

## QUALITY IMPROVEMENT STRATEGIES COMMON GOAL AND VARIETY OF WAYS

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### **ABSTRACT**

*For about sixty years principles of TQM, Kaizen, Six Sigma and others continuous improvement strategies (CIS) play a vital role in quality engineering and management. They are presented in many books, scientific and professional journals, consulting companies offers and first of all in the Internet as an easy tool (almost a patent) for an efficient running a company and its never ending improvement. The goal of this paper is presentation and systematisation of relation existing between all these CIS. It is indicated in the paper that all off them make use of a common set of principles, methods and tools. Great attention is paid to one of author's observation, that CSI allow professionals (e.g. designers, technologists, managers) more efficient usage of their knowledge, especially tacit knowledge. It is stressed their importance in creating a friendly environment for harmonious development of so called hard and soft skills and competences. However the condition is a systematic and not occasional use of them.*

**Keywords:** quality, continuous improvement, Six Sigma, TQM, Kaizen

### **1. INTRODUCTION**

Principles, methods and tools gathered under names of TQM, Kaizen, Six Sigma and Lean have been receiving considerable attention and recognition among practitioners and scientists for several dozen years. In many sources, such as books, journals, Internet and offers of counseling companies, they are often presented as the "golden mean" for constant quality improvement. This means improving a company, including realized processes, produced goods or offered services. However, these tools are seen very differently, as a philosophy, a concept or a strategy of improvement [5]. Each of these roles has its justification. They are a philosophy, because they explain a reason behind the constant improvement. They have a character of a concept, because they give a general idea of improvement and allow selecting what is the most beneficial for a given company. Lastly, they are strategies, as aim of their use is obtaining competitive advantage.

TQM, Kaizen, Six Sigma and Lean are products which are greatly advertised and sold, but they are too often taken without any criticism whatsoever. Poland is a good example for this. Experiencing with them in Poland began when the command economy, dominated by orders and controlled distribution, ceased to exist. During transition into the market economy, Polish companies have been greedily acquiring all the novelties arriving from the western countries [6]. The companies introducing their departments in Poland have transferred ready organizational solutions, as well as elements of their work culture alongside technologies and machines. It should be acknowledged that it gave us a mighty impulse for development [1].

However, this enthusiasm suppressed any critical attitude in majority of managers. A wonderful idea by Deming to name the cycle of efficient operation as the PDCA cycle was acknowledged without any criticism – if possible, managers wanted to explain everything what was to be done in companies on the basis of its principle. In a nutshell, people believed and often still believe that everything that comes “from there” is better, more effective and efficient.

Of course, it must be admitted that what is proposed, for example, by the Japanese school, is worth respecting. But the Japanese methods are not a panacea. Being able to appreciate achievements of others, we must be also able to look on them with a healthy dose of criticism and look for our own way, if they do not fit into our conditions. The more so that in the past, also during the command economy era, Polish scientists and practitioners had some brilliant ideas for improving operation of companies. Today, we have enough knowledge and many own experiences to present courage of own interpretation and implement own solutions, also in scope of organization and management of a company, fitting our organizational and work culture.

## **2. STRATEGIES OF EXPEDITIOUS OPERATION**

As regards the TQM, Kaizen, Six Sigma, Lean and ISO 9000, their importance in continuous improvement is emphasized [2,3,7]. They also have a strong position for application during phases of ensuring and maintaining proper conditions for realization of processes [2]. That is why the author calls them the Strategies of Expeditious Operation (SEO). The notion of “expeditious operation” is broad enough to contain effects of all the activities in a company – not only concerning the improvement. They are a support in each phase of the Product Life Cycle (PLC). Tools and methods of Lean and Six Sigma are irreplaceable in ensuring proper conditions, while standardized management systems, such as systems compatible with ISO 9001, are helpful in maintaining them. Aim of all the described concepts – although to a various degree – is quality improvement, lowering of costs and supplying products in time.

