the overall sustainability of an enterprise.



Macro-perspective on sustainability: How to reduce environmental consequences.

Micro-perspective on sustainability: How to create a high customer value by using less resources.

SUSTAINABILITY is a complex knowledge area with several dimensions. It is about a sustainable development ecologically, socially, economically and financially – both in the world and in the specific organization. There may sometimes even be conflicting relationships between these different dimensions of sustainability. For example, reduction of consumption in order to minimize environmental impact can have a negative impact on economic and social sustainability.

– So far, sustainability has mainly been focused on the environmental perspective, which is only a part of what sustainability really is all about. This important matter has been unilaterally discussed from a macro-perspective with focus only on the various environmental consequences of operating a business. Incorporating the knowledge and methodology from quality management and systematic improvements gives new opportunities to succeed in achieving long-term sustainability in the wider sense, says *Lars Sörqvist,* CEO of Sandholm Associates.

Quality methods are important for sustainability

Sustainability is basically about how mankind in an optimal fashion consumes the world's resources to create value for people today, and at the same time securing opportunities for future generations to meet their needs. To deal with this issue, working from a macro-perspective is not enough. The problems must also be tackled from a micro-perspective, i.e. within the processes of organizations, where resources are transformed into customer value. Today, huge waste and losses occur. Only a very small part of the resources used are actually converted into direct customer value. This means that there is a great potential for sustainable development in the operations themselves.

– In the quality management knowledge domain, methods and tools required to work with value creation and sustainability at the micro-level, are available. The ultimate objective of quality development is to meet and exceed customer needs and continuously improve efficiency, i.e. how a higher customer value can be created by using less resources, says Lars Sörqvist.

– By integrating the knowledge and methodology used in a successful quality work into the sustainability efforts, sustainability could be developed in a real way. In such a way that environment, social responsibility and economy go hand in hand.

Reduced energy consumption saved half a million euros

Sandvik's plant in Västberga has successfully reduced its energy needs, with significant savings and several hundred tons in reduced carbon dioxide emissions as a result. It has been crucial to work systematically on the basis of the Six Sigma methodology, says *Bengt Seger,* site manager.

IN VÄSTBERGA, Sandvik has several different types of functions. A special organization serves these functions with issues related to the plant operations, including contract management, energy, environment, safety and other issues. Bengt Seger is manager of the support organization and has spent years looking for potential reductions of energy consumption.

In the work of reducing energy consumption, Bengt Seger has made great use of the systematics of the Six Sigma concept.

Extensive analysis

About eight years ago, an extensive mapping of the energy consumption was initiated, primarily concerning electricity and heating. The purpose was to distribute energy costs correctly among the various businesses and to improve energy efficiency.

– We realized, among other things, that our heating and electricity consumption was equivalent to the amount of the consumption of a small town, says Bengt Seger.

With the help of energy experts, an analysis was done in order to understand how the heating system was constructed, since there were heat leaks and other problems. It was discovered that the energy consumption was quite large per unit area. The survey and analysis led to a long list of possible energy saving measures, which were divided into three categories according to how quickly the measures could be implemented and become profitable.

– We implemented measures from the list for several years. A lot of them could be taken within our own budget frame. During this time, a new energy target also came from the Sandvik top management: by 2020 all plants are to reduce their energy consumption by 20 per cent.

Million savings and reduced carbon dioxide

Many of the measures in Sandvik's plant in Västberga were relatively easy to implement, while others required investments. An example of the latter was the use of heat pumps to utilize the energy in the cooling water system in parts of the production. The saving within this area was calculated to amount to 7,20 euros per each invested euro.

– The heat pumps will soon be up and running and we will almost be self-sufficient in heating. In total, we will save several hundred thousand euros each year and get a very large reduction in carbon dioxide emissions, says Bengt Seger.

