

ON THE ROAD TOWARDS EXCELLENCE USING QUALITY TOOLS. ROLE OF RISK CONTROLLING IN INTEGRATED MANAGEMENT QSE

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Abstract: *a very effective management method, based to the model “way to excellence” inspired from the Deming cycle PDCA will be presented and discussed with the author comments over the appropriate application domain in the modern successful companies.*

Key words: *quality, tools, management, excellence, definition, concepts.*

1. INTRODUCTION

Most people agree that total Quality Management is not a science nor an art; it’s a set of behaviours and methods/tools that every manager has to use for an efficient management of his company.

Having or acquiring correct behaviours depends on a lot of factors, e.g. education, talent, intuition, inspiration, etc. We won’t handle these factors in this paper.

This paper is notably concerned by quality methods/tools whose knowledge can be acquired by books or specialized treatises and/or by experienced people.

The process followed here is based on the association of these tools with the Deming cycle. Next we will show how efficient management can be applied using continuous improvement in order to drive an enterprise towards excellence.

So we will show how to use some quality tools/methods because specialized literature gives so many varied information on this subject that a novice manager (and even a more experienced one) doesn’t often find what he’s looking for.

Each enterprise involved in a total quality process realizes a permanent effort to ameliorate its activity, in every sector, continuously and implicating every employee at every hierarchical level.

2. ROAD TO EXCELLENCE MODELLING

Figure 1 shows the road to excellence, that we can reach going up the slope (KAIZEN = continuous improvement) using the Deming cycle PDCA – *Plan, Do, Check, Act*.

Precision: the author considers that the concept of excellence based on eight maintains which is defined by the EFQM can be replaced in this case, either by the zeros philosophy: default, failure, crash, delay, stock, paper, disdain, etc., or by the minimisation of the differences between the quality components of the loop between client and provider, expected Q, aimed Q, realised Q, perceived Q (Q = quality).

An efficient quality management system (*a norm, e.g. ISO 9000, a model, e.g. EFQM, an award, e.g. “Deming-Japan”, “Malcolm Baldrige-USA”, etc.*) must be implemented for that the Deming Wheel (Fig. 1) cannot go down the slope. Such a system is shown on Fig. 1 by a corner that prevents the wheel to go down.

Driving continuous improvement consists of following the PDCA philosophy, which is represented by four steps:

- *plan*: establish what must be done;
- *do*: realizing what has been forecast;
- *check*: checking and demonstrating what has been realized;
- *act*: rectifying according to the results.

After each cycle, it’s very important to steady realized improvement, to come back to the starting point and to restart another cycle, and so on.

In order to make the Deming wheel rotating (up), it must be motorized, which means giving consistence to each PDCA sector that compose it to pull it up. That can be done with the help of specific quality tools which must be chosen and used of a convenient manner, at the good place and at the good time.

In that way, without entering into all the details of all these tools description (it exists a lot of specialized literature), we will explicit in the following the wheel motor components.

For the *Plan* part, which can be separated in several steps, it is recommended to use different specific tools. For the step *identify the problem*, we will use the *Brainstorming*; for *choose priorities*, the *Pareto law (80/20)*, *ABC curve*; for *collect data, report sheet or histogram*; for *looking for the causes of non-quality*, the *Cause-Effect Diagram (Ishikawa)*, *FMEA (Failure Mode and Effect Analysis)*.

For the *Do* part = *Act, realize*, we must first use the set of *WWWHHWF* questions (*What? Who? Where?*

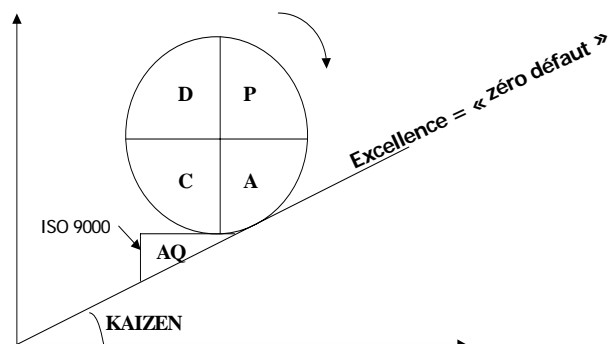


Fig. 1. The Deming Wheel.

When ? How ? Why ? For whom ?) and then determine and choose the means.

That can be done with the help of tools such SMED (Single minute Exchange of Die) or Poka-Yoke (simple and cheap anti-errors system. It allows to avoid errors as a preventive, and can be implemented from the conception phase or as soon as a human mistake is discovered).

Next, for the *try/confirm solutions* we will use the QFD tool (Quality Function Deployment, also known as "House of Quality" because of its shape) or the plans of experiences method (Tagushi).

For the *Check* part, we will use the SPC (Statistical Process Control) in the *Control* step. For the *interpreting and evaluating* step, we will use tools such as report sheets, histogram, SPC, plans of experiences method (Tagushi).