It must be clearly emphasized, that founding rules of SEO were used since the very first moment the human started to consciously manage resources at his disposal. That is because they are based on common sense and result directly out of practice of daily work. Everyone wants to lose as little time and money as possible, avoid wastage, which is applying the main Lean principle in daily life. Everyone, before deciding about any change, first defines a need for it and then tries to assess both possibilities and potential risks of its implementation. Consequently, the change is introduced and then an evaluation is formulated whether it was beneficial or not. Therefore, PDCA cycle is unconsciously realized. Often we determine the weakest links in a stream of our daily activities, e.g. by avoiding particularly crowded junctions or by leaving at a specific day time to avoid traffic jam – in other words, we utilize the Lean principles. We try to introduce small improvements around ourselves to help in our daily lives, inadvertently creating new Kaizen. The TQM also accompanies us secretly in our daily life. An example could be engaging the whole family in organization of Christmas holidays, with more or less aware attempt to reinforce bonds and improve mutual understanding. It is probably appropriate to compare it all to a famous quote from Molière – *“Good heavens! For more than forty years I have been speaking prose without knowing it.”*<sup>1</sup> Through analogy to the Molière character, we have been always applying TQM, Lean, Kaizen but only when they were named, we realized their significance.

SEO are not scientific theories, they are above all a set of practical rules and principles and

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<sup>1</sup> The Bourgeois Gentleman, Molière, 1670

methods and tools of continuous improvement, aiding them on an operational level. They developed spontaneously, they had and still have hundreds of interpreters. That is why their recognition is fuzzy and ambiguous. For some, Kaizen is part of Lean and for others – the other way around. For many, the TQM is an organized system, for some – it is a set of rules to obey. There can be an impression that “everything is everything”. On the other hand, there is nothing wrong with it, as not the whole concepts of Lean or Six Sigma are used daily, but rather specific tools and methods related to them, such as the control chart, Pareto analysis, Kanban or SMED – how to use them is beyond any doubt. But this lack of agreement regarding the nomenclature is a certain hindrance in communication between both practitioners and theoreticians of continuous improvement.

Despite existing differences, SEO are complementary towards each other. Relations between the strategies can be schematically presented as in Fig. 1 and describe as a commentary below:

“High efficiency of operations is a challenge for each company. The effects do not come by themselves, hard work is necessary. Achieving, maintaining and improving high efficiency can be imagined as rolling a stone upwards a slope. Height of the stone is here a metaphor for efficiency and the slope – difficulties which are to overcome while maintaining and improving it. A moment of hesitation and the stone goes down. Maintaining of achieved level and improving it cannot be stopped – being aware of this means building the TQM. The TQM creates a thought climate from the client’s viewpoint – fulfilling his requirements. But the TQM is, to a large extent, a way of building good solutions by convincing, influencing and calling to consciousness of employees. An ally, a partner and in many cases an equivalent of the TQM thinking is the Kaizen culture – allowing to smoothen the road, to reduce roughness. After certain time, TQM and Kaizen may become insufficient. That is why good practices and effective solutions must be solidified. The “solidifier” role is played by the standards, it is the best if they are created according to guidelines and requirements by a known other standard – the most recognized one is the ISO 9000. Implementation of a standard is a support (illustrated by the “wedge” in the Figure), preventing sliding of the cylinder of efficiency (expeditiousness, effectiveness, benefit).

The TQM and Kaizen build a friendly environment for achieving high expeditiousness of operations. However, they are not aggressive enough towards the costs. In this scope, they are aided by Lean, TOC and Six Sigma. They underline significance of financial side of the improvement, simultaneously making the road to high efficiency less steep (inclination of the slope is reduced) and they give additional impulse for improvement (the Six Sigma pushes the cylinder of efficiency), not in the role of the proverbial Sisyphus, but as an efficient tool.”

Even if the narration presented above is too literary, a little naive and even biased, it shows that all the strategies of expeditious operation create one family. And just as in the family, they can live amicably together (although they do not have to); they can also, as each family member, lead their own, self-dependent life. But in more difficult moments, they always support each other.