When this work began in the Västberga plant, the energy consumption of heating was approximately 7,700 MWh per year. After all measures, annual consumption will have decreased to approximately 1,600 MWh. Each MWh costs around 80 euros and corresponds to emissions of 70-80 kilos of carbon dioxide. Together, these improvements will reduce the cost of district heating by approximately half a million euros per year compared with the reference year 2012. Carbon dioxide emissions will similarly be reduced by about 440 tons per year.

Electricity use has also been reduced, among other things by replacing old water pump motors and unnecessarily large fan motors for ventilation. The main building in the Västberga plant is now Green Building certified, where the requirement is a 25 per cent reduction in energy consumption. This proves that quality and improvements are often closely related to sustainability.

The systematic approach is the key

Bengt Seger is Black Belt trained and has propelled the improvements by using the systematics of the Six Sigma concept. First the actual situation of energy consumption was mapped, measurements were taken, facts were analyzed, and measures were identified, implemented and closely tracked.

– The Six Sigma systematics is unbeatable and it has been absolutely crucial to work in this way: the problem is defined and then deeply analyzed so that it becomes clear to everyone involved where and how to take action. It makes things happen. Otherwise it is easy to get stuck in opinions and gut feeling. Everyone in the project team can see the results of their efforts and realize that it pays to be persistent in the improvement work, says Bengt Seger.

Sandholm Associates has supported Sandvik with training in quality management, Six Sigma and Lean during many years. Bengt Seger has completed his Black Belt training at Sandholm Associates.

Successful digitization requires quality competence

Digitization will enable many important breakthroughs, but it is important to watch out. Digitizing a process that does not deliver the right quality can easily lead to major problems. To succeed, you need to combine IT and technology expertise with expertise in quality and improvements.

THERE IS A STRONG FOCUS on digitization and how different forms of new technology dramatically will change the conditions for doing work and delivering customer benefits in the future. Many businesses today make very extensive investments in information technology of various kinds. Obviously this creates many new opportunities, but the awareness of the problems that surface in connection with digitization is also high. In order to prevent problems and ensure that the new technology really will deliver value, there is much to be gained from integrating the expertise that exists in technology development into the existing expertise in quality development and systematic improvement work.

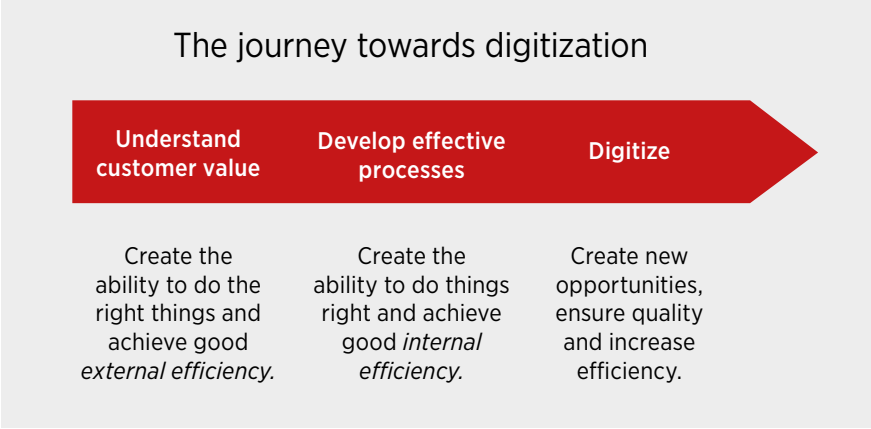
Can become an end in itself

A significant risk in technology development is that the technology becomes an end in itself. To achieve success, it is important to use technology as the means it is, and always focus on the activities it intends to support and develop. This is something that has been in focus when making demands on technology during the past decades.

– However, the way this work is undertaken today is for many organizations not good enough. In order to really succeed, this work must start with the customers of the process that is to be developed. It is in the interface with customers that value is created, i.e. the value that makes the business exist at all, says *Lars Sörqvist,* CEO of Sandholm Associates.