As for the *Act* part = react, improve, we have to use tools such as FMEA and Taguchi Method for the correct step. For the *prevent difficulties* step, the most appropriate tool is FMEA.

Of course, other quality tools and methods do exist. For example, we have Benchmarking (= to compare oneself with the best ones to improve oneself), Balanced Scorecard (= a prospective and balanced dashboard, a lever of performance. "It is the association of a road map and a dashboard of balanced performances that can be supported by the top management of the organisation in order to be deployed with success." (R. S. Kaplan from Harvard Business School)), Reengineering («a fundamental doubting and a radical redefinition of operational processes in order to obtain spectacular gains in critical performances that are today costs, quality, service and rapidity» (M. Hammer and J. Campy)), etc.

The author considers that the knowledge and control of at least three of this multitude of quality tools and methods is absolutely essential for every good manager engaged in the road to excellence. These three tools are KAIZEN, the 5S and Six Sigma, which are commented below.

KAIZEN means continuous improvement. Kaizen is an efficient strategy to think and solve problems step by step with the contribution of all. It distinguishes itself from innovation which proposes breakthroughs that need important investments. This realistic approach has been developed by Masaaki Imai from Japanese experience.

Fig. 2 shows the essential difference between occidental traditional managing thinking and Japanese one.

It's easy to observe that during the same time, there is a considerably better development level for the model based on the combination of innovation with Kaizen as the one based only on innovation.

The demonstrated efficiency of Kaizen implies that today all success enterprises in the world use it (in particular, the ISO 9000/2000 norm version takes Kaizen into account).

We mention that today occident has caught up its lateness and is again in the lead.

The « 5 S »

The 5S method, which is considered by the author as an essential, very simple and efficient technical management technique, is considered by professionals as *the first*

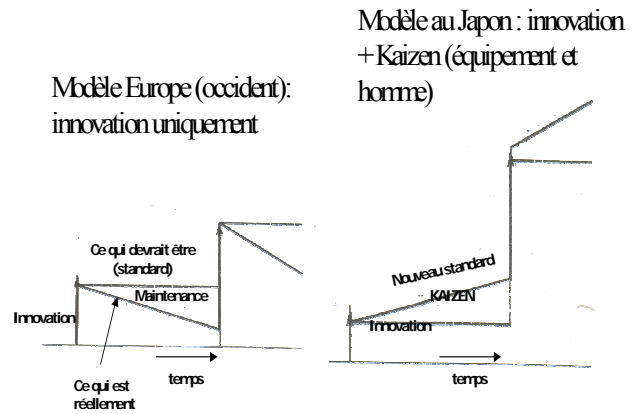


Fig. 2. Difference between occidental and Japanese managing.

practice of total quality, and so the first step for the road to excellence. This method is born and has been applied first in Japan, and has spread throughout Europe and America.

Good managers know that in order to drive an enterprise to excellence we must begin with the 5S and applied it continually (it must be mentioned that the 5S is applicable in every sector of human activity: enterprise, house, school, etc.) [3].

The name 5S comes from the first letters of the Japanese words: *seiri, seiton, seiso, seiketsu, shitsuke*, which can be respectively translated by: *clearing, tidying, cleaning, order and rigour*. Their significations are detailed below.

Seiri = Clearing what is useless means strictly keeping what is essential and clearing the rest. It's a fight against human propensity to collect everything (hamster).

Seiton = tidying things according to their usefulness. It supposes to place and order things in order to keep them easy of access and avoid useless movements and loss of time. "A place for each thing, each thing in its place".

Seiso = Cleaning ensures the neatness of the working place and allows malfunctions and defaults detection. "Cleaning is checking".

Seiketsu = Order is not an activity according to the strictest definition of the term but it consists of maintaining a pleasant and long-lasting sight at the working place by the regular use of the first three steps.

Shitsuke = Rigour consists in encouraging and motivating the employees in keeping their good habits in order to continuously improve the rules to reinforce the efficiency and adapt themselves to new situations. There's no place for drifting, hierarchy must continue to explain the process and particularly what has been bad understood in order to work in a more welcoming, cleaner, safer and more pleasant quality environment.

The 5S method gives spectacular and undeniable results, contributing to productivity, safety and life quality improvement. Because this method physically transforms the working place, people work in better conditions. So it deeply modifies people frame of mind at every hierarchical

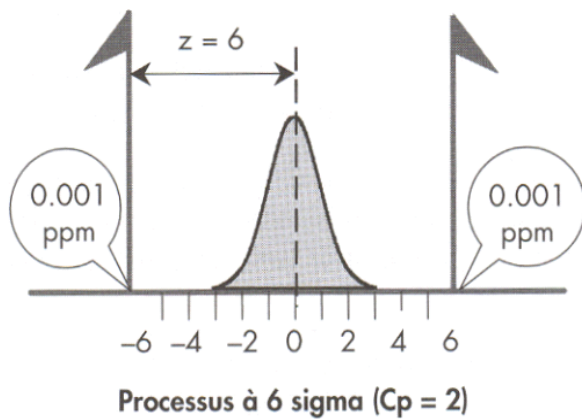


Fig. 3. Rejected parts per billion – traditional approach.