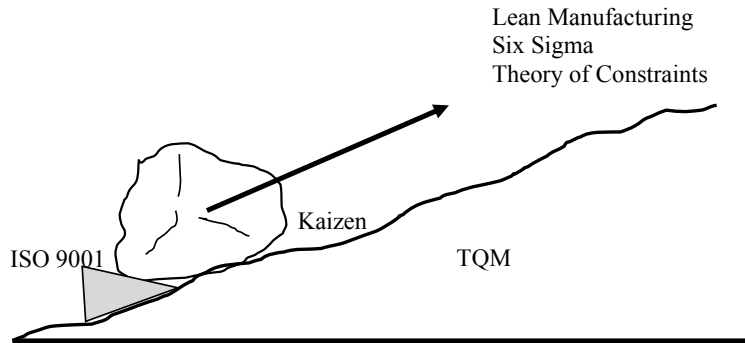


Figure 1. Relations between TQM, Kaizen, Lean, Six Sigma, TOC, ISO 9001

### 3. PRINCIPLES, METHODS AND TOOLS

The strategies of expeditious operations in themselves only have a certain potential. They gain operational power only in connection with rules, and above all tools and operational methods. However, they must be applied regularly and consistently, not only from time to time. According to a known old German proverb, “*Uebung macht den Meister*”, meaning “*practice makes perfect*”. This proverb refers to a concept, which is known as the daily practice. Practice is a set of activities performed regularly in certain situations. In a specific operation, practice is skills and knowledge gained through multiple and continued performance.

Following this trace, it can be said that a strategy, a rule, a method or a tool becomes a practice in a company, if it is regularly applied and is an element of daily routine of employees and managers. In such case it becomes a Practice of Expeditious Operation (PEO), if, thanks to its application, human performance efficiency, as well as operational and business efficiency of processes and a whole company are increased. Thanks to application of PEO, professional mastery of employees can be better used for company’s benefit.

Assigning a specific PEO to a particular group is a result of its properties [5,8]. As follows:

- **strategy** is distinguished by a certain general idea, concerns a whole company (is not related to any particular area of activity of a company), its realization requires rules, methods, tools and guidelines,
- **rule** – indicated that certain activities and attitudes are good for achieving intended results,
- **method** – is a determined methodology of operation, concerns particular area of operation of a company, its realization requires certain tools,
- **tool** – just as a method, it has determined methodology of operation, but it is usually simple and does not require use of other tools (tools are usually intuitive in use).

It should be underlined, that definite majority of tools were invented before popularization of the improvement concept, see Fig.2. Today, a given tool and method can be assigned to many concepts, similarly as a given concept is assigned to many methods and tools.

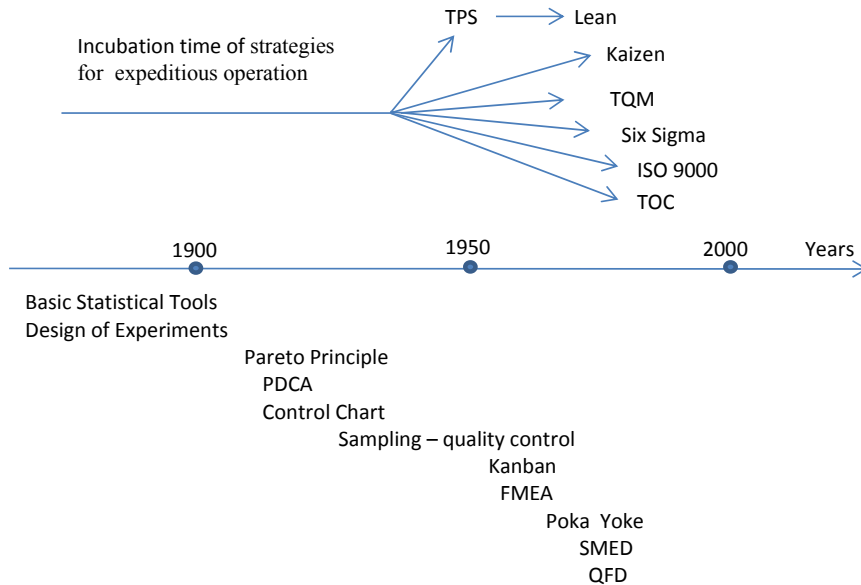


Figure 2. Evolution of chosen strategies, methods and tools of expeditious operation