Start with effectiveness and efficiency

By fully understanding the customers' needs and expectations, conditions are set for "doing the right things" and achieving good effectiveness. This is an area where quality professionals can



contribute with both competence and experience.

Then it is important to focus on the process and its ability to do the desired tasks "in the right way" and achieve good efficiency. This work is about eliminating non-value-creating activities and shortcomings. When the process has both good effectiveness and efficiency, there are many opportunities to use new technology. Effectiveness and efficiency can be further increased, quality can be improved and new opportunities to perform the work smarter can be found.

Combining IT and quality competence

The best prerequisites for successful implementation of new technology and digitization in a process are thus created by combining this work with the quality work's ability to develop processes from a customer perspective.

– In practice, this is about better collaboration between the quality and IT departments as well as the development of the competence of those who lead and operate digitization. To succeed, IT professionals must, to a much greater extent than today, learn to use the knowledge available in systematic problem-solving and value-creating process development, says Lars Sörqvist.

German-American study points out important needs

The importance of integrating quality and digitization skills is also highlighted by a recent study that included 220 manufacturing industrial companies in Germany and in the USA. The overall conclusion was that this integration significantly improves the chances of achieving good results and success in digitization. The study was conducted by the American Society for Quality (ASQ), Deutsche Gesellschaft für Qualität (DGQ) and the Boston Consulting Group.

The study shows that relatively few companies have seriously started digital development focused on the ability to create value for customers. Furthermore, experience from the companies that have come a long way in the digitization shows that the difficulties are considerably greater than many initially thought. Success is about so much more than just acquiring new technology. There is a huge need for extensive investment in training, especially as many of the skills needed are difficult to find on the labor market.

An interesting finding in the study is that the areas we mainly need to develop are "soft skills". It's about the ability to solve problems, lead improvement teams, manage change and develop a quality culture. There is also a considerable need to quickly strengthen the ability to analyze data and use statistical methods. The study shows that several of the companies that have succeeded best with digitization have chosen to develop these skills internally before they started working with implementing technology. In addition, it is important that digitization is led by the company's executive management, through a quality and improvement based leadership.

Artificial Intelligence can lift and expand quality work

Along with growing digitization, Artificial Intelligence (AI) is opening up new possibilities and challenges for businesses and organisations. This will affect quality and improvement work. According to a leading expert in the area, *Elmer Corbin* at IBM Watson Health, the opportunities and roles of quality professionals will expand.

THE DEVELOPMENT is now moving fast. The Internet of Things makes more and more products connected. We are facing the breakthrough of AI. In the production of services, we will probably see a great deal of automation, much higher productivity and better possibilities of following up.

Strong connection between digitization and quality

Digitization and the use of advanced cognitive systems that collect and analyse all available information will produce an enormous amount of information that we need to handle and understand. This knowledge can be used in quality and improvement work, including product development. The quality functions in an organisation will have the possibility of seeing when problems occur in real time, or at least much more quickly than before. Therefore, quality professionals need to develop their ability to analyse these huge amounts of information, even though the systems will be helping them with that.

The connection between digitization and quality can be looked upon from two perspectives: The first is digitization to proactively design for quality, and the second perspective is quality work to assure the quality of new technologies. What we invest in has to work the way it is supposed to, for instance the systems in self-driving cars. Faults in digitization can lead to new and serious risks. Therefore it is important to include risk management. It is also important to design digitization in a way that really supports quality and improvement work, for instance by focusing on root causes of problems and not only by trying to solve problems by investing in new technology on a system level.

Better decisions through analysing great amounts of data

One of the most advanced cognitive systems today is IBM Watson. It is a cloud-based AI-platform that allows businesses to extract deep insights and knowledge from massive amounts of structured and unstructured data in order to help those businesses accelerate the achievement of their strategic objectives. It is capable of analysing data collected from a variety of internet and intranet data sources available to users. Today Watson is used in a variety of industries, including Healthcare, Education, Customer Engagement, Financial Services, IoT, Media & Entertainment, Talent Management, and Business Workflow Optimization.