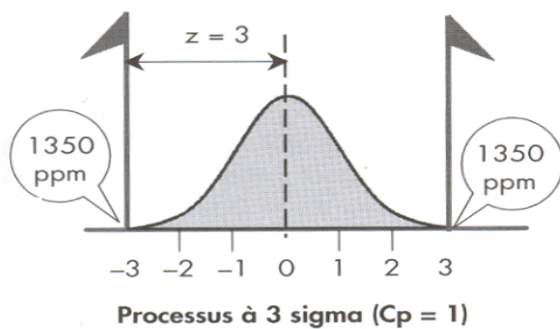


Fig. 4. Rejected parts per billion – modern approach.

levels, contributing to the growth of the personnel efficiency and wellness. It has an influence on the enterprise and even on the family life. We must mention that this method is very easy to explain but much more difficult to implement.

Six sigma, is both a very powerful method and a strategy which has i.e. allowed the transition of the production, from the traditional approach: percentage of rejects to the modern approach: ppm (rejected parts per billion), as shown in Fig 3. and Fig.4

3. PLACE OF RISK CONTROL IN INTEGRATED MANAGEMENT QSE

Enterprise management is a complex problem, including human resources, financial resources, etc. Drive a society to excellence is possible using different and sometimes specific approaches. We have to observe that a lot of high-performance enterprises in the world use integrated management process QSE (Quality-ISO 9000, Environment-ISO 14000, Safety-OHSAS 18000. Certain societies also add ethics –QS8800, etc.) with effectiveness.

In all these fields, like in all life circumstances, risk (*probability that a danger becomes a damage*) is present and must be controlled. Because it cannot be completely eliminated, we must accept to reduce it to a reasonable level, i.e. control it. An iterative process for reduction of risks does exist. It consists in following a certain number of steps (Fig. 5, inspired by the European norm EN 1050).

This iterative process is a dynamical analyse of risks and aims to control them. From another point of view, it

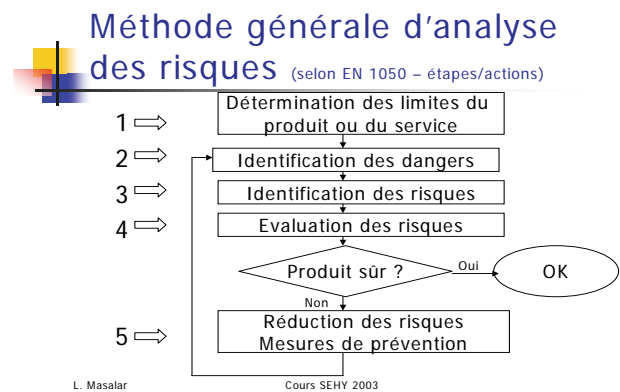


Fig. 5. Iterative process for reduction of risks.

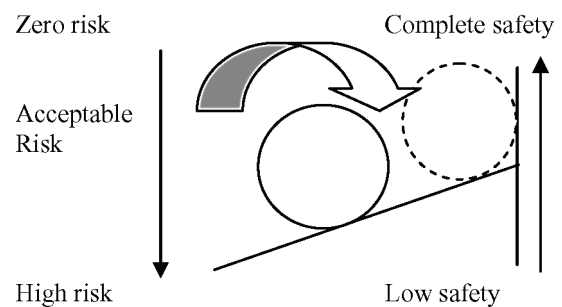


Fig. 6. Modelling towards a safety in progress.

can also be modelled like the road towards excellence, except that the objective is the risks control.

Fig. 6 shows the modelling towards a safety in progress with the help of the Deming Wheel.

The blocked position of the dotted circle shows that it's almost impossible to reach the Zero risk level. So it is more realist to aim an acceptable risk level.

We note also that the belgian team of researchers, under direction of Prof. Malchaire (UCL) has developed a general strategy of professional risks management called SOBANE (Screening, Observation, Analyse, Expertise). It allows to tackle detection and observation in the preventive phase (before accident) and analyse and assess in the curative one (after accident) [4].

4. CONCLUSION

It is sensible to know, use and control the good quality methods/tools in order to reach an effective total quality management and, using continuous improvement, to stay in the road towards Excellence.

That must be known and applied by everyone (*employees or managers*) at their levels in each enterprise which wants to be a success .

It's interesting to observe that the term management comes from Latin (*manus agere*, which means: drive with a strong hand) and that the word *mesnagement* from ancient French already meant art of lead.

“In fact, make women and men working together in order to realize a common aim is a problem as old as the world is” [1].

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