Relying on certain elaborations, it can be said that all concepts use all tools and methods. Indeed, there is a lot of truth in this statement. However, disputing how a given company, declaring that it applies TQM rules, can implement a specific tool (e.g. TPM) which is not an essence of TQM, is a discussion of purely academic character. On the other hand, saying that we use TPM in TQM is a certain infelicity. But if it helps thinking or acting towards improvement, it should be of no concern.

#### 4. SYNERGY OF SEO AND OCCUPATIONAL PROFICIENCY

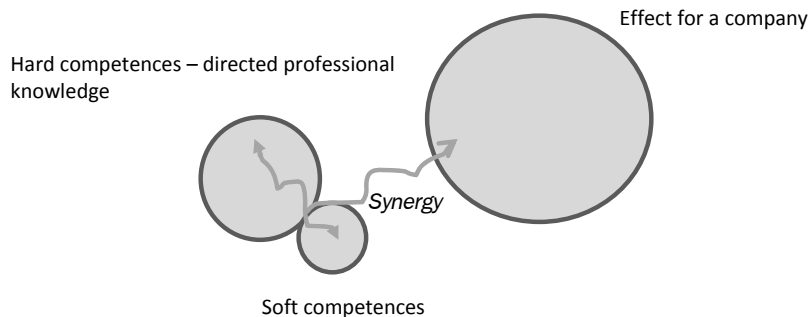
Tools and methods of Lean, Kaizen or Six Sigma are often used with an intention of improving products, operations and processes, which are, simply saying, designed in an incorrect way. Such a proceeding can hardly be named improvement, it is merely a form of repair. That is because the described concepts are not a cure for all or most of a company's problems, as sometimes suggested by neophytes and specialists from consulting companies', often really believing in it. In reality, these methods are just a support for design engineers, process engineers, salesmen, IT specialists, planners etc. That is because performing of daily duties relies on fundamental professional preparation, regarding basic activity of a company. Its success is dependent on professional knowledge and competences of employees.

Sometimes it resembles an approach of a tribal shaman (healer), who does not know fundamentals of human anatomy and physiology and still attempts to heal people.

Nowadays, when companies aim at being "lean" and friendly for their stakeholders (employees, society, environment), mere mastery in a given profession is not enough to achieve high operational expeditiousness of processes (higher than competitors). Today, operational expeditiousness means more than, e.g., in 70s of XXth century. In that time, it meant mostly supplying products with a competitive price (in the market economy; the command economy was ruled by different principles). Today, operational expeditiousness

comprises also minimization of wastage, limiting influence on natural environment and creation of human-friendly environment. There is no way it can be achieved without extra competences.

In a modern company, even someone of very high professional qualifications, a true master in operations regarding a given profession, must take care of the so-called soft competences, which are skills such as cooperation, time management, work organization, creativity, learning, communicating etc. It is a frequent case, when a brilliant specialist loses its market position with a worse one, but distinguished by soft competences.



*Figure 3. Synergy of SEO*

The soft competences – in comparison with the hard ones – are less dependent on knowledge. They depend highly on character, temper, attitude, openness for change, willingness for cooperation etc. They are gained through operations requiring creativity, teamwork, attempting endeavors with results dependent not only on knowledge and professional skills, but also on being open and flexible. The TQM, Kaizen, Lean, Six Sigma, Theory of Constraints together form a brilliant environment for its harmonious and synergic development, see Fig. 3.

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