– The Watson Quality Advisor solution is being used to provide quality professionals and manufacturing managers with proactive, decision-making recommendations in order to address possible disruptions in the supply chain based on the analysis of data collected from process and instrumentation at various points along the manufacturing lifecycle, says Elmer Corbin, who is Global Delivery Excellence Executive at IBM Watson Health. In this role, he is the executive responsible for collaborating globally within IBM and with industry partners.

New possibilities for quality professionals

In cognitive systems Elmer Corbin can see new interesting possibilities opening up for quality professionals.

– Watson technology is being used in many different industries to help inform business professionals on overall business workflow optimization in not only development and manufacturing, but in every aspect of the business operations. This technology will open up new opportunities for quality professionals to apply their skills and training to improve the performance of every aspect of a business, from HR to legal to marketing & sales.

– This will expand the roles and open new opportunities for quality professionals beyond development and manufacturing to become the business transformation and optimization leaders for their companies, Elmer Corbin says.

Corbin also points out that this technology could be used to help quality leaders figure out the distinguishing aspects that make companies in similar industries more successful than others.

Enhanced intelligence that provides higher quality

Since this is a cloud-based technology, it is available through browser interface at every level within a company and to end-user consumers and suppliers as well.

– Users and consumers of this technology will continue to create new innovative ways to use the deep analytics capabilities to discover even more insights from their data. This will create new ways of making decisions, allow for more well-informed decisions on new market opportunities, and offer new approaches to collaboration on data sources across industries, Elmer Corbin says.

– The AI characteristics of IBM Watson provide the perfect solution to help enhance, scale, and accelerate the expertise of the quality professional, ultimately expanding their roles across the entire enterprise. This augmented intelligence will allow companies to make better decisions, leading to higher quality products, services, and customer experiences across every industry.

Elmer Corbin is one of the keynote speakers at the Excellence Summit in Gothenburg on September 11–12, 2018. In addition to his position at IBM Watson Health, he is also Chairman of the Board of the American Society for Quality, ASQ.

Elmer Corbin

Accelerating global quality competition

Today we have a situation where quality-related breakthroughs are happening in countries such as China, South Korea and India. This is rapidly creating an entirely new global quality competition.

A LONG TIME AGO, high quality was something that many people mainly associated with companies and brands from a limited number of Western nations. In the 1980's, therefore, many companies in the West were completely shocked when Japanese competitors managed to compete in quality in a number of important industrial industries. In a short time, the shipbuilding industry, the camera industry and the home electronics industries were crushed. The automotive industry was also heavily affected and large market shares were taken over by Japanese manufacturers. Since then, much has happened in many other countries. We are now facing a situation where quality-related breakthroughs are happening in countries such as China, South Korea and India, which is rapidly creating an entirely new global quality competition.

Sandholm Associates have been providing education, training and consulting on quality in China since 1981. We have worked with several Chinese companies over the years and established an extensive network in the country. This has given us a unique opportunity to closely follow the systematic and purposeful quality development that has taken place in the country. A development that in many ways is very impressive and interesting. Today, there is often a strong commitment to quality and improvement work shown by leaders in Chinese companies. This is also strongly supported by the Chinese state, which has quality, development and improvement high on the agenda.

Similar developments are also taking place today in countries such as India and South Korea. In these countries, development is driven more by individual companies, which in some cases have reached very far. One such example is India's largest company, the Tata Group, which can be regarded as one of the world's best player when it comes to quality development, systematic improvement work and excellence. In addition to these countries, there is also an intensive quality development going on in companies and organizations in many other countries that have not previously been associated with the ability to deliver high-quality products.

This, in combination with the fact that many corporate executives and politicians in Europe and US have for a long time taken quality for granted, has led to more and more businesses approaching each other in quality. Something that makes a quality-related competition increase in several industries. Businesses that previously competed primarily with low prices are today offering high quality goods and services. Companies that historically have been able to maintain high prices on their products are threatened by new competitors.

