

Problem Solving and Decision making BMSW4004

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1. INTRODUCTION

Problem solving is an act of defining problem, analysing the cause of it, identifying and prioritizing the situations and selecting the alternative solutions for it.

2. BACKGROUND TO PROBLEM SOLVING

A logical problem solving process can be done through some steps called PAID. What is PAID?

Problem statement

Analyse problem details

Identify likely causes

Define actual causes

Problems exist when someone or something isn't performing as expected. Action needs to be taken to solve the problem thus action should follow from a clear understanding of the problem. To understand a problem solving it is necessary to distinguish between symptoms of the problem and its causes. Identification of the problem is the key to problem solving.

CAUSES AND SYMPTOMS OF A PROBLEM

It is necessary to distinguish between the symptoms of a problem and its causes. What is the best indication that a problem can be solved?

- The symptoms of the problem can be treated

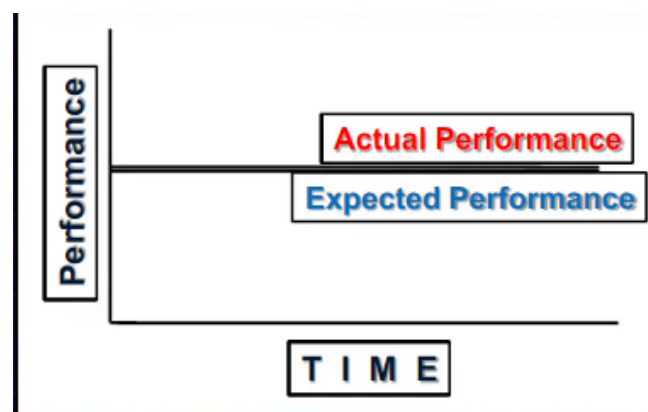
Or

- The cause of the problem has been isolated

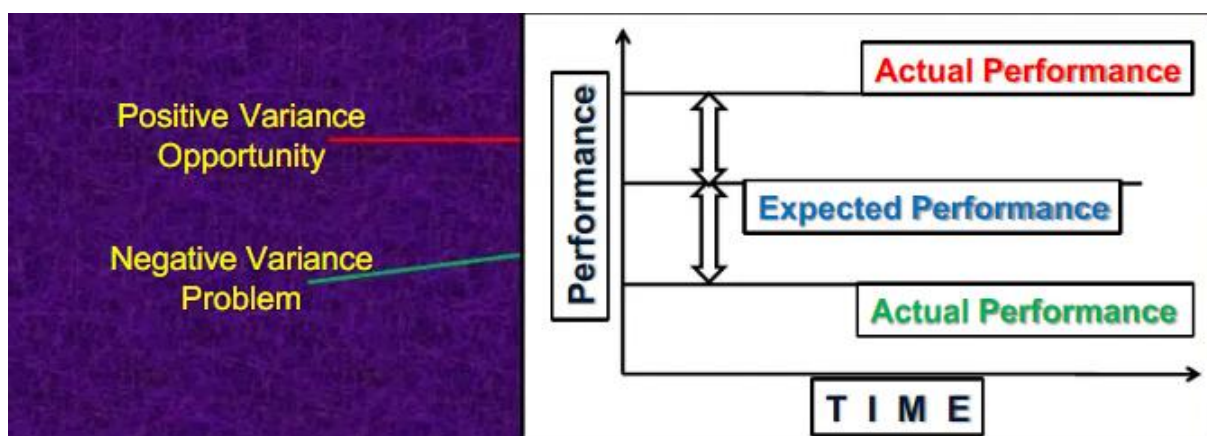
Sure the treatment of the symptoms, but surely this is not the solution, but once you have found the real cause of the problem you can decide how to deal with it.

DIAGRAM OF A PROBLEM

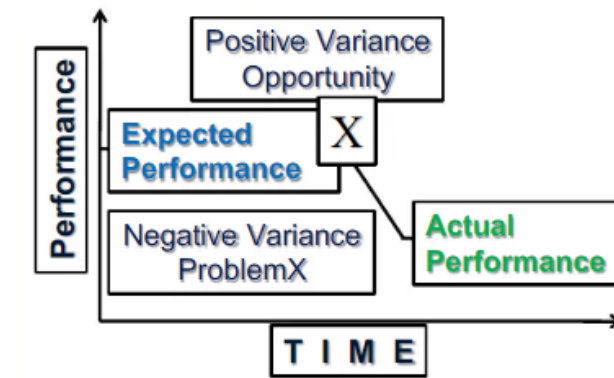
To help understand what we are looking for when finding the cause of a problem, it is worthwhile looking at the problem diagrammatically



The above diagram shows performance over time. In this case it's constant, but is there a problem?



The area with the positive variance is called “Opportunity”. The opportunity is the exact opposite of the problem and can be analysed in the same way as the problem. You want to find out what causes an opportunity to happen that you can exploit it in full or make it happen elsewhere.



Problem don't occur without a reason. In any situation with a problem, there must be a historical point, when actual performance started to deviate. Something happened at the time X which caused the problem to occur.

