In today's prevailing TQM environment, problem solving plays a vital role, and the success of businesses relies on sound decision making. Is TQM problem oriented? It is a system that, by employing proactive leadership, puts all relevant elements together to create a supportive, learning culture where prevention of failure and success of all people in the supplier-customer chain is the ultimate goal.

It should not, and, in reality, does not imply that in a “total quality system” problems will never occur. Working conditions are subject to ongoing changes in the micro- and macro-environment and the organization must learn how to handle them by utilizing its system, structure and skills. Prevention (quality assurance), a step forward in the evolution of total quality, is generated from the experience of problem solving.

Of all the managerial functions relevant to quality leadership, the one attached to managers as “investigators” plays the major role in problem solving. From the announcement of a problem until its resolution, the availability of all relevant information is crucial. Since the same information in the hands of different managers might result in distinctly different results, it is evident that successful problem solving involves more than the availability of information. Equally critical is the quality of logic applied to that information.

The common mistake made by managers is that the decision-making phase often follows straight after the recognition of the actual problem. The proper appreciation of the cause of the problem is often neglected. The vital point in the process of problem solving is this simple rule – a problem cannot be solved unless its cause is known. The S-S method can be used to plug this loophole.

The S-S problem-solving method has been developed in an effort to suggest a simple and effective way of getting down to the root cause. The process begins with identifying the most significant problem, continues with analysis to find the cause, and concludes with decision making. In the attempt to get rid of the unwanted effect (problem) efficiently, the real cause must be identified first and then removed by appropriate action.

Each of the “thinking a problem through” constituents has to be precisely defined, since these issues are always sequentially linked and require a systematic approach:

- **problem** represents what is wrong – an unwanted effect that needs correcting or removing;
- **cause** refers to what brought the problem about; and
- **decision making** encompasses choosing the actions to correct it.
Step 1: process flow analysis

There is a defined "should" path that links the beginning of the observed process, in terms of time or space, and its end when the outcome can be assessed according to the expectations, stated objectives or level of performance. But what is actually going on along that "path" often varies from what should be going on. That variation, or "change", is what should be analysed after the problem has been recognized.

Step 2: problem definition

After having recognized the significant deviation or discrepancy in the final outcome, we must be able to give a precise description of the problem with regard to its nature, the people, time, place and extent.

Step 3: identification of the real cause

During the course of the observed process or operation there must be a point where a certain change to the regular process flow ("should" path) has happened and caused the perceived deviation. Successful correction or elimination of the problem is only possible if the change, in the form of a single event or condition, is correctly determined.

Step 4: implementation of corrective/preventive action

Once the real cause has been precisely defined, the decision on the best corrective action can be made and the problem solved.

The rules of effective penalty taking

In football, there are some rules that every experienced football player will understand:

Rule 1 – A successful penalty is when the ball ends up in the net away from the goalkeeper's reach. The best spots are those along the inside edges of the goalposts, the higher the better, provided that the ball does not go over the bar. The football player must target these points. Theoretically, in such an important competition as the World Cup, the above rule should be adhered to during penalty shoot-outs without exception. This is possible because there is a definite starting-point (the penalty spot) and there are no players other than the goalkeeper and penalty-taker involved. Moreover, the penalty rules favour the penalty-taker because the goalkeeper is not allowed to move before the penalty-taker touches the ball. This leads to rule 2…

Rule 2 – The penalty-taker should assume that there is nobody at all on the field, and concentrate on placing the ball into the best positions. England's penalty-takers should have followed rules 1 and 2 (the "should" path) without exception, because this would have given the highest chance to score, but human psychology and lack of preparation gave rise to deviation from these rules.

The penalty-taker usually thinks about the preceding penalties and what the goalkeeper's next move will be. This affects the penalty-taker. It is often at this critical moment that he makes a mistake – doing something which is not part of his plan or simply forgetting his original plan completely. Then, the results are:

- giving the goalkeeper the chance to save the ball (because of the fear of making incorrect guesses about which way the goalkeeper would move);

- and

- missing the goal altogether (because of the worry that the goalkeeper might
After applying the S-S problem-solving method, the real cause of failure can be identified as the lack of proper training. In order to ensure that this is the real cause, we should test it against the what, who, where, when and how significant questions:

- **What** – lack of proper training led to poor penalty taking, mostly due to players not adhering to rule 1.
- **Who** – a significant number of players were making the mistake as a result of insufficient training.
- **When** – when players are tired, their physical condition may affect their decision making. This is why training is important.
- **Where** – more stringent training for penalties.
- **How significant** – the importance of the match makes the problem very significant, therefore, training must be thorough.

**Implementation of corrective/preventive action**

The following corrective/preventive action should be considered:

- there must be adequate training, conducted in accordance with rules 1 and 2;
- players should be convinced that there are no better alternatives;
- the possibility of a penalty shoot-out for future matches should be taken into account; and
- preventive actions should be taken to fully understand the psychological effect of the presence of the goalkeeper.

From this analysis, the coach must train players to prepare for the eventuality of penalties.

**The 1990 World Cup semi-final**

The 1990 World Cup semi-final between England and West Germany finished 1-1 after 120 minutes, resulting in the infamous penalty shoot-out. Germany were fully prepared for penalties, whereas England were not. An attitude of 'you can't practice penalties' prevailed in the England camp, although this particular game going to penalties was always a distinct possibility.

England went out and West Germany advanced to the World Cup final against a weak Argentina, winning 1-0. Had England won their semi-final, they could have become 1990 World Cup Champions rather than West Germany.

**The 1994 World Cup final**

In 1994, Italy almost repeated the same mistakes the England team had made in 1990. The match against Brazil finished in a 0-0 draw after 120 minutes.

Brazil missed the first penalty, disobeying rule 1, but other penalty-takers implemented corrective action and gave no chance for a repeat. The difference between the teams was that Brazil discovered the cause quickly and moved back to the planned course of action immediately. This difference meant success, and was a result of training.

**Management lessons from the World Cup experience**

Although we're proposing how to win the World Cup by using the S-S method, an even more important objective for managers is to learn from the lessons of the World
Cup experience:

- the cost resulting from a problem can be enormous;
- acquire the experience of problem-solving;
- the S-S method is effective;
- problems can be solved readily after the real cause is identified; and
- formulate a plan that prevents problems from happening again.

July 2010.

This is a shortened version of "Can the S-S problem-solving method help to win the World Cup?", which originally appeared in *Management Decision*, Volume 34 Number 2, 1996.

The authors are Samuel K. Ho and Svetlana Cicmil.