It is therefore of the utmost importance to continuously develop your organization's ability to deliver quality. This requires a high level of knowledge regarding continual improvements, quality and excellence. There are many indications that the winners in the future will be the organizations that can best develop both their ability to meet customer needs and the efficiency of their processes. This is not only of paramount importance for the success and survival of companies but may also affect the ability of countries to maintain welfare. A globally accelerating quality competition is a strong contributing cause for this.

Astra Zeneca learns improvement work from China

A few years ago, Astra Zeneca's manufacturing took a more global approach to its improvement work with Lean as an umbrella. Today the factories in China lead the field in this area. This can be seen as a sign of the times. Companies in Sweden and in the western world need to accelerate the pace of improvement in order to be competitive, says *Peter Alvarsson* at Astra Zeneca.

PETER ALVARSSON is Head of Operation Excellence in the manufacturing part of the company's European organization, which also includes the Middle East and Africa. He is responsible for rolling out structured improvement work in seven factories with a total of 5,500 employees.

In China, our western managers were very impressed with the commitment and how well the improvement work was implemented, says Peter Alvarsson.

A question of future and survival

This is part of a renewed global strategy since 2015. Top management speaks of Lean as a "license to operate" and maintain that this is a question of future survival. There are Lean teams at different levels and specialists in improvement work that today equal 1.5 percent of the recruited personnel. There are Lean specialists in central staffs and everywhere. All parts of the organization are supported with training and implementation of improvement work using certain methods and tools.

– Previously, there was a fairly fragmented, and partly voluntary improvement program with inadequate management support, which did not succeed so well. Different plants reached different levels in the improvement work. But now improvements are clearly on the agenda and the global management team has clear expectations of all factories, says Peter Alvarsson.

Result perspective

Peter Alvarsson and his specialist colleagues are working as internal consultants providing support regarding training and the introduction of new working methods at the plants, as well as communicating the results to be achieved. All factories have a development plan for how to improve results and increase the Lean maturity in the business. This is followed up on an ongoing basis and at the bottom is the company's production system Astra Zeneca Supply System. Peter Alvarsson emphasizes that it is important to have a result perspective on the whole.

– We do not do Lean merely for Lean's sake, but in order to create business benefits. It can sometimes be a bit flawed at that point. Focus should not be too much on the tools themselves. We are working both to improve the results and to raise the Lean maturity.

Differences are a challenge

The fact that different factories have reached different levels and exist in different cultures is one of the challenges in Peter Alvarsson's work. There are great benefits of working according to a global standard, but it should also fit in with where you actually are in your journey and the actual Lean maturity level, Peter Alvarsson says. Today, there is good management support for expecting all units to work in a certain way, but there is still room for discussion of what is the appropriate level of a global standard.

– It is partly about cultural changes that take time, and in some areas there are already systems in place. We have agreed on some basic principles and we also talk about "hard standard" and "soft standard". However, here there can be slightly different views in different countries. In Sweden, for example, people focus more on values and principles, while in the USA and England, for example, people want standards to use as templates. Cultures differ somewhat, says Peter Alvarsson.

Astra Zeneca has a long experience of improvement work. Now the management wants to create global availability and transparency around the methods

used within the company, so that no one needs to reinvent methods for example concerning problem solving.

– The desire to learn from each other has increased. People have realized that it is stupid and expensive to develop methods yourself when others have already done so. Good practice sharing is central to us.

China now in the top

China is rapidly developing as a country in the area of quality and improvement. This is also evident at Astra Zeneca, where Peter Alvarsson has seen this development up close. He says that in a few years, the company's plants in China have risen to the top in improvement work and that top executives from around the world have recently been there to learn and be inspired.