AVOIDING PITFALLS

- Giving up early
- Jumping straight to conclusion about the cause
- Not getting the right people involved
- Not collecting all the relevant data

The worst is jumping to conclusion, because it's always very tempting to think you know the cause of a problem straight away and take action to solve it.

3. Setting the problem statement

A problem statement is a single sentence which embraces the understanding of the problem. Not the cause of the problem, but the problem itself. Setting the problem statement is the single most important action taken in the whole problem-solving process.

Reasons why setting the problem statement is so important:

- Getting the problem statement wrong will result in searching in the wrong area for the problem's cause
- A clear problem statement enables to decide what work must be completed to find the cause

- Keeping the problem statement visible during the search for the cause keeps effort focused in the right area.

The problem statement provides the context within which all further work takes place.

EFFECTIVE PROBLEM STATEMENTS

Ideally a problem statement should be:

- A single sentence
- Precise
- Understandable to a person with no knowledge of the problem area
- Neutral
- Based on the description of the problem

The problem statement is one sentence statement which incorporates the understanding of the problem.

4. Analyse the problem in detail

Problem solving techniques can be classified as following:

Paradigm Preserving Techniques; Are utilized in situations that don't require the use of a board imagination, relatively easy to use and can be managed by teams that are not experienced or less developed. E.g. "Brainstorming" and "Assumption Articulation".

Paradigm Stretching Techniques; Require participants to develop new perspectives about the problem through creative thinking. E.g. "Reverse thinking" and "Six thinking hats technique"

Paradigm Breaking Techniques; The boundaries of the problem are completely busted, so the ideas obtained using these techniques, are the most fresh and innovative, but the process can be uncomfortable for no trained or unexperienced users.

THE ROLE OF QUESTIONS

Asking questions is the key to analysing the problems. A systematic approach to questioning ensures not missing any important areas. If you don't ask the right questions, you can't possibly get the right answers.

The best questions are always open questions, questions that cannot be answered with YES/NO, but require form of comment and brings explanations:

- What?
- Where?
- Why?
- When?
- Who?

Questioning Tool Box	
What is wrong?	What was their reaction?
What did you do about it?	What are the symptoms?
What was the result?	What are their effects?
What happened next?	What did you notice first?

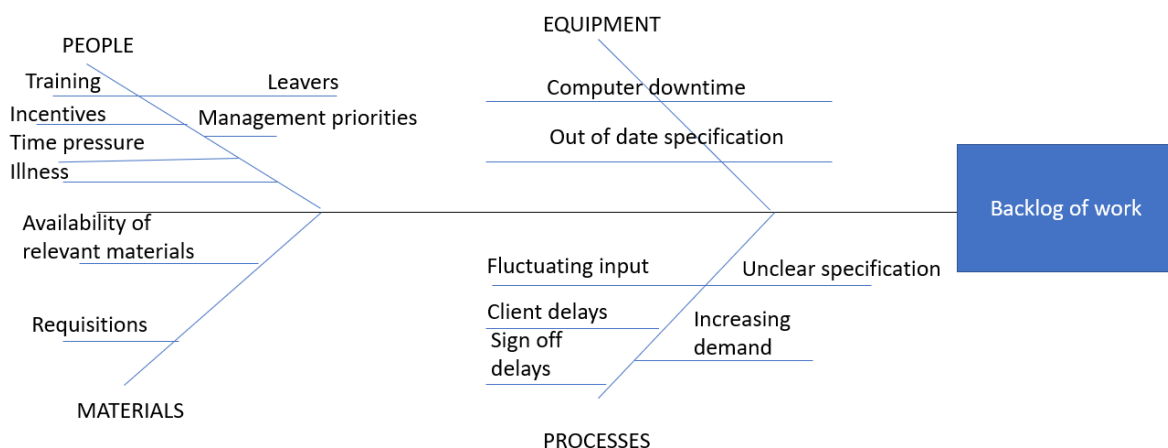
“When” questions aim to pinpoint exactly when the symptoms began to appear, in other words track down the X in time.

So the key question is “When did it start going wrong”. If X is discovered, then something must have happened at that point in time to cause the symptoms. Once what happened is discovered, it is found the root of the problem.

HERRINGBONES

Herringbones are a variant of Ishikawa fish bone and serve the same purpose, used by teams working in quality circles when trying to solve problems.

The technique is particularly useful in determining what needs to be analysed. A herringbone is like a structured brainstorm. Write down the issue needed to be covered (the problem statement) than brainstorm it using the headings on the herringbone, each “bone” providing a structure appropriate to the problem that needs to be solved.



ASSUMPTION ARTICULATION

Identification of assumption sets limits and introduces a framework withing we can work. Assumptions simplify the problems and make them easier to handle by providing fewer things to consider.

SIX THINKING HATS

The six thinking hats technique was developed by Edward de Bono, medical doctor and psychologist and he was the first using the term lateral thinking, meaning to think around the problem, rather than dealing with it directly.

One problem may occur when trying to generate ideas in a group, is that one person generates an idea and everybody else criticizes it to see if it is good enough, this is called adversarial thinking. The members can also get looked into a certain mindset, in some cases it is because of the concept generators role.



[Amazing Six Thinking Hats | njdiaries](#)

REVERSAL THINKING

Another technique from Edward de Bono, reversal thinking, is classified as a “Paradigm stretching technique.” The principal benefit of the reversal thinking technique, is the possibility for the users to obtain a new perspective about the problem or situation through revering previous ideas or concepts.

Once the problem is defined, it is created a list of ideas related to the problem or situation. Each idea is then reversed without concerning that it seems silly statement or without relevance. This will generate a list of all possible negative characteristics of the product or process.

An example of the reversal thinking technique could be how to make the weekly meetings more efficient in a cross-functional team. Then, the team focused on the problem solving might define all the possible actions required to obtain the opposite of the original goal; “turn the meeting less efficient so the attendants waste their time.” As a result, several ideas of what things to avoid to obtain efficient meetings will come up and at the same time there will be a clear view of what things to do to achieve the goal.

5. Identifying Likely Causes

Identify the differences between what you have identified from your analysis of what is right and what is wrong. This will enable discovering what is distinctive about the problem.

What has changed, something might have happened that caused the problem. So, what things changed around about the time the problem started to manifest itself.

What is the most likely explanation, answering previous questions should enable identifying potential causes. The most likely cause should explain all the data collected by the problem and what is wrong; it should be consistent with the collected data about the right things.

WHAT IS DIFFERENT?

In this stage of the PAID process, we are looking for things that are:

- Distinctive in symptoms identified which distinguish the problem from the areas where everything works fine
- Distinctive in the parts of the organization and specific locations where the problem arises which distinguish them from the areas where everything works fine
- Distinctive about the time a problem arises, from times when it does not.
- Different about a group which is affected by the problem, compared to groups that are not affected by it.

WHAT HAS CHANGED

Often the changes involve:

- *People*. These include changes in personnel, organization structure, work groups, skill levels and leadership styles
- *Materials*. Use of different materials changes in material specification and changes in quality
- *Equipment*. Introduction of new equipment and changes in maintenance procedure
- *Processes*. Introduction of new system and procedures, changes to patterns of communication, training process etc.

6. Define Actual Causes

What is the most likely explanation? Can it be proved?

Identifying most likely explanation from all potential causes of the symptoms that have been identified.

Proving the cause involves testing whether the cause identified can explain all the symptoms presented by the problem. Identification of the cause of the problem will almost inevitably lead to action designed to eliminate it. If action is taken to eliminate the wrong cause, there is a strong possibility that the actions will make things worse, therefore, it is often worthwhile proving that the *most likely explanation* is the *actual cause*.

Proving the cause involves:

- checking that the actual cause identified does explain all the facts at your disposal about both the problem and things that are right.
- Testing that any assumptions made to support the analysis are accurate
- Trying to replicate the problem situation in a controlled test.

Deciding what to do involve ***decision making*** which is a distinct process in its own right.

DECISION MAKING

The decision is about making choices, this is the cut off point when the process of thinking is stopped, and the process of action starts.

There are many types of decisions including:

- Yes or no decision
- Choose from a list
- Creative

If a decision is the cut off point when thinking process stops, clearly the quality of thinking determines the quality of decision.

ICES PROCESS

INITIATE: Deciding what to decide or *Initiating the decision*

CRITERIA: Defining exactly what is wanted

EVALUATE: Evaluation the options available against the CRITERIA

SELECT: Selecting the best options.

EVALUATING OPTIONS

Generating several options will normally help selecting the one that will best help achieving the decision's objectives

The time and effort spent generating options depends on the importance of the decision being made, and these can be generated by the problem-solving techniques.

There is not an optimum number of options for making an effective decision. Sometimes a decision is simply just yes or no or a choice between two things.

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APENDIX

Rose: Hi Daniela, please let me know when you have a few moments to discuss a bit of a situation

Daniela: Hi Rose, if it's not urgent, can it wait until I finish with this e-mail?

R: Sure

D: I will be right with you.

R: I will come by your office in 30 minutes to discuss some of the team concerns.

R: Since two of our team members have left, we had to take over their workload and we are all stressed and must work long hours, to finish the tasks. We are not being paid overtime and there is no work/life balance.

Also, we have no team leader to go to for small guidance, as next in line is you, ops manager, and we all know that you are already very busy.

D: I am currently recruiting to fill the gaps in the team, so soon there will be less workload. I will need your support to train the newbies, hope that will be ok with you too.

Also, I work with the IT guys to implement some new system to optimize, that will help you finish the tasks in smaller timeframes

I discussed with the board to workout a way for you to be paid overtime and we agreed that from next week you can log the hours and claim the overtime, if you need to do so.

Also, Rose, please let me know when you feel you have too much on your plate so I will check with the others, to see if anyone has capacity to take over some of your work.

In regards of team leader, I have already raised this issue with the board, as I also feel we need someone to link the team with myself and I am considering 2 of the senior consultants for the position, rather than recruiting from outside.