– At first they visited Sweden and were quite impressed, but in China they were even more impressed by how well the improvement work was implemented in the business. The very high level of commitment from all employees made the strongest impression. The fact that everyone is so involved drives the development. Employees see improvements as a way to develop both the business and themselves, and also to participate in and develop the new China. They take pride in all this.

Peter Alvarsson says that Astra Zeneca's manufacturing in China now shows both good results, high Lean maturity and a long-term focus. Success factors are a committed leadership, the use of the right methods in a structured way for a long time and delivery of value. The plants also have low levels of quality problems and accidents, high machine utilization, good productivity and overall a good yield.

Important to increase improvement focus in the West

When comparing the quality development in China with what happens in the western world, it is easy to think about the Japanese quality "wonder" in the latter part of the 20th century. Most companies in the west did not really take Japan seriously as a quality competitor at that time. They continued much as before as long as the business worked and finally they were outcompeted by Japanese companies. Now China is on the rise as a quality leader and this time it is a much bigger and stronger country.

Peter Alvarsson thinks that we in the western world have had good times and may have been a little spoiled by it. When a company is doing well, it can also be difficult, at the employee levels, to understand the increased global quality competition. In the light of increasing competition from countries such as China, we ask Alvarsson what advice he would like to give to companies in Sweden and in the western world.

– We must increase the intensity of our improvement work and not rely on old merits. We also need to broaden the scope and involve the entire staff and organization more than we do today. It is not enough just to have some experts and staff people who walk around solving problems.

Benefit Sweden

When it comes to succeeding in the global competition, Peter Alvarsson thinks that we in Sweden have some cultural strengths that we should use in the improvement work.

– We have less hierarchies, we have supportive leadership, more closeness between managers and employees on the floor, and we have good structure and order. It also suits us to work cross-functionally together in teams and to put the customer in focus. Since we are less hierarchical, we also have an openness and we dare to say what we think.

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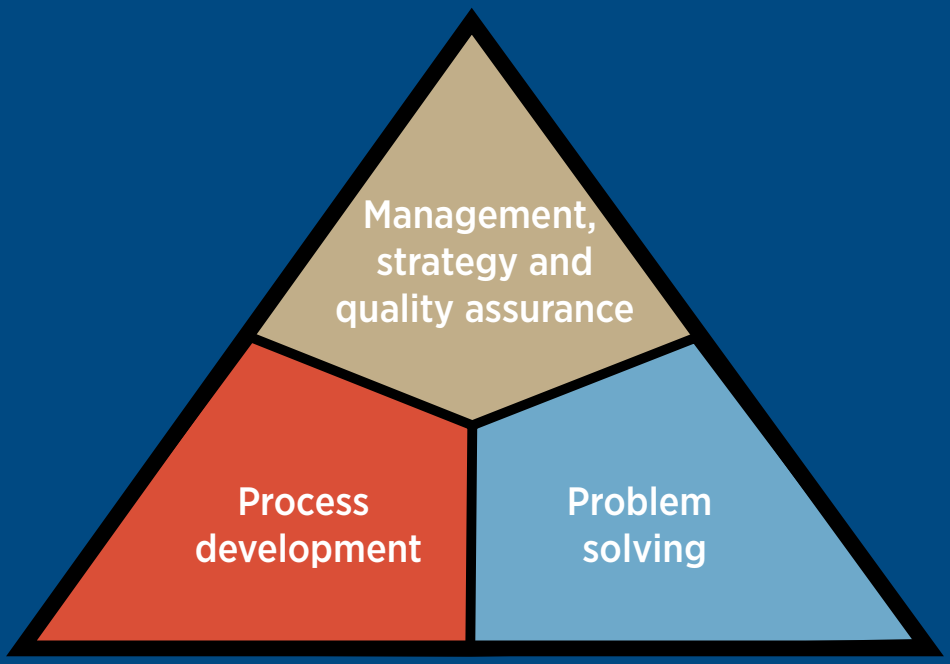

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